Pediatric Patient Safety for Selected Indicators (PDI 19)
Table of Contents for Supporting and Supplemental Information
(NOTE: Most materials available at www.qualityindicators.ahrq.gov)

SECTION 3. METHODS REPORTS

3.A. AHRQ Quality Indicator Empirical Methods (November 2013)
3.B. Pediatric Quality Indicators (PDI) Composite Measure Workgroup Final Report
3.C. Quality Indicator User Guide: Pediatric Quality Indicators (PDI) Composite Measures, Version 4.4 (March 2012)

SECTION 4. SUPPLEMENTAL INFORMATION ON PDI 19 COMPONENT INDICATORS WITH WEIGHT=0

4.A. Individual Measure Technical Specifications
    4.A.1. PDI 08 Perioperative Hemorrhage or Hematoma Rate Technical Specifications
    4.A.2. PDI 09 Postoperative Respiratory Failure Rate Technical Specifications

4.B. Measure Properties
    4.B.1. PDI 08 Perioperative Hemorrhage or Hematoma Rate Analytic Template, v4.5
    4.B.1. PDI 09 Postoperative Respiratory Failure Rate Analytic Template, v4.5

SECTION 5. PDI CODING UPDATES AND REFINEMENTS

5.A. Pediatric Quality Indicators (PDI) Log of ICD-9-CM and DRG Coding Updates and Revisions to PDI Documentation and Software, Version 4.5

PDI 19 and Component Indicators

Pediatric Patient Safety for Selected Indicators (PDI 19) is the weighted average of the observed-to-expected ratios for the following component indicators:

• PDI 01 Accidental Puncture or Laceration Rate
• PDI 02 Pressure Ulcer Rate
• PDI 05 Iatrogenic Pneumothorax Rate
• PDI 10 Postoperative Sepsis Rate
• PDI 11 Postoperative Wound Dehiscence Rate
• PDI 12 Central Venous Catheter-Related Blood Stream Infection Rate

• PDI 08 Perioperative Hemorrhage or Hematoma Rate*
• PDI 09 Postoperative Respiratory Failure Rate*

*Note: All measure properties submitted in this application use NQF weights which exclude PDI 08 and PDI 09 (by assigning them a weight of zero).

The weights include component weights and shrinkage weights. The component weights are numerator weights, defined as the relative frequency of the numerators for the component indicators in the reference population. The shrinkage weights are the signal-to-noise ratio, where the signal variance is estimated from the reference population, and the noise variance is estimated from the user's data and is unique to each provider in the user's data.

NQF originally endorsed the composite with the following 6 component indicators: PDI 01 Accidental Puncture or Laceration Rate, PDI 02 Pressure Ulcer Rate, PDI 05 Iatrogenic Pneumothorax Rate, PDI 10 Postoperative Sepsis Rate, PDI 11 Postoperative Wound Dehiscence Rate, and PDI 12 Central Venous Catheter-Related Blood Stream Infection Rate. These 6 component indicators have non-zero weights. Two other indicators were originally proposed to be included in the PDI 19 composite: PDI 08 Perioperative Hemorrhage or Hematoma Rate and PDI 09 Postoperative Respiratory Failure Rate. These indicators were given a weight of zero in the NQF-endorsed PDI 19. Consideration could be given to inclusion of these additional indicators for inclusion in the composite in the future.

For more information, see *Quality Indicator Empirical Methods*, *PDI Composite Measure Workgroup Final Report*, and *AHRQ QI User Guide: PDI Composite* available in the supporting documents or online at www.qualityindicators.ahrq.gov

Pediatric Patient Safety for Selected Indicators
Technical Specifications

Pediatric Quality Indicators #19 (PDI #19)
AHRQ Quality Indicators™, Version 4.5, May 2013
Provider-Level Indicator
Type of Score: Ratio

Description

The weighted average of the observed-to-expected ratios for the following component indicators:

- PDI #1 Accidental Puncture or Laceration Rate
- PDI #2 Pressure Ulcer Rate
- PDI #5 Iatrogenic Pneumothorax Rate
- PDI #8 Perioperative Hemorrhage or Hematoma Rate
- PDI #9 Postoperative Respiratory Failure Rate
- PDI #10 Postoperative Sepsis Rate
- PDI #11 Postoperative Wound Dehiscence Rate
- PDI #12 Central Venous Catheter-Related Blood Stream Infection Rate

The weights include component weights and shrinkage weights. The component weights are numerator weights, defined as the relative frequency of the numerators for the component indicators in the reference population. The shrinkage weights are the signal-to-noise ratio, where the signal variance is estimated from the reference population, and the noise variance is estimated from the user's data and is unique to each provider in the user's data.

For more information, see *Quality Indicator Empirical Methods*.

Numerator

Not applicable.

Denominator

Not applicable.

Accidental Puncture or Laceration Rate
Technical Specifications

Pediatric Quality Indicators #1 (PDI #1)
AHRQ Quality Indicators™, Version 4.5, May 2013
Provider-Level Indicator
Type of Score: Rate

Description

Accidental punctures or lacerations (secondary diagnosis) during procedure per 1,000 discharges for patients ages 17 years and younger. Includes metrics for discharges grouped by risk category. Excludes obstetric discharges, spinal surgery discharges, discharges with accidental puncture or laceration as a principal diagnosis, discharges with accidental puncture or laceration as a secondary diagnosis that is present on admission, normal newborns, and neonates with birth weight less than 500 grams.

[NOTE: The software provides the rate per hospital discharge. However, common practice reports the measure as per 1,000 discharges. The user must multiply the rate obtained from the software by 1,000 to report events per 1,000 hospital discharges.]

[NOTE: To obtain stratified results, the user must run the PDSASG2.SAS program in the SAS QI Software Version 4.5 or choose to stratify by risk category in the Windows QI Software Version 4.5]

Numerator

Overall:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for accidental puncture or laceration during a procedure.

ICD-9-CM Accidental puncture or laceration during a procedure diagnosis codes:

E8700	ACC CUT/HEM IN SURGERY	E8706	ACC CUT/HEM W HEART CATH
E8701	ACC CUT/HEM IN INFUSION	E8707	ACC CUT/HEM W ENEMA
E8702	ACC CUT/HEM-PERFUSN NEC	E8708	ACC CUT IN MED CARE NEC
E8703	ACC CUT/HEM IN INJECTION	E8709	ACC CUT IN MED CARE NOS
E8704	ACC CUT/HEM W SCOPE EXAM	9982	ACCIDENTAL OP LACERATION
E8705	ACC CUT/HEM W CATHETERIZ		

Risk Category 1:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with

any secondary ICD-9-CM diagnosis codes for accidental puncture or laceration during a procedure (see above).

Risk Category 2:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for accidental puncture or laceration during a procedure (see above).

Risk Category 3:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for accidental puncture or laceration during a procedure (see above).

Risk Category 4:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for accidental puncture or laceration during a procedure (see above).

Risk Category 5:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for accidental puncture or laceration during a procedure (see above).

Risk Category 6:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for accidental puncture or laceration during a procedure (see above).

Risk Category 9:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for accidental puncture or laceration during a procedure (see above).

Denominator

Overall:

Surgical and medical discharges, for patients ages 17 years and younger. Surgical and

medical discharges are defined by specific DRG or MS-DRG codes.

See *Pediatric Quality Indicators Appendices*:
- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs
- Appendix D – Medical DRGs
- Appendix E – Medical MS-DRGs

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for accidental puncture or laceration during a procedure (see above)
- with any-listed ICD-9-CM procedure codes for spine surgery
- normal newborn
- neonate with birth weight less than 500 grams (Birth Weight Category 1)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of, Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

ICD-9-CM Spine surgery procedure codes[1]:

0301	REMOVAL FB SPINAL CANAL	8162	FUS/REFUS 2-3 VERTEBRAE[2]
0302	REOPEN LAMINECTOMY SITE	8163	FUS/REFUS 4-8 VERTEBRAE[2]
0309	SPINAL CANAL EXPLOR NEC	8164	FUS/REFUS 9 VERTEBRAE[2]
0353	VERTEBRAL FX REPAIR	8165	PERCUTAN VERTEBROPLASTY
036	SPINAL CORD ADHESIOLYSIS	8166	PERCUT VERTEBRAL AUGMENT
8053	REP ANULUS FIBROSUS-GRFT	8451	INS SPINAL FUSION DEVICE[2]
8054	REP ANULS FIBROS NEC/NOS	8452	INSERT RECOMBINANT BMP[2]
8100	SPINAL FUSION NOS	*8458*	*IMPLANTATION OF INTERSPINOUS*
8101	ATLAS-AXIS FUSION		*PROCESS DECOMPRESSION DEVICE*
8102	OTH CERV FUSION ANT/ANT	8459	INSERT OTHR SPIN DEVICE
8103	OT CERV FUSION POST/POST	8460	INSERT DISC PROS NOS
8104	DRSL/DRSLUMB FUS ANT/ANT	8461	INS PART DISC PROS CERV
8105	DRSL/DSLMB FUS POST/POST	8462	INS TOT DISC PROST CERV
8106	LUMB/LMBOSAC FUS ANT/ANT	8463	INS SPIN DISC PROS THOR
8107	LMB/LMBSAC FUS POST/POST	8464	INS PART DISC PROS LUMB
8108	LUMB/LMBSAC FUS ANT/POST	8465	INS TOTL DISC PROS LUMB
8130	SPINAL REFUSION NOS	8466	REVISE DISC PROST CERV
8131	REFUSION OF ATLAS-AXIS	8467	REVISE DISC PROST THORA
8132	REFUS OTH CERVCL ANT/ANT	8468	REVISE DISC PROSTH LUMB
8133	REFUS OTH CERV POST/POST	8469	REVISE DISC PROSTH NOS
8134	REFUS DRS/DRSLMB ANT/ANT	8480	INS/REPL INTERSPINE DEV
8135	REFUS DRS/DRSLMB PST/PST	8481	REV INTERSPINE DEVICE
8136	REFUS LMB/LMBSAC ANT/ANT	8482	INS/REPL PDCL STABIL DEV
8137	REFUS LMB/LMBSAC PST/PST	8483	REV PEDCL DYN STABIL DEV
8138	REFUS LMB/LMBSC ANT/POST	8485	REV FACET REPLACE DEVICE
8139	REFUSION OF SPINE NEC		

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

[2] Code has *code also* instructions

Risk Category 1:

Surgical and medical discharges, for patients ages 17 years and younger, with either MDC 2 (eye), MDC 3 (ear, nose, mouth, and throat), MDC 9 (skin, subcutaneous tissue, and breast), MDC 19 (mental diseases and disorders), MDC 22 (burns), or MDC 23 (factors influencing health status). Surgical and medical discharges are defined by specific DRG or MS-DRG codes.

See *Pediatric Quality Indicators Appendices*:
- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs
- Appendix D – Medical DRGs
- Appendix E – Medical MS-DRGs

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for accidental puncture or laceration during a procedure (see above)
- with any-listed ICD-9-CM procedure codes for spine surgery
- normal newborn
- neonate with birth weight less than 500 grams (Birth Weight Category 1)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of, Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

Risk Category 2:

Surgical and medical discharges, for patients ages 17 years and younger, with either MDC 4 (respiratory system), MDC 5 (circulatory system), or MDC 17 (myeloproliferative diseases and disorders [poorly differentiated neoplasms]). Surgical and medical discharges are defined by specific DRG or MS-DRG codes.

See *Pediatric Quality Indicators Appendices*:
- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs
- Appendix D – Medical DRGs
- Appendix E – Medical MS-DRGs

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for accidental puncture or laceration during a procedure (see above)
- with any-listed ICD-9-CM procedure codes for spine surgery

- normal newborn
- neonate with birth weight less than 500 grams (Birth Weight Category 1)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of, Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

Risk Category 3:

Surgical and medical discharges, for patients ages 17 years and younger, with either MDC 11 (kidney and urinary tract), MDC 12 (male reproductive system), or MDC 13 (female reproductive system). Surgical and medical discharges are defined by specific DRG or MS-DRG codes.

See *Pediatric Quality Indicators Appendices*:
- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs
- Appendix D – Medical DRGs
- Appendix E – Medical MS-DRGs

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for accidental puncture or laceration during a procedure (see above)
- with any-listed ICD-9-CM procedure codes for spine surgery
- normal newborn
- neonate with birth weight less than 500 grams (Birth Weight Category 1)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of, Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

Risk Category 4:

Surgical and medical discharges, for patients ages 17 years and younger, with either MDC 0/99 (ungroupable), MDC 16 (blood and blood forming organs and immunological disorders), MDC 18 (infectious and parasitic diseases and disorders), or MDC 25 (human immunodeficiency virus infection). Surgical and medical discharges are defined by specific DRG or MS-DRG codes.

See *Pediatric Quality Indicators Appendices*:
- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs
- Appendix D – Medical DRGs
- Appendix E – Medical MS-DRGs

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for accidental puncture or laceration during a procedure (see above)
- with any-listed ICD-9-CM procedure codes for spine surgery
- normal newborn
- neonate with birth weight less than 500 grams (Birth Weight Category 1)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of, Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

Risk Category 5:

Surgical and medical discharges, for patients ages 17 years and younger, with either MDC 1 (nervous system), MDC 8 (musculoskeletal system and connective tissue), MDC 21 (injuries, poison, and toxic effect of drugs), or MDC 24 (multiple significant trauma). Surgical and medical discharges are defined by specific DRG or MS-DRG codes.

See *Pediatric Quality Indicators Appendices*:
- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs
- Appendix D – Medical DRGs
- Appendix E – Medical MS-DRGs

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for accidental puncture or laceration during a procedure (see above)
- with any-listed ICD-9-CM procedure codes for spine surgery
- normal newborn
- neonate with birth weight less than 500 grams (Birth Weight Category 1)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of, Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

Risk Category 6:

Surgical and medical discharges, for patients ages 17 years and younger, with either MDC 6 (digestive system), MDC 7 (hepatobiliary system and pancreas), or MDC 10 (endocrine, nutritional, and metabolic system). Surgical and medical discharges are defined by specific DRG or MS-DRG codes.

See *Pediatric Quality Indicators Appendices*:
- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs
- Appendix D – Medical DRGs
- Appendix E – Medical MS-DRGs

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for accidental puncture or laceration during a procedure (see above)
- with any-listed ICD-9-CM procedure codes for spine surgery
- normal newborn
- neonate with birth weight less than 500 grams (Birth Weight Category 1)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of, Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

Risk Category 9:

Surgical and medical discharges, for patients ages 17 years and younger, that do not meet the inclusion rules for Risk Category 1 through Risk Category 6. Surgical and medical discharges are defined by specific DRG or MS-DRG codes.

See *Pediatric Quality Indicators Appendices*:
- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs
- Appendix D – Medical DRGs
- Appendix E – Medical MS-DRGs

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for accidental puncture or laceration during a procedure (see above)
- with any-listed ICD-9-CM procedure codes for spine surgery
- normal newborn
- neonate with birth weight less than 500 grams (Birth Weight Category 1)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of, Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

Pressure Ulcer Rate
Technical Specifications

Pediatric Quality Indicators #2 (PDI #2)
AHRQ Quality Indicators™, Version 4.5, May 2013
Provider-Level Indicator
Type of Score: Rate

Description

Stage III or IV pressure ulcers (secondary diagnosis) per 1,000 discharges among patients ages 17 years and younger. Includes metrics for discharges grouped by risk category. Excludes neonates; stays less than five (5) days; transfers from another facility; obstetric discharges; cases with diseases of the skin, subcutaneous tissue and breast; discharges in which debridement or pedicle graft is the only operating room procedure; discharges with debridement or pedicle graft before or on the same day as the major operating room procedure; and those discharges in which pressure ulcer is the principal diagnosis or secondary diagnosis of Stage III or IV pressure ulcer is present on admission

[NOTE: The software provides the rate per hospital discharge. However, common practice reports the measure as per 1,000 discharges. The user must multiply the rate obtained from the software by 1,000 to report events per 1,000 hospital discharges.]

[NOTE: To obtain stratified results, the user must run the PDSASG2.SAS program in the SAS QI Software Version 4.5 or choose to stratify by risk category in the Windows QI Software Version 4.5]

Numerator

Overall:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for pressure ulcer and any secondary ICD-9-CM diagnosis codes for pressure ulcer stage III or IV (or unstageable).

ICD-9-CM Pressure ulcer diagnosis codes[1]:

7070	*PRESSURE ULCER*	70704	PRESSURE ULCER, HIP
70700	PRESSURE ULCER SITE NOS	70705	PRESSURE ULCER, BUTTOCK
70701	PRESSURE ULCER, ELBOW	70706	PRESSURE ULCER, ANKLE
70702	PRESSURE ULCER, UPR BACK	70707	PRESSURE ULCER, HEEL
70703	PRESSURE ULCER, LOW BACK	70709	PRESSURE ULCER, SITE NEC

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

ICD-9-CM Pressure ulcer stage diagnosis codes[1]:

70723	PRESSURE ULCER, STAGE III	70725	PRESSURE ULCER, UNSTAGEBL
70724	PRESSURE ULCER, STAGE IV		

[1] Valid for discharges on or after 10/1/2008

High Risk Category:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for pressure ulcer (see above) and any secondary ICD-9-CM diagnosis codes for pressure ulcer stage III or IV (or unstageable, see above).

Low Risk Category:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for pressure ulcer (see above) and any secondary ICD-9-CM diagnosis codes for pressure ulcer stage III or IV (or unstageable, see above).

Denominator

Overall:

Surgical and medical discharges, for patients ages 17 years and younger. Surgical and medical discharges are defined by specific DRG or MS-DRG codes.

See *Pediatric Quality Indicators Appendices*:
- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs
- Appendix D – Medical DRGs
- Appendix E – Medical MS-DRGs

Exclude cases:
- with a principal ICD-9-CM diagnosis code for pressure ulcer (see above)
- with any secondary ICD-9-CM diagnosis codes for pressure ulcer (see above) present on admission and any secondary ICD-9-CM diagnosis codes for pressure ulcer stage III or IV (or unstageable, see above) present on admission
- with any-listed ICD-9-CM procedure codes for debridement or pedicle graft before or on the same day as the major operating room procedure (surgical cases only)
- with any-listed ICD-9-CM procedure codes for debridement or pedicle graft as the only major operating room procedure (surgical cases only)
- neonates
- with length of stay of less than five (5) days
- transfer from a hospital (different facility)
- transfer from a Skilled Nursing Facility (SNF) or Intermediate Care Facility (ICF)
- transfer from another health care facility
- MDC 9 (skin, subcutaneous tissue, and breast)

- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of Neonate, Newborn, Normal Newborn, and Outborn
- Appendix J – Admission Codes for Transfers

ICD-9-CM Debridement or pedicle graft procedure codes:

8345	OTHER MYECTOMY	8671	CUT & PREP PEDICLE GRAFT
8622	EXC WOUND DEBRIDEMENT	8672	PEDICLE GRAFT ADVANCEMEN
8628	NONEXCIS DEBRIDEMENT WND	8674	ATTACH PEDICLE GRAFT NEC
8670	PEDICLE GRAFT/FLAP NOS	8675	REVISION OF PEDICLE GRFT

High Risk Category:

Surgical and medical discharges, for patients ages 17 years and younger, with any-listed ICD-9-CM diagnosis codes for hemiplegia, paraplegia, or quadriplegia or any-listed ICD-9-CM diagnosis codes for spina bifida or any-listed ICD-9-CM diagnosis codes for anoxic brain damage or any-listed ICD-9-CM procedure codes for continuous mechanical ventilation. Surgical and medical discharges are defined by specific DRG or MS-DRG codes.

See *Pediatric Quality Indicators Appendices*:
- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs
- Appendix D – Medical DRGs
- Appendix E – Medical MS-DRGs

ICD-9-CM Hemiplegia, paraplegia, or quadriplegia diagnosis codes[1]:

33371	ATHETOID CEREBRAL PALSY	3439	CEREBRAL PALSY NOS
3341	HERED SPASTIC PARAPLEGIA	*3440*	*QUADRIPLEGIA AND QUADRIPARESIS*
3420	*FLACCID HEMIPLEGIA*	34400	QUADRIPLEGIA, UNSPECIFD
34200	FLCCD HMIPLGA UNSPF SIDE	34401	QUADRPLG C1-C4, COMPLETE
34201	FLCCD HMIPLGA DOMNT SIDE	34402	QUADRPLG C1-C4, INCOMPLT
34202	FLCCD HMIPLG NONDMNT SDE	34403	QUADRPLG C5-C7, COMPLETE
3421	*SPASTIC HEMIPLEGIA*	34404	QUADRPLG C5-C7, INCOMPLT
34210	SPSTC HMIPLGA UNSPF SIDE	34409	OTHER QUADRIPLEGIA
34211	SPSTC HMIPLGA DOMNT SIDE	3441	PARAPLEGIA
34212	SPSTC HMIPLG NONDMNT SDE	3442	DIPLEGIA OF UPPER LIMBS
34280	OT SP HMIPLGA UNSPF SIDE	3443	MONOPLEGIA OF LOWER LIMB
34281	OT SP HMIPLGA DOMNT SIDE	34430	MONPLGA LWR LMB UNSP SDE
34282	OT SP HMIPLG NONDMNT SDE	34431	MONPLGA LWR LMB DMNT SDE
3429	*HEMIPLEGIA, UNSPECIFIED*	34432	MNPLG LWR LMB NONDMNT SD
34290	UNSP HEMIPLGA UNSPF SIDE	*3444*	*MONOPLEGIA OF UPPER LIMB*
34291	UNSP HEMIPLGA DOMNT SIDE	34440	MONPLGA UPR LMB UNSP SDE
34292	UNSP HMIPLGA NONDMNT SDE	34441	MONPLGA UPR LMB DMNT SDE
3430	CONGENITAL DIPLEGIA	34442	MNPLG UPR LMB NONDMNT SD
3431	CONGENITAL HEMIPLEGIA	3445	MONOPLEGIA NOS
3432	CONGENITAL QUADRIPLEGIA	*3446*	*CAUDA EQUINA SYNDROME*
3433	CONGENITAL MONOPLEGIA	34460	CAUDA EQUINA SYND NOS
3434	INFANTILE HEMIPLEGIA	34461	NEUROGENIC BLADDER
3438	CEREBRAL PALSY NEC	*3448*	*PARALYTIC SYNDROMES NEC*

34481	LOCKED-IN STATE	43841	LTE EF-MPLGA LOW LMB DOM
34489	OTH SPCF PARALYTIC SYND	43842	LT EF-MPLGA LOWLMB NONDM
3449	PARALYSIS NOS	43850	LT EF OTH PARAL SIDE NOS
43820	LATE EF-HEMPLGA SIDE NOS	43851	LT EF OTH PARAL DOM SIDE
43821	LATE EF-HEMPLGA DOM SIDE	43852	LT EF OTH PARALS NON-DOM
43822	LATE EF-HEMIPLGA NON-DOM	43853	LT EF OTH PARALS-BILAT
43830	LATE EF-MPLGA UP LMB NOS	76870	HYPOXC-ISCHEM ENCEPH NOS
43831	LATE EF-MPLGA UP LMB DOM	76872	MOD HYPOX-ISCHEM ENCEPH
43832	LT EF-MPLGA UPLMB NONDOM	76873	SEV HYPOX-ISCHEM ENCEPH
43840	LTE EF-MPLGA LOW LMB NOS		

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

ICD-9-CM Spina bifida diagnosis codes[1]:

74100	SPIN BIF W HYDROCEPH NOS	74190	SPINA BIFIDA
74101	SPIN BIF W HYDRCEPH-CERV	74191	SPINA BIFIDA-CERV
74102	SPIN BIF W HYDRCEPH-DORS	74192	SPINA BIFIDA-DORSAL
74103	SPIN BIF W HYDRCEPH-LUMB	74193	SPINA BIFIDA-LUMBAR

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

ICD-9-CM Anoxic brain damage diagnosis codes:

3481	ANOXIC BRAIN DAMAGE	7685	SEVERE BIRTH ASPHYXIA

ICD-9-CM Continuous mechanical ventilation procedure code:

9672   CONT INV MEC VEN 96+ HRS

Exclude cases:
- with a principal ICD-9-CM diagnosis code for pressure ulcer (see above)
- with any secondary ICD-9-CM diagnosis codes for pressure ulcer (see above) present on admission and any secondary ICD-9-CM diagnosis codes for pressure ulcer stage III or IV (or unstageable, see above) present on admission
- with any-listed ICD-9-CM procedure codes for debridement or pedicle graft (see above) before or on the same day as the major operating room procedure (surgical cases only)
- with any-listed ICD-9-CM procedure codes for debridement or pedicle graft (see above) as the only major operating room procedure (surgical cases only)
- neonates
- with length of stay of less than five (5) days
- transfer from a hospital (different facility)
- transfer from a Skilled Nursing Facility (SNF) or Intermediate Care Facility (ICF)
- transfer from another health care facility
- MDC 9 (skin, subcutaneous tissue, and breast)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of Neonate, Newborn, Normal Newborn, and Outborn
- Appendix J – Admission Codes for Transfers

Low Risk Category:

Surgical and medical discharges, for patients ages 17 years and younger, without any-listed ICD-9-CM diagnosis codes for hemiplegia, paraplegia, or quadriplegia (see above) and without any-listed ICD-9-CM diagnosis codes for spina bifida (see above) and without any-listed ICD-9-CM diagnosis codes for anoxic brain damage (see above) and without any-listed ICD-9-CM procedure codes for continuous mechanical ventilation (see above). Surgical and medical discharges are defined by specific DRG or MS-DRG codes.

See *Pediatric Quality Indicators Appendices*:
- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs
- Appendix D – Medical DRGs
- Appendix E – Medical MS-DRGs

Exclude cases:
- with a principal ICD-9-CM diagnosis code for pressure ulcer (see above)
- with any secondary ICD-9-CM diagnosis codes for pressure ulcer (see above) present on admission and any secondary ICD-9-CM diagnosis codes for pressure ulcer stage III or IV (or unstageable, see above) present on admission
- with any-listed ICD-9-CM procedure codes for debridement or pedicle graft (see above) before or on the same day as the major operating room procedure (surgical cases only)
- with any-listed ICD-9-CM procedure codes for debridement or pedicle graft (see above) as the only major operating room procedure (surgical cases only)
- neonates
- with length of stay of less than five (5) days
- transfer from a hospital (different facility)
- transfer from a Skilled Nursing Facility (SNF) or Intermediate Care Facility (ICF)
- transfer from another health care facility
- MDC 9 (skin, subcutaneous tissue, and breast)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of Neonate, Newborn, Normal Newborn, and Outborn
- Appendix J – Admission Codes for Transfers

Iatrogenic Pneumothorax Rate
Technical Specifications

Pediatric Quality Indicators #5 (PDI #5)
AHRQ Quality Indicators™, Version 4.5, May 2013
(Revised August, 2013)
Provider-Level Indicator
Type of Score: Rate

Description

Iatrogenic pneumothorax cases (secondary diagnosis) per 1,000 discharges for patients ages 17 years and younger. Excludes normal newborns; neonates with a birth weight less than 2,500 grams; cases with chest trauma, pleural effusion, thoracic surgery, lung or pleural biopsy, diaphragmatic surgery repair or cardiac surgery; cases with a principal diagnosis of iatrogenic pneumothorax; and cases with a secondary diagnosis of iatrogenic pneumothorax present on admission.

[NOTE: The software provides the rate per hospital discharge. However, common practice reports the measure as per 1,000 discharges. The user must multiply the rate obtained from the software by 1,000 to report events per 1,000 hospital discharges.]

Numerator

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for iatrogenic pneumothorax.

ICD-9-CM Iatrogenic pneumothorax diagnosis code:
5121   IATROGENIC PNEUMOTHORAX

Denominator

Surgical and medical discharges, for patients ages 17 years and younger. Surgical and medical discharges are defined by specific DRG or MS-DRG codes.

See *Pediatric Quality Indicators Appendices*:
- Appendix B – Surgical Discharge DRGs
- Appendix C – Surgical Discharge MS-DRGs
- Appendix D – Medical Discharge DRGs
- Appendix E – Medical Discharge MS-DRGs

Exclude cases:

- neonates with birth weight less than 2,500 grams (Birth Weight Categories 1 to 8)
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for iatrogenic pneumothorax (see above)
- with any-listed ICD-9-CM diagnosis codes for chest trauma
- with any-listed ICD-9-CM diagnosis codes for pleural effusion
- with any-listed ICD-9-CM procedure codes for thoracic surgery
- with any-listed ICD-9-CM procedure codes for lung or pleural biopsy
- with any-listed ICD-9-CM procedure codes for diaphragmatic surgery repair
- with any-listed ICD-9-CM procedure codes for cardiac surgery
- normal newborn
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L- Low Birth Weight Categories

ICD-9-CM Chest trauma diagnosis codes[1]:

80700	FRACTURE RIB NOS-CLOSED	86102	HEART LACERATION-CLOSED
80701	FRACTURE ONE RIB-CLOSED	86103	HEART CHAMBER LACERAT-CL
80702	FRACTURE TWO RIBS-CLOSED	86110	HEART INJURY NOS-OPEN
80703	FRACTURE THREE RIBS-CLOS	86111	HEART CONTUSION-OPEN
80704	FRACTURE FOUR RIBS-CLOSE	86112	HEART LACERATION-OPEN
80705	FRACTURE FIVE RIBS-CLOSE	86113	HEART CHAMBER LACER-OPN
80706	FRACTURE SIX RIBS-CLOSED	86120	LUNG INJURY NOS-CLOSED
80707	FRACTURE SEVEN RIBS-CLOS	86121	LUNG CONTUSION-CLOSED
80708	FX EIGHT/MORE RIB-CLOSED	86122	LUNG LACERATION-CLOSED
80709	FX MULT RIBS NOS-CLOSED	86130	LUNG INJURY NOS-OPEN
80710	FRACTURE RIB NOS-OPEN	86131	LUNG CONTUSION-OPEN
80711	FRACTURE ONE RIB-OPEN	86132	LUNG LACERATION-OPEN
80712	FRACTURE TWO RIBS-OPEN	8620	DIAPHRAGM INJURY-CLOSED
80713	FRACTURE THREE RIBS-OPEN	8621	DIAPHRAGM INJURY-OPEN
80714	FRACTURE FOUR RIBS-OPEN	86221	BRONCHUS INJURY-CLOSED
80715	FRACTURE FIVE RIBS-OPEN	86222	ESOPHAGUS INJURY-CLOSED
80716	FRACTURE SIX RIBS-OPEN	86229	INTRATHORACIC INJ NEC-CL
80717	FRACTURE SEVEN RIBS-OPEN	86231	BRONCHUS INJURY-OPEN
80718	FX EIGHT/MORE RIBS-OPEN	86232	ESOPHAGUS INJURY-OPEN
80719	FX MULT RIBS NOS-OPEN	86239	INTRATHORAC INJ NEC-OPEN
8072	FRACTURE OF STERNUM-CLOS	8628	INTRATHORACIC INJ NOS-CL
8073	FRACTURE OF STERNUM-OPEN	8629	INTRATHORAC INJ NOS-OPEN
8074	FLAIL CHEST	8750	OPEN WOUND OF CHEST
8075	FX LARYNX/TRACHEA-CLOSED	8751	OPEN WOUND CHEST-COMPL
8076	FX LARYNX/TRACHEA-OPEN	8760	OPEN WOUND OF BACK
8090	FRACTURE TRUNK BONE-CLOS	8761	OPEN WOUND BACK-COMPL
8091	FRACTURE TRUNK BONE-OPEN	9010	INJURY THORACIC AORTA
8600	TRAUM PNEUMOTHORAX-CLOSE	9011	INJ INNOMIN/SUBCLAV ART
8601	TRAUM PNEUMOTHORAX-OPEN	9012	INJ SUPERIOR VENA CAVA
8602	TRAUM HEMOTHORAX-CLOSED	9013	INJ INNOMIN/SUBCLAV VEIN
8603	TRAUM HEMOTHORAX-OPEN	90140	INJ PULMONARY VESSEL NOS
8604	TRAUM PNEUMOHEMOTHOR-CL	90141	INJURY PULMONARY ARTERY
8605	TRAUM PNEUMOHEMOTHOR-OPN	90142	INJURY PULMONARY VEIN
86100	HEART INJURY NOS-CLOSED	90181	INJ INTERCOSTAL ART/VEIN
86101	HEART CONTUSION-CLOSED	90182	INJ INT MAMMARY ART/VEIN

90183	INJ MULT THORACIC VESSEL	9229	CONTUSION TRUNK NOS
90189	INJ THORACIC VESSEL NEC	92611	CRUSHING INJURY BACK
9019	INJ THORACIC VESSEL NOS	92619	CRUSHING INJ TRUNK NEC
9110	ABRASION TRUNK	9268	MULT CRUSHING INJ TRUNK
9111	ABRASION TRUNK-INFECTED	9269	CRUSHING INJ TRUNK NOS
9118	SUPERFIC INJ TRUNK NEC	9290	CRUSH INJ MULT SITE NEC
9119	SUPERF INJ TRNK NEC-INF	9299	CRUSHING INJURY NOS
9220	CONTUSION OF BREAST	9541	INJ SYMPATH NERVE NEC
9221	CONTUSION OF CHEST WALL	9548	INJURY TRUNK NERVE NEC
9223	*BACK CONTUSION*	9549	INJURY TRUNK NERVE NOS
92231	BACK CONTUSION	95911	INJURY OF CHEST WALL NEC
92233	INTERSCPLR REG CONTUSION	95919	TRUNK INJURY-SITES NEC
9228	MULIPLE CONTUSION TRUNK	9599	INJURY-SITE NOS

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

ICD-9-CM Pleural effusion diagnosis codes[1]:

0101	*TUBERCULOUS PLEURISY IN PRIMARY PROGRESSIVE TUBERCULOSIS*	01176	TB PNEUMOTHORAX-OTH TEST
		0120	*TUBERCULOUS PLEURISY*
01010	PRIM TB PLEURISY-UNSPEC	01200	TB PLEURISY-UNSPEC
01011	PRIM TB PLEURISY-NO EXAM	01201	TB PLEURISY-NO EXAM
01012	PRIM TB PLEUR-EXAM UNKN	01202	TB PLEURISY-EXAM UNKN
01013	PRIM TB PLEURIS-MICRO DX	01203	TB PLEURISY-MICRO DX
01014	PRIM TB PLEURISY-CULT DX	01204	TB PLEURISY-CULT DX
01015	PRIM TB PLEURIS-HISTO DX	01205	TB PLEURISY-HISTOLOG DX
01016	PRIM TB PLEURIS-OTH TEST	01206	TB PLEURISY-OTH TEST
0117	*TUBRCULOUS PNEUMOTHORAX***	1972	SECOND MALIG NEO PLEURA
01170	TB PNEUMOTHORAX-UNSPEC	5111	BACT PLEUR/EFFUS NOT TB
01171	TB PNEUMOTHORAX-NO EXAM	*5118*	*OTHER SPECIFIED FORM OF EFFUSION, EXCEPT TUBERCULOUS*
01172	TB PNEUMOTHORX-EXAM UNKN		
01173	TB PNEUMOTHORAX-MICRO DX	51181	MALIGNANT PLEURAL EFFUSN
01174	TB PNEUMOTHORAX-CULT DX	51189	EFFUSION NEC EXC TB
01175	TB PNEUMOTHORAX-HISTO DX	5119	PLEURAL EFFUSION NOS

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

ICD-9-CM Thoracic surgery procedure codes[1]:

0522	CERVICAL SYMPATHECTOMY	3228	ENDOSC DESTRUC LUNG LES
0523	LUMBAR SYMPATHECTOMY	3229	DESTROY LOC LUNG LES NEC
0529	OTHER SYMPATHECTOMY	*323*	*SEGMENTAL RESECTION OF LUNG*
0780	THYMECTOMY NOS	3230	THORAC SEG LUNG RESECT
0781	OTH PART EXCISION THYMUS	3239	OTH SEG LUNG RESECT NOS
0782	OTH TOTL EXCISION THYMUS	324	LOBECTOMY OF LUNG
0783	THORAC PART EXISN THYMUS	3241	THORAC LOBECTOMY LUNG
0784	THORAC TOTAL EXC THYMUS	3249	LOBECTOMY OF LUNG NEC
3121	MEDIASTINAL TRACHEOSTOMY	*325*	*COMPLETE PNEUMONECTOMY*
3145	OPN BX LARYNX OR TRACHEA	3250	THORACOSPC PNEUMONECTOMY
3173	TRACHEA FISTULA CLOS NEC	3259	OTHER PNEUMONECTOMY NOS
3179	OTHER TRACHEAL REPAIR	326	RADL DISSEC THORAC STRUCT
3199	OTHER TRACHEAL OPERATION	329	OTHER EXCISION OF LUNG
3209	OTHER DESTRUC BRONC LES	330	INCISION OF BRONCHUS
321	OTHER BRONCHIAL EXCISION	331	INCISION OF LUNG
3220	THORAC EXC LUNG LESION	3320	THORACOSCOPC LUNG BIOPSY
Local excision or destruction of lesion or tissue of lung		3325	OPEN BRONCHIAL BIOPSY
3221	EMPHYSEMA BLEB PLICATION	3326	CLOSED LUNG BIOPSY
3222	LUNG VOL REDUCTION SURG	3327	CLOS ENDOSCOPIC LUNG BX
3223	OPEN ABLTN LUNG LES/TISS	3328	OPEN LUNG BIOPSY
3224	PERC ABLTN LUNG LES/TISS	3331	DESTR PHREN- LUNG COLLAPS
3225	THOR ABLTN LUNG LES/TISS	3332	PNEMOTHORAX–LUNG COLLAPS
3226	ABLTN LUNG TISS NEC/NOS	3334	THORACOPLASTY
3227	BRNC THRMPLSTY,ABLT MSCL	3339	SURG COLLAPS OF LUNG NEC

Repair and plastic operation on lung and bronchus	
3341	BRONCHIAL LACERAT SUTURE
3342	BRONCHIAL FISTULA CLOS
3343	LUNG LACERATION CLOSURE
3348	BRONCHIAL REPAIR NEC
3349	LUNG REPAIR NEC

Lung transplant	
335	*LUNG TRANSPLANTATION*
3350	LUNG TRANSPLANTNOS
3351	UNILAT LUNG TRANSPLANT
3352	BILAT LUNG TRANSPLANT
336	COMB HEART/LUNG TRANSPLA

Diagnostic procedures on chest wall, pleura, mediastinum, and diaphragm	
3329	BRONCH/LUNG DX PROC NEC
3333	PNEUMOPERIT–LUNG COLLAPS
3392	BRONCHIAL LIGATION
3393	PUNCTURE OF LUNG
3398	BRONCHIAL OPERATION NEC
3399	LUNG OPERATION NEC
3401	INCISION OF CHEST WALL
3402	EXPLORATORY THORACOTOMY
3403	REOPEN THORACOTOMY SITE
3405	PIEUROPERITONEAL SHUNT
3409	OTHER PLEURA INCISION
341	INCISION OF MEDIASTINUM
3420	THORACOSCOPIC PLEURAL BX
3421	TRANSPLEURA THORACOSOCOPY
3422	MEDIASTINOSCOPY
3423	CHEST WALL BIOPSY
3424	PLEURAL BIOPSY NEC
3425	CLOS MEDIASTINAL BIOPSY
3426	OPEN MEDIASTINAL BIOPSY
3427	BIOPSY OF DIAPHRAGM
3428	DX PROCEDURE THORAX NEC
3429	DX PROC MEDIASTINUM NEC
343	DESTRUCT MEDIASTIN LES
344	DESTRUCT CHEST WALL LES
3451	DECORTICATION OF LUNG
3452	THORACOSCOPC DECORT LUNG
3459	OTHER PLEURAL EXCISION

Repair of chest wall	
3471	SUTURE CHEST WALL LACER
3472	THORACOSTOMY CLOSURE
3473	CLOS THORACIC FISTUL NEC
3474	PECTUS DEFORMITY REPAIR
3479	OTHER CHEST WALL REPAIR

Operations on diaphragm	
3481	EXCISE DIAPHRAGM LESION
3482	SUTURE DIAPHRAGM LACERAT
3483	CLOSE DIAPHRAGM FISTULA
3484	OTHER DIAPHRAGM REPAIR
3485	IMPLANT DIAPHRA PACEMAKE
3489	DIAPHRAGM OPERATION NEC
3493	REPAIR OF PLEURA
3499	THORACIC OPERATION NEC

Operations on thoracic duct	
4061	THORAC DUCT CANNULATION
4062	THORACIC DUCT FISTULIZAT
4063	CLOSE THORACIC DUCT FIST
4064	LIGATE THORACIC DUCT
4069	THORACIC DUCT OP NEC

Esophagotomy	
4201	ESOPHAGEAL WEB INCISION
4209	ESOPHAGEAL INCISION NEC
4210	ESOPHAGOSTOMY NOS
4211	CERVICAL ESOPHAGOSTOMY
4212	ESOPH POUCH EXTERIORIZAT
4219	EXT FISTULIZAT ESOPH NEC
4221	ESOPHAGOSCOPY BY INCIS
4225	OPEN BIOPSY OF ESOPHAGUS
4231	LOC EXCIS ESOPH DIVERTIC
4232	LOCAL EXCIS ESOPHAG NEC

Excision of esophagus	
4239	DESTRUCT ESOPHAG LES NEC
4240	ESOPHAGECTOMY NOS
4241	PARTIAL ESOPHAGECTOMY
4242	TOTAL ESOPHAGECTOMY

Intrathoracic anastomosis of exophagus	
4251	THORAC ESOPHAGOESOPHAGOS
4252	THORAC ESOPHAGOGASTROST
4253	THORAC SM BOWEL INTERPOS
4254	THORAC ESOPHAGOENTER NEC
4255	THORAC LG BOWEL INTERPOS
4256	THORAC ESOPHAGOCOLOS NEC
4258	THORAC INTERPOSITION NEC
4259	THORAC ESOPHAG ANAST NEC

Antesternal anastomosis	
4261	STERN ESOPHAGOESOPHAGOST
4262	STERN ESOPHAGOGASTROSTOM
4263	STERN SM BOWEL INTERPOS
4264	STERN ESOPHAGOENTER NEC
4265	STERN LG BOWEL INTERPOS
4266	STERN ESOPHAGOCOLOS NEC
4268	STERN INTERPOSITION NEC
4269	STERN ESOPHAG ANAST NEC

Other repair of esophagus	
427	ESOPHAGOMYOTOMY
4281	INSERT PERM TUBE ESOPHAG
4282	SUTURE ESOPHAGEAL LACER
4283	ESOPHAGOSTOMY CLOSURE
4284	ESOPH FISTULA REPAIR NEC
4285	ESOPHAG STRICTURE REPAIR
4286	PROD SUBQ TUNNEL NO ANAS
4287	ESOPHAGEAL GRAFT NEC
4289	ESOPHAGEAL REPAIR NEC
435	PROXIMAL GASTRECTOMY
4399	TOTAL GASTRECTOMY NEC
4465	ESOPHAGOGASTROPLASTY
4466	CREAT ESOPHAGASTR SPHINC
4467	LAP CREAT ESOPH SPHINCT
7781	OTH CHEST CAGE OSTECTOMY
7791	TOT CHEST CAGE OSTECTOMY
8104	DRSL/DRSLUMB FUS ANT/ANT
8134	REFUS DRS/DRSLMB ANT/ANT

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

ICD-9-CM Lung or pleural biopsy procedure codes:

3326	CLOSED LUNG BIOPSY	3424	PLEURAL BIOPSY NEC
3328	OPEN LUNG BIOPSY		

ICD9-CM Diaphragmatic surgery repair procedure codes[1]:

537	*ABD REPAIR-DIAPHR HERNIA*	5381	DIAPHRAGMATIC PLICATION
5371	LAP ABD REP-DIAPHR HERN	5382	PARASTERN HERNIA REPAIR
5372	OPN ABD DIAPHRM HERN NEC	5383	LAP THORC APP-DIAPH HERN
5375	ABD REP-DIAPHR HERN NOS	5384	OPN THORC DIAPH HERN NEC
5380	THOR REP-DIAPH HERN NOS		

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

ICD9-CM Cardiac procedure codes:

3506	TRNSAPCL REP AORTC VALVE	3603	OPEN CORONRY ANGIOPLASTY
3508	TRNSAPCL REPL PULM VALVE	3610	AORTOCORONARY BYPASS NOS
3510	OPEN VALVULOPLASTY NOS	3611	AORTOCOR BYPAS-1 COR ART
3511	OPN AORTIC VALVULOPLASTY	3612	AORTOCOR BYPAS-2 COR ART
3512	OPN MITRAL VALVULOPLASTY	3613	AORTOCOR BYPAS-3 COR ART
3513	OPN PULMON VALVULOPLASTY	3614	AORTCOR BYPAS-4+ COR ART
3514	OPN TRICUS VALVULOPLASTY	3615	1 INT MAM-COR ART BYPASS
3520	OPN/OTH REP HRT VLV NOS	3616	2 INT MAM-COR ART BYPASS
3521	OPN/OTH REP AORT VLV-TIS	3617	ABD-CORON ARTERY BYPASS
3522	OPN/OTH REP AORTIC VALVE	3619	HRT REVAS BYPS ANAS NEC
3523	OPN/OTH REP MTRL VLV-TIS	362	ARTERIAL IMPLANT REVASC
3524	OPN/OTH REP MITRAL VALVE	3631	OPEN CHEST TRANS REVASC
3525	OPN/OTH REP PULM VLV-TIS	3632	OTH TRANSMYO REVASCULAR
3526	OPN/OTH REPL PUL VALVE	3639	OTH HEART REVASCULAR
3527	OPN/OTH REP TCSPD VLV-TS	3691	CORON VESS ANEURYSM REP
3528	OPN/OTH REPL TCSPD VALVE	3699	HEART VESSEL OP NEC
3531	PAPILLARY MUSCLE OPS	370	PERICARDIOCENTESIS
3532	CHORDAE TENDINEAE OPS	3710	INCISION OF HEARTNOS
3533	ANNULOPLASTY	3711	CARDIOTOMY
3534	INFUNDIBULECTOMY	3712	PERICARDIOTOMY
3535	TRABECUL CARNEAE CORD OP	3731	PERICARDIECTOMY
3539	TISS ADJ TO VALV OPS NEC	3732	HEART ANEURYSM EXCISION
3550	PROSTH REP HRT SEPTA NOS	3733	EXC/DEST HRT LESION OPEN
3551	PROS REP ATRIAL DEF-OPN	3735	PARTIAL VENTRICULECTOMY
3553	PROS REP VENTRIC DEF-OPN	3736	EXC,DESTRCT,EXCLUS LAA
3554	PROS REP ENDOCAR CUSHION	3737	EXC/DEST HRT LES, THRSPC
3560	GRFT REPAIR HRT SEPT NOS	3741	IMPL CARDIAC SUPPORT DEV
3561	GRAFT REPAIR ATRIAL DEF	3749	HEART/PERICARD REPR NEC
3562	GRAFT REPAIR VENTRIC DEF	3751	HEART TRANSPLANTATION
3563	GRFT REP ENDOCAR CUSHION	3752	IMP TOT INT BI HT RP SYS
3570	HEART SEPTA REPAIR NOS	3753	REPL/REP THR UNT TOT HRT
3571	ATRIA SEPTA DEF REP NEC	3754	REPL/REP OTH TOT HRT SYS
3572	VENTR SEPTA DEF REP NEC	3755	REM INT BIVENT HRT SYS
3573	ENDOCAR CUSHION REP NEC	3760	IMP BIVN EXT HRT AST SYS
3581	TOT REPAIR TETRAL FALLOT	3761	PULSATION BALLOON IMPLAN
3582	TOTAL REPAIR OF TAPVC	3762	INSRT NON-IMPL CIRC DEV
3583	TOT REP TRUNCUS ARTERIOS	3763	REPAIR HEART ASSIST SYS
3584	TOT COR TRANSPOS GRT VES	3764	REMVE EXT HRT ASSIST SYS
3591	INTERAT VEN RETRN TRANSP	3765	IMP VENT EXT HRT AST SYS
3592	CONDUIT RT VENT-PUL ART	3766	IMPLANTABLE HRT ASSIST
3593	CONDUIT LEFT VENTR-AORTA	3767	IMP CARDIOMYOSTIMUL SYS
3594	CONDUIT ARTIUM-PULM ART	3791	OPN CHEST CARDIAC MASSAG
3595	HEART REPAIR REVISION	3804	INCISION OF AORTA
3597	PERC MTRL VLV REPR W IMP	3805	THORACIC VESSEL INC NEC
3598	OTHER HEART SEPTA OPS	3844	RESECT ABDM AORTA W REPL
3599	OTHER HEART VALVE OPS	3845	RESECT THORAC VES W REPL

3864	EXCISION OF AORTA	390	SYSTEMIC-PULM ART SHUNT
3865	THORACIC VESSEL EXCISION	3921	CAVAL-PULMON ART ANASTOM
3884	OCCLUDE AORTA NEC	3922	AORTA-SUBCLV-CAROT BYPAS
3885	OCCLUDE THORACIC VES NEC	3923	INTRATHORACIC SHUNT NEC

Postoperative Sepsis Rate
Technical Specifications

Pediatric Quality Indicators #10 (PDI #10)
AHRQ Quality Indicators^{TM}, Version 4.5, May 2013
Provider-Level Indicator
Type of Score: Rate

Description

Postoperative sepsis cases (secondary diagnosis) per 1,000 surgery discharges for patients ages 17 years and younger. Includes metrics for discharges grouped by risk category. Excludes cases with a principal diagnosis of sepsis, cases with a secondary diagnosis of sepsis present on admission, cases with a principal diagnosis of infection, cases in which the procedure belongs to surgical class 4, neonates, obstetric discharges, and cases with stays less than four (4) days.

[NOTE: The software provides the rate per hospital discharge. However, common practice reports the measure as per 1,000 discharges. The user must multiply the rate obtained from the software by 1,000 to report events per 1,000 hospital discharges.]

[NOTE: To obtain stratified results, the user must run the PDSASG2.SAS program in the SAS QI Software Version 4.5 or choose to stratify by risk category in the Windows QI Software Version 4.5]

Numerator

Overall:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for sepsis.

ICD-9-CM Sepsis diagnosis codes[1]:

0380	STREPTOCOCCAL SEPTICEMIA	99802	POSTOP SHOCK, SEPTIC
0381	*STAPHYLOCOCCAL SEPTICEMIA*	03840	GRAM-NEG SEPTICEMIA NOS
03810	STAPHYLCOCC SEPTICEM NOS	03841	H. INFLUENAE SEPTICEMIA
03811	METH SUSC STAPH AUR SEPT	03842	E COLI SEPTICEMIA
03812	MRSA SEPTICEMIA	03843	PSEUDOMONAS SEPTICEMIA
03819	STAPHYLCOCC SEPTICEM NEC	03844	SERRATIA SEPTICEMIA
0382	PNEUMOCOCCAL SEPTICEMIA	03849	GRAM-NEG SEPTICEMIA NEC
0383	ANAEROBIC SEPTICEMIA	0388	SEPTICEMIA NEC
78552	SEPTIC SHOCK	0389	SEPTICEMIA NOS
78559	*SHOCK W/O TRAUMA NEC*	99591	SEPSIS
9980	*POSTOPERATIVE SHOCK*	99592	SEVERE SEPSIS
99800	POSTOPERATIVE SHOCK, NOS		

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

Risk Category 1:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for sepsis (see above).

Risk Category 2:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for sepsis (see above).

Risk Category 3:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for sepsis (see above).

Risk Category 4:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for sepsis (see above).

Risk Category 9:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for sepsis (see above).

Denominator

Overall:

Surgical discharges, for patients ages 17 years and younger, with any-listed ICD-9-CM procedure codes for an operating room procedure. Surgical discharges are defined by specific DRG or MS-DRG codes.

See *Pediatric Quality Indicators Appendices*:
- Appendix A – Operating Room Procedure Codes
- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for sepsis (see above)
- with a principal ICD-9-CM diagnosis code for infection
- with DRG or MS-DRG code for surgical class 4
- with length of stay of less than four (4) days

- neonates
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix H – Infection Diagnosis Codes
- Appendix I – Definitions of Neonate, Newborn, Normal Newborn, and Outborn

DRG codes for surgical class 4:

164	APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W CC	578	INFECTIOUS & PARASITIC DISEASES W OR PROCEDURE
165	APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W/O CC	579	POSTOPERATIVE OR POST-TRAUMATIC INFECTIONS W OR PROCEDURE
415	OR PROCEDURE FOR INFECTIOUS AND PARASITIC DISEASES		

MS-DRG codes for surgical class 4:

338	APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W MCC	855	INFECTIOUS & PARASITIC DISEASES W O.R. PROCEDURE W/O CC/MCC
339	APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W CC	856	POSTOPERATIVE OR POST-TRAUMATIC INFECTIONS W O.R. PROC W MCC
340	APPENDECTOMY W COMPLICATGED PRINCIPAL DIAG W/O CC/MCC	857	POSTOPERATIVE OR POST-TRAUMATIC INFECTIONS W O.R. PROC W CC
853	INFECTIOUS & PARASITIC DISEASES W O.R. PROCEDURE W MCC	858	POSTOPERATIVE OR POST-TRAUMATIC INFECTIONS W O.R. PROC W/O CC/MCC
854	INFECTIOUS & PARASITIC DISEASES W O.R. PROCEDURE W CC		

Risk Category 1:

Elective surgical class 1 discharges, for patients ages 17 years and younger, with any-listed ICD-9-CM procedure codes for an operating room procedure. Elective surgical class 1 discharges are defined by specific DRG or MS-DRG codes with admission type recorded as elective (SID ATYPE=3).

See *Pediatric Quality Indicators Appendices*:
- Appendix A – Operating Room Procedure Codes

DRG codes for surgical class 1:

003	CRANIOTOMY AGE 0-17	042	INTRAOCULAR PROCEDURES EXCEPT RETINA, IRIS & LENS
006	CARPAL TUNNEL RELEASE		
007	PERIPH & CRANIAL NERVE & OTHER NERV SYST PROC W CC	049	MAJOR HEAD & NECK PROCEDURES
		050	SIALOADENECTOMY
008	PERIPH & CRANIAL NERVE & OTHER NERV SYST PROC W/O CC	051	SALIVARY GLAND PROCEDURES EXCEPT SIALOADENECTOMY
036	RETINAL PROCEDURES	052	CLEFT LIP & PALATE REPAIR
037	ORBITAL PROCEDURES	054	SINUS & MASTOID PROCEDURES AGE 0-17
038	PRIMARY IRIS PROCEDURES		
039	LENS PROCEDURES WITH OR WITHOUT VITRECTOMY	055	MISCELLANEOUS EAR, NOSE, MOUTH & THROAT PROCEDURES
041	EXTRAOCULAR PROCEDURES EXCEPT ORBIT AGE 0-17	056	RHINOPLASTY

058	T&A PROC, EXCEPT TONSILLECTOMY &/OR ADENOIDECTOMY ONLY, AGE 0-17		228	MAJOR THUMB OR JOINT PROC,OR OTH HAND OR WRIST PROC W CC
060	TONSILLECTOMY &/OR ADENOIDECTOMY ONLY, AGE 0-17		229	HAND OR WRIST PROC, EXCEPT MAJOR JOINT PROC, W/O CC
062	MYRINGOTOMY W TUBE INSERTION AGE 0-17		230	LOCAL EXCISION & REMOVAL OF INT FIX DEVICES OF HIP & FEMUR
063	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES		232	ARTHROSCOPY
103	HEART TRANSPLANT OR IMPLANT OF HEART ASSIST SYSTEM		233	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W CC
104	CARDIAC VALVE & OTH MAJOR CARDIOTHORACIC PROC W CARD CATH		234	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W/O CC
			257	TOTAL MASTECTOMY FOR MALIGNANCY W CC
105	CARDIAC VALVE & OTH MAJOR CARDIOTHORACIC PROC W/O CARD CATH		258	TOTAL MASTECTOMY FOR MALIGNANCY W/O CC
106	CORONARY BYPASS W PTCA		259	SUBTOTAL MASTECTOMY FOR MALIGNANCY W CC
108	OTHER CARDIOTHORACIC PROCEDURES		260	SUBTOTAL MASTECTOMY FOR MALIGNANCY W/O CC
110	MAJOR CARDIOVASCULAR PROCEDURES W CC		261	BREAST PROC FOR NON-MALIGNANCY EXCEPT BIOPSY & LOCAL EXCISION
111	MAJOR CARDIOVASCULAR PROCEDURES W/O CC		262	BREAST BIOPSY & LOCAL EXCISION FOR NON-MALIGNANCY
113	AMPUTATION FOR CIRC SYSTEM DISORDERS EXCEPT UPPER LIMB & TOE		285	AMPUTAT OF LOWER LIMB FOR ENDOCRINE,NUTRIT,& METABOL DISORDERS
114	UPPER LIMB & TOE AMPUTATION FOR CIRC SYSTEM DISORDERS		286	ADRENAL & PITUITARY PROCEDURES
117	CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT		287	SKIN GRAFTS & WOUND DEBRID FOR ENDOC,NUTRIT & METAB DISORDERS
118	CARDIAC PACEMAKER DEVICE REPLACEMENT		289	PARATHYROID PROCEDURES
			290	THYROID PROCEDURES
119	VEIN LIGATION & STRIPPING		291	THYROGLOSSAL PROCEDURES
120	OTHER CIRCULATORY SYSTEM O.R. PROCEDURES		292	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W CC
163	HERNIA PROCEDURES AGE 0-17		293	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W/O CC
168	MOUTH PROCEDURES W CC		338	TESTES PROCEDURES, FOR MALIGNANCY
169	MOUTH PROCEDURES W/O CC			
212	HIP & FEMUR PROCEDURES EXCEPT MAJOR JOINT AGE 0-17		340	TESTES PROCEDURES, NON-MALIGNANCY AGE 0-17
213	AMPUTATION FOR MUSCULOSKELETAL SYSTEM & CONN TISSUE DISORDERS		393	SPLENECTOMY AGE 0-17
			394	OTHER O.R. PROCEDURES OF THE BLOOD AND BLOOD FORMING ORGANS
216	BIOPSIES OF MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE		471	BILATERAL OR MULTIPLE MAJOR JOINT PROCS OF LOWER EXTREMITY
217	WND DEBRID & SKN GRFT EXCEPT HAND,FOR MUSCSKELET & CONN TISS DIS		479	OTHER VASCULAR PROCEDURES W/O CC
220	LOWER EXTREM & HUMER PROC EXCEPT HIP,FOOT,FEMUR AGE 0-17		481	BONE MARROW TRANSPLANT
			491	MAJOR JOINT & LIMB REATTACHMENT PROCEDURES OF UPPER EXTREMITY
223	MAJOR SHOULDER/ELBOW PROC, OR OTHER UPPER EXTREMITY PROC W CC		496	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION
224	SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC, W/O CC		497	SPINAL FUSION EXCEPT CERVICAL W CC
			498	SPINAL FUSION EXCEPT CERVICAL W/O CC
225	FOOT PROCEDURES		499	BACK & NECK PROCEDURES EXCEPT SPINAL FUSION W CC
226	SOFT TISSUE PROCEDURES W CC			
227	SOFT TISSUE PROCEDURES W/O CC			

500	BACK & NECK PROCEDURES EXCEPT SPINAL FUSION W/O CC		544	MAJOR JOINT REPLACEMENT OR REATTACHMENT OF LOWER EXTREMITY
501	KNEE PROCEDURES W PDX OF INFECTION W CC		545	REVISION OF HIP OR KNEE REPLACEMENT
502	KNEE PROCEDURES W PDX OF INFECTION W/O CC		546	SPINAL FUSION EXC CERV WITH CURVATURE OF THE SPINE OR MALIG
503	KNEE PROCEDURES W/O PDX OF INFECTION		547	CORONARY BYPASS W CARDIAC CATH W MAJOR CV DX
515	CARDIAC DEFIBRILLATOR IMPLANT W/O CARDIAC CATH		548	CORONARY BYPASS W CARDIAC CATH W/O MAJOR CV DX
518	PERC CARDIO PROC W/O CORONARY ARTERY STENT OR AMI		549	CORONARY BYPASS W/O CARDIAC CATH W MAJOR CV DX
519	CERVICAL SPINAL FUSION W CC		550	CORONARY BYPASS W/O CARDIAC CATH W/O MAJOR CV DX
520	CERVICAL SPINAL FUSION W/O CC		551	PERMANENT CARDIAC PACEMAKER IMPL W MAJ CV DX OR AICD LEAD OR GNRTR
525	OTHER HEART ASSIST SYSTEM IMPLANT		552	OTHER PERMANENT CARDIAC PACEMAKER IMPLANT W/O MAJOR CV DX
528	INTRACRANIAL VASCULAR PROC W PDX HEMORRHAGE			
529	VENTRICULAR SHUNT PROCEDURES W CC		553	OTHER VASCULAR PROCEDURES W CC W MAJOR CV DX
530	VENTRICULAR SHUNT PROCEDURES W/O CC		554	OTHER VASCULAR PROCEDURES W CC W/O MAJOR CV DX
531	SPINAL PROCEDURES W CC		555	PERCUTANEOUS CARDIOVASCULAR PROC W MAJOR CV DX
532	SPINAL PROCEDURES W/O CC		556	PERCUTANEOUS CARDIOVASC PROC W NON-DRUG-ELUTING STENT W/O MAJ CV DX
533	EXTRACRANIAL PROCEDURES W CC			
534	EXTRACRANIAL PROCEDURES W/O CC		557	PERCUTANEOUS CARDIOVASCULAR PROC W DRUG-ELUTING STENT W MAJOR CV DX
535	CARDIAC DEFIB IMPLANT W CARDIAC CATH W AMI/HF/SHOCK			
536	CARDIAC DEFIB IMPLANT W CARDIAC CATH W/O AMI/HF/SHOCK		558	PERCUTANEOUS CARDIOVASCULAR PROC W DRUG-ELUTING STENT W/O MAJ CV DX
537	LOCAL EXCIS & REMOV OF INT FIX DEV EXCEPT HIP & FEMUR W CC			
538	LOCAL EXCIS & REMOV OF INT FIX DEV EXCEPT HIP & FEMUR W/O CC		577	CAROTID ARTERY STENT PROCEDURE
543	CRANIOTOMY W MAJOR DEVICE IMPLANT OR ACUTE COMPLEX CNS PRINCIPAL DIAGNOSIS			

MS-DRG codes for surgical class 1[1]

001	HEART TRANSPLANT OR IMPLANT OF HEART ASSIST SYSTEM W MCC			COMPLEX CNS PDX W MCC OR CHEMO IMPLANT
002	HEART TRANSPLANT OR IMPLANT OF HEART ASSIST SYSTEM W/O MCC		024	CRANIO W MAJOR DEV IMPL/ACUTE COMPLEX CNS PDX W/O MCC
009	*BONE MARROW TRANSPLANT*		027	CRANIOTOMY & ENDOVASCULAR INTRACRANIAL PROCEDURES W/O CC/MCC
014	ALLOGENIC BONE MARROW TRANSPLANT			
016	AUTOLOGOUS BONE MARROW TRANSPLANT W CC/MCC		028	SPINAL PROCEDURES W MCC
017	AUTOLOGOUS BONE MARROW TRANSPLANT W/O CC/MCC		029	SPINAL PROCEDURES W CC OR SPINAL NEUROSTIMULATORS
020	INTRACRANIAL VASCULAR PROCEDURES W PDX HEMORRHAGE W MCC		030	SPINAL PROCEDURES W/O CC/MCC
			031	VENTRICULAR SHUNT PROCEDURES W MCC
021	INTRACRANIAL VASCULAR PROCEDURES W PDX HEMORRHAGE W CC		032	VENTRICULAR SHUNT PROCEDURES W CC
022	INTRACRANIAL VASCULAR PROCEDURES W PDX HEMORRHAGE W/O CC/MCC		033	VENTRICULAR SHUNT PROCEDURES W/O CC/MCC
			034	CAROTID ARTERY STENT PROCEDURE W MCC
023	CRANIO W MAJOR DEV IMPL/ACUTE		035	CAROTID ARTERY STENT PROCEDURE W CC

036	CAROTID ARTERY STENT PROCEDURE W/O CC/MCC		CATH W AMI/HF/SHOCK W/O MCC
037	EXTRACRANIAL PROCEDURES W MCC	224	CARDIAC DEFIB IMPLANT W CARDIAC CATH W/O AMI/HF/SHOCK W MCC
038	EXTRACRANIAL PROCEDURES W CC	225	CARDIAC DEFIB IMPLANT W CARDIAC CATH W/O AMI/HF/SHOCK W/O MCC
039	EXTRACRANIAL PROCEDURES W/O CC/MCC	226	CARDIAC DEFIBRILLATOR IMPLANT W/O CARDIAC CATH W MCC
040	PERIPH & CRANIAL NERVE & OTHER NERV SYST PROC W MCC	227	CARDIAC DEFIBRILLATOR IMPLANT W/O CARDIAC CATH W/O MCC
041	PERIPH/CRANIAL NERVE & OTHER NERV SYST PROC W CC OR PERIPH NEUROSTIM	228	OTHER CARDIOTHORACIC PROCEDURES W MCC
042	PERIPH & CRANIAL NERVE & OTHER NERV SYST PROC W/O CC/MCC	229	OTHER CARDIOTHORACIC PROCEDURES W CC
113	ORBITAL PROCEDURES W CC/MCC	230	OTHER CARDIOTHORACIC PROCEDURES W/O CC/MCC
114	ORBITAL PROCEDURES W/O CC/MCC	231	CORONARY BYPASS W PTCA W MCC
115	EXTRAOCULAR PROCEDURES EXCEPT ORBIT	232	CORONARY BYPASS W PTCA W/O MCC
116	INTRAOCULAR PROCEDURES W CC/MCC	233	CORONARY BYPASS W CARDIAC CATH W MCC
117	INTRAOCULAR PROCEDURES W/O CC/MCC	234	CORONARY BYPASS W CARDIAC CATH W/O MCC
129	MAJOR HEAD & NECK PROCEDURES W CC/MCC OR MAJOR DEVICE	235	CORONARY BYPASS W/O CARDIAC CATH W MCC
130	MAJOR HEAD & NECK PROCEDURES W/O CC/MCC	236	CORONARY BYPASS W/O CARDIAC CATH W/O MCC
131	CRANIAL/FACIAL PROCEDURES W CC/MCC	237	MAJOR CARDIOVASC PROCEDURES W MCC
132	CRANIAL/FACIAL PROCEDURES W/O CC/MCC	238	MAJOR CARDIOVASCULAR PROCEDURES W/O MCC
133	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES W CC/MCC	239	AMPUTATION FOR CIRC SYS DISORDERS EXC UPPER LIMB & TOE W MCC
134	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES W/O CC/MCC	240	AMPUTATION FOR CIRC SYS DISORDERS EXC UPPER LIMB & TOE W CC
136	SINUS & MASTOID PROCEDURES W/O CC/MCC	241	AMPUTATION FOR CIRC SYS DISORDERS EXC UPPER LIMB & TOE W/O CC/MCC
137	MOUTH PROCEDURES W CC/MCC	242	PERMANENT CARDIAC PACEMAKER IMPLANT W MCC
138	MOUTH PROCEDURES W/O CC/MCC	243	PERMANENT CARDIAC PACEMAKER IMPLANT W CC
139	SALIVARY GLAND PROCEDURES	244	PERMANENT CARDIAC PACEMAKER IMPLANT W/O CC/MCC
215	OTHER HEART ASSIST SYSTEM IMPLANT	245	AICD GENERATOR PROCEDURES
216	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W CARD CATH W MCC	246	PERC CARDIOVASC PROC W DRUG-ELUTING STENT W MCC OR 4+ VESSELS/STENTS
217	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W CARD CATH W CC	247	PERC CARDIOVASC PROC W DRUG-ELUTING STENT W/O MCC
218	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W CARD CATH W/O CC/MCC	248	PERC CARDIOVASC PROC W NON-DRUG-ELUTING STENT W MCC OR 4+ VES/STENTS
219	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W/O CARD CATH W MCC	249	PERC CARDIOVASC PROC W NON-DRUG-ELUTING STENT W/O MCC
220	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W/O CARD CATH W CC	250	PERC CARDIOVASC PROC W/O CORONARY ARTERY STENT OR AMI W MCC
221	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W/O CARD CATH W/O CC/MCC	251	PERC CARDIOVASC PROC W/O CORONARY ARTERY STENT OR AMI W/O MCC
222	CARDIAC DEFIB IMPLANT W CARDIAC CATH W AMI/HF/SHOCK W MCC		
223	CARDIAC DEFIB IMPLANT W CARDIAC		

252	OTHER VASCULAR PROCEDURES W MCC		468	REVISION OF HIP OR KNEE REPLACEMENT W/O CC/MCC
253	OTHER VASCULAR PROCEDURES W CC		469	MAJOR JOINT REPLACEMENT OR REATTACHMENT OF LOWER EXTREMITY W MCC
254	OTHER VASCULAR PROCEDURES W/O CC/MCC		470	MAJOR JOINT REPLACEMENT OR REATTACHMENT OF LOWER EXTREMITY W/O MCC
255	UPPER LIMB & TOE AMPUTATION FOR CIRC SYSTEM DISORDERS W MCC		471	CERVICAL SPINAL FUSION W MCC
256	UPPER LIMB & TOE AMPUTATION FOR CIRC SYSTEM DISORDERS W CC		472	CERVICAL SPINAL FUSION W CC
257	UPPER LIMB & TOE AMPUTATION FOR CIRC SYSTEM DISORDERS W/O CC/MCC		473	CERVICAL SPINAL FUSION W/O CC/MCC
258	CARDIAC PACEMAKER DEVICE REPLACEMENT W MCC		474	AMPUTATION FOR MUSCULOSKELETAL SYS & CONN TISSUE DIS W MCC
259	CARDIAC PACEMAKER DEVICE REPLACEMENT W/O MCC		475	AMPUTATION FOR MUSCULOSKELETAL SYS & CONN TISSUE DIS W CC
260	CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT W MCC		476	AMPUTATION FOR MUSCULOSKELETAL SYS & CONN TISSUE DIS W/O CC/MCC
261	CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT W CC		477	BIOPSIES OF MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W MCC
262	CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT W/O CC/MCC		478	BIOPSIES OF MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W CC
263	VEIN LIGATION & STRIPPING		479	BIOPSIES OF MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W/O CC/MCC
264	OTHER CIRCULATORY SYSTEM O.R. PROCEDURES		482	HIP & FEMUR PROCEDURES EXCEPT MAJOR JOINT W/O CC/MCC
352	INGUINAL & FEMORAL HERNIA PROCEDURES W/O CC/MCC		483	MAJOR JOINT & LIMB REATTACHMENT PROC OF UPPER EXTREMITY W CC/MCC
453	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION W MCC		484	MAJOR JOINT & LIMB REATTACHMENT PROC OF UPPER EXTREMITY W/O CC/MCC
454	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION W CC		485	KNEE PROCEDURES W PDX OF INFECTION W MCC
455	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION W/O CC/MCC		486	KNEE PROCEDURES W PDX OF INFECTION W CC
456	SPINAL FUS EXC CERV W SPINAL CURV/MALIG/INFEC OR 9+ FUS W MCC		487	KNEE PROCEDURES W PDX OF INFECTION W/O CC/MCC
457	SPINAL FUS EXC CERV W SPINAL CURV/MALIG/INFEC OR 9+ FUS W CC		488	KNEE PROCEDURES W/O PDX OF INFECTION W CC/MCC
458	SPINAL FUS EXC CERV W SPINAL CURV/MALIG/INFEC OR 9+ FUS W/O CC/MCC		489	KNEE PROCEDURES W/O PDX OF INFECTION W/O CC/MCC
459	SPINAL FUSION EXCEPT CERVICAL W MCC		490	BACK & NECK PROC EXC SPINAL FUSION W CC/MCC OR DISC DEVICE/NEUROSTIM
460	SPINAL FUSION EXCEPT CERVICAL W/O MCC		491	BACK & NECK PROC EXC SPINAL FUSION W/O CC/MCC
461	BILATERAL OR MULTIPLE MAJOR JOINT PROCS OF LOWER EXTREMITY W MCC		494	LOWER EXTREM & HUMER PROC EXCEPT HIP,FOOT,FEMUR W/O CC/MCC
462	BILATERAL OR MULTIPLE MAJOR JOINT PROCS OF LOWER EXTREMITY W/O MCC		495	LOCAL EXCISION & REMOVAL INT FIX DEVICES EXC HIP & FEMUR W MCC
463	WND DEBRID & SKN GRFT EXC HAND, FOR MUSCULO-CONN TISS DIS W MCC		496	LOCAL EXCISION & REMOVAL INT FIX DEVICES EXC HIP & FEMUR W CC
464	WND DEBRID & SKN GRFT EXC HAND, FOR MUSCULO-CONN TISS DIS W CC		497	LOCAL EXCISION & REMOVAL INT FIX DEVICES EXC HIP & FEMUR W/O CC/MCC
465	WND DEBRID & SKN GRFT EXC HAND, FOR MUSCULO-CONN TISS DIS W/O CC/MCC		498	LOCAL EXCISION & REMOVAL INT FIX DEVICES OF HIP & FEMUR W CC/MCC
466	REVISION OF HIP OR KNEE REPLACEMENT W MCC		499	LOCAL EXCISION & REMOVAL INT FIX DEVICES OF HIP & FEMUR W/O CC/MCC
467	REVISION OF HIP OR KNEE REPLACEMENT W CC		500	SOFT TISSUE PROCEDURES W MCC

501	SOFT TISSUE PROCEDURES W CC		W/O CC/MCC
502	SOFT TISSUE PROCEDURES W/O CC/MCC	616	AMPUTAT OF LOWER LIMB FOR ENDOCRINE,NUTRIT,& METABOL DIS W MCC
503	FOOT PROCEDURES W MCC	617	AMPUTAT OF LOWER LIMB FOR ENDOCRINE,NUTRIT,& METABOL DIS W CC
504	FOOT PROCEDURES W CC		
505	FOOT PROCEDURES W/O CC/MCC		
506	MAJOR THUMB OR JOINT PROCEDURES	618	AMPUTAT OF LOWER LIMB FOR ENDOCRINE,NUTRIT,& METABOL DIS W/O CC/MCC
507	MAJOR SHOULDER OR ELBOW JOINT PROCEDURES W CC/MCC		
508	MAJOR SHOULDER OR ELBOW JOINT PROCEDURES W/O CC/MCC	622	SKIN GRAFTS & WOUND DEBRID FOR ENDOC, NUTRIT & METAB DIS W MCC
509	ARTHROSCOPY	623	SKIN GRAFTS & WOUND DEBRID FOR ENDOC, NUTRIT & METAB DIS W CC
510	SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC W MCC	624	SKIN GRAFTS & WOUND DEBRID FOR ENDOC, NUTRIT & METAB DIS W/O CC/MCC
511	SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC W CC		
512	SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC W/O CC/MCC	625	THYROID, PARATHYROID & THYROGLOSSAL PROCEDURES W MCC
		626	THYROID, PARATHYROID & THYROGLOSSAL PROCEDURES W CC
513	HAND OR WRIST PROC, EXCEPT MAJOR THUMB OR JOINT PROC W CC/MCC	627	THYROID, PARATHYROID & THYROGLOSSAL PROCEDURES W/O CC/MCC
514	HAND OR WRIST PROC, EXCEPT MAJOR THUMB OR JOINT PROC W/O CC/MCC	628	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W MCC
515	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W MCC	629	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W CC
516	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W CC	630	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W/O CC/MCC
517	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W/O CC/MCC	711	TESTES PROCEDURES W CC/MCC
		712	TESTES PROCEDURES W/O CC/MCC
582	MASTECTOMY FOR MALIGNANCY W CC/MCC	799	SPLENECTOMY W MCC
		800	SPLENECTOMY W CC
583	MASTECTOMY FOR MALIGNANCY W/O CC/MCC	801	SPLENECTOMY W/O CC/MCC
		802	OTHER O.R. PROC OF THE BLOOD & BLOOD FORMING ORGANS W MCC
584	BREAST BIOPSY, LOCAL EXCISION & OTHER BREAST PROCEDURES W CC/MCC	803	OTHER O.R. PROC OF THE BLOOD & BLOOD FORMING ORGANS W CC
585	BREAST BIOPSY, LOCAL EXCISION & OTHER BREAST PROCEDURES W/O CC/MCC	804	OTHER O.R. PROC OF THE BLOOD & BLOOD FORMING ORGANS W/O CC/MCC
614	ADRENAL & PITUITARY PROCEDURES W CC/MCC		
615	ADRENAL & PITUITARY PROCEDURES		

[1] The DRG/MS-DRG codes are continuously updated. The current list of DRG/MS-DRG codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for sepsis (see above)
- with a principal ICD-9-CM diagnosis code for infection
- with DRG or MS-DRG code for surgical class 4 (see above)
- with length of stay of less than four (4) days
- neonates
- MDC 14 (pregnancy, childbirth, and puerperium)

- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix H – Infection Diagnosis Codes
- Appendix I – Definitions of Neonate, Newborn, Normal Newborn, and Outborn

Risk Category 2:

Non-elective surgical class 1 discharges, for patients ages 17 years and younger, with any-listed ICD-9-CM procedure codes for an operating room procedure. Non-elective surgical class 1 discharges are defined by specific DRG or MS-DRG codes (see above) with admission type recorded as non-elective (SID ATYPE not equal to 3).

See *Pediatric Quality Indicators Appendices*:
- Appendix A – Operating Room Procedure Codes

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for sepsis (see above)
- with a principal ICD-9-CM diagnosis code for infection
- with DRG or MS-DRG code for surgical class 4 (see above)
- with length of stay of less than four (4) days
- neonates
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix H – Infection Diagnosis Codes
- Appendix I – Definitions of Neonate, Newborn, Normal Newborn, and Outborn

Risk Category 3:

Elective surgical class 2, 3, or 9 discharges, for patients ages 17 years and younger, with any-listed ICD-9-CM procedure codes for an operating room procedure. Elective surgical class 2, 3, or 9 discharges are defined by specific DRG or MS-DRG codes with admission type recorded as elective (SID ATYPE=3).

See *Pediatric Quality Indicators Appendices*:
- Appendix A – Operating Room Procedure Codes

DRG codes for surgical class 2

075	MAJOR CHEST PROCEDURES	303	KIDNEY AND URETER PROCEDURES FOR NEOPLASM
076	OTHER RESP SYSTEM O.R. PROCEDURES W CC	304	KIDNEY AND URETER PROCEDURES FOR NON-NEOPLASM WITHOUT CC
077	OTHER RESP SYSTEM O.R. PROCEDURES W/O CC	305	KIDNEY AND URETER PROCEDURES FOR NON-NEOPLASM WITHOUT CC
146	RECTAL RESECTION W CC	306	PROSTATECTOMY W CC
147	RECTAL RESECTION W/O CC	307	PROSTATECTOMY W/O CC
149	MAJOR SMALL & LARGE BOWEL PROCEDURES W/O CC	308	MINOR BLADDER PROCEDURES W CC
150	PERITONEAL ADHESIOLYSIS W CC	309	MINOR BLADDER PROCEDURES W/O CC
151	PERITONEAL ADHESIOLYSIS W/O CC	310	TRANSURETHRAL PROCEDURES W CC
152	MINOR SMALL & LARGE BOWEL PROCEDURES W CC	311	TRANSURETHRAL PROCEDURES W/O CC
153	MINOR SMALL & LARGE BOWEL PROCEDURES W/O CC	314	URETHRAL PROCEDURES, AGE 0-17
156	STOMACH, ESOPHAGEAL & DUODENAL PROCEDURES AGE 0-17	315	OTHER KIDNEY & URINARY TRACT O.R. PROCEDURES
157	ANAL & STOMAL PROCEDURES W CC	334	MAJOR MALE PELVIC PROCEDURES W CC
158	ANAL & STOMAL PROCEDURES W/O CC	335	MAJOR MALE PELVIC PROCEDURES W/O CC
166	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W CC	336	TRANSURETHRAL PROSTATECTOMY W CC
167	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W/O CC	337	TRANSURETHRAL PROSTATECTOMY W/O CC
170	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W CC	341	PENIS PROCEDURES
171	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W/O CC	343	CIRCUMCISION AGE 0-17
191	PANCREAS, LIVER & SHUNT PROCEDURES W CC	344	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROCEDURES FOR MALIGNANCY
192	PANCREAS, LIVER & SHUNT PROCEDURES W/O CC	345	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC EXCEPT FOR MALIGNANCY
193	BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W CC	353	PELVIC EVISCERATION, RADICAL HYSTERECTOMY & RADICAL VULVECTOMY
194	BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W/O CC	354	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W CC
195	CHOLECYSTECTOMY W C.D.E. W CC	355	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W/O CC
196	CHOLECYSTECTOMY W C.D.E. W/O CC	356	FEMALE REPRODUCTIVE SYSTEM RECONSTRUCTIVE PROCEDURES
197	CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W CC	357	UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIGNANCY
198	CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W/O CC	358	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W CC
199	HEPATOBILIARY DIAGNOSTIC PROCEDURE FOR MALIGNANCY	359	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W/O CC
200	HEPATOBILIARY DIAGNOSTIC PROCEDURE FOR NON-MALIGNANCY	360	VAGINA, CERVIX & VULVA PROCEDURES
201	OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES	361	LAPAROSCOPY & INCISIONAL TUBAL INTERRUPTION
265	SKIN GRAFT &/OR DEBRID EXCEPT FOR SKIN ULCER OR CELLULITIS W CC	362	ENDOSCOPIC TUBAL INTERRUPTION
266	SKIN GRAFT &/OR DEBRID EXCEPT FOR SKIN ULCER OR CELLULITIS W/O CC	363	D&C, CONIZATION & RADIO-IMPLANT, FOR MALIGNANCY
267	PERIANAL & PILONIDAL PROCEDURES	364	D&C, CONIZATION EXCEPT FOR MALIGNANCY
268	SKIN, SUBCUTANEOUS TISSUE & BREAST PLASTIC PROCEDURES	365	OTHER FEMALE REPRODUCTIVE SYSTEM O.R. PROCEDURES
269	OTHER SKIN, SUBCUT TISS & BREAST PROC W CC	370	CESAREAN SECTION W CC
270	OTHER SKIN, SUBCUT TISS & BREAST PROC W/O CC	371	CESAREAN SECTION W/O CC
288	O.R. PROCEDURES FOR OBESITY	372	VAGINAL DELIVERY W COMPLICATING DIAGNOSES
302	KIDNEY TRANSPLANT		

373	VAGINAL DELIVERY W/O COMPLICATING DIAGNOSES		493	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W CC
374	VAGINAL DELIVERY W STERILIZATION &/OR D&C		494	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W/O CC
375	VAGINAL DELIVERY W O.R. PROC EXCEPT STERIL &/OR D&C		495	LUNG TRANSPLANT
377	POSTPARTUM & POST ABORTION DIAGNOSES W O.R. PROCEDURE		512	SIMULTANEOUS PANCREAS/KIDNEY TRANSPLANT
381	ABORTION W D&C, ASPIRATION CURETTAGE OR HYSTEROTOMY		513	PANCREAS TRANSPLANT
468	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS		541	ECMO OR TRACH W MV 96+HRS OR PDX EXC FACE, MOUTH & NECK W MAJ O.R.
476	PROSTATIC O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS		542	TRACH W MV 96+HRS OR PDX EXC FACE, MOUTH & NECK W/O MAJ O.R.
477	NON-EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS		559	ACUTE ISCHEMIC STROKE WITH USE OF THROMBOLYTIC AGENT
480	LIVER TRANSPLANT AND/OR INTESTINAL TRANSPLANT		569	MAJOR SMALL & LARGE BOWEL PROCEDURES W CC W MAJOR GI DX
482	TRACHEOSTOMY FOR FACE,MOUTH & NECK DIAGNOSES		570	MAJOR SMALL & LARGE BOWEL PROCEDURES W CC W/O MAJOR GI DX
			573	MAJOR BLADDER PROCEDURES

MS-DRG codes for surgical class 2

003	ECMO OR TRACH W MV 96+ HRS OR PDX EXC FACE, MOUTH & NECK W MAJ O.R.		330	MAJOR SMALL & LARGE BOWEL PROCEDURES W CC
004	TRACH W MV 96+ HRS OR PDX EXC FACE, MOUTH & NECK W/O MAJ O.R.		331	MAJOR SMALL & LARGE BOWEL PROCEDURES W/O CC/MCC
005	LIVER TRANSPLANT W MCC OR INTESTINAL TRANSPLANT		332	RECTAL RESECTION W MCC
006	LIVER TRANSPLANT W/O MCC		333	RECTAL RESECTION W CC
007	LUNG TRANSPLANT		334	RECTAL RESECTION W/O CC/MCC
008	SIMULTANEOUS PANCREAS/KIDNEY TRANSPLANT		335	PERITONEAL ADHESIOLYSIS W MCC
010	PANCREAS TRANSPLANT		336	PERITONEAL ADHESIOLYSIS W CC
011	TRACHEOSTOMY FOR FACE,MOUTH & NECK DIAGNOSES W MCC		337	PERITONEAL ADHESIOLYSIS W/O CC/MCC
012	TRACHEOSTOMY FOR FACE,MOUTH & NECK DIAGNOSES W CC		341	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W MCC
013	TRACHEOSTOMY FOR FACE,MOUTH & NECK DIAGNOSES W/O CC/MCC		342	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W CC
061	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W MCC		343	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W/O CC/MCC
062	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W CC		344	MINOR SMALL & LARGE BOWEL PROCEDURES W MCC
063	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W/O CC/MCC		345	MINOR SMALL & LARGE BOWEL PROCEDURES W CC
163	MAJOR CHEST PROCEDURES W MCC		346	MINOR SMALL & LARGE BOWEL PROCEDURES W/O CC/MCC
164	MAJOR CHEST PROCEDURES W CC		347	ANAL & STOMAL PROCEDURES W MCC
165	MAJOR CHEST PROCEDURES W/O CC/MCC		348	ANAL & STOMAL PROCEDURES W CC
166	OTHER RESP SYSTEM O.R. PROCEDURES W MCC		349	ANAL & STOMAL PROCEDURES W/O CC/MCC
167	OTHER RESP SYSTEM O.R. PROCEDURES W CC		356	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W MCC
168	OTHER RESP SYSTEM O.R. PROCEDURES W/O CC/MCC		357	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W CC
327	STOMACH, ESOPHAGEAL & DUODENAL PROC W CC		358	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W/O CC/MCC
329	MAJOR SMALL & LARGE BOWEL PROCEDURES W MCC		405	PANCREAS, LIVER & SHUNT PROCEDURES W MCC
			406	PANCREAS, LIVER & SHUNT PROCEDURES W CC
			407	PANCREAS, LIVER & SHUNT PROCEDURES W/O CC/MCC

408	BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W MCC	658	KIDNEY & URETER PROCEDURES FOR NEOPLASM W/O CC/MCC
409	BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W CC	659	KIDNEY & URETER PROCEDURES FOR NON-NEOPLASM W MCC
410	BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W/O CC/MCC	660	KIDNEY & URETER PROCEDURES FOR NON-NEOPLASM W CC
411	CHOLECYSTECTOMY W C.D.E. W MCC	661	KIDNEY & URETER PROCEDURES FOR NON-NEOPLASM W/O CC/MCC
412	CHOLECYSTECTOMY W C.D.E. W CC	662	MINOR BLADDER PROCEDURES W MCC
413	CHOLECYSTECTOMY W C.D.E. W/O CC/MCC	663	MINOR BLADDER PROCEDURES W CC
414	CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W MCC	664	MINOR BLADDER PROCEDURES W/O CC/MCC
415	CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W CC	665	PROSTATECTOMY W MCC
416	CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W/O CC/MCC	666	PROSTATECTOMY W CC
		667	PROSTATECTOMY W/O CC/MCC
417	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W MCC	668	TRANSURETHRAL PROCEDURES W MCC
418	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W CC	669	TRANSURETHRAL PROCEDURES W CC
419	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W/O CC/MCC	670	TRANSURETHRAL PROCEDURES W/O CC/MCC
420	HEPATOBILIARY DIAGNOSTIC PROCEDURES W MCC	672	URETHRAL PROCEDURES W/O CC/MCC
		673	OTHER KIDNEY & URINARY TRACT PROCEDURES W MCC
421	HEPATOBILIARY DIAGNOSTIC PROCEDURES W CC	674	OTHER KIDNEY & URINARY TRACT PROCEDURES W CC
422	HEPATOBILIARY DIAGNOSTIC PROCEDURES W/O CC/MCC	675	OTHER KIDNEY & URINARY TRACT PROCEDURES W/O CC/MCC
423	OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES W MCC	707	MAJOR MALE PELVIC PROCEDURES W CC/MCC
424	OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES W CC	708	MAJOR MALE PELVIC PROCEDURES W/O CC/MCC
425	OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES W/O CC/MCC	709	PENIS PROCEDURES W CC/MCC
		710	PENIS PROCEDURES W/O CC/MCC
576	SKIN GRAFT EXC FOR SKIN ULCER OR CELLULITIS W MCC	713	TRANSURETHRAL PROSTATECTOMY W CC/MCC
577	SKIN GRAFT EXC FOR SKIN ULCER OR CELLULITIS W CC	714	TRANSURETHRAL PROSTATECTOMY W/O CC/MCC
578	SKIN GRAFT EXC FOR SKIN ULCER OR CELLULITIS W/O CC/MC	715	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC FOR MALIGNANCY W CC/MCC
579	OTHER SKIN, SUBCUT TISS & BREAST PROC W MCC	716	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC FOR MALIGNANCY W/O CC/MCC
580	OTHER SKIN, SUBCUT TISS & BREAST PROC W CC	717	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC EXC MALIGNANCY W CC/MCC
581	OTHER SKIN, SUBCUT TISS & BREAST PROC W/O CC/MCC		
619	O.R. PROCEDURES FOR OBESITY W MCC	718	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC EXC MALIGNANCY W/O CC/MCC
620	O.R. PROCEDURES FOR OBESITY W CC		
621	O.R. PROCEDURES FOR OBESITY W/O CC/MCC	734	PELVIC EVISCERATION, RAD HYSTERECTOMY & RAD VULVECTOMY W CC/MCC
652	KIDNEY TRANSPLANT	735	PELVIC EVISCERATION, RAD HYSTERECTOMY & RAD VULVECTOMY W/O CC/MCC
653	MAJOR BLADDER PROCEDURES W MCC		
654	MAJOR BLADDER PROCEDURES W CC	736	UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIGNANCY W MCC
655	MAJOR BLADDER PROCEDURES W/O CC/MCC		
656	KIDNEY & URETER PROCEDURES FOR NEOPLASM W MCC	737	UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIGNANCY W CC
657	KIDNEY & URETER PROCEDURES FORNEOPLASM W CC		

738	UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIGNANCY W/O CC/MCC		770	ABORTION W D&C, ASPIRATION CURETTAGE OR HYSTEROTOMY
739	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W MCC		774	VAGINAL DELIVERY W COMPLICATING DIAGNOSES
740	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W CC		775	VAGINAL DELIVERY W/O COMPLICATING DIAGNOSES
741	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W/O CC/MCC		981	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W MCC
742	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W CC/MCC		982	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W CC
743	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W/O CC/MCC		983	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W/O CC/MCC
744	D&C, CONIZATION, LAPAROSCOPY & TUBAL INTERRUPTION W CC/MCC		984	PROSTATIC O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W MCC
745	D&C, CONIZATION, LAPAROSCOPY & TUBAL INTERRUPTION W/O CC/MCC		985	PROSTATIC O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W CC
746	VAGINA, CERVIX & VULVA PROCEDURES W CC/MCC		986	PROSTATIC O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W/O CC/MCC
747	VAGINA, CERVIX & VULVA PROCEDURES W/O CC/MCC		987	NON-EXTENSIVE O.R. PROC UNRELATED TO PRINCIPAL DIAGNOSIS W MCC
748	FEMALE REPRODUCTIVE SYSTEM RECONSTRUCTIVE PROCEDURES		988	NON-EXTENSIVE O.R. PROC UNRELATED TO PRINCIPAL DIAGNOSIS W CC
749	OTHER FEMALE REPRODUCTIVE SYSTEM O.R. PROCEDURES W CC/MCC		989	NON-EXTENSIVE O.R. PROC UNRELATED TO PRINCIPAL DIAGNOSIS W/O CC/MCC
750	OTHER FEMALE REPRODUCTIVE SYSTEM O.R. PROCEDURES W/O CC/MCC			
765	CESAREAN SECTION W CC/MCC			
766	CESAREAN SECTION W/O CC/MCC			
767	VAGINAL DELIVERY W STERILIZATION &/OR D&C			
768	VAGINAL DELIVERY W O.R. PROC EXCEPT STERIL &/OR D&C			
769	POSTPARTUM & POST ABORTION DIAGNOSES W O.R. PROCEDURE			

DRG codes for surgical class 3

263	SKIN GRAFT &/OR DEBRID FOR SKN ULCER OR CELLULITIS W CC		485	LIMB REATTACHMENT, HIP AND FEMUR PROC FOR MULTIPLE SIGNIFICANT TRAUMA
264	SKIN GRAFT &/OR DEBRID FOR SKN ULCER OR CELLULITIS W/O CC		486	OTHER O.R. PROCEDURES FOR MULTIPLE SIGNIFICANT TRAUMA
439	SKIN GRAFTS FOR INJURIES		504	EXTEN. BURNS OR FULL THICKNESS BURN W/MV 96+HRS W/SKIN GFT
440	WOUND DEBRIDEMENTS FOR INJURIES			
441	HAND PROCEDURES FOR INJURIES		506	FULL THICKNESS BURN W SKIN GRAFT OR INHAL INJ W CC OR SIG TRAUMA
442	OTHER O.R. PROCEDURES FOR INJURIES W CC		507	FULL THICKNESS BURN W SKIN GRFT OR INHAL INJ W/O CC OR SIG TRAUMA
443	OTHER O.R. PROCEDURES FOR INJURIES W/O CC			
484	CRANIOTOMY FOR MULTIPLE SIGNIFICANT TRAUMA			

MS-DRG codes for surgical class 3

570	SKIN DEBRIDEMENT W MCC		575	SKIN GRAFT FOR SKIN ULCER OR CELLULITIS W/O CC/MCC
571	SKIN DEBRIDEMENT W CC			
572	SKIN DEBRIDEMENT W/O CC/MCC		901	WOUND DEBRIDEMENTS FOR INJURIES W MCC
573	SKIN GRAFT FOR SKIN ULCER OR CELLULITIS W MCC		902	WOUND DEBRIDEMENTS FOR INJURIES W CC
574	SKIN GRAFT FOR SKIN ULCER OR CELLULITIS W CC		903	WOUND DEBRIDEMENTS FOR INJURIES W/O CC/MCC

904	SKIN GRAFTS FOR INJURIES W CC/MCC		929	FULL THICKNESS BURN W SKIN GRAFT OR INHAL INJ W/O CC/MCC
905	SKIN GRAFTS FOR INJURIES W/O CC/MCC		955	CRANIOTOMY FOR MULTIPLE SIGNIFICANT TRAUMA
906	HAND PROCEDURES FOR INJURIES		956	LIMB REATTACHMENT, HIP & FEMUR PROC FOR MULTIPLE SIGNIFICANT TRAUMA
907	OTHER O.R. PROCEDURES FOR INJURIES W MCC			
908	OTHER O.R. PROCEDURES FOR INJURIES W CC		957	OTHER O.R. PROCEDURES FOR MULTIPLE SIGNIFICANT TRAUMA W MCC
909	OTHER O.R. PROCEDURES FOR INJURIES W/O CC/MCC		958	OTHER O.R. PROCEDURES FOR MULTIPLE SIGNIFICANT TRAUMA W CC
927	EXTENSIVE BURNS OR FULL THICKNESS BURNS W MV 96+ HRS W SKIN GRAFT		959	OTHER O.R. PROCEDURES FOR MULTIPLE SIGNIFICANT TRAUMA W/O CC/MCC
928	FULL THICKNESS BURN W SKIN GRAFT OR INHAL INJ W CC/MCC			

DRG codes for surgical class 9

401	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W CC		424	O.R. PROCEDURE W PRINCIPAL DIAGNOSES OF MENTAL ILLNESS
402	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W/O CC		461	O.R. PROC W DIAGNOSES OF OTHER CONTACT W HEALTH SERVICES
406	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R.PROC W CC		488	HIV W EXTENSIVE O.R. PROCEDURE
407	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R.PROC W/O CC		539	LYMPHOMA & LEUKEMIA W MAJOR OR PROCEDURE W CC
408	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W OTHER O.R.PROC		540	LYMPHOMA & LEUKEMIA W MAJOR OR PROCEDURE W/O CC

MS-DRG codes for surgical class 9

820	LYMPHOMA & LEUKEMIA W MAJOR O.R. PROCEDURE W MCC		829	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W OTHER O.R. PROC W CC/MCC
821	LYMPHOMA & LEUKEMIA W MAJOR O.R. PROCEDURE W CC			
822	LYMPHOMA & LEUKEMIA W MAJOR O.R. PROCEDURE W/O CC/MCC		830	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W OTHER O.R. PROC W/O CC/MCC
823	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W MCC		876	O.R. PROCEDURE W PRINCIPAL DIAGNOSES OF MENTAL ILLNESS
824	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W CC		939	O.R. PROC W DIAGNOSES OF OTHER CONTACT W HEALTH SERVICES W MCC
825	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W/O CC/MCC		940	O.R. PROC W DIAGNOSES OF OTHER CONTACT W HEALTH SERVICES W CC
826	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R. PROC W MCC		941	O.R. PROC W DIAGNOSES OF OTHER CONTACT W HEALTH SERVICES W/O CC/MCC
827	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R. PROC W CC			
828	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R. PROC W/O CC/MCC		969	HIV W EXTENSIVE O.R. PROCEDURE W MCC
			970	HIV W EXTENSIVE O.R. PROCEDURE W/O MCC

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for sepsis (see above)
- with a principal ICD-9-CM diagnosis code for infection
- with DRG or MS-DRG code for surgical class 4 (see above)
- with length of stay of less than four (4) days
- neonates
- MDC 14 (pregnancy, childbirth, and puerperium)

- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix H – Infection Diagnosis Codes
- Appendix I – Definitions of Neonate, Newborn, Normal Newborn, and Outborn

Risk Category 4:

Non-elective surgical class 2, 3, or 9 discharges, for patients ages 17 years and younger, with any-listed ICD-9-CM procedure codes for an operating room procedure. Non-elective surgical class 2, 3, or 9 discharges are defined by specific DRG or MS-DRG codes with admission type recorded as non-elective (SID ATYPE not equal to 3).

See *Pediatric Quality Indicators Appendices*:
- Appendix A – Operating Room Procedure Codes

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for sepsis (see above)
- with a principal ICD-9-CM diagnosis code for infection
- with DRG or MS-DRG code for surgical class 4 (see above)
- with length of stay of less than four (4) days
- neonates
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix H – Infection Diagnosis Codes
- Appendix I – Definitions of Neonate, Newborn, Normal Newborn, and Outborn

Risk Category 9:

Surgical discharges not meeting the inclusion rules for Risk Category 1 through Risk Category 4, for patients ages 17 years and younger, with any-listed ICD-9-CM procedure codes for an operating room procedure. Surgical discharges are defined by specific DRG or MS-DRG codes.

See *Pediatric Quality Indicators Appendices*:
- Appendix A – Operating Room Procedure Codes

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for sepsis (see above)
- with a principal ICD-9-CM diagnosis code for infection
- with DRG or MS-DRG code for surgical class 4 (see above)
- with length of stay of less than four (4) days
- neonates
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix H – Infection Diagnosis Codes
- Appendix I – Definitions of Neonate, Newborn, Normal Newborn, and Outborn

Postoperative Wound Dehiscence Rate
Technical Specifications

Pediatric Quality Indicators #11 (PDI #11)
AHRQ Quality Indicators™, Version 4.5, May 2013
Provider-Level Indicator
Type of Score: Rate

Description

Postoperative reclosures of the abdominal wall per 1,000 abdominopelvic surgery discharges for patients ages 17 years and younger. Includes metrics for discharges grouped by risk category. Excludes cases in which the abdominal wall reclosure occurs on or before the day of the first abdominopelvic surgery, newborn cases with gastroschisis or umbilical hernia repair occurring before the day of the abdominal wall reclosure, cases with a high- or intermediate-risk immunocompromised state, cases with cirrhosis and hepatic failure with a diagnosis of coma or hepatorenal syndrome, cases with transplants, cases with stays less than two (2) days, neonates with birth weight less than 500 grams, and obstetric cases.

[NOTE: The software provides the rate per hospital discharge. However, common practice reports the measure as per 1,000 discharges. The user must multiply the rate obtained from the software by 1,000 to report events per 1,000 hospital discharges.]

[NOTE: To obtain stratified results, the user must run the PDSASG2.SAS program in the SAS QI Software Version 4.5 or choose to stratify by risk category in the Windows QI Software Version 4.5]

Numerator

Overall:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any-listed ICD-9-CM procedure codes for reclosure of postoperative disruption of the abdominal wall.

ICD-9-CM Reclosure of postoperative disruption of the abdominal wall procedure codes:
5461   RECLOSE POST OP DISRUPT

Risk Category 1:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any-listed ICD-9-CM procedure codes for reclosure of postoperative disruption of the abdominal wall (see above).

Risk Category 2:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any-listed ICD-9-CM procedure codes for reclosure of postoperative disruption of the abdominal wall (see above).

Risk Category 3:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any-listed ICD-9-CM procedure codes for reclosure of postoperative disruption of the abdominal wall (see above).

Risk Category 4:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any-listed ICD-9-CM procedure codes for reclosure of postoperative disruption of the abdominal wall (see above).

Risk Category 9:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any-listed ICD-9-CM procedure codes for reclosure of postoperative disruption of the abdominal wall (see above).

Denominator

Overall:

Discharges, for patients ages 17 years and younger, with any-listed ICD-9-CM procedure codes for abdominopelvic surgery.

ICD-9-CM Abdominopelvic surgery procedure codes[1]:

1731	LAP MUL SEG RES LG INTES	3847	ABD VEIN RESECT W REPLAC
1732	LAPAROSCOPIC CECECTOMY	3857	ABD VARICOS V LIGA-STRIP
1733	LAP RIGHT HEMICOLECTOMY	3864	EXCISION OF AORTA
1734	LAP RES TRANSVERSE COLON	3866	ABDOMINAL ARTERY EXCIS
1735	LAP LEFT HEMICOLECTOMY	3867	ABDOMINAL VEIN EXCISION
1736	LAP SIGMOIDECTOMY	3884	OCCLUDE AORTA NEC
1739	LAP PT EX LRG INTEST NEC	3886	OCCLUDE ABD ARTERY NEC
3804	INCISION OF AORTA	3887	OCCLUDE ABD VEIN NEC
3806	ABDOMEN ARTERY INCISION	391	INTRA-ABD VENOUS SHUNT
3807	ABDOMINAL VEIN INCISION	3924	AORTA-RENAL BYPASS
3814	ENDARTERECTOMY OF AORTA	3925	AORTA-ILIAC-FEMOR BYPASS
3816	ABDOMINAL ENDARTERECTOMY	3926	INTRA-ABDOMIN SHUNT NEC
3834	AORTA RESECTION & ANAST	4052	RAD DISSEC PERIAORT NODE
3836	ABD VESSEL RESECT/ANAST	4053	RAD DISSECT ILIAC NODES
3837	ABD VEIN RESECT & ANAST	412	SPLENOTOMY
3844	RESECT ABDM AORTA W REPL	4133	OPEN SPLEEN BIOPSY
3846	ABD ARTERY RESEC W REPLA	4141	SPLENIC CYST MARSUPIAL

4142	EXC SPLENIC LESION/TISS	4534	DESTR SM BOWEL LES NEC
4143	PARTIAL SPLENECTOMY	4541	EXCISE LG INTESTINE LES
415	TOTAL SPLENECTOMY	4549	DESTRUC LG BOWEL LES NEC
4193	EXC OF ACCESSORY SPLEEN	4550	INTEST SEG ISOLAT NOS
4194	SPLEEN TRANSPLANTATION	4551	SM BOWEL SEGMENT ISOLAT
4195	REPAIR OF SPLEEN	4552	LG BOWEL SEGMENT ISOLAT
4199	SPLEEN OPERATION NEC	4561	MULT SEG SM BOWEL EXCIS
4240	ESOPHAGECTOMY NOS	4562	PART SM BOWEL RESECT NEC
4241	PARTIAL ESOPHAGECTOMY	4563	TOTAL REMOVAL SM BOWEL
4242	TOTAL ESOPHAGECTOMY	4571	OPN MUL SEG LG INTES NEC
4253	THORAC SM BOWEL INTERPOS	4572	OPEN CECECTOMY NEC
4254	THORAC ESOPHAGOENTER NEC	4573	OPN RT HEMICOLECTOMY NEC
4255	THORAC LG BOWEL INTERPOS	4574	OPN TRANSV COLON RES NEC
4256	THORAC ESOPHAGOCOLOS NEC	4575	OPN LFT HEMICOLECTMY NEC
4263	STERN SM BOWEL INTERPOS	4576	OPEN SIGMOIDECTOMY NEC
4264	STERN ESOPHAGOENTER NEC	4579	PRT LG INTES EXC NEC/NOS
4265	STERN LG BOWEL INTERPOS	*458*	*TOTAL INTRA-ABDOMINAL*
4266	STERN ESOPHAGOCOLOS NEC		*COLECTOMY*
4291	LIGATION ESOPH VARIX	4581	LAP TOT INTR-AB COLECTMY
430	GASTROTOMY	4582	OP TOT INTR-ABD COLECTMY
433	PYLOROMYOTOMY	4583	TOT ABD COLECTMY NEC/NOS
4342	LOCAL GASTR EXCISION NEC	4590	INTESTINAL ANASTOM NOS
4349	LOCAL GASTR DESTRUCT NEC	4591	SM-TO-SM BOWEL ANASTOM
435	PROXIMAL GASTRECTOMY	4592	SM BOWEL-RECT STUMP ANAS
436	DISTAL GASTRECTOMY	4593	SMALL-TO-LARGE BOWEL NEC
437	PART GASTREC W JEJ ANAST	4594	LG-TO-LG BOWEL ANASTOM
4381	PART GAST W JEJ TRANSPOS	4595	ANAL ANASTOMOSIS
4382	LAP VERTICAL GASTRECTOMY	4601	SM BOWEL EXTERIORIZATION
4389	OPN/OTH PART GASTRECTOMY	4603	LG BOWEL EXTERIORIZATION
4391	TOT GAST W INTES INTERPO	4610	COLOSTOMY NOS
4399	TOTAL GASTRECTOMY NEC	4611	TEMPORARY COLOSTOMY
4400	VAGOTOMY NOS	4613	PERMANENT COLOSTOMY
4401	TRUNCAL VAGOTOMY	4620	ILEOSTOMY NOS
4402	HIGHLY SELECTIVE VAGOTOMY	4621	TEMPORARY ILESOSTOMY
4403	SELECTIVE VAGOTOMY NEC	4622	CONTINENT ILEOSTOMY
4411	TRANSABDOMINAL GASTROSCOPY	4623	PERMANENT ILEOSTOMY NEC
4415	OPEN GASTRIC BIOPSY	4640	INTEST STOMA REVIS NOS
4421	DILATE PYLORUS, INCISION	4641	SM BOWEL STOMA REVISION
4429	OTHER PYLOROPLASTY	4642	PERICOLOST HERNIA REPAIR
4431	HIGH GASTRIC BYPASS	4643	LG BOWEL STOMA REVIS NEC
4439	GASTROENTEROSTOMY NEC	4650	INTEST STOMA CLOSURE NOS
4440	SUTURE PEPTIC ULCER NOS	4651	SM BOWEL STOMA CLOSURE
4441	SUT GASTRIC ULCER SITE	4652	LG BOWEL STOMA CLOSURE
4442	SUTURE DUODEN ULCER SITE	4660	INTESTINAL FIXATION NOS
445	REVISION GASTRIC ANASTOM	4661	SM BOWEL-ABD WALL FIXAT
4461	SUTURE GASTRIC LACERAT	4662	SMALL BOWEL FIXATION NEC
4463	CLOSE GASTRIC FISTUL NEC	4663	LG BOWEL-ABD WALL FIXAT
4464	GASTROPEXY	4664	LARGE BOWEL FIXATION NEC
4465	ESOPHAGOGASTROPLASTY	4672	DUODENAL FISTULA CLOSURE
4466	CREAT ESOPHAGASTR SPHINC	4674	CLOSE SM BOWEL FIST NEC
4469	GASTRIC REPAIR NEC	4676	CLOSE LG BOWEL FISTULA
4491	LIGATE GASTRIC VARICES	4680	INTRA-AB BOWEL MANIP NOS
4492	INTRAOP GASTRIC MANIPUL	4681	INTRA-ABD SM BOWEL MANIP
4499	GASTRIC OPERATION NEC	4682	INTRA-ABD LG BOWEL MANIP
4500	INTESTINAL INCISION NOS	4691	MYOTOMY OF SIGMOID COLON
4501	DUODENAL INCISION	4692	MYOTOMY OF COLON NEC
4502	SMALL BOWEL INCISION NEC	4693	REVISE SM BOWEL ANASTOM
4503	LARGE BOWEL INCISION	4694	REVISE LG BOWEL ANASTOM
4531	OTH EXCISE DUODENUM LES	4699	INTESTINAL OP NEC
4532	DESTRUCT DUODEN LES NEC	4709	OTHER APPENDECTOMY
4533	LOCAL EXCIS SM BOWEL NEC	4719	OTHER INCID APPENDECTOMY

472	DRAIN APPENDICEAL ABSC		5212	OPEN PANCREATIC BIOPSY
4791	APPENDECTOMY		5222	OTHER DESTRU PANCREA LES
4792	CLOSE APPENDICEAL FISTUL		523	PANCREAT CYST MARSUPIALI
4799	APPENDICEAL OPS NEC		524	INT DRAIN PANCREAT CYST
4840	PULL-THRU RES RECTUM NOS		5251	PROXIMAL PANCREATECTOMY
4841	SOAVE SUBMUC RECT RESECT		5252	DISTAL PANCREATECTOMY
4843	OPN PULL-THRU RES RECTUM		5253	RAD SUBTOT PANCREATECTOM
4849	PULL-THRU RECT RESEC NEC		5259	PARTIAL PANCREATECT NEC
4850	ABDPERNEAL RES RECTM NOS		526	TOTAL PANCREATECTOMY
4852	OPN ABDPERNEAL RESC REC		527	RAD PANCREATICODUODENECT
4859	ABDPERNEAL RESC RECT NEC		5280	PANCREAT TRANSPLANT NOS
4875	ABDOMINAL PROCTOPEXY		5281	REIMPLANT PANCREATIC TIS
500	HEPATOTOMY		5282	PANCREATIC HOMOTRANSPLAN
5012	OPEN LIVER BIOPSY		5283	PANCREATIC HETEROTRANSPL
5021	MARSUPIALIZAT LIVER LES		5292	CANNULATION PANCREA DUC
5022	PARTIAL HEPATECTOMY		5295	PANCREATIC REPAIR NEC
5023	OPN ABLTN LIVER LES/TISS		5296	PANCREATIC ANASTOMOSIS
5026	ABLTN LIVER LES/TISS NEC		5299	PANCREATIC OPERATION NEC
5029	DESTRUC HEPATIC LES NEC		5300	UNILAT ING HERN REP NOS
503	HEPATIC LOBECTOMY		5301	OPN REP DIR ING HERN NEC
504	TOTAL HEPATECTOMY		5302	OPN REP IND ING HERN NEC
5051	AUXILIARY LIVER TRANSPL		5303	OPN DIR ING HERN-GFT NEC
5059	LIVER TRANSPLANT NEC		5304	OPN IND ING HERN-GFT NEC
5069	LIVER REPAIR NEC		5305	ING HERNIA REP-GRAFT NOS
5103	CHOLECYSTOSTOMY NEC		5310	BILAT ING HERNIA REP NOS
5104	CHOLECYSTOTOMY NEC		5311	OPN BIL DIR ING HERN NEC
5113	OPEN BILIARY TRACT BX		5312	OPN BIL IND ING HERN NEC
5121	OTH PART CHOLECYSTECTOMY		5313	OPN BI DR/IN ING HRN NEC
5122	CHOLECYSTECTOMY		5314	OPN BI DR ING HRN-GR NEC
5131	GB-TO-HEPAT DUCT ANAST		5315	OP BI IN ING HRN-GRF NEC
5132	GB-TO-INTESTINE ANASTOM		5316	OP BI DR/IN IG HR-GR NEC
5133	GB-TO-PANCREAS ANASTOM		5317	BIL ING HRN REP-GRFT NOS
5134	GB-TO-STOMACH ANASTOMOS		5321	UNIL FEMOR HRN REP-GRFT
5135	GALLBLADDER ANASTOM NEC		5329	UNIL FEMOR HERN REP NEC
5136	CHOLEDOCHOENTEROSTOMY		5331	BIL FEM HERN REPAIR-GRFT
5137	HEPATIC DUCT-GI ANASTOM		5339	BIL FEM HERN REPAIR NEC
5139	BILE DUCT ANASTOMOS NEC		5341	OPN REP UMB HRN-GRFT NEC
5141	CDE FOR CALCULUS REMOV		5349	OPEN REP UMBIL HERN NEC
5142	CDE FOR OBSTRUCTION NEC		5351	INCISIONAL HERNIA REPAIR
5143	CHOLEDOCHOHEPAT INTUBAT		5359	ABD WALL HERN REPAIR NEC
5149	INCIS OBSTR BILE DUC NEC		5361	OPEN INCIS HERN-GRFT NEC
5151	COMMON DUCT EXPLORATION		5369	OPN HERN ANT ABD-GRF NEC
5159	BILE DUCT INCISION NEC		*537*	*ABD REPAIR-DIAPHR HERNIA*
5161	EXCIS CYST DUCT REMNANT		5375	ABD REP-DIAPHR HERN NOS
5162	EXCIS AMPULLA OF VATER		540	ABDOMINAL WALL INCISION
5163	COMMON DUCT EXCIS NEC		5411	EXPLORATORY LAPAROTOMY
5169	BILE DUCT EXCISION NEC		5419	LAPAROTOMY NEC
5171	SIMPLE SUT-COMMON DUCT		5422	ABDOMINAL WALL BIOPSY
5172	CHOLEDOCHOPLASTY		5423	PERITONEAL BIOPSY
5179	BILE DUCT REPAIR NEC		543	DESTRUCT ABD WALL LESION
5181	SPHINCTER OF ODDI DILAT		544	DESTRUCT PERITONEAL TISS
5182	PANCREAT SPHINCTEROTOM		5459	OTH PERITON ADHESIOLYSIS
5183	PANCREAT SPHINCTEROPLAS		5463	ABD WALL SUTURE NEC
5189	SPHINCT OF ODDI OP NEC		5464	PERITONEAL SUTURE
5192	CLOSURE CHOLECYSTOSTOMY		5471	REPAIR OF GASTROSCHISIS
5193	CLOS BILIARY FISTUL NEC		5472	ABDOMEN WALL REPAIR NEC
5194	REVIS BILE TRACT ANASTOM		5473	PERITONEAL REPAIR NEC
5195	REMOVE BILE DUCT PROSTH		5474	OMENTAL REPAIR NEC
5199	BILIARY TRACT OP NEC		5475	MESENTERIC REPAIR NEC
5201	CATH DRAIN-PANCREAT CYST		5492	REMOVE FB FROM PERITON
5209	PANCREATOTOMY NEC		5493	CREATE CUTANPERITON FIST

5494	CREAT PERITONEOVAS SHUNT		6529	LOCAL DESTR OVA LES NEC
5495	PERITONEAL INCISION		6539	OTH UNILAT OOPHORECTOMY
5532	OPN ABLTN RENAL LES/TISS		6549	OTH UNI SALPINGO-OOPHOR
5535	ABLTN RENAL LES/TISS NEC		6551	OTH REMOVE BOTH OVARIES
5551	NEPHROURETERECTOMY		6552	OTH REMOVE REMAIN OVARY
5552	SOLITARY KIDNEY NEPHRECT		6561	OTH REMOVE OVARIES/TUBES
5553	REJECTED KIDNEY NEPHRECT		6562	OTH REMOVE REM OVA/TUBE
5554	BILATERAL NEPHRECTOMY		6571	OTH SIMPLE SUTURE OVARY
5561	RENAL AUTOTRANSPLANT		6572	OTH REIMPLANT OF OVARY
5569	KIDNEY TRANSPLANT NEC		6573	OTH SALPINGO-OOPHOROPLAS
557	NEPHROPEXY		6579	REPAIR OF OVARY NEC
5583	CLOSE RENAL FISTULA NEC		6589	ADHESIOLYSIS OVARY/TUBE
5584	REDUCE RENAL PEDICL TORS		6592	TRANSPLANTATION OF OVARY
5585	SYMPHYSIOTOMY		6593	MANUAL RUPT OVARIAN CYST
5586	RENAL ANASTOMOSIS		6594	OVARIAN DENERVATION
5587	CORRECT URETEROPELV JUNC		6595	OVARIAN TORSION RELEASE
5591	RENAL DECAPSULATION		6599	OVARIAN OPERATION NEC
5597	IMPLANT MECHANIC KIDNEY		6601	SALPINGOTOMY
5598	REMOV MECHANICAL KIDNEY		6602	SALPINGOSTOMY
5651	FORM CUTAN ILEOURETEROST		6631	BILAT TUBAL CRUSHING NEC
5652	REVIS CUTAN ILEOURETEROS		6632	BILAT TUBAL DIVISION NEC
5661	FORM CUTAN URETEROSTOMY		6639	BILAT TUBAL DESTRUCT NEC
5662	REVIS CUTAN URETEROS NEC		664	TOTAL UNILAT SALPINGECT
5671	URIN DIVERSION TO BOWEL		6651	REMOVE BOTH FALLOP TUBES
5672	REVIS URETEROENTEROSTOMY		6652	REMOVE SOLITARY FAL TUBE
5673	NEPHROCYSTANASTOMOSI NOS		6661	DESTROY FALLOP TUBE LES
5674	URETERONEOCYSTOSTOMY		6662	REMOV TUBE & ECTOP PREG
5675	TRANSURETEROURETEROSTOMY		6663	BILAT PART SALPINGEC NOS
5683	URETEROSTOMY CLOSURE		6669	PARTIAL SALPINGECTOM NEC
5684	CLOSE URETER FISTULA NEC		6671	SIMPL SUTURE FALLOP TUBE
5685	URETEROPEXY		6672	SALPINGO-OOPHOROSTOMY
5686	REMOVE URETERAL LIGATURE		6673	SALPINGO-SALPINGOSTOMY
5689	REPAIR OF URETER NEC		6674	SALPINGO-UTEROSTOMY
5695	LIGATION OF URETER		6679	FALLOP TUBE REPAIR NEC
5771	RADICAL CYSTECTOMY		6692	UNILAT FALLOP TUBE DESTR
5779	TOTAL CYSTECTOMY NEC		6697	BURY FIMBRIAE IN UTERUS
5782	CYSTOSTOMY CLOSURE		680	HYSTEROTOMY
5787	BLADDER RECONSTRUCTION		6813	OPEN UTERINE BIOPSY
5900	RETROPERIT DISSECT NOS		6814	OPEN UTERINE LIGAMENT BX
5902	PERIREN ADHESIOLYS NEC		*683*	*SUBTOTAL ABDOMINAL HYSTERECTOMY*
5909	PERIREN/URETER INCIS NEC			
6012	OPEN PROSTATIC BIOPSY		6839	SUBTOTL ABD HYST NEC/NOS
6014	OPEN SEMINAL VESICLES BX		*684*	*TOTAL ABDOMINAL HYSTERECTOMY*
6015	PERIPROSTATIC BIOPSY		6841	LAP TOTAL ABDOMINAL HYST
603	SUPRAPUBIC PROSTATECTOMY		6849	TOTAL ABD HYST NEC/NOS
604	RETROPUBIC PROSTATECTOMY		*686*	*RADICAL ABDOMINAL HYSTERECTOMY*
605	RADICAL PROSTATECTOMY			
6061	LOS EXCIS PROSTATIC LES		6861	LAP RADICAL ABDOMNL HYST
6072	SEMINAL VESICLE INCISION		6869	RADICAL ABD HYST NEC/NOS
6073	SEMINAL VESICLE EXCISION		688	PELVIC EVISCERATION
6079	SEMINAL VESICLE OP NEC		6922	UTERINE SUSPENSION NEC
6093	REPAIR OF PROSTATE		693	PARACERV UTERINE DENERV
6509	OTHER OOPHOROTOMY		6941	SUTURE UTERINE LACERAT
6512	OVARIAN BIOPSY NEC		6942	CLOSURE UTERINE FISTULA
6521	OVARIAN CYST MARSUPIALIZ		6949	UTERINE REPAIR NEC
6522	OVARIAN WEDGE RESECTION			

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

Exclude cases:
- where the procedure for abdominal wall reclosure (see above) occurs on or before the day of the first abdominopelvic surgery procedure (see above)[†]
- with any-listed ICD-9-CM procedure codes for gastroschisis or umbilical hernia repair in newborns (omphalacele repair) performed before abdominal wall reclosure (see above)
- with any-listed ICD-9-CM diagnosis codes for high-risk immunocompromised state
- with any-listed ICD-9-CM diagnosis codes for intermediate-risk immunocompromised state
- with any-listed ICD-9-CM procedure codes for transplant
- with any-listed ICD-9-CM diagnosis codes for cirrhosis and any-listed ICD-9-CM diagnosis codes for hepatic failure consisting of a diagnosis of coma or hepatorenal syndrome
- with length of stay less than two (2) days
- neonates with birth weight less than 500 grams (Birth Weight Category 1)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix F – High-Risk Immunocompromised States
- Appendix G – Intermediate-Risk Immunocompromised States
- Appendix I – Definitions of Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

ICD-9-CM Gastroschisis or umbilical hernia repair in newborns (omphalacele repair) procedure codes:

5341	OPN REP UMB HRN-GRFT NEC	5471	REPAIR OF GASTROSCHISIS
5349	OPEN REP UMBIL HERN NEC		

ICD-9-CM Transplant procedure codes[1]:

335	*LUNG TRANSPLANT*	4105	ALLO HEM STEM CT W/O PUR
3350	LUNG TRANSPLANT NOS	4106	CORD BLD STEM CELL TRANS
3351	UNILAT LUNG TRANSPLANT	4107	AUTO HEM STEM CT W PURG
3352	BILAT LUNG TRANSPLANT	4108	ALLO HEM STEM CT W PURG
336	COMB HEART/LUNG TRANSPLA	4109	AUTO BONE MT W PURGING
375	*HEART TRANSPLANTATION*	5051	AUXILIARY LIVER TRANSPL
3751	HEART TRANSPLANTATION	5059	LIVER TRANSPLANT NEC
410	*OPERATIONS ON BONE MAROW AND SPLEEN*	5280	PANCREAT TRANSPLANT NOS
		5281	REIMPLANT PANCREATIC TIS
4100	BONE MARROW TRNSPLNT NOS	5282	PANCREATIC HOMOTRANSPLAN
4101	AUTO BONE MT W/O PURG	5283	PANCREATIC HETEROTRANSPL
4102	ALO BONE MARROW TRNSPLNT	5285	ALLOTRNSPLNT ISLETS LANG
4103	ALLOGRFT BONE MARROW NOS	5286	TRNSPLNT ISLETS LANG NOS
4104	AUTO HEM STEM CT W/O PUR	5569	KIDNEY TRANSPLANT NEC

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

[†] If day of procedure is not available in the input data file, the rate may be slightly lower than if the information was available

ICD-9-CM Cirrhosis diagnosis codes:

5712	ALCOHOL CIRRHOSIS LIVER	5716	BILIARY CIRRHOSIS
5715	CIRRHOSIS OF LIVER NOS		

ICD-9-CM Hepatic failure consisting of a diagnosis of coma or hepatorenal syndrome diagnosis codes:

5722	HEPATIC ENCEPHALOPATHY	5724	HEPATORENAL SYNDROME

Risk Category 1:

Elective surgical class 1 discharges, for patients ages 17 years and younger, with any-listed ICD-9-CM procedure codes for abdominopelvic surgery (see above). Elective surgical class 1 discharges are defined by specific DRG or MS-DRG codes with admission type recorded as elective (SID ATYPE=3).

DRG codes for surgical class 1:

003	CRANIOTOMY AGE 0-17	106	CORONARY BYPASS W PTCA
006	CARPAL TUNNEL RELEASE	108	OTHER CARDIOTHORACIC PROCEDURES
007	PERIPH & CRANIAL NERVE & OTHER NERV SYST PROC W CC	110	MAJOR CARDIOVASCULAR PROCEDURES W CC
008	PERIPH & CRANIAL NERVE & OTHER NERV SYST PROC W/O CC	111	MAJOR CARDIOVASCULAR PROCEDURES W/O CC
036	RETINAL PROCEDURES	113	AMPUTATION FOR CIRC SYSTEM DISORDERS EXCEPT UPPER LIMB & TOE
037	ORBITAL PROCEDURES		
038	PRIMARY IRIS PROCEDURES		
039	LENS PROCEDURES WITH OR WITHOUT VITRECTOMY	114	UPPER LIMB & TOE AMPUTATION FOR CIRC SYSTEM DISORDERS
041	EXTRAOCULAR PROCEDURES EXCEPT ORBIT AGE 0-17	117	CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT
042	INTRAOCULAR PROCEDURES EXCEPT RETINA, IRIS & LENS	118	CARDIAC PACEMAKER DEVICE REPLACEMENT
049	MAJOR HEAD & NECK PROCEDURES	119	VEIN LIGATION & STRIPPING
050	SIALOADENECTOMY	120	OTHER CIRCULATORY SYSTEM O.R. PROCEDURES
051	SALIVARY GLAND PROCEDURES EXCEPT SIALOADENECTOMY		
052	CLEFT LIP & PALATE REPAIR	163	HERNIA PROCEDURES AGE 0-17
054	SINUS & MASTOID PROCEDURES AGE 0-17	168	MOUTH PROCEDURES W CC
		169	MOUTH PROCEDURES W/O CC
055	MISCELLANEOUS EAR, NOSE, MOUTH & THROAT PROCEDURES	212	HIP & FEMUR PROCEDURES EXCEPT MAJOR JOINT AGE 0-17
056	RHINOPLASTY	213	AMPUTATION FOR MUSCULOSKELETAL SYSTEM & CONN TISSUE DISORDERS
058	T&A PROC, EXCEPT TONSILLECTOMY &/OR ADENOIDECTOMY ONLY, AGE 0-17		
060	TONSILLECTOMY &/OR ADENOIDECTOMY ONLY, AGE 0-17	216	BIOPSIES OF MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE
062	MYRINGOTOMY W TUBE INSERTION AGE 0-17	217	WND DEBRID & SKN GRFT EXCEPT HAND,FOR MUSCSKELET & CONN TISS DIS
063	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES	220	LOWER EXTREM & HUMER PROC EXCEPT HIP,FOOT,FEMUR AGE 0-17
103	HEART TRANSPLANT OR IMPLANT OF HEART ASSIST SYSTEM	223	MAJOR SHOULDER/ELBOW PROC, OR OTHER UPPER EXTREMITY PROC W CC
104	CARDIAC VALVE & OTH MAJOR CARDIOTHORACIC PROC W CARD CATH	224	SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC, W/O CC
105	CARDIAC VALVE & OTH MAJOR CARDIOTHORACIC PROC W/O CARD CATH	225	FOOT PROCEDURES
		226	SOFT TISSUE PROCEDURES W CC

227	SOFT TISSUE PROCEDURES W/O CC		498	SPINAL FUSION EXCEPT CERVICAL W/O CC
228	MAJOR THUMB OR JOINT PROC,OR OTH HAND OR WRIST PROC W CC		499	BACK & NECK PROCEDURES EXCEPT SPINAL FUSION W CC
229	HAND OR WRIST PROC, EXCEPT MAJOR JOINT PROC, W/O CC		500	BACK & NECK PROCEDURES EXCEPT SPINAL FUSION W/O CC
230	LOCAL EXCISION & REMOVAL OF INT FIX DEVICES OF HIP & FEMUR		501	KNEE PROCEDURES W PDX OF INFECTION W CC
232	ARTHROSCOPY		502	KNEE PROCEDURES W PDX OF INFECTION W/O CC
233	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W CC		503	KNEE PROCEDURES W/O PDX OF INFECTION
234	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W/O CC		515	CARDIAC DEFIBRILLATOR IMPLANT W/O CARDIAC CATH
257	TOTAL MASTECTOMY FOR MALIGNANCY W CC		518	PERC CARDIO PROC W/O CORONARY ARTERY STENT OR AMI
258	TOTAL MASTECTOMY FOR MALIGNANCY W/O CC		519	CERVICAL SPINAL FUSION W CC
259	SUBTOTAL MASTECTOMY FOR MALIGNANCY W CC		520	CERVICAL SPINAL FUSION W/O CC
260	SUBTOTAL MASTECTOMY FOR MALIGNANCY W/O CC		525	OTHER HEART ASSIST SYSTEM IMPLANT
261	BREAST PROC FOR NON-MALIGNANCY EXCEPT BIOPSY & LOCAL EXCISION		528	INTRACRANIAL VASCULAR PROC W PDX HEMORRHAGE
262	BREAST BIOPSY & LOCAL EXCISION FOR NON-MALIGNANCY		529	VENTRICULAR SHUNT PROCEDURES W CC
285	AMPUTAT OF LOWER LIMB FOR ENDOCRINE,NUTRIT,& METABOL DISORDERS		530	VENTRICULAR SHUNT PROCEDURES W/O CC
286	ADRENAL & PITUITARY PROCEDURES		531	SPINAL PROCEDURES W CC
			532	SPINAL PROCEDURES W/O CC
287	SKIN GRAFTS & WOUND DEBRID FOR ENDOC,NUTRIT & METAB DISORDERS		533	EXTRACRANIAL PROCEDURES W CC
			534	EXTRACRANIAL PROCEDURES W/O CC
289	PARATHYROID PROCEDURES		535	CARDIAC DEFIB IMPLANT W CARDIAC CATH W AMI/HF/SHOCK
290	THYROID PROCEDURES		536	CARDIAC DEFIB IMPLANT W CARDIAC CATH W/O AMI/HF/SHOCK
291	THYROGLOSSAL PROCEDURES			
292	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W CC		537	LOCAL EXCIS & REMOV OF INT FIX DEV EXCEPT HIP & FEMUR W CC
293	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W/O CC		538	LOCAL EXCIS & REMOV OF INT FIX DEV EXCEPT HIP & FEMUR W/O CC
338	TESTES PROCEDURES, FOR MALIGNANCY		543	CRANIOTOMY W MAJOR DEVICE IMPLANT OR ACUTE COMPLEX CNS PRINCIPAL DIAGNOSIS
340	TESTES PROCEDURES, NON-MALIGNANCY AGE 0-17		544	MAJOR JOINT REPLACEMENT OR REATTACHMENT OF LOWER EXTREMITY
393	SPLENECTOMY AGE 0-17			
394	OTHER O.R. PROCEDURES OF THE BLOOD AND BLOOD FORMING ORGANS		545	REVISION OF HIP OR KNEE REPLACEMENT
471	BILATERAL OR MULTIPLE MAJOR JOINT PROCS OF LOWER EXTREMITY		546	SPINAL FUSION EXC CERV WITH CURVATURE OF THE SPINE OR MALIG
479	OTHER VASCULAR PROCEDURES W/O CC		547	CORONARY BYPASS W CARDIAC CATH W MAJOR CV DX
481	BONE MARROW TRANSPLANT		548	CORONARY BYPASS W CARDIAC CATH W/O MAJOR CV DX
491	MAJOR JOINT & LIMB REATTACHMENT PROCEDURES OF UPPER EXTREMITY		549	CORONARY BYPASS W/O CARDIAC CATH W MAJOR CV DX
496	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION		550	CORONARY BYPASS W/O CARDIAC CATH W/O MAJOR CV DX
497	SPINAL FUSION EXCEPT CERVICAL W CC		551	PERMANENT CARDIAC PACEMAKER IMPL W MAJ CV DX OR AICD LEAD OR GNRTR

552	OTHER PERMANENT CARDIAC PACEMAKER IMPLANT W/O MAJOR CV DX	557	PERCUTANEOUS CARDIOVASCULAR PROC W DRUG-ELUTING STENT W MAJOR CV DX
553	OTHER VASCULAR PROCEDURES W CC W MAJOR CV DX	558	PERCUTANEOUS CARDIOVASCULAR PROC W DRUG-ELUTING STENT W/O MAJ CV DX
554	OTHER VASCULAR PROCEDURES W CC W/O MAJOR CV DX	577	CAROTID ARTERY STENT PROCEDURE
555	PERCUTANEOUS CARDIOVASCULAR PROC W MAJOR CV DX		
556	PERCUTANEOUS CARDIOVASC PROC W NON-DRUG-ELUTING STENT W/O MAJ CV DX		

MS-DRG codes for surgical class 1[1]

001	HEART TRANSPLANT OR IMPLANT OF HEART ASSIST SYSTEM W MCC		CC/MCC
002	HEART TRANSPLANT OR IMPLANT OF HEART ASSIST SYSTEM W/O MCC	040	PERIPH & CRANIAL NERVE & OTHER NERV SYST PROC W MCC
009	*BONE MARROW TRANSPLANT*	041	PERIPH/CRANIAL NERVE & OTHER NERV SYST PROC W CC OR PERIPH NEUROSTIM
014	ALLOGENIC BONE MARROW TRANSPLANT	042	PERIPH & CRANIAL NERVE & OTHER NERV SYST PROC W/O CC/MCC
016	AUTOLOGOUS BONE MARROW TRANSPLANT W CC/MCC	113	ORBITAL PROCEDURES W CC/MCC
017	AUTOLOGOUS BONE MARROW TRANSPLANT W/O CC/MCC	114	ORBITAL PROCEDURES W/O CC/MCC
020	INTRACRANIAL VASCULAR PROCEDURES W PDX HEMORRHAGE W MCC	115	EXTRAOCULAR PROCEDURES EXCEPT ORBIT
021	INTRACRANIAL VASCULAR PROCEDURES W PDX HEMORRHAGE W CC	116	INTRAOCULAR PROCEDURES W CC/MCC
022	INTRACRANIAL VASCULAR PROCEDURES W PDX HEMORRHAGE W/O CC/MCC	117	INTRAOCULAR PROCEDURES W/O CC/MCC
023	CRANIO W MAJOR DEV IMPL/ACUTE COMPLEX CNS PDX W MCC OR CHEMO IMPLANT	129	MAJOR HEAD & NECK PROCEDURES W CC/MCC OR MAJOR DEVICE
024	CRANIO W MAJOR DEV IMPL/ACUTE COMPLEX CNS PDX W/O MCC	130	MAJOR HEAD & NECK PROCEDURES W/O CC/MCC
027	CRANIOTOMY & ENDOVASCULAR INTRACRANIAL PROCEDURES W/O CC/MCC	131	CRANIAL/FACIAL PROCEDURES W CC/MCC
028	SPINAL PROCEDURES W MCC	132	CRANIAL/FACIAL PROCEDURES W/O CC/MCC
029	SPINAL PROCEDURES W CC OR SPINAL NEUROSTIMULATORS	133	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES W CC/MCC
030	SPINAL PROCEDURES W/O CC/MCC	134	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES W/O CC/MCC
031	VENTRICULAR SHUNT PROCEDURES W MCC	136	SINUS & MASTOID PROCEDURES W/O CC/MCC
032	VENTRICULAR SHUNT PROCEDURES W CC	137	MOUTH PROCEDURES W CC/MCC
033	VENTRICULAR SHUNT PROCEDURES W/O CC/MCC	138	MOUTH PROCEDURES W/O CC/MCC
034	CAROTID ARTERY STENT PROCEDURE W MCC	139	SALIVARY GLAND PROCEDURES
035	CAROTID ARTERY STENT PROCEDURE W CC	215	OTHER HEART ASSIST SYSTEM IMPLANT
036	CAROTID ARTERY STENT PROCEDURE W/O CC/MCC	216	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W CARD CATH W MCC
037	EXTRACRANIAL PROCEDURES W MCC	217	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W CARD CATH W CC
038	EXTRACRANIAL PROCEDURES W CC	218	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W CARD CATH W/O CC/MCC
039	EXTRACRANIAL PROCEDURES W/O	219	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W/O CARD CATH W MCC

220	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W/O CARD CATH W CC		DRUG-ELUTING STENT W MCC OR 4+ VES/STENTS
221	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W/O CARD CATH W/O CC/MCC	249	PERC CARDIOVASC PROC W NON-DRUG-ELUTING STENT W/O MCC
222	CARDIAC DEFIB IMPLANT W CARDIAC CATH W AMI/HF/SHOCK W MCC	250	PERC CARDIOVASC PROC W/O CORONARY ARTERY STENT OR AMI W MCC
223	CARDIAC DEFIB IMPLANT W CARDIAC CATH W AMI/HF/SHOCK W/O MCC	251	PERC CARDIOVASC PROC W/O CORONARY ARTERY STENT OR AMI W/O MCC
224	CARDIAC DEFIB IMPLANT W CARDIAC CATH W/O AMI/HF/SHOCK W MCC	252	OTHER VASCULAR PROCEDURES W MCC
225	CARDIAC DEFIB IMPLANT W CARDIAC CATH W/O AMI/HF/SHOCK W/O MCC	253	OTHER VASCULAR PROCEDURES W CC
226	CARDIAC DEFIBRILLATOR IMPLANT W/O CARDIAC CATH W MCC	254	OTHER VASCULAR PROCEDURES W/O CC/MCC
227	CARDIAC DEFIBRILLATOR IMPLANT W/O CARDIAC CATH W/O MCC	255	UPPER LIMB & TOE AMPUTATION FOR CIRC SYSTEM DISORDERS W MCC
228	OTHER CARDIOTHORACIC PROCEDURES W MCC	256	UPPER LIMB & TOE AMPUTATION FOR CIRC SYSTEM DISORDERS W CC
229	OTHER CARDIOTHORACIC PROCEDURES W CC	257	UPPER LIMB & TOE AMPUTATION FOR CIRC SYSTEM DISORDERS W/O CC/MCC
230	OTHER CARDIOTHORACIC PROCEDURES W/O CC/MCC	258	CARDIAC PACEMAKER DEVICE REPLACEMENT W MCC
231	CORONARY BYPASS W PTCA W MCC	259	CARDIAC PACEMAKER DEVICE REPLACEMENT W/O MCC
232	CORONARY BYPASS W PTCA W/O MCC	260	CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT W MCC
233	CORONARY BYPASS W CARDIAC CATH W MCC	261	CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT W CC
234	CORONARY BYPASS W CARDIAC CATH W/O MCC	262	CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT W/O CC/MCC
235	CORONARY BYPASS W/O CARDIAC CATH W MCC	263	VEIN LIGATION & STRIPPING
236	CORONARY BYPASS W/O CARDIAC CATH W/O MCC	264	OTHER CIRCULATORY SYSTEM O.R. PROCEDURES
237	MAJOR CARDIOVASC PROCEDURES W MCC	352	INGUINAL & FEMORAL HERNIA PROCEDURES W/O CC/MCC
238	MAJOR CARDIOVASCULAR PROCEDURES W/O MCC	453	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION W MCC
239	AMPUTATION FOR CIRC SYS DISORDERS EXC UPPER LIMB & TOE W MCC	454	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION W CC
240	AMPUTATION FOR CIRC SYS DISORDERS EXC UPPER LIMB & TOE W CC	455	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION W/O CC/MCC
241	AMPUTATION FOR CIRC SYS DISORDERS EXC UPPER LIMB & TOE W/O CC/MCC	456	SPINAL FUS EXC CERV W SPINAL CURV/MALIG/INFEC OR 9+ FUS W MCC
242	PERMANENT CARDIAC PACEMAKER IMPLANT W MCC	457	SPINAL FUS EXC CERV W SPINAL CURV/MALIG/INFEC OR 9+ FUS W CC
243	PERMANENT CARDIAC PACEMAKER IMPLANT W CC	458	SPINAL FUS EXC CERV W SPINAL CURV/MALIG/INFEC OR 9+ FUS W/O CC/MCC
244	PERMANENT CARDIAC PACEMAKER IMPLANT W/O CC/MCC	459	SPINAL FUSION EXCEPT CERVICAL W MCC
245	AICD GENERATOR PROCEDURES	460	SPINAL FUSION EXCEPT CERVICAL W/O MCC
246	PERC CARDIOVASC PROC W DRUG-ELUTING STENT W MCC OR 4+ VESSELS/STENTS	461	BILATERAL OR MULTIPLE MAJOR JOINT PROCS OF LOWER EXTREMITY W MCC
247	PERC CARDIOVASC PROC W DRUG-ELUTING STENT W/O MCC	462	BILATERAL OR MULTIPLE MAJOR
248	PERC CARDIOVASC PROC W NON-		

	JOINT PROCS OF LOWER EXTREMITY W/O MCC		FUSION W CC/MCC OR DISC DEVICE/NEUROSTIM
463	WND DEBRID & SKN GRFT EXC HAND, FOR MUSCULO-CONN TISS DIS W MCC	491	BACK & NECK PROC EXC SPINAL FUSION W/O CC/MCC
464	WND DEBRID & SKN GRFT EXC HAND, FOR MUSCULO-CONN TISS DIS W CC	494	LOWER EXTREM & HUMER PROC EXCEPT HIP,FOOT,FEMUR W/O CC/MCC
465	WND DEBRID & SKN GRFT EXC HAND, FOR MUSCULO-CONN TISS DIS W/O CC/MCC	495	LOCAL EXCISION & REMOVAL INT FIX DEVICES EXC HIP & FEMUR W MCC
466	REVISION OF HIP OR KNEE REPLACEMENT W MCC	496	LOCAL EXCISION & REMOVAL INT FIX DEVICES EXC HIP & FEMUR W CC
467	REVISION OF HIP OR KNEE REPLACEMENT W CC	497	LOCAL EXCISION & REMOVAL INT FIX DEVICES EXC HIP & FEMUR W/O CC/MCC
468	REVISION OF HIP OR KNEE REPLACEMENT W/O CC/MCC	498	LOCAL EXCISION & REMOVAL INT FIX DEVICES OF HIP & FEMUR W CC/MCC
469	MAJOR JOINT REPLACEMENT OR REATTACHMENT OF LOWER EXTREMITY W MCC	499	LOCAL EXCISION & REMOVAL INT FIX DEVICES OF HIP & FEMUR W/O CC/MCC
470	MAJOR JOINT REPLACEMENT OR REATTACHMENT OF LOWER EXTREMITY W/O MCC	500	SOFT TISSUE PROCEDURES W MCC
471	CERVICAL SPINAL FUSION W MCC	501	SOFT TISSUE PROCEDURES W CC
472	CERVICAL SPINAL FUSION W CC	502	SOFT TISSUE PROCEDURES W/O CC/MCC
473	CERVICAL SPINAL FUSION W/O CC/MCC	503	FOOT PROCEDURES W MCC
474	AMPUTATION FOR MUSCULOSKELETAL SYS & CONN TISSUE DIS W MCC	504	FOOT PROCEDURES W CC
		505	FOOT PROCEDURES W/O CC/MCC
		506	MAJOR THUMB OR JOINT PROCEDURES
475	AMPUTATION FOR MUSCULOSKELETAL SYS & CONN TISSUE DIS W CC	507	MAJOR SHOULDER OR ELBOW JOINT PROCEDURES W CC/MCC
476	AMPUTATION FOR MUSCULOSKELETAL SYS & CONN TISSUE DIS W/O CC/MCC	508	MAJOR SHOULDER OR ELBOW JOINT PROCEDURES W/O CC/MCC
		509	ARTHROSCOPY
477	BIOPSIES OF MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W MCC	510	SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC W MCC
478	BIOPSIES OF MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W CC	511	SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC W CC
479	BIOPSIES OF MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W/O CC/MCC	512	SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC W/O CC/MCC
482	HIP & FEMUR PROCEDURES EXCEPT MAJOR JOINT W/O CC/MCC	513	HAND OR WRIST PROC, EXCEPT MAJOR THUMB OR JOINT PROC W CC/MCC
483	MAJOR JOINT & LIMB REATTACHMENT PROC OF UPPER EXTREMITY W CC/MCC	514	HAND OR WRIST PROC, EXCEPT MAJOR THUMB OR JOINT PROC W/O CC/MCC
484	MAJOR JOINT & LIMB REATTACHMENT PROC OF UPPER EXTREMITY W/O CC/MCC	515	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W MCC
485	KNEE PROCEDURES W PDX OF INFECTION W MCC	516	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W CC
486	KNEE PROCEDURES W PDX OF INFECTION W CC	517	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W/O CC/MCC
487	KNEE PROCEDURES W PDX OF INFECTION W/O CC/MCC	582	MASTECTOMY FOR MALIGNANCY W CC/MCC
488	KNEE PROCEDURES W/O PDX OF INFECTION W CC/MCC	583	MASTECTOMY FOR MALIGNANCY W/O CC/MCC
489	KNEE PROCEDURES W/O PDX OF INFECTION W/O CC/MCC	584	BREAST BIOPSY, LOCAL EXCISION & OTHER BREAST PROCEDURES W CC/MCC
490	BACK & NECK PROC EXC SPINAL	585	BREAST BIOPSY, LOCAL EXCISION &

	OTHER BREAST PROCEDURES W/O CC/MCC		MCC
614	ADRENAL & PITUITARY PROCEDURES W CC/MCC	626	THYROID, PARATHYROID & THYROGLOSSAL PROCEDURES W CC
615	ADRENAL & PITUITARY PROCEDURES W/O CC/MCC	627	THYROID, PARATHYROID & THYROGLOSSAL PROCEDURES W/O CC/MCC
616	AMPUTAT OF LOWER LIMB FOR ENDOCRINE,NUTRIT,& METABOL DIS W MCC	628	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W MCC
617	AMPUTAT OF LOWER LIMB FOR ENDOCRINE,NUTRIT,& METABOL DIS W CC	629	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W CC
618	AMPUTAT OF LOWER LIMB FOR ENDOCRINE,NUTRIT,& METABOL DIS W/O CC/MCC	630	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W/O CC/MCC
		711	TESTES PROCEDURES W CC/MCC
		712	TESTES PROCEDURES W/O CC/MCC
622	SKIN GRAFTS & WOUND DEBRID FOR ENDOC, NUTRIT & METAB DIS W MCC	799	SPLENECTOMY W MCC
		800	SPLENECTOMY W CC
623	SKIN GRAFTS & WOUND DEBRID FOR ENDOC, NUTRIT & METAB DIS W CC	801	SPLENECTOMY W/O CC/MCC
		802	OTHER O.R. PROC OF THE BLOOD & BLOOD FORMING ORGANS W MCC
624	SKIN GRAFTS & WOUND DEBRID FOR ENDOC, NUTRIT & METAB DIS W/O CC/MCC	803	OTHER O.R. PROC OF THE BLOOD & BLOOD FORMING ORGANS W CC
		804	OTHER O.R. PROC OF THE BLOOD & BLOOD FORMING ORGANS W/O CC/MCC
625	THYROID, PARATHYROID & THYROGLOSSAL PROCEDURES W		

[1] The DRG/MS-DRG codes are continuously updated. The current list of DRG/MS-DRG codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

Exclude cases:
- where the procedure for abdominal wall reclosure (see above) occurs on or before the day of the first abdominopelvic surgery procedure (see above)[†]
- with any-listed ICD-9-CM procedure codes for gastroschisis or umbilical hernia repair in newborns (omphalacele repair, see above) performed before abdominal wall reclosure (see above)
- with any-listed ICD-9-CM diagnosis codes for high-risk immunocompromised state
- with any-listed ICD-9-CM diagnosis codes for intermediate-risk immunocompromised state
- with any-listed ICD-9-CM procedure codes for transplant (see above)
- with any-listed ICD-9-CM diagnosis codes for cirrhosis (see above) and any-listed ICD-9-CM diagnosis codes for hepatic failure consisting of a diagnosis of coma or hepatorenal syndrome (see above)
- with length of stay less than two (2) days
- neonates with birth weight less than 500 grams (Birth Weight Category 1)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix F – High-Risk Immunocompromised States
- Appendix G – Intermediate-Risk Immunocompromised States
- Appendix I – Definitions of Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

Risk Category 2:

Non-elective surgical class 1 discharges, for patients ages 17 years and younger, with any-listed ICD-9-CM procedure codes for abdominopelvic surgery (see above). Non-elective surgical class 1 discharges are defined by specific DRG or MS-DRG codes (see above) with admission type recorded as non-elective (SID ATYPE not equal to 3).

Exclude cases:
- where the procedure for abdominal wall reclosure (see above) occurs on or before the day of the first abdominopelvic surgery procedure (see above)[†]
- with any-listed ICD-9-CM procedure codes for gastroschisis or umbilical hernia repair in newborns (omphalacele repair, see above) performed before abdominal wall reclosure (see above)
- with any-listed ICD-9-CM diagnosis codes for high-risk immunocompromised state
- with any-listed ICD-9-CM diagnosis codes for intermediate-risk immunocompromised state
- with any-listed ICD-9-CM procedure codes for transplant (see above)
- with any-listed ICD-9-CM diagnosis codes for cirrhosis (see above) and any-listed ICD-9-CM diagnosis codes for hepatic failure consisting of a diagnosis of coma or hepatorenal syndrome (see above)
- with length of stay less than two (2) days
- neonates with birth weight less than 500 grams (Birth Weight Category 1)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix F – High-Risk Immunocompromised States
- Appendix G – Intermediate-Risk Immunocompromised States
- Appendix I – Definitions of Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

Risk Category 3:

Elective surgical class 2, 3, or 9 discharges, for patients ages 17 years and younger, with any-listed ICD-9-CM procedure codes for abdominopelvic surgery (see above). Elective surgical class 2, 3, or 9 discharges are defined by specific DRG or MS-DRG codes with admission type recorded as elective (SID ATYPE=3).

DRG codes for surgical class 2

075	MAJOR CHEST PROCEDURES	147	RECTAL RESECTION W/O CC
076	OTHER RESP SYSTEM O.R. PROCEDURES W CC	149	MAJOR SMALL & LARGE BOWEL PROCEDURES W/O CC
077	OTHER RESP SYSTEM O.R. PROCEDURES W/O CC	150	PERITONEAL ADHESIOLYSIS W CC
146	RECTAL RESECTION W CC	151	PERITONEAL ADHESIOLYSIS W/O CC

152	MINOR SMALL & LARGE BOWEL PROCEDURES W CC
153	MINOR SMALL & LARGE BOWEL PROCEDURES W/O CC
156	STOMACH, ESOPHAGEAL & DUODENAL PROCEDURES AGE 0-17
157	ANAL & STOMAL PROCEDURES W CC
158	ANAL & STOMAL PROCEDURES W/O CC
166	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W CC
167	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W/O CC
170	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W CC
171	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W/O CC
191	PANCREAS, LIVER & SHUNT PROCEDURES W CC
192	PANCREAS, LIVER & SHUNT PROCEDURES W/O CC
193	BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W CC
194	BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W/O CC
195	CHOLECYSTECTOMY W C.D.E. W CC
196	CHOLECYSTECTOMY W C.D.E. W/O CC
197	CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W CC
198	CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W/O CC
199	HEPATOBILIARY DIAGNOSTIC PROCEDURE FOR MALIGNANCY
200	HEPATOBILIARY DIAGNOSTIC PROCEDURE FOR NON-MALIGNANCY
201	OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES
265	SKIN GRAFT &/OR DEBRID EXCEPT FOR SKIN ULCER OR CELLULITIS W CC
266	SKIN GRAFT &/OR DEBRID EXCEPT FOR SKIN ULCER OR CELLULITIS W/O CC
267	PERIANAL & PILONIDAL PROCEDURES
268	SKIN, SUBCUTANEOUS TISSUE & BREAST PLASTIC PROCEDURES
269	OTHER SKIN, SUBCUT TISS & BREAST PROC W CC
270	OTHER SKIN, SUBCUT TISS & BREAST PROC W/O CC
288	O.R. PROCEDURES FOR OBESITY
302	KIDNEY TRANSPLANT
303	KIDNEY AND URETER PROCEDURES FOR NEOPLASM
304	KIDNEY AND URETER PROCEDURES FOR NON-NEOPLASM WITHOUT CC
305	KIDNEY AND URETER PROCEDURES FOR NON-NEOPLASM WITHOUT CC
306	PROSTATECTOMY W CC
307	PROSTATECTOMY W/O CC
308	MINOR BLADDER PROCEDURES W CC

309	MINOR BLADDER PROCEDURES W/O CC
310	TRANSURETHRAL PROCEDURES W CC
311	TRANSURETHRAL PROCEDURES W/O CC
314	URETHRAL PROCEDURES, AGE 0-17
315	OTHER KIDNEY & URINARY TRACT O.R. PROCEDURES
334	MAJOR MALE PELVIC PROCEDURES W CC
335	MAJOR MALE PELVIC PROCEDURES W/O CC
336	TRANSURETHRAL PROSTATECTOMY W CC
337	TRANSURETHRAL PROSTATECTOMY W/O CC
341	PENIS PROCEDURES
343	CIRCUMCISION AGE 0-17
344	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROCEDURES FOR MALIGNANCY
345	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC EXCEPT FOR MALIGNANCY
353	PELVIC EVISCERATION, RADICAL HYSTERECTOMY & RADICAL VULVECTOMY
354	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W CC
355	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W/O CC
356	FEMALE REPRODUCTIVE SYSTEM RECONSTRUCTIVE PROCEDURES
357	UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIGNANCY
358	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W CC
359	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W/O CC
360	VAGINA, CERVIX & VULVA PROCEDURES
361	LAPAROSCOPY & INCISIONAL TUBAL INTERRUPTION
362	ENDOSCOPIC TUBAL INTERRUPTION
363	D&C, CONIZATION & RADIO-IMPLANT, FOR MALIGNANCY
364	D&C, CONIZATION EXCEPT FOR MALIGNANCY
365	OTHER FEMALE REPRODUCTIVE SYSTEM O.R. PROCEDURES
370	CESAREAN SECTION W CC
371	CESAREAN SECTION W/O CC
372	VAGINAL DELIVERY W COMPLICATING DIAGNOSES
373	VAGINAL DELIVERY W/O COMPLICATING DIAGNOSES
374	VAGINAL DELIVERY W STERILIZATION &/OR D&C
375	VAGINAL DELIVERY W O.R. PROC EXCEPT STERIL &/OR D&C
377	POSTPARTUM & POST ABORTION DIAGNOSES W O.R. PROCEDURE

381	ABORTION W D&C, ASPIRATION CURETTAGE OR HYSTEROTOMY		495	LUNG TRANSPLANT
468	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS		512	SIMULTANEOUS PANCREAS/KIDNEY TRANSPLANT
476	PROSTATIC O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS		513	PANCREAS TRANSPLANT
477	NON-EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS		541	ECMO OR TRACH W MV 96+HRS OR PDX EXC FACE, MOUTH & NECK W MAJ O.R.
480	LIVER TRANSPLANT AND/OR INTESTINAL TRANSPLANT		542	TRACH W MV 96+HRS OR PDX EXC FACE, MOUTH & NECK W/O MAJ O.R.
482	TRACHEOSTOMY FOR FACE,MOUTH & NECK DIAGNOSES		559	ACUTE ISCHEMIC STROKE WITH USE OF THROMBOLYTIC AGENT
493	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W CC		569	MAJOR SMALL & LARGE BOWEL PROCEDURES W CC W MAJOR GI DX
494	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W/O CC		570	MAJOR SMALL & LARGE BOWEL PROCEDURES W CC W/O MAJOR GI DX
			573	MAJOR BLADDER PROCEDURES

MS-DRG codes for surgical class 2

003	ECMO OR TRACH W MV 96+ HRS OR PDX EXC FACE, MOUTH & NECK W MAJ O.R.		333	RECTAL RESECTION W CC
			334	RECTAL RESECTION W/O CC/MCC
			335	PERITONEAL ADHESIOLYSIS W MCC
004	TRACH W MV 96+ HRS OR PDX EXC FACE, MOUTH & NECK W/O MAJ O.R.		336	PERITONEAL ADHESIOLYSIS W CC
			337	PERITONEAL ADHESIOLYSIS W/O CC/MCC
005	LIVER TRANSPLANT W MCC OR INTESTINAL TRANSPLANT		341	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W MCC
006	LIVER TRANSPLANT W/O MCC		342	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W CC
007	LUNG TRANSPLANT			
008	SIMULTANEOUS PANCREAS/KIDNEY TRANSPLANT		343	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W/O CC/MCC
010	PANCREAS TRANSPLANT		344	MINOR SMALL & LARGE BOWEL PROCEDURES W MCC
011	TRACHEOSTOMY FOR FACE,MOUTH & NECK DIAGNOSES W MCC		345	MINOR SMALL & LARGE BOWEL PROCEDURES W CC
012	TRACHEOSTOMY FOR FACE,MOUTH & NECK DIAGNOSES W CC		346	MINOR SMALL & LARGE BOWEL PROCEDURES W/O CC/MCC
013	TRACHEOSTOMY FOR FACE,MOUTH & NECK DIAGNOSES W/O CC/MCC		347	ANAL & STOMAL PROCEDURES W MCC
			348	ANAL & STOMAL PROCEDURES W CC
061	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W MCC		349	ANAL & STOMAL PROCEDURES W/O CC/MCC
062	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W CC		356	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W MCC
063	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W/O CC/MCC		357	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W CC
163	MAJOR CHEST PROCEDURES W MCC		358	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W/O CC/MCC
164	MAJOR CHEST PROCEDURES W CC			
165	MAJOR CHEST PROCEDURES W/O CC/MCC		405	PANCREAS, LIVER & SHUNT PROCEDURES W MCC
166	OTHER RESP SYSTEM O.R. PROCEDURES W MCC		406	PANCREAS, LIVER & SHUNT PROCEDURES W CC
167	OTHER RESP SYSTEM O.R. PROCEDURES W CC		407	PANCREAS, LIVER & SHUNT PROCEDURES W/O CC/MCC
168	OTHER RESP SYSTEM O.R. PROCEDURES W/O CC/MCC		408	BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W MCC
327	STOMACH, ESOPHAGEAL & DUODENAL PROC W CC		409	BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W CC
329	MAJOR SMALL & LARGE BOWEL PROCEDURES W MCC		410	BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W/O CC/MCC
330	MAJOR SMALL & LARGE BOWEL PROCEDURES W CC			
331	MAJOR SMALL & LARGE BOWEL PROCEDURES W/O CC/MCC		411	CHOLECYSTECTOMY W C.D.E. W MCC
332	RECTAL RESECTION W MCC		412	CHOLECYSTECTOMY W C.D.E. W CC

413	CHOLECYSTECTOMY W C.D.E. W/O CC/MCC		660	KIDNEY & URETER PROCEDURES FOR NON-NEOPLASM W CC
414	CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W MCC		661	KIDNEY & URETER PROCEDURES FOR NON-NEOPLASM W/O CC/MCC
415	CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W CC		662	MINOR BLADDER PROCEDURES W MCC
416	CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W/O CC/MCC		663	MINOR BLADDER PROCEDURES W CC
			664	MINOR BLADDER PROCEDURES W/O CC/MCC
417	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W MCC		665	PROSTATECTOMY W MCC
			666	PROSTATECTOMY W CC
418	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W CC		667	PROSTATECTOMY W/O CC/MCC
419	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W/O CC/MCC		668	TRANSURETHRAL PROCEDURES W MCC
			669	TRANSURETHRAL PROCEDURES W CC
420	HEPATOBILIARY DIAGNOSTIC PROCEDURES W MCC		670	TRANSURETHRAL PROCEDURES W/O CC/MCC
421	HEPATOBILIARY DIAGNOSTIC PROCEDURES W CC		672	URETHRAL PROCEDURES W/O CC/MCC
422	HEPATOBILIARY DIAGNOSTIC PROCEDURES W/O CC/MCC		673	OTHER KIDNEY & URINARY TRACT PROCEDURES W MCC
423	OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES W MCC		674	OTHER KIDNEY & URINARY TRACT PROCEDURES W CC
424	OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES W CC		675	OTHER KIDNEY & URINARY TRACT PROCEDURES W/O CC/MCC
425	OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES W/O CC/MCC		707	MAJOR MALE PELVIC PROCEDURES W CC/MCC
			708	MAJOR MALE PELVIC PROCEDURES W/O CC/MCC
576	SKIN GRAFT EXC FOR SKIN ULCER OR CELLULITIS W MCC		709	PENIS PROCEDURES W CC/MCC
577	SKIN GRAFT EXC FOR SKIN ULCER OR CELLULITIS W CC		710	PENIS PROCEDURES W/O CC/MCC
578	SKIN GRAFT EXC FOR SKIN ULCER OR CELLULITIS W/O CC/MC		713	TRANSURETHRAL PROSTATECTOMY W CC/MCC
579	OTHER SKIN, SUBCUT TISS & BREAST PROC W MCC		714	TRANSURETHRAL PROSTATECTOMY W/O CC/MCC
580	OTHER SKIN, SUBCUT TISS & BREAST PROC W CC		715	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC FOR MALIGNANCY W CC/MCC
581	OTHER SKIN, SUBCUT TISS & BREAST PROC W/O CC/MCC		716	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC FOR MALIGNANCY W/O CC/MCC
619	O.R. PROCEDURES FOR OBESITY W MCC		717	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC EXC MALIGNANCY W CC/MCC
620	O.R. PROCEDURES FOR OBESITY W CC		718	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC EXC MALIGNANCY W/O CC/MCC
621	O.R. PROCEDURES FOR OBESITY W/O CC/MCC			
652	KIDNEY TRANSPLANT		734	PELVIC EVISCERATION, RAD HYSTERECTOMY & RAD VULVECTOMY W CC/MCC
653	MAJOR BLADDER PROCEDURES W MCC			
654	MAJOR BLADDER PROCEDURES W CC		735	PELVIC EVISCERATION, RAD HYSTERECTOMY & RAD VULVECTOMY W/O CC/MCC
655	MAJOR BLADDER PROCEDURES W/O CC/MCC			
656	KIDNEY & URETER PROCEDURES FOR NEOPLASM W MCC		736	UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIGNANCY W MCC
657	KIDNEY & URETER PROCEDURES FORNEOPLASM W CC			
658	KIDNEY & URETER PROCEDURES FOR NEOPLASM W/O CC/MCC		737	UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIGNANCY W CC
659	KIDNEY & URETER PROCEDURES FOR NON-NEOPLASM W MCC			

738	UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIGNANCY W/O CC/MCC
739	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W MCC
740	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W CC
741	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W/O CC/MCC
742	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W CC/MCC
743	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W/O CC/MCC
744	D&C, CONIZATION, LAPAROSCOPY & TUBAL INTERRUPTION W CC/MCC
745	D&C, CONIZATION, LAPAROSCOPY & TUBAL INTERRUPTION W/O CC/MCC
746	VAGINA, CERVIX & VULVA PROCEDURES W CC/MCC
747	VAGINA, CERVIX & VULVA PROCEDURES W/O CC/MCC
748	FEMALE REPRODUCTIVE SYSTEM RECONSTRUCTIVE PROCEDURES
749	OTHER FEMALE REPRODUCTIVE SYSTEM O.R. PROCEDURES W CC/MCC
750	OTHER FEMALE REPRODUCTIVE SYSTEM O.R. PROCEDURES W/O CC/MCC
765	CESAREAN SECTION W CC/MCC
766	CESAREAN SECTION W/O CC/MCC
767	VAGINAL DELIVERY W STERILIZATION &/OR D&C
768	VAGINAL DELIVERY W O.R. PROC EXCEPT STERIL &/OR D&C

769	POSTPARTUM & POST ABORTION DIAGNOSES W O.R. PROCEDURE
770	ABORTION W D&C, ASPIRATION CURETTAGE OR HYSTEROTOMY
774	VAGINAL DELIVERY W COMPLICATING DIAGNOSES
775	VAGINAL DELIVERY W/O COMPLICATING DIAGNOSES
981	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W MCC
982	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W CC
983	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W/O CC/MCC
984	PROSTATIC O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W MCC
985	PROSTATIC O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W CC
986	PROSTATIC O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W/O CC/MCC
987	NON-EXTENSIVE O.R. PROC UNRELATED TO PRINCIPAL DIAGNOSIS W MCC
988	NON-EXTENSIVE O.R. PROC UNRELATED TO PRINCIPAL DIAGNOSIS W CC
989	NON-EXTENSIVE O.R. PROC UNRELATED TO PRINCIPAL DIAGNOSIS W/O CC/MCC

DRG codes for surgical class 3

263	SKIN GRAFT &/OR DEBRID FOR SKN ULCER OR CELLULITIS W CC
264	SKIN GRAFT &/OR DEBRID FOR SKN ULCER OR CELLULITIS W/O CC
439	SKIN GRAFTS FOR INJURIES
440	WOUND DEBRIDEMENTS FOR INJURIES
441	HAND PROCEDURES FOR INJURIES
442	OTHER O.R. PROCEDURES FOR INJURIES W CC
443	OTHER O.R. PROCEDURES FOR INJURIES W/O CC
484	CRANIOTOMY FOR MULTIPLE SIGNIFICANT TRAUMA

485	LIMB REATTACHMENT, HIP AND FEMUR PROC FOR MULTIPLE SIGNIFICANT TRAUMA
486	OTHER O.R. PROCEDURES FOR MULTIPLE SIGNIFICANT TRAUMA
504	EXTEN. BURNS OR FULL THICKNESS BURN W/MV 96+HRS W/SKIN GFT
506	FULL THICKNESS BURN W SKIN GRAFT OR INHAL INJ W CC OR SIG TRAUMA
507	FULL THICKNESS BURN W SKIN GRFT OR INHAL INJ W/O CC OR SIG TRAUMA

MS-DRG codes for surgical class 3

570	SKIN DEBRIDEMENT W MCC
571	SKIN DEBRIDEMENT W CC
572	SKIN DEBRIDEMENT W/O CC/MCC
573	SKIN GRAFT FOR SKIN ULCER OR CELLULITIS W MCC
574	SKIN GRAFT FOR SKIN ULCER OR CELLULITIS W CC

575	SKIN GRAFT FOR SKIN ULCER OR CELLULITIS W/O CC/MCC
901	WOUND DEBRIDEMENTS FOR INJURIES W MCC
902	WOUND DEBRIDEMENTS FOR INJURIES W CC

903	WOUND DEBRIDEMENTS FOR INJURIES W/O CC/MCC		929	FULL THICKNESS BURN W SKIN GRAFT OR INHAL INJ W/O CC/MCC
904	SKIN GRAFTS FOR INJURIES W CC/MCC		955	CRANIOTOMY FOR MULTIPLE SIGNIFICANT TRAUMA
905	SKIN GRAFTS FOR INJURIES W/O CC/MCC		956	LIMB REATTACHMENT, HIP & FEMUR PROC FOR MULTIPLE SIGNIFICANT TRAUMA
906	HAND PROCEDURES FOR INJURIES			
907	OTHER O.R. PROCEDURES FOR INJURIES W MCC		957	OTHER O.R. PROCEDURES FOR MULTIPLE SIGNIFICANT TRAUMA W MCC
908	OTHER O.R. PROCEDURES FOR INJURIES W CC		958	OTHER O.R. PROCEDURES FOR MULTIPLE SIGNIFICANT TRAUMA W CC
909	OTHER O.R. PROCEDURES FOR INJURIES W/O CC/MCC		959	OTHER O.R. PROCEDURES FOR MULTIPLE SIGNIFICANT TRAUMA W/O CC/MCC
927	EXTENSIVE BURNS OR FULL THICKNESS BURNS W MV 96+ HRS W SKIN GRAFT			
928	FULL THICKNESS BURN W SKIN GRAFT OR INHAL INJ W CC/MCC			

DRG codes for surgical class 9

401	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W CC		424	O.R. PROCEDURE W PRINCIPAL DIAGNOSES OF MENTAL ILLNESS
402	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W/O CC		461	O.R. PROC W DIAGNOSES OF OTHER CONTACT W HEALTH SERVICES
406	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R.PROC W CC		488	HIV W EXTENSIVE O.R. PROCEDURE
407	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R.PROC W/O CC		539	LYMPHOMA & LEUKEMIA W MAJOR OR PROCEDURE W CC
408	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W OTHER O.R.PROC		540	LYMPHOMA & LEUKEMIA W MAJOR OR PROCEDURE W/O CC

MS-DRG codes for surgical class 9

820	LYMPHOMA & LEUKEMIA W MAJOR O.R. PROCEDURE W MCC			CC/MCC
821	LYMPHOMA & LEUKEMIA W MAJOR O.R. PROCEDURE W CC		830	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W OTHER O.R. PROC W/O CC/MCC
822	LYMPHOMA & LEUKEMIA W MAJOR O.R. PROCEDURE W/O CC/MCC		876	O.R. PROCEDURE W PRINCIPAL DIAGNOSES OF MENTAL ILLNESS
823	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W MCC		939	O.R. PROC W DIAGNOSES OF OTHER CONTACT W HEALTH SERVICES W MCC
824	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W CC			
825	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W/O CC/MCC		940	O.R. PROC W DIAGNOSES OF OTHER CONTACT W HEALTH SERVICES W CC
826	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R. PROC W MCC		941	O.R. PROC W DIAGNOSES OF OTHER CONTACT W HEALTH SERVICES W/O CC/MCC
827	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R. PROC W CC		969	HIV W EXTENSIVE O.R. PROCEDURE W MCC
828	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R. PROC W/O CC/MCC		970	HIV W EXTENSIVE O.R. PROCEDURE W/O MCC
829	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W OTHER O.R. PROC W			

Exclude cases:
- where the procedure for abdominal wall reclosure (see above) occurs on or before the day of the first abdominopelvic surgery procedure (see above)[†]

- with any-listed ICD-9-CM procedure codes for gastroschisis or umbilical hernia repair in newborns (omphalacele repair, see above) performed before abdominal wall reclosure (see above)
- with any-listed ICD-9-CM diagnosis codes for high-risk immunocompromised state
- with any-listed ICD-9-CM diagnosis codes for intermediate-risk immunocompromised state
- with any-listed ICD-9-CM procedure codes for transplant (see above)
- with any-listed ICD-9-CM diagnosis codes for cirrhosis (see above) and any-listed ICD-9-CM diagnosis codes for hepatic failure consisting of a diagnosis of coma or hepatorenal syndrome (see above)
- with length of stay less than two (2) days
- neonates with birth weight less than 500 grams (Birth Weight Category 1)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix F – High-Risk Immunocompromised States
- Appendix G – Intermediate-Risk Immunocompromised States
- Appendix I – Definitions of Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

Risk Category 4:

Non-elective surgical class 2, 3, or 9 discharges, for patients ages 17 years and younger, with any-listed ICD-9-CM procedure codes for abdominopelvic surgery (see above). Non-elective surgical class 2, 3, or 9 discharges are defined by specific DRG or MS-DRG codes (see above) with admission type recorded as non-elective (SID ATYPE not equal to 3).

Exclude cases:
- where the procedure for abdominal wall reclosure (see above) occurs on or before the day of the first abdominopelvic surgery procedure (see above)[†]
- with any-listed ICD-9-CM procedure codes for gastroschisis or umbilical hernia repair in newborns (omphalacele repair, see above) performed before abdominal wall reclosure (see above)
- with any-listed ICD-9-CM diagnosis codes for high-risk immunocompromised state
- with any-listed ICD-9-CM diagnosis codes for intermediate-risk immunocompromised state
- with any-listed ICD-9-CM procedure codes for transplant (see above)
- with any-listed ICD-9-CM diagnosis codes for cirrhosis (see above) and any-listed ICD-9-CM diagnosis codes for hepatic failure consisting of a diagnosis of coma or hepatorenal syndrome (see above)
- with length of stay less than two (2) days
- neonates with birth weight less than 500 grams (Birth Weight Category 1)

- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix F – High-Risk Immunocompromised States
- Appendix G – Intermediate-Risk Immunocompromised States
- Appendix I – Definitions of Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

Risk Category 9:

Discharges not meeting the inclusion rules for Risk Category 1 through Risk Category 4, for patients ages 17 years and younger, with any-listed ICD-9-CM procedure codes for abdominopelvic surgery.

Exclude cases:
- where the procedure for abdominal wall reclosure (see above) occurs on or before the day of the first abdominopelvic surgery procedure (see above)[†]
- with any-listed ICD-9-CM procedure codes for gastroschisis or umbilical hernia repair in newborns (omphalacele repair, see above) performed before abdominal wall reclosure (see above)
- with any-listed ICD-9-CM diagnosis codes for high-risk immunocompromised state
- with any-listed ICD-9-CM diagnosis codes for intermediate-risk immunocompromised state
- with any-listed ICD-9-CM procedure codes for transplant (see above)
- with any-listed ICD-9-CM diagnosis codes for cirrhosis (see above) and any-listed ICD-9-CM diagnosis codes for hepatic failure consisting of a diagnosis of coma or hepatorenal syndrome (see above)
- with length of stay less than two (2) days
- neonates with birth weight less than 500 grams (Birth Weight Category 1)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix F – High-Risk Immunocompromised States
- Appendix G – Intermediate-Risk Immunocompromised States
- Appendix I – Definitions of Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

Central Venous Catheter-Related Blood Stream Infection Rate
Technical Specifications

Pediatric Quality Indicators #12 (PDI #12)
AHRQ Quality Indicators[TM], Version 4.5, May 2013
Provider-Level Indicator
Type of Score: Rate

Description

Central venous catheter-related bloodstream infections (secondary diagnosis) per 1,000 medical and surgical discharges for patients ages 17 years and younger. Includes metrics for discharges grouped by risk category. Excludes cases with a principal diagnosis of a central venous catheter-related bloodstream infection, cases with a secondary diagnosis of a central venous catheter-related bloodstream infection present on admission, normal newborns, neonates with a birth weight of less than 500 grams, cases with stays less than two (2) days, and obstetric cases.

[NOTE: The software provides the rate per hospital discharge. However, common practice reports the measure as per 1,000 discharges. The user must multiply the rate obtained from the software by 1,000 to report events per 1,000 hospital discharges.]

[NOTE: To obtain stratified results, the user must run the PDSASG2.SAS program in the SAS QI Software Version 4.5 or choose to stratify by risk category in the Windows QI Software Version 4.5]

Numerator

Overall:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for selected infections.

For discharges prior to October 1, 2007, the selected infections are:

ICD-9-CM Hospital-associated infection diagnosis codes[1]:

99662	REACT-OTH VASC DEV/GRAFT	*9993* *OTHER INFECTION*

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

For discharges on or after October 1, 2007 but before October 1, 2011, the selected infection is:

ICD-9-CM Central venous catheter-related blood stream infection diagnosis code:
99931   OTH/UNS INF-CEN VEN CATH

For discharges on or after October 1, 2011, the selected infections are:

ICD-9-CM Central venous catheter-related blood stream infection diagnosis code:
99931   OTH/UNS INF-CEN VEN CATH   99932   BLOOD INF DT CEN VEN CTH

High Risk Category:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for selected infections (see above).

Intermediate Risk Category:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for selected infections (see above).

Low Risk Category:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for selected infections (see above).

Denominator

Overall:

Surgical and medical discharges, for patients ages 17 years and younger. Surgical and medical discharges are defined by specific DRG or MS-DRG codes.

See *Pediatric Quality Indicators Appendices*:
- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs
- Appendix D – Medical DRGs
- Appendix E – Medical MS-DRGs

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for selected infections (as defined by the numerator, see above)
- normal newborns
- neonates with birth weight less than 500 grams (Birth Weight Category 1)
- with length of stay less than two (2) days
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year

(YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:

- Appendix I – Definitions of, Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

High Risk Category:

Surgical and medical discharges, for patients ages 17 years and younger, with any-listed ICD-9-CM diagnosis codes for high-risk immunocompromised state or any-listed ICD-9-CM procedure codes for transplant or any-listed ICD-9-CM diagnosis codes for cancer. Surgical and medical discharges are defined by specific DRG or MS-DRG codes.

See *Pediatric Quality Indicators Appendices*:

- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs
- Appendix D – Medical DRGs
- Appendix E – Medical MS-DRGs
- Appendix F – High-Risk Immunocompromised States

ICD-9-CM Transplant procedure codes[1]:

335	*LUNG TRANSPLANT*	4105	ALLO HEM STEM CT W/O PUR
3350	LUNG TRANSPLANT NOS	4106	CORD BLD STEM CELL TRANS
3351	UNILAT LUNG TRANSPLANT	4107	AUTO HEM STEM CT W PURG
3352	BILAT LUNG TRANSPLANT	4108	ALLO HEM STEM CT W PURG
336	COMB HEART/LUNG TRANSPLA	4109	AUTO BONE MT W PURGING
375	*HEART TRANSPLANTATION*	5051	AUXILIARY LIVER TRANSPL
3751	HEART TRANSPLANTATION	5059	LIVER TRANSPLANT NEC
410	*OPERATIONS ON BONE MAROW AND SPLEEN*	5280	PANCREAT TRANSPLANT NOS
		5281	REIMPLANT PANCREATIC TIS
4100	BONE MARROW TRNSPLNT NOS	5282	PANCREATIC HOMOTRANSPLAN
4101	AUTO BONE MT W/O PURG	5283	PANCREATIC HETEROTRANSPL
4102	ALO BONE MARROW TRNSPLNT	5285	ALLOTRNSPLNT ISLETS LANG
4103	ALLOGRFT BONE MARROW NOS	5286	TRNSPLNT ISLETS LANG NOS
4104	AUTO HEM STEM CT W/O PUR	5569	KIDNEY TRANSPLANT NEC

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

ICD-9-CM Cancer diagnosis codes[1]

1400	MAL NEO UPPER VERMILION	1419	MALIG NEO TONGUE NOS
1401	MAL NEO LOWER VERMILION	1420	MALIG NEO PAROTID
1403	MAL NEO UPPER LIP, INNER	1421	MALIG NEO SUBMANDIBULAR
1404	MAL NEO LOWER LIP, INNER	1422	MALIG NEO SUBLINGUAL
1405	MAL NEO LIP, INNER NOS	1428	MAL NEO MAJ SALIVARY NEC
1406	MAL NEO LIP, COMMISSURE	1429	MAL NEO SALIVARY NOS
1408	MAL NEO LIP NEC	1430	MALIG NEO UPPER GUM
1409	MAL NEO LIP/VERMIL NOS	1431	MALIG NEO LOWER GUM
1410	MAL NEO TONGUE BASE	1438	MALIG NEO GUM NEC
1411	MAL NEO DORSAL TONGUE	1439	MALIG NEO GUM NOS
1412	MAL NEO TIP/LAT TONGUE	1440	MAL NEO ANT FLOOR MOUTH
1413	MAL NEO VENTRAL TONGUE	1441	MAL NEO LAT FLOOR MOUTH
1414	MAL NEO ANT 2/3 TONGUE	1448	MAL NEO MOUTH FLOOR NEC
1415	MAL NEO TONGUE JUNCTION	1449	MAL NEO MOUTH FLOOR NOS
1416	MAL NEO LINGUAL TONSIL	1450	MAL NEO CHEEK MUCOSA
1418	MALIG NEO TONGUE NEC	1451	MAL NEO MOUTH VESTIBULE

1452	MALIG NEO HARD PALATE	1535	MALIGNANT NEO APPENDIX
1453	MALIG NEO SOFT PALATE	1536	MALIG NEO ASCEND COLON
1454	MALIGNANT NEOPLASM UVULA	1537	MAL NEO SPLENIC FLEXURE
1455	MALIGNANT NEO PALATE NOS	1538	MALIGNANT NEO COLON NEC
1456	MALIG NEO RETROMOLAR	1539	MALIGNANT NEO COLON NOS
1458	MALIG NEOPLASM MOUTH NEC	1540	MAL NEO RECTOSIGMOID JCT
1459	MALIG NEOPLASM MOUTH NOS	1541	MALIGNANT NEOPL RECTUM
1460	MALIGNANT NEOPL TONSIL	1542	MALIG NEOPL ANAL CANAL
1461	MAL NEO TONSILLAR FOSSA	1543	MALIGNANT NEO ANUS NOS
1462	MAL NEO TONSIL PILLARS	1548	MAL NEO RECTUM/ANUS NEC
1463	MALIGN NEOPL VALLECULA	1550	MAL NEO LIVER, PRIMARY
1464	MAL NEO ANT EPIGLOTTIS	1551	MAL NEO INTRAHEPAT DUCTS
1465	MAL NEO EPIGLOTTIS JUNCT	1552	MALIGNANT NEO LIVER NOS
1466	MAL NEO LAT OROPHARYNX	1560	MALIG NEO GALLBLADDER
1467	MAL NEO POST OROPHARYNX	1561	MAL NEO EXTRAHEPAT DUCTS
1468	MAL NEO OROPHARYNX NEC	1562	MAL NEO AMPULLA OF VATER
1469	MALIG NEO OROPHARYNX NOS	1568	MALIG NEO BILIARY NEC
1470	MAL NEO SUPER NASOPHARYN	1569	MALIG NEO BILIARY NOS
1471	MAL NEO POST NASOPHARYNX	1570	MAL NEO PANCREAS HEAD
1472	MAL NEO LAT NASOPHARYNX	1571	MAL NEO PANCREAS BODY
1473	MAL NEO ANT NASOPHARYNX	1572	MAL NEO PANCREAS TAIL
1478	MAL NEO NASOPHARYNX NEC	1573	MAL NEO PANCREATIC DUCT
1479	MAL NEO NASOPHARYNX NOS	1574	MAL NEO ISLET LANGERHANS
1480	MAL NEO POSTCRICOID	1578	MALIG NEO PANCREAS NEC
1481	MAL NEO PYRIFORM SINUS	1579	MALIG NEO PANCREAS NOS
1482	MAL NEO ARYEPIGLOTT FOLD	1580	MAL NEO RETROPERITONEUM
1483	MAL NEO POST HYPOPHARYNX	1588	MAL NEO PERITONEUM NEC
1488	MAL NEO HYPOPHARYNX NEC	1589	MAL NEO PERITONEUM NOS
1489	MAL NEO HYPOPHARYNX NOS	1590	MALIG NEO INTESTINE NOS
1490	MAL NEO PHARYNX NOS	1591	MALIGNANT NEO SPLEEN NEC
1491	MAL NEO WALDEYER'S RING	1598	MAL NEO GI/INTRA-ABD NEC
1498	MAL NEO ORAL/PHARYNX NEC	1599	MAL NEO GI TRACT ILL-DEF
1499	MAL NEO OROPHRYN ILL-DEF	1600	MAL NEO NASAL CAVITIES
1500	MAL NEO CERVICAL ESOPHAG	1601	MALIG NEO MIDDLE EAR
1501	MAL NEO THORACIC ESOPHAG	1602	MAL NEO MAXILLARY SINUS
1502	MAL NEO ABDOMIN ESOPHAG	1603	MAL NEO ETHMOIDAL SINUS
1503	MAL NEO UPPER 3RD ESOPH	1604	MALIG NEO FRONTAL SINUS
1504	MAL NEO MIDDLE 3RD ESOPH	1605	MAL NEO SPHENOID SINUS
1505	MAL NEO LOWER 3RD ESOPH	1608	MAL NEO ACCESS SINUS NEC
1508	MAL NEO ESOPHAGUS NEC	1609	MAL NEO ACCESS SINUS NOS
1509	MAL NEO ESOPHAGUS NOS	1610	MALIGNANT NEO GLOTTIS
1510	MAL NEO STOMACH CARDIA	1611	MALIG NEO SUPRAGLOTTIS
1511	MALIGNANT NEO PYLORUS	1612	MALIG NEO SUBGLOTTIS
1512	MAL NEO PYLORIC ANTRUM	1613	MAL NEO CARTILAGE LARYNX
1513	MAL NEO STOMACH FUNDUS	1618	MALIGNANT NEO LARYNX NEC
1514	MAL NEO STOMACH BODY	1619	MALIGNANT NEO LARYNX NOS
1515	MAL NEO STOM LESSER CURV	1620	MALIGNANT NEO TRACHEA
1516	MAL NEO STOM GREAT CURV	1622	MALIG NEO MAIN BRONCHUS
1518	MALIG NEOPL STOMACH NEC	1623	MAL NEO UPPER LOBE LUNG
1519	MALIG NEOPL STOMACH NOS	1624	MAL NEO MIDDLE LOBE LUNG
1520	MALIGNANT NEOPL DUODENUM	1625	MAL NEO LOWER LOBE LUNG
1521	MALIGNANT NEOPL JEJUNUM	1628	MAL NEO BRONCH/LUNG NEC
1522	MALIGNANT NEOPLASM ILEUM	1629	MAL NEO BRONCH/LUNG NOS
1523	MAL NEO MECKEL'S DIVERT	1630	MAL NEO PARIETAL PLEURA
1528	MAL NEO SMALL BOWEL NEC	1631	MAL NEO VISCERAL PLEURA
1529	MAL NEO SMALL BOWEL NOS	1638	MALIG NEOPL PLEURA NEC
1530	MAL NEO HEPATIC FLEXURE	1639	MALIG NEOPL PLEURA NOS
1531	MAL NEO TRANSVERSE COLON	1640	MALIGNANT NEOPL THYMUS
1532	MAL NEO DESCEND COLON	1641	MALIGNANT NEOPL HEART
1533	MAL NEO SIGMOID COLON	1642	MAL NEO ANT MEDIASTINUM
1534	MALIGNANT NEOPLASM CECUM	1643	MAL NEO POST MEDIASTINUM

1648	MAL NEO MEDIASTINUM NEC	1828	MAL NEO BODY UTERUS NEC
1649	MAL NEO MEDIASTINUM NOS	1830	MALIGN NEOPL OVARY
1650	MAL NEO UPPER RESP NOS	1832	MAL NEO FALLOPIAN TUBE
1658	MAL NEO THORAX/RESP NEC	1833	MAL NEO BROAD LIGAMENT
1659	MAL NEO RESP SYSTEM NOS	1834	MALIG NEO PARAMETRIUM
1700	MAL NEO SKULL/FACE BONE	1835	MAL NEO ROUND LIGAMENT
1701	MALIGNANT NEO MANDIBLE	1838	MAL NEO ADNEXA NEC
1702	MALIG NEO VERTEBRAE	1839	MAL NEO ADNEXA NOS
1703	MAL NEO RIBS/STERN/CLAV	1840	MALIGN NEOPL VAGINA
1704	MAL NEO LONG BONES ARM	1841	MAL NEO LABIA MAJORA
1705	MAL NEO BONES WRIST/HAND	1842	MAL NEO LABIA MINORA
1706	MAL NEO PELVIC GIRDLE	1843	MALIGN NEOPL CLITORIS
1707	MAL NEO LONG BONES LEG	1844	MALIGN NEOPL VULVA NOS
1708	MAL NEO BONES ANKLE/FOOT	1848	MAL NEO FEMALE GENIT NEC
1709	MALIG NEOPL BONE NOS	1849	MAL NEO FEMALE GENIT NOS
1710	MAL NEO SOFT TISSUE HEAD	185	MALIGN NEOPL PROSTATE
1712	MAL NEO SOFT TISSUE ARM	1860	MAL NEO UNDESCEND TESTIS
1713	MAL NEO SOFT TISSUE LEG	1869	MALIG NEO TESTIS NEC
1714	MAL NEO SOFT TIS THORAX	1871	MALIGN NEOPL PREPUCE
1715	MAL NEO SOFT TIS ABDOMEN	1872	MALIG NEO GLANS PENIS
1716	MAL NEO SOFT TIS PELVIS	1873	MALIG NEO PENIS BODY
1717	MAL NEOPL TRUNK NOS	1874	MALIG NEO PENIS NOS
1718	MAL NEO SOFT TISSUE NEC	1875	MALIG NEO EPIDIDYMIS
1719	MAL NEO SOFT TISSUE NOS	1876	MAL NEO SPERMATIC CORD
1720	MALIG MELANOMA LIP	1877	MALIGN NEOPL SCROTUM
1721	MALIG MELANOMA EYELID	1878	MAL NEO MALE GENITAL NEC
1722	MALIG MELANOMA EAR	1879	MAL NEO MALE GENITAL NOS
1723	MAL MELANOM FACE NEC NOS	1880	MAL NEO BLADDER-TRIGONE
1724	MAL MELANOMA SCALP/NECK	1881	MAL NEO BLADDER-DOME
1725	MALIG MELANOMA TRUNK	1882	MAL NEO BLADDER-LATERAL
1726	MALIG MELANOMA ARM	1883	MAL NEO BLADDER-ANTERIOR
1727	MALIG MELANOMA LEG	1884	MAL NEO BLADDER-POST
1728	MALIG MELANOMA SKIN NEC	1885	MAL NEO BLADDER NECK
1729	MALIG MELANOMA SKIN NOS	1886	MAL NEO URETERIC ORIFICE
1740	MALIG NEO NIPPLE	1887	MALIG NEO URACHUS
1741	MAL NEO BREAST-CENTRAL	1888	MALIG NEO BLADDER NEC
1742	MAL NEO BREAST UP-INNER	1889	MALIG NEO BLADDER NOS
1743	MAL NEO BREAST LOW-INNER	1890	MALIG NEOPL KIDNEY
1744	MAL NEO BREAST UP-OUTER	1891	MALIG NEO RENAL PELVIS
1745	MAL NEO BREAST LOW-OUTER	1892	MALIGN NEOPL URETER
1746	MAL NEO BREAST-AXILLARY	1893	MALIGN NEOPL URETHRA
1748	MALIGN NEOPL BREAST NEC	1894	MAL NEO PARAURETHRAL
1749	MALIGN NEOPL BREAST NOS	1898	MAL NEO URINARY NEC
1750	MAL NEO MALE NIPPLE	1899	MAL NEO URINARY NOS
1759	MAL NEO MALE BREAST NEC	1900	MALIGN NEOPL EYEBALL
1760	SKIN – KAPOSI'S SARCOMA	1901	MALIGN NEOPL ORBIT
1761	SFT TISUE – KPSI'S SRCMA	1902	MAL NEO LACRIMAL GLAND
1762	PALATE – KPSI'S SARCOMA	1903	MAL NEO CONJUNCTIVA
1763	GI SITES – KPSI'S SRCOMA	1904	MALIGN NEOPL CORNEA
1764	LUNG – KAPOSI'S SARCOMA	1905	MALIGN NEOPL RETINA
1765	LYM NDS – KPSI'S SARCOMA	1906	MALIGN NEOPL CHOROID
1768	SPF STS – KPSI'S SARCOMA	1907	MAL NEO LACRIMAL DUCT
1769	KAPOSI'S SARCOMA NOS	1908	MALIGN NEOPL EYE NEC
179	MALIG NEOPL UTERUS NOS	1909	MALIGN NEOPL EYE NOS
1800	MALIG NEO ENDOCERVIX	1910	MALIGN NEOPL CEREBRUM
1801	MALIG NEO EXOCERVIX	1911	MALIG NEO FRONTAL LOBE
1808	MALIG NEO CERVIX NEC	1912	MAL NEO TEMPORAL LOBE
1809	MAL NEO CERVIX UTERI NOS	1913	MAL NEO PARIETAL LOBE
181	MALIGNANT NEOPL PLACENTA	1914	MAL NEO OCCIPITAL LOBE
1820	MALIG NEO CORPUS UTERI	1915	MAL NEO CEREB VENTRICLE
1821	MAL NEO UTERINE ISTHMUS	1916	MAL NEO CEREBELLUM NOS

1917	MAL NEO BRAIN STEM		20106	HODGKINS PARAGRAN PELVIC
1918	MALIG NEO BRAIN NEC		20107	HODGKINS PARAGRAN SPLEEN
1919	MALIG NEO BRAIN NOS		20108	HODGKINS PARAGRAN MULT
1920	MAL NEO CRANIAL NERVES		20110	HDGK GRN UNSP XTRNDL ORG
1921	MAL NEO CEREBRAL MENING		20111	HODGKINS GRANULOM HEAD
1922	MAL NEO SPINAL CORD		20112	HODGKINS GRANULOM THORAX
1923	MAL NEO SPINAL MENINGES		20113	HODGKINS GRANULOM ABDOM
1928	MAL NEO NERVOUS SYST NEC		20114	HODGKINS GRANULOM AXILLA
1929	MAL NEO NERVOUS SYST NOS		20115	HODGKINS GRANULOM INGUIN
193	MALIGN NEOPL THYROID		20116	HODGKINS GRANULOM PELVIC
1940	MALIGN NEOPL ADRENAL		20117	HODGKINS GRANULOM SPLEEN
1941	MALIG NEO PARATHYROID		20118	HODGKINS GRANULOM MULT
1943	MALIG NEO PITUITARY		20120	HDGK SRC UNSP XTRNDL ORG
1944	MALIGN NEO PINEAL GLAND		20121	HODGKINS SARCOMA HEAD
1945	MAL NEO CAROTID BODY		20122	HODGKINS SARCOMA THORAX
1946	MAL NEO PARAGANGLIA NEC		20123	HODGKINS SARCOMA ABDOM
1948	MAL NEO ENDOCRINE NEC		20124	HODGKINS SARCOMA AXILLA
1949	MAL NEO ENDOCRINE NOS		20125	HODGKINS SARCOMA INGUIN
1950	MAL NEO HEAD/FACE/NECK		20126	HODGKINS SARCOMA PELVIC
1951	MALIGN NEOPL THORAX		20127	HODGKINS SARCOMA SPLEEN
1952	MALIG NEO ABDOMEN		20128	HODGKINS SARCOMA MULT
1953	MALIGN NEOPL PELVIS		20140	LYM-HST UNSP XTRNDL ORGN
1954	MALIGN NEOPL ARM		20141	HODG LYMPH-HISTIO HEAD
1955	MALIGN NEOPL LEG		20142	HODG LYMPH-HISTIO THORAX
1958	MALIG NEO SITE NEC		20143	HODG LYMPH-HISTIO ABDOM
1960	MAL NEO LYMPH-HEAD/NECK		20144	HODG LYMPH-HISTIO AXILLA
1961	MAL NEO LYMPH-INTRATHOR		20145	HODG LYMPH-HISTIO INGUIN
1962	MAL NEO LYMPH INTRA-ABD		20146	HODG LYMPH-HISTIO PELVIC
1963	MAL NEO LYMPH-AXILLA/ARM		20147	HODG LYMPH-HISTIO SPLEEN
1965	MAL NEO LYMPH-INGUIN/LEG		20148	HODG LYMPH-HISTIO MULT
1966	MAL NEO LYMPH-INTRAPELV		20150	NDR SCLR UNSP XTRNDL ORG
1968	MAL NEO LYMPH NODE-MULT		20151	HODG NODUL SCLERO HEAD
1969	MAL NEO LYMPH NODE NOS		20152	HODG NODUL SCLERO THORAX
1970	SECONDARY MALIG NEO LUNG		20153	HODG NODUL SCLERO ABDOM
1971	SEC MAL NEO MEDIASTINUM		20154	HODG NODUL SCLERO AXILLA
1972	SECOND MALIG NEO PLEURA		20155	HODG NODUL SCLERO INGUIN
1973	SEC MALIG NEO RESP NEC		20156	HODG NODUL SCLERO PELVIC
1974	SEC MALIG NEO SM BOWEL		20157	HODG NODUL SCLERO SPLEEN
1975	SEC MALIG NEO LG BOWEL		20158	HODG NODUL SCLERO MULT
1976	SEC MAL NEO PERITONEUM		20160	MXD CELR UNSP XTRNDL ORG
1977	SECOND MALIG NEO LIVER		20161	HODGKINS MIX CELL HEAD
1978	SEC MAL NEO GI NEC		20162	HODGKINS MIX CELL THORAX
1980	SECOND MALIG NEO KIDNEY		20163	HODGKINS MIX CELL ABDOM
1981	SEC MALIG NEO URIN NEC		20164	HODGKINS MIX CELL AXILLA
1982	SECONDARY MALIG NEO SKIN		20165	HODGKINS MIX CELL INGUIN
1983	SEC MAL NEO BRAIN/SPINE		20166	HODGKINS MIX CELL PELVIC
1984	SEC MALIG NEO NERVE NEC		20167	HODGKINS MIX CELL SPLEEN
1985	SECONDARY MALIG NEO BONE		20168	HODGKINS MIX CELL MULT
1986	SECOND MALIG NEO OVARY		20170	LYM DPLT UNSP XTRNDL ORG
1987	SECOND MALIG NEO ADRENAL		20171	HODG LYMPH DEPLET HEAD
19881	SECOND MALIG NEO BREAST		20172	HODG LYMPH DEPLET THORAX
19882	SECOND MALIG NEO GENITAL		20173	HODG LYMPH DEPLET ABDOM
19889	SECONDARY MALIG NEO NEC		20174	HODG LYMPH DEPLET AXILLA
1990	MALIG NEO DISSEMINATED		20175	HODG LYMPH DEPLET INGUIN
1991	MALIGNANT NEOPLASM NOS		20176	HODG LYMPH DEPLET PELVIC
20100	HDGK PRG UNSP XTRNDL ORG		20177	HODG LYMPH DEPLET SPLEEN
20101	HODGKINS PARAGRAN HEAD		20178	HODG LYMPH DEPLET MULT
20102	HODGKINS PARAGRAN THORAX		20190	HDGK DIS UNSP XTRNDL ORG
20103	HODGKINS PARAGRAN ABDOM		20191	HODGKINS DIS NOS HEAD
20104	HODGKINS PARAGRAN AXILLA		20192	HODGKINS DIS NOS THORAX
20105	HODGKINS PARAGRAN INGUIN		20193	HODGKINS DIS NOS ABDOM

20194	HODGKINS DIS NOS AXILLA	20256	LETTERER-SIWE DIS PELVIC
20195	HODGKINS DIS NOS INGUIN	20257	LETTERER-SIWE DIS SPLEEN
20196	HODGKINS DIS NOS PELVIC	20258	LETTERER-SIWE DIS MULT
20197	HODGKINS DIS NOS SPLEEN	20260	MLG MAST UNSP XTRNDL ORG
20198	HODGKINS DIS NOS MULT	20261	MAL MASTOCYTOSIS HEAD
20200	NDLR LYM UNSP XTRNDL ORG	20262	MAL MASTOCYTOSIS THORAX
20201	NODULAR LYMPHOMA HEAD	20263	MAL MASTOCYTOSIS ABDOM
20202	NODULAR LYMPHOMA THORAX	20264	MAL MASTOCYTOSIS AXILLA
20203	NODULAR LYMPHOMA ABDOM	20265	MAL MASTOCYTOSIS INGUIN
20204	NODULAR LYMPHOMA AXILLA	20266	MAL MASTOCYTOSIS PELVIC
20205	NODULAR LYMPHOMA INGUIN	20267	MAL MASTOCYTOSIS SPLEEN
20206	NODULAR LYMPHOMA PELVIC	20268	MAL MASTOCYTOSIS MULT
20207	NODULAR LYMPHOMA SPLEEN	20280	OTH LYMP UNSP XTRNDL ORG
20208	NODULAR LYMPHOMA MULT	20281	LYMPHOMAS NEC HEAD
20210	MYCS FNG UNSP XTRNDL ORG	20282	LYMPHOMAS NEC THORAX
20211	MYCOSIS FUNGOIDES HEAD	20283	LYMPHOMAS NEC ABDOM
20212	MYCOSIS FUNGOIDES THORAX	20284	LYMPHOMAS NEC AXILLA
20213	MYCOSIS FUNGOIDES ABDOM	20285	LYMPHOMAS NEC INGUIN
20214	MYCOSIS FUNGOIDES AXILLA	20286	LYMPHOMAS NEC PELVIC
20215	MYCOSIS FUNGOIDES INGUIN	20287	LYMPHOMAS NEC SPLEEN
20216	MYCOSIS FUNGOIDES PELVIC	20288	LYMPHOMAS NEC MULT
20217	MYCOSIS FUNGOIDES SPLEEN	20290	UNSP LYM UNSP XTRNDL ORG
20218	MYCOSIS FUNGOIDES MULT	20291	LYMPHOID MAL NEC HEAD
20220	SZRY DIS UNSP XTRNDL ORG	20292	LYMPHOID MAL NEC THORAX
20221	SEZARY'S DISEASE HEAD	20293	LYMPHOID MAL NEC ABDOM
20222	SEZARY'S DISEASE THORAX	20294	LYMPHOID MAL NEC AXILLA
20223	SEZARY'S DISEASE ABDOM	20295	LYMPHOID MAL NEC INGUIN
20224	SEZARY'S DISEASE AXILLA	20296	LYMPHOID MAL NEC PELVIC
20225	SEZARY'S DISEASE INGUIN	20297	LYMPHOID MAL NEC SPLEEN
20226	SEZARY'S DISEASE PELVIC	20298	LYMPHOID MAL NEC MULT
20227	SEZARY'S DISEASE SPLEEN	*2030*	*MULTIPLE MYELOMA*
20228	SEZARY'S DISEASE MULT	20300	MULT MYELM W/O REMISSION
20230	MLG HIST UNSP XTRNDL ORG	20301	MULT MYELM W REMISSION
20231	MAL HISTIOCYTOSIS HEAD	*2031*	*PLASMA CELL LEUKEMIA*
20232	MAL HISTIOCYTOSIS THORAX	20310	PLS CL LEU W/O ACHV RMSN
20233	MAL HISTIOCYTOSIS ABDOM	20311	PLSM CELL LEUK W RMSON
20234	MAL HISTIOCYTOSIS AXILLA	*2038*	*IMMUNOPROLIFERAT NEO NEC*
20235	MAL HISTIOCYTOSIS INGUIN	20380	OTH IMNO NPL WO ACH RMSN
20236	MAL HISTIOCYTOSIS PELVIC	20381	OTH IMNPRFL NPL W RMSN
20237	MAL HISTIOCYTOSIS SPLEEN	*2040*	*ACUTE LYMPHOID LEUKEMIA*
20238	MAL HISTIOCYTOSIS MULT	20400	AC LYM LEUK WO ACHV RMSN
20240	LK RTCTL UNSP XTRNDL ORG	20401	ACT LYM LEUK W RMSION
20241	HAIRY-CELL LEUKEM HEAD	*2041*	*CHR LYMPHOID LEUKEMIA*
20242	HAIRY-CELL LEUKEM THORAX	20410	CH LYM LEUK WO ACHV RMSN
20243	HAIRY-CELL LEUKEM ABDOM	20411	CHR LYM LEUK W RMSION
20244	HAIRY-CELL LEUKEM AXILLA	*2042*	*SUBAC LYMPHOID LEUKEMIA*
20245	HAIRY-CELL LEUKEM INGUIN	20420	SBAC LYM LEU WO ACH RMSN
20246	HAIRY-CELL LEUKEM PELVIC	20421	SBAC LYM LEUK W RMSION
20247	HAIRY-CELL LEUKEM SPLEEN	*2048*	*LYMPHOID LEUKEMIA NEC*
20248	HAIRY-CELL LEUKEM MULT	20480	OTH LYM LEU WO ACHV RMSN
20250	LTR-SIWE UNSP XTRNDL ORG	20481	OTH LYM LEUK W RMSION
20251	LETTERER-SIWE DIS HEAD	*2049*	*LYMPHOID LEUKEMIA NOS*
20252	LETTERER-SIWE DIS THORAX	20490	UNS LYM LEU WO ACH RMSN
20253	LETTERER-SIWE DIS ABDOM	20491	UNS LYM LEUK W RMSION
20254	LETTERER-SIWE DIS AXILLA	2386	PLASMACYTOMA NOS
20255	LETTERER-SIWE DIS INGUIN	2733	MACROGLOBULINEMIA

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for selected infections (as defined by the numerator, see above)
- normal newborns
- neonates with birth weight less than 500 grams (Birth Weight Category 1)
- with length of stay less than two (2) days
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of, Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

Intermediate Risk Category:

Surgical and medical discharges, for patients ages 17 years and younger, with either:
- any-listed ICD-9-CM diagnosis codes for intermediate-risk immunocompromised state; or
- any-listed ICD-9-CM diagnosis codes for cirrhosis and any-listed ICD-9-CM diagnosis codes for hepatic failure consisting of a diagnosis of coma or hepatorenal syndrome; or
- any-listed ICD-9-CM diagnosis codes for cystic fibrosis; or
- any-listed ICD-9-CM diagnosis codes for hemophilia

Surgical and medical discharges are defined by specific DRG or MS-DRG codes.

See *Pediatric Quality Indicators Appendices*:
- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs
- Appendix D – Medical DRGs
- Appendix E – Medical MS-DRGs
- Appendix G – Intermediate-Risk Immunocompromised States

ICD-9-CM Cirrhosis diagnosis codes:

5712	ALCOHOLIC CIRRHOSIS OF LIVER	5716	BILIARY CIRRHOSIS
5715	CIRRHOSIS OF LIVER NOS		

ICD-9-CM Hepatic failure consisting of a diagnosis of coma or hepatorenal syndrome diagnosis codes:

5722	HEPATIC ENCEPHALOPATHY	5724	HEPATORENAL SYNDROME

ICD-9-CM Cystic fibrosis diagnosis codes:

27700	CYSTIC FIBROS W/O ILEUS	27703	CYSTIC FIBROSIS W GI MAN
27701	CYSTIC FIBROS W ILEUS	27709	CYSTIC FIBROSIS NEC
27702	CYSTIC FIBROS W PUL MAN		

ICD-9-CM Hemophilia diagnosis codes:

2860	CONG FACTOR VIII DIORD	2863	CONG DEF CLOT FACTOR NEC
2861	CONG FACTOR IX DISORDER	2864	VON WILLEBRAND'S DISEASE
2862	CONG FACTOR XI DISORDER		

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for selected infections (as defined by the numerator, see above)
- normal newborns
- neonates with birth weight less than 500 grams (Birth Weight Category 1)
- with length of stay less than two (2) days
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of, Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

Low Risk Category:

Surgical and medical discharges, for patients ages 17 years and younger, not meeting the inclusion criteria for the High Risk Category or the Intermediate Risk Category. Surgical and medical discharges are defined by specific DRG or MS-DRG codes.

See *Pediatric Quality Indicators Appendices*:
- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs
- Appendix D – Medical DRGs
- Appendix E – Medical MS-DRGs

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for selected infections (as defined by the numerator, see above)
- normal newborns
- neonates with birth weight less than 500 grams (Birth Weight Category 1)
- with length of stay less than two (2) days
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of, Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

AHRQ Quality Indicators^{TM}

TECHNICAL SPECIFICATIONS: PEDIATRIC QUALITY INDICATORS APPENDICES
Version 4.5

May 2013

Table of Contents

Appendix A – Operating Room Procedure Codes

ICD-9-CM Operating room procedure codes[1]:

0049	SUPERSAT 02 THERAPY	0206	CRANIAL OSTEOPLASTY NEC
0050	IMPL CRT PACEMAKER SYS	0207	SKULL PLATE REMOVAL
0051	IMPL CRT DEFIBRILLAT SYS	0211	SIMPLE SUTURE OF DURA
0052	IMP/REP LEAD LF VEN SYS	0212	BRAIN MENINGE REPAIR NEC
0053	IMP/REP CRT PACEMAKR GEN	0213	MENINGE VESSEL LIGATION
0054	IMP/REP CRT DEFIB GENAT	0214	CHOROID PLEXECTOMY
0056	INS/REP SENS-CRD/VSL MTR	*022*	*VENTRICULOSTOMY*
0057	IMP/REP SUBCUE CARD DEV	0221	INSERT/REPLACE EVD
0058	*INS INTRA-ANSM PRES MNTR*	0222	INTRCRAN VENT SHUNT/ANAS
0059	*INTRAVASC MSMNT COR ART*	0231	VENTRICL SHUNT-HEAD/NECK
0061	PERC ANGIO EXTRACRAN VES	0232	VENTRI SHUNT-CIRCULA SYS
0062	PERC ANGIO INTRACRAN VES	0233	VENTRICL SHUNT-THORAX
0066	PTCA	0234	VENTRICL SHUNT-ABDOMEN
0067	*INTRAVAS MSMNT THORC ART*	0235	VENTRI SHUNT-UNINARY SYS
0068	*INTRAVAS MSMT PERIPH ART*	0239	VENT SHUNT EXTRACRAN NEC
0069	*INTRAVS MSMT VES NEC/NOS*	0242	REPLACE VENTRICLE SHUNT
0070	REV HIP REPL-ACETAB/FEM	0243	REMOVE VENTRICLE SHUNT
0071	REV HIP REPL-ACETAB COMP	0291	LYSIS CORTICAL ADHESION
0072	REV HIP REPL-FEM COMP	0292	BRAIN REPAIR
0073	REV HIP REPL-LINER/HEAD	0293	IMP/REPL BRAIN STIM LEAD
0080	REV KNEE REPLACEMT-TOTAL	0294	INSERT/REPLAC SKULL TONG
0081	REV KNEE REPL-TIBIA COMP	0299	SKULL & BRAIN OP NEC
0082	REV KNEE REPL-FEMUR COMP	0301	REMOVAL FB SPINAL CANAL
0083	REV KNEE REPLACE-PATELLA	0302	REOPEN LAMINECTOMY SITE
0084	REV KNEE REPL-TIBIA LIN	0309	SPINAL CANAL EXPLOR NEC
0085	RESRF HIP,TOTAL-ACET/FEM	031	INTRASPIN NERVE ROOT DIV
0086	RESRF HIP,PART-FEM HEAD	0321	PERCUTANEOUS CHORDOTOMY
0087	RESRF HIP,PART-ACETABLUM	0329	OTHER CHORDOTOMY
0094	INTRA-OP NEUROPHYS MONTR	0332	SPINAL CORD/MENINGES BX
0110	INTRACRAN PRESSURE MONTR	0339	OTHER SPINAL DX PROC
0112	OPEN CEREB MENINGES BX	034	EXCIS SPINAL CORD LESION
0114	OPEN BRAIN BIOPSY	0351	SPINE MENINGOCELE REPAIR
0115	SKULL BIOPSY	0352	MYELOMENINGOCEL REPAIR
0116	INTRACRANIAL 02 MONITOR	0353	VERTEBRAL FX REPAIR
0117	BRAIN TEMP MONITORING	0359	SPINAL STRUCT REPAIR NEC
0118	OTHER BRAIN DX PROCEDURE	036	SPINAL CORD ADHESIOLYSIS
0119	OTHER SKULL DX PROCEDURE	0371	SUBARACH-PERITON SHUNT
0121	CRANIAL SINUS I & D	0372	SUBARACH-URETERAL SHUNT
0122	REMOVAL BRAIN STIM LEAD	0379	OTH SPINAL THECAL SHUNT
0123	REOPEN CRANIOTOMY SITE	0393	IMP/REPL SPINE STIM LEAD
0124	OTHER CRANIOTOMY	0394	REMOVAL SPINE STIM LEAD
0125	OTHER CRANIECTOMY	0397	REVISE SPINE THECA SHUNT
0128	INTRACEREB CTH-BURR HOLE	0398	REMOVE SPINE THECA SHUNT
0131	INCISE CEREBRAL MENINGES	0399	SPINE CANAL STRUC OP NEC
0132	LOBOTOMY & TRACTOTOMY	0401	EXCISION ACOUSTC NEUROMA
0139	OTHER BRAIN INCISION	0402	TRIGEMINAL NERV DIVISION
0141	THALAMUS OPERATIONS	0403	PERIPH NERVE DIV NEC
0142	GLOBUS PALLIDUS OPS	0404	PERIPH NERVE INCIS NEC
0151	EX CEREB MENINGEAL LES	0405	GASSERIAN GANGLIONECTOMY
0152	HEMISPHERECTOMY	0406	PERIPH GANGLIONECT NEC
0153	BRAIN LOBECTOMY	0407	PERIPH NERV EXCISION NEC
0159	OTHER BRAIN EXCISION	0412	OPEN PERIPH NERVE BIOPSY
016	EXCISE SKULL LESION	0419	PERIPH NERVE DX PROC NEC
0201	LINEAR CRANIECTOMY	043	PERIPHERAL NERVE SUTURE
0202	ELEVATE SKULL FX FRAGMNT	0441	DECOMPRESS TRIGEM ROOT
0203	SKULL FLAP FORMATION	0442	CRAN NERV ROOT DECOM NEC
0204	BONE GRAFT TO SKULL	0443	CARPAL TUNNEL RELEASE
0205	SKULL PLATE INSERTION	0444	TARSAL TUNNEL RELEASE

0449	PER NERVE ADHESIOLYS NEC		0742	ADRENAL NERVE DIVISION
045	PERIPHERAL NERVE GRAFT		0743	ADRENAL VESSEL LIGATION
046	PERIPH NERVE TRANSPOSIT		0744	ADRENAL REPAIR
0471	HYPOGLOSS-FACIAL ANASTOM		0745	ADRENAL REIMPLANTATION
0472	ACCESSORY-FACIAL ANASTOM		0749	ADRENAL OPERATION NEC
0473	ACCESS-HYPOGLOSS ANASTOM		0751	PINEAL FIELD EXPLORATION
0474	PERIPH NERV ANASTOM NEC		0752	PINEAL GLAND INCISION
0475	POSTOP REVIS PER NERV OP		0753	PARTIAL PINEALECTOMY
0476	LATE REPAIR PER NERV INJ		0754	TOTAL PINEALECTOMY
0479	OTHER NEUROPLASTY		0759	PINEAL OPERATION NEC
0491	NEURECTASIS		0761	EXC PITUIT LES-TRANSFRON
0492	IMP/REPL PERI STIM LEAD		0762	EXC PITUIT LES-TRANSPHEN
0493	REMOVAL PERI STIM LEAD		0763	PART EXCIS PITUITARY NOS
0499	PERIPHERAL NERVE OPS NEC		0764	TOT EXC PITUIT-TRANSFRON
050	SYMPATH NERVE DIVISION		0765	TOT EXC PITUIT-TRANSPHEN
0511	SYMPATHETIC NERVE BIOPSY		0768	TOTAL EXC PITUITARY NEC
0519	SYMPATH NRV DX PROC NEC		0769	TOTAL EXC PITUITARY NOS
0521	SPHENOPALATIN GANGLIONEC		0771	PITUITARY FOSSA EXPLORAT
0522	CERVICAL SYMPATHECTOMY		0772	PITUITARY GLAND INCISION
0523	LUMBAR SYMPATHECTOMY		0779	PITUITARY OPERATION NEC
0524	PRESACRAL SYMPATHECTOMY		0780	THYMECTOMY NOS
0525	PERIART SYMPATHECTOMY		0781	OTH PART EXCISION THYMUS
0529	OTHER SYMPATHECTOMY		0782	OTH TOTL EXCISION THYMUS
0581	SYMPATHETIC NERVE REPAIR		0783	THORAC PART EXISN THYMUS
0589	SYMPATHETIC NERVE OP NEC		0784	THORAC TOTAL EXC THYMUS
0602	REOPEN THYROID FIELD WND		0791	THYMUS FIELD EXPLORATION
0609	INCIS THYROID FIELD NEC		0792	OTHER INCISION OF THYMUS
0612	OPEN THYROID GLAND BX		0793	REPAIR OF THYMUS
0613	PARATHYROID BIOPSY		0794	THYMUS TRANSPLANTATION
0619	THYR/PARATHY DX PROC NEC		0795	THORAC INCISION THYMUS
062	UNILAT THYROID LOBECTOMY		0798	OTH THORAC OP THYMUS NOS
0631	EXCISION THYROID LESION		0799	OTHER THYMUS OPS NOS
0639	PART THYROIDECTOMY NEC		0811	EYELID BIOPSY
064	COMPLETE THYROIDECTOMY		0820	REMOVE EYELID LESION NOS
0650	SUBSTERN THYROIDECT NOS		0821	CHALAZION EXCISION
0651	PART SUBSTERN THYROIDECT		0822	EXCISE MINOR LES LID NEC
0652	TOT SUBSTERN THYROIDECT		0823	EXC MAJ LES LID PRT-THIC
066	LINGUAL THYROID EXCISION		0824	EXC MAJ LES LID FUL-THIC
0681	TOTAL PARATHYROIDECTOMY		0825	DESTRUCTION LID LESION
0689	OTHER PARATHYROIDECTOMY		0831	PTOSIS REP-FRONT MUS SUT
0691	THYROID ISTHMUS DIVISION		0832	PTOSIS REP-FRON MUS SLNG
0692	THYROID VESSEL LIGATION		0833	PTOSIS REP-LEVAT MUS ADV
0693	THYROID SUTURE		0834	PTOSIS REP-LEVAT MUS NEC
0694	THYROID REIMPLANTATION		0835	PTOS REP-TARSAL TECHNIQ
0695	PARATHYROID REIMPLANT		0836	BLEPHAROPTOS REPAIR NEC
0698	OTHER THYROID OPERATIONS		0837	REDUC OVERCORRECT PTOSIS
0699	OTHER PARATHYROID OPS		0838	CORRECT LID RETRACTION
0700	ADRENAL EXPLORATION NOS		0841	THERMOCAUT/ENTROPION REP
0701	UNILAT ADRENAL EXPLORAT		0842	SUTURE ENTROPION REPAIR
0702	BILAT ADRENAL EXPLORAT		0843	WEDG RESEC ENTROPION REP
0712	OPEN ADRENAL GLAND BX		0844	LID RECONS ENTROPION REP
0713	TRANSFRONT PITUITARY BX		0849	ENTROPION/ECTROP REP NEC
0714	TRANSPHEN PITUITARY BX		0851	CANTHOTOMY
0715	PITUITARY BIOPSY NOS		0852	BLEPHARORRHAPHY
0716	THYMUS BIOPSY		0859	ADJUST LID POSITION NEC
0717	PINEAL BIOPSY		0861	LID RECONST W SKIN GRAFT
0719	ENDOCRINE DX PROC NEC		0862	LID RECONST W MUC GRAFT
0721	ADRENAL LESION EXCISION		0863	LID RECONST W HAIR GRAFT
0722	UNILATERAL ADRENALECTOMY		0864	LID RECON-TARSOCONJ FLAP
0729	PART ADRENALECTOMY NEC		0869	LID RECONSTR W GRAFT NEC
073	BILATERAL ADRENALECTOMY		0870	LID RECONSTRUCTION NOS
0741	ADRENAL INCISION		0871	LID MARG RECON-PART THIC

0872	LID RECONS-PART THIC NEC	1151	SUTURE CORNEA LACERATION
0873	LID MARG RECONS FUL THIC	1152	REP CORNEA POSTOP DEHISC
0874	LID RECONST-FUL THIC NEC	1153	RX CORNEA LAC W CONJ FLP
0891	ELECTROSURG LID EPILAT	1159	CORNEAL REPAIR NEC
0892	CRYOSURG LID EPILATION	1160	CORNEAL TRANSPLANT NOS
0893	EYELID EPILATION NEC	1161	LAM KERATPLAST W AUTGRFT
0899	EYELID OPERATION NEC	1162	LAMELLAR KERATOPLAST NEC
090	LACRIMAL GLAND INCISION	1163	PERF KERATOPL W AUTOGRFT
0911	LACRIMAL GLAND BIOPSY	1164	PERFORAT KERATOPLAST NEC
0912	LACRIMAL SAC BIOPSY	1169	CORNEAL TRANSPLANT NEC
0919	LACRIMAL SYS DX PROC NEC	1171	KERATOMILEUSIS
0920	EXC LACRIMAL GLAND NOS	1172	KERATOPHAKIA
0921	EXCIS LES LACRIMAL GLAND	1173	KERATOPROSTHESIS
0922	PART DACRYOADENECT NEC	1174	THERMOKERATOPLASTY
0923	TOTAL DACRYOADENECTOMY	1175	RADIAL KERATOTOMY
093	OTHER LACRIMAL GLAND OPS	1176	EPIKERATOPHAKIA
0941	LACRIMAL PUNCTUM PROBE	1179	CORNEA RECONSTRUCT NEC
0942	LAC CANALICULI PROBE	1191	CORNEAL TATTOOING
0943	NASOLACRIMAL DUCT PROBE	1192	REMOVE CORNEAL IMPLANT
0944	NASOLAC DUCT INTUBAT	1199	CORNEAL OPERATION NEC
0949	LAC PASSAGE MANIP NEC	1200	REMOV ANT SEGMNT FB NOS
0951	LAC PUNCTUM INCISION	1201	MAGNET REMOV ANT SEG FB
0952	LAC CANALICULI INCISION	1202	NONMAG REMOV ANT SEG FB
0953	LACRIMAL SAC INCISION	1211	IRIDOTOMY W TRANSFIXION
0959	LACRIM PASSAGE INCIS NEC	1212	IRIDOTOMY NEC
096	LACRIM SAC/PASSAGE EXCIS	1213	PROLAPSED IRIS EXCISION
0971	CORRECT EVERTED PUNCTUM	1214	IRIDECTOMY NEC
0972	PUNCTUM REPAIR NEC	1221	DX ASPIRAT-ANT CHAMBER
0973	CANALICULUS REPAIR	1222	IRIS BIOPSY
0981	DACRYOCYSTORHINOSTOMY	1229	ANT SEGMENT DX PROC NEC
0982	CONJUNCTIVOCYSTORHINOST	1231	GONIOSYNECHIAE LYSIS
0983	CONJUNCTIVORHINOS W TUBE	1232	ANT SYNECHIA LYSIS NEC
0991	LAC PUNCTUM OBLITERATION	1233	POST SYNECHIAE LYSIS
0999	LACRIMAL SYSTEM OP NEC	1234	CORNEOVITREAL ADHESIOLYS
100	INCISE/REMOV CONJUNCT FB	1235	COREOPLASTY
101	CONJUNCTIVA INCISION NEC	1239	IRIDOPLASTY NEC
1021	CONJUNCTIVAL BIOPSY	1240	REMOV ANT SEGMNT LES NOS
1029	CONJUNCTIVA DX PROC NEC	1241	NONEXC DESTRUC IRIS LES
1031	EXCISE CONJUNCTIV LESION	1242	EXCISION OF IRIS LESION
1032	DESTRUCT CONJUNC LES NEC	1243	NONEXC DESTR CIL BOD LES
1033	OTH CONJUNC DESTRUC PROC	1244	EXCISE CILIARY BODY LES
1041	SYMBLEPH REP W FREE GRFT	1251	GONIOPUNCTURE
1042	GRAFT CONJUNC CUL-DE-SAC	1252	GONIOTOMY
1043	CONJUN CUL-DE-SAC RX NEC	1253	GONIOTOMY W GONIOPUNCTUR
1044	CONJUNC FREE GRAFT NEC	1254	TRABECULOTOMY AB EXTERNO
1049	CONJUNCTIVOPLASTY NEC	1255	CYCLODIALYSIS
105	CONJUNC/LID ADHESIOLYSIS	1259	FACILIT INTRAOC CIRC NEC
106	REPAIR CONJUNCT LACERAT	1261	TREPHIN SCLERA W IRIDECT
1091	SUBCONJUNCTIVAL INJECT	1262	THERMCAUT SCLER W IRIDEC
1099	CONJUNCTIVAL OP NEC	1263	IRIDENCLEISIS/IRIDOTASIS
110	MAGNET REMOVAL CORNEA FB	1264	TRABECULECTOM AB EXTERNO
111	CORNEAL INCISION	1265	SCLER FISTULIZ W IRIDECT
1121	CORNEAL SCRAPE FOR SMEAR	1266	POSTOP REVIS SCL FISTUL
1122	CORNEAL BIOPSY	1267	INSERT AQUEOUS DRAIN DEV
1129	CORNEAL DX PROC NEC	1269	SCLER FISTULIZING OP NEC
1131	PTERYGIUM TRANSPOSITION	1271	CYCLODIATHERMY
1132	PTERYG EXC W CORNEA GRFT	1272	CYCLOCRYOTHERAPY
1139	PTERYGIUM EXCISION NEC	1273	CYCLOPHOTOCOAGULATION
1141	MECH REMOV CORNEA EPITH	1274	CIL BODY DIMINUTION NOS
1142	THERMOCAUT CORNEA LESION	1279	GLAUCOMA PROCEDURE NEC
1143	CRYOTHERAP CORNEA LESION	1281	SUTURE SCLERAL LACER
1149	DESTRUCT CORNEA LES NEC	1282	SCLERAL FISTULA REPAIR

1283	REVIS ANT SEG OP WND NEC		1475	VITREOUS SUBSTITUT INJEC
1284	DESTRUCT SCLERAL LESION		1479	VITREOUS OPERATION NEC
1285	REPAIR STAPHYLOM W GRAFT		149	OTHER POST SEGMENT OPS
1286	REP SCLER STAPHYLOMA NEC		1501	EXTRAOC MUSC-TEND BIOPSY
1287	GRAFT REINFORCE SCLERA		1509	EXTRAOC MUSC DX PROC NEC
1288	SCLERA REINFORCEMENT NEC		1511	ONE EXTRAOC MUS RECESS
1289	SCLERAL OPERATION NEC		1512	1 EXTRAOC MUSCL ADVANCE
1291	THERAPEUT EVAC ANT CHAMB		1513	1 EXTRAOC MUSCL RESECT
1292	ANTERIOR CHAMBER INJECT		1519	XTRAOC MUS OP/DETACH NEC
1293	REMOV EPITHEL DOWNGROWTH		1521	LENGTHEN 1 EXTRAOC MUSC
1297	IRIS OPERATION NEC		1522	SHORTEN 1 EXTRAOC MUSC
1298	CILIARY BODY OP NEC		1529	OP ON 1 EXTRAOC MUSC NEC
1299	ANTERIOR CHAMBER OP NEC		153	TEMP DETACH >1 XTROC MUS
1300	REMOVE FB LENS NOS		154	OTH OP ON >L EXTRAOC MUS
1301	MAGNET REMOVE FB LENS		155	EXTRAOCUL MUS TRANSPOSIT
1302	NONMAGNET REMOVE FB LENS		156	REVIS EXTRAOC MUSC SURG
1311	TEMP-INF INTRCAP LENS EX		157	EXTRAOC MUSC INJ REPAIR
1319	INTRACAPSUL LENS EXT NEC		159	OTH EXTRAOC MUS-TEND OP
132	LINEAR EXTRACAP LENS EXT		1601	ORBITOTOMY W BONE FLAP
133	SIMPL ASPIR LENS EXTRACT		1602	ORBITOTOMY W IMPLANT
1341	CATARAC PHACOEMULS/ASPIR		1609	ORBITOTOMY NEC
1342	POST CATARAC FRAG/ASPIR		161	REMOVE PENETRAT FB EYE
1343	CATARACT FRAG/ASPIR NEC		1622	DIAGNOSTIC ASP OF ORBIT
1351	TEMP-INF XTRACAP LENS EX		1623	EYEBALL & ORBIT BIOPSY
1359	EXTRACAP LENS EXTRAC NEC		1629	EYEBAL/ORBIT DX PROC NEC
1364	AFTER-CATAR DISCISSION		1631	EYE EVISC W SYNCH IMPLAN
1365	AFTER-CATARACT EXCISION		1639	EYEBALL EVISCERATION NEC
1366	AFTER CATAR FRAGMNTATION		1641	EYE ENUC/IMPLAN/MUSC ATT
1369	CATARACT EXTRACTION NEC		1642	EYE ENUC W IMPLANT NEC
1370	INSERT PSEUDOPHAKOS NOS		1649	EYEBALL ENUCLEATION NEC
1371	INSERT LENS AT CATAR EXT		1651	RADICAL ORBITOMAXILLECT
1372	SECONDARY INSERT LENS		1652	ORBIT EXENT W BONE REMOV
138	IMPLANTED LENS REMOVAL		1659	ORBITAL EXENTERATION NEC
139	*OTHER OPERATIONS ON LENS*		1661	2NDRY OCULAR IMP INSERT
1390	OPERATION ON LENS NEC		1662	REVIS/REINSERT OCUL IMP
1391	IMPL INTRAOC TELESC PROS		1663	REVIS ENUC SOCKET W GRFT
1400	REMOV POST SEGMNT FB NOS		1664	ENUC SOCKET REVIS NEC
1401	MAGNET REMOV POST SEG FB		1665	2NDRY EXENT CAVITY GRAFT
1402	NONMAG REMOV POST SEG FB		1666	REVIS EXENTER CAVITY NEC
1411	DIAGNOST VITREOUS ASPIR		1669	2ND OP POST EYE REM NEC
1419	DX PROC POST SEG NEC		1671	REMOVE OCULAR IMPLANT
1421	CHORIORET LES DIATHERMY		1672	REMOVE ORBITAL IMPLANT
1422	CHORIORETIN LES CRYOTHER		1681	REPAIR OF ORBITAL WOUND
1426	CHORIORET LES RADIOTHER		1682	REPAIR EYEBALL RUPTURE
1427	CHORIORET LES RAD IMPLAN		1689	EYE/ORBIT INJ REPAIR NEC
1429	CHORIORET LES DESTR NEC		1692	EXCISION ORBITAL LESION
1431	RETINAL TEAR DIATHERMY		1693	EXCISION EYE LESION NOS
1432	RETINAL TEAR CRYOTHERAPY		1698	OPERATION ON ORBIT NEC
1439	RETINAL TEAR REPAIR NEC		1699	OPERATION ON EYEBALL NEC
1441	SCLERAL BUCKLE W IMPLANT		1711	LAP DIR ING HERN-GRAFT
1449	SCLERAL BUCKLING NEC		1712	LAP INDIR ING HERN-GRAFT
1451	DETACH RETINA-DIATHERMY		1713	LAP ING HERN-GRAFT NOS
1452	DETACH RETINA-CRYOTHERAP		1721	LAP BIL DIR ING HRN-GRFT
1453	DETACH RETINA XENON COAG		1722	LAP BI INDIR ING HRN-GRF
1454	DETACH RETINA LASER COAG		1723	LAP BI DR/IND ING HRN-GR
1455	DETACH RET PHOTOCOAG NOS		1724	LAP BIL ING HERN-GRF NOS
1459	REPAIR RETINA DETACH NEC		1731	LAP MUL SEG RES LG INTES
146	REMOV PROS MAT POST SEG		1732	LAPAROSCOPIC CECECTOMY
1471	ANTERIOR REMOV VITREOUS		1733	LAP RIGHT HEMICOLECTOMY
1472	VITREOUS REMOVAL NEC		1734	LAP RES TRANSVERSE COLON
1473	ANTERIOR MECHAN VITRECT		1735	LAP LEFT HEMICOLECTOMY
1474	MECH VITRECTOMY NEC		1736	LAP SIGMOIDECTOMY

1739	LAP PT EX LRG INTEST NEC	2109	EPISTAXIS CONTROL NEC
1751	IMPLANT CCM,TOTAL SYSTEM	214	RESECTION OF NOSE
1752	IMPLANT CCM PULSE GENRTR	215	SUBMUC NASAL SEPT RESECT
1753	PERC ATHER EXTRACRAN VSL	2161	DIATHER/CRYO TURBINECTOM
1754	PERC ATHER INTRACRAN VSL	2162	TURBINATE FRACTURE
1755	TRANSLUM COR ATHERECTOMY	2169	TURBINECTOMY NEC
1756	ATHER OTH NON-VOR VESSEL	2172	OPEN REDUCTION NASAL FX
1761	LITT LESN BRAIN,GUIDANCE	2182	NASAL FISTULA CLOSURE
1762	LITT LES HD/NCK,GUIDANCE	2183	TOT NASAL RECONSTRUCTION
1763	LITT LESN LIVER,GUIDANCE	2184	REVISION RHINOPLASTY
1769	LITT LESN, GUIDE OTH/NOS	2185	AUGMENTATION RHINOPLASTY
1770	IV INFUSION CLOFARABINE	2186	LIMITED RHINOPLASTY
1821	PREAURICULAR SINUS EXCIS	2187	RHINOPLASTY NEC
1831	RAD EXCIS EXT EAR LES	2188	SEPTOPLASTY NEC
1839	EXCIS EXTERNAL EAR NEC	2189	NASAL REPAIR NEC
185	CORRECTION PROMINENT EAR	2199	NASAL OPERATION NEC
186	EXT AUDIT CANAL RECONSTR	2212	OPEN BIOPSY NASAL SINUS
1871	CONSTRUCTION EAR AURICLE	2231	RADICAL MAXILLARY ANTROT
1872	REATTACH AMPUTATED EAR	2239	EXT MAXILLARY ANTROT NEC
1879	PLASTIC REP EXT EAR NEC	2241	FRONTAL SINUSOTOMY
189	OTHER EXT EAR OPERATIONS	2242	FRONTAL SINUSECTOMY
190	STAPES MOBILIZATION	2250	SINUSOTOMY NOS
1911	STAPEDECT W REPLAC INCUS	2251	ETHMOIDOTOMY
1919	STAPEDECTOMY NEC	2252	SPHENOIDOTOMY
1921	REV STAPDEC W INCUS REPL	2253	MULTIPLE SINUS INCISION
1929	STAPEDECTOMY REVIS NEC	2260	SINUSECTOMY NOS
193	OSSICULAR CHAIN OP NEC	2261	C-LUC EXC MAX SINUS LES
194	MYRINGOPLASTY	2262	EXC MAX SINUS LESION NEC
1952	TYPE 2 TYMPANOPLASTY	2263	ETHMOIDECTOMY
1953	TYPE 3 TYMPANOPLASTY	2264	SPHENOIDECTOMY
1954	TYPE 4 TYMPANOPLASTY	2271	NASAL SINUS FISTULA CLOS
1955	TYPE 5 TYMPANOPLASTY	2279	NASAL SINUS REPAIR NEC
196	TYMPANOPLASTY REVISION	229	OTHER NASAL SINUS OPS
199	MIDDLE EAR REPAIR NEC	242	GINGIVOPLASTY
2001	MYRINGOTOMY W INTUBATION	244	EXC OF DENTAL LES OF JAW
2021	MASTOID INCISION	245	ALVEOLOPLASTY
2022	PETRUS PYRAM AIR CEL INC	2502	OPEN BIOPSY OF TONGUE
2023	MIDDLE EAR INCISION	251	DESTRUCTION TONGUE LES
2032	MID & INNER EAR BIOPSY	252	PARTIAL GLOSSECTOMY
2039	MID/IN EAR DX PROC NEC	253	COMPLETE GLOSSECTOMY
2041	SIMPLE MASTOIDECTOMY	254	RADICAL GLOSSECTOMY
2042	RADICAL MASTOIDECTOMY	2559	REPAIR OF TONGUE NEC
2049	MASTOIDECTOMY NEC	2594	OTHER GLOSSOTOMY
2051	EXCISE MIDDLE EAR LESION	2599	TONGUE OPERATION NEC
2059	MIDDLE EAR EXCISION NEC	2612	OPEN BX SALIV GLAND/DUCT
2061	INNER EAR FENESTRATION	2621	SALIVARY CYST MARSUPIAL
2062	REVIS INNER EAR FENESTRA	2629	SALIV LESION EXCIS NEC
2071	ENDOLYMPHATIC SHUNT	2630	SIALOADENECTOMY NOS
2072	INNER EAR INJECTION	2631	PARTIAL SIALOADENECTOMY
2079	INC/EXC/DESTR IN EAR NEC	2632	COMPLETE SIALOADENECTOMY
2091	TYMPANOSYMPATHECTOMY	2641	SUTURE OF SALIV GLND LAC
2092	MASTOIDECTOMY REVISION	2642	SALIVARY FISTULA CLOSURE
2093	REPAIR OVAL/ROUND WINDOW	2649	SALIVARY REPAIR NEC
2095	ELECMAG HEAR DEV IMPLANT	2699	SALIVARY OPERATION NEC
2096	IMPLT COCHLEAR PROST NOS	270	DRAIN FACE & MOUTH FLOOR
2097	IMP/REP SCHAN COCH PROS	271	INCISION OF PALATE
2098	IMP/REP MCHAN COCHL PROS	2721	BONY PALATE BIOPSY
2099	MID-INNER EAR OPS NEC	2722	UVULA AND SOFT PALATE BX
2104	ETHMOID ART LIGAT-EPIST	2731	LOC EXC BONY PALATE LES
2105	MAX ART LIG FOR EPISTAX	2732	WIDE EXC BONY PALATE LES
2106	EXT CAROT ART LIG-EPIST	2742	WIDE EXCISION OF LIP LES
2107	NASAL SEPT GRFT-EPISTAX	2743	EXCISION OF LIP LES NEC

2749	EXCISION OF MOUTH NEC		3171	SUTURE OF TRACHEAL LACER
2753	CLOSURE OF MOUTH FISTULA		3172	CLOSURE OF TRACHEOSTOMY
2754	REPAIR OF CLEFT LIP		3173	TRACHEA FISTULA CLOS NEC
2755	FULL-THICK GRFT TO MOUTH		3174	REVISION OF TRACHEOSTOMY
2756	SKIN GRAFT TO MOUTH NEC		3175	TRACHEAL RECONSTRUCTION
2757	PEDICLE ATTACH TO MOUTH		3179	OTHER TRACHEAL REPAIR
2759	MOUTH REPAIR NEC		3191	LARYNGEAL NERV DIVISION
2761	SUTURE OF PALATE LACERAT		3192	LYSIS TRACH/LARYNX ADHES
2762	CLEFT PALATE CORRECTION		3198	OTH LARYNGEAL OPERATION
2763	REVIS CLEFT PALAT REPAIR		3199	OTHER TRACHEAL OPERATION
2769	OTH PLASTIC REPAIR PALAT		*320*	*OTHER TRACHEAL OPERATION*
2771	INCISION OF UVULA		3209	OTHER DESTRUC BRONC LES
2772	EXCISION OF UVULA		321	OTHER BRONCHIAL EXCISION
2773	REPAIR OF UVULA		3220	THORAC EXC LUNG LESION
2779	OTHER UVULA OPERATIONS		3221	EMPHYSEMA BLEB PLICATION
2792	MOUTH INCISION NOS		3222	LUNG VOL REDUCTION SURG
2799	ORAL CAVITY OPS NEC		3223	OPEN ABLTN LUNG LES/TISS
280	PERITONSILLAR I & D		3224	PERC ABLTN LUNG LES/TISS
2811	TONSIL&ADENOID BIOPSY		3225	THOR ABLTN LUNG LES/TISS
2819	TONSIL&ADENOID DX OP NEC		3226	ABLTN LUNG TISS NEC/NOS
282	TONSILLECTOMY		3229	DESTROY LOC LUNG LES NEC
283	TONSILLECTOMY/ADENOIDEC		*323*	*SEGMENTAL LUNG RESECTION*
284	EXCISION OF TONSIL TAG		3230	THORAC SEG LUNG RESECT
285	EXCISION LINGUAL TONSIL		3239	OTH SEG LUNG RESECT NOS
286	ADENOIDECTOMY		*324*	*LOBECTOMY OF LUNG*
287	HEMORR CONTRL POST T & A		3241	THORAC LOBECTOMY LUNG
2891	INCIS TO REMOV TONSIL FB		3249	LOBECTOMY OF LUNG NEC
2892	EXCIS TONSIL/ADENOID LES		*325*	*COMPLETE PNEUMONECTOMY*
2899	TONSIL/ADENOID OPS NEC		3250	THORACOSPC PNEUMONECTOMY
290	PHARYNGOTOMY		3259	OTHER PNEUMONECTOMY NOS
292	EXC BRANCHIAL CLEFT CYST		326	RAD DISSEC THORAC STRUCT
293	*EXC BRANCHIAL CLEFT CYST*		329	OTHER EXCISION OF LUNG
2931	CRICOPHARYNGEAL MYOTOMY		330	INCISION OF BRONCHUS
2932	PHARYNGEAL DIVERTICULEC		331	INCISION OF LUNG
2933	PHARYNGECTOMY		3320	THORACOSCOPC LUNG BIOPSY
2939	EXCIS/DESTR LES PHAR NEC		3325	OPEN BRONCHIAL BIOPSY
294	PLASTIC OP ON PHARYNX		3327	CLOS ENDOSCOPIC LUNG BX
2951	SUTURE OF PHARYNGEAL LAC		3328	OPEN LUNG BIOPSY
2952	CLOS BRANCH CLEFT FISTUL		3329	BRONCH/LUNG DX PROC NEC
2953	CLOS PHARYNX FISTULA NEC		3334	THORACOPLASTY
2954	LYSIS PHARYNGEAL ADHES		3339	SURG COLLAPS OF LUNG NEC
2959	PHARYNGEAL REPAIR NEC		3341	BRONCHIAL LACERAT SUTURE
2992	DIVIS GLOSSOPHARYNG NERV		3342	BRONCHIAL FISTULA CLOS
2999	PHARYNGEAL OPERATION NEC		3343	LUNG LACERATION CLOSURE
3001	LARYNX CYST MARSUPIALIZ		3348	BRONCHIAL REPAIR NEC
3009	DESTRUCT LARYNX LES NEC		3349	LUNG REPAIR NEC
301	HEMILARYNGECTOMY		335	LUNG REPAIR NEC
3021	EPIGLOTTIDECTOMY		3350	LUNG TRANSPLANT NOS
3022	VOCAL CORDECTOMY		3351	UNILAT LUNG TRANSPLANT
3029	OTHER PART LARYNGECTOMY		3352	BILAT LUNG TRANSPLANT
303	COMPLETE LARYNGECTOMY		336	COMB HEART/LUNG TRANSPLA
304	RADICAL LARYNGECTOMY		3373	ENDO INS/RE BRNC VAL,MUL
3121	MEDIASTINAL TRACHEOSTOMY		3392	BRONCHIAL LIGATION
3129	OTHER PERM TRACHEOSTOMY		3393	PUNCTURE OF LUNG
313	INCIS LARYNX TRACHEA NEC		3398	BRONCHIAL OPERATION NEC
3145	OPN BX LARYNX OR TRACHEA		3399	LUNG OPERATION NEC
315	LOCAL DESTRUC TRACH LES		3402	EXPLORATORY THORACOTOMY
3161	SUTURE OF LARYNGEAL LAC		3403	REOPEN THORACOTOMY SITE
3162	LARYNGEAL FISTULA CLOS		3406	THORAC DRAIN PLEURL CAV
3163	LARYNGOSTOMY REVISION		341	INCISION OF MEDIASTINUM
3164	LARYNGEAL FX REPAIR		3420	THORACOSCOPIC PLEURAL BX
3169	OTHER LARYNGEAL REPAIR		3421	TRANSPLEURA THORACOSCOPY

3422	MEDIASTINOSCOPY	3563	GRFT REP ENDOCAR CUSHION
3426	OPEN MEDIASTINAL BIOPSY	3570	HEART SEPTA REPAIR NOS
3427	BIOPSY OF DIAPHRAGM	3571	ATRIA SEPTA DEF REP NEC
3428	DX PROCEDURE THORAX NEC	3572	VENTR SEPTA DEF REP NEC
3429	DX PROC MEDIASTINUM NEC	3573	ENDOCAR CUSHION REP NEC
343	DESTRUCT MEDIASTIN LES	3581	TOT REPAIR TETRAL FALLOT
344	DESTRUCT CHEST WALL LES	3582	TOTAL REPAIR OF TAPVC
3451	DECORTICATION OF LUNG	3583	TOT REP TRUNCUS ARTERIOS
3452	THORACOSCOPC DECORT LUNG	3584	TOT COR TRANSPOS GRT VES
3459	OTHER PLEURAL EXCISION	3591	INTERAT VEN RETRN TRANSP
346	SCARIFICATION OF PLEURA	3592	CONDUIT RT VENT-PUL ART
3473	CLOS THORACIC FISTUL NEC	3593	CONDUIT LEFT VENTR-AORTA
3474	PECTUS DEFORMITY REPAIR	3594	CONDUIT ARTIUM-PULM ART
3479	OTHER CHEST WALL REPAIR	3595	HEART REPAIR REVISION
3481	EXCISE DIAPHRAGM LESION	3596	PERC HEART VALVULOPLASTY
3482	SUTURE DIAPHRAGM LACERAT	3598	OTHER HEART SEPTA OPS
3483	CLOSE DIAPHRAGM FISTULA	3599	OTHER HEART VALVE OPS
3484	OTHER DIAPHRAGM REPAIR	*3600*	*OTHER HEART VALVE OPS*
3485	IMPLANT DIAPHRA PACEMAKE	*3601*	*PTCA-1 VES/ATH W/O AGENT*
3489	DIAPHRAGM OPERATION NEC	*3602*	*PTCA-1 VES/ATH W AGENT*
3493	REPAIR OF PLEURA	3603	OPEN CORONRY ANGIOPLASTY
3499	THORACIC OPERATION NEC	*3605*	*PTCA-MULTIPLE VESSEL/ATH*
3500	CLOSED VALVOTOMY NOS	3609	REM OF COR ART OBSTR NEC
3501	CLOSED AORTIC VALVOTOMY	3610	AORTOCORONARY BYPASS NOS
3502	CLOSED MITRAL VALVOTOMY	3611	AORTOCOR BYPAS-1 COR ART
3503	CLOSED PULMON VALVOTOMY	3612	AORTOCOR BYPAS-2 COR ART
3504	CLOSED TRICUSP VALVOTOMY	3613	AORTOCOR BYPAS-3 COR ART
3505	ENDOVAS REPL AORTC VALVE	3614	AORTCOR BYPAS-4+ COR ART
3506	TRNSAPCL REP AORTC VALVE	3615	1 INT MAM-COR ART BYPASS
3507	ENDOVAS REPL PULM VALVE	3616	2 INT MAM-COR ART BYPASS
3508	TRNSAPCL REPL PULM VALVE	3617	ABD-CORON ARTERY BYPASS
3509	ENDOVAS REPL UNS HRT VLV	3619	HRT REVAS BYPS ANAS NEC
3510	OPEN VALVULOPLASTY NOS	362	ARTERIAL IMPLANT REVASC
3511	OPN AORTIC VALVULOPLASTY	*363*	*ARTERIAL IMPLANT REVASC*
3512	OPN MITRAL VALVULOPLASTY	3631	OPEN CHEST TRANS REVASC
3513	OPN PULMON VALVULOPLASTY	3632	OTH TRANSMYO REVASCULAR
3514	OPN TRICUS VALVULOPLASTY	3633	ENDO TRANSMYO REVASCULAR
3520	OPN/OTH REP HRT VLV NOS	3634	PERC TRANSMYO REVASCULAR
3521	OPN/OTH REP AORT VLV-TIS	3639	OTH HEART REVASCULAR
3522	OPN/OTH REP AORTIC VALVE	3691	CORON VESS ANEURYSM REP
3523	OPN/OTH REP MRTL VLV-TIS	3699	HEART VESSEL OP NEC
3524	OPN/OTH REP MITRAL VALVE	3710	INCISION OF HEART NOS
3525	OPN/OTH REP PULM VLV-TIS	3711	CARDIOTOMY
3526	OPN/OTH REPL PUL VALVE	3712	PERICARDIOTOMY
3527	OPN/OTH REP TCSPD VLV-TS	3724	PERICARDIAL BIOPSY
3528	OPN/OTH REPL TCSP VALVE	3731	PERICARDIECTOMY
3531	PAPILLARY MUSCLE OPS	3732	HEART ANEURYSM EXCISION
3532	CHORDAE TENDINEAE OPS	3733	EXC/DEST HRT LESION OPEN
3533	ANNULOPLASTY	3734	EXC/DEST HRT LES OTHER
3534	INFUNDIBULECTOMY	3735	PARTIAL VENTRICULECTOMY
3535	TRABECUL CARNEAE CORD OP	*374*	*HEART & PERICARD REPAIR*
3539	TISS ADJ TO VALV OPS NEC	3741	IMPL CARDIAC SUPPORT DEV
3542	CREATE SEPTAL DEFECT	3749	HEART/PERICARD REPR NEC
3550	PROSTH REP HRT SEPTA NOS	*375*	*HEART & PERICARD REPAIR*
3551	PROS REP ATRIAL DEF-OPN	3751	HEART TRANSPLANTATION
3552	PROS REPAIR ATRIA DEF-CL	3752	IMP TOT INT BI HT RP SYS
3553	PROS REP VENTRIC DEF-OPN	3753	REPL/REP THR UNT TOT HRT
3554	PROS REP ENDOCAR CUSHION	3754	REPL/REP OTH TOT HRT SYS
3555	PROS REP VENTRC DEF-CLOS	3755	REM INT BIVENT HRT SYS
3560	GRFT REPAIR HRT SEPT NOS	3760	IMP BIVN EXT HRT AST SYS
3561	GRAFT REPAIR ATRIAL DEF	3761	PULSATION BALLOON IMPLAN
3562	GRAFT REPAIR VENTRIC DEF	3762	INSRT NON-IMPL CIRC DEV

3763	REPAIR HEART ASSIST SYS	3846	ABD ARTERY RESEC W REPLA
3764	REMVE EXT HRT ASSIST SYS	3847	ABD VEIN RESECT W REPLAC
3765	IMP VENT EXT HRT AST SYS	3848	LEG ARTERY RESEC W REPLA
3766	IMPLANTABLE HRT ASSIST	3849	LEG VEIN RESECT W REPLAC
3767	IMP CARDIOMYOSTIMUL SYS	3850	VARICOSE V LIG-STRIP NOS
3768	PERCUTAN HRT ASSIST SYST	3851	INTCRAN VAR V LIG-STRIP
3774	INT OR REPL LEAD EPICAR	3852	HEAD/NECK VAR V LIG-STR
3775	REVISION OF LEAD	3853	ARM VARICOSE V LIG-STRIP
3776	REPL TV ATRI-VENT LEAD	3855	THORAC VAR V LIG-STRIP
3777	REMOVAL OF LEAD W/O REPL	3857	ABD VARICOS V LIGA-STRIP
3779	REV/RELOC CARD DEV POCKT	3859	LEG VARICOS V LIGA-STRIP
3780	INT OR REPL PERM PACEMKR	3860	EXCISION OF VESSEL NOS
3785	REPL PACEM W 1-CHAM, NON	3861	INTRACRAN VESSEL EXCIS
3786	REPL PACEM 1-CHAM, RATE	3862	HEAD/NECK VESSEL EXCIS
3787	REPL PACEM W DUAL-CHAM	3863	ARM VESSEL EXCISION
3789	REVISE OR REMOVE PACEMAK	3864	EXCISION OF AORTA
3791	OPN CHEST CARDIAC MASSAG	3865	THORACIC VESSEL EXCISION
3794	IMPLT/REPL CARDDEFIB TOT	3866	ABDOMINAL ARTERY EXCIS
3795	IMPLT CARDIODEFIB LEADS	3867	ABDOMINAL VEIN EXCISION
3796	IMPLT CARDIODEFIB GENATR	3868	LEG ARTERY EXCISION
3797	REPL CARDIODEFIB LEADS	3869	LEG VEIN EXCISION
3798	REPL CARDIODEFIB GENRATR	3880	SURG VESSEL OCCLUS NEC
3799	OTHER HEART/PERICARD OPS	3881	OCCLUS INTRACRAN VES NEC
3800	INCISION OF VESSEL NOS	3882	OCCLUS HEAD/NECK VES NEC
3801	INTRACRAN VESSEL INCIS	3883	OCCLUDE ARM VESSEL NEC
3802	HEAD/NECK VES INCIS NEC	3884	OCCLUDE AORTA NEC
3803	UPPER LIMB VESSEL INCIS	3885	OCCLUDE THORACIC VES NEC
3804	INCISION OF AORTA	3886	OCCLUDE ABD ARTERY NEC
3805	THORACIC VESSEL INC NEC	3887	OCCLUDE ABD VEIN NEC
3806	ABDOMEN ARTERY INCISION	3888	OCCLUDE LEG ARTERY NEC
3807	ABDOMINAL VEIN INCISION	3889	OCCLUDE LEG VEIN NEC
3808	LOWER LIMB ARTERY INCIS	390	SYSTEMIC-PULM ART SHUNT
3809	LOWER LIMB VEIN INCISION	391	INTRA-ABD VENOUS SHUNT
3810	ENDARTERECTOMY NOS	3921	CAVAL-PULMON ART ANASTOM
3811	INTRACRAN ENDARTERECTOMY	3922	AORTA-SUBCLV-CAROT BYPAS
3812	HEAD & NECK ENDARTER NEC	3923	INTRATHORACIC SHUNT NEC
3813	UPPER LIMB ENDARTERECTOM	3924	AORTA-RENAL BYPASS
3814	ENDARTERECTOMY OF AORTA	3925	AORTA-ILIAC-FEMOR BYPASS
3815	THORACIC ENDARTERECTOMY	3926	INTRA-ABDOMIN SHUNT NEC
3816	ABDOMINAL ENDARTERECTOMY	3927	DIALYSIS ARTERIOVENOSTOM
3818	LOWER LIMB ENDARTERECT	3928	EXTRACRAN-INTRACR BYPASS
3821	BLOOD VESSEL BIOPSY	3929	VASC SHUNT & BYPASS NEC
3824	INTRAVAS IMG COR VES OCT	3930	SUTURE OF VESSEL NOS
3825	INTRAVAS IMG NON-COR OCT	3931	SUTURE OF ARTERY
3826	INSRT PRSR SNSR W/O LEAD	3932	SUTURE OF VEIN
3829	BLOOD VESSEL DX PROC NEC	3941	POSTOP VASC OP HEM CONTR
3830	VESSEL RESECT/ANAST NOS	3942	REVIS REN DIALYSIS SHUNT
3831	INTRACRAN VES RESEC-ANAS	3943	REMOV REN DIALYSIS SHUNT
3832	HEAD/NECK VES RESEC-ANAS	3949	VASC PROC REVISION NEC
3833	ARM VESSEL RESECT/ANAST	3950	ANGIO/ATH NON-CORO VES
3834	AORTA RESECTION & ANAST	3951	CLIPPING OF ANEURYSM
3835	THOR VESSEL RESECT/ANAST	3952	ANEURYSM REPAIR NEC
3836	ABD VESSEL RESECT/ANAST	3953	ARTERIOVEN FISTULA REP
3837	ABD VEIN RESECT & ANAST	3954	RE-ENTRY OPERATION
3838	LEG ARTERY RESECT/ANAST	3955	REIMPLAN ABERR RENAL VES
3839	LEG VEIN RESECT/ANASTOM	3956	REPAIR VESS W TIS PATCH
3840	VESSEL RESECT/REPLAC NOS	3957	REP VESS W SYNTH PATCH
3841	INTRACRAN VES RESEC-REPL	3958	REPAIR VESS W PATCH NOS
3842	HEAD/NECK VES RESEC-REPL	3959	REPAIR OF VESSEL NEC
3843	ARM VES RESECT W REPLACE	*397*	*PER CARDIOPULMON BYPASS*
3844	RESECT ABDM AORTA W REPL	3971	ENDO IMPL GRFT ABD AOR
3845	RESECT THORAC VES W REPL	3972	ENDOVASC EMBOL HD/NK VES

3973	ENDO IMP GRFT THOR AORTA		4251	THORAC ESOPHAGOESOPHAGOS
3974	ENDO REM OBS HD/NECK VES		4252	THORAC ESOPHAGOGASTROST
3975	ENDO EMB HD/NK, BARE COIL		4253	THORAC SM BOWEL INTERPOS
3976	ENDO EM HD/NK, BIOAC COIL		4254	THORAC ESOPHAGOENTER NEC
3977	TEMP ENDOVSC OCCLS VESSL		4255	THORAC LG BOWEL INTERPOS
3978	ENDOVAS IMPLN GRFT AORTA		4256	THORAC ESOPHAGOCOLOS NEC
3979	OTH ENDO PROC OTH VESSEL		4258	THORAC INTERPOSITION NEC
398	*CARTD BODY/SINUS/VASC OP*		4259	THORAC ESOPHAG ANAST NEC
3991	FREEING OF VESSEL		4261	STERN ESOPHAGOESOPHAGOST
3992	VEIN INJECT-SCLEROS AGNT		4262	STERN ESOPHAGOGASTROSTOM
3993	INSERT VES-TO-VES CANNUL		4263	STERN SM BOWEL INTERPOS
3994	REPLAC VES-TO-VES CANNUL		4264	STERN ESOPHAGOENTER NEC
3998	HEMORRHAGE CONTROL NOS		4265	STERN LG BOWEL INTERPOS
3999	VESSEL OPERATION NEC		4266	STERN ESOPHAGOCOLOS NEC
400	INCIS LYMPHATIC STRUCTUR		4268	STERN INTERPOSITION NEC
4011	LYMPHATIC STRUCT BIOPSY		4269	STERN ESOPHAG ANAST NEC
4019	LYMPHATIC DIAG PROC NEC		427	ESOPHAGOMYOTOMY
4021	EXCIS DEEP CERVICAL NODE		4282	SUTURE ESOPHAGEAL LACER
4022	EXCISE INT MAMMARY NODE		4283	ESOPHAGOSTOMY CLOSURE
4023	EXCISE AXILLARY NODE		4284	ESOPH FISTULA REPAIR NEC
4024	EXCISE INGUINAL NODE		4285	ESOPHAG STRICTURE REPAIR
4029	SIMP EXC LYMPH STRUC NEC		4286	PROD SUBQ TUNNEL NO ANAS
403	REGIONAL LYMPH NODE EXC		4287	ESOPHAGEAL GRAFT NEC
4040	RAD NECK DISSECTION NOS		4289	ESOPHAGEAL REPAIR NEC
4041	UNILAT RAD NECK DISSECT		4291	LIGATION ESOPH VARIX
4042	BILAT RAD NECK DISSECT		430	GASTROTOMY
4050	RAD NODE DISSECTION NOS		*431*	*GASTROTOMY*
4051	RAD DISSEC AXILLARY NODE		*432*	*OTHER GASTROSTOMY*
4052	RAD DISSEC PERIAORT NODE		433	PYLOROMYOTOMY
4053	RAD DISSECT ILIAC NODES		4342	LOCAL GASTR EXCISION NEC
4054	RADICAL GROIN DISSECTION		4349	LOCAL GASTR DESTRUCT NEC
4059	RAD NODE DISSECTION NEC		435	PROXIMAL GASTRECTOMY
4061	THORAC DUCT CANNULATION		436	DISTAL GASTRECTOMY
4062	THORACIC DUCT FISTULIZAT		437	PART GASTREC W JEJ ANAST
4063	CLOSE THORACIC DUCT FIST		4381	PART GAST W JEJ TRANSPOS
4064	LIGATE THORACIC DUCT		4382	LAP VERTICAL GASTRECTOMY
4069	THORACIC DUCT OP NEC		4389	OPN/OTH PART GASTRECTOMY
409	LYMPH STRUCTURE OP NEC		4391	TOT GAST W INTES INTERPO
412	SPLENOTOMY		4399	TOTAL GASTRECTOMY NEC
4133	OPEN SPLEEN BIOPSY		4400	VAGOTOMY NOS
4141	SPLENIC CYST MARSUPIAL		4401	TRUNCAL VAGOTOMY
4142	EXC SPLENIC LESION/TISS		4402	HIGHLY SELECT VAGOTOMY
4143	PARTIAL SPLENECTOMY		4403	SELECTIVE VAGOTOMY NEC
415	TOTAL SPLENECTOMY		4411	TRANSABDOMIN GASTROSCOPY
4193	EXC OF ACCESSORY SPLEEN		4415	OPEN GASTRIC BIOPSY
4194	SPLEEN TRANSPLANTATION		*442*	*GASTRIC DIAGNOS PROC NEC*
4195	REPAIR OF SPLEEN		4421	DILATE PYLORUS, INCISION
4199	SPLEEN OPERATION NEC		4429	OTHER PYLOROPLASTY
4201	ESOPHAGEAL WEB INCISION		4431	HIGH GASTRIC BYPASS
4209	ESOPHAGEAL INCISION NEC		4432	PERCU GASTROJEJUNOSTOMY
4210	ESOPHAGOSTOMY NOS		4438	LAP GASTROENTEROSTOMY
4211	CERVICAL ESOPHAGOSTOMY		4439	GASTROENTEROSTOMY NEC
4212	ESOPH POUCH EXTERIORIZAT		4440	SUTURE PEPTIC ULCER NOS
4219	EXT FISTULIZAT ESOPH NEC		4441	SUT GASTRIC ULCER SITE
4221	ESOPHAGOSCOPY BY INCIS		4442	SUTURE DUODEN ULCER SITE
4225	OPEN BIOPSY OF ESOPHAGUS		445	REVISION GASTRIC ANASTOM
4231	LOC EXCIS ESOPH DIVERTIC		4461	SUTURE GASTRIC LACERAT
4232	LOCAL EXCIS ESOPHAG NEC		4463	CLOSE GASTRIC FISTUL NEC
4239	DESTRUCT ESOPHAG LES NEC		4464	GASTROPEXY
4240	ESOPHAGECTOMY NOS		4465	ESOPHAGOGASTROPLASTY
4241	PARTIAL ESOPHAGECTOMY		4466	CREAT ESOPHAGASTR SPHINC
4242	TOTAL ESOPHAGECTOMY		4467	LAP CREAT ESOPH SPHINCT

4468	LAPAROSCOP GASTROPLSTY	4650	INTEST STOMA CLOSURE NOS
4469	GASTRIC REPAIR NEC	4651	SM BOWEL STOMA CLOSURE
4491	LIGATE GASTRIC VARICES	4652	LG BOWEL STOMA CLOSURE
4492	INTRAOP GASTRIC MANIPUL	4660	INTESTINAL FIXATION NOS
4495	LAP GASTRIC RESTRIC PROC	4661	SM BOWEL-ABD WALL FIXAT
4496	LAP REV GAST RESTRI PROC	4662	SMALL BOWEL FIXATION NEC
4497	LAP REM GAST RESTRIC DEV	4663	LG BOWEL-ABD WALL FIXAT
4498	ADJUST GAST RESTRICT DEV	4664	LARGE BOWEL FIXATION NEC
4499	GASTRIC OPERATION NEC	4671	DUODENAL LACERAT SUTURE
4500	INTESTINAL INCISION NOS	4672	DUODENAL FISTULA CLOSURE
4501	DUODENAL INCISION	4673	SMALL BOWEL SUTURE NEC
4502	SMALL BOWEL INCISION NEC	4674	CLOSE SM BOWEL FIST NEC
4503	LARGE BOWEL INCISION	4675	SUTURE LG BOWEL LACERAT
4511	TRANSAB SM BOWEL ENDOSC	4676	CLOSE LG BOWEL FISTULA
4515	OPEN SMALL BOWEL BIOPSY	4679	REPAIR OF INTESTINE NEC
4521	TRANSAB LG BOWEL ENDOSC	4680	INTRA-AB BOWEL MANIP NOS
4526	OPEN LARGE BOWEL BIOPSY	4681	INTRA-ABD SM BOWEL MANIP
4531	OTH EXCISE DUODENUM LES	4682	INTRA-ABD LG BOWEL MANIP
4532	DESTRUCT DUODEN LES NEC	4686	ENDO INSRT COLONIC STENT
4533	LOCAL EXCIS SM BOWEL NEC	4687	INSERT COLONIC STENT NEC
4534	DESTR SM BOWEL LES NEC	4691	MYOTOMY OF SIGMOID COLON
4541	EXCISE LG INTESTINE LES	4692	MYOTOMY OF COLON NEC
4549	DESTRUC LG BOWEL LES NEC	4693	REVISE SM BOWEL ANASTOM
4550	INTEST SEG ISOLAT NOS	4694	REVISE LG BOWEL ANASTOM
4551	SM BOWEL SEGMENT ISOLAT	4697	TRANSPLANT OF INTESTINE
4552	LG BOWEL SEGMENT ISOLAT	4699	INTESTINAL OP NEC
4561	MULT SEG SM BOWEL EXCIS	*470*	*INTESTINAL OP NEC*
4562	PART SM BOWEL RESECT NEC	4701	LAP APPENDECTOMY
4563	TOTAL REMOVAL SM BOWEL	4709	OTHER APPENDECTOMY
4571	OPN MUL SEG LG INTES NEC	*471*	*OTHER APPENDECTOMY*
4572	OPEN CECECTOMY NEC	4711	LAP INCID APPENDECTOMY
4573	OPN RT HEMICOLECTOMY NEC	4719	OTHER INCID APPENDECTOMY
4574	OPN TRANSV COLON RES NEC	472	DRAIN APPENDICEAL ABSC
4575	OPN LFT HEMICOLECTMY NEC	4791	APPENDICOSTOMY
4576	OPEN SIGMOIDECTOMY NEC	4792	CLOSE APPENDICEAL FISTUL
4579	PRT LG INTES EXC NEC/NOS	4799	APPENDICEAL OPS NEC
458	*TOT INTRA-ABD COLECTOMY*	480	PROCTOTOMY
4581	LAP TOT INTR-AB COLECTMY	481	PROCTOSTOMY
4582	OP TOT INTR-ABD COLECTMY	4821	TRANSAB PROCTOSIGMOIDOSC
4583	TOT ABD COLECTMY NEC/NOS	4825	OPEN RECTAL BIOPSY
4590	INTESTINAL ANASTOM NOS	4835	LOCAL EXCIS RECTAL LES
4591	SM-TO-SM BOWEL ANASTOM	4840	PULL-THRU RES RECTUM NOS
4592	SM BOWEL-RECT STUMP ANAS	4841	SOAVE SUBMUC RECT RESECT
4593	SMALL-TO-LARGE BOWEL NEC	4842	LAP PULL-THRU RES RECTUM
4594	LG-TO-LG BOWEL ANASTOM	4843	OPN PULL-THRU RES RECTUM
4595	ANAL ANASTOMOSIS	4849	PULL-THRU RECT RESEC NEC
4601	SM BOWEL EXTERIORIZATION	*485*	*ABDPERINEAL RECT RESECT*
4602	RESECT EXT SEG SM BOWEL	4850	ABDPERNEAL RES RECTM NOS
4603	LG BOWEL EXTERIORIZATION	4851	LAP ABDPERNEAL RESC REC
4604	RESECT EXT SEG LG BOWEL	4852	OPN ABDPERNEAL RESC REC
4610	COLOSTOMY NOS	4859	ABDPERNEAL RESC RECT NEC
4611	TEMPORARY COLOSTOMY	4861	TRANSSAC RECTOSIGMOIDECT
4612	TEMPORARY COLOSTOMY	4862	ANT RECT RESECT W COLOST
4613	PERMANENT COLOSTOMY	4863	ANTERIOR RECT RESECT NEC
4620	ILEOSTOMY NOS	4864	POSTERIOR RECT RESECTION
4621	TEMPORARY ILEOSTOMY	4865	DUHAMEL RECTAL RESECTION
4622	CONTINENT ILEOSTOMY	*4866*	*DUHAMEL RECTAL RESECTION*
4623	PERMANENT ILEOSTOMY NEC	4869	RECTAL RESECTION NEC
4640	INTEST STOMA REVIS NOS	4871	SUTURE OF RECTAL LACER
4641	SM BOWEL STOMA REVISION	4872	CLOSURE OF PROCTOSTOMY
4642	PERICOLOST HERNIA REPAIR	4873	CLOSE RECTAL FIST NEC
4643	LG BOWEL STOMA REVIS NEC	4874	RECTORECTOSTOMY

4875	ABDOMINAL PROCTOPEXY		5123	LAPAROSCOPIC CHOLECYSTEC
4876	PROCTOPEXY NEC		5124	LAP PART CHOLECYSTECTOMY
4879	REPAIR OF RECTUM NEC		5131	GB-TO-HEPAT DUCT ANAST
4881	PERIRECTAL INCISION		5132	GB-TO-INTESTINE ANASTOM
4882	PERIRECTAL EXCISION		5133	GB-TO-PANCREAS ANASTOM
4891	INCIS RECTAL STRICTURE		5134	GB-TO-STOMACH ANASTOMOS
4892	ANORECTAL MYOMECTOMY		5135	GALLBLADDER ANASTOM NEC
4893	REPAIR PERIRECT FISTULA		5136	CHOLEDOCHOENTEROSTOMY
4899	RECTAL PERIRECT OP NEC		5137	HEPATIC DUCT-GI ANASTOM
4901	INCIS PERIANAL ABSCESS		5139	BILE DUCT ANASTOMOS NEC
4902	PERIANAL INCISION NEC		5141	CDE FOR CALCULUS REMOV
4904	PERIANAL EXCISION NEC		5142	CDE FOR OBSTRUCTION NEC
4911	ANAL FISTULOTOMY		5143	CHOLEDOCHOHEPAT INTUBAT
4912	ANAL FISTULECTOMY		5149	INCIS OBSTR BILE DUC NEC
493	*ANAL/PERIAN DX PROC NEC*		5151	COMMON DUCT EXPLORATION
4939	OTHER DESTRUC ANUS LES		5159	BILE DUCT INCISION NEC
4944	HEMORRHOID CRYOTHERAPY		5161	EXCIS CYST DUCT REMNANT
4945	HEMORRHOID LIGATION		5162	EXCIS AMPULLA OF VATER
4946	HEMORRHOIDECTOMY		5163	COMMON DUCT EXCIS NEC
4949	HEMORRHOID PROCEDURE NEC		5169	BILE DUCT EXCISION NEC
4951	LEFT LAT SPHINCTEROTOMY		5171	SIMPLE SUT-COMMON DUCT
4952	POST SPHINCTEROTOMY		5172	CHOLEDOCHOPLASTY
4959	ANAL SPHINCTEROTOMY NEC		5179	BILE DUCT REPAIR NEC
496	EXCISION OF ANUS		5181	SPHINCTER OF ODDI DILAT
4971	SUTURE ANAL LACERATION		5182	PANCREAT SPHINCTEROTOM
4972	ANAL CERCLAGE		5183	PANCREAT SPHINCTEROPLAS
4973	CLOSURE OF ANAL FISTULA		5189	SPHINCT OF ODDI OP NEC
4974	GRACILIS MUSC TRANSPLAN		5191	REPAIR GB LACERATION
4975	IMPL OR REV ART ANAL SPH		5192	CLOSURE CHOLECYSTOSTOMY
4976	REMOV ART ANAL SPHINCTER		5193	CLOS BILIARY FISTUL NEC
4979	ANAL SPHINCT REPAIR NEC		5194	REVIS BILE TRACT ANASTOM
4991	INCISION OF ANAL SEPTUM		5195	REMOVE BILE DUCT PROSTH
4992	INSERT SUBQ ANAL STIMUL		5199	BILIARY TRACT OP NEC
4993	ANAL INCISION NEC		5201	CATH DRAIN-PANCREAT CYST
4994	REDUCTION ANAL PROLAPSE		5209	PANCREATOTOMY NEC
4995	CONTROL ANAL HEMORRHAGE		5212	OPEN PANCREATIC BIOPSY
4999	ANAL OPERATION NEC		5219	PANCREATIC DX PROC NEC
500	HEPATOTOMY		*522*	*PANCREATIC DX PROC NEC*
5012	OPEN LIVER BIOPSY		5222	OTHER DESTRU PANCREA LES
5013	TRANSJUGULAR LIVER BX		523	PANCREAT CYST MARSUPIALI
5014	LAPAROSCOPIC LIVER BX		524	INT DRAIN PANCREAT CYST
5019	HEPATIC DX PROC NEC		5251	PROXIMAL PANCREATECTOMY
5021	MARSUPIALIZAT LIVER LES		5252	DISTAL PANCREATECTOMY
5022	PARTIAL HEPATECTOMY		5253	RAD SUBTOT PANCREATECTOM
5023	OPN ABLTN LIVER LES/TISS		5259	PARTIAL PANCREATECT NEC
5024	PERC ABLTN LIVER LES/TIS		526	TOTAL PANCREATECTOMY
5025	LAP ABLTN LIVER LES/TISS		527	RAD PANCREATICODUODENECT
5026	ABLTN LIVER LES/TISS NEC		5280	PANCREAT TRANSPLANT NOS
5029	DESTRUC HEPATIC LES NEC		5281	REIMPLANT PANCREATIC TIS
503	HEPATIC LOBECTOMY		5282	PANCREATIC HOMOTRANSPLAN
504	TOTAL HEPATECTOMY		5283	PANCREATIC HETEROTRANSPL
5051	AUXILIARY LIVER TRANSPL		*5291*	*TRNSPLNT ISLETS LANG NOS*
5059	LIVER TRANSPLANT NEC		5292	CANNULATION PANCREA DUC
5061	CLOSURE LIVER LACERAT		5295	PANCREATIC REPAIR NEC
5069	LIVER REPAIR NEC		5296	PANCREATIC ANASTOMOSIS
5102	TROCAR CHOLECYSTOSTOMY		5299	PANCREATIC OPERATION NEC
5103	CHOLECYSTOSTOMY NEC		5300	UNILAT ING HERN REP NOS
5104	CHOLECYSTOTOMY NEC		5301	OPN REP DIR ING HERN NEC
5113	OPEN BILIARY TRACT BX		5302	OPN REP IND ING HERN NEC
5119	BILIARY TR DX PROC NEC		5303	OPN DIR ING HERN-GFT NEC
5121	OTH PART CHOLECYSTECTOMY		5304	OPN IND ING HERN-GFT NEC
5122	CHOLECYSTECTOMY		5305	ING HERNIA REP-GRAFT NOS

5310	BILAT ING HERNIA REP NOS		5511	PYELOTOMY
5311	OPN BIL DIR ING HERN NEC		5512	PYELOSTOMY
5312	OPN BIL IND ING HERN NEC		5524	OPEN RENAL BIOPSY
5313	OPN BI DR/IN ING HRN NEC		5529	RENAL DIAGNOST PROC NEC
5314	OPN BI DR ING HRN-GR NEC		5531	RENAL LES MARSUPIALIZAT
5315	OP BI IN ING HRN-GRF NEC		5532	OPN ABLTN RENAL LES/TISS
5316	OP BI DR/IN IG HR-GR NEC		5533	PERC ABLTN RENL LES/TISS
5317	BIL ING HRN REP-GRFT NOS		5534	LAP ABLTN RENAL LES/TISS
5321	UNIL FEMOR HRN REP-GRFT		5535	ABLTN RENAL LES/TISS NEC
5329	UNIL FEMOR HERN REP NEC		5539	LOC DESTR RENAL LES NEC
5331	BIL FEM HERN REPAIR-GRF		554	PARTIAL NEPHRECTOMY
5339	BIL FEM HERN REPAIR NEC		5551	NEPHROURETERECTOMY
5341	UMBIL HERNIA REPAIR-GRF		5552	SOLITARY KIDNEY NEPHRECT
5342	LAP UMBIL HERNIA-GRAFT		5553	REJECTED KIDNEY NEPHRECT
5343	LAP UMBILICAL HERNIA NEC		5554	BILATERAL NEPHRECTOMY
5349	OPEN REP UMBIL HERN NEC		5561	RENAL AUTOTRANSPLANT
5351	INCISIONAL HERNIA REPAIR		5569	KIDNEY TRANSPLANT NEC
5359	ABD WALL HERN REPAIR NEC		557	NEPHROPEXY
5361	OPEN INCIS HERN-GRFT NEC		5581	SUTURE KIDNEY LACERATION
5362	LAP INCIS HERN REPR-GRFT		5582	CLOSE NEPHROST & PYELOST
5363	LAP HERN ANT ABD-GFT NEC		5583	CLOSE RENAL FISTULA NEC
5369	OPN HERN ANT ABD-GRF NEC		5584	REDUCE RENAL PEDICL TORS
537	*ABD REPAIR-DIAPHR HERNIA*		5585	SYMPHYSIOTOMY
5371	LAP ABD REP-DIAPHR HERN		5586	RENAL ANASTOMOSIS
5372	OPN ABD DIAPHRM HERN NEC		5587	CORRECT URETEROPELV JUNC
5375	ABD REP-DIAPHR HERN NOS		5589	RENAL REPAIR NEC
5380	THOR REP-DIAPH HERN NOS		5591	RENAL DECAPSULATION
5381	DIAPHRAGMATIC PLICATION		5597	IMPLANT MECHANIC KIDNEY
5382	PARASTERN HERNIA REPAIR		5598	REMOV MECHANICAL KIDNEY
5383	LAP THORC APP-DIAPH HERN		5599	RENAL OPERATION NEC
5384	OPN THORC DIAPH HERN NEC		560	TU REMOV URETER OBSTRUCT
539	OTHER HERNIA REPAIR		561	URETERAL MEATOTOMY
540	ABDOMINAL WALL INCISION		562	URETEROTOMY
5411	EXPLORATORY LAPAROTOMY		5634	OPEN URETERAL BIOPSY
5412	REOPEN RECENT LAP SITE		5639	URETERAL DX PROCEDUR NEC
5419	LAPAROTOMY NEC		5640	URETERECTOMY NOS
5421	LAPAROSCOPY		5641	PARTIAL URETERECTOMY
5422	ABDOMINAL WALL BIOPSY		5642	TOTAL URETERECTOMY
5423	PERITONEAL BIOPSY		5651	FORM CUTAN ILEOURETEROST
5429	ABD REGION DX PROC NEC		5652	REVIS CUTAN ILEOURETEROS
543	DESTRUCT ABD WALL LESION		5661	FORM CUTAN URETEROSTOMY
544	DESTRUCT PERITONEAL TISS		5662	REVIS CUTAN URETEROS NEC
545	*DESTRUCT PERITONEAL TISS*		5671	URIN DIVERSION TO BOWEL
5451	LAP PERITON ADHESIOLYSIS		5672	REVIS URETEROENTEROSTOMY
5459	OTH PERITON ADHESIOLYSIS		5673	NEPHROCYSTANASTOMOSI NOS
5461	RECLOSE POST OP DISRUPT		5674	URETERONEOCYSTOSTOMY
5462	DELAYED CLOS ABD WOUND		5675	TRANSURETEROURETEROSTOMY
5463	ABD WALL SUTURE NEC		5679	URETERAL ANASTOMOSIS NEC
5464	PERITONEAL SUTURE		5681	INTRALUM URETE ADHESIOLY
5471	REPAIR OF GASTROSCHISIS		5682	SUTURE URETERAL LACERAT
5472	ABDOMEN WALL REPAIR NEC		5683	URETEROSTOMY CLOSURE
5473	PERITONEAL REPAIR NEC		5684	CLOSE URETER FISTULA NEC
5474	OMENTAL REPAIR NEC		5685	URETEROPEXY
5475	MESENTERIC REPAIR NEC		5686	REMOVE URETERAL LIGATURE
5492	REMOVE FB FROM PERITON		5689	REPAIR OF URETER NEC
5493	CREATE CUTANPERITON FIST		5692	IMPLANT URETERAL STIMUL
5494	CREAT PERITONEOVAS SHUNT		5693	REPLACE URETERAL STIMUL
5495	PERITONEAL INCISION		5694	REMOVE URETERAL STIMULAT
5501	NEPHROTOMY		5695	LIGATION OF URETER
5502	NEPHROSTOMY		5699	URETERAL OPERATION NEC
5503	PERCU NEPHROSTM W/O FRAG		5712	CYSTOTOMY & ADHESIOLYSIS
5504	PERCU NEPHROSTMY W FRAG		5718	OTHER SUPRAPU CYSTOSTOMY

5719	CYSTOTOMY NEC		6012	OPEN PROSTATIC BIOPSY
5721	VESICOSTOMY		6014	OPEN SEMINAL VESICLES BX
5722	REVISE CLO VESICOSTOMY		6015	PERIPROSTATIC BIOPSY
5733	CLOS TRANSURETH BLADD BX		6018	PROSTATIC DX PROCED NEC
5734	OPEN BLADDER BIOPSY		6019	SEMIN VES DX PROCED NEC
5739	BLADDER DIAGNOS PROC NEC		602	SEMIN VES DX PROCED NEC
5741	TU ADHESIOLYSIS BLADDER		6021	TRANSURETH PROSTATECTOMY
5749	TU DESTRUC BLADD LES NEC		6029	OTH TRANSURETH PROSTATEC
5751	EXCISION OF URACHUS		603	SUPRAPUBIC PROSTATECTOMY
5759	BLADDER LES DESTRUCT NEC		604	RETROPUBIC PROSTATECTOMY
576	PARTIAL CYSTECTOMY		605	RADICAL PROSTATECTOMY
5771	RADICAL CYSTECTOMY		6061	LOS EXCIS PROSTATIC LES
5779	TOTAL CYSTECTOMY NEC		6062	PERINEAL PROSTATECTOMY
5781	SUTURE BLADDER LACERAT		6069	PROSTATECTOMY NEC
5782	CYSTOSTOMY CLOSURE		6072	SEMINAL VESICLE INCISION
5783	ENTEROVESICO FIST REPAIR		6073	SEMINAL VESICLE EXCISION
5784	VESIC FISTULA REPAIR NEC		6079	SEMINAL VESICLE OP NEC
5785	CYSTOURETHROPLASTY		6081	PERIPROSTATIC INCISION
5786	BLADDER EXSTROPHY REPAIR		6082	PERIPROSTATIC EXCISION
5787	BLADDER RECONSTRUCTION		6093	REPAIR OF PROSTATE
5788	BLADDER ANASTOMOSIS NEC		6094	CONTROL PROSTATE HEMORR
5789	BLADDER REPAIR NEC		6095	TRANS BAL DIL PROS URETH
5791	BLADDER SPHINCTEROTOMY		6096	TU DESTR PROSTATE BY MT
5793	CONTROL BLADD HEMORRHAGE		6097	OTH TU DESTR PROS - RT
5796	IMPLANT BLADDER STIMULAT		6099	PROSTATIC OPERATION NEC
5797	REPLACE BLADDER STIMULAT		612	EXCISION OF HYDROCELE
5798	REMOVE BLADDER STIMULAT		6142	SCROTAL FISTULA REPAIR
5799	BLADDER OPERATION NEC		6149	SCROTUM/TUNIC REPAIR NEC
580	URETHROTOMY		6192	EXCISION TUNICA LES NEC
581	URETHRAL MEATOTOMY		6199	SCROTUM & TUNICA OP NEC
5841	SUTURE URETHRAL LACERAT		620	INCISION OF TESTES
5842	URETHROSTOMY CLOSURE		6212	OPEN TESTICULAR BIOPSY
5843	CLOSE URETH FISTULA NEC		6219	TESTES DX PROCEDURE NEC
5844	URETHRAL REANASTOMOSIS		622	TESTICULAR LES DESTRUCT
5845	HYPO-EPISPADIUS REPAIR		623	UNILATERAL ORCHIECTOMY
5846	URETH RECONSTRUCTION NEC		6241	REMOVE BOTH TESTES
5847	URETHRAL MEATOPLASTY		6242	REMOVE SOLITARY TESTIS
5849	URETHRAL REPAIR NEC		625	ORCHIOPEXY
585	URETH STRICTURE RELEASE		6261	SUTURE TESTICULAR LACER
5891	PERIURETHRAL INCISION		6269	TESTICULAR REPAIR NEC
5892	PERIURETHRAL EXCISION		627	INSERT TESTICULAR PROSTH
5893	IMPLT ARTF URIN SPHINCT		6299	TESTICULAR OPERATION NEC
5899	URETH/PERIURETH OP NEC		6309	SPERMAT CORD/VAS DX NEC
5900	RETROPERIT DISSECT NOS		631	EXC SPERMATIC VARICOCELE
5901	RETROPERIT DISSECT NOS		632	EXCISE EPIDIDYMIS CYST
5902	PERIREN ADHESIOLYS NEC		633	EXCISE CORD/EPID LES NEC
5903	LAP LYS PERIREN/URET ADH		634	EPIDIDYMECTOMY
5909	PERIREN/URETER INCIS NEC		6351	SUTURE CORD & EPID LACER
5911	OTH LYS PERIVES ADHESIO		6353	TRANSPLANT SPERMAT CORD
5912	LAP LYS PERIVESURETH ADH		6359	CORD & EPIDID REPAIR NEC
5919	PERIVESICAL INCISION NEC		6381	SUTURE VAS & EPIDID LAC
5921	PERIREN/URETERAL BIOPSY		6382	POSTOP VAS RECONSTRUCT
5929	PERIREN/URET DX PROC NEC		6383	EPIDIDYMOVASOSTOMY
593	URETHROVES JUNCT PLICAT		6385	REMOV VAS DEFERENS VALVE
594	SUPRAPUBIC SLING OP		6389	VAS & EPIDIDY REPAIR NEC
595	RETROPUBIC URETH SUSPENS		6392	EPIDIDYMOTOMY
596	PARAURETHRAL SUSPENSION		6393	SPERMATIC CORD INCISION
5971	LEVATOR MUSC SUSPENSION		6394	SPERM CORD ADHESIOLYSIS
5979	URIN INCONTIN REPAIR NEC		6395	INSERT VALVE IN VAS DEF
5991	PERIREN/VESICLE EXCISION		6399	CORD/EPID/VAS OPS NEC
5992	PERIREN/VESICLE OP NEC		6411	PENILE BIOPSY
600	INCISION OF PROSTATE		642	LOCAL EXCIS PENILE LES

643	AMPUTATION OF PENIS	6611	FALLOPIAN TUBE BIOPSY
6441	SUTURE PENILE LACERATION	6619	FALLOP TUBE DX PROC NEC
6442	RELEASE OF CHORDEE	6621	BILAT ENDOSC CRUSH TUBE
6443	CONSTRUCTION OF PENIS	6622	BILAT ENDOSC DIVIS TUBE
6444	RECONSTRUCTION OF PENIS	6629	BILAT ENDOS OCC TUBE NEC
6445	REPLANTATION OF PENIS	6631	BILAT TUBAL CRUSHING NEC
6449	PENILE REPAIR NEC	6632	BILAT TUBAL DIVISION NEC
645	SEX TRANSFORMAT OP NEC	6639	BILAT TUBAL DESTRUCT NEC
6492	INCISION OF PENIS	664	TOTAL UNILAT SALPINGECT
6493	DIVISION OF PENILE ADHES	6651	REMOVE BOTH FALLOP TUBES
6495	INS NONINFL PENIS PROSTH	6652	REMOVE SOLITARY FAL TUBE
6496	REMOVE INT PENILE PROSTH	6661	DESTROY FALLOP TUBE LES
6497	INS INFLATE PENIS PROSTH	6662	REMOV TUBE & ECTOP PREG
6498	PENILE OPERATION NEC	6663	BILAT PART SALPINGEC NOS
6499	MALE GENITAL OP NEC	6669	PARTIAL SALPINGECTOM NEC
650	MALE GENITAL OP NEC	6671	SIMPL SUTURE FALLOP TUBE
6501	LAPAROSCOPIC OOPHOROTOMY	6672	SALPINGO-OOPHOROSTOMY
6509	OTHER OOPHOROTOMY	6673	SALPINGO-SALPINGOSTOMY
6511	OVARIAN ASPIRAT BIOPSY	6674	SALPINGO-UTEROSTOMY
6512	OVARIAN BIOPSY NEC	6679	FALLOP TUBE REPAIR NEC
6513	LAP BIOPSY OF OVARY	6692	UNILAT FALLOP TUBE DESTR
6514	OTH LAP DX PROC OVARIES	6693	IMPL FALLOP TUBE PROSTH
6519	OVARIAN DX PROCEDURE NEC	6694	REMOV FALLOP TUBE PROSTH
6521	OVARIAN CYST MARSUPIALIZ	6695	BLOW THERAPEUT INTO TUBE
6522	OVARIAN WEDGE RESECTION	6696	FALLOPIAN TUBE DILATION
6523	LAP MARSUP OVARIAN CYST	6697	BURY FIMBRIAE IN UTERUS
6524	LAP WEDGE RESECT OVARY	6699	FALLOPIAN TUBE OP NEC
6525	OTH LAP LOC EXC DEST OVA	6711	ENDOCERVICAL BIOPSY
6529	LOCAL DESTR OVA LES NEC	6712	CERVICAL BIOPSY NEC
653	LOCAL DESTR OVA LES NEC	6719	CERVICAL DX PROCEDUR NEC
6531	LAP UNILAT OOPHORECTOMY	672	CONIZATION OF CERVIX
6539	OTH UNILAT OOPHORECTOMY	6731	CERVICAL CYST MARSUPIAL
654	OTH UNILAT OOPHORECTOMY	6732	CERVICAL LES CAUTERIZAT
6541	LAP UNI SALPINGO-OOPHOR	6733	CERVICAL LES CRYOTHERAPY
6549	OTH UNI SALPINGO-OOPHOR	6739	CERVICAL LES DESTRUC NEC
6551	OTH REMOVE BOTH OVARIES	674	AMPUTATION OF CERVIX
6552	OTH REMOVE REMAIN OVARY	*675*	*AMPUTATION OF CERVIX*
6553	LAP REMOVE BOTH OVARIES	6751	TRANSAB CERCLAGE CERVIX
6554	LAP REMOVE REMAIN OVARY	6759	OTH REP INT CERVICAL OS
6561	OTH REMOVE OVARIES/TUBES	6761	SUTURE CERVICAL LACERAT
6562	OTH REMOVE REM OVA/TUBE	6762	CERVICAL FISTULA REPAIR
6563	LAP REMOVE OVARIES/TUBES	6769	CERVICAL REPAIR NEC
6564	LAP REMOVE REM OVA/TUBE	680	HYSTEROTOMY
6571	OTH SIMPLE SUTURE OVARY	6813	OPEN UTERINE BIOPSY
6572	OTH REIMPLANT OF OVARY	6814	OPEN UTERINE LIGAMENT BX
6573	OTH SALPINGO-OOPHOROPLAS	6815	CLOS UTERINE LIGAMENT BX
6574	LAP SIMPLE SUTURE OVARY	6816	CLOSED UTERINE BIOPSY
6575	LAP REIMPLANT OF OVARY	6819	UTERUS/ADNEX DX PROC NEC
6576	LAP SALPINGO-OOPHOROPLAS	6821	ENDOMET SYNECHIAE DIVIS
6579	REPAIR OF OVARY NEC	6822	INCISION UTERINE SEPTUM
658	*REPAIR OF OVARY NEC*	6823	ENDOMETRIAL ABLATION
6581	LAP ADHESIOLYS OVA/TUBE	6824	UTERINE ART EMB W COILS
6589	ADHESIOLYSIS OVARY/TUBE	6825	UTERINE ART EMB W/O COIL
6591	ASPIRATION OF OVARY	6829	UTERINE LES DESTRUCT NEC
6592	TRANSPLANTATION OF OVARY	*683*	*UTERINE LES DESTRUCT NEC*
6593	MANUAL RUPT OVARIAN CYST	6831	LAP SCERVIC HYSTERECTOMY
6594	OVARIAN DENERVATION	6839	SUBTOTL ABD HYST NEC/NOS
6595	OVARIAN TORSION RELEASE	*684*	*TOTAL ABD HYSTERECTOMY*
6599	OVARIAN OPERATION NEC	6841	LAP TOTAL ABDOMINAL HYST
660	*OVARIAN OPERATION NEC*	6849	TOTAL ABD HYST NEC/NOS
6601	SALPINGOTOMY	685	VAGINAL HYSTERECTOMY
6602	SALPINGOSTOMY	6851	LAP AST VAG HYSTERECTOMY

6859	VAG HYSTERECTOMY NEC/NOS	7109	INCIS VULVA/PERINEUM NEC
686	*RADICAL ABD HYSTERECTOMY*	7111	VULVAR BIOPSY
6861	LAP RADICAL ABDOMNL HYST	7119	VULVAR DIAGNOS PROC NEC
6869	RADICAL ABD HYST NEC/NOS	7122	INCISE BARTHOLIN'S GLAND
687	*RADICAL VAG HYSTERECTOMY*	7123	BARTHOLIN GLAND MARSUP
6871	LAP RADICAL VAGINAL HYST	7124	DESTRUC BARTHOLIN GLAND
6879	RADICAL VAG HYST NEC/NOS	7129	BARTHOLIN'S GLAND OP NEC
688	PELVIC EVISCERATION	713	LOCAL VULVAR EXCIS NEC
689	HYSTERECTOMY NEC/NOS	714	OPERATIONS ON CLITORIS
6901	D & C FOR PREG TERMINAT	715	RADICAL VULVECTOMY
6902	D & C POST DELIVERY	7161	UNILATERAL VULVECTOMY
6909	D & C NEC	7162	BILATERAL VULVECTOMY
6911	*D & C NEC*	7171	SUTURE VULVAR LACERATION
6919	DESTRUC UTER SUPPORT NEC	7172	REPAIR VULVAR FISTULA
6921	INTERPOSIT OP UTERIN LIG	7179	VULVAR/PERIN REPAIR NEC
6922	UTERINE SUSPENSION NEC	718	OTHER VULVAR OPERATIONS
6923	VAG REPAIR INVERS UTERUS	719	OTHER FEMALE GENITAL OPS
6929	UTERUS/ADNEXA REPAIR NEC	7394	PUBIOTOMY TO ASSIST DEL
693	PARACERV UTERINE DENERV	7399	OPS ASSISTING DELIV NEC
6941	SUTURE UTERINE LACERAT	740	CLASSICAL C-SECTION
6942	CLOSURE UTERINE FISTULA	741	LOW CERVICAL C-SECTION
6949	UTERINE REPAIR NEC	742	EXTRAPERITONEAL C-SECT
6951	ASPIRAT CURET-PREG TERMI	743	REM EXTRATUB ECTOP PREG
6952	ASPIRAT CURET-POST DELIV	744	CESAREAN SECTION NEC
6995	INCISION OF CERVIX	7491	HYSTEROTOMY TO TERMIN PG
6997	REMOVE PENETRAT CERV FB	7499	CESAREAN SECTION NOS
6998	UTERINE SUPPORT OP NEC	7536	CORRECTION FETAL DEFECT
6999	UTERINE OPERATION NEC	7550	REPAIR OB LAC UTERUS NOS
7012	CULDOTOMY	7551	REPAIR OB LACERAT CERVIX
7013	INTRALUM VAG ADHESIOLYS	7552	REPAIR OB LAC CORP UTERI
7014	VAGINOTOMY NEC	7561	REPAIR OB LAC BLAD/URETH
7023	CUL-DE-SAC BIOPSY	7593	SURG CORR INVERT UTERUS
7024	VAGINAL BIOPSY	7599	OBSTETRIC OPERATION NEC
7029	VAGIN/CUL-DE-SAC DX NEC	7601	FACIAL BONE SEQUESTRECT
7031	HYMENECTOMY	7609	FACIAL BONE INCISION NEC
7032	EXCIS CUL-DE-SAC LESION	7611	FACIAL BONE BIOPSY
7033	EXCISION VAGINAL LESION	7619	FACIAL BONE DX PROC NEC
704	VAGINAL OBLITERATION	762	DESTRUCT FACIAL BONE LES
7050	CYSTOCEL/RECTOCEL REPAIR	7631	PARTIAL MANDIBULECTOMY
7051	CYSTOCELE REPAIR	7639	PART FACIAL OSTECTOM NEC
7052	RECTOCELE REPAIR	7641	TOT MANDIBULEC W RECONST
7053	CYSTO & RECTO W GRF/PROS	7642	TOTAL MANDIBULECTOMY NEC
7054	REP CYSTOCEL W GRFT/PROS	7643	MANDIBULAR RECONST NEC
7055	REP RECTOCELE W GRF/PROS	7644	TOT FACE OSTECT W RECONS
7061	VAGINAL CONSTRUCTION	7645	TOT FACE BONE OSTECT NEC
7062	VAGINAL RECONSTRUCTION	7646	FACIAL BONE RECONSTR NEC
7063	VAGINAL CONST W GRF/PROS	765	TEMPOROMAND ARTHROPLASTY
7064	VAG RECONST W GRFT/PROS	7661	CL OSTEOPLASTY MAND RAMI
7071	SUTURE VAGINA LACERATION	7662	OPEN OSTEOPLAS MAND RAMI
7072	REPAIR COLOVAGIN FISTULA	7663	OSTEOPLASTY MANDIBLE BDY
7073	REPAIR RECTOVAG FISTULA	7664	MAND ORTHOGNATHIC OP NEC
7074	REP VAGINOENT FISTUL NEC	7665	SEG OSTEOPLASTY MAXILLA
7075	REPAIR VAG FISTULA NEC	7666	TOT OSTEOPLASTY MAXILLA
7076	HYMENORRHAPHY	7667	REDUCTION GENIOPLASTY
7077	VAGINAL SUSPENS & FIXAT	7668	AUGMENTATION GENIOPLASTY
7078	VAG SUSP/FIX W GRFT/PROS	7669	FACIAL BONE REPAIR NEC
7079	VAGINAL REPAIR NEC	7670	REDUCTION FACIAL FX NOS
708	VAGINAL VAULT OBLITERAT	7672	OPN REDUCT MALAR/ZYGO FX
7091	VAGINAL OPERATION NEC	7674	OPEN REDUCT MAXILLARY FX
7092	CUL-DE-SAC OPERATION NEC	7676	OPEN REDUCT MANDIBLE FX
7093	CUL-DE-SAC GRF/PROS NEC	7677	OPEN REDUCT ALVEOLAR FX
7101	VULVAR ADHESIOLYSIS	7679	OPEN REDUCT FACE FX NEC

7691	BONE GRAFT TO FACE BONE		7759	BUNIONECTOMY NEC
7692	SYN IMPLANT TO FACE BONE		7760	LOC EXC BONE LESION NOS
7694	OPEN REDUCT TM DISLOCAT		7761	EXC CHEST CAGE BONE LES
7697	REMOVE INT FIX FACE BONE		7762	LOC EXC BONE LES HUMERUS
7699	FACIAL BONE/JNT OP NEC		7763	LOC EXC LES RADIUS/ULNA
7700	SEQUESTRECTOMY NOS		7764	LOC EXC LES METACAR/CAR
7701	CHEST CAGE SEQUESTREC		7765	LOC EXC BONE LES FEMUR
7702	HUMERUS SEQUESTRECTOMY		7766	LOC EXC BONE LES PATELLA
7703	RADIUS & ULNA SEQUESTREC		7767	LOC EXC LES TIBIA/FIBULA
7704	METACARP/CARP SEQUESTREC		7768	LOC EXC LES METATAR/TAR
7705	FEMORAL SEQUESTRECTOMY		7769	LOC EXC BONE LESION NEC
7706	PATELLAR SEQUESTRECTOMY		7770	EXCISE BONE FOR GRFT NOS
7707	TIBIA/FIBULA SEQUESTREC		7771	EX CHEST CAGE BONE-GFT
7708	METATAR/TAR SEQUESTREC		7772	EXCISE HUMERUS FOR GRAFT
7709	SEQUESTRECTOMY NEC		7773	EXCIS RADIUS/ULNA-GRAFT
7710	OTHER BONE INCISION NOS		7774	EXCIS METACAR/CAR-GRAFT
7711	OTHER CHEST CAGE INCIS		7775	EXCISE FEMUR FOR GRAFT
7712	OTHER HUMERUS INCISION		7776	EXCISE PATELLA FOR GRAFT
7713	OTHER RADIUS/ULNA INCIS		7777	EXCISE TIB/FIB FOR GRAFT
7714	OTH METACARP/CARP INCIS		7778	EXCIS METATAR/TAR-GRAFT
7715	OTHER FEMORAL INCISION		7779	EXCISE BONE FOR GFT NEC
7716	OTHER PATELLAR INCISION		7780	OTH PART OSTECTOMY NOS
7717	OTHER TIBIA/FIBULA INCIS		7781	OTH CHEST CAGE OSTECTOMY
7718	OTH METATARS/TARS INCIS		7782	PARTIAL HUMERECTOMY NEC
7719	BONE INCIS W/O DIV NEC		7783	PART OSTECT-RADIUS/ULNA
7720	WEDGE OSTEOTOMY NOS		7784	PART OSTECT-METACAR/CAR
7721	CHEST CAGE WEDG OSTEOTOM		7785	PART OSTECTOMY-FEMUR
7722	HUMERUS WEDGE OSTEOTOMY		7786	PARTIAL PATELLECTOMY
7723	RADIUS/ULNA WEDG OSTEOTO		7787	PART OSTECT-TIBIA/FIBULA
7724	METACAR/CAR WEDG OSTEOTO		7788	PART OSTECT-METATAR/TAR
7725	FEMORAL WEDGE OSTEOTOMY		7789	PARTIAL OSTECTOMY NEC
7726	PATELLAR WEDGE OSTEOTOMY		7790	TOTAL OSTECTOMY NOS
7727	TIBIA/FIBUL WEDG OSTEOT		7791	TOT CHEST CAGE OSTECTOMY
7728	METATAR/TAR WEDG OSTEOT		7792	TOTAL OSTECTOMY-HUMERUS
7729	WEDGE OSTEOTOMY NEC		7793	TOT OSTECT-RADIUS/ULNA
7730	OTHER BONE DIVISION NOS		7794	TOT OSTECT-METACARP/CARP
7731	CHEST CAGE BONE DIV NEC		7795	TOT OSTECTOMY-FEMUR
7732	HUMERUS DIVISION NEC		7796	TOTAL PATELLECTOMY
7733	RADIUS/ULNA DIVISION NEC		7797	TOT OSTECT-TIBIA/FIBULA
7734	METACAR/CAR DIVISION NEC		7798	TOT OSTECT-METATARS/TARS
7735	FEMORAL DIVISION NEC		7799	TOTAL OSTECTOMY NEC
7736	PATELLAR DIVISION NEC		7800	BONE GRAFT NOS
7737	TIBIA/FIBULA DIV NEC		7801	BONE GRAFT TO CHEST CAGE
7738	METATAR/TAR DIVISION NEC		7802	BONE GRAFT TO HUMERUS
7739	BONE DIVISION NEC		7803	BONE GRAFT-RADIUS/ULNA
7740	BONE BIOPSY NOS		7804	BONE GRFT TO METACAR/CAR
7741	CHEST CAGE BONE BIOPSY		7805	BONE GRAFT TO FEMUR
7742	HUMERUS BIOPSY		7806	BONE GRAFT TO PATELLA
7743	RADIUS & ULNA BIOPSY		7807	BONE GRAFT-TIBIA/FIBULA
7744	METACARPAL/CARPAL BIOPSY		7808	BONE GRAFT-METATAR/TAR
7745	FEMORAL BIOPSY		7809	BONE GRAFT NEC
7746	PATELLAR BIOPSY		7810	APPLIC EXT FIX DEV NOS
7747	TIBIA & FIBULA BIOPSY		7811	APPL EXT FIX-CHEST CAGE
7748	METATARSAL/TARSAL BIOPSY		7812	APPLIC EXT FIX-HUMERUS
7749	BONE BIOPSY NEC		7813	APPL EXT FIX-RADIUS/ULNA
7751	BUNIONECT/SFT/OSTEOTOMY		7814	APPL EXT FIX-METACAR/CAR
7752	BUNIONECT/SFT/ARTHRODES		7815	APPLIC EXT FIX DEV-FEMUR
7753	OTH BUNIONECT W SFT CORR		7816	APPL EXT FIX DEV-PATELLA
7754	EXC CORRECT BUNIONETTE		7817	APPL EXT FIX-TIB/FIBULA
7756	REPAIR OF HAMMER TOE		7818	APPL EXT FIX-METATAR/TAR
7757	REPAIR OF CLAW TOE		7819	APPLIC EXT FIX DEV NEC
7758	OTH EXC, FUS, REPAIR TOE		7820	LIMB SHORTEN PROC NOS

7822	LIMB SHORT PROC-HUMERUS		7886	OTH DX PROCED-PATELLA
7823	LIMB SHORTEN-RADIUS/ULNA		7887	OTH DX PROC-TIBIA/FIBULA
7824	LIMB SHORTEN-METACAR/CAR		7888	OTH DX PROC-METATAR/TAR
7825	LIMB SHORT PROC-FEMUR		7889	OTHER BONE DX PROC NEC
7827	LIMB SHORTEN-TIB/FIBULA		7890	INSERT BONE STIMUL NOS
7828	LIMB SHORTEN-METATAR/TAR		7891	INSERT BONE STIMUL-CHEST
7829	LIMB SHORTEN PROC NEC		7892	INSERT BONE STIM-HUMERUS
7830	LIMB LENGTHEN PROC NOS		7893	INSER BONE STIM-RAD/ULNA
7831	LIMB LENGTHEN PROC NOS		7894	INSER BONE STIM-META/CAR
7832	LIMB LENGTH PROC-HUMERUS		7895	INSERT BONE STIM-FEMUR
7833	LIMB LENGTH-RADIUS/ULNA		7896	INSERT BONE STIM-PATELLA
7834	LIMB LENGTH-METACAR/CAR		7897	INSER BONE STIM-TIB/FIB
7835	LIMB LENGTH PROC-FEMUR		7898	INSER BONE STIM-META/TAR
7837	LIMB LENGTHEN-TIB/FIBULA		7899	INSERT BONE STIMUL NEC
7838	LIMB LENGTHN-METATAR/TAR		7910	CL FX REDUC-INT FIX NOS
7839	LIMB LENGTHEN PROC NEC		7911	CLOS RED-INT FIX HUMERUS
7840	OTH BONE REPAIR/PLAST OP		7912	CL RED-INT FIX RAD/ULNA
7841	OTH CHEST CAGE REP/PLAST		7913	CL RED-INT FIX METAC/CAR
7842	OTH HUMERUS REPAIR/PLAST		7914	CLOSE RED-INT FIX FINGER
7843	OTH RAD/ULN REPAIR/PLAST		7915	CLOSED RED-INT FIX FEMUR
7844	OTH METAC/CARP REP/PLAST		7916	CL RED-INT FIX TIB/FIBU
7845	OTH FEMUR REPAIR/PLASTIC		7917	CL RED-INT FIX METAT/TAR
7846	OTH PATELLA REPAIR/PLAST		7918	CLOSE RED-INT FIX TOE FX
7847	OTH TIB/FIB REPAIR/PLAST		7919	CL FX REDUC-INT FIX NEC
7848	OTH META/TAR REPA/PLAST		7920	OPEN FX REDUCTION NOS
7849	OTH BONE REPA/PLAST NEC		7921	OPEN REDUC-HUMERUS FX
7850	INT FIX W/O FX REDUC NOS		7922	OPEN REDUC-RADIUS/ULN FX
7851	INT FIXATION-CHEST CAGE		7923	OPEN REDUC-METAC/CAR FX
7852	INT FIXATION-HUMERUS		7924	OPEN REDUCTION-FINGER FX
7853	INT FIXATION-RADIUS/ULNA		7925	OPEN REDUCTION-FEMUR FX
7854	INT FIXATION-METACAR/CAR		7926	OPEN REDUC-TIBIA/FIB FX
7855	INTERNAL FIXATION-FEMUR		7927	OPEN REDUC-METAT/TARS FX
7856	INTERNAL FIX-PATELLA		7928	OPEN REDUCTION-TOE FX
7857	INT FIXATION-TIBIA/FIBUL		7929	OPEN FX REDUCTION NEC
7858	INT FIXATION-METATAR/TAR		7930	OPN FX RED W INT FIX NOS
7859	INT FIX-NO FX REDUCT NEC		7931	OPEN RED-INT FIX HUMERUS
7860	REMOVE IMP DEVICE NOS		7932	OP RED-INT FIX RAD/ULNA
7861	REMOV IMP DEV-CHEST CAGE		7933	OP RED-INT FIX METAC/CAR
7862	REMOV IMPL DEV-HUMERUS		7934	OPEN RED-INT FIX FINGER
7863	REMOV IMP DEV-RADIUS/ULN		7935	OPEN REDUC-INT FIX FEMUR
7864	REMOV IMP DEV-METAC/CARP		7936	OP RED-INT FIX TIB/FIBUL
7865	REMOVE IMP DEVICE-FEMUR		7937	OP RED-INT FIX METAT/TAR
7866	REMOV IMP DEVICE-PATELLA		7938	OPEN REDUCT-INT FIX TOE
7867	REMOV IMP DEV-TIB/FIBULA		7939	OPN FX RED W INT FIX NEC
7868	REMOVE IMP DEV-METAT/TAR		7940	CLS REDUC-SEP EPIPHY NOS
7869	REMOVE IMPL DEVICE NEC		7941	CLOSE RED-HUMERUS EPIPHY
7870	OSTEOCLASIS NOS		7942	CLS RED-RADIUS/UL EPIPHY
7871	OSTEOCLASIS-CHEST CAGE		7945	CLOSE REDUC-FEMUR EPIPHY
7872	OSTEOCLASIS-HUMERUS		7946	CLS RED-TIBIA/FIB EPIPHY
7873	OSTEOCLASIS-RADIUS/ULNA		7949	CLS REDUC-SEP EPIPHY NEC
7874	OSTEOCLASIS-METACAR/CAR		7950	OPEN RED-SEP EPIPHY NOS
7875	OSTEOCLASIS-FEMUR		7951	OPN RED-SEP EPIPHY-HUMER
7876	OSTEOCLASIS-PATELLA		7952	OP RED-RADIUS/ULN EPIPHY
7877	OSTEOCLASIS-TIBIA/FIBULA		7955	OPN RED-SEP EPIPHY-FEMUR
7878	OSTEOCLASIS-METATAR/TAR		7956	OP RED-TIBIA/FIB EPIPHYS
7879	OSTEOCLASIS NEC		7959	OPEN RED-SEP EPIPHY NEC
7880	OTHER BONE DX PROC NOS		7960	OPEN FX SITE DEBRIDE NOS
7881	OTH DX PROCED-CHEST CAGE		7961	DEBRID OPEN FX-HUMERUS
7882	OTH DX PROCED-HUMERUS		7962	DEBRID OPN FX-RADIUS/ULN
7883	OTH DX PROC-RADIUS/ULNA		7963	DEBRID OPN FX-METAC/CAR
7884	OTH DX PROC-METACAR/CAR		7964	DEBRID OPN FX-FINGER
7885	OTH DX PROCED-FEMUR		7965	DEBRID OPN FX-FEMUR

7966	DEBRID OPN FX-TIBIA/FIB	8048	FOOT JOINT STRUCT DIVIS
7967	DEBRID OPN FX-METAT/TAR	8049	JT STRUCTUR DIVISION NEC
7968	DEBRID OPN FX-TOE	*805*	*JT STRUCTUR DIVISION NEC*
7969	OPEN FX SITE DEBRIDE NEC	8050	EXC/DEST INTVRT DISC NOS
7980	OPEN REDUC-DISLOCAT NOS	8051	EXCISION INTERVERT DISC
7981	OPN REDUC DISLOC-SHOULDR	8053	REP ANULUS FIBROSUS-GRFT
7982	OPEN REDUC-ELBOW DISLOC	8054	REP ANULS FIBROS NEC/NOS
7983	OPEN REDUC-WRIST DISLOC	8059	OTH EXC/DEST INTVRT DISC
7984	OPEN REDUC DISLOC-HAND	806	EXCIS KNEE SEMILUN CARTL
7985	OPEN REDUC-HIP DISLOCAT	8070	SYNOVECTOMY-SITE NOS
7986	OPEN REDUC-KNEE DISLOCAT	8071	SHOULDER SYNOVECTOMY
7987	OPEN REDUC-ANKLE DISLOC	8072	ELBOW SYNOVECTOMY
7988	OPN REDUC DISLOC-FT/TOE	8073	WRIST SYNOVECTOMY
7989	OPEN REDUC-DISLOCAT NEC	8074	HAND SYNOVECTOMY
7990	UNSPEC OP BONE INJ NOS	8075	HIP SYNOVECTOMY
7991	HUMERUS INJURY OP NOS	8076	KNEE SYNOVECTOMY
7992	RADIUS/ULNA INJ OP NOS	8077	ANKLE SYNOVECTOMY
7993	METACARP/CARP INJ OP NOS	8078	FOOT SYNOVECTOMY
7994	FINGER INJURY OP NOS	8079	SYNOVECTOMY-SITE NEC
7995	FEMUR INJURY OP NOS	8080	DESTRUCT JOINT LES NOS
7996	TIBIA/FIBULA INJ OP NOS	8081	DESTRUC-SHOULDER LES NEC
7997	METATARS/TARS INJ OP NOS	8082	DESTRUC-ELBOW LESION NEC
7998	TOE INJURY OPERATION NOS	8083	DESTRUC-WRIST LESION NEC
7999	UNSPEC OP-BONE INJ NEC	8084	DESTRUC-HAND JT LES NEC
8000	ARTH/PROS REM WO REP NOS	8085	DESTRUCT-HIP LESION NEC
8001	ARTH/PROS REM WO RE-SHLD	8086	DESTRUCT-KNEE LESION NEC
8002	ARTH/PROS REM WO REP-ELB	8087	DESTRUC-ANKLE LESION NEC
8003	ARTH/PROS REM WO RE-WRST	8088	DESTRUC-FOOT JT LES NEC
8004	ARTH/PROS REM WO REP-HND	8089	DESTRUCT JOINT LES NEC
8005	ARTH/PROS REM WO REP-HIP	8090	EXCISION OF JOINT NOS
8006	ARTH/PROS REM WO RE-KNEE	8091	EXCISION OF SHOULDER NEC
8007	ARTH/PROS REM WO REP-ANK	8092	EXCISION OF ELBOW NEC
8008	ARTH/PROS REM WO RE-FOOT	8093	EXCISION OF WRIST NEC
8009	ARTH/PROS REM WO REP NEC	8094	EXCISION HAND JOINT NEC
8010	OTHER ARTHROTOMY NOS	8095	EXCISION OF HIP NEC
8011	OTH ARTHROTOMY-SHOULDER	8096	EXCISION OF KNEE NEC
8012	OTH ARTHROTOMY-ELBOW	8097	EXCISION OF ANKLE NEC
8013	OTH ARTHROTOMY-WRIST	8098	EXCISION FOOT JOINT NEC
8014	OTH ARTHROTOMY-HAND/FNGR	8099	EXCISION OF JOINT NEC
8015	OTH ARTHROTOMY-HIP	8100	SPINAL FUSION NOS
8016	OTH ARTHROTOMY-KNEE	8101	ATLAS-AXIS FUSION
8017	OTH ARTHROTOMY-ANKLE	8102	OTH CERV FUSION ANT/ANT
8018	OTH ARTHROTOMY-FOOT/TOE	8103	OT CERV FUSION POST/POST
8019	OTHER ARTHROTOMY NEC	8104	DRSL/DRSLUMB FUS ANT/ANT
8020	ARTHROSCOPY NOS	8105	DRSL/DSLMB FUS POST/POST
8021	SHOULDER ARTHROSCOPY	8106	LUMB/LMBOSAC FUS ANT/ANT
8022	ELBOW ARTHROSCOPY	8107	LMB/LMBSAC FUS POST/POST
8023	WRIST ARTHROSCOPY	8108	LUMB/LMBSAC FUS ANT/POST
8024	HAND & FINGER ARTHROSCOP	*8109*	*LUMBAR/LUMBOSAC FUS POST*
8025	HIP ARTHROSCOPY	8111	ANKLE FUSION
8026	KNEE ARTHROSCOPY	8112	TRIPLE ARTHRODESIS
8027	ANKLE ARTHROSCOPY	8113	SUBTALAR FUSION
8028	FOOT & TOE ARTHROSCOPY	8114	MIDTARSAL FUSION
8029	ARTHROSCOPY NEC	8115	TARSOMETATARSAL FUSION
8040	JT STRUCTUR DIVISION NOS	8116	METATARSOPHALANGEAL FUS
8041	SHOULDER STRUCT DIVISION	8117	OTHER FUSION OF FOOT
8042	ELBOW STRUCTURE DIVISION	8118	SUBTALR JT ARTHROEREISIS
8043	WRIST STRUCTURE DIVISION	8120	ARTHRODESIS NOS
8044	HAND JOINT STRUCT DIVIS	8121	ARTHRODESIS OF HIP
8045	HIP STRUCTURE DIVISION	8122	ARTHRODESIS OF KNEE
8046	KNEE STRUCTURE DIVISION	8123	ARTHRODESIS OF SHOULDER
8047	ANKLE STRUCTURE DIVISION	8124	ARTHRODESIS OF ELBOW

8125	CARPORADIAL FUSION	8202	MYOTOMY OF HAND
8126	METACARPOCARPAL FUSION	8203	BURSOTOMY OF HAND
8127	METACARPOPHALANGEAL FUS	8209	INC SOFT TISSUE HAND NEC
8128	INTERPHALANGEAL FUSION	8211	TENOTOMY OF HAND
8129	ARTHRODESIS NEC	8212	FASCIOTOMY OF HAND
8130	SPINAL REFUSION NOS	8219	DIV SOFT TISSUE HAND NEC
8131	REFUSION OF ATLAS-AXIS	8221	EXC LES TEND SHEATH HAND
8132	REFUS OTH CERVCL ANT/ANT	8222	EXCISION HAND MUSCLE LES
8133	REFUS OF OTH CERV POST/POST	8229	EXC LES SFT TISS HND NEC
8134	REFUS DRS/DRSLMB ANT/ANT	8231	BURSECTOMY OF HAND
8135	REFUS DRS/DRSLMB PST/PST	8232	EXCIS HAND TEND FOR GRFT
8136	REFUS LMB/LMBSAC ANT/ANT	8233	HAND TENONECTOMY NEC
8137	REFUS LMB/LMBSAC PST/PST	8234	EXC HND MUS/FAS FOR GRFT
8138	REFUS LMB/LMBSC ANT/POST	8235	HAND FASCIECTOMY NEC
8139	REFUSION OF SPINE NEC	8236	OTHER MYECTOMY OF HAND
8140	REPAIR OF HIP, NEC	8239	HAND SOFT TISSUE EXC NEC
8141	*REPAIR OF HIP, NEC*	8241	SUTURE TENDN SHEATH HAND
8142	FIVE-IN-ONE KNEE REPAIR	8242	DELAY SUT FLEX TEND HAND
8143	TRIAD KNEE REPAIR	8243	DELAY SUT HAND TEND NEC
8144	PATELLAR STABILIZATION	8244	SUTUR FLEX TEND HAND NEC
8145	CRUCIATE LIG REPAIR NEC	8245	SUTURE HAND TENDON NEC
8146	COLLATERL LIG REPAIR NEC	8246	SUTURE HAND MUSCLE/FASC
8147	OTHER REPAIR OF KNEE	8251	HAND TENDON ADVANCEMENT
8148	OTHER REPAIR OF KNEE	8252	HAND TENDON RECESSION
8149	OTHER REPAIR OF ANKLE	8253	HAND TENDON REATTACHMENT
8151	TOTAL HIP REPLACEMENT	8254	HAND MUSCLE REATTACHMENT
8152	PARTIAL HIP REPLACEMENT	8255	CHNG HND MUS/TEN LNG NEC
8153	REVISE HIP REPLACEMENT NOS	8256	TRANSPLANT HAND TEND NEC
8154	TOTAL KNEE REPLACEMENT	8257	TRANSPOSIT HAND TEND NEC
8155	REVISE KNEE REPLACEMENT	8258	TRANSPLANT HAND MUSC NEC
8156	TOTAL ANKLE REPLACEMENT	8259	TRANSPOSIT HAND MUSC NEC
8157	REPL JOINT OF FOOT, TOE	8261	POLLICIZATION OPERATION
8159	REV JT REPL LOW EXT NEC	8269	THUMB RECONSTRUCTION NEC
8161	*360 SPINAL FUSION*	8271	HAND TEND PULLEY RECONST
8162	FUS/REFUS 2-3 VERTEBRAE	8272	PLAST OP HND-MUS/FAS GRF
8163	FUS/REFUS 4-8 VERTEBRAE	8279	PLAST OP HAND W GRFT NEC
8164	FUS/REFUS 9 VERTEBRAE	8281	TRANSFER OF FINGER
8165	PERCUTAN VERTEBROPLASTY	8282	REPAIR OF CLEFT HAND
8166	PERCUT VERTEBRAL AUGMENT	8283	REPAIR OF MACRODACTYLY
8169	*OTH HIP REPAIR JAN80--SEP89*	8284	REPAIR OF MALLET FINGER
8171	ARTHROPLAS METACARP WIT	8285	OTHER TENODESIS OF HAND
8172	ARTHROPLASTY METACAR W/O	8286	OTHER TENOPLASTY OF HAND
8173	TOTAL WRIST REPLACEMENT	8289	HAND PLASTIC OP NEC
8174	ARTHROPLASTY CARPAL WIT	8291	LYSIS OF HAND ADHESIONS
8175	ARTHROPLASTY CARPAL W/O	8299	HAND MUS/TEN/FAS/OPS NEC
8179	OTH REPAIR HAN/FIN/WRIS	8301	TENDON SHEATH EXPLORAT
8180	OTH TOTL SHOULDR REPLACE	8302	MYOTOMY
8181	PARTIAL SHOULDER REPLACE	8303	BURSOTOMY
8182	REP RECUR SHLDER DISLOC	8309	SOFT TISSUE INCISION NEC
8183	SHOULDER ARTHROPLAST NEC	8311	ACHILLOTENOTOMY
8184	TOTAL ELBOW REPLACEMENT	8312	ADDUCTOR TENOTOMY OF HIP
8185	ELBOW ARTHROPLASTY NEC	8313	OTHER TENOTOMY
8186	*ELBOW ARTHROPLASTY NEC*	8314	FASCIOTOMY
8187	*ELBOW ARTHROPLASTY NEC*	8319	SOFT TISSUE DIVISION NEC
8193	SUTUR CAPSUL/LIGAMEN ARM	8321	OPEN BIOPSY SOFT TISSUE
8194	SUTURE CAPSUL/LIG ANK/FT	8329	SOFT TISSUE DX PROC NEC
8195	SUTUR CAPSUL/LIG LEG NEC	8331	EXCIS LES TENDON SHEATH
8196	OTHER REPAIR OF JOINT	8332	EXCIS LESION OF MUSCLE
8197	REV JT REPL UPPER EXTREM	8339	EXC LES SOFT TISSUE NEC
8198	OTHER JOINT DX PROCEDURE	8341	TENDON EXCISION FOR GRFT
8199	JOINT STRUCTURE OP NEC	8342	OTHER TENONECTOMY
8201	EXPLOR TEND SHEATH-HAND	8343	MUSC/FASC EXCIS FOR GRFT

8344	OTHER FASCIECTOMY		8448	IMPLANT LEG PROSTHESIS
8345	OTHER MYECTOMY		*8458*	*IMP INTRSPINE DECOMP DEV*
8349	OTHER SOFT TISSUE EXCIS		8459	INSERT OTH SPIN DEVICE
835	BURSECTOMY		8460	INSERT DISC PROS NOS
8361	TENDON SHEATH SUTURE		8461	INS PART DISC PROS CERV
8362	DELAYED TENDON SUTURE		8462	INS TOT DISC PROST CERV
8363	ROTATOR CUFF REPAIR		8463	INS SPIN DISC PROS THOR
8364	OTHER SUTURE OF TENDON		8464	INS PART DISC PROS LUMB
8365	OTHER MUSCLE/FASC SUTURE		8465	INS TOTL DISC PROS LUMB
8371	TENDON ADVANCEMENT		8466	REVISE DISC PROST CERV
8372	TENDON RECESSION		8467	REVISE DISC PROST THORA
8373	TENDON REATTACHMENT		8468	REVISE DISC PROSTH LUMB
8374	MUSCLE REATTACHMENT		8469	REVISE DISC PROSTH NOS
8375	TENDON TRNSFR/TRANSPLANT		8480	INS/REPL INTERSPINE DEV
8376	OTHER TENDON TRANSPOSIT		8481	REV INTERSPINE DEVICE
8377	MUSCLE TRNSFR/TRANSPLANT		8482	INS/REPL PDCL STABIL DEV
8379	OTHER MUSCLE TRANSPOSIT		8483	REV PEDCL DYN STABIL DEV
8381	TENDON GRAFT		8484	INS/REPL FACET REPLC DEV
8382	MUSCLE OR FASCIA GRAFT		8485	REV FACET REPLACE DEVICE
8383	TENDON PULLEY RECONSTRUC		8491	AMPUTATION NOS
8384	CLUBFOOT RELEASE NEC		8492	SEPARAT EQUAL JOIN TWIN
8385	MUSC/TEND LNG CHANGE NEC		8493	SEPARAT UNEQUL JOIN TWIN
8386	QUADRICEPSPLASTY		8499	MUSCULOSKELETAL OP NEC
8387	OTHER PLASTIC OPS MUSCLE		8512	OPEN BREAST BIOPSY
8388	OTHER PLASTIC OPS TENDON		8520	BREAST TISSU DESTRUC NOS
8389	OTHER PLASTIC OPS FASCIA		8521	LOCAL EXCIS BREAST LES
8391	ADHESIOLYSIS MUS/TEN/FAS		8522	QUADRANT RESECT BREAST
8392	INSERT SKEL MUSC STIMULA		8523	SUBTOTAL MASTECTOMY
8393	REMOV SKEL MUSC STIMULAT		8524	EXC ECTOPIC BREAST TISSU
8399	MUS/TEN/FAS/BUR OP NEC		8525	EXCISION OF NIPPLE
8400	UPPER LIMB AMPUTAT NOS		8531	UNILAT REDUCT MAMMOPLAST
8401	FINGER AMPUTATION		8532	BILAT REDUCT MAMMOPLASTY
8402	THUMB AMPUTATION		8533	UNIL SUBQ MAMMECT-IMPLNT
8403	AMPUTATION THROUGH HAND		8534	UNILAT SUBQ MAMMECT NEC
8404	DISARTICULATION OF WRIST		8535	BIL SUBQ MAMMECT-IMPLANT
8405	AMPUTATION THRU FOREARM		8536	BILAT SUBQ MAMMECTOM NEC
8406	DISARTICULATION OF ELBOW		8541	UNILAT SIMPLE MASTECTOMY
8407	AMPUTATION THRU HUMERUS		8542	BILAT SIMPLE MASTECTOMY
8408	SHOULDER DISARTICULATION		8543	UNILAT EXTEN SIMP MASTEC
8409	FOREQUARTER AMPUTATION		8544	BILAT EXTEND SIMP MASTEC
8410	LOWER LIMB AMPUTAT NOS		8545	UNILAT RADICAL MASTECTOM
8411	TOE AMPUTATION		8546	BILAT RADICAL MASTECTOMY
8412	AMPUTATION THROUGH FOOT		8547	UNIL EXT RAD MASTECTOMY
8413	DISARTICULATION OF ANKLE		8548	BIL EXTEN RAD MASTECTOMY
8414	AMPUTAT THROUGH MALLEOLI		8550	AUGMENT MAMMOPLASTY NOS
8415	BELOW KNEE AMPUTAT NEC		8553	UNILAT BREAST IMPLANT
8416	DISARTICULATION OF KNEE		8554	BILATERAL BREAST IMPLANT
8417	ABOVE KNEE AMPUTATION		856	MASTOPEXY
8418	DISARTICULATION OF HIP		*857*	*TOTAL BREAST RECONSTRUCT*
8419	HINDQUARTER AMPUTATION		8570	TOTL RECONSTC BREAST NOS
8421	THUMB REATTACHMENT		8571	LATISS DORSI MYOCUT FLAP
8422	FINGER REATTACHMENT		8572	TRAM FLAP, PEDICLED
8423	FOREARM/WRIST/HAND REATT		8573	TRAM FLAP, FREE
8424	UPPER ARM REATTACHMENT		8574	DIEP FLAP, FREE
8425	TOE REATTACHMENT		8575	SIEA FLAP, FREE
8426	FOOT REATTACHMENT		8576	GAP FLAP, FREE
8427	LOWER LEG/ANKLE REATTACH		8579	TOTL RECONST BREAST NEC
8428	THIGH REATTACHMENT		8582	BREAST SPLIT-THICK GRAFT
8429	REATTACHMENT NEC		8583	BREAST FULL-THICK GRAFT
843	AMPUTATION STUMP REVIS		8584	BREAST PEDICLE GRAFT
8440	IMPLNT/FIT PROS LIMB NOS		8585	BREAST MUSCLE FLAP GRAFT
8444	IMPLANT ARM PROSTHESIS		8586	TRANSPOSITION OF NIPPLE

8587	NIPPLE REPAIR NEC		8672	PEDICLE GRAFT ADVANCEMEN
8589	MAMMOPLASTY NEC		8673	ATTACH PEDICLE TO HAND
8593	BREAST IMPLANT REVISION		8674	ATTACH PEDICLE GRAFT NEC
8594	BREAST IMPLANT REMOVAL		8675	REVISION OF PEDICLE GRFT
8595	INSER BREAST TISSU EXPAN		8681	REPAIR FACIAL WEAKNESS
8596	REMOV BREAST TISSU EXPAN		8682	FACIAL RHYTIDECTOMY
8599	BREAST OPERATION NEC		8683	SIZE REDUCT PLASTIC OP
8606	INSERT INFUSION PUMP		8684	RELAXATION OF SCAR
8621	EXCISION OF PILONID CYST		8685	SYNDACTYLY CORRECTION
8622	EXC WOUND DEBRIDEMENT		8686	ONYCHOPLASTY
8625	DERMABRASION		8689	SKIN REPAIR & PLASTY NEC
864	RADICAL EXCIS SKIN LES		8691	SKIN EXCISION FOR GRAFT
8660	FREE SKIN GRAFT NOS		8693	INSERT TISSUE EXPANDER
8661	FULL-THICK HAND SKIN GRF		8694	INS/REPL SINGLE PUL GEN
8662	HAND SKIN GRAFT NEC		8695	INS/RE PLS GN NO RECHRG
8663	FULL-THICK SKIN GRFT NEC		8696	INSERT/REPL OTH NEUROST
8665	HETEROGRAFT TO SKIN		8697	INS/REP 1 PUL GEN, RECHRG
8666	HOMOGRAFT TO SKIN		8698	INS/REP MUL PUL GN,RECHG
8667	DERMAL REGENER GRAFT		8753	INTRAOPER CHOLANGIOGRAM
8669	FREE SKIN GRAFT NEC		9227	RADIOACTIVE ELEM IMPLANT
8670	PEDICLE GRAFT/FLAP NOS		9504	ANESTHETIZED EYE EXAM
8671	CUT & PREP PEDICLE GRAFT			

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

Appendix B – Surgical DRGs

Surgical DRG codes[1]:

003	CRANIOTOMY, AGE 0-17
004	*SPINAL PROCEDURES*
005	*EXTRACRANIAL VASCULAR PROCEDURES*
006	CARPAL TUNNEL RELEASE
007	PERIPH & CRANIAL NERVE & OTHER NERV SYST PROC W CC
008	PERIPH & CRANIAL NERVE & OTHER NERV SYST PROC W/O CC
014	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION
015	NONSPECIFIC CVA & PRECEREBRAL OCCLUSION W/O INFARCT
036	RETINAL PROCEDURES
037	ORBITAL PROCEDURES
038	PRIMARY IRIS PROCEDURES
039	LENS PROCEDURES W/ OR W/O VITRECTOMY
041	EXTRAOCULAR PROCEDURES EXCEPT ORBIT, AGE >0-17
042	INTRAOCULAR PROCEDURES EXCEPT RETINA, IRIS & LENS
049	MAJOR HEAD & NECK PROCEDURES
050	SIALOADENECTOMY
051	SALIVARY GLAND PROCEDURES EXCEPT SIALOADENECTOMY
052	CLEFT LIP & PALATE REPAIR
054	SINUS & MASTOID PROCEDURES, AGE 0-17
055	MISCELLANEOUS EAR, NOSE, MOUTH AND THROAT PROCEDURES
056	RHINOPLASTY
058	T&A PROC, EXCEPT TONSILLECTOMY &/OR ADENOIDECTOMY ONLY, AGE 0-17
060	TONSILLECTOMY &/OR ADENOIDECTOMY ONLY, AGE 0 – 17
062	MYRINGOTOMY W/ TUBE INSERTION, AGE 0-17
063	OTHER EAR, NOSE, MOUTH AND THROAT O.R. PROCEDURES
075	MAJOR CHEST PROCEDURES
076	OTHER RESP SYSTEM O.R. PROCEDURES W CC
077	OTHER RESP SYSTEM O.R. PROCEDURES W/O CC
103	HEART TRANSPLANT OR IMPLANT OF HEART ASSIST SYSTEM
104	CARDIAC VALVE & OTH MAJOR CARDIOTHORACIC PROC W CARD CATH
105	CARDIAC VALVE & OTH MAJOR CARDIOTHORACIC PROC W/O CARD CATH
106	CORONARY BYPASS W PTCA
107	*CORONARY BYPASS W/ CARDIAC CATHETERIZATION*
108	OTHER CARDIOTHORACIC PROCEDURES
109	*CORONARY BYPASS W/O CARDIAC CATHETERIZATION*
110	MAJOR CARDIOVASCULAR PROCEDURES W CC
111	MAJOR CARDIOVASCULAR PROCEDURES W/O CC
112	*PERCUTANEOUS CARDIOVASCULAR PROCEDURES*
113	AMPUTATION FOR CIRCSYSTEM DISORDERS EXCEPT UPPER LIMB & TOE
114	UPPER LIMB & TOE AMPUTATION FOR CIRC SYSTEM DISORDERS
115	*PERMANENT CARDIAC PACEMAKER IMPLANT W/ ACUTE MYOCARDIAL INFARCTION, HEART FAILURE OR SHOCK OR ACID LEAD OR GENERATOR PROCEDURE*
116	*OTHER PERMANENT CARDIAC PACEMAKER IMPLANT OR PTCA W/ CORONARY ARTERIAL STENT*
117	CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT
118	CARDIAC PACEMAKER DEVICE REPLACEMENT
119	VEIN LIGATION & STRIPPING
120	OTHER CIRCULATORY SYSTEM O.R. PROCEDURES
146	RECTAL RESECTION WCC
147	RECTAL RESECTION W/O CC
148	*MAJOR SMALL AND LARGE BOWEL PROCEDURES W/ CC*
149	MAJOR SMALL & LARGE BOWEL PROCEDURES W/O CC
150	PERITONEAL ADHESIOLYSIS W CC
151	PERITONEAL ADHESIOLYSIS W/O CC
152	MINOR SMALL & LARGE BOWEL PROCEDURES W CC
153	MINOR SMALL & LARGE BOWEL PROCEDURES W/O CC
156	STOMACH, ESOPHAGEAL AND DUODENAL PROCEDURES, AGE 0-17
157	ANAL & STOMAL PROCEDURES W CC
158	ANAL AND STOMAL PROCEDURES W/O CC
163	HERNIA PROCEDURESAGE 0-17
164	APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W CC
165	APPENDECTOMY W/ COMPLICATED PRINCIPAL DIAG W/O CC
166	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W CC
167	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W/O CC
168	MOUTH PROCEDURES W CC
169	MOUTH PROCEDURES W/O CC
170	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W/ CC

171	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W/O CC
191	PANCREAS, LIVER & SHUNT PROCEDURES W CC
192	PANCREAS, LIVER & SHUNT PROCEDURES W/O CC
193	BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W CC
194	BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W/O CC
195	CHOLECYSTECTOMY W C.D.E. W CC
196	CHOLECYSTECTOMY W C.D.E. W/O CC
197	CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W CC
198	CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W/O CC
199	HEPATOBILIARY DIAGNOSTIC PROCEDURE FOR MALIGNANCY
200	HEPATOBILIARY DIAGNOSTIC PROCEDURE FOR NON-MALIGNANCY
201	OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES
209	*MAJOR JOINT AND LIMB REATTACHMENT PROCEDURES OF LOWER EXTREMITY*
212	HIP AND FEMUR PROCEDURES EXCEPT MAJOR JOINT AGE 0-17
213	AMPUTATION FOR MUSCULOSKELETAL SYSTEM & CONN TISSUE DISORDERS
214	*BACK & NECK PROCEDURES W CC*
215	*BACK & NECK PROCEDURES W/O CC*
216	BIOPSIES OF MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE
217	WND DEBRID & SKN GRFT EXCEPT HAND,FOR MUSCSKELET & CONN TISS DIS
220	LOWER EXTREM & HUMER PROC EXCEPT HIP,FOOT,FEMUR AGE 0-17 W/O CC
221	*KNEE PROCEDURES W CC*
222	*KNEE PROCEDURES W/O CC*
223	MAJOR SHOULDER/ELBOW PROC, OR OTHER UPPER EXTREMITY PROC W CC
224	SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC, W/O CC
225	FOOT PROCEDURES
226	SOFT TISSUE PROCEDURES W CC
227	SOFT TISSUE PROCEDURES W/O CC
228	MAJOR THUMB OR JOINT PROC,OR OTH HAND OR WRIST PROC W CC
229	HAND OR WRIST PROC, EXCEPT MAJOR JOINT PROC, W/O CC
230	LOCAL EXCISION & REMOVAL OF INT FIX DEVICES OF HIP & FEMUR
231	*LOCAL EXCISION AND REMOVAL OF INTERNAL FIXATION DEVICES EXCEPT HIP AND FEMUR*
232	ARTHROSCOPY
233	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W CC
234	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W/O CC

257	TOTAL MASTECTOMY FOR MALIGNANCY W CC
258	TOTAL MASTECTOMY FOR MALIGNANCY W/O CC
259	SUBTOTAL MASTECTOMY FOR MALIGNANCY W CC
260	SUBTOTAL MASTECTOMY FOR MALIGNANCY W/O CC
261	BREAST PROC FOR NON-MALIGNANCY EXCEPT BIOPSY & LOCAL EXCISION
262	BREAST BIOPSY &LOCAL EXCISION FOR NON-MALIGNANCY
263	SKIN GRAFT &/OR DEBRID FOR SKN ULCER OR CELLULITIS W CC
264	SKIN GRAFT &/OR DEBRID FOR SKN ULCER OR CELLULITIS W/O CC
265	SKIN GRAFT &/OR DEBRID EXCEPT FOR SKIN ULCER OR CELLULITIS W CC
266	SKIN GRAFT &/OR DEBRID EXCEPT FOR SKIN ULCER OR CELLULITIS W/O CC
267	PERIANAL AND PILONIDAL PROCEDURES
268	SKIN, SUBCUTANEOUS TISSUE &BREAST PLASTIC PROCEDURES
269	OTHER SKIN, SUBCUT TISS & BREAST PROC W CC
270	OTHER SKIN, SUBCUT TISS & BREAST PROC W/O CC
285	AMPUTAT OF LOWER LIMB FOR ENDOCRINE,NUTRIT,& METABOL DISORDERS
286	ADRENAL &PITUITARY PROCEDURES
287	SKIN GRAFTS & WOUND DEBRID FOR ENDOC, NUTRIT & METAB DISORDERS
288	O.R. PROCEDURES FOR OBESITY
289	PARATHYROID PROCEDURES
290	THYROID PROCEDURES
291	THYROGLOSSAL PROCEDURES
292	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W CC
293	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W/O CC
302	KIDNEY TRANSPLANT
303	KIDNEY AND URETER PROCEDURES FOR NEOPLASM
304	KIDNEY AND URETER PROCEDURES FOR NON-NEOPLASM WITHOUT CC
305	KIDNEY AND URETER PROCEDURES FOR NON-NEOPLASM WITHOUT CC
306	PROSTATECTOMY W CC
307	PROSTATECTOMY W/O CC
308	MINOR BLADDER PROCEDURES W CC
309	MINOR BLADDER PROCEDURES W/O CC
310	TRANSURETHRAL PROCEDURES W CC
311	TRANSURETHRAL PROCEDURES W/O CC
314	URETHRAL PROCEDURES, AGE 0-17
315	OTHER KIDNEY AND URINARY TRACT O.R. PROCEDURES
334	MAJOR MALE PELVIC PROCEDURES W CC

335	MAJOR MALE PELVIC PROCEDURES W/O CC		406	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R.PROC W CC
336	TRANSURETHRAL PROSTATECTOMY W CC		407	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R.PROC W/O CC
337	TRANSURETHRAL PROSTATECTOMY W/O CC		408	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W OTHER O.R.PROC
338	TESTES PROCEDURES FOR MALIGNANCY		*415*	*OR PROCEDURE FOR INFECTIOUS AND PARASITIC DISEASES*
340	TESTES PROCEDURES FOR NONMALIGNANCY AGE 0-17		424	OR PROCEDURES W PRINCIPAL DIAGNOSIS OF MENTAL ILLNESS
341	PENIS PROCEDURES		439	SKIN GRAFTS FOR INJURIES
343	CIRCUMCISION AGE 0-17		440	WOUND DEBRIDEMENTS FOR INJURIES
344	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROCEDURES FOR MALIGNANCY		441	HAND PROCEDURES FOR INJURIES
345	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC EXCEPT FOR MALIGNANCY		442	OTHER O.R. PROCEDURES FOR INJURIES W/ CC
353	PELVIC EVISCERATION, RADICAL HYSTERECTOMY & RADICAL VULVECTOMY		443	OTHER O.R. PROCEDURES FOR INJURIES W/O CC
			458	*NON-EXTENSIVE BURNS W SKIN GRAFT*
354	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W CC		*459*	*NON-EXTENSIVE BURNS W WOUND DEBRIDEMENT OR OTHER O.R. PROC*
355	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W/O CC		461	O.R. PROC W DIAGNOSES OF OTHER CONTACT W HEALTH SERVICES
356	FEMALE REPRODUCTIVE SYSTEM RECONSTRUCTIVE PROCEDURES		468	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS
357	UTERINE &ADNEXA PROCEDURES FOR OVARIAN OR ADNEXAL MALIGNANCY		471	BILATERAL OR MULTIPLE MAJOR JOINT PROCS OF LOWER EXTREMITY
358	UTERINE AND ADNEXA PROC FOR NON-MALIGNANCY W CC		*472*	*EXTENSIVE BURNS W O.R. PROCEDURE*
359	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W/O CC		476	PROSTATIC OR PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS
360	VAGINA, CERVIX AND VULVA PROCEDURES		477	NON-EXTENSIVE OR PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS
361	LAPAROSCOPY &INCISIONAL TUBAL INTERRUPTION		*478*	*OTHER VASCULAR PROCEDURES W/ CC*
362	ENDOSCOPIC TUBAL INTERRUPTION		479	OTHER VASCULAR PROCEDURES W/O CC
363	D&C, CONIZATION & RADIO-IMPLANT, FOR MALIGNANCY		480	LIVER TRANSPLANT AND/OR INTESTINAL TRANSPLANT
364	D & C, CONIZATION EXCEPT FOR MALIGNANCY		481	BONE MARROW TRANSPLANT
			482	TRACHEOSTOMY FOR FACE, MOUTH & NECK DIAGNOSES
365	OTHER FEMALE REPRODUCTIVE SYSTEM O.R. PROCEDURES		*483*	*TRACHEOSTOMY EXCEPT FOR FACE, MOUTH AND NECK DIAGNOSES*
370	CESAREAN SECTION W/ CC		484	CRANIOTOMY FOR MULTIPLE SIGNIFICANT TRAUMA
371	CESAREAN SECTION W/O CC			
374	VAGINAL DELIVERY W/ STERILIZATION AND/OR D AND C		485	LIMB REATTACHMENT, HIP AND FEMUR PROC FOR MULTIPLE SIGNIFICANT TRAUMA
375	VAGINAL DELIVERY W/ OR PROCEDURE EXCEPT STERILIZATION AND/OR D AND C		486	OTHER O.R. PROCEDURES FOR MULTIPLE SIGNIFICANT TRAUMA
377	POSTPARTUM AND POSTABORTION DIAGNOSES W/ OR PROCEDURE		488	HIV W EXTENSIVE O.R. PROCEDURE
381	ABORTION W/ D AND C ASPIRATION CURETTAGE OR HYSTERECTOMY		491	MAJOR JOINT & LIMB REATTACHMENT PROCEDURES OF UPPER EXTREMITY
393	SPLENECTOMY, AGE 0-17		493	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W CC
394	OTHER OR PROCEDURES OF THE BLOOD AND BLOOD-FORMING ORGANS		494	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W/O CC
400	*LYMPHOMA AND LEUKEMIA W/ MAJOR OR PROCEDURES*		495	LUNG TRANSPLANT
			496	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION
401	LYMPHOMA AND NONACUTE LEUKEMIA W/ OTHER O.R. PROC W CC		497	SPINAL FUSION W CC
			498	SPINAL FUSION W/O CC
402	LYMPHOMA AND NONACUTE LEUKEMIA W/ OTHER O.R. PROC W/O CC		499	BACK &NECK PROCEDURES EXCEPT SPINAL FUSION W CC

500	BACK & NECK PROCEDURES EXCEPT SPINAL FUSION W/O CC
501	KNEE PROCEDURES W PDX OF INFECTION W CC
502	KNEE PROCEDURES W PDX OF INFECTION W/O CC
503	KNEE PROCEDURES W/O PDX OF INFECTION
504	EXTEN. BURNS OR FULL THICKNESS BURN W/MV 96+HRS W/SKIN GFT
506	FULL THICKNESS BURN W SKIN GRAFT OR INHAL INJ W CC OR SIG TRAUMA
507	FULL THICKNESS BURN W SKIN GRFT OR INHAL INJ W/O CC OR SIG TRAUMA
512	SIMULTANEOUS PANCREAS/KIDNEY TRANSPLANT
513	PANCREAS TRANSPLANT
514	*CARDIAC DEFIBRILLATOR IMPLANT W CARDIAC CATH*
515	CARDIAC DEFIBRILLATOR IMPLANT W/O CARDIAC CATH
516	*PERCUTANEOUS CARDIOVASC PROC W AMI*
517	*PERC CARDIO PROC W NON-DRUG ELUTING STENT W/O AMI*
518	PERC CARDIO PROC W/O CORONARY ARTERY STENT OR AMI
519	CERVICAL SPINAL FUSION W CC
520	CERVICAL SPINAL FUSION W/O CC
525	OTHER HEART ASSIST SYSTEM IMPLANT
526	*PERCUTNEOUS CARDIOVASULAR PROC W DRUG ELUTING STENT W AMI*
527	*PERCUTNEOUS CARDIOVASULAR PROC W DRUG ELUTING STENT W/O AMI*
528	INTRACRANIAL VASCULAR PROC W PDX HEMORRHAGE
529	VENTRICULAR SHUNT PROCEDURES W CC
530	VENTRICULAR SHUNT PROCEDURES W/O CC
531	SPINAL PROCEDURES W CC
532	SPINAL PROCEDURES W/O CC
533	EXTRACRANIAL PROCEDURES W CC
534	EXTRACRANIAL PROCEDURES W/O CC
535	CARDIAC DEFIB IMPLANT W CARDIAC CATH W AMI/HF/SHOCK
536	CARDIAC DEFIB IMPLANT W CARDIAC CATH W/O AMI/HF/SHOCK
537	LOCAL EXCIS & REMOV OF INT FIX DEV EXCEPT HIP & FEMUR W CC
538	LOCAL EXCIS & REMOV OF INT FIX DEV EXCEPT HIP & FEMUR W/O CC
539	LYMPHOMA & LEUKEMIA W MAJOR OR PROCEDURE W CC
540	LYMPHOMA & LEUKEMIA W MAJOR OR PROCEDURE W/O CC
541	TRACH W MV 96+HRS OR PDX EXC FACE, MTH, FACE & NECK DX W/MAJ OR
542	TRACH W MV 96+HRS OR PDX EXC FACE, MTH, FACE & NECK DX W/O MJ OR
543	CRANIOTOMY W MAJOR DEVICE IMPLANT OR ACUTE COMPLEX CNS PRINCIPAL DIAGNOSIS
544	MAJOR JOINT REPLACEMENT OR REATTACHMENT OF LOWER EXTREMITY
545	REVISION OF HIP OR KNEE REPLACEMENT
546	SPINAL FUSION EXC CERV WITH CURVATURE OF THE SPINE OR MALIG
547	CORONARY BYPASS W CARDIAC CATH W MAJOR CV DX
548	CORONARY BYPASS W CARDIAC CATH W/O MAJOR CV DX
549	CORONARY BYPASS W/O CARDIAC CATH W MAJOR CV DX
550	CORONARY BYPASS W/O CARDIAC CATH W/O MAJOR CV DX
551	PERMANENT CARDIAC PACEMAKER IMPL W MAJ CV DX OR AICD LEAD OR GNRTR
552	OTHER PERMANENT CARDIAC PACEMAKER IMPLANT W/O MAJOR CV DX
553	OTHER VASCULAR PROCEDURES W CC W MAJOR CV DX
554	OTHER VASCULAR PROCEDURES W CC W/O MAJOR CV DX
555	PERCUTANEOUS CARDIOVASCULAR PROC W MAJOR CV DX
556	PERCUTANEOUS CARDIOVASC PROC W NON-DRUG-ELUTING STENT W/O MAJ CV DX
557	PERCUTANEOUS CARDIOVASCULAR PROC W DRUG-ELUTING STENT W MAJOR CV DX
558	PERCUTANEOUS CARDIOVASCULAR PROC W DRUG-ELUTING STENT W/O MAJ CV DX
569	MAJOR SMALL & LARGE BOWEL PROCEDURES W CC W MAJOR GI DX
570	MAJOR SMALL & LARGE BOWEL PROCEDURES W CC W/O MAJOR GI DX
573	MAJOR BLADDER PROCEDURES
577	CAROTID ARTERY STENT PROCEDURE
578	INFECTIOUS & PARASITIC DISEASES W OR PROCEDURE
579	POSTOPERATIVE OR POST-TRAUMATIC INFECTIONS W OR PROCEDURE

[1] The DRG/MS-DRG codes are continuously updated. The current list of DRG/MS-DRG codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

Appendix C – Surgical MS-DRGs

For medical discharges using MS-DRGs (on or after October 1, 2007)

Surgical MS-DRG codes[1]:

001	HEART TRANSPLANT OR IMPLANT OF HEART ASSIST SYSTEM W MCC
002	HEART TRANSPLANT OR IMPLANT OF HEART ASSIST SYSTEM W/O MCC
003	ECMO OR TRACH W MV 96+ HRS OR PDX EXC FACE, MOUTH & NECK W MAJ O.R.
004	TRACH W MV 96+ HRS OR PDX EXC FACE, MOUTH & NECK W/O MAJ O.R.
005	LIVER TRANSPLANT W MCC OR INTESTINAL TRANSPLANT
006	LIVER TRANSPLANT W/O MCC
007	LUNG TRANSPLANT
008	SIMULTANEOUS PANCREAS/KIDNEY TRANSPLANT
009	*BONE MARROW TRANSPLANT*
010	PANCREAS TRANSPLANT
011	TRACHEOSTOMY FOR FACE,MOUTH & NECK DIAGNOSES W MCC
012	TRACHEOSTOMY FOR FACE,MOUTH & NECK DIAGNOSES W CC
013	TRACHEOSTOMY FOR FACE,MOUTH & NECK DIAGNOSES W/O CC/MCC
014	ALLOGENIC BONE MARROW TRANSPLANT
015	AUTOLOGOUS BONE MARROW TRANSPLANT
016	AUTOLOGOUS BONE MARROW TRANSPLANT W CC/MCC
017	AUTOLOGOUS BONE MARROW TRANSPLANT W/O CC/MCC
020	INTRACRANIAL VASCULAR PROCEDURES W PDX HEMORRHAGE W MCC
021	INTRACRANIAL VASCULAR PROCEDURES W PDX HEMORRHAGE W CC
022	INTRACRANIAL VASCULAR PROCEDURES W PDX HEMORRHAGE W/O CC/MCC
023	CRANIO W MAJOR DEV IMPL/ACUTE COMPLEX CNS PDX W MCC OR CHEMO IMPLANT
024	CRANIO W MAJOR DEV IMPL/ACUTE COMPLEX CNS PDX W/O MCC
025	CRANIOTOMY & ENDOVASCULAR INTRACRANIAL PROCEDURES W MCC
026	CRANIOTOMY & ENDOVASCULAR INTRACRANIAL PROCEDURES W CC
027	CRANIOTOMY & ENDOVASCULAR INTRACRANIAL PROCEDURES W/O CC/MCC
028	SPINAL PROCEDURES W MCC
029	SPINAL PROCEDURES W CC OR SPINAL NEUROSTIMULATORS
030	SPINAL PROCEDURES W/O CC/MCC
031	VENTRICULAR SHUNT PROCEDURES W MCC
032	VENTRICULAR SHUNT PROCEDURES W CC
033	VENTRICULAR SHUNT PROCEDURES W/O CC/MCC
034	CAROTID ARTERY STENT PROCEDURE W MCC
035	CAROTID ARTERY STENT PROCEDURE W CC
036	CAROTID ARTERY STENT PROCEDURE W/O CC/MCC
037	EXTRACRANIAL PROCEDURES W MCC
038	EXTRACRANIAL PROCEDURES W CC
039	EXTRACRANIAL PROCEDURES W/O CC/MCC
040	PERIPH/CRANIAL NERVE & OTHER NERV SYST PROC W MCC
041	PERIPH/CRANIAL NERVE & OTHER NERV SYST PROC W CC OR PERIPH NEUROSTIM
042	PERIPH/CRANIAL NERVE & OTHER NERV SYST PROC W/O CC/MCC
113	ORBITAL PROCEDURES W CC/MCC
114	ORBITAL PROCEDURES W/O CC/MCC
115	EXTRAOCULAR PROCEDURES EXCEPT ORBIT
116	INTRAOCULAR PROCEDURES W CC/MCC
117	INTRAOCULAR PROCEDURES W/O CC/MCC
129	MAJOR HEAD & NECK PROCEDURES W CC/MCC OR MAJOR DEVICE
130	MAJOR HEAD & NECK PROCEDURES W/O CC/MCC
131	CRANIAL/FACIAL PROCEDURES W CC/MCC
132	CRANIAL/FACIAL PROCEDURES W/O CC/MCC
133	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES W CC/MCC
134	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES W/O CC/MCC
135	SINUS & MASTOID PROCEDURES W CC/MCC
136	SINUS & MASTOID PROCEDURES W/O CC/MCC
137	MOUTH PROCEDURES W CC/MCC
138	MOUTH PROCEDURES W/O CC/MCC
139	SALIVARY GLAND PROCEDURES
163	MAJOR CHEST PROCEDURES W MCC
164	MAJOR CHEST PROCEDURES W CC
165	MAJOR CHEST PROCEDURES W/O CC/MCC

166	OTHER RESP SYSTEM O.R. PROCEDURES W MCC		240	AMPUTATION FOR CIRC SYS DISORDERS EXC UPPER LIMB & TOE W CC
167	OTHER RESP SYSTEM O.R. PROCEDURES W CC		241	AMPUTATION FOR CIRC SYS DISORDERS EXC UPPER LIMB & TOE W/O CC/MCC
168	OTHER RESP SYSTEM O.R. PROCEDURES W/O CC/MCC		242	PERMANENT CARDIAC PACEMAKER IMPLANT W MCC
215	OTHER HEART ASSIST SYSTEM IMPLANT		243	PERMANENT CARDIAC PACEMAKER IMPLANT W CC
216	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W CARD CATH W MCC		244	PERMANENT CARDIAC PACEMAKER IMPLANT W/O CC/MCC
217	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W CARD CATH W CC		245	AICD GENERATOR PROCEDURES
			246	PERC CARDIOVASC PROC W DRUG-ELUTING STENT W MCC OR 4+ VESSELS/STENTS
218	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W CARD CATH W/O CC/MCC		247	PERC CARDIOVASC PROC W DRUG-ELUTING STENT W/O MCC
219	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W/O CARD CATH W MCC		248	PERC CARDIOVASC PROC W NON-DRUG-ELUTING STENT W MCC OR 4+ VES/STENTS
220	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W/O CARD CATH W CC		249	PERC CARDIOVASC PROC W NON-DRUG-ELUTING STENT W/O MCC
221	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W/O CARD CATH W/O CC/MCC		250	PERC CARDIOVASC PROC W/O CORONARY ARTERY STENT W MCC
			251	PERC CARDIOVASC PROC W/O CORONARY ARTERY STENT W/O MCC
222	CARDIAC DEFIB IMPLANT W CARDIAC CATH W AMI/HF/SHOCK W MCC		252	OTHER VASCULAR PROCEDURES W MCC
223	CARDIAC DEFIB IMPLANT W CARDIAC CATH W AMI/HF/SHOCK W/O MCC		253	OTHER VASCULAR PROCEDURES W CC
224	CARDIAC DEFIB IMPLANT W CARDIAC CATH W/O AMI/HF/SHOCK W MCC		254	OTHER VASCULAR PROCEDURES W/O CC/MCC
225	CARDIAC DEFIB IMPLANT W CARDIAC CATH W/O AMI/HF/SHOCK W/O MCC		255	UPPER LIMB & TOE AMPUTATION FOR CIRC SYSTEM DISORDERS W MCC
226	CARDIAC DEFIBRILLATOR IMPLANT W/O CARDIAC CATH W MCC		256	UPPER LIMB & TOE AMPUTATION FOR CIRC SYSTEM DISORDERS W CC
227	CARDIAC DEFIBRILLATOR IMPLANT W/O CARDIAC CATH W/O MCC		257	UPPER LIMB & TOE AMPUTATION FOR CIRC SYSTEM DISORDERS W/O CC/MCC
228	OTHER CARDIOTHORACIC PROCEDURES W MCC		258	CARDIAC PACEMAKER DEVICE REPLACEMENT W MCC
229	OTHER CARDIOTHORACIC PROCEDURES W CC		259	CARDIAC PACEMAKER DEVICE REPLACEMENT W/O MCC
230	OTHER CARDIOTHORACIC PROCEDURES W/O CC/MCC		260	CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT W MCC
231	CORONARY BYPASS W PTCA W MCC		261	CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT W CC
232	CORONARY BYPASS W PTCA W/O MCC		262	CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT W/O CC/MCC
233	CORONARY BYPASS W CARDIAC CATH W MCC			
234	CORONARY BYPASS W CARDIAC CATH W/O MCC		263	VEIN LIGATION & STRIPPING
235	CORONARY BYPASS W/O CARDIAC CATH W MCC		264	OTHER CIRCULATORY SYSTEM O.R. PROCEDURES
236	CORONARY BYPASS W/O CARDIAC CATH W/O MCC		265	AICD LEAD PROCEDURES
237	MAJOR CARDIOVASC PROCEDURES W MCC		326	STOMACH, ESOPHAGEAL & DUODENAL PROC W MCC
238	MAJOR CARDIOVASC PROCEDURES W/O MCC		327	STOMACH, ESOPHAGEAL & DUODENAL PROC W CC
239	AMPUTATION FOR CIRC SYS DISORDERS EXC UPPER LIMB & TOE W MCC		328	STOMACH, ESOPHAGEAL & DUODENAL PROC W/O CC/MCC
			329	MAJOR SMALL & LARGE BOWEL PROCEDURES W MCC

330 MAJOR SMALL & LARGE BOWEL PROCEDURES W CC
331 MAJOR SMALL & LARGE BOWEL PROCEDURES W/O CC/MCC
332 RECTAL RESECTION W MCC
333 RECTAL RESECTION W CC
334 RECTAL RESECTION W/O CC/MCC
335 PERITONEAL ADHESIOLYSIS W MCC
336 PERITONEAL ADHESIOLYSIS W CC
337 PERITONEAL ADHESIOLYSIS W/O CC/MCC
338 APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W MCC
339 APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W CC
340 APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W/O CC/MCC
341 APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W MCC
342 APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W CC
343 APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W/O CC/MCC
344 MINOR SMALL & LARGE BOWEL PROCEDURES W MCC
345 MINOR SMALL & LARGE BOWEL PROCEDURES W CC
346 MINOR SMALL & LARGE BOWEL PROCEDURES W/O CC/MCC
347 ANAL & STOMAL PROCEDURES W MCC
348 ANAL & STOMAL PROCEDURES W CC
349 ANAL & STOMAL PROCEDURES W/O CC/MCC
350 INGUINAL & FEMORAL HERNIA PROCEDURES W MCC
351 INGUINAL & FEMORAL HERNIA PROCEDURES W CC
352 INGUINAL & FEMORAL HERNIA PROCEDURES W/O CC/MCC
353 HERNIA PROCEDURES EXCEPT INGUINAL & FEMORAL W MCC
354 HERNIA PROCEDURES EXCEPT INGUINAL & FEMORAL W CC
355 HERNIA PROCEDURES EXCEPT INGUINAL & FEMORAL W/O CC/MCC
356 OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W MCC
357 OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W CC
358 OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W/O CC/MCC
405 PANCREAS, LIVER & SHUNT PROCEDURES W MCC
406 PANCREAS, LIVER & SHUNT PROCEDURES W CC
407 PANCREAS, LIVER & SHUNT PROCEDURES W/O CC/MCC
408 BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W MCC
409 BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W CC

410 BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W/O CC/MCC
411 CHOLECYSTECTOMY W C.D.E. W MCC
412 CHOLECYSTECTOMY W C.D.E. W CC
413 CHOLECYSTECTOMY W C.D.E. W/O CC/MCC
414 CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W MCC
415 CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W CC
416 CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W/O CC/MCC
417 LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W MCC
418 LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W CC
419 LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W/O CC/MCC
420 HEPATOBILIARY DIAGNOSTIC PROCEDURES W MCC
421 HEPATOBILIARY DIAGNOSTIC PROCEDURES W CC
422 HEPATOBILIARY DIAGNOSTIC PROCEDURES W/O CC/MCC
423 OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES W MCC
424 OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES W CC
425 OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES W/O CC/MCC
453 COMBINED ANTERIOR/POSTERIOR SPINAL FUSION W MCC
454 COMBINED ANTERIOR/POSTERIOR SPINAL FUSION W CC
455 COMBINED ANTERIOR/POSTERIOR SPINAL FUSION W/O CC/MCC
456 SPINAL FUS EXC CERV W SPINAL CURV/MALIG/INFEC OR 9+ FUS W MCC
457 SPINAL FUS EXC CERV W SPINAL CURV/MALIG/INFEC OR 9+ FUS W CC
458 SPINAL FUS EXC CERV W SPINAL CURV/MALIG/INFEC OR 9+ FUS W/O CC/MCC
459 SPINAL FUSION EXCEPT CERVICAL W MCC
460 SPINAL FUSION EXCEPT CERVICAL W/O MCC
461 BILATERAL OR MULTIPLE MAJOR JOINT PROCS OF LOWER EXTREMITY W MCC
462 BILATERAL OR MULTIPLE MAJOR JOINT PROCS OF LOWER EXTREMITY W/O MCC
463 WND DEBRID & SKN GRFT EXC HAND, FOR MUSCULO-CONN TISS DIS W MCC
464 WND DEBRID & SKN GRFT EXC HAND, FOR MUSCULO-CONN TISS DIS W CC
465 WND DEBRID & SKN GRFT EXC HAND, FOR MUSCULO-CONN TISS DIS W/O CC/MCC
466 REVISION OF HIP OR KNEE REPLACEMENT W MCC

467	REVISION OF HIP OR KNEE REPLACEMENT W CC		497	LOCAL EXCISION & REMOVAL INT FIX DEVICES EXC HIP & FEMUR W/O CC/MCC
468	REVISION OF HIP OR KNEE REPLACEMENT W/O CC/MCC		498	LOCAL EXCISION & REMOVAL INT FIX DEVICES OF HIP & FEMUR W CC/MCC
469	MAJOR JOINT REPLACEMENT OR REATTACHMENT OF LOWER EXTREMITY W MCC		499	LOCAL EXCISION & REMOVAL INT FIX DEVICES OF HIP & FEMUR W/O CC/MCC
470	MAJOR JOINT REPLACEMENT OR REATTACHMENT OF LOWER EXTREMITY W/O MCC		500	SOFT TISSUE PROCEDURES W MCC
471	CERVICAL SPINAL FUSION W MCC		501	SOFT TISSUE PROCEDURES W CC
472	CERVICAL SPINAL FUSION W CC		502	SOFT TISSUE PROCEDURES W/O CC/MCC
473	CERVICAL SPINAL FUSION W/O CC/MCC		503	FOOT PROCEDURES W MCC
474	AMPUTATION FOR MUSCULOSKELETAL SYS & CONN TISSUE DIS W MCC		504	FOOT PROCEDURES W CC
475	AMPUTATION FOR MUSCULOSKELETAL SYS & CONN TISSUE DIS W CC		505	FOOT PROCEDURES W/O CC/MCC
			506	MAJOR THUMB OR JOINT PROCEDURES
476	AMPUTATION FOR MUSCULOSKELETAL SYS & CONN TISSUE DIS W/O CC/MCC		507	MAJOR SHOULDER OR ELBOW JOINT PROCEDURES W CC/MCC
477	BIOPSIES OF MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W MCC		508	MAJOR SHOULDER OR ELBOW JOINT PROCEDURES W/O CC/MCC
478	BIOPSIES OF MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W CC		509	ARTHROSCOPY
479	BIOPSIES OF MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W/O CC/MCC		510	SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC W MCC
			511	SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC W CC
480	HIP & FEMUR PROCEDURES EXCEPT MAJOR JOINT W MCC		512	SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC W/O CC/MCC
481	HIP & FEMUR PROCEDURES EXCEPT MAJOR JOINT W CC		513	HAND OR WRIST PROC, EXCEPT MAJOR THUMB OR JOINT PROC W CC/MCC
482	HIP & FEMUR PROCEDURES EXCEPT MAJOR JOINT W/O CC/MCC		514	HAND OR WRIST PROC, EXCEPT MAJOR THUMB OR JOINT PROC W/O CC/MCC
483	MAJOR JOINT & LIMB REATTACHMENT PROC OF UPPER EXTREMITY W CC/MCC		515	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W MCC
484	MAJOR JOINT & LIMB REATTACHMENT PROC OF UPPER EXTREMITY W/O CC/MCC		516	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W CC
485	KNEE PROCEDURES W PDX OF INFECTION W MCC		517	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W/O CC/MCC
486	KNEE PROCEDURES W PDX OF INFECTION W CC		570	SKIN DEBRIDEMENT W MCC
			571	SKIN DEBRIDEMENT W CC
487	KNEE PROCEDURES W PDX OF INFECTION W/O CC/MCC		572	SKIN DEBRIDEMENT W/O CC/MCC
488	KNEE PROCEDURES W/O PDX OF INFECTION W CC/MCC		573	SKIN GRAFT FOR SKIN ULCER OR CELLULITIS W MCC
489	KNEE PROCEDURES W/O PDX OF INFECTION W/O CC/MCC		574	SKIN GRAFT FOR SKIN ULCER OR CELLULITIS W CC
490	BACK & NECK PROC EXC SPINAL FUSION W CC/MCC OR DISC DEVICE/NEUROSTIM		575	SKIN GRAFT FOR SKIN ULCER OR CELLULITIS W/O CC/MCC
			576	SKIN GRAFT EXC FOR SKIN ULCER OR CELLULITIS W MCC
491	BACK & NECK PROC EXC SPINAL FUSION W/O CC/MCC		577	SKIN GRAFT EXC FOR SKIN ULCER OR CELLULITIS W CC
492	LOWER EXTREM & HUMER PROC EXCEPT HIP,FOOT,FEMUR W MCC		578	SKIN GRAFT EXC FOR SKIN ULCER OR CELLULITIS W/O CC/MCC
493	LOWER EXTREM & HUMER PROC EXCEPT HIP,FOOT,FEMUR W CC		579	OTHER SKIN, SUBCUT TISS & BREAST PROC W MCC
494	LOWER EXTREM & HUMER PROC EXCEPT HIP,FOOT,FEMUR W/O CC/MCC		580	OTHER SKIN, SUBCUT TISS & BREAST PROC W CC
495	LOCAL EXCISION & REMOVAL INT FIX DEVICES EXC HIP & FEMUR W MCC		581	OTHER SKIN, SUBCUT TISS & BREAST PROC W/O CC/MCC
496	LOCAL EXCISION & REMOVAL INT FIX DEVICES EXC HIP & FEMUR W CC		582	MASTECTOMY FOR MALIGNANCY W CC/MCC
			583	MASTECTOMY FOR MALIGNANCY W/O CC/MCC

584	BREAST BIOPSY, LOCAL EXCISION & OTHER BREAST PROCEDURES W CC/MCC		663	MINOR BLADDER PROCEDURES W CC
585	BREAST BIOPSY, LOCAL EXCISION & OTHER BREAST PROCEDURES W/O CC/MCC		664	MINOR BLADDER PROCEDURES W/O CC/MCC
614	ADRENAL & PITUITARY PROCEDURES W CC/MCC		665	PROSTATECTOMY W MCC
615	ADRENAL & PITUITARY PROCEDURES W/O CC/MCC		666	PROSTATECTOMY W CC
616	AMPUTAT OF LOWER LIMB FOR ENDOCRINE,NUTRIT,& METABOL DIS W MCC		667	PROSTATECTOMY W/O CC/MCC
			668	TRANSURETHRAL PROCEDURES W MCC
617	AMPUTAT OF LOWER LIMB FOR ENDOCRINE,NUTRIT,& METABOL DIS W CC		669	TRANSURETHRAL PROCEDURES W CC
			670	TRANSURETHRAL PROCEDURES W/O CC/MCC
618	AMPUTAT OF LOWER LIMB FOR ENDOCRINE,NUTRIT,& METABOL DIS W/O CC/MCC		671	URETHRAL PROCEDURES W CC/MCC
			672	URETHRAL PROCEDURES W/O CC/MCC
619	O.R. PROCEDURES FOR OBESITY W MCC		673	OTHER KIDNEY & URINARY TRACT PROCEDURES W MCC
620	O.R. PROCEDURES FOR OBESITY W CC		674	OTHER KIDNEY & URINARY TRACT PROCEDURES W CC
621	O.R. PROCEDURES FOR OBESITY W/O CC/MCC		675	OTHER KIDNEY & URINARY TRACT PROCEDURES W/O CC/MCC
622	SKIN GRAFTS & WOUND DEBRID FOR ENDOC, NUTRIT & METAB DIS W MCC		707	MAJOR MALE PELVIC PROCEDURES W CC/MCC
623	SKIN GRAFTS & WOUND DEBRID FOR ENDOC, NUTRIT & METAB DIS W CC		708	MAJOR MALE PELVIC PROCEDURES W/O CC/MCC
624	SKIN GRAFTS & WOUND DEBRID FOR ENDOC, NUTRIT & METAB DIS W/O CC/MCC		709	PENIS PROCEDURES W CC/MCC
			710	PENIS PROCEDURES W/O CC/MCC
625	THYROID, PARATHYROID & THYROGLOSSAL PROCEDURES W MCC		711	TESTES PROCEDURES W CC/MCC
			712	TESTES PROCEDURES W/O CC/MCC
626	THYROID, PARATHYROID & THYROGLOSSAL PROCEDURES W CC		713	TRANSURETHRAL PROSTATECTOMY W CC/MCC
627	THYROID, PARATHYROID & THYROGLOSSAL PROCEDURES W/O CC/MCC		714	TRANSURETHRAL PROSTATECTOMY W/O CC/MCC
628	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W MCC		715	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC FOR MALIGNANCY W CC/MCC
629	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W CC		716	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC FOR MALIGNANCY W/O CC/MCC
630	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W/O CC/MCC		717	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC EXC MALIGNANCY W CC/MCC
652	KIDNEY TRANSPLANT			
653	MAJOR BLADDER PROCEDURES W MCC		718	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC EXC MALIGNANCY W/O CC/MCC
654	MAJOR BLADDER PROCEDURES W CC			
655	MAJOR BLADDER PROCEDURES W/O CC/MCC		734	PELVIC EVISCERATION, RAD HYSTERECTOMY & RAD VULVECTOMY W CC/MCC
656	KIDNEY & URETER PROCEDURES FOR NEOPLASM W MCC		735	PELVIC EVISCERATION, RAD HYSTERECTOMY & RAD VULVECTOMY W/O CC/MCC
657	KIDNEY & URETER PROCEDURES FOR NEOPLASM W CC		736	UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIGNANCY W MCC
658	KIDNEY & URETER PROCEDURES FOR NEOPLASM W/O CC/MCC			
659	KIDNEY & URETER PROCEDURES FOR NON-NEOPLASM W MCC		737	UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIGNANCY W CC
660	KIDNEY & URETER PROCEDURES FOR NON-NEOPLASM W CC		738	UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIGNANCY W/O CC/MCC
661	KIDNEY & URETER PROCEDURES FOR NON-NEOPLASM W/O CC/MCC		739	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W MCC
662	MINOR BLADDER PROCEDURES W MCC		740	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W CC

741	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W/O CC/MCC
742	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W CC/MCC
743	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W/O CC/MCC
744	D&C, CONIZATION, LAPAROSCOPY & TUBAL INTERRUPTION W CC/MCC
745	D&C, CONIZATION, LAPAROSCOPY & TUBAL INTERRUPTION W/O CC/MCC
746	VAGINA, CERVIX & VULVA PROCEDURES W CC/MCC
747	VAGINA, CERVIX & VULVA PROCEDURES W/O CC/MCC
748	FEMALE REPRODUCTIVE SYSTEM RECONSTRUCTIVE PROCEDURES
749	OTHER FEMALE REPRODUCTIVE SYSTEM O.R. PROCEDURES W CC/MCC
750	OTHER FEMALE REPRODUCTIVE SYSTEM O.R. PROCEDURES W/O CC/MCC
765	CESAREAN SECTION W CC/MCC
766	CESAREAN SECTION W/O CC/MCC
767	VAGINAL DELIVERY W STERILIZATION &/OR D&C
768	VAGINAL DELIVERY W O.R. PROC EXCEPT STERIL &/OR D&C
769	POSTPARTUM & POST ABORTION DIAGNOSES W O.R. PROCEDURE
770	ABORTION W D&C, ASPIRATION CURETTAGE OR HYSTEROTOMY
799	SPLENECTOMY W MCC
800	SPLENECTOMY W CC
801	SPLENECTOMY W/O CC/MCC
802	OTHER O.R. PROC OF THE BLOOD & BLOOD FORMING ORGANS W MCC
803	OTHER O.R. PROC OF THE BLOOD & BLOOD FORMING ORGANS W CC
804	OTHER O.R. PROC OF THE BLOOD & BLOOD FORMING ORGANS W/O CC/MCC
820	LYMPHOMA & LEUKEMIA W MAJOR O.R. PROCEDURE W MCC
821	LYMPHOMA & LEUKEMIA W MAJOR O.R. PROCEDURE W CC
822	LYMPHOMA & LEUKEMIA W MAJOR O.R. PROCEDURE W/O CC/MCC
823	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W MCC
824	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W CC
825	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W/O CC/MCC
826	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R. PROC W MCC
827	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R. PROC W CC
828	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R. PROC W/O CC/MCC
829	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W OTHER O.R. PROC W CC/MCC
830	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W OTHER O.R. PROC W/O CC/MCC
853	INFECTIOUS & PARASITIC DISEASES W O.R. PROCEDURE W MCC
854	INFECTIOUS & PARASITIC DISEASES W O.R. PROCEDURE W CC
855	INFECTIOUS & PARASITIC DISEASES W O.R. PROCEDURE W/O CC/MCC
856	POSTOPERATIVE OR POST-TRAUMATIC INFECTIONS W O.R. PROC W MCC
857	POSTOPERATIVE OR POST-TRAUMATIC INFECTIONS W O.R. PROC W CC
858	POSTOPERATIVE OR POST-TRAUMATIC INFECTIONS W O.R. PROC W/O CC/MCC
876	O.R. PROCEDURE W PRINCIPAL DIAGNOSES OF MENTAL ILLNESS
901	WOUND DEBRIDEMENTS FOR INJURIES W MCC
902	WOUND DEBRIDEMENTS FOR INJURIES W CC
903	WOUND DEBRIDEMENTS FOR INJURIES W/O CC/MCC
904	SKIN GRAFTS FOR INJURIES W CC/MCC
905	SKIN GRAFTS FOR INJURIES W/O CC/MCC
906	HAND PROCEDURES FOR INJURIES
907	OTHER O.R. PROCEDURES FOR INJURIES W MCC
908	OTHER O.R. PROCEDURES FOR INJURIES W CC
909	OTHER O.R. PROCEDURES FOR INJURIES W/O CC/MCC
927	EXTENSIVE BURNS OR FULL THICKNESS BURNS W MV 96+ HRS W SKIN GRAFT
928	FULL THICKNESS BURN W SKIN GRAFT OR INHAL INJ W CC/MCC
929	FULL THICKNESS BURN W SKIN GRAFT OR INHAL INJ W/O CC/MCC
939	O.R. PROC W DIAGNOSES OF OTHER CONTACT W HEALTH SERVICES W MCC
940	O.R. PROC W DIAGNOSES OF OTHER CONTACT W HEALTH SERVICES W CC
941	O.R. PROC W DIAGNOSES OF OTHER CONTACT W HEALTH SERVICES W/O CC/MCC
955	CRANIOTOMY FOR MULTIPLE SIGNIFICANT TRAUMA
956	LIMB REATTACHMENT, HIP & FEMUR PROC FOR MULTIPLE SIGNIFICANT TRAUMA
957	OTHER O.R. PROCEDURES FOR MULTIPLE SIGNIFICANT TRAUMA W MCC
958	OTHER O.R. PROCEDURES FOR MULTIPLE SIGNIFICANT TRAUMA W CC
959	OTHER O.R. PROCEDURES FOR MULTIPLE SIGNIFICANT TRAUMA W/O CC/MCC
969	HIV W EXTENSIVE O.R. PROCEDURE W MCC

970	HIV W EXTENSIVE O.R. PROCEDURE W/O MCC	986	PROSTATIC O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W/O CC/MCC
981	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W MCC	987	NON-EXTENSIVE O.R. PROC UNRELATED TO PRINCIPAL DIAGNOSIS W MCC
982	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W CC	988	NON-EXTENSIVE O.R. PROC UNRELATED TO PRINCIPAL DIAGNOSIS W CC
983	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W/O CC/MCC	989	NON-EXTENSIVE O.R. PROC UNRELATED TO PRINCIPAL DIAGNOSIS W/O CC/MCC
984	PROSTATIC O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W MCC		
985	PROSTATIC O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W CC		

[1] The DRG/MS-DRG codes are continuously updated. The current list of DRG/MS-DRG codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

Appendix D – Medical DRGs

Medical DRG codes[1]:

009	SPINAL DISORDERS AND INJURIES	087	PULMONARY EDEMA & RESPIRATORY FAILURE
010	NERVOUS SYSTEM NEOPLASMS W/ CC	088	CHRONIC OBSTRUCTIVE PULMONARY DISEASE
011	NERVOUS SYSTEM NEOPLASMS W/O CC	091	SIMPLE PNEUMONIA & PLEURISY AGE 0-17
012	DEGENERATIVE NERVOUS SYSTEM DISORDERS	092	INTERSTITIAL LUNG DISEASE W CC
013	MULTIPLE SCLEROSIS AND CEREBELLAR ATAXIA	093	INTERSTITIAL LUNG DISEASE W/O CC
014	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION	094	PNEUMOTHORAX W CC
015	NONSPECIFIC CVA & PRECEREBRAL OCCLUSION W/O INFARCT	095	PNEUMOTHORAX W/O CC
016	NONSPECIFIC CEREBROVASCULAR DISORDERS W CC	098	BRONCHITIS & ASTHMA AGE 0-17
017	NONSPECIFIC CEREBROVASCULAR DISORDERS W/O CC	099	RESPIRATORY SIGNS & SYMPTOMS W CC
018	CRANIAL & PERIPHERAL NERVE DISORDERS W CC	100	RESPIRATORY SIGNS & SYMPTOMS W/O CC
019	CRANIAL & PERIPHERAL NERVE DISORDERS W/O CC	101	OTHER RESPIRATORY SYSTEM DIAGNOSES W CC
020	*NERVOUS SYSTEM INFECTION EXCEPT VIRAL MENINGITIS*	102	OTHER RESPIRATORY SYSTEM DIAGNOSES W/O CC
021	VIRAL MENINGITIS	121	CIRCULATORY DISORDERS W AMI & MAJOR COMP, DISCHARGED ALIVE
022	HYPERTENSIVE ENCEPHALOPATHY	122	CIRCULATORY DISORDERS W AMI W/O MAJOR COMP, DISCHARGED ALIVE
023	NONTRAUMATIC STUPOR & COMA	123	CIRCULATORY DISORDERS W AMI, EXPIRED
026	SEIZURE & HEADACHE AGE 0-17	124	CIRCULATORY DISORDERS EXCEPT AMI, W CARD CATH& COMPLEX DIAG
027	TRAUMATIC STUPOR & COMA, COMA >1 HR	125	CIRCULATORY DISORDERS EXCEPT AMI, W CARD CATH W/O COMPLEX DIAG
030	TRAUMATIC STUPOR & COMA, COMA <1 HR AGE >17 W CC	126	ACUTE & SUBACUTE ENDOCARDITIS
033	CONCUSSION AGE 0-17	127	HEART FAILURE & SHOCK
034	OTHER DISORDERS OF NERVOUS SYSTEM W CC	128	DEEP VEIN THROMBOPHLEBITIS
		129	CARDIAC ARREST, UNEXPLAINED
035	OTHER DISORDERS OF NERVOUS SYSTEM W/O CC	130	PERIPHERAL VASCULAR DISORDERS W CC
043	HYPHEMA	131	PERIPHERAL VASCULAR DISORDERS W/O CC
044	ACUTE MAJOR EYE INFECTIONS	132	ATHEROSCLEROSIS W CC
045	NEUROLOGICAL EYE DISORDERS	133	ATHEROSCLEROSIS W/O CC
048	OTHER DISORDERS OF THE EYE AGE 0-17	134	HYPERTENSION
064	EAR, NOSE, MOUTH AND THROAT MALIGNANCY	137	CARDIAC CONGENITAL & VALVULAR DISORDERS AGE 0 – 17 W CC
065	DISEQUILIBRIUM	138	CARDIAC ARRHYTHMIA & CONDUCTION DISORDERS W CC
066	EPISTAXIS	139	CARDIAC ARRHYTHMIA & CONDUCTION DISORDERS W/O CC
067	EPIGLOTTITIS		
070	OTITIS MEDIA & URI AGE 0-17	140	ANGINA PECTORIS
071	LARYNGOTRACHEITIS	141	SYNCOPE AND COLLAPSE W CC
072	NASAL TRAUMA & DEFORMITY	142	SYNCOPE AND COLLAPSE W/O CC
074	OTHER EAR, NOSE, MOUTH & THROAT DIAGNOSES AGE 0-17	143	CHEST PAIN
		144	OTHER CIRCULATORY SYSTEM DIAGNOSES W CC
078	PULMONARY EMBOLISM	145	OTHER CIRCULATORY SYSTEM DIAGNOSES W/O CC
081	RESPIRATORY INFECTIONS AND INFLAMMATIONS AGE 0-17		
082	RESPIRATORY NEOPLASMS	172	DIGESTIVE MALIGNANCY W CC
083	MAJOR CHEST TRAUMA W CC	173	DIGESTIVE MALIGNANCY W/O CC
084	MAJOR CHEST TRAUMA W/O CC	174	G.I. HEMORRHAGE W CC
085	PLEURAL EFFUSION W CC	175	G.I. HEMORRHAGE W/O CC
086	PLEURAL EFFUSION W/O CC		

176	COMPLICATED PEPTIC ULCER		274	MALIGNANT BREAST DISORDERS W CC
177	UNCOMPLICATED PEPTIC ULCER W CC		275	MALIGNANT BREAST DISORDERS W/O CC
178	UNCOMPLICATED PEPTIC ULCER W/O CC		276	NON-MALIGNANT BREAST DISORDERS
179	INFLAMMATORY BOWEL DISEASE		279	CELLULITIS AGE 0-17
180	G.I. OBSTRUCTION W CC		282	TRAUMA TO SKIN, SUBCUT TISS & BREAST AGE 0-17
181	G.I. OBSTRUCTION W/O CC		283	MINOR SKIN DISORDERS W CC
184	ESOPHAGITIS, GASTROENT & MISC DIGEST DISORDERS AGE 0-17		284	MINOR SKIN DISORDERS W/O CC
186	DENTAL & ORAL DIS EXCEPT EXTRACTIONS & RESTORATIONS AGE 0-17		295	DIABETES AGE 0-35
			298	NUTRITIONAL & MISC METABOLIC DISORDERS AGE 0-17
187	DENTAL EXTRACTIONS & RESTORATIONS		299	INBORN ERRORS OF METABOLISM
190	OTHER DIGESTIVE SYSTEM DIAGNOSES AGE 0-17		300	ENDOCRINE DISORDERS W CC
			301	ENDOCRINE DISORDERS W/O CC
202	CIRRHOSIS & ALCOHOLIC HEPATITIS		316	RENAL FAILURE
203	MALIGNANCY OF HEPATOBILIARY SYSTEM OR PANCREAS		317	ADMISSION FOR RENAL DIALYSIS
			318	KIDNEY & URINARY TRACT NEOPLASMS W CC
204	DISORDERS OF PANCREAS EXCEPT MALIGNANCY		319	KIDNEY & URINARY TRACT NEOPLASMS W/O CC
205	DISORDERS OF LIVER EXCEPT MALIG,CIRR,ALC HEPA W CC		322	KIDNEY & URINARY TRACT INFECTIONS AGE 0-17
206	DISORDERS OF LIVER EXCEPT MALIG,CIRR,ALC HEPA W/O CC		323	URINARY STONES W CC, &/ OR ESW LITHOTRIPSY
207	DISORDERS OF THE BILIARY TRACT W CC		324	URINARY STONES W/O CC
208	DISORDERS OF THE BILIARY TRACT W/O CC		327	KIDNEY & URINARY TRACT SIGNS & SYMPTOMS AGE 0-17
235	FRACTURES OF FEMUR		330	URETHRAL STRICTURE AGE 0-17
236	FRACTURES OF HIP & PELVIS		333	OTHER KIDNEY & URINARY TRACT DIAGNOSES AGE 0-17
237	SPRAINS, STRAINS & DISLOCATIONS OF HIP, PELVIS & THIGH		346	MALIGNANCY, MALE REPRODUCTIVE SYSTEM, W CC
238	OSTEOMYELITIS		347	MALIGNANCY, MALE REPRODUCTIVE SYSTEM, W/O CC
239	PATHOLOGICAL FRACTURES & MUSCULOSKELETAL & CONN TISS MALIGNANCY		348	BENIGN PROSTATIC HYPERTROPHY W CC
240	CONNECTIVE TISSUE DISORDERS W CC		349	BENIGN PROSTATIC HYPERTROPHY W/O CC
241	CONNECTIVE TISSUE DISORDERS W/O CC		350	INFLAMMATION OF THE MALE REPRODUCTIVE SYSTEM
242	SEPTIC ARTHRITIS		351	STERILIZATION, MALE
243	MEDICAL BACK PROBLEMS		352	OTHER MALE REPRODUCTIVE SYSTEM DIAGNOSES
244	BONE DISEASES & SPECIFIC ARTHROPATHIES W CC		366	MALIGNANCY, FEMALE REPRODUCTIVE SYSTEM W CC
245	BONE DISEASES & SPECIFIC ARTHROPATHIES W/O CC		367	MALIGNANCY, FEMALE REPRODUCTIVE SYSTEM W/O CC
246	NONSPECIFIC ARTHROPATHIES		368	INFECTIONS, FEMALE REPRODUCTIVE SYSTEM
247	SIGNS & SYMPTOMS OF MUSCULOSKELETAL SYSTEM & CONN TISSUE		369	MENSTRUAL & OTHER FEMALE REPRODUCTIVE SYSTEM DISORDERS
248	TENDONITIS, MYOSITIS AND BURSITIS		372	VAGINAL DELIVERY W COMPLICATING DIAGNOSES
249	AFTERCARE, MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE		373	VAGINAL DELIVERY W/O COMPLICATING DIAGNOSES
252	FX, SPRN, STRN & DISL OF FOREARM, HAND, FOOT AGE 0-17		376	POSTPARTUM & POST ABORTION DIAGNOSES W/O O.R. PROCEDURE
255	FX, SPRN, STRN & DISL OF UPARM,LOWLEG EX FOOT AGE 0-17		378	ENTOPIC PREGNANCY
256	OTHER MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE DIAGNOSES		379	THREATENED ABORTION
271	SKIN ULCERS		380	ABORTION W/O D&C
272	MAJOR SKIN DISORDERS W CC		382	FALSE LABOR
273	MAJOR SKIN DISORDERS W/O CC			

383 OTHER ANTEPARTUM DIAGNOSES W MEDICAL COMPLICATIONS

384 OTHER ANTEPARTUM DIAGNOSES W/O MEDICAL COMPLICATIONS

385 NEONATES, DIED OR TRANSFERRED TO ANOTHER ACUTE FACILITY

386 EXTREME IMMATURITY OR RESPIRATORY DISTRESS SYNDROME, NEONATE

387 PREMATURITY W MAJOR PROBLEMS

388 PREMATURITY W/O MAJOR PROBLEMS

389 FULL TERM NEONATE W MAJOR PROBLEMS

390 NEONATE W OTHER SIGNIFICANT PROBLEMS

391 NORMAL NEWBORN

396 RED BLOOD CELL DISORDERS AGE 0-17

397 COAGULATION DISORDERS

398 RETICULOENDOTHELIAL & IMMUNITY DISORDERS W CC

399 RETICULOENDOTHELIAL AND IMMUNITY DISORDERS W/O CC

403 LYMPHOMA & NON-ACUTE LEUKEMIA W CC

404 LYMPHOMA & NON-ACUTE LEUKEMIA W/O CC

405 ACUTE LEUKEMIA W/O MAJOR O.R. PROCEDURE AGE 0-17

409 RADIOTHERAPY

410 CHEMOTHERAPY W/O ACUTE LEUKEMIA AS SECONDARY DIAGNOSIS

411 HISTORY OF MALIGNANCY W/O ENDOSCOPY

412 HISTORY OF MALIGNANCY W ENDOSCOPY

413 OTHER MYELOPROLIF DIS OR POORLY DIFF NEOPL DIAG W CC

414 OTHER MYELOPROLIF DIS OR POORLY DIFF NEOPL DIAG W/O CC

417 SEPTICEMIA AGE 0-17

418 POSTOPERATIVE & POST-TRAUMATIC INFECTIONS

422 VIRAL ILLNESS & FEVER OF UNKNOWN ORIGIN AGE 0-17

423 OTHER INFECTIOUS & PARASITIC DISEASES DIAGNOSES

425 ACUTE ADJUSTMENT REACTION & PSYCHOSOCIAL DYSFUNCTION

426 DEPRESSIVE NEUROSES

427 NEUROSES EXCEPT DEPRESSIVE

428 DISORDERS OF PERSONALITY & IMPULSE CONTROL

429 ORGANIC DISTURBANCES & MENTAL RETARDATION

430 PSYCHOSES

431 CHILDHOOD MENTAL DISORDERS

432 OTHER MENTAL DISORDER DIAGNOSES

433 ALCOHOL/DRUG ABUSE OR DEPENDENCE, LEFT AMA

434 ALCOHOL/DRUG ABUSE OR DEPENDENCE, DETOXIFICATION OR OTHER SYMPTOMATIC TREATMENT W/ CC

435 ALCOHOL/DRUG ABUSE OR DEPENDENCE, DETOXIFICATION OR OTHER SYMPTOMATIC TREATMENT W/O CC

436 ALCOHOL/DRUG DEPENDENCE W/ REHABILITATION THERAPY

437 ALCOHOL DRUG DEPENDENCE W/ COMBINED REHABILITATION AND DETOXIFICATION THERAPY

446 TRAUMATIC INJURY AGE 0-17

448 ALLERGIC REACTIONS AGE 0-17

451 POISONING & TOXIC EFFECTS OF DRUGS AGE 0-17

452 COMPLICATIONS OF TREATMENT W CC

453 COMPLICATIONS OF TREATMENT W/O CC

454 OTHER INJURY, POISONING & TOXIC EFFECT DIAGNOSES W CC

455 OTHER INJURY, POISONING & TOXIC EFFECT DIAGNOSES W/O CC

456 BURNS, TRANSFERRED TO ANOTHER ACUTE CARE FACILITY

457 EXTENSIVE BURNS W/O O.R. PROCEDURE

460 NON-EXTENSIVE BURNS W/O O.R. PROCEDURE

462 REHABILITATION

463 SIGNS & SYMPTOMS W CC

464 SIGNS & SYMPTOMS W/O CC

465 AFTERCARE W HISTORY OF MALIGNANCY AS SECONDARY DIAGNOSIS

466 AFTERCARE W/O HISTORY OF MALIGNANCY AS SECONDARY DIAGNOSIS

467 OTHER FACTORS INFLUENCING HEALTH STATUS

475 RESPIRATORY SYSTEM DIAGNOSIS W/ VENTILATOR SUPPORT

487 OTHER MULTIPLE SIGNIFICANT TRAUMA

489 HIV W MAJOR RELATED CONDITION

490 HIV W OR W/O OTHER RELATED CONDITION

492 CHEMOTHERAPY W ACUTE LEUKEMIA OR W USE OF HI DOSE CHEMOAGENT

505 EXTEN. BURNS OR FULL THICKNESS BURN W/MV 96+HRS W/O SKIN GRFT

508 FULL THICKNESS BURN W/O SKIN GRFT OR INHAL INJ W CC OR SIG TRAUMA

509 FULL THICKNESS BURN W/O SKIN GRFT OR INH INJ W/O CC OR SIG TRAUMA

510 NON-EXTENSIVE BURNS W CC OR SIGNIFICANT TRAUMA

511 NON-EXTENSIVE BURNS W/O CC OR SIGNIFICANT TRAUMA

521 ALCOHOL/DRUG ABUSE OR DEPENDENCE W CC

522	ALC/DRUG ABUSE OR DEPEND W REHABILITATION THERAPY W/O CC	565	RESPIRATORY SYSTEM DIAGNOSIS WITH VENTILATOR SUPPORT 96+ HOURS
523	ALC/DRUG ABUSE OR DEPEND W/O REHABILITATION THERAPY W/O CC	566	RESPIRATORY SYSTEM DIAGNOSIS WITH VENTILATOR SUPPORT < 96 HOURS
524	TRANSIENT ISCHEMIA		
559	ACUTE ISCHEMIC STROKE WITH USE OF THROMBOLYTIC AGENT	571	MAJOR ESOPHAGEAL DISORDERs
560	BACTERIAL & TUBERCULOUS INFECTIONS OF NERVOUS SYSTEM	572	MAJOR GASTROINTESTINAL DISORDERS AND PERITONEAL INFECTIONS
561	NON-BACTERIAL INFECTIONS OF NERVOUS SYSTEM EXCEPT VIRAL MENINGITIS	574	MAJOR HEMATOLOGIC/IMMUNOLOGIC DIAG EXC SICKLE CELL CRISIS & COAGUL

[1] The DRG/MS-DRG codes are continuously updated. The current list of DRG/MS-DRG codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

Appendix E – Medical MS-DRGs

For medical discharges using MS-DRGs (on or after October 1, 2007)

Medical MS-DRG codes:

052 SPINAL DISORDERS & INJURIES W CC/MCC
053 SPINAL DISORDERS & INJURIES W/O CC/MCC
054 NERVOUS SYSTEM NEOPLASMS W MCC
055 NERVOUS SYSTEM NEOPLASMS W/O MCC
056 DEGENERATIVE NERVOUS SYSTEM DISORDERS W MCC
057 DEGENERATIVE NERVOUS SYSTEM DISORDERS W/O MCC
058 MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W MCC
059 MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W CC
060 MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W/O CC/MCC
061 ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W MCC
062 ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W CC
063 ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W/O CC/MCC
064 INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W MCC
065 INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W CC
066 INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W/O CC/MCC
067 NONSPECIFIC CVA & PRECEREBRAL OCCLUSION W/O INFARCT W MCC
068 NONSPECIFIC CVA & PRECEREBRAL OCCLUSION W/O INFARCT W/O MCC
069 TRANSIENT ISCHEMIA
070 NONSPECIFIC CEREBROVASCULAR DISORDERS W MCC
071 NONSPECIFIC CEREBROVASCULAR DISORDERS W CC
072 NONSPECIFIC CEREBROVASCULAR DISORDERS W/O CC/MCC
073 CRANIAL & PERIPHERAL NERVE DISORDERS W MCC
074 CRANIAL & PERIPHERAL NERVE DISORDERS W/O MCC
075 VIRAL MENINGITIS W CC/MCC
076 VIRAL MENINGITIS W/O CC/MCC
077 HYPERTENSIVE ENCEPHALOPATHY W MCC
078 HYPERTENSIVE ENCEPHALOPATHY W CC
079 HYPERTENSIVE ENCEPHALOPATHY W/O CC/MCC
080 NONTRAUMATIC STUPOR & COMA W MCC

081 NONTRAUMATIC STUPOR & COMA W/O MCC
082 TRAUMATIC STUPOR & COMA, COMA >1 HR W MCC
083 TRAUMATIC STUPOR & COMA, COMA >1 HR W CC
084 TRAUMATIC STUPOR & COMA, COMA >1 HR W/O CC/MCC
085 TRAUMATIC STUPOR & COMA, COMA <1 HR W MCC
086 TRAUMATIC STUPOR & COMA, COMA <1 HR W CC
087 TRAUMATIC STUPOR & COMA, COMA <1 HR W/O CC/MCC
088 CONCUSSION W MCC
089 CONCUSSION W CC
090 CONCUSSION W/O CC/MCC
091 OTHER DISORDERS OF NERVOUS SYSTEM W MCC
092 OTHER DISORDERS OF NERVOUS SYSTEM W CC
093 OTHER DISORDERS OF NERVOUS SYSTEM W/O CC/MCC
094 BACTERIAL & TUBERCULOUS INFECTIONS OF NERVOUS SYSTEM W MCC
095 BACTERIAL & TUBERCULOUS INFECTIONS OF NERVOUS SYSTEM W CC
096 BACTERIAL & TUBERCULOUS INFECTIONS OF NERVOUS SYSTEM W/O CC/MCC
097 NON-BACTERIAL INFECT OF NERVOUS SYS EXC VIRAL MENINGITIS W MCC
098 NON-BACTERIAL INFECT OF NERVOUS SYS EXC VIRAL MENINGITIS W CC
099 NON-BACTERIAL INFECT OF NERVOUS SYS EXC VIRAL MENINGITIS W/O CC/MCC
100 SEIZURES W MCC
101 SEIZURES W/O MCC
102 HEADACHES W MCC
103 HEADACHES W/O MCC
121 ACUTE MAJOR EYE INFECTIONS W CC/MCC
122 ACUTE MAJOR EYE INFECTIONS W/O CC/MCC
123 NEUROLOGICAL EYE DISORDERS
124 OTHER DISORDERS OF THE EYE W MCC
125 OTHER DISORDERS OF THE EYE W/O MCC
146 EAR, NOSE, MOUTH & THROAT MALIGNANCY W MCC
147 EAR, NOSE, MOUTH & THROAT MALIGNANCY W CC

148	EAR, NOSE, MOUTH & THROAT MALIGNANCY W/O CC/MCC	207	RESPIRATORY SYSTEM DIAGNOSIS W VENTILATOR SUPPORT 96+ HOURS
149	DYSEQUILIBRIUM	208	RESPIRATORY SYSTEM DIAGNOSIS W VENTILATOR SUPPORT <96 HOURS
150	EPISTAXIS W MCC	280	ACUTE MYOCARDIAL INFARCTION, DISCHARGED ALIVE W MCC
151	EPISTAXIS W/O MCC		
152	OTITIS MEDIA & URI W MCC	281	ACUTE MYOCARDIAL INFARCTION, DISCHARGED ALIVE W CC
153	OTITIS MEDIA & URI W/O MCC		
154	OTHER EAR, NOSE, MOUTH & THROAT DIAGNOSES W MCC	282	ACUTE MYOCARDIAL INFARCTION, DISCHARGED ALIVE W/O CC/MCC
155	OTHER EAR, NOSE, MOUTH & THROAT DIAGNOSES W CC	283	ACUTE MYOCARDIAL INFARCTION, EXPIRED W MCC
156	OTHER EAR, NOSE, MOUTH & THROAT DIAGNOSES W/O CC/MCC	284	ACUTE MYOCARDIAL INFARCTION, EXPIRED W CC
157	DENTAL & ORAL DISEASES W MCC	285	ACUTE MYOCARDIAL INFARCTION, EXPIRED W/O CC/MCC
158	DENTAL & ORAL DISEASES W CC		
159	DENTAL & ORAL DISEASES W/O CC/MCC	286	CIRCULATORY DISORDERS EXCEPT AMI, W CARD CATH W MCC
175	PULMONARY EMBOLISM W MCC		
176	PULMONARY EMBOLISM W/O MCC	287	CIRCULATORY DISORDERS EXCEPT AMI, W CARD CATH W/O MCC
177	RESPIRATORY INFECTIONS & INFLAMMATIONS W MCC	288	ACUTE & SUBACUTE ENDOCARDITIS W MCC
178	RESPIRATORY INFECTIONS & INFLAMMATIONS W CC	289	ACUTE & SUBACUTE ENDOCARDITIS W CC
179	RESPIRATORY INFECTIONS & INFLAMMATIONS W/O CC/MCC	290	ACUTE & SUBACUTE ENDOCARDITIS W/O CC/MCC
180	RESPIRATORY NEOPLASMS W MCC		
181	RESPIRATORY NEOPLASMS W CC	291	HEART FAILURE & SHOCK W MCC
182	RESPIRATORY NEOPLASMS W/O CC/MCC	292	HEART FAILURE & SHOCK W CC
		293	HEART FAILURE & SHOCK W/O CC/MCC
183	MAJOR CHEST TRAUMA W MCC	294	DEEP VEIN THROMBOPHLEBITIS W CC/MCC
184	MAJOR CHEST TRAUMA W CC		
185	MAJOR CHEST TRAUMA W/O CC/MCC	295	DEEP VEIN THROMBOPHLEBITIS W/O CC/MCC
186	PLEURAL EFFUSION W MCC		
187	PLEURAL EFFUSION W CC	296	CARDIAC ARREST, UNEXPLAINED W MCC
188	PLEURAL EFFUSION W/O CC/MCC		
189	PULMONARY EDEMA & RESPIRATORY FAILURE	297	CARDIAC ARREST, UNEXPLAINED W CC
		298	CARDIAC ARREST, UNEXPLAINED W/O CC/MCC
190	CHRONIC OBSTRUCTIVE PULMONARY DISEASE W MCC		
		299	PERIPHERAL VASCULAR DISORDERS W MCC
191	CHRONIC OBSTRUCTIVE PULMONARY DISEASE W CC	300	PERIPHERAL VASCULAR DISORDERS W CC
192	CHRONIC OBSTRUCTIVE PULMONARY DISEASE W/O CC/MCC	301	PERIPHERAL VASCULAR DISORDERS W/O CC/MCC
193	SIMPLE PNEUMONIA & PLEURISY W MCC	302	ATHEROSCLEROSIS W MCC
		303	ATHEROSCLEROSIS W/O MCC
194	SIMPLE PNEUMONIA & PLEURISY W CC	304	HYPERTENSION W MCC
195	SIMPLE PNEUMONIA & PLEURISY W/O CC/MCC	305	HYPERTENSION W/O MCC
		306	CARDIAC CONGENITAL & VALVULAR DISORDERS W MCC
196	INTERSTITIAL LUNG DISEASE W MCC		
197	INTERSTITIAL LUNG DISEASE W CC	307	CARDIAC CONGENITAL & VALVULAR DISORDERS W/O MCC
198	INTERSTITIAL LUNG DISEASE W/O CC/MCC		
		308	CARDIAC ARRHYTHMIA & CONDUCTION DISORDERS W MCC
199	PNEUMOTHORAX W MCC		
200	PNEUMOTHORAX W CC	309	CARDIAC ARRHYTHMIA & CONDUCTION DISORDERS W CC
201	PNEUMOTHORAX W/O CC/MCC		
202	BRONCHITIS & ASTHMA W CC/MCC	310	CARDIAC ARRHYTHMIA & CONDUCTION DISORDERS W/O CC/MCC
203	BRONCHITIS & ASTHMA W/O CC/MCC		
204	RESPIRATORY SIGNS & SYMPTOMS	311	ANGINA PECTORIS
205	OTHER RESPIRATORY SYSTEM DIAGNOSES W MCC	312	SYNCOPE & COLLAPSE
		313	CHEST PAIN
206	OTHER RESPIRATORY SYSTEM DIAGNOSES W/O MCC		

314	OTHER CIRCULATORY SYSTEM DIAGNOSES W MCC	437	MALIGNANCY OF HEPATOBILIARY SYSTEM OR PANCREAS W/O CC/MCC
315	OTHER CIRCULATORY SYSTEM DIAGNOSES W CC	438	DISORDERS OF PANCREAS EXCEPT MALIGNANCY W MCC
316	OTHER CIRCULATORY SYSTEM DIAGNOSES W/O CC/MCC	439	DISORDERS OF PANCREAS EXCEPT MALIGNANCY W CC
368	MAJOR ESOPHAGEAL DISORDERS W MCC	440	DISORDERS OF PANCREAS EXCEPT MALIGNANCY W/O CC/MCC
369	MAJOR ESOPHAGEAL DISORDERS W CC	441	DISORDERS OF LIVER EXCEPT MALIG,CIRR,ALC HEPA W MCC
370	MAJOR ESOPHAGEAL DISORDERS W/O CC/MCC	442	DISORDERS OF LIVER EXCEPT MALIG,CIRR,ALC HEPA W CC
371	MAJOR GASTROINTESTINAL DISORDERS & PERITONEAL INFECTIONS W MCC	443	DISORDERS OF LIVER EXCEPT MALIG,CIRR,ALC HEPA W/O CC/MCC
372	MAJOR GASTROINTESTINAL DISORDERS & PERITONEAL INFECTIONS W CC	444	DISORDERS OF THE BILIARY TRACT W MCC
373	MAJOR GASTROINTESTINAL DISORDERS & PERITONEAL INFECTIONS W/O CC/MCC	445	DISORDERS OF THE BILIARY TRACT W CC
374	DIGESTIVE MALIGNANCY W MCC	446	DISORDERS OF THE BILIARY TRACT W/O CC/MCC
375	DIGESTIVE MALIGNANCY W CC	533	FRACTURES OF FEMUR W MCC
376	DIGESTIVE MALIGNANCY W/O CC/MCC	534	FRACTURES OF FEMUR W/O MCC
377	G.I. HEMORRHAGE W MCC	535	FRACTURES OF HIP & PELVIS W MCC
378	G.I. HEMORRHAGE W CC	536	FRACTURES OF HIP & PELVIS W/O MCC
379	G.I. HEMORRHAGE W/O CC/MCC	537	SPRAINS, STRAINS, & DISLOCATIONS OF HIP, PELVIS & THIGH W CC/MCC
380	COMPLICATED PEPTIC ULCER W MCC	538	SPRAINS, STRAINS, & DISLOCATIONS OF HIP, PELVIS & THIGH W/O CC/MCC
381	COMPLICATED PEPTIC ULCER W CC	539	OSTEOMYELITIS W MCC
382	COMPLICATED PEPTIC ULCER W/O CC/MCC	540	OSTEOMYELITIS W CC
383	UNCOMPLICATED PEPTIC ULCER W MCC	541	OSTEOMYELITIS W/O CC/MCC
384	UNCOMPLICATED PEPTIC ULCER W/O MCC	542	PATHOLOGICAL FRACTURES & MUSCULOSKELET & CONN TISS MALIG W MCC
385	INFLAMMATORY BOWEL DISEASE W MCC	543	PATHOLOGICAL FRACTURES & MUSCULOSKELET & CONN TISS MALIG W CC
386	INFLAMMATORY BOWEL DISEASE W CC	544	PATHOLOGICAL FRACTURES & MUSCULOSKELET & CONN TISS MALIG W/O CC/MCC
387	INFLAMMATORY BOWEL DISEASE W/O CC/MCC	545	CONNECTIVE TISSUE DISORDERS W MCC
388	G.I. OBSTRUCTION W MCC	546	CONNECTIVE TISSUE DISORDERS W CC
389	G.I. OBSTRUCTION W CC	547	CONNECTIVE TISSUE DISORDERS W/O CC/MCC
390	G.I. OBSTRUCTION W/O CC/MCC	548	SEPTIC ARTHRITIS W MCC
391	ESOPHAGITIS, GASTROENT & MISC DIGEST DISORDERS W MCC	549	SEPTIC ARTHRITIS W CC
392	ESOPHAGITIS, GASTROENT & MISC DIGEST DISORDERS W/O MCC	550	SEPTIC ARTHRITIS W/O CC/MCC
393	OTHER DIGESTIVE SYSTEM DIAGNOSES W MCC	551	MEDICAL BACK PROBLEMS W MCC
		552	MEDICAL BACK PROBLEMS W/O MCC
394	OTHER DIGESTIVE SYSTEM DIAGNOSES W CC	553	BONE DISEASES & ARTHROPATHIES W MCC
395	OTHER DIGESTIVE SYSTEM DIAGNOSES W/O CC/MCC	554	BONE DISEASES & ARTHROPATHIES W/O MCC
432	CIRRHOSIS & ALCOHOLIC HEPATITIS W MCC	555	SIGNS & SYMPTOMS OF MUSCULOSKELETAL SYSTEM & CONN TISSUE W MCC
433	CIRRHOSIS & ALCOHOLIC HEPATITIS W CC	556	SIGNS & SYMPTOMS OF MUSCULOSKELETAL SYSTEM & CONN TISSUE W/O MCC
434	CIRRHOSIS & ALCOHOLIC HEPATITIS W/O CC/MCC	557	TENDONITIS, MYOSITIS & BURSITIS W MCC
435	MALIGNANCY OF HEPATOBILIARY SYSTEM OR PANCREAS W MCC		
436	MALIGNANCY OF HEPATOBILIARY SYSTEM OR PANCREAS W CC		

558	TENDONITIS, MYOSITIS & BURSITIS W/O MCC	688	KIDNEY & URINARY TRACT NEOPLASMS W/O CC/MCC
559	AFTERCARE, MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W MCC	689	KIDNEY & URINARY TRACT INFECTIONS W MCC
560	AFTERCARE, MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W CC	690	KIDNEY & URINARY TRACT INFECTIONS W/O MCC
561	AFTERCARE, MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W/O CC/MCC	691	URINARY STONES W ESW LITHOTRIPSY W CC/MCC
562	FX, SPRN, STRN & DISL EXCEPT FEMUR, HIP, PELVIS & THIGH W MCC	692	URINARY STONES W ESW LITHOTRIPSY W/O CC/MCC
563	FX, SPRN, STRN & DISL EXCEPT FEMUR, HIP, PELVIS & THIGH W/O MCC	693	URINARY STONES W/O ESW LITHOTRIPSY W MCC
564	OTHER MUSCULOSKELETAL SYS & CONNECTIVE TISSUE DIAGNOSES W MCC	694	URINARY STONES W/O ESW LITHOTRIPSY W/O MCC
565	OTHER MUSCULOSKELETAL SYS & CONNECTIVE TISSUE DIAGNOSES W CC	695	KIDNEY & URINARY TRACT SIGNS & SYMPTOMS W MCC
566	OTHER MUSCULOSKELETAL SYS & CONNECTIVE TISSUE DIAGNOSES W/O CC/MCC	696	KIDNEY & URINARY TRACT SIGNS & SYMPTOMS W/O MCC
592	SKIN ULCERS W MCC	697	URETHRAL STRICTURE
593	SKIN ULCERS W CC	698	OTHER KIDNEY & URINARY TRACT DIAGNOSES W MCC
594	SKIN ULCERS W/O CC/MCC	699	OTHER KIDNEY & URINARY TRACT DIAGNOSES W CC
595	MAJOR SKIN DISORDERS W MCC	700	OTHER KIDNEY & URINARY TRACT DIAGNOSES W/O CC/MCC
596	MAJOR SKIN DISORDERS W/O MCC	722	MALIGNANCY, MALE REPRODUCTIVE SYSTEM W MCC
597	MALIGNANT BREAST DISORDERS W MCC	723	MALIGNANCY, MALE REPRODUCTIVE SYSTEM W CC
598	MALIGNANT BREAST DISORDERS W CC	724	MALIGNANCY, MALE REPRODUCTIVE SYSTEM W/O CC/MCC
599	MALIGNANT BREAST DISORDERS W/O CC/MCC	725	BENIGN PROSTATIC HYPERTROPHY W MCC
600	NON-MALIGNANT BREAST DISORDERS W CC/MCC	726	BENIGN PROSTATIC HYPERTROPHY W/O MCC
601	NON-MALIGNANT BREAST DISORDERS W/O CC/MCC	727	INFLAMMATION OF THE MALE REPRODUCTIVE SYSTEM W MCC
602	CELLULITIS W MCC	728	INFLAMMATION OF THE MALE REPRODUCTIVE SYSTEM W/O MCC
603	CELLULITIS W/O MCC	729	OTHER MALE REPRODUCTIVE SYSTEM DIAGNOSES W CC/MCC
604	TRAUMA TO THE SKIN, SUBCUT TISS & BREAST W MCC	730	OTHER MALE REPRODUCTIVE SYSTEM DIAGNOSES W/O CC/MCC
605	TRAUMA TO THE SKIN, SUBCUT TISS & BREAST W/O MCC	754	MALIGNANCY, FEMALE REPRODUCTIVE SYSTEM W MCC
606	MINOR SKIN DISORDERS W MCC	755	MALIGNANCY, FEMALE REPRODUCTIVE SYSTEM W CC
607	MINOR SKIN DISORDERS W/O MCC	756	MALIGNANCY, FEMALE REPRODUCTIVE SYSTEM W/O CC/MCC
637	DIABETES W MCC	757	INFECTIONS, FEMALE REPRODUCTIVE SYSTEM W MCC
638	DIABETES W CC	758	INFECTIONS, FEMALE REPRODUCTIVE SYSTEM W CC
639	DIABETES W/O CC/MCC	759	INFECTIONS, FEMALE REPRODUCTIVE SYSTEM W/O CC/MCC
640	NUTRITIONAL & MISC METABOLIC DISORDERS W MCC	760	MENSTRUAL & OTHER FEMALE REPRODUCTIVE SYSTEM DISORDERS W CC/MCC
641	NUTRITIONAL & MISC METABOLIC DISORDERS W/O MCC	761	MENSTRUAL & OTHER FEMALE REPRODUCTIVE SYSTEM DISORDERS W/O CC/MCC
642	INBORN ERRORS OF METABOLISM		
643	ENDOCRINE DISORDERS W MCC		
644	ENDOCRINE DISORDERS W CC		
645	ENDOCRINE DISORDERS W/O CC/MCC		
682	RENAL FAILURE W MCC		
683	RENAL FAILURE W CC		
684	RENAL FAILURE W/O CC/MCC		
685	ADMIT FOR RENAL DIALYSIS		
686	KIDNEY & URINARY TRACT NEOPLASMS W MCC		
687	KIDNEY & URINARY TRACT NEOPLASMS W CC		

774	VAGINAL DELIVERY W COMPLICATING DIAGNOSES		844	OTHER MYELOPROLIF DIS OR POORLY DIFF NEOPL DIAG W CC
775	VAGINAL DELIVERY W/O COMPLICATING DIAGNOSES		845	OTHER MYELOPROLIF DIS OR POORLY DIFF NEOPL DIAG W/O CC/MCC
776	POSTPARTUM & POST ABORTION DIAGNOSES W/O O.R. PROCEDURE		846	CHEMOTHERAPY W/O ACUTE LEUKEMIA AS SECONDARY DIAGNOSIS W MCC
777	ECTOPIC PREGNANCY		847	CHEMOTHERAPY W/O ACUTE LEUKEMIA AS SECONDARY DIAGNOSIS W CC
778	THREATENED ABORTION		848	CHEMOTHERAPY W/O ACUTE LEUKEMIA AS SECONDARY DIAGNOSIS W/O CC/MCC
779	ABORTION W/O D&C			
780	FALSE LABOR			
781	OTHER ANTEPARTUM DIAGNOSES W MEDICAL COMPLICATIONS		849	RADIOTHERAPY
782	OTHER ANTEPARTUM DIAGNOSES W/O MEDICAL COMPLICATIONS		862	POSTOPERATIVE & POST-TRAUMATIC INFECTIONS W MCC
789	NEONATES, DIED OR TRANSFERRED TO ANOTHER ACUTE CARE FACILITY		863	POSTOPERATIVE & POST-TRAUMATIC INFECTIONS W/O MCC
790	EXTREME IMMATURITY OR RESPIRATORY DISTRESS SYNDROME, NEONATE		864	FEVER
			865	VIRAL ILLNESS W MCC
			866	VIRAL ILLNESS W/O MCC
791	PREMATURITY W MAJOR PROBLEMS		867	OTHER INFECTIOUS & PARASITIC DISEASES DIAGNOSES W MCC
792	PREMATURITY W/O MAJOR PROBLEMS			
793	FULL TERM NEONATE W MAJOR PROBLEMS		868	OTHER INFECTIOUS & PARASITIC DISEASES DIAGNOSES W CC
794	NEONATE W OTHER SIGNIFICANT PROBLEMS		869	OTHER INFECTIOUS & PARASITIC DISEASES DIAGNOSES W/O CC/MCC
795	NORMAL NEWBORN		870	SEPTICEMIA OR SEVERE SEPSIS W MV 96+ HOURS
808	MAJOR HEMATOL/IMMUN DIAG EXC SICKLE CELL CRISIS & COAGUL W MCC		871	SEPTICEMIA OR SEVERE SEPSIS W/O MV 96+ HOURS W MCC
809	MAJOR HEMATOL/IMMUN DIAG EXC SICKLE CELL CRISIS & COAGUL W CC		872	SEPTICEMIA OR SEVERE SEPSIS W/O MV 96+ HOURS W/O MCC
810	MAJOR HEMATOL/IMMUN DIAG EXC SICKLE CELL CRISIS & COAGUL W/O CC/MCC		880	ACUTE ADJUSTMENT REACTION & PSYCHOSOCIAL DYSFUNCTION
811	RED BLOOD CELL DISORDERS W MCC		881	DEPRESSIVE NEUROSES
812	RED BLOOD CELL DISORDERS W/O MCC		882	NEUROSES EXCEPT DEPRESSIVE
813	COAGULATION DISORDERS		883	DISORDERS OF PERSONALITY & IMPULSE CONTROL
814	RETICULOENDOTHELIAL & IMMUNITY DISORDERS W MCC		884	ORGANIC DISTURBANCES & MENTAL RETARDATION
815	RETICULOENDOTHELIAL & IMMUNITY DISORDERS W CC		885	PSYCHOSES
816	RETICULOENDOTHELIAL & IMMUNITY DISORDERS W/O CC/MCC		886	BEHAVIORAL & DEVELOPMENTAL DISORDERS
834	ACUTE LEUKEMIA W/O MAJOR O.R. PROCEDURE W MCC		887	OTHER MENTAL DISORDER DIAGNOSES
835	ACUTE LEUKEMIA W/O MAJOR O.R. PROCEDURE W CC		894	ALCOHOL/DRUG ABUSE OR DEPENDENCE, LEFT AMA
836	ACUTE LEUKEMIA W/O MAJOR O.R. PROCEDURE W/O CC/MCC		895	ALCOHOL/DRUG ABUSE OR DEPENDENCE W REHABILITATION THERAPY
837	CHEMO W ACUTE LEUKEMIA AS SDX OR W HIGH DOSE CHEMO AGENT W MCC		896	ALCOHOL/DRUG ABUSE OR DEPENDENCE W/O REHABILITATION THERAPY W MCC
838	CHEMO W ACUTE LEUKEMIA AS SDX W CC OR HIGH DOSE CHEMO AGENT			
839	CHEMO W ACUTE LEUKEMIA AS SDX W/O CC/MCC		897	ALCOHOL/DRUG ABUSE OR DEPENDENCE W/O REHABILITATION THERAPY W/O MCC
840	LYMPHOMA & NON-ACUTE LEUKEMIA W MCC			
			913	TRAUMATIC INJURY W MCC
841	LYMPHOMA & NON-ACUTE LEUKEMIA W CC		914	TRAUMATIC INJURY W/O MCC
			915	ALLERGIC REACTIONS W MCC
842	LYMPHOMA & NON-ACUTE LEUKEMIA W/O CC/MCC		916	ALLERGIC REACTIONS W/O MCC
			917	POISONING & TOXIC EFFECTS OF DRUGS W MCC
843	OTHER MYELOPROLIF DIS OR POORLY DIFF NEOPL DIAG W MCC		918	POISONING & TOXIC EFFECTS OF DRUGS W/O MCC

919	COMPLICATIONS OF TREATMENT W MCC		950	AFTERCARE W/O CC/MCC
920	COMPLICATIONS OF TREATMENT W CC		951	OTHER FACTORS INFLUENCING HEALTH STATUS
921	COMPLICATIONS OF TREATMENT W/O CC/MCC		963	OTHER MULTIPLE SIGNIFICANT TRAUMA W MCC
922	OTHER INJURY, POISONING & TOXIC EFFECT DIAG W MCC		964	OTHER MULTIPLE SIGNIFICANT TRAUMA W CC
923	OTHER INJURY, POISONING & TOXIC EFFECT DIAG W/O MCC		965	OTHER MULTIPLE SIGNIFICANT TRAUMA W/O CC/MCC
933	EXTENSIVE BURNS OR FULL THICKNESS BURNS W MV 96+ HRS W/O SKIN GRAFT		974	HIV W MAJOR RELATED CONDITION W MCC
934	FULL THICKNESS BURN W/O SKIN GRFT OR INHAL INJ		975	HIV W MAJOR RELATED CONDITION W CC
935	NON-EXTENSIVE BURNS		976	HIV W MAJOR RELATED CONDITION W/O CC/MCC
945	REHABILITATION W CC/MCC		977	HIV W OR W/O OTHER RELATED CONDITION
946	REHABILITATION W/O CC/MCC			
947	SIGNS & SYMPTOMS W MCC			
948	SIGNS & SYMPTOMS W/O MCC			
949	AFTERCARE W CC/MCC			

Appendix F – High-Risk Immunocompromised State Diagnosis and Procedure Codes

ICD-9-CM High-risk immunocompromised state diagnosis codes[1]:

042	HUMAN IMMUNO VIRUS DIS	20520	SBAC MYL LEU WO ACH RMSN
1363	PNEUMOCYSTOSIS	20521	SBAC MYL LEUK W RMSION
1992	MALIG NEOPL-TRANSP ORGAN	20522	SBAC MYL LEUK IN RELAPSE
20000	RETCLSRC UNSP XTRNDL ORG	*2053*	*MYELOID SARCOMA*
20001	RETICULOSARCOMA HEAD	20530	MYL SARCOMA WO ACHV RMSN
20002	RETICULOSARCOMA THORAX	20531	MYL SRCOMA W RMSION
20003	RETICULOSARCOMA ABDOM	20532	MYEL SARCOMA IN RELAPSE
20004	RETICULOSARCOMA AXILLA	*2058*	*MYELOID LEUKEMIA NEC*
20005	RETICULOSARCOMA INGUIN	20580	OTH MY LEUK WO ACHV RMSN
20006	RETICULOSARCOMA PELVIC	20581	OTH MYL LEUK W RMSION
20007	RETICULOSARCOMA SPLEEN	20582	OTH MYEL LEUK IN RELAPSE
20008	RETICULOSARCOMA MULT	*2059*	*MYELOID LEUKEMIA NOS*
20010	LYMPHSRC UNSP XTRNDL ORG	20590	UNS MY LEU WO ACH RMSN
20011	LYMPHOSARCOMA HEAD	20591	UNS MYL LEUK W RMSION
20012	LYMPHOSARCOMA THORAX	20592	MYEL LEUK NOS IN RELAPSE
20013	LYMPHOSARCOMA ABDOM	*2060*	*ACUTE MONOCYTIC LEUKEMIA*
20014	LYMPHOSARCOMA AXILLA	20600	AC MONO LEU WO ACHV RMSN
20015	LYMPHOSARCOMA INGUIN	20601	ACT MONO LEUK W RMSION
20016	LYMPHOSARCOMA PELVIC	20602	ACT MONO LEUK IN RELAPSE
20017	LYMPHOSARCOMA SPLEEN	*2061*	*CHR MONOCYTIC LEUKEMIA*
20018	LYMPHOSARCOMA MULT	20610	CH MONO LEU WO ACHV RMSN
20020	BRKT TMR UNSP XTRNDL ORG	20611	CHR MONO LEUK W RMSION
20021	BURKITT'S TUMOR HEAD	20612	CHR MONO LEUK IN RELAPSE
20022	BURKITT'S TUMOR THORAX	*2062*	*SUBAC MONOCYTIC LEUKEMIA*
20023	BURKITT'S TUMOR ABDOM	20620	SBAC MNO LEU WO ACH RMSN
20024	BURKITT'S TUMOR AXILLA	20621	SBAC MONO LEUK W RMSION
20025	BURKITT'S TUMOR INGUIN	20622	SBAC MONO LEU IN RELAPSE
20026	BURKITT'S TUMOR PELVIC	*2068*	*MONOCYTIC LEUKEMIA NEC*
20027	BURKITT'S TUMOR SPLEEN	20680	OT MONO LEU WO ACHV RMSN
20028	BURKITT'S TUMOR MULT	20681	OTH MONO LEUK W RMSION
20080	OTH VARN UNSP XTRNDL ORG	20682	OTH MONO LEUK IN RELAPSE
20081	MIXED LYMPHOSARC HEAD	*2069*	*MONOCYTIC LEUKEMIA NOS*
20082	MIXED LYMPHOSARC THORAX	20690	UNS MNO LEU WO ACH RMSN
20083	MIXED LYMPHOSARC ABDOM	20691	UNS MONO LEUK W RMSION
20084	MIXED LYMPHOSARC AXILLA	20692	MONO LEUK NOS RELAPSE
20085	MIXED LYMPHOSARC INGUIN	*2070*	*ACUTE ERYTHREMIA*
20086	MIXED LYMPHOSARC PELVIC	20700	AC ERTH/ERLK WO ACH RMSN
20087	MIXED LYMPHOSARC SPLEEN	20701	ACT ERTH/ERYLK W RMSON
20088	MIXED LYMPHOSARC MULT	20702	AC ERTH/ERYLK IN RELAPSE
20302	MULT MYELOMA IN RELAPSE	*2071*	*CHRONIC ERYTHREMIA*
20312	PLSM CEL LEUK IN RELAPSE	20710	CHR ERYTHRM W/O ACH RMSN
20382	OTH IMNPRLF NEO-RELAPSE	20711	CHR ERYTHRM W REMISION
20402	ACT LYMP LEUK IN RELAPSE	20712	CHR ERYTHRMIA IN RELAPSE
20412	CHR LYMP LEUK IN RELAPSE	*2072*	*MEGAKARYOCYTIC LEUKEMIA*
20422	SBAC LYM LEUK IN RELAPSE	20720	MGKRCYT LEUK WO ACH RMSN
20482	OTH LYM LEUK IN RELAPSE	20721	MGKRYCYT LEUK W RMSION
20492	LYMP LEUK NOS RELAPSE	20722	MGKRYCYT LEUK IN RELAPSE
2050	*ACUTE MYELOID LEUKEMIA*	*2078*	*SPECIFIED LEUKEMIA NEC*
20500	AC MYL LEUK WO ACHV RMSN	20780	OTH LEUK W/O ACHV RMSN
20502	ACT MYEL LEUK IN RELAPSE	20781	OTH SPF LEUK W REMSION
20501	ACT MYL LEUK W RMSION	20782	OTH SPF LEUK IN RELAPSE
2051	*CHRONIC MYELOID LEUKEMIA*	*2080*	*ACT LEUK UNS CL W/O RMSN*
20510	CH MYL LEUK WO ACHV RMSN	20800	AC LEU UN CL WO ACH RMSN
20511	CHR MYL LEUK W RMSION	20801	ACT LEUK UNS CL W RMSON
20512	CHR MYEL LEUK IN RELAPSE	20802	AC LEUK UNS CL RELAPSE
2052	*SUBACUT MYELOID LEUKEMIA*	*2081*	*CHRONIC LEUKEMIA NOS*

20810	CH LEU UN CL WO ACH RMSN		28803	DRUG INDUCED NEUTROPENIA
20811	CHR LEUK UNS CL W RMSON		28809	NEUTROPENIA NEC
20812	CH LEU UNS CL IN RELAPSE		2881	FUNCTION DIS NEUTROPHILS
2082	*SUBACUTE LEUKEMIA NOS*		2882	GENETIC ANOMALY LEUKOCYT
20820	SBC LEU UN CL WO AH RMSN		2884	HEMOPHAGOCYTIC SYNDROMES
20821	SBAC LEUK UNS CL W RMSON		28850	LEUKOCYTOPENIA NOS
20822	SBAC LEU UNS CL-RELAPSE		28851	LYMPHOCYTOPENIA
2088	*LEUKEMIA-UNSPEC CELL NEC*		28859	DECREASED WBC COUNT NEC
20880	OT LEU UN CL WO ACH RMSN		28953	NEUTROPENIC SPLENOMEGALY
20881	OTH LEUK UNS CL W RMSON		28983	MYELOFIBROSIS
20882	OTH LEUK UNS CL-RELAPSE		40301	MAL HYP KID W CR KID V
2089	*LEUKEMIA-UNSPEC CELL NOS*		40311	BEN HYP KID W CR KID V
20890	LEUK NOS W/O ACHV RMSN		40391	HYP KID NOS W CR KID V
20891	LEUKEMIA NOS W REMISSION		40402	MAL HY HT/KD ST V W/O HF
20892	LEUKEMIA NOS IN RELAPSE		40403	MAL HYP HT/KD STG V W HF
23873	HI GRDE MYELODYS SYN LES		40412	BEN HY HT/KD ST V W/O HF
23876	MYELOFI W MYELO METAPLAS		40413	BEN HYP HT/KD STG V W HF
23877	POST TPLYMPHPROLIF DIS		40492	HY HT/KD NOS ST V W/O HF
23879	LYMPH/HEMATPOITC TIS NEC		40493	HYP HT/KD NOS ST V W HF
260	KWASHIORKOR		5793	INTEST POSTOP NONABSORB
261	NUTRITIONAL MARASMUS		*585*	*CHRONIC KIDNEY DISEASE*
262	OTH SEVERE MALNUTRITION		5855	CHRON KIDNEY DIS STAGE V
27900	HYPOGAMMAGLOBULINEM NOS		5856	END STAGE RENAL DISEASE
27901	SELECTIVE IGA IMMUNODEF		*9968*	*COMPLICATIONS OF TRANSPLANTED*
27902	SELECTIVE IGM IMMUNODEF			*ORGAN*
27903	SELECTIVE IG DEFIC NEC		99680	COMP ORGAN TRANSPLNT NOS
27904	CONG HYPOGAMMAGLOBULINEM		99681	COMPL KIDNEY TRANSPLANT
27905	IMMUNODEFIC W HYPER-IGM		99682	COMPL LIVER TRANSPLANT
27906	COMMON VARIABL IMMUNODEF		99683	COMPL HEART TRANSPLANT
27909	HUMORAL IMMUNITY DEF NEC		99684	COMPL LUNG TRANSPLANT
27910	IMMUNDEF T-CELL DEF NOS		99685	COMPL MARROW TRANSPLANT
27911	DIGEORGE'S SYNDROME		99686	COMPL PANCREAS TRANSPLNT
27912	WISKOTT-ALDRICH SYNDROME		99687	COMP INTESTINE TRANSPLNT
27913	NEZELOF'S SYNDROME		99688	COMP TP ORGAN-STEM CELL
27919	DEFIC CELL IMMUNITY NOS		99689	COMP OTH ORGAN TRANSPLNT
2792	COMBINED IMMUNITY DEFIC		V420	KIDNEY TRANSPLANT STATUS
2793	IMMUNITY DEFICIENCY NOS		V421	HEART TRANSPLANT STATUS
2794	*AUTOIMMUNE DISEASE, NOT*		V426	LUNG TRANSPLANT STATUS
	ELSEWHERE CLASSIFIED		V427	LIVER TRANSPLANT STATUS
27941	AUTOIMMUN LYMPHPROF SYND		*V428*	*OTHER SPECIFIED ORGAN OR TISSUE*
27949	AUTOIMMUNE DISEASE NEC		V4281	TRNSPL STATUS-BNE MARROW
27950	GRAFT-VERSUS-HOST NOS		V4282	TRSPL STS-PERIP STM CELL
27951	AC GRAFT-VERSUS-HOST DIS		V4283	TRNSPL STATUS-PANCREAS
27952	CHRONC GRAFT-VS-HOST DIS		V4284	TRNSPL STATUS-INTESTINES
27953	AC ON CHRN GRFT-VS-HOST		V4289	TRNSPL STATUS ORGAN NEC
2798	IMMUNE MECHANISM DIS NEC		*V451*	*RENAL DIALYSIS STATUS*
2799	IMMUNE MECHANISM DIS NOS		V4511	RENAL DIALYSIS STATUS
28409	CONST APLASTC ANEMIA NEC		V560	RENAL DIALYSIS ENCOUNTER
2841	*PANCYTOPENIA*		V561	FT/ADJ XTRCORP DIAL CATH
28411	ANTIN CHEMO INDCD PANCYT		V562	FIT/ADJ PERIT DIAL CATH
28412	OTH DRG INDCD PANCYTOPNA		*V563*	*ENCOUNTER FOR ADEQUACY*
28419	OTHER PANCYTOPENIA			*TESTING FOR DIALYSIS*
2880	*AGRANULOCYTOSIS*		V5631	HEMODIALYSIS TESTING
28800	NEUTROPENIA NOS		V5632	PERITONEAL DIALYSIS TEST
28801	CONGENITAL NEUTROPENIA		V568	DIALYSIS ENCOUNTER, NEC
28802	CYCLIC NEUTROPENIA			

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

ICD-9-CM High-risk immunocompromised state procedure codes[1]:

335	*LUNG TRANSPLANT*	4106	CORD BLD STEM CELL TRANS
3350	LUNG TRANSPLANT NOS	4107	AUTO HEM STEM CT W PURG
3351	UNILAT LUNG TRANSPLANT	4108	ALLO HEM STEM CT W PURG
3352	BILAT LUNG TRANSPLANT	4109	AUTO BONE MT W PURGING
336	COMB HEART/LUNG TRANSPLA	5051	AUXILIARY LIVER TRANSPL
375	*HEART TRANSPLANTATION*	5059	LIVER TRANSPLANT NEC
3751	HEART TRANSPLANTATION	5280	PANCREAT TRANSPLANT NOS
410	*OPERATIONS ON BONE MAROW AND SPLEEN*	5281	REIMPLANT PANCREATIC TIS
		5282	PANCREATIC HOMOTRANSPLAN
4100	BONE MARROW TRNSPLNT NOS	5283	PANCREATIC HETEROTRANSPL
4101	AUTO BONE MT W/O PURG	5285	ALLOTRNSPLNT ISLETS LANG
4102	ALO BONE MARROW TRNSPLNT	5286	TRNSPLNT ISLETS LANG NOS
4103	ALLOGRFT BONE MARROW NOS	5569	KIDNEY TRANSPLANT NEC
4104	AUTO HEM STEM CT W/O PUR		
4105	ALLO HEM STEM CT W/O PUR		

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

Appendix G – Intermediate-Risk Immunocompromised State Diagnosis Codes

ICD-9-CM Intermediate-risk immunocompromised state diagnosis codes[1]:

07022	HPT B CHRN COMA WO DLTA		58281	CHR NEPHRITIS IN OTH DIS
07023	HPT B CHRN COMA W DLTA		58289	CHRONIC NEPHRITIS NEC
07044	CHRNC HPT C W HEPAT COMA		5829	CHORNIC NEPHRITIS NOS
2894	HYPERSPLENISM		*583*	*NEPHRITIS AND NEPHROPATHY, NOT*
28950	SPLEEN DISEASE NOS			*SPECFIED AS ACUTE OR CHRONIC*
28951	CHR CONGEST SPLENOMEGALY		5830	PROLIFERAT NEPHRITIS NOS
28952	SPLENIC SEQUESTRATION		5831	MEMBRANOUS NEPHRITIS NOS
28959	SPLEEN DISEASE NEC		5832	MEMBRANOPROLIF NEPHR NOS
4560	ESOPHAG VARICES W BLEED		5834	RAPIDLY PROG NEPHRIT NOS
4561	ESOPH VARICES W/O BLEED		5836	RENAL CORT NECROSIS NOS
45620	BLEED ESOPH VAR OTH DIS		5837	NEPHR NOS/MEDULL NECROS
45621	ESOPH VARICE OTH DISNOS		*5838*	*WITH OTHER SPECIFIED*
5723	PORTAL HYPERTENSION			*PATHOLOGICAL LESION IN KIDNEY*
5728	OTH SEQUELA, CHR LIV DIS		58381	NEPHRITIS NOS IN OTH DIS
5735	HEPATOPULMONARY SYNDROME		58389	NEPHRITIS NEC
580	*ACUTE GLOMERULONEPHRITIS*		5839	NEPHRITIS NOS
5800	AC PROLIFERAT NEPHRITIS		7100	SYST LUPUS ERYTHEMATOSUS
5804	AC RAPIDLY PROGR NEPHRIT		7101	SYSTEMIC SCLEROSIS
5808	*WITH OTHER SPECIFIED*		7102	SICCA SYNDROME
	PATHOLOGICAL LESION IN KIDNEY		7103	DERMATOMYOSITIS
58081	AC NEPHRITIS IN OTH DIS		7104	POLYMYOSITIS
58089	ACUTE NEPHRITIS NEC		7105	EOSINOPHILIA MYALGIA SYND
5809	ACUTE NEPHRITIS NOS		7108	DIFF CONNECT TIS DIS NEC
581	*NEPHROTIC SYNDROME*		7109	DIFF CONNECT TIS DIS NOS
5810	NEPHROTIC SYN, PROLIFER		7590	ANOMALIES OF SPLEEN
5811	EPIMEMBRANOUS NEPHRITIS		7994	CACHEXIA
5812	MEMBRANOPROLIF NEPHROSIS		86500	SPLEEN INJURY NOS-CLOSED
5813	MINIMAL CHANGE NEPHROSIS		86501	SPLEEN HEMATOMA-CLOSED
5818	*WITH OTHER SPECIFIED*		86502	SPLEEN CAPSULAR TEAR
	PATHOLOGICAL LESION IN KIDNEY		86503	SPLEEN PARENCHYMA LACER
58181	NEPHROTIC SYN IN OTH DIS		86504	SPLEEN DISRUPTION-CLOS
58189	NEPHROTIC SYNDROME NEC		86509	SPLEEN INJURY NEC-CLOSED
5819	NEPHROTIC SYNDROME NOS		86510	SPLEEN INJURY NOS-OPEN
582	*CHRONIC GLOMERULONEPHRITIS*		86511	SPLEEN HEMATOMA-OPEN
5820	*WITH LESION OF PROLIFERATIVE*		86512	SPLEEN CAPSULAR TEAR-OPN
	GLOMERULONEPHRITIS		86513	SPLEEN PARNCHYM LAC-OPN
5821	PERINEAL URETHROSCOPY		86514	SPLEEN DISRUPTION-OPEN
5822	URETHROSCOPY NEC		86519	SPLEEN INJURY NEC-OPEN
5824	PERIURETHRAL BIOPSY		V427	LIVER TRANSPLANT STATUS
5828	*WITH OTHER SPECIFIED*			
	PATHOLOGICAL LESION IN KIDNEY			

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

Appendix H – Infection Diagnosis Codes

ICD-9-CM Infection diagnosis codes[1]:

0010	CHOLERA D/T VIB CHOLERAE	0210	ULCEROGLANDUL TULAREMIA
0011	CHOLERA D/T VIB EL TOR	0211	ENTERIC TULAREMIA
0019	CHOLERA NOS	0212	PULMONARY TULAREMIA
0020	TYPHOID FEVER	0213	OCULOGLANDULAR TULAREMIA
0021	PARATYPHOID FEVER A	0218	TULAREMIA NEC
0022	PARATYPHOID FEVER B	0219	TULAREMIA NOS
0023	PARATYPHOID FEVER C	0220	CUTANEOUS ANTHRAX
0029	PARATYPHOID FEVER NOS	0221	PULMONARY ANTHRAX
0030	SALMONELLA ENTERITIS	0222	GASTROINTESTINAL ANTHRAX
0031	SALMONELLA SEPTICEMIA	0223	ANTHRAX SEPTICEMIA
00320	LOCAL SALMONELLA INF NOS	0228	OTHER ANTHRAX MANIFEST
00321	SALMONELLA MENINGITIS	0229	ANTHRAX NOS
00322	SALMONELLA PNEUMONIA	0230	BRUCELLA MELITENSIS
00323	SALMONELLA ARTHRITIS	0231	BRUCELLA ABORTUS
00324	SALMONELLA OSTEOMYELITIS	0232	BRUCELLA SUIS
00329	LOCAL SALMONELLA INF NEC	0233	BRUCELLA CANIS
0038	SALMONELLA INFECTION NEC	0238	BRUCELLOSIS NEC
0039	SALMONELLA INFECTION NOS	0239	BRUCELLOSIS NOS
0040	SHIGELLA DYSENTERIAE	024	GLANDERS
0041	SHIGELLA FLEXNERI	025	MELIOIDOSIS
0042	SHIGELLA BOYDII	0260	SPIRILLARY FEVER
0043	SHIGELLA SONNEI	0261	STREPTOBACILLARY FEVER
0048	SHIGELLA INFECTION NEC	0269	RAT-BITE FEVER NOS
0049	SHIGELLOSIS NOS	0270	LISTERIOSIS
0050	STAPH FOOD POISONING	0271	ERYSIPELOTHRIX INFECTION
0051	BOTULISM FOOD POISONING	0272	PASTEURELLOSIS
0052	FOOD POIS D/T C. PERFRIN	0278	ZOONOTIC BACT DIS NEC
0053	FOOD POIS: CLOSTRID NEC	0279	ZOONOTIC BACT DIS NOS
0054	FOOD POIS: V. PARAHAEM	0320	FAUCIAL DIPHTHERIA
00581	FOOD POISN D/T V. VULNIF	0321	NASOPHARYNX DIPHTHERIA
00589	BACT FOOD POISONING NEC	0322	ANT NASAL DIPHTHERIA
0059	FOOD POISONING NOS	0323	LARYNGEAL DIPHTHERIA
00800	INTEST INFEC E COLI NOS	03281	CONJUNCTIVAL DIPHTHERIA
00801	INT INF E COLI ENTRPATH	03282	DIPHTHERITIC MYOCARDITIS
00802	INT INF E COLI ENTRTOXGN	03283	DIPHTHERITIC PERITONITIS
00803	INT INF E COLI ENTRNVSV	03284	DIPHTHERITIC CYSTITIS
00804	INT INF E COLI ENTRHMRG	03285	CUTANEOUS DIPHTHERIA
00809	INT INF E COLI SPCF NEC	03289	DIPHTHERIA NEC
0081	ARIZONA ENTERITIS	0329	DIPHTHERIA NOS
0082	AEROBACTER ENTERITIS	0330	BORDETELLA PERTUSSIS
0083	PROTEUS ENTERITIS	0331	BORDETELLA PARAPERTUSSIS
00841	STAPHYLOCOCC ENTERITIS	0338	WHOOPING COUGH NEC
00842	PSEUDOMONAS ENTERITIS	0339	WHOOPING COUGH NOS
00843	INT INFEC CAMPYLOBACTER	0340	STREP SORE THROAT
00844	INT INF YRSNIA ENTRCLTCA	0341	SCARLET FEVER
00845	INT INF CLSTRDIUM DFCILE	035	ERYSIPELAS
00846	INTES INFEC OTH ANEROBES	0360	MENINGOCOCCAL MENINGITIS
00847	INT INF OTH GRM NEG BCTR	0361	MENINGOCOCC ENCEPHALITIS
00849	BACTERIAL ENTERITIS NEC	0362	MENINGOCOCCEMIA
0085	BACTERIAL ENTERITIS NOS	0363	MENINGOCOCC ADRENAL SYND
0200	BUBONIC PLAGUE	03640	MENINGOCOCC CARDITIS NOS
0201	CELLULOCUTANEOUS PLAGUE	03641	MENINGOCOCC PERICARDITIS
0202	SEPTICEMIC PLAGUE	03642	MENINGOCOCC ENDOCARDITIS
0203	PRIMARY PNEUMONIC PLAGUE	03643	MENINGOCOCC MYOCARDITIS
0204	SECONDARY PNEUMON PLAGUE	03681	MENINGOCOCC OPTIC NEURIT
0205	PNEUMONIC PLAGUE NOS	03682	MENINGOCOCC ARTHROPATHY
0208	OTHER TYPES OF PLAGUE	03689	MENINGOCOCCAL INFECT NEC
0209	PLAGUE NOS	0369	MENINGOCOCCAL INFECT NOS

037	TETANUS	09810	GC (ACUTE) UPPER GU NOS
0380	STREPTOCOCCAL SEPTICEMIA	09811	GC CYSTITIS (ACUTE)
03810	STAPHYLCOCC SEPTICEM NOS	09812	GC PROSTATITIS (ACUTE)
03811	METH SUSC STAPH AUR SEPT	09813	GC ORCHITIS (ACUTE)
03812	MRSA SEPTICEMIA	09814	GC SEM VESICULIT (ACUTE)
03819	STAPHYLCOCC SEPTICEM NEC	09815	GC CERVICITIS (ACUTE)
0382	PNEUMOCOCCAL SEPTICEMIA	09816	GC ENDOMETRITIS (ACUTE)
0383	ANAEROBIC SEPTICEMIA	09817	ACUTE GC SALPINGITIS
03840	GRAM-NEG SEPTICEMIA NOS	09819	GC (ACUTE) UPPER GU NEC
03841	H. INFLUENAE SEPTICEMIA	0982	CHR GC INFECT LOWER GU
03842	E COLI SEPTICEMIA	09830	CHR GC UPPER GU NOS
03843	PSEUDOMONAS SEPTICEMIA	09831	GC CYSTITIS, CHRONIC
03844	SERRATIA SEPTICEMIA	09832	GC PROSTATITIS, CHRONIC
03849	GRAM-NEG SEPTICEMIA NEC	09833	GC ORCHITIS, CHRONIC
0388	SEPTICEMIA NEC	09834	GC SEM VESICULITIS, CHR
0389	SEPTICEMIA NOS	09835	GC CERVICITIS, CHRONIC
0390	CUTANEOUS ACTINOMYCOSIS	09836	GC ENDOMETRITIS, CHRONIC
0391	PULMONARY ACTINOMYCOSIS	09837	GC SALPINGITIS (CHRONIC)
0392	ABDOMINAL ACTINOMYCOSIS	09839	CHR GC UPPER GU NEC
0393	CERVICOFAC ACTINOMYCOSIS	09840	GONOCOCCAL CONJUNCTIVIT
0394	MADURA FOOT	09841	GONOCOCCAL IRIDOCYCLITIS
0398	ACTINOMYCOSIS NEC	09842	GONOCOCCAL ENDOPHTHALMIA
0399	ACTINOMYCOSIS NOS	09843	GONOCOCCAL KERATITIS
0400	GAS GANGRENE	09849	GONOCOCCAL EYE NEC
0401	RHINOSCLEROMA	09850	GONOCOCCAL ARTHRITIS
0402	WHIPPLE'S DISEASE	09851	GONOCOCCAL SYNOVITIS
0403	NECROBACILLOSIS	09852	GONOCOCCAL BURSITIS
04041	INFANT BOTULISM	09853	GONOCOCCAL SPONDYLITIS
04042	WOUND BOTULISM	09859	GC INFECT JOINT NEC
04081	TROPICAL PYOMYOSITIS	0986	GONOCOCCAL INFEC PHARYNX
04082	TOXIC SHOCK SYNDROME	0987	GC INFECT ANUS & RECTUM
04089	BACTERIAL DISEASES NEC	09881	GONOCOCCAL KERATOSIS
04100	STREPTOCOCCUS UNSPECF	09882	GONOCOCCAL MENINGITIS
04101	STREPTOCOCCUS GROUP A	09883	GONOCOCCAL PERICARDITIS
04102	STREPTOCOCCUS GROUP B	09884	GONOCOCCAL ENDOCARDITIS
04103	STREPTOCOCCUS GROUP C	09885	GONOCOCCAL HEART DIS NEC
04104	ENTEROCOCCUS GROUP D	09886	GONOCOCCAL PERITONITIS
04105	STREPTOCOCCUS GROUP G	09889	GONOCOCCAL INF SITE NEC
04109	OTHER STREPTOCOCCUS	3200	HEMOPHILUS MENINGITIS
04110	STAPHYLOCOCCUS UNSPCFIED	3201	PNEUMOCOCCAL MENINGITIS
04111	MTH SUS STPH AUR ELS/NOS	3202	STREPTOCOCCAL MENINGITIS
04112	MRSA ELSEWHERE/NOS	3203	STAPHYLOCOCC MENINGITIS
04119	OTHER STAPHYLOCOCCUS	3207	MENING IN OTH BACT DIS
0412	PNEUMOCOCCUS INFECT NOS	32081	ANAEROBIC MENINGITIS
0413	KLEBSIELLA PNEUMONIAE	32082	MNINGTS GRAM-NEG BCT NEC
0414	*E. COLI INFECT NOS*	32089	MENINGITIS OTH SPCF BACT
04141	SHIGA TXN-PRODUCE E.COLI	3209	BACTERIAL MENINGITIS NOS
04142	SHGA TXN PROD E.COLI NEC	3229	MENINGITIS NOS
04143	SHGA TXN PROD E.COLI NOS	3240	INTRACRANIAL ABSCESS
04149	E.COLI INFECTION NEC/NOS	3241	INTRASPINAL ABSCESS
0415	H. INFLUENZAE INFECT NOS	3249	CNS ABSCESS NOS
0416	PROTEUS INFECTION NOS	36000	PURULENT ENDOPHTHALM NOS
0417	PSEUDOMONAS INFECT NOS	36001	ACUTE ENDOPHTHALMITIS
04182	BACTEROIDES FRAGILIS	36002	PANOPHTHALMITIS
04183	CLOSTRIDIUM PERFRINGENS	36004	VITREOUS ABSCESS
04184	OTHER ANAEROBES	37055	CORNEAL ABSCESS
04185	OTH GRAM NEGATV BACTERIA	37200	ACUTE CONJUNCTIVITIS NOS
04186	HELICOBACTER PYLORI	37203	MUCOPUR CONJUNCTIVIT NEC
04189	OTH SPECF BACTERIA	37204	PSEUDOMEMB CONJUNCTIVIT
0419	BACTERIAL INFECTION NOS	37220	BLEPHAROCONJUNCTIVIT NOS
0783	CAT-SCRATCH DISEASE	37221	ANGULAR BLEPHAROCONJUNCT
0980	ACUTE GC INFECT LOWER GU	37230	CONJUNCTIVITIS NOS

37300	BLEPHARITIS NOS	48231	PNEUMONIA STRPTOCOCCUS A
37301	ULCERATIVE BLEPHARITIS	48232	PNEUMONIA STRPTOCOCCUS B
37311	HORDEOLUM EXTERNUM	48239	PNEUMONIA OTH STREP
37312	HORDEOLUM INTERNUM	48240	STAPHYLOCOCCAL PNEU NOS
37313	ABSCESS OF EYELID	48241	METH SUS PNEUM D/T STAPH
37500	DACRYOADENITIS NOS	48242	METH RES PNEU D/T STAPH
37501	ACUTE DACRYOADENITIS	48249	STAPH PNEUMONIA NEC
37530	DACRYOCYSTITIS NOS	48281	PNEUMONIA ANAEROBES
37531	ACUTE CANALICULITIS	48282	PNEUMONIA E COLI
37532	ACUTE DACRYOCYSTITIS	48283	PNEUMO OTH GRM-NEG BACT
37601	ORBITAL CELLULITIS	48284	LEGIONNAIRES' DISEASE
37602	ORBITAL PERIOSTITIS	48289	PNEUMONIA OTH SPCF BACT
37603	ORBITAL OSTEOMYELITIS	4829	BACTERIAL PNEUMONIA NOS
37604	ORBITAL TENONITIS	4843	PNEUMONIA IN WHOOP COUGH
38010	INFEC OTITIS EXTERNA NOS	4845	PNEUMONIA IN ANTHRAX
38011	ACUTE INFECTION OF PINNA	4848	PNEUM IN INFECT DIS NEC
38012	ACUTE SWIMMERS' EAR	485	BRONCHOPNEUMONIA ORG NOS
38013	AC INFECT EXTERN EAR NEC	486	PNEUMONIA, ORGANISM NOS
38014	MALIGNANT OTITIS EXTERNA	*490*	*BRONCHITIS NOS*
38150	EUSTACHIAN SALPING NOS	49122	OBS CHR BRONC W AC BRONC
38151	AC EUSTACHIAN SALPING	4941	BRONCHIECTASIS W AC EXAC
38200	AC SUPP OTITIS MEDIA NOS	5100	EMPYEMA WITH FISTULA
38201	AC SUPP OM W DRUM RUPT	5109	EMPYEMA W/O FISTULA
38202	AC SUPP OM IN OTH DIS	5111	BACT PLEUR/EFFUS NOT TB
3821	CHR TUBOTYMPAN SUPPUR OM	5130	ABSCESS OF LUNG
3822	CHR ATTICOANTRAL SUP OM	5131	ABSCESS OF MEDIASTINUM
3823	CHR SUP OTITIS MEDIA NOS	51901	TRACHEOSTOMY INFECTION
3824	SUPPUR OTITIS MEDIA NOS	5192	MEDIASTINITIS
3829	OTITIS MEDIA NOS	5220	PULPITIS
38300	AC MASTOIDITIS W/O COMPL	5225	PERIAPICAL ABSCESS
38301	SUBPERI MASTOID ABSCESS	5227	PERIAPICAL ABSC W SINUS
38302	AC MASTOIDITIS-COMPL NEC	*5230*	*ACUTE GINGIVITIS*
38320	PETROSITIS NOS	52300	ACUTE GINGIVITIS, PLAQUE
38321	ACUTE PETROSITIS	52301	AC GINGIVITIS,NONPLAQUE
38400	ACUTE MYRINGITIS NOS	*5233*	*ACUTE PERIODONTITIS*
38633	SUPPURATIV LABYRINTHITIS	52330	AGGRES PERIODONTITIS NOS
4200	AC PERICARDIT IN OTH DIS	52331	AGGRES PERIODONTITIS,LOC
42090	ACUTE PERICARDITIS NOS	52332	AGGRES PERIODONTITIS,GEN
42099	ACUTE PERICARDITIS NEC	52333	ACUTE PERIODONTITIS
4210	AC/SUBAC BACT ENDOCARD	5264	INFLAMMATION OF JAW
4211	AC ENDOCARDIT IN OTH DIS	5273	SALIVARY GLAND ABSCESS
4219	AC/SUBAC ENDOCARDIT NOS	5283	CELLULITIS/ABSCESS MOUTH
42292	SEPTIC MYOCARDITIS	53641	GASTROSTOMY INFECTION
4610	AC MAXILLARY SINUSITIS	53901	INT D/T GASTRC BAND PROC
4611	AC FRONTAL SINUSITIS	53981	INF D/T OT BARIATRC PROC
4612	AC ETHMOIDAL SINUSITIS	5400	AC APPEND W PERITONITIS
4613	AC SPHENOIDAL SINUSITIS	5401	ABSCESS OF APPENDIX
4618	OTHER ACUTE SINUSITIS	5409	ACUTE APPENDICITIS NOS
4619	ACUTE SINUSITIS NOS	541	APPENDICITIS NOS
462	ACUTE PHARYNGITIS	542	OTHER APPENDICITIS
463	ACUTE TONSILLITIS	56201	DVRTCLI SML INT W/O HMRG
46430	AC EPIGLOTTITIS NO OBSTR	56203	DVRTCLI SML INT W HMRHG
46431	AC EPIGLOTTITIS W OBSTR	56211	DVRTCLI COLON W/O HMRHG
4660	ACUTE BRONCHITIS	56213	DVRTCLI COLON W HMRHG
475	PERITONSILLAR ABSCESS	566	ANAL & RECTAL ABSCESS
47822	PARAPHARYNGEAL ABSCESS	5670	PERITONITIS IN INFEC DIS
47824	RETROPHARYNGEAL ABSCESS	5671	PNEUMOCOCCAL PERITONITIS
481	PNEUMOCOCCAL PNEUMONIA	*5672*	*SUPPURAT PERITONITIS NEC*
4820	K. PNEUMONIAE PNEUMONIA	56721	PERITONITIS (ACUTE) GEN
4821	PSEUDOMONAL PNEUMONIA	56722	PERITONEAL ABSCESS
4822	H.INFLUENZAE PNEUMONIA	56723	SPONTAN BACT PERITONITIS
48230	STREPTOCOCCAL PNEUMN NOS	56729	SUPPURAT PERITONITIS NEC

56731	PSOAS MUSCLE ABSCESS		6149	FEM PELV INFLAM DIS NOS
56738	RETROPERITON ABSCESS NEC		6150	AC UTERINE INFLAMMATION
56739	RETROPERITON INFECT NEC		6159	UTERINE INFLAM DIS NOS
56781	CHOLEPERITONITIS		6160	CERVICITIS
56782	SCLEROSING MESENTERITIS		61610	VAGINITIS NOS
56789	PERITONITIS NEC		6163	BARTHOLIN'S GLND ABSCESS
5679	PERITONITIS NOS		6164	ABSCESS OF VULVA NEC
5695	INTESTINAL ABSCESS		63400	SPON ABOR W PEL INF-UNSP
56961	COLOSTY/ENTEROST INFECTN		63401	SPON ABOR W PELV INF-INC
5720	ABSCESS OF LIVER		63402	SPON ABOR W PEL INF-COMP
5721	PORTAL PYEMIA		63500	LEG ABOR W PELV INF-UNSP
57400	CHOLELITH W AC CHOLECYST		63501	LEG ABOR W PELV INF-INC
57401	CHOLELITH/AC GB INF-OBST		63502	LEG ABOR W PELV INF-COMP
57430	CHOLEDOCHOLITH/AC GB INF		63600	ILLEG AB W PELV INF-UNSP
57431	CHOLEDOCHLITH/AC GB-OBST		63601	ILLEG AB W PELV INF-INC
57460	GALL&BIL CAL W/AC W/O OB		63602	ILLEG AB W PELV INF-COMP
57461	GALL&BIL CAL W/AC W OBS		63700	ABORT NOS W PEL INF-UNSP
57480	GAL&BIL CAL W/AC&CHR W/O		63701	ABORT NOS W PEL INF-INC
57481	GAL&BIL CAL W/AC&CH W OB		63702	ABORT NOS W PEL INF-COMP
5750	ACUTE CHOLECYSTITIS		6380	ATTEM ABORT W PELVIC INF
57510	CHOLECYSTITIS NOS		6390	POSTABORTION GU INFECT
57512	ACTE & CHR CHOLECYSTITIS		64650	BACTERIURIA PREG-UNSPEC
5754	PERFORATION GALLBLADDER		64651	ASYM BACTERIURIA-DELIVER
5761	CHOLANGITIS		64652	ASY BACTERURIA-DEL W P/P
5763	PERFORATION OF BILE DUCT		64653	ASY BACTERIURIA-ANTEPART
5770	ACUTE PANCREATITIS		64654	ASY BACTERIURIA-POSTPART
59010	AC PYELONEPHRITIS NOS		64660	GU INFECT IN PREG-UNSPEC
59011	AC PYELONEPHR W MED NECR		64661	GU INFECTION-DELIVERED
5902	RENAL/PERIRENAL ABSCESS		64662	GU INFECTION-DELIV W P/P
5903	PYELOURETERITIS CYSTICA		64663	GU INFECTION-ANTEPARTUM
59080	PYELONEPHRITIS NOS		64664	GU INFECTION-POSTPARTUM
59081	PYELONEPHRIT IN OTH DIS		64710	GONORRHEA IN PREG-UNSPEC
5909	INFECTION OF KIDNEY NOS		64711	GONORRHEA-DELIVERED
5950	ACUTE CYSTITIS		64712	GONORRHEA-DELIVER W P/P
5954	CYSTITIS IN OTH DIS		64713	GONORRHEA-ANTEPARTUM
59581	CYSTITIS CYSTICA		64714	GONORRHEA-POSTPARTUM
59589	CYSTITIS NEC		64780	INF DIS IN PREG NEC-UNSP
5959	CYSTITIS NOS		64781	INFECT DIS NEC-DELIVERED
59681	INFECTION OF CYSTOSTOMY		64782	INFECT DIS NEC-DEL W P/P
5970	URETHRAL ABSCESS		64783	INFECT DIS NEC-ANTEPART
5990	URIN TRACT INFECTION NOS		64784	INFECT DIS NEC-POSTPART
6010	ACUTE PROSTATITIS		64790	INFECT IN PREG NOS-UNSP
6012	ABSCESS OF PROSTATE		64791	INFECT NOS-DELIVERED
6013	PROSTATOCYSTITIS		64792	INFECT NOS-DELIVER W P/P
6014	PROSTATITIS IN OTH DIS		64793	INFECT NOS-ANTEPARTUM
6018	PROSTATIC INFLAM DIS NEC		64794	INFECT NOS-POSTPARTUM
6019	PROSTATITIS NOS		65840	AMNIOTIC INFECTION-UNSP
6031	INFECTED HYDROCELE		65841	AMNIOTIC INFECTION-DELIV
6040	ORCHITIS WITH ABSCESS		65843	AMNIOTIC INFECT-ANTEPART
60490	ORCHITIS/EPIDIDYMIT NOS		67000	MAJ PUERP INF NOS-UNSP
60491	ORCHITIS IN OTH DISEASE		67002	MAJ PUER INF NOS-DEL P/P
6071	BALANOPOSTHITIS		67004	MAJOR PUERP INF NOS-P/P
6072	INFLAM DIS, PENIS NEC		67010	PUERP ENDOMETRITIS-UNSP
6080	SEMINAL VESICULITIS		67012	PUERP ENDOMET DEL W P/P
6084	MALE GEN INFLAM DIS NEC		67014	PUERP ENDOMET-POSTPART
6110	INFLAM DISEASE OF BREAST		67020	PUERPERAL SEPSIS-UNSP
6140	AC SALPINGO-OOPHORITIS		67022	PUERPRL SEPSIS-DEL W P/P
6141	CHR SALPINGO-OOPHORITIS		67024	PUERPERL SEPSIS-POSTPART
6142	SALPINGO-OOPHORITIS NOS		67030	PUERP SEPTC THROMB-UNSP
6143	ACUTE PARAMETRITIS		67032	PRP SPTC THRMB-DEL W P/P
6144	CHRONIC PARAMETRITIS		67034	PRP SEPTC THRMB-POSTPART
6145	AC PELV PERITONITIS-FEM		67080	MAJ PRP INFEC NEC-UNSPEC

67082	MAJ PRP INF NEC-DL W P/P		70707	*PRESSURE ULCER, HEEL*
67084	MAJ PUERP INFEC NEC-P/P		70709	*PRESSURE ULCER, SITE NEC*
67500	INFECT NIPPLE PREG-UNSP		70720	PRESSURE ULCER, STAGE NOS
67501	INFECT NIPPLE-DELIVERED		70722	PRESSURE ULCER, STAGE II
67502	INFECT NIPPLE-DEL W P/P		70723	PRESSURE ULCER, STAGE III
67503	INFECT NIPPLE-ANTEPARTUM		70724	PRESSURE ULCER, STAGE IV
67504	INFECT NIPPLE-POSTPARTUM		71100	PYOGEN ARTHRITIS-UNSPEC
67510	BREAST ABSCESS PREG-UNSP		71101	PYOGEN ARTHRITIS-SHLDER
67511	BREAST ABSCESS-DELIVERED		71102	PYOGEN ARTHRITIS-UP/ARM
67512	BREAST ABSCESS-DEL W P/P		71103	PYOGEN ARTHRITIS-FOREARM
67513	BREAST ABSCESS-ANTEPART		71104	PYOGEN ARTHRITIS-HAND
67514	BREAST ABSCESS-POSTPART		71105	PYOGEN ARTHRITIS-PELVIS
67580	BREAST INF PREG NEC-UNSP		71106	PYOGEN ARTHRITIS-L/LEG
67581	BREAST INFECT NEC-DELIV		71107	PYOGEN ARTHRITIS-ANKLE
67582	BREAST INF NEC-DEL W P/P		71108	PYOGEN ARTHRITIS NEC
67583	BREAST INF NEC-ANTEPART		71109	PYOGEN ARTHRITIS-MULT
67584	BREAST INF NEC-POSTPART		71190	INF ARTHRITIS NOS-UNSPEC
67590	BREAST INF PREG NOS-UNSP		71191	INF ARTHRITIS NOS-SHLDER
67591	BREAST INFECT NOS-DELIV		71192	INF ARTHRITIS NOS-UP/ARM
67592	BREAST INF NOS-DEL W P/P		71193	INF ARTHRIT NOS-FOREARM
67593	BREAST INF NOS-ANTEPART		71194	INF ARTHRIT NOS-HAND
67594	BREAST INF NOS-POSTPART		71195	INF ARTHRIT NOS-PELVIS
6800	CARBUNCLE OF FACE		71196	INF ARTHRIT NOS-L/LEG
6801	CARBUNCLE OF NECK		71197	INF ARTHRIT NOS-ANKLE
6802	CARBUNCLE OF TRUNK		71198	INF ARTHRIT NOS-OTH SITE
6803	CARBUNCLE OF ARM		71199	INF ARTHRITIS NOS-MULT
6804	CARBUNCLE OF HAND		7280	INFECTIVE MYOSITIS
6805	CARBUNCLE OF BUTTOCK		72886	NECROTIZING FASCIITIS
6806	CARBUNCLE OF LEG		73000	AC OSTEOMYELITIS-UNSPEC
6807	CARBUNCLE OF FOOT		73001	AC OSTEOMYELITIS-SHLDER
6808	CARBUNCLE, SITE NEC		73002	AC OSTEOMYELITIS-UP/ARM
6809	CARBUNCLE NOS		73003	AC OSTEOMYELITIS-FOREARM
68100	CELLULITIS, FINGER NOS		73004	AC OSTEOMYELITIS-HAND
68101	FELON		73005	AC OSTEOMYELITIS-PELVIS
68102	ONYCHIA OF FINGER		73006	AC OSTEOMYELITIS-L/LEG
68110	CELLULITIS, TOE NOS		73007	AC OSTEOMYELITIS-ANKLE
68111	ONYCHIA OF TOE		73008	AC OSTEOMYELITIS NEC
6819	CELLULITIS OF DIGIT NOS		73009	AC OSTEOMYELITIS-MULT
6820	CELLULITIS OF FACE		73010	CHR OSTEOMYELITIS-UNSP
6821	CELLULITIS OF NECK		73011	CHR OSTEOMYELIT-SHLDER
6822	CELLULITIS OF TRUNK		73012	CHR OSTEOMYELIT-UP/ARM
6823	CELLULITIS OF ARM		73013	CHR OSTEOMYELIT-FOREARM
6824	CELLULITIS OF HAND		73014	CHR OSTEOMYELIT-HAND
6825	CELLULITIS OF BUTTOCK		73015	CHR OSTEOMYELIT-PELVIS
6826	CELLULITIS OF LEG		73016	CHR OSTEOMYELIT-L/LEG
6827	CELLULITIS OF FOOT		73017	CHR OSTEOMYELIT-ANKLE
6828	CELLULITIS, SITE NEC		73018	CHR OSTEOMYELIT NEC
6829	CRLLULITIS NOS		73019	CHR OSTEOMYELIT-MULT
683	ACUTE LYMPHADENITIS		73020	OSTEOMYELITIS NOS-UNSPEC
684	IMPETIGO		73021	OSTEOMYELITIS NOS-SHLDER
68600	PYODERMA NOS		73022	OSTEOMYELITIS NOS-UP/ARM
68609	PYODERMA NEC		73023	OSTEOMYELIT NOS-FOREARM
6868	LOCAL SKIN INFECTION NEC		73024	OSTEOMYELITIS NOS-HAND
6869	LOCAL SKIN INFECTION NOS		73025	OSTEOMYELITIS NOS-PELVIS
69581	RITTER'S DISEASE		73026	OSTEOMYELITIS NOS-L/LEG
70700	*PRESSURE ULCER, SITE NOS*		73027	OSTEOMYELITIS NOS-ANKLE
70701	*PRESSURE ULCER, ELBOW*		73028	OSTEOMYELIT NOS-OTH SITE
70702	*PRESSURE ULCER, UPR BACK*		73029	OSTEOMYELITIS NOS-MULT
70703	*PRESSURE ULCER, LOW BACK*		73030	PERIOSTITIS-UNSPEC
70704	*PRESSURE ULCER, HIP*		73031	PERIOSTITIS-SHLDER
70705	*PRESSURE ULCER, BUTTOCK*		73032	PERIOSTITIS-UP/ARM
70706	*PRESSURE ULCER, ANKLE*		73033	PERIOSTITIS-FOREARM

73034	PERIOSTITIS-HAND	9125	INSECT BITE SHLD/ARM-INF
73035	PERIOSTITIS-PELVIS	9127	FB SHOULDER/ARM-INFECT
73036	PERIOSTITIS-L/LEG	9129	SUPERF INJ SHLDR NEC-INF
73037	PERIOSTITIS-ANKLE	9131	ABRASION FOREARM-INFECT
73038	PERIOSTITIS NEC	9133	BLISTER FOREARM-INFECTED
73039	PERIOSTITIS-MULT	9135	INSECT BITE FOREARM-INF
73080	BONE INFECT NEC-UNSPEC	9137	FOREIGN BODY FOREARM-INF
73081	BONE INFECT NEC-SHLDER	9139	SUPRF INJ FORARM NEC-INF
73082	BONE INFECT NEC-UP/ARM	9141	ABRASION HAND-INFECTED
73083	BONE INFECT NEC-FOREARM	9143	BLISTER HAND-INFECTED
73084	BONE INFECT NEC-HAND	9145	INSECT BITE HAND-INFECT
73085	BONE INFECT NEC-PELVIS	9147	FOREIGN BODY HAND-INFECT
73086	BONE INFECT NEC-L/LEG	9149	SUPERF INJ HAND NEC-INF
73087	BONE INFECT NEC-ANKLE	9151	ABRASION FINGER-INFECTED
73088	BONE INFECT NEC-OTH SITE	9153	BLISTER FINGER-INFECTED
73089	BONE INFECT NEC-MULT	9155	INSECT BITE FINGER-INFEC
73090	BONE INFEC NOS-UNSP SITE	9157	FOREIGN BODY FINGER-INF
73091	BONE INFECT NOS-SHLDER	9159	SUPRF INJ FINGER NEC-INF
73092	BONE INFECT NOS-UP/ARM	9161	ABRASION HIP/LEG-INFECT
73093	BONE INFECT NOS-FOREARM	9163	BLISTER HIP & LEG-INFECT
73094	BONE INFECT NOS-HAND	9165	INSECT BITE HIP/LEG-INF
73095	BONE INFECT NOS-PELVIS	9167	FOREIGN BDY HIP/LEG-INF
73096	BONE INFECT NOS-L/LEG	9169	SUPERF INJ LEG NEC-INFEC
73097	BONE INFECT NOS-ANKLE	9171	ABRASION FOOT/TOE-INFEC
73098	BONE INFECT NOS-OTH SITE	9173	BLISTER FOOT & TOE-INFEC
73099	BONE INFECT NOS-MULT	9175	INSECT BITE FOOT/TOE-INF
7713	TETANUS NEONATORUM	9177	FOREIGN BDY FOOT/TOE-INF
7714	OMPHALITIS OF NEWBORN	9179	SUPERF INJ FOOT NEC-INF
7715	NEONATAL INFEC MASTITIS	9191	ABRASION NEC-INFECTED
77181	NB SEPTICEMIA [SEPSIS]	9193	BLISTER NEC-INFECTED
77182	NB URINARY TRACT INFECTN	9195	INSECT BITE NEC-INFECTED
77183	BACTEREMIA OF NEWBORN	9197	SUPERFICIAL FB NEC-INFEC
77189	PERINATAL INFECTION NEC	9199	SUPERFIC INJ NEC-INFECT
7775	*NECROT ENTEROCOLITIS NB*	99590	SIRS, NOS
77750	NEC ENTEROCOLTIS NB NOS	99591	SEPSIS
77751	STG I NEC ENTEROCOL NB	99592	SEVERE SEPSIS
77752	STG II NEC ENTEROCOL NB	99660	REACTION-UNSP DEVIC/GRFT
77753	STG III NEC ENTEROCOL NB	99661	REACT-CARDIAC DEV/GRAFT
7854	GANGRENE	99662	REACT-OTH VASC DEV/GRAFT
78552	SEPTIC SHOCK	99663	REACT-NERV SYS DEV/GRAFT
7907	BACTEREMIA	99664	REACT-INDWELL URIN CATH
9101	ABRASION HEAD-INFECTED	99665	REACT-OTH GENITOURIN DEV
9103	BLISTER HEAD-INFECTED	99666	REACT-INTER JOINT PROST
9105	INSECT BITE HEAD-INFECT	99667	REACT-OTH INT ORTHO DEV
9107	FOREIGN BODY HEAD-INFECT	99669	REACT-INT PROS DEVIC NEC
9109	SUPERF INJ HEAD NEC-INF	99762	INFECTION AMPUTAT STUMP
9111	ABRASION TRUNK-INFECTED	99851	INFECTED POSTOP SEROMA
9113	BLISTER TRUNK-INFECTED	99859	OTHER POSTOP INFECTION
9115	INSECT BITE TRUNK-INFEC	*9993*	*INFEC COMPL MED CARE NEC*
9117	FOREIGN BODY TRUNK-INFEC	99931	OTH/UNS INF-CEN VEN CATH
9119	SUPERF INJ TRNK NEC-INF	99932	BLOOD INF DT CEN VEN CTH
9121	ABRASION SHLDR/ARM-INFEC	99933	LCL INF DT CEN VEN CTH
9123	BLISTER SHOULDER/ARM-INF	99934	AC INF FOL TRANS,INF BLD

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

Appendix I – Definitions of Neonate, Newborn, Normal Newborn, and Outborn

A neonate is defined as any discharge with either:

- age in days at admission between zero and 28 days (inclusive); or
- age in days missing and age in years equal to zero and either:
    - an admission type of newborn (SID ATYPE=4); or
    - with any-listed ICD-9-CM diagnosis codes for in-hospital live birth; or
    - with any-listed ICD-9-CM diagnosis codes for neonatal observation and evaluation

ICD-9-CM In-hospital live birth diagnosis codes:

V3000	SINGLE LB IN-HOSP W/O CS	V3401	OTH MULT LB-IN HOSP W CS
V3001	SINGLE LB IN-HOSP W CS	V3500	OTH MULT SB-HOSP W/O CS
V3100	TWIN-MATE LB-HOSP W/O CS	V3501	OTH MULT SB-IN HOSP W CS
V3101	TWIN-MATE LB-IN HOS W CS	V3600	MULT LB/SB-IN HOS W/O CS
V3200	TWIN-MATE SB-HOSP W/O CS	V3601	MULT LB/SB-IN HOSP W CS
V3201	TWIN-MATE SB-HOSP W CS	V3700	MULT BRTH NOS-HOS W/O CS
V3300	TWIN-NOS-IN HOSP W/O CS	V3701	MULT BIRTH NOS-HOSP W CS
V3301	TWIN-NOS-IN HOSP W CS	V3900	LIVEBORN NOS-HOSP W/O CS
V3400	OTH MULT LB-HOSP W/O CS	V3901	LIVEBORN NOS-HOSP W CS

ICD-9-CM Neonatal observation and evaluation diagnosis codes:

V290	NB OBSRV SUSPCT INFECT	V293	NB OBS GENETC/METABL CND
V291	NB OBSRV SUSPCT NEURLGCL	V298	NB OBSRV OTH SUSPCT COND
V292	OBSRV NB SUSPC RESP COND	V299	NB OBSRV UNSP SUSPCT CND

A newborn is defined as any discharge meeting the definition of "neonate" (see above) with either:

- any-listed ICD-9-CM code for in-hospital live birth (see above) and age in days equal to zero or missing; or
- an admission type of newborn (SID ATYPE=4) and age in days equal to zero without any-listed ICD-9-CM diagnosis codes for out-of-hospital live birth; or
- an admission type of newborn (SID ATYPE=4) with point of origin for born inside this hospital (POINTOFORIGINUB04 code =5)

ICD-9-CM Out-of-hospital live birth diagnosis codes:

V301	SINGL LIVEBRN-BEFORE ADM	V342	OTH MULTIPLE NB-NONHOSP
V302	SINGLE LIVEBORN-NONHOSP	V351	OTH MULT SB-BEFORE ADM
V311	TWIN, MATE LB-BEFORE ADM	V352	OTH MULTIPLE SB-NONHOSP
V312	TWIN, MATE LB-NONHOSP	V361	MULT NB/SB-BEFORE ADM
V321	TWIN, MATE SB-BEFORE ADM	V362	MULTIPLE NB/SB-NONHOSP
V322	TWIN, MATE SB-NONHOSP	V371	MULT BRTH NOS-BEFORE ADM
V331	TWIN NOS-BEFORE ADMISSN	V372	MULT BIRTH NOS-NONHOSP
V332	TWIN NOS-NONHOSP	V391	LIVEBORN NOS-BEFORE ADM
V341	OTH MULT NB-BEFORE ADM	V392	LIVEBORN NOS-NONHOSP

A normal newborn is defined as any discharge meeting the definition of "newborn" (see above) with a DRG code of 391 or a MS-DRG code 795.

An outborn is defined as any discharge meeting the definition of "neonate" (see above) that does not meet the definition of "newborn" (see above) with either:

- age in days less than 2 days and not missing; or
- an admission type of newborn (SID ATYPE=4) and age in days missing; or
- an admission type of newborn (SID ATYPE=4) and point of origin for born outside this hospital (POINTOFORIGINUB04 code =6)

Appendix J – Admission Codes for Transfers

SID ASOURCE Codes

2 - Another hospital
3 - Another facility, including long term care

POINTOFORIGINUB04 Codes

4 - Transfer from a hospital
5 - Transfer from a Skilled Nursing Facility (SNF) or Intermediate Care Facility (ICF)
6 - Transfer from another health care facility

If Admission Type is newborn (ATYPE=4), POINTOFORIGINUB04 codes are as follows:
5 - Born inside this hospital
6 - Born outside of this hospital

Appendix K – Stratification

The PDI module reports rates stratified by age and/or birth weight and, in some cases, by specified clinical strata. Refer to the individual Technical Specifications documents for indicator-specific stratification. The values of three variables related to age and weight are used to assign cases to stratification categories: Pediatric Age in Years, Age in Days, and Birth Weight.

Pediatric Age in Years

The values for Pediatric Age in Years include the following:
- 1 = Less than one (1) year
- 2 = 1 to 2 years
- 3 = 3 to 5 years
- 4 = 6 to 12 years
- 5 = 13 to 17 years

Age in Days

Age in Days is defined on patients whose age is less than one year. Possible values for this category are as follows:
- 0 = N/A
- 1 = 0 to 28 days
- 2 = 29 to 60 days
- 3 = 61 to 90 days
- 4 = 91 to 365 days

Birth Weight

Values assigned to Birth Weight categories are based on ICD-9-CM diagnosis codes that specify infant weight in grams. The values are as follows:
- 0 = N/A
- 1 = 0 to 499 g
- 2 = 500 to 999 g
- 3 = 1000 to 1499 g
- 4 = 1500 to 1999 g
- 5 = 2000 to 2500 g

Appendix L – Low Birth Weight Categories

ICD-9-CM Birth Weight Category 1 (less than 500 grams) diagnosis codes:

76401	LIGHT-FOR-DATES <500G	76501	EXTREME IMMATUR <500G
76411	LT-FOR-DATE W/MAL <500G	76511	PRETERM NEC <500G
76421	FETAL MALNUTRITION <500G	V2131	LOW BIRTHWT STATUS <500G
76491	FET GROWTH RETARD <500G		

ICD-9-CM Birth Weight Category 2 (500 to 749 grams) diagnosis codes:

76402	LT-FOR-DATES 500-749G	76492	FET GROWTH RET 500-749G
76412	LT-DATE W/MAL 500-749G	76502	EXTREME IMMATUR 500-749G
76422	FETAL MALNUTR 500-749G	76512	PRETERM NEC 500-749G

ICD-9-CM Birth Weight Category 3 (750 to 999 grams) diagnosis codes:

76403	LT-FOR-DATES 750-999G	76503	EXTREME IMMATUR 750-999G
76413	LT-DATE W/MAL 750-999G	76513	PRETERM NEC 750-999G
76423	FETAL MAL 750-999G	V2132	LOW BIRTHWT 500-999G
76493	FET GROWTH RET 750-999G		

ICD-9-CM Birth Weight Category 4 (1,000 to 1,249 grams) diagnosis codes:

76404	LT-FOR-DATES 1000-1249G	76494	FET GRWTH RET 1000-1249G
76414	LT-DATE W/MAL 1000-1249G	76504	EXTREME IMMAT 1000-1249G
76424	FETAL MAL 1000-1249G	76514	PRETERM NEC 1000-1249G

ICD-9-CM Birth Weight Category 5 (1,250 to 1,499 grams) diagnosis codes:

76405	LT-FOR-DATES 1250-1499G	76505	EXTREME IMMAT 1250-1499G
76415	LT-DATE W/MAL 1250-1499G	76515	PRETERM NEC 1250-1499G
76425	FETAL MAL 1250-1499G	V2133	LOW BIRTHWT 1000-1499G
76495	FET GRWTH RET 1250-1499G		

ICD-9-CM Birth Weight Category 6 (1,500 to 1,749 grams) diagnosis codes:

76406	LT-FOR-DATES 1500-1749G	76496	FET GRWTH RET 1500-1749G
76416	LT-DATE W/MAL 1500-1749G	76506	EXTREME IMMAT 1500-1749G
76426	FETAL MAL 1500-1749G	76516	PRETERM NEC 1500-1749G

ICD-9-CM Birth Weight Category 7 (1,750 to 1,999 grams) diagnosis codes:

76407	LT-FOR-DATES 1750-1999G	76507	EXTREME IMMAT 1750-1999G
76417	LT-DATE W/MAL 1750-1999G	76517	PRETERM NEC 1750-1999G
76427	FETAL MALNUTR 1750-1999G	V2134	LOW BIRTHWT 1500-1999G
76497	FET GRWTH RET 1750-1999G		

ICD-9-CM Birth Weight Category 8 (2,000 to 2,499 grams) diagnosis codes:

76408	LT-FOR-DATES 2000-2499G	76508	EXTREME IMMAT 2000-2499G
76418	LT-DATE W/MAL 2000-2499G	76518	PRETERM NEC 2000-2499G
76428	FETAL MALNUTR 2000-2499G	V2135	LOW BIRTHWT 2000-2500G
76498	FET GRWTH RET 2000-2499G		

ICD-9-CM Birth Weight Category 9 (≥ 2,500 grams) diagnosis codes:

76409	LT-FOR-DATES 2500+G	76499	FET GRWTH RET 2500+G
76419	LT-DATE W/MAL 2500+G	76509	EXTREME IMMAT 2500+G
76429	FETAL MALNUTR 2500+G	76519	PRETERM NEC 2500+G

AHRQ Quality Indicators[TM]

PEDIATRIC QUALITY INDICATORS (PDI) PARAMETER ESTIMATES
Version 4.5

Prepared for:

Agency for Healthcare Research and Quality
U.S. Department of Health and Human Services
540 Gaither Road
Rockville, MD 20850
http://www.qualityindicators.ahrq.gov

Contract No. HHSA290201200001C

Prepared by:

Battelle

505 King Avenue
Columbus, OH 43201

May 2013

Table of Contents

Executive Summary

This document provides statistical parameters associated with version 4.5 of Agency for Healthcare Research and Quality (AHRQ) Quality Indicators[TM] (QI) Pediatric Quality Indicators (PDI). The parameter estimates derived for the AHRQ QI are based on analysis of the 2010 Agency for Healthcare Research and Quality's Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID). HCUP is a family of health care databases and related software tools and products developed through a Federal-State-Industry partnership[1]. HCUP includes the largest collection of longitudinal hospital care data in the United States, with all-payer, encounter-level information beginning in 1988. The SID contain all-payer, encounter-level information on inpatient discharges, including clinical and resource information typically found on a billing record, such as patient demographics, up to 30 *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)* diagnoses and procedures, length of stay (LOS), expected payer, admission and discharge dates and discharge disposition. In 2010, the HCUP databases represent more than 95 percent of all annual discharges in the U.S.[2]

Two types of parameters are listed here. The majority of the document is devoted to listing covariates and coefficients for risk adjustment logistic regression models. The document also lists weights used to calculate the composite indicator, PDI #19.

The regression coefficients are used by the prediction module to calculate risk-adjusted rates that account for differences in patient populations across providers or across areas. Covariates that are considered as potential risk adjusters include gender and age, birth weight, congenital anomalies, Major Diagnostic Categories (MDC), Modified Diagnosis-Related Group (MDRG) categories, patient point-of-origin and whether they were transferred from another facility, and

---

[1] The AHRQ QI program would like to acknowledge the HCUP Partner organizations that participated in the HCUP SID: **Alaska** State Hospital and Nursing Home Association, **Arizona** Department of Health Services, **Arkansas** Department of Health, **California** Office of Statewide Health Planning and Development, **Colorado** Hospital Association, **Connecticut** Hospital Association, **Florida** Agency for Health Care Administration, **Georgia** Hospital Association, **Hawaii** Health Information Corporation, **Illinois** Department of Public Health, **Indiana** Hospital Association, **Iowa** Hospital Association, **Kansas** Hospital Association, **Kentucky** Cabinet for Health and Family Services, **Louisiana** Department of Health and Hospitals, **Maine** Health Data Organization, **Maryland** Health Services Cost Review Commission, **Massachusetts** Center for Health Information and Analysis, **Michigan** Health & Hospital Association, **Minnesota** Hospital Association (provides data for Minnesota and North Dakota), **Mississippi** Department of Health, **Missouri** Hospital Industry Data Institute, **Montana** MHA - An Association of Montana Health Care Providers, **Nebraska** Hospital Association, **Nevada** Department of Health and Human Services, **New Hampshire** Department of Health & Human Services, **New Jersey** Department of Health, **New Mexico** Department of Health, **New York** State Department of Health, **North Carolina** Department of Health and Human Services, **North Dakota** (data provided by the Minnesota Hospital Association), **Ohio** Hospital Association, **Oklahoma** State Department of Health, **Oregon** Association of Hospitals and Health Systems, **Oregon** Health Policy and Research, **Pennsylvania** Health Care Cost Containment Council, **Rhode Island** Department of Health, **South Carolina** Budget & Control Board, **South Dakota** Association of Healthcare Organizations, **Tennessee** Hospital Association, **Texas** Department of State Health Services, **Utah** Department of Health, **Vermont** Association of Hospitals and Health Systems, **Virginia** Health Information, **Washington** State Department of Health, **West Virginia** Health Care Authority, **Wisconsin** Department of Health Services, **Wyoming** Hospital Association

[2] The states included in the analysis are Alaska, Arkansas, Arizona, California, Colorado, Connecticut, Florida, Georgia, Hawaii, Iowa, Illinois, Indiana, Kansas, Kentucky, Louisiana, Massachusetts, Maryland, Maine, Michigan, Minnesota, Missouri, Montana, North Carolina, Nebraska, New Jersey, New Mexico, Nevada, New York, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Vermont, Washington, Wisconsin, West Virginia, and Wyoming.

some indicator specific categories. Descriptions of some variable categories are provided in the Appendix tables at the end of the document. Every covariate in every model is a binary indicator variable, coded using 0 or 1. The AHRQ QI software user does not need to manipulate or adjust these coefficients; rather this document is intended to make it transparent to the user how the risk adjusted QI rates are calculated.

The document provides a risk adjustment coefficient table for each risk-adjusted PDI, with the exception of PDI #11 Postoperative Wound Dehiscense Rate. Certain indicators (such as PDI #11 Postoperative Wound Dehiscence Rate) are not risk-adjusted because materially important risk factors (e.g., post-operative coughing) are not available in the Healthcare Cost and Utilization Project (HCUP) State Inpatient Database (SID).

Several PDI have populations at risk that are complex, and are therefore stratified in a manner described in the technical specifications so analysts may examine observed rates for each stratum. Categorical variables are used to identify the strata. Whereas the risk adjustment models in some of the other AHRQ QI modules fit individual models for individual QI strata, which results in stratum-specific coefficients for each variable in the models, the PDI module includes at most one risk adjustment model per QI, pooling the data across strata to fit coefficients on the covariates, and using binary indicator covariates to fit a separate regression intercept for each stratum. The variables that identify the strata, and whose coefficients are used to calculate the stratum-specific intercepts, are described in Table A.6.

Additional information on the risk adjustment process and composite indicators maybe found in *Quality Indicator Empirical Methods*, available on the AHRQ QI$^{\text{TM}}$ website. (http://www.qualityindicators.ahrq.gov/modules/Default.aspx)

Table 1. Risk Adjustment Coefficients for NQI #2 Neonatal Mortality Rate

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	-6.5954	0.1772	1385.97	< 0.0001
SEX	Female	1	-0.4015	0.0245	268.07	< 0.0001
BIRTH WEIGHT	2500+	1	0.9675	0.0540	320.94	< 0.0001
BIRTH WEIGHT	2000 to 2499	1	1.1441	0.0530	465.17	< 0.0001
BIRTH WEIGHT	1750 to 1999	1	1.7939	0.0706	646.36	< 0.0001
BIRTH WEIGHT	1500 to 1749	1	2.3595	0.0675	1220.36	< 0.0001
BIRTH WEIGHT	1250 to 1499	1	2.6971	0.0673	1604.82	< 0.0001
BIRTH WEIGHT	1000 to 1249	1	3.5560	0.0559	4048.91	< 0.0001
BIRTH WEIGHT	750 to 999	1	4.6778	0.0452	10704.74	< 0.0001
BIRTH WEIGHT	<500 to 749	1	6.8426	0.0328	43574.23	< 0.0001
MDRG	416	1	4.1740	0.3068	185.10	< 0.0001
MDRG	505	1	-0.2257	0.2162	1.09	0.2966
MDRG	508	1	-0.4005	0.2429	2.72	0.0992
MDC	1	1	0.4161	0.2504	2.76	0.0965
MDC	4	1	2.3425	0.2343	99.97	< 0.0001
MDC	5	1	1.6794	0.1957	73.63	< 0.0001
MDC	6	1	-0.7176	0.2317	9.59	0.002
MDC	15	1	-0.7767	0.1726	20.24	< 0.0001
MDC	OTHER	1	-0.1243	0.2113	0.35	0.5564
CONGCAT	1	1	2.3713	0.0695	1165.32	< 0.0001
CONGCAT	2	1	3.7784	0.0589	4109.51	< 0.0001
CONGCAT	3	1	2.2168	0.0712	968.10	< 0.0001
CONGCAT	4	1	1.5146	0.0837	327.09	< 0.0001
CONGCAT	5	1	3.3051	0.0640	2667.03	< 0.0001
CONGCAT	6	1	5.2260	0.1645	1009.81	< 0.0001

(CONTINUED)

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
CONGCAT	7	1	3.5855	0.0935	1470.25	< 0.0001
CONGCAT	8	1	2.6276	0.0793	1098.04	< 0.0001
TRNSFER	Transfer-in	1	0.8353	0.0445	352.95	< 0.0001
NOPOUB04	UB-04 Point-of-Origin Data Not Available	1	-0.0869	0.0308	7.94	0.0048
NOPRDAY	Procedure Days Data Not Available	1	0.5911	0.0268	487.24	< 0.0001

c-statistic = 0.919

Table 2. Risk Adjustment Coefficients for NQI #3 Neonatal Blood Stream Infection Rate

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	-4.4321	0.1000	1965.16	< 0.0001
BIRTH WEIGHT	1000 to 2499	1	0.1747	0.0963	3.29	0.0695
BIRTH WEIGHT	750 to 999	1	1.5000	0.1050	204.23	< 0.0001
BIRTH WEIGHT	<500 to 749	1	1.9451	0.1150	286.26	< 0.0001
MDRG	1501	1	0.0090	0.0865	0.01	0.9174
CONGCAT	1	1	0.6589	0.1041	40.04	< 0.0001
CONGCAT	5	1	0.4945	0.1552	10.15	0.0014
CONGCAT	8	1	-0.1343	0.2044	0.43	0.5112
TRNSFER	Transfer-in	1	-0.0333	0.1072	0.10	0.7560
NOPOUB04	UB-04 Point-of-Origin Data Not Available	1	0.0369	0.1095	0.11	0.7360

c-statistic = 0.626

Table 3. Risk Adjustment Coefficients for PDI #1 Accidental Puncture or Laceration Rate

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	-9.7041	0.2355	1697.40	< 0.0001
MDC	5	1	-1.0631	0.1103	92.85	< 0.0001
MDC	6	1	-0.5362	0.1012	28.07	< 0.0001
MDC	8	1	-2.8787	0.1483	377.01	< 0.0001
MDC	11	1	-1.3590	0.1472	85.28	< 0.0001
MDC	15	1	-1.4487	0.1144	160.46	< 0.0001
MDC	OTHER	1	-1.8279	0.1042	307.79	< 0.0001
HPPD01	2	1	2.1627	0.2363	83.74	< 0.0001
HPPD01	3	1	3.7524	0.2399	244.74	< 0.0001
HPPD01	4 to 5	1	5.0460	0.2478	414.64	< 0.0001
HPPD01	6	1	6.2727	0.2324	728.74	< 0.0001
HPPD01	7	1	6.9796	0.2276	940.76	< 0.0001

c-statistic = 0.949

Table 4. Risk Adjustment Coefficients for PDI #2 Pressure Ulcer Rate

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	-11.3641	0.5421	439.50	< 0.0001
PAGECAT	13 to 17	1	1.0873	0.4049	7.21	0.0073
PAGECAT	6 to 12	1	0.6175	0.3920	2.48	0.1152
MDC	1	1	0.2834	0.2700	1.10	0.2939
GPPD02	2	1	4.2160	0.4781	77.75	< 0.0001

c-statistic = 0.895

Table 5. Risk Adjustment Coefficients for PDI #5 Iatrogenic Pneumothorax Rate

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	-9.2459	0.1095	7134.96	< 0.0001
PAGECAT	13 to 17	1	0.9421	0.1371	47.24	< 0.0001
PAGECAT	1 to 12	1	0.5507	0.1218	20.43	< 0.0001

c-statistic = 0.548

Table 6. Risk Adjustment Coefficients for PDI #6 RACHS-1 Pediatric Heart Surgery Mortality Rate

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	-4.4761	0.1400	1022.56	< 0.0001
AGEDCAT	91+	1	0.8117	0.1493	29.54	< 0.0001
AGEDCAT	29 to 90	1	0.9159	0.1594	33.03	< 0.0001
AGEDCAT	0 to 28	1	2.0274	0.1472	189.76	< 0.0001
BWHTCAT	<500 to 2499	1	0.1695	0.1258	1.82	0.1778
CCS	217	1	0.3430	0.0852	16.21	0.0001
TRNSFER	Transfer-in	1	0.0062	0.1108	0.00	0.9556
HPPD06	2	1	-0.8451	0.1270	44.27	< 0.0001
HPPD06	3	1	0.0068	0.1310	0.00	0.9588
HPPD06	4	1	0.1455	0.1248	1.36	0.2439
HPPD06	5 to 6	1	0.9059	0.1722	27.66	< 0.0001
RACHS-1	Multiple	1	0.5337	0.0958	31.03	< 0.0001

c-statistic = 0.784

Table 7. Risk Adjustment Coefficients for PDI #8 Perioperative Hemorrhage or Hematoma Rate

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	-5.9179	0.0867	4662.76	< 0.0001
MDC	5	1	2.0937	0.1229	290.33	< 0.0001

c-statistic = 0.629

Table 8. Risk Adjustment Coefficients for PDI #9 Postoperative Respiratory Failure Rate

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	-3.8917	0.1484	687.92	< 0.0001
PAGECAT	13 to 17	1	-1.9002	0.1633	135.38	< 0.0001
PAGECAT	6 to 12	1	-1.5944	0.1634	95.24	< 0.0001
PAGECAT	3 to 5	1	-1.4687	0.1717	73.18	< 0.0001
PAGECAT	1 to 2	1	-1.1091	0.1609	47.49	< 0.0001
AGEDCAT	29 to 91+	1	-0.8010	0.1509	28.17	< 0.0001
MDRG	802	1	1.0791	0.1493	52.25	< 0.0001
MDC	1	1	0.3377	0.1066	10.04	0.0015
CCS	52	1	1.1102	0.1299	73.06	< 0.0001
CCS	58	1	0.8563	0.0928	85.06	< 0.0001
CCS	82	1	0.7288	0.1241	34.50	< 0.0001
CCS	95	1	0.6301	0.0988	40.70	< 0.0001
CCS	133	1	1.1227	0.1439	60.91	< 0.0001
CCS	217	1	0.5506	0.0860	41.00	< 0.0001
CCS	224	1	0.8335	0.1477	31.86	< 0.0001
TRNSFER	Transfer-in	1	1.6088	0.3127	26.47	< 0.0001

c-statistic = 0.765

Table 9. Risk Adjustment Coefficients for PDI #10 Postoperative Sepsis Rate

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	-4.6208	0.1343	1184.41	< 0.0001
PAGECAT	13 to 17	1	-0.7263	0.0756	92.27	< 0.0001
PAGECAT	6 to 12	1	-0.8626	0.0869	98.54	< 0.0001
PAGECAT	3 to 5	1	-0.6527	0.1134	33.11	< 0.0001
CCS	62	1	0.9431	0.1274	54.77	< 0.0001
CCS	83	1	0.5239	0.1046	25.11	< 0.0001
CCS	108	1	0.7506	0.1114	45.43	< 0.0001
CCS	151	1	0.6228	0.1290	23.31	< 0.0001
CCS	213	1	0.6329	0.0971	42.50	< 0.0001
TRNSFER	Transfer-in	1	0.4982	0.0854	34.05	< 0.0001
GPPD10	2 to 3	1	0.2611	0.1251	4.35	0.0369
GPPD10	4 to 5	1	0.7768	0.1316	34.84	< 0.0001
HPPD10	2 to 3	1	1.4073	0.0767	336.98	< 0.0001

c-statistic = 0.758

Table 10. Risk Adjustment Coefficients for PDI #12 Central Venous Catheter-Related Blood Stream Infection Rate

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	-7.1408	0.0726	9678.83	< 0.0001
PAGECAT	13 to 17	1	-0.7535	0.0954	62.39	< 0.0001
PAGECAT	6 to 12	1	-0.6861	0.0932	54.17	< 0.0001
PAGECAT	3 to 5	1	-0.4624	0.0982	22.19	< 0.0001
PAGECAT	1 to 2	1	-0.0751	0.0860	0.76	0.3825
BIRTH WEIGHT	1000 to 1249	1	2.0378	0.1384	216.92	< 0.0001
BIRTH WEIGHT	750 to 999	1	2.3797	0.1193	398.01	< 0.0001
BIRTH WEIGHT	<500 to 749	1	2.7759	0.1213	524.02	< 0.0001
MDRG	416	1	0.6588	0.1416	21.64	< 0.0001
MDRG	602	1	1.3831	0.1398	97.85	< 0.0001
MDRG	1711	1	1.2589	0.1478	72.51	< 0.0001
MDRG	7705	1	2.4387	0.1226	395.43	< 0.0001
MDC	5	1	0.4025	0.1025	15.42	0.0001
MDC	7	1	0.8861	0.1359	42.54	< 0.0001
MDC	10	1	0.2287	0.1505	2.31	0.1287
MDC	15	1	-1.1323	0.0853	176.26	< 0.0001
MDC	16	1	-0.0408	0.1356	0.09	0.7635
CCS	39	1	0.7694	0.1058	52.89	< 0.0001
CCS	52	1	0.3238	0.0926	12.23	0.0005
CCS	58	1	0.4406	0.0688	41.04	< 0.0001
CCS	63	1	-0.6275	0.1431	19.23	< 0.0001
CCS	81	1	0.2822	0.1449	3.79	0.0515
CCS	82	1	0.5089	0.1438	12.53	0.0004
CCS	83	1	0.3794	0.1125	11.38	0.0007
CCS	103	1	0.6020	0.1459	17.02	< 0.0001

(CONTINUED)

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
CCS	138	1	0.1575	0.0827	3.63	0.0568
CCS	151	1	0.4509	0.1024	19.38	< 0.0001
CCS	213	1	1.0672	0.0679	246.79	< 0.0001
CCS	214	1	0.8629	0.1025	70.85	< 0.0001
CCS	217	1	0.1728	0.0765	5.11	0.0238
TRNSFER	Transfer-in	1	0.7140	0.0610	137.23	< 0.0001
NOPOUB04	UB-04 Point-of-Origin Data Not Available	1	0.4010	0.0499	64.46	< 0.0001
NOPRDAY	Procedure Days Data Not Available	1	-2.5682	0.1188	467.11	< 0.0001
GPPD12	2	1	0.8288	0.1542	28.87	< 0.0001
GPPD12	3	1	1.9160	0.0665	830.40	< 0.0001

c-statistic = 0.926

Table 11. Risk Adjustment Coefficients for PDI #14 Asthma Admission Rate

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	-5.6860	0.0070	648244.7	< 0.0001
SEX	Female	1	-0.5190	0.0117	1963.33	< 0.0001
AGE2	Male, Age 5-9	1	-0.6460	0.0103	3928.66	< 0.0001
AGE3	Male, Age 10-14	1	-1.3880	0.0129	11607.62	< 0.0001
AGE4	Male, Age 15-17	1	-2.2890	0.0223	10539.28	< 0.0001
AGE2	Female, Age 5-9	1	0.0688	0.0169	16.59	< 0.0001
AGE3	Female, Age 10-14	1	0.1499	0.0207	52.36	< 0.0001
AGE4	Female, Age 15-17	1	0.6621	0.0315	441.42	< 0.0001

c-statistic = 0.608

Table 12. Risk Adjustment Coefficients for PDI #15 Diabetes Short-Term Complications Admission Rate

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	-7.9890	0.0213	140774.1	< 0.0001
SEX	Female	1	0.2553	0.0287	79.13	< 0.0001
AGE2	Male, Age 5-9	1	-1.1200	0.0398	792.94	< 0.0001
AGE3	Male, Age 10-14	1	-0.2230	0.0286	61.29	< 0.0001
AGE2	Female, Age 5-9	1	-0.0190	0.0537	0.13	0.7169
AGE3	Female, Age 10-14	1	-0.0850	0.0388	4.82	0.0281

c-statistic: Measures of association between the observed and predicted values were not calculated because the predicted probabilities are indistinguishable when they are classified into intervals of length 0.002.

Table 13. Risk Adjustment Coefficients for PDI #16 Gastroenteritis Admission Rate

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	-6.3580	0.0078	657889.9	< 0.0001
SEX	Female	1	-0.1310	0.0116	129.07	< 0.0001
AGE2	Male, Age 5-9	1	-1.2780	0.0164	6084.53	< 0.0001
AGE3	Male, Age 10-14	1	-2.0250	0.0222	8358.40	< 0.0001
AGE4	Male, Age 15-17	1	-2.0990	0.0280	5612.87	< 0.0001
AGE2	Female, Age 5-9	1	0.0060	0.0242	0.06	0.8037
AGE3	Female, Age 10-14	1	0.0988	0.0321	9.50	0.0021
AGE4	Female, Age 15-17	1	0.3906	0.0380	105.45	< 0.0001

c-statistic: Measures of association between the observed and predicted values were not calculated because the predicted probabilities are indistinguishable when they are classified into intervals of length 0.002.

Table 14. Risk Adjustment Coefficients for PDI #17 Perforated Appendix Admission Rate

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	0.4560	0.0452	101.54	< 0.0001
SEX	Female	1	0.1669	0.0685	5.94	0.0148
AGE2	Male, Age 5-9	1	-1.0660	0.0496	461.68	< 0.0001
AGE3	Male, Age 10-14	1	-1.3630	0.0483	795.71	< 0.0001
AGE4	Male, Age 15-17	1	-1.6130	0.0505	1020.68	< 0.0001
AGE2	Female, Age 5-9	1	-0.0570	0.0755	0.59	0.4431
AGE3	Female, Age 10-14	1	-0.1620	0.0738	4.84	0.0278
AGE4	Female, Age 15-17	1	-0.5400	0.0782	47.89	< 0.0001

c-statistic = 0.609

Table 15. Risk Adjustment Coefficients for PDI #18 Urinary Tract Infection Admission Rate

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	-7.9860	0.0177	204273.7	< 0.0001
SEX	Female	1	1.2556	0.0201	3889.73	< 0.0001
AGE2	Male, Age 5-9	1	-1.5760	0.0416	1434.33	< 0.0001
AGE3	Male, Age 10-14	1	-1.8940	0.0472	1608.92	< 0.0001
AGE4	Male, Age 15-17	1	-1.8780	0.0572	1079.69	< 0.0001
AGE2	Female, Age 5-9	1	0.6258	0.0453	190.85	< 0.0001
AGE3	Female, Age 10-14	1	0.1716	0.0530	10.49	0.0012
AGE4	Female, Age 15-17	1	1.3422	0.0600	501.11	< 0.0001

c-statistic: Measures of association between the observed and predicted values were not calculated because the predicted probabilities are indistinguishable when they are classified into intervals of length 0.002.

Table 16. Risk Adjustment Coefficients for PQI #9 Low Birth Weight Rate

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	-2.7589	0.003	797816	< 0.0001
SEX	Female	1	0.0986	0.0043	519.667	< 0.0001

c-statistic = 0.512

Table 17. Risk Adjustment Coefficients for PDI #90 Pediatric Quality Overall Composite§

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	-6.9610	0.0127	298370.3	< 0.0001
SEX	Female	1	0.6470	0.0159	1660.08	< 0.0001
AGE2	Male, Age 5-9	1	0.8574	0.0148	3362.92	< 0.0001
AGE3	Male, Age 10-14	1	0.3890	0.0153	649.81	< 0.0001
AGE2	Female, Age 5-9	1	-0.7610	0.0193	1551.48	< 0.0001
AGE3	Female, Age 10-14	1	-0.6880	0.0200	1185.17	< 0.0001

c-statistic = 0.532

---

§ This PDI composite includes PDIs #14, #15, #16, and 18. For more information see *Quality Indicator User Guide: Pediatric Quality Indicators (PDI) Composite Measures*.

Table 18. Risk Adjustment Coefficients for PDI #91 Pediatric Quality Acute Composite[**]

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	-8.2380	0.0241	116715.1	< 0.0001
SEX	Female	1	1.3036	0.0274	2271.62	< 0.0001
AGE2	Male, Age 5-9	1	0.6280	0.0289	473.00	< 0.0001
AGE3	Male, Age 10-14	1	0.0571	0.0305	3.49	0.0617
AGE2	Female, Age 5-9	1	-0.8190	0.0341	578.17	< 0.0001
AGE3	Female, Age 10-14	1	-0.8630	0.0365	558.62	< 0.0001

c-statistic: Measures of association between the observed and predicted values were not calculated because the predicted probabilities are indistinguishable when they are classified into intervals of length 0.002.

[**] This PDI composite includes PDIs #16 and #18. For more information see *Quality Indicator User Guide: Pediatric Quality Indicators (PDI) Composite Measures*.

Table 19. Risk Adjustment Coefficients for PDI #92 Pediatric Quality Chronic Composite[††]

PARAMETER	LABEL	DF	ESTIMATE	STANDARD ERROR	WALD CHI-SQUARE	PR > CHI-SQUARE
INTERCEPT		1	-7.2890	0.0150	235845.3	< 0.0001
SEX	Female	1	0.2007	0.0205	96.02	< 0.0001
AGE2	Male, Age 5-9	1	0.9333	0.0172	2928.18	< 0.0001
AGE3	Male, Age 10-14	1	0.4927	0.0177	774.66	< 0.0001
AGE2	Female, Age 5-9	1	-0.5810	0.0245	562.83	< 0.0001
AGE3	Female, Age 10-14	1	-0.4090	0.0249	270.41	< 0.0001

c-statistic: Measures of association between the observed and predicted values were not calculated because the predicted probabilities are indistinguishable when they are classified into intervals of length 0.002.

[††] This PDI composite includes PDIs #14 and #15. For more information see *Quality Indicator User Guide: Pediatric Quality Indicators (PDI) Composite Measures*.

Composite Weights for PDI #19

Users must use these "NQF Numerator Weights" when using the AHRQ QI software to compute the provider-level composite measure using their own data and when comparing the results of the software with the results reported under the Hospital Inpatient Quality Reporting (IQR) program. Table 3 provides the NQF weights for this composite measure. The sum of the weights for the indicators included in the same composite always equals one.

Note that the weight for some of the component indicators is zero. The reason is that the composite measures developed in the AHRQ workgroup final reports included all of the relevant indicators regardless whether the indicator was endorsed by NQF. However, the evaluation criteria applied by NQF required that the components of a composite be either NQF endorsed as individual measures or determined to have met the criteria for endorsement of an individual measure. In the version of the AHRQ QI composite measures submitted to NQF, component indicators that did not meet these criteria were assigned a weight of zero. This method is simply a way of operationalizing the concept that the NQF-endorsed composites do not include component indicators that were judged by the NQF not to meet the criteria for stand-alone endorsement.

Table 20. NQF Numerator Weights for PDI #19

INDICATOR	WEIGHT USEPOA = 0[1]	WEIGHT USEPOA = 1[1]
PDI #1 Accidental Puncture or Laceration Rate	0.2721	0.3119
PDI #2 Pressure Ulcer Rate	0.0317	0.0100
PDI #5 Iatrogenic Pneumothorax Rate	0.0678	0.0701
PDI #8 Perioperative Hemorrhage or Hematoma Rate[2]	0.0000	0.0000
PDI #9 Postoperative Respiratory Failure Rate[2]	0.0000	0.0000
PDI #10 Postoperative Sepsis Rate	0.2609	0.2655
PDI #11 Postoperative Wound Dehiscence Rate	0.0094	0.0121
PDI #12 Central Venous Catheter-Related Blood Stream Infection Rate	0.3581	0.3304
SUM	1.0000	1.0000

[1] The use of present on admission (POA) results in different weights for the composite. Without POA data, USEPOA = 0; With POA, USEPOA = 1.

[2] These weights are set to zero because these measures are not included in the NQF Endorsed Composite.

Table A.1. Population Age and Birth Weight Categories

AGE IN YEARS CATEGORIES (PAGECAT)	
5	13 to 17 years
4	6 to 12 years
3	3 to 5 years
2	1 to 2 years
1	< 1 year
AGE IN DAYS CATEGORIES (AGEDCAT)	
4	91+ days
3	61 to 90 days
2	29 to 60 days
1	< 29 days
BIRTH WEIGHT CATEGORIES (BWHTCAT)	
9	2500+ grams
8	2000-2499 grams
7	1750-1999 grams
6	1500-1749 grams
5	1250-1499 grams
4	1000-1249 grams
3	750-999 grams
2	500-749 grams
1	<500 grams

Table A.2. Modified Diagnosis-Related Group (MDRG) Categories

Column Headings
MDC – Major Diagnostic Category
M/S – Medical / Surgical DRG Indicator
MDRG – Modified DRG
CMS-DRG – Diagnosis-Related Group (DRG) Version 24 and earlier
MS-DRG – Diagnosis-Related Group (DRG) Version 25 and later

The modified DRG (MDRG) pools individual CMS-DRGs and MS-DRGs into a larger category. The MDRG is a four digit code. The first two digits are the MDC, and the second two digits are a sequence number (e.g., 01-04) within MDC. CMS-DRGs that are divided into separate CMS-DRGs due to the presence of complications and comorbidities (CC) are pooled into a single MDRG. MS-DRGs that are divided into separate MS-DRGs due to the presence of CC and Major CC (MCC) are pooled into a single MDRG. The CMS crosswalk was used to pool CMS-DRGs and MS-DRGs into a single MDRG.

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
01	S	0101	528	INTRACRANIAL VASCULAR PROC W PDX HEMORRHAGE	020	INTRACRANIAL VASCULAR PROCEDURES W PDX HEMORRHAGE W MCC
01	S	0101	528	INTRACRANIAL VASCULAR PROC W PDX HEMORRHAGE	021	INTRACRANIAL VASCULAR PROCEDURES W PDX HEMORRHAGE W CC
01	S	0101	528	INTRACRANIAL VASCULAR PROC W PDX HEMORRHAGE	022	INTRACRANIAL VASCULAR PROCEDURES W PDX HEMORRHAGE W/O CC/MCC
01	S	0102	543	CRANIOTOMY W MAJOR DEVICE IMPLANT OR ACUTE COMPLEX CNS PRINCIPAL DIAGNOSIS	023	CRANIO W MAJOR DEV IMPL/ACUTE COMPLEX CNS PDX W MCC OR CHEMO IMPLANT
01	S	0102	543	CRANIOTOMY W MAJOR DEVICE IMPLANT OR ACUTE COMPLEX CNS PRINCIPAL DIAGNOSIS	024	CRANIO W MAJOR DEV IMPL/ACUTE COMPLEX CNS PDX W/O MCC
01	S	0103	001	CRANIOTOMY AGE >17 W CC	025	CRANIOTOMY & ENDOVASCULAR INTRACRANIAL PROCEDURES W MCC
01	S	0103	002	CRANIOTOMY AGE >17 W/O CC	026	CRANIOTOMY & ENDOVASCULAR INTRACRANIAL PROCEDURES W CC
01	S	0103	003	CRANIOTOMY AGE 0-17	027	CRANIOTOMY & ENDOVASCULAR INTRACRANIAL PROCEDURES W/O CC/MCC
01	S	0104	531	SPINAL PROCEDURES W CC	028	SPINAL PROCEDURES W MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
01	S	0104	532	SPINAL PROCEDURES W/O CC	029	SPINAL PROCEDURES W CC OR SPINAL NEUROSTIMULATORS
01	S	0104	532	SPINAL PROCEDURES W/O CC	030	SPINAL PROCEDURES W/O CC/MCC
01	S	0104	004	SPINAL PROCEDURES (NO LONGER VALID)		
01	S	0105	529	VENTRICULAR SHUNT PROCEDURES W CC	031	VENTRICULAR SHUNT PROCEDURES W MCC
01	S	0105	530	VENTRICULAR SHUNT PROCEDURES W/O CC	032	VENTRICULAR SHUNT PROCEDURES W CC
01	S	0105	530	VENTRICULAR SHUNT PROCEDURES W/O CC	033	VENTRICULAR SHUNT PROCEDURES W/O CC/MCC
01	S	0106	577	CAROTID ARTERY STENT PROCEDURE	034	CAROTID ARTERY STENT PROCEDURE W MCC
01	S	0106	577	CAROTID ARTERY STENT PROCEDURE	035	CAROTID ARTERY STENT PROCEDURE W CC
01	S	0106	577	CAROTID ARTERY STENT PROCEDURE	036	CAROTID ARTERY STENT PROCEDURE W/O CC/MCC
01	S	0107	533	EXTRACRANIAL PROCEDURES W CC	037	EXTRACRANIAL PROCEDURES W MCC
01	S	0107	534	EXTRACRANIAL PROCEDURES W/O CC	038	EXTRACRANIAL PROCEDURES W CC
01	S	0107	534	EXTRACRANIAL PROCEDURES W/O CC	039	EXTRACRANIAL PROCEDURES W/O CC/MCC
01	S	0107	005	EXTRACRANIAL PROCEDURES (NO LONGER VALID)		
01	S	0108	006	CARPAL TUNNEL RELEASE	040	PERIPH & CRANIAL NERVE & OTHER NERV SYST PROC W MCC
01	S	0108	007	PERIPH & CRANIAL NERVE & OTHER NERV SYST PROC W CC	041	PERIPH/CRANIAL NERVE & OTHER NERV SYST PROC W CC OR PERIPH NEUROSTIM
01	S	0108	008	PERIPH & CRANIAL NERVE & OTHER NERV SYST PROC W/O CC	042	PERIPH & CRANIAL NERVE & OTHER NERV SYST PROC W/O CC/MCC
01	M	0109	009	SPINAL DISORDERS & INJURIES	052	SPINAL DISORDERS & INJURIES W CC/MCC
01	M	0109	009	SPINAL DISORDERS & INJURIES	053	SPINAL DISORDERS & INJURIES W/O CC/MCC
01	M	0110	010	NERVOUS SYSTEM NEOPLASMS W CC	054	NERVOUS SYSTEM NEOPLASMS W MCC
01	M	0110	011	NERVOUS SYSTEM NEOPLASMS W/O CC	055	NERVOUS SYSTEM NEOPLASMS W/O MCC
01	M	0111	012	DEGENERATIVE NERVOUS SYSTEM DISORDERS	056	DEGENERATIVE NERVOUS SYSTEM DISORDERS W MCC
01	M	0111	012	DEGENERATIVE NERVOUS SYSTEM DISORDERS	057	DEGENERATIVE NERVOUS SYSTEM DISORDERS W/O MCC
01	M	0112	013	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA	058	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
01	M	0112	013	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA	059	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W CC
01	M	0112	013	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA	060	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W/O CC/MCC
01	M	0113	559	ACUTE ISCHEMIC STROKE WITH USE OF THROMBOLYTIC AGENT	061	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W MCC
01	M	0113	559	ACUTE ISCHEMIC STROKE WITH USE OF THROMBOLYTIC AGENT	062	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W CC
01	M	0113	559	ACUTE ISCHEMIC STROKE WITH USE OF THROMBOLYTIC AGENT	063	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W/O CC/MCC
01	M	0114	014	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION	064	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W MCC
01	M	0114	014	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION	065	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W CC
01	M	0114	014	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION	066	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W/O CC/MCC
01	M	0115	015	NONSPECIFIC CVA & PRECEREBRAL OCCLUSION W/O INFARCT	067	NONSPECIFIC CVA & PRECEREBRAL OCCLUSION W/O INFARCT W MCC
01	M	0115	015	NONSPECIFIC CVA & PRECEREBRAL OCCLUSION W/O INFARCT	068	NONSPECIFIC CVA & PRECEREBRAL OCCLUSION W/O INFARCT W/O MCC
01	M	0116	524	TRANSIENT ISCHEMIA	069	TRANSIENT ISCHEMIA
01	M	0117	016	NONSPECIFIC CEREBROVASCULAR DISORDERS W CC	070	NONSPECIFIC CEREBROVASCULAR DISORDERS W MCC
01	M	0117	017	NONSPECIFIC CEREBROVASCULAR DISORDERS W/O CC	071	NONSPECIFIC CEREBROVASCULAR DISORDERS W CC
01	M	0117	017	NONSPECIFIC CEREBROVASCULAR DISORDERS W/O CC	072	NONSPECIFIC CEREBROVASCULAR DISORDERS W/O CC/MCC
01	M	0118	018	CRANIAL & PERIPHERAL NERVE DISORDERS W CC	073	CRANIAL & PERIPHERAL NERVE DISORDERS W MCC
01	M	0118	019	CRANIAL & PERIPHERAL NERVE DISORDERS W/O CC	074	CRANIAL & PERIPHERAL NERVE DISORDERS W/O MCC
01	M	0119	021	VIRAL MENINGITIS	075	VIRAL MENINGITIS W CC/MCC
01	M	0119	021	VIRAL MENINGITIS	076	VIRAL MENINGITIS W/O CC/MCC
01	M	0120	022	HYPERTENSIVE ENCEPHALOPATHY	077	HYPERTENSIVE ENCEPHALOPATHY W MCC
01	M	0120	022	HYPERTENSIVE ENCEPHALOPATHY	078	HYPERTENSIVE ENCEPHALOPATHY W CC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
01	M	0120	022	HYPERTENSIVE ENCEPHALOPATHY	079	HYPERTENSIVE ENCEPHALOPATHY W/O CC/MCC
01	M	0121	023	NONTRAUMATIC STUPOR & COMA	080	NONTRAUMATIC STUPOR & COMA W MCC
01	M	0121	023	NONTRAUMATIC STUPOR & COMA	081	NONTRAUMATIC STUPOR & COMA W/O MCC
01	M	0122	027	TRAUMATIC STUPOR & COMA, COMA >1 HR	082	TRAUMATIC STUPOR & COMA, COMA >1 HR W MCC
01	M	0122	027	TRAUMATIC STUPOR & COMA, COMA >1 HR	083	TRAUMATIC STUPOR & COMA, COMA >1 HR W CC
01	M	0122	027	TRAUMATIC STUPOR & COMA, COMA >1 HR	084	TRAUMATIC STUPOR & COMA, COMA >1 HR W/O CC/MCC
01	M	0123	028	TRAUMATIC STUPOR & COMA, COMA <1 HR AGE >17 W CC	085	TRAUMATIC STUPOR & COMA, COMA <1 HR W MCC
01	M	0123	029	TRAUMATIC STUPOR & COMA, COMA <1 HR AGE >17 W/O CC	086	TRAUMATIC STUPOR & COMA, COMA <1 HR W CC
01	M	0123	030	TRAUMATIC STUPOR & COMA, COMA <1 HR AGE 0-17	087	TRAUMATIC STUPOR & COMA, COMA <1 HR W/O CC/MCC
01	M	0124	031	CONCUSSION AGE >17 W CC	088	CONCUSSION W MCC
01	M	0124	032	CONCUSSION AGE >17 W/O CC	089	CONCUSSION W CC
01	M	0124	033	CONCUSSION AGE 0-17	090	CONCUSSION W/O CC/MCC
01	M	0125	034	OTHER DISORDERS OF NERVOUS SYSTEM W CC	091	OTHER DISORDERS OF NERVOUS SYSTEM W MCC
01	M	0125	035	OTHER DISORDERS OF NERVOUS SYSTEM W/O CC	092	OTHER DISORDERS OF NERVOUS SYSTEM W CC
01	M	0125	035	OTHER DISORDERS OF NERVOUS SYSTEM W/O CC	093	OTHER DISORDERS OF NERVOUS SYSTEM W/O CC/MCC
01	M	0126	560	BACTERIAL & TUBERCULOUS INFECTIONS OF NERVOUS SYSTEM	094	BACTERIAL & TUBERCULOUS INFECTIONS OF NERVOUS SYSTEM W MCC
01	M	0126	560	BACTERIAL & TUBERCULOUS INFECTIONS OF NERVOUS SYSTEM	095	BACTERIAL & TUBERCULOUS INFECTIONS OF NERVOUS SYSTEM W CC
01	M	0126	560	BACTERIAL & TUBERCULOUS INFECTIONS OF NERVOUS SYSTEM	096	BACTERIAL & TUBERCULOUS INFECTIONS OF NERVOUS SYSTEM W/O CC/MCC
01	M	0127	561	NON-BACTERIAL INFECTIONS OF NERVOUS SYSTEM EXCEPT VIRAL MENINGITIS	097	NON-BACTERIAL INFECT OF NERVOUS SYS EXC VIRAL MENINGITIS W MCC
01	M	0127	561	NON-BACTERIAL INFECTIONS OF NERVOUS SYSTEM EXCEPT VIRAL MENINGITIS	098	NON-BACTERIAL INFECT OF NERVOUS SYS EXC VIRAL MENINGITIS W CC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
01	M	0127	561	NON-BACTERIAL INFECTIONS OF NERVOUS SYSTEM EXCEPT VIRAL MENINGITIS	099	NON-BACTERIAL INFECT OF NERVOUS SYS EXC VIRAL MENINGITIS W/O CC/MCC
01	M	0128	026	SEIZURE & HEADACHE AGE 0-17	100	SEIZURES W MCC
01	M	0128	562	SEIZURE AGE > 17 W CC	101	SEIZURES W/O MCC
01	M	0128	563	SEIZURE AGE > 17 W/O CC	101	SEIZURES W/O MCC
01	M	0129	564	HEADACHES AGE >17	102	HEADACHES W MCC
01	M	0129	564	HEADACHES AGE >17	103	HEADACHES W/O MCC
01	M	0198	020	NERVOUS SYSTEM INFECTION EXCEPT VIRAL MENINGITIS (NO LONGER VALID)		
01	M	0198	024	SEIZURE & HEADACHE AGE >17 W CC (NO LONGER VALID)		
01	M	0198	025	SEIZURE & HEADACHE AGE >17 WO CC (NO LONGER VALID)		
04	M	0198	474	NO LONGER VALID		
02	S	0201	037	ORBITAL PROCEDURES	113	ORBITAL PROCEDURES W CC/MCC
02	S	0201	037	ORBITAL PROCEDURES	114	ORBITAL PROCEDURES W/O CC/MCC
02	S	0202	040	EXTRAOCULAR PROCEDURES EXCEPT ORBIT AGE >17	115	EXTRAOCULAR PROCEDURES EXCEPT ORBIT
02	S	0202	041	EXTRAOCULAR PROCEDURES EXCEPT ORBIT AGE 0-17	115	EXTRAOCULAR PROCEDURES EXCEPT ORBIT
02	S	0203	036	RETINAL PROCEDURES	116	INTRAOCULAR PROCEDURES W CC/MCC
02	S	0203	038	PRIMARY IRIS PROCEDURES	117	INTRAOCULAR PROCEDURES W/O CC/MCC
02	S	0203	039	LENS PROCEDURES WITH OR WITHOUT VITRECTOMY	117	INTRAOCULAR PROCEDURES W/O CC/MCC
02	S	0203	042	INTRAOCULAR PROCEDURES EXCEPT RETINA, IRIS & LENS	117	INTRAOCULAR PROCEDURES W/O CC/MCC
02	M	0204	044	ACUTE MAJOR EYE INFECTIONS	121	ACUTE MAJOR EYE INFECTIONS W CC/MCC
02	M	0204	044	ACUTE MAJOR EYE INFECTIONS	122	ACUTE MAJOR EYE INFECTIONS W/O CC/MCC
02	M	0205	045	NEUROLOGICAL EYE DISORDERS	123	NEUROLOGICAL EYE DISORDERS
02	M	0206	043	HYPHEMA	124	OTHER DISORDERS OF THE EYE W MCC
02	M	0206	046	OTHER DISORDERS OF THE EYE AGE >17 W CC	125	OTHER DISORDERS OF THE EYE W/O MCC
02	M	0206	047	OTHER DISORDERS OF THE EYE AGE >17 W/O CC	125	OTHER DISORDERS OF THE EYE W/O MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
02	M	0206	048	OTHER DISORDERS OF THE EYE AGE 0-17	125	OTHER DISORDERS OF THE EYE W/O MCC
03	S	0301	049	MAJOR HEAD & NECK PROCEDURES	129	MAJOR HEAD & NECK PROCEDURES W CC/MCC OR MAJOR DEVICE
03	S	0301	049	MAJOR HEAD & NECK PROCEDURES	130	MAJOR HEAD & NECK PROCEDURES W/O CC/MCC
03	S	0301	049	MAJOR HEAD & NECK PROCEDURES	131	CRANIAL/FACIAL PROCEDURES W CC/MCC
03	S	0301	049	MAJOR HEAD & NECK PROCEDURES	132	CRANIAL/FACIAL PROCEDURES W/O CC/MCC
03	S	0302	052	CLEFT LIP & PALATE REPAIR	133	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES W CC/MCC
03	S	0302	055	MISCELLANEOUS EAR, NOSE, MOUTH & THROAT PROCEDURES	134	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES W/O CC/MCC
03	S	0302	056	RHINOPLASTY	134	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES W/O CC/MCC
03	S	0302	057	T&A PROC, EXCEPT TONSILLECTOMY &/OR ADENOIDECTOMY ONLY, AGE >17	134	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES W/O CC/MCC
03	S	0302	058	T&A PROC, EXCEPT TONSILLECTOMY &/OR ADENOIDECTOMY ONLY, AGE 0-17	134	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES W/O CC/MCC
03	S	0302	059	TONSILLECTOMY &/OR ADENOIDECTOMY ONLY, AGE >17	134	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES W/O CC/MCC
03	S	0302	060	TONSILLECTOMY &/OR ADENOIDECTOMY ONLY, AGE 0-17	134	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES W/O CC/MCC
03	S	0302	061	MYRINGOTOMY W TUBE INSERTION AGE >17	134	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES W/O CC/MCC
03	S	0302	062	MYRINGOTOMY W TUBE INSERTION AGE 0-17	134	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES W/O CC/MCC
03	S	0302	063	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES	134	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES W/O CC/MCC
03	S	0303	053	SINUS & MASTOID PROCEDURES AGE >17	135	SINUS & MASTOID PROCEDURES W CC/MCC
03	S	0303	054	SINUS & MASTOID PROCEDURES AGE 0-17	136	SINUS & MASTOID PROCEDURES W/O CC/MCC
03	S	0304	168	MOUTH PROCEDURES W CC	137	MOUTH PROCEDURES W CC/MCC
03	S	0304	169	MOUTH PROCEDURES W/O CC	138	MOUTH PROCEDURES W/O CC/MCC
03	S	0305	050	SIALOADENECTOMY	139	SALIVARY GLAND PROCEDURES
03	S	0305	051	SALIVARY GLAND PROCEDURES EXCEPT SIALOADENECTOMY	139	SALIVARY GLAND PROCEDURES

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
03	M	0306	064	EAR, NOSE, MOUTH & THROAT MALIGNANCY	146	EAR, NOSE, MOUTH & THROAT MALIGNANCY W MCC
03	M	0306	064	EAR, NOSE, MOUTH & THROAT MALIGNANCY	147	EAR, NOSE, MOUTH & THROAT MALIGNANCY W CC
03	M	0306	064	EAR, NOSE, MOUTH & THROAT MALIGNANCY	148	EAR, NOSE, MOUTH & THROAT MALIGNANCY W/O CC/MCC
03	M	0307	065	DYSEQUILIBRIUM	149	DYSEQUILIBRIUM
03	M	0308	066	EPISTAXIS	150	EPISTAXIS W MCC
03	M	0308	066	EPISTAXIS	151	EPISTAXIS W/O MCC
03	M	0309	067	EPIGLOTTITIS	152	OTITIS MEDIA & URI W MCC
03	M	0309	068	OTITIS MEDIA & URI AGE >17 W CC	153	OTITIS MEDIA & URI W/O MCC
03	M	0309	069	OTITIS MEDIA & URI AGE >17 W/O CC	153	OTITIS MEDIA & URI W/O MCC
03	M	0309	070	OTITIS MEDIA & URI AGE 0-17	153	OTITIS MEDIA & URI W/O MCC
03	M	0309	071	LARYNGOTRACHEITIS	153	OTITIS MEDIA & URI W/O MCC
03	M	0310	072	NASAL TRAUMA & DEFORMITY	154	NASAL TRAUMA & DEFORMITY W MCC
03	M	0310	073	OTHER EAR, NOSE, MOUTH & THROAT DIAGNOSES AGE >17	155	NASAL TRAUMA & DEFORMITY W CC
03	M	0310	074	OTHER EAR, NOSE, MOUTH & THROAT DIAGNOSES AGE 0-17	156	NASAL TRAUMA & DEFORMITY W/O CC/MCC
03	M	0311	185	DENTAL & ORAL DIS EXCEPT EXTRACTIONS & RESTORATIONS, AGE >17	157	DENTAL & ORAL DISEASES W MCC
03	M	0311	186	DENTAL & ORAL DIS EXCEPT EXTRACTIONS & RESTORATIONS, AGE 0-17	158	DENTAL & ORAL DISEASES W CC
03	M	0311	187	DENTAL EXTRACTIONS & RESTORATIONS	159	DENTAL & ORAL DISEASES W/O CC/MCC
04	S	0401	075	MAJOR CHEST PROCEDURES	163	MAJOR CHEST PROCEDURES W MCC
04	S	0401	075	MAJOR CHEST PROCEDURES	164	MAJOR CHEST PROCEDURES W CC
04	S	0401	075	MAJOR CHEST PROCEDURES	165	MAJOR CHEST PROCEDURES W/O CC/MCC
04	S	0402	076	OTHER RESP SYSTEM O.R. PROCEDURES W CC	166	OTHER RESP SYSTEM O.R. PROCEDURES W MCC
04	S	0402	077	OTHER RESP SYSTEM O.R. PROCEDURES W/O CC	167	OTHER RESP SYSTEM O.R. PROCEDURES W CC
04	S	0402	077	OTHER RESP SYSTEM O.R. PROCEDURES W/O CC	168	OTHER RESP SYSTEM O.R. PROCEDURES W/O CC/MCC
04	M	0403	078	PULMONARY EMBOLISM	175	PULMONARY EMBOLISM W MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
04	M	0403	078	PULMONARY EMBOLISM	176	PULMONARY EMBOLISM W/O MCC
04	M	0404	079	RESPIRATORY INFECTIONS & INFLAMMATIONS AGE >17 W CC	177	RESPIRATORY INFECTIONS & INFLAMMATIONS W MCC
04	M	0404	080	RESPIRATORY INFECTIONS & INFLAMMATIONS AGE >17 W/O CC	178	RESPIRATORY INFECTIONS & INFLAMMATIONS W CC
04	M	0404	081	RESPIRATORY INFECTIONS & INFLAMMATIONS AGE 0-17	179	RESPIRATORY INFECTIONS & INFLAMMATIONS W/O CC/MCC
04	M	0405	082	RESPIRATORY NEOPLASMS	180	RESPIRATORY NEOPLASMS W MCC
04	M	0405	082	RESPIRATORY NEOPLASMS	181	RESPIRATORY NEOPLASMS W CC
04	M	0405	082	RESPIRATORY NEOPLASMS	182	RESPIRATORY NEOPLASMS W/O CC/MCC
04	M	0406	083	MAJOR CHEST TRAUMA W CC	183	MAJOR CHEST TRAUMA W MCC
04	M	0406	084	MAJOR CHEST TRAUMA W/O CC	184	MAJOR CHEST TRAUMA W CC
04	M	0406	084	MAJOR CHEST TRAUMA W/O CC	185	MAJOR CHEST TRAUMA W/O CC/MCC
04	M	0407	085	PLEURAL EFFUSION W CC	186	PLEURAL EFFUSION W MCC
04	M	0407	086	PLEURAL EFFUSION W/O CC	187	PLEURAL EFFUSION W CC
04	M	0407	086	PLEURAL EFFUSION W/O CC	188	PLEURAL EFFUSION W/O CC/MCC
04	M	0408	087	PULMONARY EDEMA & RESPIRATORY FAILURE	189	PULMONARY EDEMA & RESPIRATORY FAILURE
04	M	0409	088	CHRONIC OBSTRUCTIVE PULMONARY DISEASE	190	CHRONIC OBSTRUCTIVE PULMONARY DISEASE W MCC
04	M	0409	088	CHRONIC OBSTRUCTIVE PULMONARY DISEASE	191	CHRONIC OBSTRUCTIVE PULMONARY DISEASE W CC
04	M	0409	088	CHRONIC OBSTRUCTIVE PULMONARY DISEASE	192	CHRONIC OBSTRUCTIVE PULMONARY DISEASE W/O CC/MCC
04	M	0410	089	SIMPLE PNEUMONIA & PLEURISY AGE >17 W CC	193	SIMPLE PNEUMONIA & PLEURISY W MCC
04	M	0410	090	SIMPLE PNEUMONIA & PLEURISY AGE >17 W/O CC	194	SIMPLE PNEUMONIA & PLEURISY W CC
04	M	0410	091	SIMPLE PNEUMONIA & PLEURISY AGE 0-17	195	SIMPLE PNEUMONIA & PLEURISY W/O CC/MCC
04	M	0411	092	INTERSTITIAL LUNG DISEASE W CC	196	INTERSTITIAL LUNG DISEASE W MCC
04	M	0411	093	INTERSTITIAL LUNG DISEASE W/O CC	197	INTERSTITIAL LUNG DISEASE W CC
04	M	0411	093	INTERSTITIAL LUNG DISEASE W/O CC	198	INTERSTITIAL LUNG DISEASE W/O CC/MCC
04	M	0412	094	PNEUMOTHORAX W CC	199	PNEUMOTHORAX W MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
04	M	0412	095	PNEUMOTHORAX W/O CC	200	PNEUMOTHORAX W CC
04	M	0412	095	PNEUMOTHORAX W/O CC	201	PNEUMOTHORAX W/O CC/MCC
04	M	0413	096	BRONCHITIS & ASTHMA AGE >17 W CC	202	BRONCHITIS & ASTHMA W CC/MCC
04	M	0413	097	BRONCHITIS & ASTHMA AGE >17 W/O CC	203	BRONCHITIS & ASTHMA W/O CC/MCC
04	M	0413	098	BRONCHITIS & ASTHMA AGE 0-17	203	BRONCHITIS & ASTHMA W/O CC/MCC
04	M	0414	099	RESPIRATORY SIGNS & SYMPTOMS W CC	204	RESPIRATORY SIGNS & SYMPTOMS
04	M	0414	100	RESPIRATORY SIGNS & SYMPTOMS W/O CC	204	RESPIRATORY SIGNS & SYMPTOMS
04	M	0415	101	OTHER RESPIRATORY SYSTEM DIAGNOSES W CC	205	OTHER RESPIRATORY SYSTEM DIAGNOSES W MCC
04	M	0415	102	OTHER RESPIRATORY SYSTEM DIAGNOSES W/O CC	206	OTHER RESPIRATORY SYSTEM DIAGNOSES W/O MCC
04	M	0416	565	RESPIRATORY SYSTEM DIAGNOSIS WITH VENTILATOR SUPPORT 96+ HOURS	207	RESPIRATORY SYSTEM DIAGNOSIS W VENTILATOR SUPPORT 96+ HOURS
04	M	0416	566	RESPIRATORY SYSTEM DIAGNOSIS WITH VENTILATOR SUPPORT < 96 HOURS	208	RESPIRATORY SYSTEM DIAGNOSIS W VENTILATOR SUPPORT <96 HOURS
04	M	0416	475	RESPIRATORY SYSTEM DIAGNOSIS WITH VENTILATOR SUPPORT (NO LONGER VALID)		
05	S	0501	525	OTHER HEART ASSIST SYSTEM IMPLANT	215	OTHER HEART ASSIST SYSTEM IMPLANT
05	S	0502	555	PERCUTANEOUS CARDIOVASCULAR PROC W MAJOR CV DX	248	PERC CARDIOVASC PROC W NON-DRUG-ELUTING STENT W MCC OR 4+ VES/STENTS
05	S	0502	556	PERCUTANEOUS CARDIOVASC PROC W NON-DRUG-ELUTING STENT W/O MAJ CV DX	249	PERC CARDIOVASC PROC W NON-DRUG-ELUTING STENT W/O MCC
05	S	0502	516	PERCUTANEOUS CARDIOVASC PROC W AMI		
05	S	0502	517	PERC CARDIO PROC W NON-DRUG ELUTING STENT WO AMI		
05	S	0503	104	CARDIAC VALVE & OTH MAJOR CARDIOTHORACIC PROC W CARD CATH	216	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W CARD CATH W MCC
05	S	0503	104	CARDIAC VALVE & OTH MAJOR CARDIOTHORACIC PROC W CARD CATH	217	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W CARD CATH W CC
05	S	0503	104	CARDIAC VALVE & OTH MAJOR CARDIOTHORACIC PROC W CARD CATH	218	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W CARD CATH W/O CC/MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
05	S	0503	105	CARDIAC VALVE & OTH MAJOR CARDIOTHORACIC PROC W/O CARD CATH	219	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W/O CARD CATH W MCC
05	S	0503	105	CARDIAC VALVE & OTH MAJOR CARDIOTHORACIC PROC W/O CARD CATH	220	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W/O CARD CATH W CC
05	S	0503	105	CARDIAC VALVE & OTH MAJOR CARDIOTHORACIC PROC W/O CARD CATH	221	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W/O CARD CATH W/O CC/MCC
05	S	0504	535	CARDIAC DEFIB IMPLANT W CARDIAC CATH W AMI/HF/SHOCK	222	CARDIAC DEFIB IMPLANT W CARDIAC CATH W AMI/HF/SHOCK W MCC
05	S	0504	535	CARDIAC DEFIB IMPLANT W CARDIAC CATH W AMI/HF/SHOCK	223	CARDIAC DEFIB IMPLANT W CARDIAC CATH W AMI/HF/SHOCK W/O MCC
05	S	0504	536	CARDIAC DEFIB IMPLANT W CARDIAC CATH W/O AMI/HF/SHOCK	224	CARDIAC DEFIB IMPLANT W CARDIAC CATH W/O AMI/HF/SHOCK W MCC
05	S	0504	536	CARDIAC DEFIB IMPLANT W CARDIAC CATH W/O AMI/HF/SHOCK	225	CARDIAC DEFIB IMPLANT W CARDIAC CATH W/O AMI/HF/SHOCK W/O MCC
05	S	0504	515	CARDIAC DEFIBRILLATOR IMPLANT W/O CARDIAC CATH	226	CARDIAC DEFIBRILLATOR IMPLANT W/O CARDIAC CATH W MCC
05	S	0504	515	CARDIAC DEFIBRILLATOR IMPLANT W/O CARDIAC CATH	227	CARDIAC DEFIBRILLATOR IMPLANT W/O CARDIAC CATH W/O MCC
05	S	0505	108	OTHER CARDIOTHORACIC PROCEDURES	228	OTHER CARDIOTHORACIC PROCEDURES W MCC
05	S	0505	108	OTHER CARDIOTHORACIC PROCEDURES	229	OTHER CARDIOTHORACIC PROCEDURES W CC
05	S	0505	108	OTHER CARDIOTHORACIC PROCEDURES	230	OTHER CARDIOTHORACIC PROCEDURES W/O CC/MCC
05	S	0506	106	CORONARY BYPASS W PTCA	231	CORONARY BYPASS W PTCA W MCC
05	S	0506	106	CORONARY BYPASS W PTCA	232	CORONARY BYPASS W PTCA W/O MCC
05	S	0507	547	CORONARY BYPASS W CARDIAC CATH W MAJOR CV DX	233	CORONARY BYPASS W CARDIAC CATH W MCC
05	S	0507	548	CORONARY BYPASS W CARDIAC CATH W/O MAJOR CV DX	234	CORONARY BYPASS W CARDIAC CATH W/O MCC
05	S	0507	549	CORONARY BYPASS W/O CARDIAC CATH W MAJOR CV DX	235	CORONARY BYPASS W/O CARDIAC CATH W MCC
05	S	0507	550	CORONARY BYPASS W/O CARDIAC CATH W/O MAJOR CV DX	236	CORONARY BYPASS W/O CARDIAC CATH W/O MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
05	S	0507	107	CORONARY BYPASS W CARDIAC CATH (NO LONGER VALID)		
05	S	0507	109	CORONARY BYPASS WO PTCA OR CARDIAC CATH (NO LONGER VALID)		
05	S	0508	110	MAJOR CARDIOVASCULAR PROCEDURES W CC	237	MAJOR CARDIOVASC PROCEDURES W MCC OR THORACIC AORTIC ANEURYSM REPAIR
05	S	0508	111	MAJOR CARDIOVASCULAR PROCEDURES W/O CC	238	MAJOR CARDIOVASCULAR PROCEDURES W/O MCC
05	S	0509	113	AMPUTATION FOR CIRC SYSTEM DISORDERS EXCEPT UPPER LIMB & TOE	239	AMPUTATION FOR CIRC SYS DISORDERS EXC UPPER LIMB & TOE W MCC
05	S	0509	113	AMPUTATION FOR CIRC SYSTEM DISORDERS EXCEPT UPPER LIMB & TOE	240	AMPUTATION FOR CIRC SYS DISORDERS EXC UPPER LIMB & TOE W CC
05	S	0509	113	AMPUTATION FOR CIRC SYSTEM DISORDERS EXCEPT UPPER LIMB & TOE	241	AMPUTATION FOR CIRC SYS DISORDERS EXC UPPER LIMB & TOE W/O CC/MCC
05	S	0510	551	PERMANENT CARDIAC PACEMAKER IMPL W MAJ CV DX OR AICD LEAD OR GNRTR	242	PERMANENT CARDIAC PACEMAKER IMPLANT W MCC
05	S	0510	552	OTHER PERMANENT CARDIAC PACEMAKER IMPLANT W/O MAJOR CV DX	243	PERMANENT CARDIAC PACEMAKER IMPLANT W CC
05	S	0510	552	OTHER PERMANENT CARDIAC PACEMAKER IMPLANT W/O MAJOR CV DX	244	PERMANENT CARDIAC PACEMAKER IMPLANT W/O CC/MCC
05	S	0510	552	OTHER PERMANENT CARDIAC PACEMAKER IMPLANT W/O MAJOR CV DX	245	AICD LEAD & GENERATOR PROCEDURES
05	S	0510	115	PRM CARD PACEM IMPL W AMI/HR/SHOCK OR AICD LEAD OR GNRTR (NO LONGER VALID)		
05	S	0510	116	OTHER PERMANENT CARDIAC PACEMAKER IMPLANT (NO LONGER VALID)		
05	S	0511	557	PERCUTANEOUS CARDIOVASCULAR PROC W DRUG-ELUTING STENT W MAJOR CV DX	246	PERC CARDIOVASC PROC W DRUG-ELUTING STENT W MCC OR 4+ VESSELS/STENTS
05	S	0511	558	PERCUTANEOUS CARDIOVASCULAR PROC W DRUG-ELUTING STENT W/O MAJ CV DX	247	PERC CARDIOVASC PROC W DRUG-ELUTING STENT W/O MCC
05	S	0511	526	PERCUTNEOUS CARDIOVASULAR PROC W DRUG ELUTING STENT W AM		
05	S	0511	527	PERCUTNEOUS CARDIOVASULAR PROC W DRUG ELUTING STENT WO A		
05	S	0513	518	PERC CARDIO PROC W/O CORONARY ARTERY STENT OR AMI	250	PERC CARDIOVASC PROC W/O CORONARY ARTERY STENT OR AMI W MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
05	S	0513	518	PERC CARDIO PROC W/O CORONARY ARTERY STENT OR AMI	251	PERC CARDIOVASC PROC W/O CORONARY ARTERY STENT OR AMI W/O MCC
05	S	0514	479	OTHER VASCULAR PROCEDURES W/O CC	252	OTHER VASCULAR PROCEDURES W MCC
05	S	0514	553	OTHER VASCULAR PROCEDURES W CC W MAJOR CV DX	253	OTHER VASCULAR PROCEDURES W CC
05	S	0514	554	OTHER VASCULAR PROCEDURES W CC W/O MAJOR CV DX	254	OTHER VASCULAR PROCEDURES W/O CC/MCC
05	S	0514	478	OTHER VASCULAR PROCEDURES W CC		
05	S	0515	114	UPPER LIMB & TOE AMPUTATION FOR CIRC SYSTEM DISORDERS	255	UPPER LIMB & TOE AMPUTATION FOR CIRC SYSTEM DISORDERS W MCC
05	S	0515	114	UPPER LIMB & TOE AMPUTATION FOR CIRC SYSTEM DISORDERS	256	UPPER LIMB & TOE AMPUTATION FOR CIRC SYSTEM DISORDERS W CC
05	S	0515	114	UPPER LIMB & TOE AMPUTATION FOR CIRC SYSTEM DISORDERS	257	UPPER LIMB & TOE AMPUTATION FOR CIRC SYSTEM DISORDERS W/O CC/MCC
05	S	0516	118	CARDIAC PACEMAKER DEVICE REPLACEMENT	258	CARDIAC PACEMAKER DEVICE REPLACEMENT W MCC
05	S	0516	118	CARDIAC PACEMAKER DEVICE REPLACEMENT	259	CARDIAC PACEMAKER DEVICE REPLACEMENT W/O MCC
05	S	0517	117	CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT	260	CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT W MCC
05	S	0517	117	CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT	261	CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT W CC
05	S	0517	117	CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT	262	CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT W/O CC/MCC
05	S	0518	119	VEIN LIGATION & STRIPPING	263	VEIN LIGATION & STRIPPING
05	S	0519	120	OTHER CIRCULATORY SYSTEM O.R. PROCEDURES	264	OTHER CIRCULATORY SYSTEM O.R. PROCEDURES
05	M	0520	121	CIRCULATORY DISORDERS W AMI & MAJOR COMP, DISCHARGED ALIVE	280	ACUTE MYOCARDIAL INFARCTION, DISCHARGED ALIVE W MCC
05	M	0520	122	CIRCULATORY DISORDERS W AMI W/O MAJOR COMP, DISCHARGED ALIVE	281	ACUTE MYOCARDIAL INFARCTION, DISCHARGED ALIVE W CC
05	M	0520	122	CIRCULATORY DISORDERS W AMI W/O MAJOR COMP, DISCHARGED ALIVE	282	ACUTE MYOCARDIA INFARCTION, DISCHARGED ALIVE W/O CC/MCC
05	M	0521	123	CIRCULATORY DISORDERS W AMI, EXPIRED	283	ACUTE MYOCARDIAL INFARCTION, EXPIRED W MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
05	M	0521	123	CIRCULATORY DISORDERS W AMI, EXPIRED	284	ACUTE MYOCARDIAL INFARCTION, EXPIRED W CC
05	M	0521	123	CIRCULATORY DISORDERS W AMI, EXPIRED	285	ACUTE MYOCARDIAL INFARCTION, EXPIRED W/O CC/MCC
05	M	0522	124	CIRCULATORY DISORDERS EXCEPT AMI, W CARD CATH & COMPLEX DIAG	286	CIRCULATORY DISORDERS EXCEPT AMI, W CARD CATH W MCC
05	M	0522	125	CIRCULATORY DISORDERS EXCEPT AMI, W CARD CATH W/O COMPLEX DIAG	287	CIRCULATORY DISORDERS EXCEPT AMI, W CARD CATH W/O MCC
05	M	0523	126	ACUTE & SUBACUTE ENDOCARDITIS	288	ACUTE & SUBACUTE ENDOCARDITIS W MCC
05	M	0523	126	ACUTE & SUBACUTE ENDOCARDITIS	289	ACUTE & SUBACUTE ENDOCARDITIS W CC
05	M	0523	126	ACUTE & SUBACUTE ENDOCARDITIS	290	ACUTE & SUBACUTE ENDOCARDITIS W/O CC/MCC
05	M	0524	127	HEART FAILURE & SHOCK	291	HEART FAILURE & SHOCK W MCC
05	M	0524	127	HEART FAILURE & SHOCK	292	HEART FAILURE & SHOCK W CC
05	M	0524	127	HEART FAILURE & SHOCK	293	HEART FAILURE & SHOCK W/O CC/MCC
05	M	0525	128	DEEP VEIN THROMBOPHLEBITIS	294	DEEP VEIN THROMBOPHLEBITIS W CC/MCC
05	M	0525	128	DEEP VEIN THROMBOPHLEBITIS	295	DEEP VEIN THROMBOPHLEBITIS W/O CC/MCC
05	M	0526	129	CARDIAC ARREST, UNEXPLAINED	296	CARDIAC ARREST, UNEXPLAINED W MCC
05	M	0526	129	CARDIAC ARREST, UNEXPLAINED	297	CARDIAC ARREST, UNEXPLAINED W CC
05	M	0526	129	CARDIAC ARREST, UNEXPLAINED	298	CARDIAC ARREST, UNEXPLAINED W/O CC/MCC
05	M	0527	130	PERIPHERAL VASCULAR DISORDERS W CC	299	PERIPHERAL VASCULAR DISORDERS W MCC
05	M	0527	131	PERIPHERAL VASCULAR DISORDERS W/O CC	300	PERIPHERAL VASCULAR DISORDERS W CC
05	M	0527	131	PERIPHERAL VASCULAR DISORDERS W/O CC	301	PERIPHERAL VASCULAR DISORDERS W/O CC/MCC
05	M	0528	132	ATHEROSCLEROSIS W CC	302	ATHEROSCLEROSIS W MCC
05	M	0528	133	ATHEROSCLEROSIS W/O CC	303	ATHEROSCLEROSIS W/O MCC
05	M	0529	134	HYPERTENSION	304	HYPERTENSION W MCC
05	M	0529	134	HYPERTENSION	305	HYPERTENSION W/O MCC
05	M	0530	135	CARDIAC CONGENITAL & VALVULAR DISORDERS AGE >17 W CC	306	CARDIAC CONGENITAL & VALVULAR DISORDERS W MCC
05	M	0530	136	CARDIAC CONGENITAL & VALVULAR DISORDERS AGE >17 W/O CC	307	CARDIAC CONGENITAL & VALVULAR DISORDERS W/O MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
05	M	0530	137	CARDIAC CONGENITAL & VALVULAR DISORDERS AGE 0-17	307	CARDIAC CONGENITAL & VALVULAR DISORDERS W/O MCC
05	M	0531	138	CARDIAC ARRHYTHMIA & CONDUCTION DISORDERS W CC	308	CARDIAC ARRHYTHMIA & CONDUCTION DISORDERS W MCC
05	M	0531	139	CARDIAC ARRHYTHMIA & CONDUCTION DISORDERS W/O CC	309	CARDIAC ARRHYTHMIA & CONDUCTION DISORDERS W CC
05	M	0531	139	CARDIAC ARRHYTHMIA & CONDUCTION DISORDERS W/O CC	310	CARDIAC ARRHYTHMIA & CONDUCTION DISORDERS W/O CC/MCC
05	M	0532	140	ANGINA PECTORIS	311	ANGINA PECTORIS
05	M	0533	141	SYNCOPE & COLLAPSE W CC	312	SYNCOPE & COLLAPSE
05	M	0533	142	SYNCOPE & COLLAPSE W/O CC	312	SYNCOPE & COLLAPSE
05	M	0534	143	CHEST PAIN	313	CHEST PAIN
05	M	0535	144	OTHER CIRCULATORY SYSTEM DIAGNOSES W CC	314	OTHER CIRCULATORY SYSTEM DIAGNOSES W MCC
05	M	0535	145	OTHER CIRCULATORY SYSTEM DIAGNOSES W/O CC	315	OTHER CIRCULATORY SYSTEM DIAGNOSES W CC
05	M	0535	145	OTHER CIRCULATORY SYSTEM DIAGNOSES W/O CC	316	OTHER CIRCULATORY SYSTEM DIAGNOSES W/O CC/MCC
05	S	0599	112	PERCUTANEOUS CARDIOVASCULAR PROCEDURES (NO LONGER VALID)		
05	S	0599	514	CARDIAC DEFIB IMPLANT W CARDIAC CATH (NO LONGER VALID)		
06	S	0601	155	STOMACH, ESOPHAGEAL & DUODENAL PROCEDURES AGE >17 W/O CC	326	STOMACH, ESOPHAGEAL & DUODENAL PROC W MCC
06	S	0601	156	STOMACH, ESOPHAGEAL & DUODENAL PROCEDURES AGE 0-17	327	STOMACH, ESOPHAGEAL & DUODENAL PROC W CC
06	S	0601	567	STOMACH, ESOPHAGEAL & DUODENAL PROC AGE > 17 W CC W MAJOR GI DX	328	STOMACH, ESOPHAGEAL & DUODENAL PROC W/O CC/MCC
06	S	0601	568	STOMACH, ESOPHAGEAL & DUODENAL PROCEDURES PROC AGE > 17 W CC W/O MAJOR GI DX	328	STOMACH, ESOPHAGEAL & DUODENAL PROC W/O CC/MCC
06	S	0601	154	STOMACH, ESOPHAGEAL & DUODENAL PROCEDURES AGE >17 W CC (NO LONGER VALID)		
06	S	0602	149	MAJOR SMALL & LARGE BOWEL PROCEDURES W/O CC	329	MAJOR SMALL & LARGE BOWEL PROCEDURES W MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
06	S	0602	569	MAJOR SMALL & LARGE BOWEL PROCEDURES W CC W MAJOR GI DX	330	MAJOR SMALL & LARGE BOWEL PROCEDURES W CC
06	S	0602	570	MAJOR SMALL & LARGE BOWEL PROCEDURES W CC W/O MAJOR GI DX	331	MAJOR SMALL & LARGE BOWEL PROCEDURES W/O CC/MCC
06	S	0602	148	MAJOR SMALL & LARGE BOWEL PROCEDURES W CC (NO LONGER VALID)		
06	S	0603	146	RECTAL RESECTION W CC	332	RECTAL RESECTION W MCC
06	S	0603	147	RECTAL RESECTION W/O CC	333	RECTAL RESECTION W CC
06	S	0603	147	RECTAL RESECTION W/O CC	334	RECTAL RESECTION W/O CC/MCC
06	S	0604	150	PERITONEAL ADHESIOLYSIS W CC	335	PERITONEAL ADHESIOLYSIS W MCC
06	S	0604	151	PERITONEAL ADHESIOLYSIS W/O CC	336	PERITONEAL ADHESIOLYSIS W CC
06	S	0604	151	PERITONEAL ADHESIOLYSIS W/O CC	337	PERITONEAL ADHESIOLYSIS W/O CC/MCC
06	S	0605	164	APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W CC	338	APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W MCC
06	S	0605	165	APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W/O CC	339	APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W CC
06	S	0605	165	APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W/O CC	340	APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W/O CC/MCC
06	S	0606	166	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W CC	341	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W MCC
06	S	0606	167	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W/O CC	342	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W CC
06	S	0606	167	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W/O CC	343	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W/O CC/MCC
06	S	0607	152	MINOR SMALL & LARGE BOWEL PROCEDURES W CC	344	MINOR SMALL & LARGE BOWEL PROCEDURES W MCC
06	S	0607	153	MINOR SMALL & LARGE BOWEL PROCEDURES W/O CC	345	MINOR SMALL & LARGE BOWEL PROCEDURES W CC
06	S	0607	153	MINOR SMALL & LARGE BOWEL PROCEDURES W/O CC	346	MINOR SMALL & LARGE BOWEL PROCEDURES W/O CC/MCC
06	S	0608	157	ANAL & STOMAL PROCEDURES W CC	347	ANAL & STOMAL PROCEDURES W MCC
06	S	0608	158	ANAL & STOMAL PROCEDURES W/O CC	348	ANAL & STOMAL PROCEDURES W CC
06	S	0608	158	ANAL & STOMAL PROCEDURES W/O CC	349	ANAL & STOMAL PROCEDURES W/O CC/MCC
06	S	0609	161	INGUINAL & FEMORAL HERNIA PROCEDURES AGE >17 W CC	350	INGUINAL & FEMORAL HERNIA PROCEDURES W MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
06	S	0609	162	INGUINAL & FEMORAL HERNIA PROCEDURES AGE >17 W/O CC	351	INGUINAL & FEMORAL HERNIA PROCEDURES W CC
06	S	0609	163	HERNIA PROCEDURES AGE 0-17	352	INGUINAL & FEMORAL HERNIA PROCEDURES W/O CC/MCC
06	S	0610	159	HERNIA PROCEDURES EXCEPT INGUINAL & FEMORAL AGE >17 W CC	353	HERNIA PROCEDURES EXCEPT INGUINAL & FEMORAL W MCC
06	S	0610	160	HERNIA PROCEDURES EXCEPT INGUINAL & FEMORAL AGE >17 W/O CC	354	HERNIA PROCEDURES EXCEPT INGUINAL & FEMORAL W CC
06	S	0610	160	HERNIA PROCEDURES EXCEPT INGUINAL & FEMORAL AGE >17 W/O CC	355	HERNIA PROCEDURES EXCEPT INGUINAL & FEMORAL W/O CC/MCC
06	S	0611	170	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W CC	356	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W MCC
06	S	0611	171	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W/O CC	357	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W CC
06	S	0611	171	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W/O CC	358	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W/O CC/MCC
06	M	0612	571	MAJOR ESOPHAGEAL DISORDERS	368	MAJOR ESOPHAGEAL DISORDERS W MCC
06	M	0612	571	MAJOR ESOPHAGEAL DISORDERS	369	MAJOR ESOPHAGEAL DISORDERS W CC
06	M	0612	571	MAJOR ESOPHAGEAL DISORDERS	370	MAJOR ESOPHAGEAL DISORDERS W/O CC/MCC
06	M	0613	572	MAJOR GASTROINTESTINAL DISORDERS AND PERITONEAL INFECTIONS	371	MAJOR GASTROINTESTINAL DISORDERS & PERITONEAL INFECTIONS W MCC
06	M	0613	572	MAJOR GASTROINTESTINAL DISORDERS AND PERITONEAL INFECTIONS	372	MAJOR GASTROINTESTINAL DISORDERS & PERITONEAL INFECTIONS W CC
06	M	0613	572	MAJOR GASTROINTESTINAL DISORDERS AND PERITONEAL INFECTIONS	373	MAJOR GASTROINTESTINAL DISORDERS & PERITONEAL INFECTIONS W/O CC/MCC
06	M	0614	172	DIGESTIVE MALIGNANCY W CC	374	DIGESTIVE MALIGNANCY W MCC
06	M	0614	173	DIGESTIVE MALIGNANCY W/O CC	375	DIGESTIVE MALIGNANCY W CC
06	M	0614	173	DIGESTIVE MALIGNANCY W/O CC	376	DIGESTIVE MALIGNANCY W/O CC/MCC
06	M	0615	174	G.I. HEMORRHAGE W CC	377	G.I. HEMORRHAGE W MCC
06	M	0615	175	G.I. HEMORRHAGE W/O CC	378	G.I. HEMORRHAGE W CC
06	M	0615	175	G.I. HEMORRHAGE W/O CC	379	G.I. HEMORRHAGE W/O CC/MCC
06	M	0616	176	COMPLICATED PEPTIC ULCER	380	COMPLICATED PEPTIC ULCER W MCC
06	M	0616	176	COMPLICATED PEPTIC ULCER	381	COMPLICATED PEPTIC ULCER W CC
06	M	0616	176	COMPLICATED PEPTIC ULCER	382	COMPLICATED PEPTIC ULCER W/O CC/MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
06	M	0617	177	UNCOMPLICATED PEPTIC ULCER W CC	383	UNCOMPLICATED PEPTIC ULCER W MCC
06	M	0617	178	UNCOMPLICATED PEPTIC ULCER W/O CC	384	UNCOMPLICATED PEPTIC ULCER W/O MCC
06	M	0618	179	INFLAMMATORY BOWEL DISEASE	385	INFLAMMATORY BOWEL DISEASE W MCC
06	M	0618	179	INFLAMMATORY BOWEL DISEASE	386	INFLAMMATORY BOWEL DISEASE W CC
06	M	0618	179	INFLAMMATORY BOWEL DISEASE	387	INFLAMMATORY BOWEL DISEASE W/O CC/MCC
06	M	0619	180	G.I. OBSTRUCTION W CC	388	G.I. OBSTRUCTION W MCC
06	M	0619	181	G.I. OBSTRUCTION W/O CC	389	G.I. OBSTRUCTION W CC
06	M	0619	181	G.I. OBSTRUCTION W/O CC	390	G.I. OBSTRUCTION W/O CC/MCC
06	M	0620	182	ESOPHAGITIS, GASTROENT & MISC DIGEST DISORDERS AGE >17 W CC	391	ESOPHAGITIS, GASTROENT & MISC DIGEST DISORDERS W MCC
06	M	0620	183	ESOPHAGITIS, GASTROENT & MISC DIGEST DISORDERS AGE >17 W/O CC	392	ESOPHAGITIS, GASTROENT & MISC DIGEST DISORDERS W/O MCC
06	M	0620	184	ESOPHAGITIS, GASTROENT & MISC DIGEST DISORDERS AGE 0-17	392	ESOPHAGITIS, GASTROENT & MISC DIGEST DISORDERS W/O MCC
06	M	0621	188	OTHER DIGESTIVE SYSTEM DIAGNOSES AGE >17 W CC	393	OTHER DIGESTIVE SYSTEM DIAGNOSES W MCC
06	M	0621	189	OTHER DIGESTIVE SYSTEM DIAGNOSES AGE >17 W/O CC	394	OTHER DIGESTIVE SYSTEM DIAGNOSES W CC
06	M	0621	190	OTHER DIGESTIVE SYSTEM DIAGNOSES AGE 0-17	395	OTHER DIGESTIVE SYSTEM DIAGNOSES W/O CC/MCC
07	S	0701	191	PANCREAS, LIVER & SHUNT PROCEDURES W CC	405	PANCREAS, LIVER & SHUNT PROCEDURES W MCC
07	S	0701	192	PANCREAS, LIVER & SHUNT PROCEDURES W/O CC	406	PANCREAS, LIVER & SHUNT PROCEDURES W CC
07	S	0701	192	PANCREAS, LIVER & SHUNT PROCEDURES W/O CC	407	PANCREAS, LIVER & SHUNT PROCEDURES W/O CC/MCC
07	S	0702	193	BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W CC	408	BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W MCC
07	S	0702	194	BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W/O CC	409	BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W CC
07	S	0702	194	BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W/O CC	410	BILIARY TRACT PROC EXCEPT ONLY CHOLECYST W OR W/O C.D.E. W/O CC/MCC
07	S	0703	195	CHOLECYSTECTOMY W C.D.E. W CC	411	CHOLECYSTECTOMY W C.D.E. W MCC
07	S	0703	196	CHOLECYSTECTOMY W C.D.E. W/O CC	412	CHOLECYSTECTOMY W C.D.E. W CC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
07	S	0703	196	CHOLECYSTECTOMY W C.D.E. W/O CC	413	CHOLECYSTECTOMY W C.D.E. W/O CC/MCC
07	S	0704	197	CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W CC	414	CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W MCC
07	S	0704	198	CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W/O CC	415	CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W CC
07	S	0704	198	CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W/O CC	416	CHOLECYSTECTOMY EXCEPT BY LAPAROSCOPE W/O C.D.E. W/O CC/MCC
07	S	0705	493	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W CC	417	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W MCC
07	S	0705	494	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W/O CC	418	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W CC
07	S	0705	494	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W/O CC	419	LAPAROSCOPIC CHOLECYSTECTOMY W/O C.D.E. W/O CC/MCC
07	S	0706	199	HEPATOBILIARY DIAGNOSTIC PROCEDURE FOR MALIGNANCY	420	HEPATOBILIARY DIAGNOSTIC PROCEDURES W MCC
07	S	0706	200	HEPATOBILIARY DIAGNOSTIC PROCEDURE FOR NON-MALIGNANCY	421	HEPATOBILIARY DIAGNOSTIC PROCEDURES W CC
07	S	0706	200	HEPATOBILIARY DIAGNOSTIC PROCEDURE FOR NON-MALIGNANCY	422	HEPATOBILIARY DIAGNOSTIC PROCEDURES W/O CC/MCC
07	S	0707	201	OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES	423	OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES W MCC
07	S	0707	201	OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES	424	OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES W CC
07	S	0707	201	OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES	425	OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES W/O CC/MCC
07	M	0708	202	CIRRHOSIS & ALCOHOLIC HEPATITIS	432	CIRRHOSIS & ALCOHOLIC HEPATITIS W MCC
07	M	0708	202	CIRRHOSIS & ALCOHOLIC HEPATITIS	433	CIRRHOSIS & ALCOHOLIC HEPATITIS W CC
07	M	0708	202	CIRRHOSIS & ALCOHOLIC HEPATITIS	434	CIRRHOSIS & ALCOHOLIC HEPATITIS W/O CC/MCC
07	M	0709	203	MALIGNANCY OF HEPATOBILIARY SYSTEM OR PANCREAS	435	MALIGNANCY OF HEPATOBILIARY SYSTEM OR PANCREAS W MCC
07	M	0709	203	MALIGNANCY OF HEPATOBILIARY SYSTEM OR PANCREAS	436	MALIGNANCY OF HEPATOBILIARY SYSTEM OR PANCREAS W CC
07	M	0709	203	MALIGNANCY OF HEPATOBILIARY SYSTEM OR PANCREAS	437	MALIGNANCY OF HEPATOBILIARY SYSTEM OR PANCREAS W/O CC/MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
07	M	0710	204	DISORDERS OF PANCREAS EXCEPT MALIGNANCY	438	DISORDERS OF PANCREAS EXCEPT MALIGNANCY W MCC
07	M	0710	204	DISORDERS OF PANCREAS EXCEPT MALIGNANCY	439	DISORDERS OF PANCREAS EXCEPT MALIGNANCY W CC
07	M	0710	204	DISORDERS OF PANCREAS EXCEPT MALIGNANCY	440	DISORDERS OF PANCREAS EXCEPT MALIGNANCY W/O CC/MCC
07	M	0711	205	DISORDERS OF LIVER EXCEPT MALIG,CIRR,ALC HEPA W CC	441	DISORDERS OF LIVER EXCEPT MALIG,CIRR,ALC HEPA W MCC
07	M	0711	206	DISORDERS OF LIVER EXCEPT MALIG,CIRR,ALC HEPA W/O CC	442	DISORDERS OF LIVER EXCEPT MALIG,CIRR,ALC HEPA W CC
07	M	0711	206	DISORDERS OF LIVER EXCEPT MALIG,CIRR,ALC HEPA W/O CC	443	DISORDERS OF LIVER EXCEPT MALIG,CIRR,ALC HEPA W/O CC/MCC
07	M	0712	207	DISORDERS OF THE BILIARY TRACT W CC	444	DISORDERS OF THE BILIARY TRACT W MCC
07	M	0712	208	DISORDERS OF THE BILIARY TRACT W/O CC	445	DISORDERS OF THE BILIARY TRACT W CC
07	M	0712	208	DISORDERS OF THE BILIARY TRACT W/O CC	446	DISORDERS OF THE BILIARY TRACT W/O CC/MCC
08	S	0801	496	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION	453	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION W MCC
08	S	0801	496	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION	454	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION W CC
08	S	0801	496	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION	455	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION W/O CC/MCC
08	S	0802	546	SPINAL FUSION EXC CERV WITH CURVATURE OF THE SPINE OR MALIG	456	SPINAL FUS EXC CERV W SPINAL CURV/MALIG/INFEC OR 9+ FUS W MCC
08	S	0802	546	SPINAL FUSION EXC CERV WITH CURVATURE OF THE SPINE OR MALIG	457	SPINAL FUS EXC CERV W SPINAL CURV/MALIG/INFEC OR 9+ FUS W CC
08	S	0802	546	SPINAL FUSION EXC CERV WITH CURVATURE OF THE SPINE OR MALIG	458	SPINAL FUS EXC CERV W SPINAL CURV/MALIG/INFEC OR 9+ FUS W/O CC/MCC
08	S	0803	497	SPINAL FUSION EXCEPT CERVICAL W CC	459	SPINAL FUSION EXCEPT CERVICAL W MCC
08	S	0803	498	SPINAL FUSION EXCEPT CERVICAL W/O CC	460	SPINAL FUSION EXCEPT CERVICAL W/O MCC
08	S	0804	471	BILATERAL OR MULTIPLE MAJOR JOINT PROCS OF LOWER EXTREMITY	461	BILATERAL OR MULTIPLE MAJOR JOINT PROCS OF LOWER EXTREMITY W MCC
08	S	0804	471	BILATERAL OR MULTIPLE MAJOR JOINT PROCS OF LOWER EXTREMITY	462	BILATERAL OR MULTIPLE MAJOR JOINT PROCS OF LOWER EXTREMITY W/O MCC
08	S	0805	217	WND DEBRID & SKN GRFT EXCEPT HAND,FOR MUSCSKELET & CONN TISS DIS	463	WND DEBRID & SKN GRFT EXC HAND, FOR MUSCULO-CONN TISS DIS W MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
08	S	0805	217	WND DEBRID & SKN GRFT EXCEPT HAND,FOR MUSCSKELET & CONN TISS DIS	464	WND DEBRID & SKN GRFT EXC HAND, FOR MUSCULO-CONN TISS DIS W CC
08	S	0805	217	WND DEBRID & SKN GRFT EXCEPT HAND,FOR MUSCSKELET & CONN TISS DIS	465	WND DEBRID & SKN GRFT EXC HAND, FOR MUSCULO-CONN TISS DIS W/O CC/MCC
08	S	0806	545	REVISION OF HIP OR KNEE REPLACEMENT	466	REVISION OF HIP OR KNEE REPLACEMENT W MCC
08	S	0806	545	REVISION OF HIP OR KNEE REPLACEMENT	467	REVISION OF HIP OR KNEE REPLACEMENT W CC
08	S	0806	545	REVISION OF HIP OR KNEE REPLACEMENT	468	REVISION OF HIP OR KNEE REPLACEMENT W/O CC/MCC
08	S	0807	544	MAJOR JOINT REPLACEMENT OR REATTACHMENT OF LOWER EXTREMITY	469	MAJOR JOINT REPLACEMENT OR REATTACHMENT OF LOWER EXTREMITY W MCC
08	S	0807	544	MAJOR JOINT REPLACEMENT OR REATTACHMENT OF LOWER EXTREMITY	470	MAJOR JOINT REPLACEMENT OR REATTACHMENT OF LOWER EXTREMITY W/O MCC
08	S	0808	519	CERVICAL SPINAL FUSION W CC	471	CERVICAL SPINAL FUSION W MCC
08	S	0808	520	CERVICAL SPINAL FUSION W/O CC	472	CERVICAL SPINAL FUSION W CC
08	S	0808	520	CERVICAL SPINAL FUSION W/O CC	473	CERVICAL SPINAL FUSION W/O CC/MCC
08	S	0809	213	AMPUTATION FOR MUSCULOSKELETAL SYSTEM & CONN TISSUE DISORDERS	474	AMPUTATION FOR MUSCULOSKELETAL SYS & CONN TISSUE DIS W MCC
08	S	0809	213	AMPUTATION FOR MUSCULOSKELETAL SYSTEM & CONN TISSUE DISORDERS	475	AMPUTATION FOR MUSCULOSKELETAL SYS & CONN TISSUE DIS W CC
08	S	0809	213	AMPUTATION FOR MUSCULOSKELETAL SYSTEM & CONN TISSUE DISORDERS	476	AMPUTATION FOR MUSCULOSKELETAL SYS & CONN TISSUE DIS W/O CC/MCC
08	S	0810	216	BIOPSIES OF MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE	477	BIOPSIES OF MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W MCC
08	S	0810	216	BIOPSIES OF MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE	478	BIOPSIES OF MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W CC
08	S	0810	216	BIOPSIES OF MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE	479	BIOPSIES OF MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W/O CC/MCC
08	S	0811	210	HIP & FEMUR PROCEDURES EXCEPT MAJOR JOINT AGE >17 W CC	480	HIP & FEMUR PROCEDURES EXCEPT MAJOR JOINT W MCC
08	S	0811	211	HIP & FEMUR PROCEDURES EXCEPT MAJOR JOINT AGE >17 W/O CC	481	HIP & FEMUR PROCEDURES EXCEPT MAJOR JOINT W CC
08	S	0811	212	HIP & FEMUR PROCEDURES EXCEPT MAJOR JOINT AGE 0-17	482	HIP & FEMUR PROCEDURES EXCEPT MAJOR JOINT W/O CC/MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
08	S	0812	491	MAJOR JOINT & LIMB REATTACHMENT PROCEDURES OF UPPER EXTREMITY	483	MAJOR JOINT & LIMB REATTACHMENT PROC OF UPPER EXTREMITY W CC/MCC
08	S	0812	491	MAJOR JOINT & LIMB REATTACHMENT PROCEDURES OF UPPER EXTREMITY	484	MAJOR JOINT & LIMB REATTACHMENT PROC OF UPPER EXTREMITY W/O CC/MCC
08	S	0813	501	KNEE PROCEDURES W PDX OF INFECTION W CC	485	KNEE PROCEDURES W PDX OF INFECTION W MCC
08	S	0813	502	KNEE PROCEDURES W PDX OF INFECTION W/O CC	486	KNEE PROCEDURES W PDX OF INFECTION W CC
08	S	0813	502	KNEE PROCEDURES W PDX OF INFECTION W/O CC	487	KNEE PROCEDURES W PDX OF INFECTION W/O CC/MCC
08	S	0814	503	KNEE PROCEDURES W/O PDX OF INFECTION	488	KNEE PROCEDURES W/O PDX OF INFECTION W CC/MCC
08	S	0814	503	KNEE PROCEDURES W/O PDX OF INFECTION	489	KNEE PROCEDURES W/O PDX OF INFECTION W/O CC/MCC
08	S	0815	499	BACK & NECK PROCEDURES EXCEPT SPINAL FUSION W CC	490	BACK & NECK PROC EXC SPINAL FUSION W CC/MCC OR DISC DEVICE/NEUROSTIM
08	S	0815	500	BACK & NECK PROCEDURES EXCEPT SPINAL FUSION W/O CC	491	BACK & NECK PROC EXC SPINAL FUSION W/O CC/MCC
08	S	0816	218	LOWER EXTREM & HUMER PROC EXCEPT HIP,FOOT,FEMUR AGE >17 W CC	492	LOWER EXTREM & HUMER PROC EXCEPT HIP,FOOT,FEMUR W MCC
08	S	0816	219	LOWER EXTREM & HUMER PROC EXCEPT HIP,FOOT,FEMUR AGE >17 W/O CC	493	LOWER EXTREM & HUMER PROC EXCEPT HIP,FOOT,FEMUR W CC
08	S	0816	220	LOWER EXTREM & HUMER PROC EXCEPT HIP,FOOT,FEMUR AGE 0-17	494	LOWER EXTREM & HUMER PROC EXCEPT HIP,FOOT,FEMUR W/O CC/MCC
08	S	0817	537	LOCAL EXCIS & REMOV OF INT FIX DEV EXCEPT HIP & FEMUR W CC	495	LOCAL EXCISION & REMOVAL INT FIX DEVICES EXC HIP & FEMUR W MCC
08	S	0817	538	LOCAL EXCIS & REMOV OF INT FIX DEV EXCEPT HIP & FEMUR W/O CC	496	LOCAL EXCISION & REMOVAL INT FIX DEVICES EXC HIP & FEMUR W CC
08	S	0817	538	LOCAL EXCIS & REMOV OF INT FIX DEV EXCEPT HIP & FEMUR W/O CC	497	LOCAL EXCISION & REMOVAL INT FIX DEVICES EXC HIP & FEMUR W/O CC/MCC
08	S	0818	230	LOCAL EXCISION & REMOVAL OF INT FIX DEVICES OF HIP & FEMUR	498	LOCAL EXCISION & REMOVAL INT FIX DEVICES OF HIP & FEMUR W CC/MCC
08	S	0818	230	LOCAL EXCISION & REMOVAL OF INT FIX DEVICES OF HIP & FEMUR	499	LOCAL EXCISION & REMOVAL INT FIX DEVICES OF HIP & FEMUR W/O CC/MCC
08	S	0819	226	SOFT TISSUE PROCEDURES W CC	500	SOFT TISSUE PROCEDURES W MCC
08	S	0819	227	SOFT TISSUE PROCEDURES W/O CC	501	SOFT TISSUE PROCEDURES W CC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
08	S	0819	227	SOFT TISSUE PROCEDURES W/O CC	502	SOFT TISSUE PROCEDURES W/O CC/MCC
08	S	0820	225	FOOT PROCEDURES	503	FOOT PROCEDURES W MCC
08	S	0820	225	FOOT PROCEDURES	504	FOOT PROCEDURES W CC
08	S	0820	225	FOOT PROCEDURES	505	FOOT PROCEDURES W/O CC/MCC
08	S	0821	228	MAJOR THUMB OR JOINT PROC,OR OTH HAND OR WRIST PROC W CC	506	MAJOR THUMB OR JOINT PROCEDURES
08	S	0822	223	MAJOR SHOULDER/ELBOW PROC, OR OTHER UPPER EXTREMITY PROC W CC	507	MAJOR SHOULDER OR ELBOW JOINT PROCEDURES W CC/MCC
08	S	0822	223	MAJOR SHOULDER/ELBOW PROC, OR OTHER UPPER EXTREMITY PROC W CC	508	MAJOR SHOULDER OR ELBOW JOINT PROCEDURES W/O CC/MCC
08	S	0823	232	ARTHROSCOPY	509	ARTHROSCOPY
08	S	0824	224	SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC, W/O CC	510	SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC W MCC
08	S	0824	224	SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC, W/O CC	511	SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC W CC
08	S	0824	224	SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC, W/O CC	512	SHOULDER,ELBOW OR FOREARM PROC,EXC MAJOR JOINT PROC W/O CC/MCC
08	S	0825	229	HAND OR WRIST PROC, EXCEPT MAJOR JOINT PROC, W/O CC	513	HAND OR WRIST PROC, EXCEPT MAJOR THUMB OR JOINT PROC W CC/MCC
08	S	0825	229	HAND OR WRIST PROC, EXCEPT MAJOR JOINT PROC, W/O CC	514	HAND OR WRIST PROC, EXCEPT MAJOR THUMB OR JOINT PROC W/O CC/MCC
08	S	0826	233	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W CC	515	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W MCC
08	S	0826	234	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W/O CC	516	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W CC
08	S	0826	234	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W/O CC	517	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W/O CC/MCC
08	M	0827	235	FRACTURES OF FEMUR	533	FRACTURES OF FEMUR W MCC
08	M	0827	235	FRACTURES OF FEMUR	534	FRACTURES OF FEMUR W/O MCC
08	M	0828	236	FRACTURES OF HIP & PELVIS	535	FRACTURES OF HIP & PELVIS W MCC
08	M	0828	236	FRACTURES OF HIP & PELVIS	536	FRACTURES OF HIP & PELVIS W/O MCC
08	M	0829	237	SPRAINS, STRAINS, & DISLOCATIONS OF HIP, PELVIS & THIGH	537	SPRAINS, STRAINS, & DISLOCATIONS OF HIP, PELVIS & THIGH W CC/MCC
08	M	0829	237	SPRAINS, STRAINS, & DISLOCATIONS OF HIP, PELVIS & THIGH	538	SPRAINS, STRAINS, & DISLOCATIONS OF HIP, PELVIS & THIGH W/O CC/MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
08	M	0830	238	OSTEOMYELITIS	539	OSTEOMYELITIS W MCC
08	M	0830	238	OSTEOMYELITIS	540	OSTEOMYELITIS W CC
08	M	0830	238	OSTEOMYELITIS	541	OSTEOMYELITIS W/O CC/MCC
08	M	0831	239	PATHOLOGICAL FRACTURES & MUSCULOSKELETAL & CONN TISS MALIGNANCY	542	PATHOLOGICAL FRACTURES & MUSCULOSKELET & CONN TISS MALIG W MCC
08	M	0831	239	PATHOLOGICAL FRACTURES & MUSCULOSKELETAL & CONN TISS MALIGNANCY	543	PATHOLOGICAL FRACTURES & MUSCULOSKELET & CONN TISS MALIG W CC
08	M	0831	239	PATHOLOGICAL FRACTURES & MUSCULOSKELETAL & CONN TISS MALIGNANCY	544	PATHOLOGICAL FRACTURES & MUSCULOSKELET & CONN TISS MALIG W/O CC/MCC
08	M	0832	240	CONNECTIVE TISSUE DISORDERS W CC	545	CONNECTIVE TISSUE DISORDERS W MCC
08	M	0832	241	CONNECTIVE TISSUE DISORDERS W/O CC	546	CONNECTIVE TISSUE DISORDERS W CC
08	M	0832	241	CONNECTIVE TISSUE DISORDERS W/O CC	547	CONNECTIVE TISSUE DISORDERS W/O CC/MCC
08	M	0833	242	SEPTIC ARTHRITIS	548	SEPTIC ARTHRITIS W MCC
08	M	0833	242	SEPTIC ARTHRITIS	549	SEPTIC ARTHRITIS W CC
08	M	0833	242	SEPTIC ARTHRITIS	550	SEPTIC ARTHRITIS W/O CC/MCC
08	M	0834	243	MEDICAL BACK PROBLEMS	551	MEDICAL BACK PROBLEMS W MCC
08	M	0834	243	MEDICAL BACK PROBLEMS	552	MEDICAL BACK PROBLEMS W/O MCC
08	M	0835	244	BONE DISEASES & SPECIFIC ARTHROPATHIES W CC	553	BONE DISEASES & ARTHROPATHIES W MCC
08	M	0835	245	BONE DISEASES & SPECIFIC ARTHROPATHIES W/O CC	554	BONE DISEASES & ARTHROPATHIES W/O MCC
08	M	0835	246	NON-SPECIFIC ARTHROPATHIES	554	BONE DISEASES & ARTHROPATHIES W/O MCC
08	M	0836	247	SIGNS & SYMPTOMS OF MUSCULOSKELETAL SYSTEM & CONN TISSUE	555	SIGNS & SYMPTOMS OF MUSCULOSKELETAL SYSTEM & CONN TISSUE W MCC
08	M	0836	247	SIGNS & SYMPTOMS OF MUSCULOSKELETAL SYSTEM & CONN TISSUE	556	SIGNS & SYMPTOMS OF MUSCULOSKELETAL SYSTEM & CONN TISSUE W/O MCC
08	M	0837	248	TENDONITIS, MYOSITIS & BURSITIS	557	TENDONITIS, MYOSITIS & BURSITIS W MCC
08	M	0837	248	TENDONITIS, MYOSITIS & BURSITIS	558	TENDONITIS, MYOSITIS & BURSITIS W/O MCC
08	M	0838	249	AFTERCARE, MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE	559	AFTERCARE, MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
08	M	0838	249	AFTERCARE, MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE	560	AFTERCARE, MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W CC
08	M	0838	249	AFTERCARE, MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE	561	AFTERCARE, MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE W/O CC/MCC
08	M	0839	250	FX, SPRN, STRN & DISL OF FOREARM, HAND, FOOT AGE >17 W CC	562	FX, SPRN, STRN & DISL EXCEPT FEMUR, HIP, PELVIS & THIGH W MCC
08	M	0839	251	FX, SPRN, STRN & DISL OF FOREARM, HAND, FOOT AGE >17 W/O CC	563	FX, SPRN, STRN & DISL EXCEPT FEMUR, HIP, PELVIS & THIGH W/O MCC
08	M	0839	252	FX, SPRN, STRN & DISL OF FOREARM, HAND, FOOT AGE 0-17	563	FX, SPRN, STRN & DISL EXCEPT FEMUR, HIP, PELVIS & THIGH W/O MCC
08	M	0839	253	FX, SPRN, STRN & DISL OF UPARM,LOWLEG EX FOOT AGE >17 W CC	563	FX, SPRN, STRN & DISL EXCEPT FEMUR, HIP, PELVIS & THIGH W/O MCC
08	M	0839	254	FX, SPRN, STRN & DISL OF UPARM,LOWLEG EX FOOT AGE >17 W/O CC	563	FX, SPRN, STRN & DISL EXCEPT FEMUR, HIP, PELVIS & THIGH W/O MCC
08	M	0839	255	FX, SPRN, STRN & DISL OF UPARM,LOWLEG EX FOOT AGE 0-17	563	FX, SPRN, STRN & DISL EXCEPT FEMUR, HIP, PELVIS & THIGH W/O MCC
08	M	0840	256	OTHER MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE DIAGNOSES	564	OTHER MUSCULOSKELETAL SYS & CONNECTIVE TISSUE DIAGNOSES W MCC
08	M	0840	256	OTHER MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE DIAGNOSES	565	OTHER MUSCULOSKELETAL SYS & CONNECTIVE TISSUE DIAGNOSES W CC
08	M	0840	256	OTHER MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE DIAGNOSES	566	OTHER MUSCULOSKELETAL SYS & CONNECTIVE TISSUE DIAGNOSES W/O CC/MCC
08	S	0899	209	MAJOR JOINT & LIMB REATTACHMENT PROCEDURES OF LOWER EXTR		
08	S	0899	214	BACK & NECK PROC W CC (NO LONGER VALID)		
08	S	0899	215	BACK & NECK PROC WO CC (NO LONGER VALID)		
08	S	0899	221	KNEE PROC W CC (NO LONGER VALID)		
08	S	0899	222	KNEE PROC WO CC (NO LONGER VALID)		
08	S	0899	231	LOCAL EXCISION & REMOVAL OF INT FIX DEVICES EXCEPT HIP &		
09	S	0901	263	SKIN GRAFT &/OR DEBRID FOR SKN ULCER OR CELLULITIS W CC	570	SKIN DEBRIDEMENT W MCC
09	S	0901	264	SKIN GRAFT &/OR DEBRID FOR SKN ULCER OR CELLULITIS W/O CC	571	SKIN DEBRIDEMENT W CC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
09	S	0901	264	SKIN GRAFT &/OR DEBRID FOR SKN ULCER OR CELLULITIS W/O CC	572	SKIN DEBRIDEMENT W/O CC/MCC
09	S	0901	263	SKIN GRAFT &/OR DEBRID FOR SKN ULCER OR CELLULITIS W CC	573	SKIN GRAFT FOR SKN ULCER OR CELLULITIS W MCC
09	S	0901	264	SKIN GRAFT &/OR DEBRID FOR SKN ULCER OR CELLULITIS W/O CC	574	SKIN GRAFT FOR SKN ULCER OR CELLULITIS W CC
09	S	0901	264	SKIN GRAFT &/OR DEBRID FOR SKN ULCER OR CELLULITIS W/O CC	575	SKIN GRAFT FOR SKN ULCER OR CELLULITIS W/O CC/MCC
09	S	0902	265	SKIN GRAFT &/OR DEBRID EXCEPT FOR SKIN ULCER OR CELLULITIS W CC	576	SKIN GRAFT EXC FOR SKIN ULCER OR CELLULITIS W MCC
09	S	0902	266	SKIN GRAFT &/OR DEBRID EXCEPT FOR SKIN ULCER OR CELLULITIS W/O CC	577	SKIN GRAFT EXC FOR SKIN ULCER OR CELLULITIS W CC
09	S	0902	266	SKIN GRAFT &/OR DEBRID EXCEPT FOR SKIN ULCER OR CELLULITIS W/O CC	578	SKIN GRAFT EXC FOR SKIN ULCER OR CELLULITIS W/O CC/MCC
09	S	0903	267	PERIANAL & PILONIDAL PROCEDURES	579	OTHER SKIN, SUBCUT TISS & BREAST PROC W MCC
09	S	0903	268	SKIN, SUBCUTANEOUS TISSUE & BREAST PLASTIC PROCEDURES	580	OTHER SKIN, SUBCUT TISS & BREAST PROC W CC
09	S	0903	269	OTHER SKIN, SUBCUT TISS & BREAST PROC W CC	581	OTHER SKIN, SUBCUT TISS & BREAST PROC W/O CC/MCC
09	S	0903	270	OTHER SKIN, SUBCUT TISS & BREAST PROC W/O CC	581	OTHER SKIN, SUBCUT TISS & BREAST PROC W/O CC/MCC
09	S	0904	257	TOTAL MASTECTOMY FOR MALIGNANCY W CC	582	MASTECTOMY FOR MALIGNANCY W CC/MCC
09	S	0904	258	TOTAL MASTECTOMY FOR MALIGNANCY W/O CC	583	MASTECTOMY FOR MALIGNANCY W/O CC/MCC
09	S	0905	259	SUBTOTAL MASTECTOMY FOR MALIGNANCY W CC	584	BREAST BIOPSY, LOCAL EXCISION & OTHER BREAST PROCEDURES W CC/MCC
09	S	0905	260	SUBTOTAL MASTECTOMY FOR MALIGNANCY W/O CC	585	BREAST BIOPSY, LOCAL EXCISION & OTHER BREAST PROCEDURES W/O CC/MCC
09	S	0905	261	BREAST PROC FOR NON-MALIGNANCY EXCEPT BIOPSY & LOCAL EXCISION	585	BREAST BIOPSY, LOCAL EXCISION & OTHER BREAST PROCEDURES W/O CC/MCC
09	S	0905	262	BREAST BIOPSY & LOCAL EXCISION FOR NON-MALIGNANCY	585	BREAST BIOPSY, LOCAL EXCISION & OTHER BREAST PROCEDURES W/O CC/MCC
09	M	0906	271	SKIN ULCERS	592	SKIN ULCERS W MCC
09	M	0906	271	SKIN ULCERS	593	SKIN ULCERS W CC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
09	M	0906	271	SKIN ULCERS	594	SKIN ULCERS W/O CC/MCC
09	M	0907	272	MAJOR SKIN DISORDERS W CC	595	MAJOR SKIN DISORDERS W MCC
09	M	0907	273	MAJOR SKIN DISORDERS W/O CC	596	MAJOR SKIN DISORDERS W/O MCC
09	M	0908	274	MALIGNANT BREAST DISORDERS W CC	597	MALIGNANT BREAST DISORDERS W MCC
09	M	0908	275	MALIGNANT BREAST DISORDERS W/O CC	598	MALIGNANT BREAST DISORDERS W CC
09	M	0908	275	MALIGNANT BREAST DISORDERS W/O CC	599	MALIGNANT BREAST DISORDERS W/O CC/MCC
09	M	0909	276	NON-MALIGANT BREAST DISORDERS	600	NON-MALIGNANT BREAST DISORDERS W CC/MCC
09	M	0909	276	NON-MALIGANT BREAST DISORDERS	601	NON-MALIGNANT BREAST DISORDERS W/O CC/MCC
09	M	0910	277	CELLULITIS AGE >17 W CC	602	CELLULITIS W MCC
09	M	0910	278	CELLULITIS AGE >17 W/O CC	603	CELLULITIS W/O MCC
09	M	0910	279	CELLULITIS AGE 0-17	603	CELLULITIS W/O MCC
09	M	0911	280	TRAUMA TO THE SKIN, SUBCUT TISS & BREAST AGE >17 W CC	604	TRAUMA TO THE SKIN, SUBCUT TISS & BREAST W MCC
09	M	0911	281	TRAUMA TO THE SKIN, SUBCUT TISS & BREAST AGE >17 W/O CC	605	TRAUMA TO THE SKIN, SUBCUT TISS & BREAST W/O MCC
09	M	0911	282	TRAUMA TO THE SKIN, SUBCUT TISS & BREAST AGE 0-17	605	TRAUMA TO THE SKIN, SUBCUT TISS & BREAST W/O MCC
09	M	0912	283	MINOR SKIN DISORDERS W CC	606	MINOR SKIN DISORDERS W MCC
09	M	0912	284	MINOR SKIN DISORDERS W/O CC	607	MINOR SKIN DISORDERS W/O MCC
10	S	1001	286	ADRENAL & PITUITARY PROCEDURES	614	ADRENAL & PITUITARY PROCEDURES W CC/MCC
10	S	1001	286	ADRENAL & PITUITARY PROCEDURES	615	ADRENAL & PITUITARY PROCEDURES W/O CC/MCC
10	S	1002	285	AMPUTAT OF LOWER LIMB FOR ENDOCRINE,NUTRIT,& METABOL DISORDERS	616	AMPUTAT OF LOWER LIMB FOR ENDOCRINE,NUTRIT,& METABOL DIS W MCC
10	S	1002	285	AMPUTAT OF LOWER LIMB FOR ENDOCRINE,NUTRIT,& METABOL DISORDERS	617	AMPUTAT OF LOWER LIMB FOR ENDOCRINE,NUTRIT,& METABOL DIS W CC
10	S	1002	285	AMPUTAT OF LOWER LIMB FOR ENDOCRINE,NUTRIT,& METABOL DISORDERS	618	AMPUTAT OF LOWER LIMB FOR ENDOCRINE,NUTRIT,& METABOL DIS W/O CC/MCC
10	S	1003	288	O.R. PROCEDURES FOR OBESITY	619	O.R. PROCEDURES FOR OBESITY W MCC
10	S	1003	288	O.R. PROCEDURES FOR OBESITY	620	O.R. PROCEDURES FOR OBESITY W CC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
10	S	1003	288	O.R. PROCEDURES FOR OBESITY	621	O.R. PROCEDURES FOR OBESITY W/O CC/MCC
10	S	1004	287	SKIN GRAFTS & WOUND DEBRID FOR ENDOC, NUTRIT & METAB DISORDERS	622	SKIN GRAFTS & WOUND DEBRID FOR ENDOC, NUTRIT & METAB DIS W MCC
10	S	1004	287	SKIN GRAFTS & WOUND DEBRID FOR ENDOC, NUTRIT & METAB DISORDERS	623	SKIN GRAFTS & WOUND DEBRID FOR ENDOC, NUTRIT & METAB DIS W CC
10	S	1004	287	SKIN GRAFTS & WOUND DEBRID FOR ENDOC, NUTRIT & METAB DISORDERS	624	SKIN GRAFTS & WOUND DEBRID FOR ENDOC, NUTRIT & METAB DIS W/O CC/MCC
10	S	1005	289	PARATHYROID PROCEDURES	625	THYROID, PARATHYROID & THYROGLOSSAL PROCEDURES W MCC
10	S	1005	290	THYROID PROCEDURES	626	THYROID, PARATHYROID & THYROGLOSSAL PROCEDURES W CC
10	S	1005	291	THYROGLOSSAL PROCEDURES	627	THYROID, PARATHYROID & THYROGLOSSAL PROCEDURES W/O CC/MCC
10	S	1006	292	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W CC	628	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W MCC
10	S	1006	293	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W/O CC	629	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W CC
10	S	1006	293	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W/O CC	630	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W/O CC/MCC
10	M	1007	294	DIABETES AGE >35	637	DIABETES W MCC
10	M	1007	295	DIABETES AGE 0-35	638	DIABETES W CC
10	M	1007	295	DIABETES AGE 0-35	639	DIABETES W/O CC/MCC
10	M	1008	296	NUTRITIONAL & MISC METABOLIC DISORDERS AGE >17 W CC	640	NUTRITIONAL & MISC METABOLIC DISORDERS W MCC
10	M	1008	297	NUTRITIONAL & MISC METABOLIC DISORDERS AGE >17 W/O CC	641	NUTRITIONAL & MISC METABOLIC DISORDERS W/O MCC
10	M	1008	298	NUTRITIONAL & MISC METABOLIC DISORDERS AGE 0-17	641	NUTRITIONAL & MISC METABOLIC DISORDERS W/O MCC
10	M	1009	299	INBORN ERRORS OF METABOLISM	642	INBORN ERRORS OF METABOLISM
10	M	1010	300	ENDOCRINE DISORDERS W CC	643	ENDOCRINE DISORDERS W MCC
10	M	1010	301	ENDOCRINE DISORDERS W/O CC	644	ENDOCRINE DISORDERS W CC
10	M	1010	301	ENDOCRINE DISORDERS W/O CC	645	ENDOCRINE DISORDERS W/O CC/MCC
11	S	1101	302	KIDNEY TRANSPLANT	652	KIDNEY TRANSPLANT
11	S	1102	573	MAJOR BLADDER PROCEDURES	653	MAJOR BLADDER PROCEDURES W MCC
11	S	1102	573	MAJOR BLADDER PROCEDURES	654	MAJOR BLADDER PROCEDURES W CC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
11	S	1102	573	MAJOR BLADDER PROCEDURES	655	MAJOR BLADDER PROCEDURES W/O CC/MCC
11	S	1103	303	KIDNEY AND URETER PROCEDURES FOR NEOPLASM	656	KIDNEY & URETER PROCEDURES FOR NEOPLASM W MCC
11	S	1103	303	KIDNEY AND URETER PROCEDURES FOR NEOPLASM	657	KIDNEY & URETER PROCEDURES FORNEOPLASM W CC
11	S	1103	303	KIDNEY AND URETER PROCEDURES FOR NEOPLASM	658	KIDNEY & URETER PROCEDURES FOR NEOPLASM W/O CC/MCC
11	S	1104	304	KIDNEY AND URETER PROCEDURES FOR NON-NEOPLASM WITHOUT CC	659	KIDNEY & URETER PROCEDURES FOR NON-NEOPLASM W MCC
11	S	1104	305	KIDNEY AND URETER PROCEDURES FOR NON-NEOPLASM WITHOUT CC	660	KIDNEY & URETER PROCEDURES FOR NON-NEOPLASM W CC
11	S	1104	305	KIDNEY AND URETER PROCEDURES FOR NON-NEOPLASM WITHOUT CC	661	KIDNEY & URETER PROCEDURES FOR NON-NEOPLASM W/O CC/MCC
11	S	1105	308	MINOR BLADDER PROCEDURES W CC	662	MINOR BLADDER PROCEDURES W MCC
11	S	1105	309	MINOR BLADDER PROCEDURES W/O CC	663	MINOR BLADDER PROCEDURES W CC
11	S	1105	309	MINOR BLADDER PROCEDURES W/O CC	664	MINOR BLADDER PROCEDURES W/O CC/MCC
11	S	1106	306	PROSTATECTOMY W CC	665	PROSTATECTOMY W MCC
11	S	1106	307	PROSTATECTOMY W/O CC	666	PROSTATECTOMY W CC
11	S	1106	307	PROSTATECTOMY W/O CC	667	PROSTATECTOMY W/O CC/MCC
11	S	1107	310	TRANSURETHRAL PROCEDURES W CC	668	TRANSURETHRAL PROCEDURES W MCC
11	S	1107	311	TRANSURETHRAL PROCEDURES W/O CC	669	TRANSURETHRAL PROCEDURES W CC
11	S	1107	311	TRANSURETHRAL PROCEDURES W/O CC	670	TRANSURETHRAL PROCEDURES W/O CC/MCC
11	S	1108	312	URETHRAL PROCEDURES, AGE >17 W CC	671	URETHRAL PROCEDURES W CC/MCC
11	S	1108	313	URETHRAL PROCEDURES, AGE >17 W/O CC	672	URETHRAL PROCEDURES W/O CC/MCC
11	S	1108	314	URETHRAL PROCEDURES, AGE 0-17	672	URETHRAL PROCEDURES W/O CC/MCC
11	S	1109	315	OTHER KIDNEY & URINARY TRACT O.R. PROCEDURES	673	OTHER KIDNEY & URINARY TRACT PROCEDURES W MCC
11	S	1109	315	OTHER KIDNEY & URINARY TRACT O.R. PROCEDURES	674	OTHER KIDNEY & URINARY TRACT PROCEDURES W CC
11	S	1109	315	OTHER KIDNEY & URINARY TRACT O.R. PROCEDURES	675	OTHER KIDNEY & URINARY TRACT PROCEDURES W/O CC/MCC
11	M	1110	316	RENAL FAILURE	682	RENAL FAILURE W MCC
11	M	1110	316	RENAL FAILURE	683	RENAL FAILURE W CC
11	M	1110	316	RENAL FAILURE	684	RENAL FAILURE W/O CC/MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
11	M	1111	317	ADMIT FOR RENAL DIALYSIS	685	ADMIT FOR RENAL DIALYSIS
11	M	1112	318	KIDNEY & URINARY TRACT NEOPLASMS W CC	686	KIDNEY & URINARY TRACT NEOPLASMS W MCC
11	M	1112	319	KIDNEY & URINARY TRACT NEOPLASMS W/O CC	687	KIDNEY & URINARY TRACT NEOPLASMS W CC
11	M	1112	319	KIDNEY & URINARY TRACT NEOPLASMS W/O CC	688	KIDNEY & URINARY TRACT NEOPLASMS W/O CC/MCC
11	M	1113	320	KIDNEY & URINARY TRACT INFECTIONS AGE >17 W CC	689	KIDNEY & URINARY TRACT INFECTIONS W MCC
11	M	1113	321	KIDNEY & URINARY TRACT INFECTIONS AGE >17 W/O CC	690	KIDNEY & URINARY TRACT INFECTIONS W/O MCC
11	M	1113	322	KIDNEY & URINARY TRACT INFECTIONS AGE 0-17	690	KIDNEY & URINARY TRACT INFECTIONS W/O MCC
11	M	1114	323	URINARY STONES W CC, &/OR ESW LITHOTRIPSY	691	URINARY STONES W ESW LITHOTRIPSY W CC/MCC
11	M	1114	323	URINARY STONES W CC, &/OR ESW LITHOTRIPSY	692	URINARY STONES W ESW LITHOTRIPSY W/O CC/MCC
11	M	1115	324	URINARY STONES W/O CC	693	URINARY STONES W/O ESW LITHOTRIPSY W MCC
11	M	1115	324	URINARY STONES W/O CC	694	URINARY STONES W/O ESW LITHOTRIPSY W/O MCC
11	M	1116	325	KIDNEY & URINARY TRACT SIGNS & SYMPTOMS AGE >17 W CC	695	KIDNEY & URINARY TRACT SIGNS & SYMPTOMS W MCC
11	M	1116	326	KIDNEY & URINARY TRACT SIGNS & SYMPTOMS AGE >17 W/O CC	696	KIDNEY & URINARY TRACT SIGNS & SYMPTOMS W/O MCC
11	M	1116	327	KIDNEY & URINARY TRACT SIGNS & SYMPTOMS AGE 0-17	696	KIDNEY & URINARY TRACT SIGNS & SYMPTOMS W/O MCC
11	M	1117	328	URETHRAL STRICTURE AGE >17 W CC	697	URETHRAL STRICTURE
11	M	1117	329	URETHRAL STRICTURE AGE >17 W/O CC	697	URETHRAL STRICTURE
11	M	1117	330	URETHRAL STRICTURE AGE 0-17	697	URETHRAL STRICTURE
11	M	1118	331	OTHER KIDNEY & URINARY TRACT DIAGNOSES AGE >17 W CC	698	OTHER KIDNEY & URINARY TRACT DIAGNOSES W MCC
11	M	1118	332	OTHER KIDNEY & URINARY TRACT DIAGNOSES AGE >17 W/O CC	699	OTHER KIDNEY & URINARY TRACT DIAGNOSES W CC
11	M	1118	333	OTHER KIDNEY & URINARY TRACT DIAGNOSES AGE 0-17	700	OTHER KIDNEY & URINARY TRACT DIAGNOSES W/O CC/MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
12	S	1201	334	MAJOR MALE PELVIC PROCEDURES W CC	707	MAJOR MALE PELVIC PROCEDURES W CC/MCC
12	S	1201	335	MAJOR MALE PELVIC PROCEDURES W/O CC	708	MAJOR MALE PELVIC PROCEDURES W/O CC/MCC
12	S	1202	341	PENIS PROCEDURES	709	PENIS PROCEDURES W CC/MCC
12	S	1202	341	PENIS PROCEDURES	710	PENIS PROCEDURES W/O CC/MCC
12	S	1203	338	TESTES PROCEDURES, FOR MALIGNANCY	711	TESTES PROCEDURES W CC/MCC
12	S	1203	339	TESTES PROCEDURES, NON-MALIGNANCY AGE >17	712	TESTES PROCEDURES W/O CC/MCC
12	S	1203	340	TESTES PROCEDURES, NON-MALIGNANCY AGE 0-17	712	TESTES PROCEDURES W/O CC/MCC
12	S	1204	336	TRANSURETHRAL PROSTATECTOMY W CC	713	TRANSURETHRAL PROSTATECTOMY W CC/MCC
12	S	1204	337	TRANSURETHRAL PROSTATECTOMY W/O CC	714	TRANSURETHRAL PROSTATECTOMY W/O CC/MCC
12	S	1205	344	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROCEDURES FOR MALIGNANCY	715	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC FOR MALIGNANCY W CC/MCC
12	S	1205	344	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROCEDURES FOR MALIGNANCY	716	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC FOR MALIGNANCY W/O CC/MCC
12	S	1206	345	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC EXCEPT FOR MALIGNANCY	717	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC EXC MALIGNANCY W CC/MCC
12	S	1206	345	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC EXCEPT FOR MALIGNANCY	718	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC EXC MALIGNANCY W/O CC/MCC
12	S	1206	342	CIRCUMCISION AGE >17	718	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC EXC MALIGNANCY W/O CC/MCC
12	S	1206	343	CIRCUMCISION AGE 0-17	718	OTHER MALE REPRODUCTIVE SYSTEM O.R. PROC EXC MALIGNANCY W/O CC/MCC
12	M	1207	346	MALIGNANCY, MALE REPRODUCTIVE SYSTEM, W CC	722	MALIGNANCY, MALE REPRODUCTIVE SYSTEM W MCC
12	M	1207	347	MALIGNANCY, MALE REPRODUCTIVE SYSTEM, W/O CC	723	MALIGNANCY, MALE REPRODUCTIVE SYSTEM W CC
12	M	1207	347	MALIGNANCY, MALE REPRODUCTIVE SYSTEM, W/O CC	724	MALIGNANCY, MALE REPRODUCTIVE SYSTEM W/O CC/MCC
12	M	1208	348	BENIGN PROSTATIC HYPERTROPHY W CC	725	BENIGN PROSTATIC HYPERTROPHY W MCC
12	M	1208	349	BENIGN PROSTATIC HYPERTROPHY W/O CC	726	BENIGN PROSTATIC HYPERTROPHY W/O MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
12	M	1209	350	INFLAMMATION OF THE MALE REPRODUCTIVE SYSTEM	727	INFLAMMATION OF THE MALE REPRODUCTIVE SYSTEM W MCC
12	M	1209	350	INFLAMMATION OF THE MALE REPRODUCTIVE SYSTEM	728	INFLAMMATION OF THE MALE REPRODUCTIVE SYSTEM W/O MCC
12	M	1210	351	STERILIZATION, MALE	729	OTHER MALE REPRODUCTIVE SYSTEM DIAGNOSES W CC/MCC
12	M	1210	352	OTHER MALE REPRODUCTIVE SYSTEM DIAGNOSES	730	OTHER MALE REPRODUCTIVE SYSTEM DIAGNOSES W/O CC/MCC
13	S	1301	353	PELVIC EVISCERATION, RADICAL HYSTERECTOMY & RADICAL VULVECTOMY	734	PELVIC EVISCERATION, RAD HYSTERECTOMY & RAD VULVECTOMY W CC/MCC
13	S	1301	353	PELVIC EVISCERATION, RADICAL HYSTERECTOMY & RADICAL VULVECTOMY	735	PELVIC EVISCERATION, RAD HYSTERECTOMY & RAD VULVECTOMY W/O CC/MCC
13	S	1302	357	UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIGNANCY	736	UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIGNANCY W MCC
13	S	1302	357	UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIGNANCY	737	UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIGNANCY W CC
13	S	1302	357	UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIGNANCY	738	UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIGNANCY W/O CC/MCC
13	S	1303	354	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W CC	739	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W MCC
13	S	1303	355	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W/O CC	740	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W CC
13	S	1303	355	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W/O CC	741	UTERINE,ADNEXA PROC FOR NON-OVARIAN/ADNEXAL MALIG W/O CC/MCC
13	S	1304	358	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W CC	742	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W CC/MCC
13	S	1304	359	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W/O CC	743	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W/O CC/MCC
13	S	1305	361	LAPAROSCOPY & INCISIONAL TUBAL INTERRUPTION	744	D&C, CONIZATION, LAPAROSCOPY & TUBAL INTERRUPTION W CC/MCC
13	S	1305	362	ENDOSCOPIC TUBAL INTERRUPTION	745	D&C, CONIZATION, LAPAROSCOPY & TUBAL INTERRUPTION W/O CC/MCC
13	S	1305	363	D&C, CONIZATION & RADIO-IMPLANT, FOR MALIGNANCY	745	D&C, CONIZATION, LAPAROSCOPY & TUBAL INTERRUPTION W/O CC/MCC
13	S	1305	364	D&C, CONIZATION EXCEPT FOR MALIGNANCY	745	D&C, CONIZATION, LAPAROSCOPY & TUBAL INTERRUPTION W/O CC/MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
13	S	1306	360	VAGINA, CERVIX & VULVA PROCEDURES	746	VAGINA, CERVIX & VULVA PROCEDURES W CC/MCC
13	S	1306	360	VAGINA, CERVIX & VULVA PROCEDURES	747	VAGINA, CERVIX & VULVA PROCEDURES W/O CC/MCC
13	S	1307	356	FEMALE REPRODUCTIVE SYSTEM RECONSTRUCTIVE PROCEDURES	748	FEMALE REPRODUCTIVE SYSTEM RECONSTRUCTIVE PROCEDURES
13	S	1308	365	OTHER FEMALE REPRODUCTIVE SYSTEM O.R. PROCEDURES	749	OTHER FEMALE REPRODUCTIVE SYSTEM O.R. PROCEDURES W CC/MCC
13	S	1308	365	OTHER FEMALE REPRODUCTIVE SYSTEM O.R. PROCEDURES	750	OTHER FEMALE REPRODUCTIVE SYSTEM O.R. PROCEDURES W/O CC/MCC
13	M	1309	366	MALIGNANCY, FEMALE REPRODUCTIVE SYSTEM W CC	754	MALIGNANCY, FEMALE REPRODUCTIVE SYSTEM W MCC
13	M	1309	367	MALIGNANCY, FEMALE REPRODUCTIVE SYSTEM W/O CC	755	MALIGNANCY, FEMALE REPRODUCTIVE SYSTEM W CC
13	M	1309	367	MALIGNANCY, FEMALE REPRODUCTIVE SYSTEM W/O CC	756	MALIGNANCY, FEMALE REPRODUCTIVE SYSTEM W/O CC/MCC
13	M	1310	368	INFECTIONS, FEMALE REPRODUCTIVE SYSTEM	757	INFECTIONS, FEMALE REPRODUCTIVE SYSTEM W MCC
13	M	1310	368	INFECTIONS, FEMALE REPRODUCTIVE SYSTEM	758	INFECTIONS, FEMALE REPRODUCTIVE SYSTEM W CC
13	M	1310	368	INFECTIONS, FEMALE REPRODUCTIVE SYSTEM	759	INFECTIONS, FEMALE REPRODUCTIVE SYSTEM W/O CC/MCC
13	M	1311	369	MENSTRUAL & OTHER FEMALE REPRODUCTIVE SYSTEM DISORDERS	760	MENSTRUAL & OTHER FEMALE REPRODUCTIVE SYSTEM DISORDERS W CC/MCC
13	M	1311	369	MENSTRUAL & OTHER FEMALE REPRODUCTIVE SYSTEM DISORDERS	761	MENSTRUAL & OTHER FEMALE REPRODUCTIVE SYSTEM DISORDERS W/O CC/MCC
14	S	1401	370	CESAREAN SECTION W CC	765	CESAREAN SECTION W CC/MCC
14	S	1401	371	CESAREAN SECTION W/O CC	766	CESAREAN SECTION W/O CC/MCC
14	S	1402	374	VAGINAL DELIVERY W STERILIZATION &/OR D&C	767	VAGINAL DELIVERY W STERILIZATION &/OR D&C
14	S	1402	375	VAGINAL DELIVERY W O.R. PROC EXCEPT STERIL &/OR D&C	768	VAGINAL DELIVERY W O.R. PROC EXCEPT STERIL &/OR D&C
14	S	1403	377	POSTPARTUM & POST ABORTION DIAGNOSES W O.R. PROCEDURE	769	POSTPARTUM & POST ABORTION DIAGNOSES W O.R. PROCEDURE

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
14	S	1404	381	ABORTION W D&C, ASPIRATION CURETTAGE OR HYSTEROTOMY	770	ABORTION W D&C, ASPIRATION CURETTAGE OR HYSTEROTOMY
14	M	1405	372	VAGINAL DELIVERY W COMPLICATING DIAGNOSES	774	VAGINAL DELIVERY W COMPLICATING DIAGNOSES
14	M	1405	373	VAGINAL DELIVERY W/O COMPLICATING DIAGNOSES	775	VAGINAL DELIVERY W/O COMPLICATING DIAGNOSES
14	M	1406	376	POSTPARTUM & POST ABORTION DIAGNOSES W/O O.R. PROCEDURE	776	POSTPARTUM & POST ABORTION DIAGNOSES W/O O.R. PROCEDURE
14	M	1407	378	ECTOPIC PREGNANCY	777	ECTOPIC PREGNANCY
14	M	1408	379	THREATENED ABORTION	778	THREATENED ABORTION
14	M	1409	380	ABORTION W/O D&C	779	ABORTION W/O D&C
14	M	1410	382	FALSE LABOR	780	FALSE LABOR
14	M	1411	383	OTHER ANTEPARTUM DIAGNOSES W MEDICAL COMPLICATIONS	781	OTHER ANTEPARTUM DIAGNOSES W MEDICAL COMPLICATIONS
14	M	1412	384	OTHER ANTEPARTUM DIAGNOSES W/O MEDICAL COMPLICATIONS	782	OTHER ANTEPARTUM DIAGNOSES W/O MEDICAL COMPLICATIONS
15	M	1501	385	NEONATES, DIED OR TRANSFERRED TO ANOTHER ACUTE CARE FACILITY	789	NEONATES, DIED OR TRANSFERRED TO ANOTHER ACUTE CARE FACILITY
15	M	1502	386	EXTREME IMMATURITY OR RESPIRATORY DISTRESS SYNDROME, NEONATE	790	EXTREME IMMATURITY OR RESPIRATORY DISTRESS SYNDROME, NEONATE
15	M	1503	387	PREMATURITY W MAJOR PROBLEMS	791	PREMATURITY W MAJOR PROBLEMS
15	M	1504	388	PREMATURITY W/O MAJOR PROBLEMS	792	PREMATURITY W/O MAJOR PROBLEMS
15	M	1505	389	FULL TERM NEONATE W MAJOR PROBLEMS	793	FULL TERM NEONATE W MAJOR PROBLEMS
15	M	1506	390	NEONATE W OTHER SIGNIFICANT PROBLEMS	794	NEONATE W OTHER SIGNIFICANT PROBLEMS
15	M	1507	391	NORMAL NEWBORN	795	NORMAL NEWBORN
16	S	1601	392	SPLENECTOMY AGE >17	799	SPLENECTOMY W MCC
16	S	1601	393	SPLENECTOMY AGE 0-17	800	SPLENECTOMY W CC
16	S	1601	393	SPLENECTOMY AGE 0-17	801	SPLENECTOMY W/O CC/MCC
16	S	1602	394	OTHER O.R. PROCEDURES OF THE BLOOD AND BLOOD FORMING ORGANS	802	OTHER O.R. PROC OF THE BLOOD & BLOOD FORMING ORGANS W MCC
16	S	1602	394	OTHER O.R. PROCEDURES OF THE BLOOD AND BLOOD FORMING ORGANS	803	OTHER O.R. PROC OF THE BLOOD & BLOOD FORMING ORGANS W CC
16	S	1602	394	OTHER O.R. PROCEDURES OF THE BLOOD AND BLOOD FORMING ORGANS	804	OTHER O.R. PROC OF THE BLOOD & BLOOD FORMING ORGANS W/O CC/MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
16	M	1603	574	MAJOR HEMATOLOGIC/IMMUNOLOGIC DIAG EXC SICKLE CELL CRISIS & COAGUL	808	MAJOR HEMATOL/IMMUN DIAG EXC SICKLE CELL CRISIS & COAGUL W MCC
16	M	1603	574	MAJOR HEMATOLOGIC/IMMUNOLOGIC DIAG EXC SICKLE CELL CRISIS & COAGUL	809	MAJOR HEMATOL/IMMUN DIAG EXC SICKLE CELL CRISIS & COAGUL W CC
16	M	1603	574	MAJOR HEMATOLOGIC/IMMUNOLOGIC DIAG EXC SICKLE CELL CRISIS & COAGUL	810	MAJOR HEMATOL/IMMUN DIAG EXC SICKLE CELL CRISIS & COAGUL W/O CC/MCC
16	M	1604	395	RED BLOOD CELL DISORDERS AGE >17	811	RED BLOOD CELL DISORDERS W MCC
16	M	1604	396	RED BLOOD CELL DISORDERS AGE 0-17	812	RED BLOOD CELL DISORDERS W/O MCC
16	M	1605	397	COAGULATION DISORDERS	813	COAGULATION DISORDERS
16	M	1606	398	RETICULOENDOTHELIAL & IMMUNITY DISORDERS W CC	814	RETICULOENDOTHELIAL & IMMUNITY DISORDERS W MCC
16	M	1606	399	RETICULOENDOTHELIAL & IMMUNITY DISORDERS W/O CC	815	RETICULOENDOTHELIAL & IMMUNITY DISORDERS W CC
16	M	1606	399	RETICULOENDOTHELIAL & IMMUNITY DISORDERS W/O CC	816	RETICULOENDOTHELIAL & IMMUNITY DISORDERS W/O CC/MCC
17	S	1707	539	LYMPHOMA & LEUKEMIA W MAJOR OR PROCEDURE W CC	820	LYMPHOMA & LEUKEMIA W MAJOR O.R. PROCEDURE W MCC
17	S	1707	540	LYMPHOMA & LEUKEMIA W MAJOR OR PROCEDURE W/O CC	821	LYMPHOMA & LEUKEMIA W MAJOR O.R. PROCEDURE W CC
17	S	1707	540	LYMPHOMA & LEUKEMIA W MAJOR OR PROCEDURE W/O CC	822	LYMPHOMA & LEUKEMIA W MAJOR O.R. PROCEDURE W/O CC/MCC
17	S	1708	401	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W CC	823	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W MCC
17	S	1708	402	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W/O CC	824	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W CC
17	S	1708	402	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W/O CC	825	LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W/O CC/MCC
17	S	1709	406	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R.PROC W CC	826	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R. PROC W MCC
17	S	1709	407	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R.PROC W/O CC	827	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R. PROC W CC
17	S	1709	407	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R.PROC W/O CC	828	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R. PROC W/O CC/MCC
17	S	1710	408	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W OTHER O.R.PROC	829	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W OTHER O.R. PROC W CC/MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
17	S	1710	408	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W OTHER O.R.PROC	830	MYELOPROLIF DISORD OR POORLY DIFF NEOPL W OTHER O.R. PROC W/O CC/MCC
17	M	1711	405	ACUTE LEUKEMIA W/O MAJOR O.R. PROCEDURE AGE 0-17	834	ACUTE LEUKEMIA W/O MAJOR O.R. PROCEDURE W MCC
17	M	1711	473	ACUTE LEUKEMIA W/O MAJOR O.R. PROCEDURE AGE >17	835	ACUTE LEUKEMIA W/O MAJOR O.R. PROCEDURE W CC
17	M	1711	473	ACUTE LEUKEMIA W/O MAJOR O.R. PROCEDURE AGE >17	836	ACUTE LEUKEMIA W/O MAJOR O.R. PROCEDURE W/O CC/MCC
17	M	1712	492	CHEMOTHERAPY W ACUTE LEUKEMIA OR W USE OF HI DOSE CHEMOAGENT	837	CHEMO W ACUTE LEUKEMIA AS SDX OR W HIGH DOSE CHEMO AGENT W MCC
17	M	1712	492	CHEMOTHERAPY W ACUTE LEUKEMIA OR W USE OF HI DOSE CHEMOAGENT	838	CHEMO W ACUTE LEUKEMIA AS SDX W CC OR HIGH DOSE CHEMO AGENT
17	M	1712	492	CHEMOTHERAPY W ACUTE LEUKEMIA OR W USE OF HI DOSE CHEMOAGENT	839	CHEMO W ACUTE LEUKEMIA AS SDX W/O CC/MCC
17	M	1713	403	LYMPHOMA & NON-ACUTE LEUKEMIA W CC	840	LYMPHOMA & NON-ACUTE LEUKEMIA W MCC
17	M	1713	404	LYMPHOMA & NON-ACUTE LEUKEMIA W/O CC	841	LYMPHOMA & NON-ACUTE LEUKEMIA W CC
17	M	1713	404	LYMPHOMA & NON-ACUTE LEUKEMIA W/O CC	842	LYMPHOMA & NON-ACUTE LEUKEMIA W/O CC/MCC
17	M	1714	411	HISTORY OF MALIGNANCY W/O ENDOSCOPY	843	OTHER MYELOPROLIF DIS OR POORLY DIFF NEOPL DIAG W MCC
17	M	1714	412	HISTORY OF MALIGNANCY W ENDOSCOPY	844	OTHER MYELOPROLIF DIS OR POORLY DIFF NEOPL DIAG W CC
17	M	1714	413	OTHER MYELOPROLIF DIS OR POORLY DIFF NEOPL DIAG W CC	845	OTHER MYELOPROLIF DIS OR POORLY DIFF NEOPL DIAG W/O CC/MCC
17	M	1714	414	OTHER MYELOPROLIF DIS OR POORLY DIFF NEOPL DIAG W/O CC	845	OTHER MYELOPROLIF DIS OR POORLY DIFF NEOPL DIAG W/O CC/MCC
17	M	1715	410	CHEMOTHERAPY W/O ACUTE LEUKEMIA AS SECONDARY DIAGNOSIS	846	CHEMOTHERAPY W/O ACUTE LEUKEMIA AS SECONDARY DIAGNOSIS W MCC
17	M	1715	410	CHEMOTHERAPY W/O ACUTE LEUKEMIA AS SECONDARY DIAGNOSIS	847	CHEMOTHERAPY W/O ACUTE LEUKEMIA AS SECONDARY DIAGNOSIS W CC
17	M	1715	410	CHEMOTHERAPY W/O ACUTE LEUKEMIA AS SECONDARY DIAGNOSIS	848	CHEMOTHERAPY W/O ACUTE LEUKEMIA AS SECONDARY DIAGNOSIS W/O CC/MCC
17	M	1716	409	RADIOTHERAPY	849	RADIOTHERAPY
17	S	1799	400	LYMPHOMA & LEUKEMIA W MAJOR O.R. PROCEDURE (NO LONGER VA		

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
18	S	1801	578	INFECTIOUS & PARASITIC DISEASES W OR PROCEDURE	853	INFECTIOUS & PARASITIC DISEASES W O.R. PROCEDURE W MCC
18	S	1801	578	INFECTIOUS & PARASITIC DISEASES W OR PROCEDURE	854	INFECTIOUS & PARASITIC DISEASES W O.R. PROCEDURE W CC
18	S	1801	578	INFECTIOUS & PARASITIC DISEASES W OR PROCEDURE	855	INFECTIOUS & PARASITIC DISEASES W O.R. PROCEDURE W/O CC/MCC
18	S	1802	579	POSTOPERATIVE OR POST-TRAUMATIC INFECTIONS W OR PROCEDURE	856	POSTOPERATIVE OR POST-TRAUMATIC INFECTIONS W O.R. PROC W MCC
18	S	1802	579	POSTOPERATIVE OR POST-TRAUMATIC INFECTIONS W OR PROCEDURE	857	POSTOPERATIVE OR POST-TRAUMATIC INFECTIONS W O.R. PROC W CC
18	S	1802	579	POSTOPERATIVE OR POST-TRAUMATIC INFECTIONS W OR PROCEDURE	858	POSTOPERATIVE OR POST-TRAUMATIC INFECTIONS W O.R. PROC W/O CC/MCC
18	M	1803	418	POSTOPERATIVE & POST-TRAUMATIC INFECTIONS	862	POSTOPERATIVE & POST-TRAUMATIC INFECTIONS W MCC
18	M	1803	418	POSTOPERATIVE & POST-TRAUMATIC INFECTIONS	863	POSTOPERATIVE & POST-TRAUMATIC INFECTIONS W/O MCC
18	M	1804	419	FEVER OF UNKNOWN ORIGIN AGE >17 W CC	864	FEVER OF UNKNOWN ORIGIN
18	M	1804	420	FEVER OF UNKNOWN ORIGIN AGE >17 W/O CC	864	FEVER OF UNKNOWN ORIGIN
18	M	1805	421	VIRAL ILLNESS AGE >17	865	VIRAL ILLNESS W MCC
18	M	1805	422	VIRAL ILLNESS & FEVER OF UNKNOWN ORIGIN AGE 0-17	866	VIRAL ILLNESS W/O MCC
18	M	1806	423	OTHER INFECTIOUS & PARASITIC DISEASES DIAGNOSES	867	OTHER INFECTIOUS & PARASITIC DISEASES DIAGNOSES W MCC
18	M	1806	423	OTHER INFECTIOUS & PARASITIC DISEASES DIAGNOSES	868	OTHER INFECTIOUS & PARASITIC DISEASES DIAGNOSES W CC
18	M	1806	423	OTHER INFECTIOUS & PARASITIC DISEASES DIAGNOSES	869	OTHER INFECTIOUS & PARASITIC DISEASES DIAGNOSES W/O CC/MCC
18	M	1807	417	SEPTICEMIA AGE 0-17	870	SEPTICEMIA W MV 96+ HOURS
18	M	1807	575	SEPTICEMIA W MV96+ HOURS AGE >17	870	SEPTICEMIA W MV 96+ HOURS
18	M	1808	576	SEPTICEMIA W/O MV96+ HOURS AGE >17	871	SEPTICEMIA W/O MV 96+ HOURS W MCC
18	M	1808	576	SEPTICEMIA W/O MV96+ HOURS AGE >17	872	SEPTICEMIA W/O MV 96+ HOURS W/O MCC
18	M	1898	416	SEPTICEMIA AGE >17 (NO LONGER VALID)		
18	S	1899	415	O.R. PROCEDURE FOR INFECTIOUS & PARASITIC DISEASES (NO LONGER VALID)		

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
19	S	1909	424	O.R. PROCEDURE W PRINCIPAL DIAGNOSES OF MENTAL ILLNESS	876	O.R. PROCEDURE W PRINCIPAL DIAGNOSES OF MENTAL ILLNESS
19	M	1910	425	ACUTE ADJUSTMENT REACTION & PSYCHOSOCIAL DYSFUNCTION	880	ACUTE ADJUSTMENT REACTION & PSYCHOSOCIAL DYSFUNCTION
19	M	1911	426	DEPRESSIVE NEUROSES	881	DEPRESSIVE NEUROSES
19	M	1912	427	NEUROSES EXCEPT DEPRESSIVE	882	NEUROSES EXCEPT DEPRESSIVE
19	M	1913	428	DISORDERS OF PERSONALITY & IMPULSE CONTROL	883	DISORDERS OF PERSONALITY & IMPULSE CONTROL
19	M	1914	429	ORGANIC DISTURBANCES & MENTAL RETARDATION	884	ORGANIC DISTURBANCES & MENTAL RETARDATION
19	M	1915	430	PSYCHOSES	885	PSYCHOSES
19	M	1916	431	CHILDHOOD MENTAL DISORDERS	886	BEHAVIORAL & DEVELOPMENTAL DISORDERS
19	M	1917	432	OTHER MENTAL DISORDER DIAGNOSES	887	OTHER MENTAL DISORDER DIAGNOSES
20	M	2018	433	ALCOHOL/DRUG ABUSE OR DEPENDENCE, LEFT AMA	894	ALCOHOL/DRUG ABUSE OR DEPENDENCE, LEFT AMA
20	M	2019	521	ALCOHOL/DRUG ABUSE OR DEPENDENCE W CC	895	ALCOHOL/DRUG ABUSE OR DEPENDENCE W REHABILITATION THERAPY
20	M	2019	522	ALC/DRUG ABUSE OR DEPEND W REHABILITATION THERAPY W/O CC	895	ALCOHOL/DRUG ABUSE OR DEPENDENCE W REHABILITATION THERAPY
20	M	2020	523	ALC/DRUG ABUSE OR DEPEND W/O REHABILITATION THERAPY W/O CC	896	ALCOHOL/DRUG ABUSE OR DEPENDENCE W/O REHABILITATION THERAPY W MCC
20	M	2020	523	ALC/DRUG ABUSE OR DEPEND W/O REHABILITATION THERAPY W/O CC	897	ALCOHOL/DRUG ABUSE OR DEPENDENCE W/O REHABILITATION THERAPY W/O MCC
20	M	2098	434	ALC/DRUG ABUSE OR DEPEND, DETOX OR OTH SYMPT TREAT W CC		
20	M	2098	435	ALC/DRUG ABUSE OR DEPEND, DETOX OR OTH SYMPT TREAT WO CC		
20	M	2098	436	ALC/DRUG DEPENDENCE W REHABILITATION THERAPY (NO LONGER		
20	M	2098	437	ALC/DRUG DEPENDENCE, COMBINED REHAB & DETOX THERAPY (NO		
20	M	2098	438	NO LONGER VALID		
21	S	2101	440	WOUND DEBRIDEMENTS FOR INJURIES	901	WOUND DEBRIDEMENTS FOR INJURIES W MCC
21	S	2101	440	WOUND DEBRIDEMENTS FOR INJURIES	902	WOUND DEBRIDEMENTS FOR INJURIES W CC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
21	S	2101	440	WOUND DEBRIDEMENTS FOR INJURIES	903	WOUND DEBRIDEMENTS FOR INJURIES W/O CC/MCC
21	S	2102	439	SKIN GRAFTS FOR INJURIES	904	SKIN GRAFTS FOR INJURIES W CC/MCC
21	S	2102	439	SKIN GRAFTS FOR INJURIES	905	SKIN GRAFTS FOR INJURIES W/O CC/MCC
21	S	2103	441	HAND PROCEDURES FOR INJURIES	906	HAND PROCEDURES FOR INJURIES
21	S	2104	442	OTHER O.R. PROCEDURES FOR INJURIES W CC	907	OTHER O.R. PROCEDURES FOR INJURIES W MCC
21	S	2104	443	OTHER O.R. PROCEDURES FOR INJURIES W/O CC	908	OTHER O.R. PROCEDURES FOR INJURIES W CC
21	S	2104	443	OTHER O.R. PROCEDURES FOR INJURIES W/O CC	909	OTHER O.R. PROCEDURES FOR INJURIES W/O CC/MCC
21	M	2105	444	TRAUMATIC INJURY AGE >17 W CC	913	TRAUMATIC INJURY W MCC
21	M	2105	445	TRAUMATIC INJURY AGE >17 W/O CC	914	TRAUMATIC INJURY W/O MCC
21	M	2105	446	TRAUMATIC INJURY AGE 0-17	914	TRAUMATIC INJURY W/O MCC
21	M	2106	447	ALLERGIC REACTIONS AGE >17	915	ALLERGIC REACTIONS W MCC
21	M	2106	448	ALLERGIC REACTIONS AGE 0-17	916	ALLERGIC REACTIONS W/O MCC
21	M	2107	449	POISONING & TOXIC EFFECTS OF DRUGS AGE >17 W CC	917	POISONING & TOXIC EFFECTS OF DRUGS W MCC
21	M	2107	450	POISONING & TOXIC EFFECTS OF DRUGS AGE >17 W/O CC	918	POISONING & TOXIC EFFECTS OF DRUGS W/O MCC
21	M	2107	451	POISONING & TOXIC EFFECTS OF DRUGS AGE 0-17	918	POISONING & TOXIC EFFECTS OF DRUGS W/O MCC
21	M	2108	452	COMPLICATIONS OF TREATMENT W CC	919	COMPLICATIONS OF TREATMENT W MCC
21	M	2108	453	COMPLICATIONS OF TREATMENT W/O CC	920	COMPLICATIONS OF TREATMENT W CC
21	M	2108	453	COMPLICATIONS OF TREATMENT W/O CC	921	COMPLICATIONS OF TREATMENT W/O CC/MCC
21	M	2109	454	OTHER INJURY, POISONING & TOXIC EFFECT DIAG W CC	922	OTHER INJURY, POISONING & TOXIC EFFECT DIAG W MCC
21	M	2109	455	OTHER INJURY, POISONING & TOXIC EFFECT DIAG W/O CC	923	OTHER INJURY, POISONING & TOXIC EFFECT DIAG W/O MCC
22	S	2201	506	FULL THICKNESS BURN W SKIN GRAFT OR INHAL INJ W CC OR SIG TRAUMA	928	FULL THICKNESS BURN W SKIN GRAFT OR INHAL INJ W CC/MCC
22	S	2201	507	FULL THICKNESS BURN W SKIN GRFT OR INHAL INJ W/O CC OR SIG TRAUMA	929	FULL THICKNESS BURN W SKIN GRAFT OR INHAL INJ W/O CC/MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
22	S	2210	504	EXTEN. BURNS OR FULL THICKNESS BURN W/MV 96+HRS W/SKIN GFT	927	EXTENSIVE BURNS OR FULL THICKNESS BURNS W MV 96+ HRS W SKIN GRAFT
22	M	2212	505	EXTEN. BURNS OR FULL THICKNESS BURN W/MV 96+HRS W/O SKIN GFT	933	EXTENSIVE BURNS OR FULL THICKNESS BURNS W MV 96+ HRS W/O SKIN GRAFT
22	M	2213	508	FULL THICKNESS BURN W/O SKIN GRFT OR INHAL INJ W CC OR SIG TRAUMA	934	FULL THICKNESS BURN W/O SKIN GRFT OR INHAL INJ
22	M	2213	509	FULL THICKNESS BURN W/O SKIN GRFT OR INH INJ W/O CC OR SIG TRAUMA	934	FULL THICKNESS BURN W/O SKIN GRFT OR INHAL INJ
22	M	2214	510	NON-EXTENSIVE BURNS W CC OR SIGNIFICANT TRAUMA	935	NON-EXTENSIVE BURNS
22	M	2214	511	NON-EXTENSIVE BURNS W/O CC OR SIGNIFICANT TRAUMA	935	NON-EXTENSIVE BURNS
22	M	2298	456	BURNS, TRANSFERRED TO ANOTHER ACUTE CARE FACILITY (NO LO		
22	M	2298	457	EXTENSIVE BURNS WO O.R. PROCEDURE (NO LONGER VALID)		
22	M	2298	458	NON-EXTENSIVE BURNS W SKIN GRAFT (NO LONGER VALID)		
22	M	2298	459	NON-EXTENSIVE BURNS W WOUND DEBRIDEMENT OR OTHER O.R. PR		
22	M	2298	460	NON-EXTENSIVE BURNS WO O.R. PROCEDURE (NO LONGER VALID)		
22	S	2299	472	BILATERAL OR MULTIPLE MAJOR JOINT PROCS OF LOWER EXTREMI		
23	S	2301	461	O.R. PROC W DIAGNOSES OF OTHER CONTACT W HEALTH SERVICES	939	O.R. PROC W DIAGNOSES OF OTHER CONTACT W HEALTH SERVICES W MCC
23	S	2301	461	O.R. PROC W DIAGNOSES OF OTHER CONTACT W HEALTH SERVICES	940	O.R. PROC W DIAGNOSES OF OTHER CONTACT W HEALTH SERVICES W CC
23	S	2301	461	O.R. PROC W DIAGNOSES OF OTHER CONTACT W HEALTH SERVICES	941	O.R. PROC W DIAGNOSES OF OTHER CONTACT W HEALTH SERVICES W/O CC/MCC
23	M	2302	462	REHABILITATION	945	REHABILITATION W CC/MCC
23	M	2302	462	REHABILITATION	946	REHABILITATION W/O CC/MCC
23	M	2303	463	SIGNS & SYMPTOMS W CC	947	SIGNS & SYMPTOMS W MCC
23	M	2303	464	SIGNS & SYMPTOMS W/O CC	948	SIGNS & SYMPTOMS W/O MCC
23	M	2304	465	AFTERCARE W HISTORY OF MALIGNANCY AS SECONDARY DIAGNOSIS	949	AFTERCARE W CC/MCC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
23	M	2304	466	AFTERCARE W/O HISTORY OF MALIGNANCY AS SECONDARY DIAGNOSIS	950	AFTERCARE W/O CC/MCC
23	M	2305	467	OTHER FACTORS INFLUENCING HEALTH STATUS	951	OTHER FACTORS INFLUENCING HEALTH STATUS
24	S	2406	484	CRANIOTOMY FOR MULTIPLE SIGNIFICANT TRAUMA	955	CRANIOTOMY FOR MULTIPLE SIGNIFICANT TRAUMA
24	S	2407	485	LIMB REATTACHMENT, HIP AND FEMUR PROC FOR MULTIPLE SIGNIFICANT TRAUMA	956	LIMB REATTACHMENT, HIP & FEMUR PROC FOR MULTIPLE SIGNIFICANT TRAUMA
24	S	2408	486	OTHER O.R. PROCEDURES FOR MULTIPLE SIGNIFICANT TRAUMA	957	OTHER O.R. PROCEDURES FOR MULTIPLE SIGNIFICANT TRAUMA W MCC
24	S	2408	486	OTHER O.R. PROCEDURES FOR MULTIPLE SIGNIFICANT TRAUMA	958	OTHER O.R. PROCEDURES FOR MULTIPLE SIGNIFICANT TRAUMA W CC
24	S	2408	486	OTHER O.R. PROCEDURES FOR MULTIPLE SIGNIFICANT TRAUMA	959	OTHER O.R. PROCEDURES FOR MULTIPLE SIGNIFICANT TRAUMA W/O CC/MCC
24	M	2409	487	OTHER MULTIPLE SIGNIFICANT TRAUMA	963	OTHER MULTIPLE SIGNIFICANT TRAUMA W MCC
24	M	2409	487	OTHER MULTIPLE SIGNIFICANT TRAUMA	964	OTHER MULTIPLE SIGNIFICANT TRAUMA W CC
24	M	2409	487	OTHER MULTIPLE SIGNIFICANT TRAUMA	965	OTHER MULTIPLE SIGNIFICANT TRAUMA W/O CC/MCC
25	S	2501	488	HIV W EXTENSIVE O.R. PROCEDURE	969	HIV W EXTENSIVE O.R. PROCEDURE W MCC
25	S	2501	488	HIV W EXTENSIVE O.R. PROCEDURE	970	HIV W EXTENSIVE O.R. PROCEDURE W/O MCC
25	M	2502	489	HIV W MAJOR RELATED CONDITION	974	HIV W MAJOR RELATED CONDITION W MCC
25	M	2502	489	HIV W MAJOR RELATED CONDITION	975	HIV W MAJOR RELATED CONDITION W CC
25	M	2502	489	HIV W MAJOR RELATED CONDITION	976	HIV W MAJOR RELATED CONDITION W/O CC/MCC
25	M	2503	490	HIV W OR W/O OTHER RELATED CONDITION	977	HIV W OR W/O OTHER RELATED CONDITION
PR	S	7701	103	HEART TRANSPLANT OR IMPLANT OF HEART ASSIST SYSTEM	001	HEART TRANSPLANT OR IMPLANT OF HEART ASSIST SYSTEM W MCC
PR	S	7701	103	HEART TRANSPLANT OR IMPLANT OF HEART ASSIST SYSTEM	002	HEART TRANSPLANT OR IMPLANT OF HEART ASSIST SYSTEM W/O MCC
PR	S	7702	480	LIVER TRANSPLANT AND/OR INTESTINAL TRANSPLANT	005	LIVER TRANSPLANT W MCC OR INTESTINAL TRANSPLANT
PR	S	7702	480	LIVER TRANSPLANT AND/OR INTESTINAL TRANSPLANT	006	LIVER TRANSPLANT W/O MCC
PR	S	7703	495	LUNG TRANSPLANT	007	LUNG TRANSPLANT

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
PR	S	7704	512	SIMULTANEOUS PANCREAS/KIDNEY TRANSPLANT	008	SIMULTANEOUS PANCREAS/KIDNEY TRANSPLANT
PR	S	7705	481	BONE MARROW TRANSPLANT	009	BONE MARROW TRANSPLANT
PR	S	7705	481	BONE MARROW TRANSPLANT	014	ALLOGENEIC BONE MARROW TRANSPLANT
PR	S	7705	481	BONE MARROW TRANSPLANT	015	AUTOLOGOUS BONE MARROW TRANSPLANT (NO LONGER VALID)
PR	S	7705	481	BONE MARROW TRANSPLANT	016	AUTOLOGOUS BONE MARROW TRANSPLANT W CC/MCC
PR	S	7705	481	BONE MARROW TRANSPLANT	017	AUTOLOGOUS BONE MARROW TRANSPLANT W/O CC/MCC
PR	S	7706	513	PANCREAS TRANSPLANT	010	PANCREAS TRANSPLANT
PR	S	7799	541	ECMO OR TRACH W MV 96+HRS OR PDX EXC FACE, MOUTH & NECK W MAJ O.R.	003	ECMO OR TRACH W MV 96+ HRS OR PDX EXC FACE, MOUTH & NECK W MAJ O.R.
PR	S	7799	542	TRACH W MV 96+HRS OR PDX EXC FACE, MOUTH & NECK W/O MAJ O.R.	004	TRACH W MV 96+ HRS OR PDX EXC FACE, MOUTH & NECK W/O MAJ O.R.
PR	S	7799	482	TRACHEOSTOMY FOR FACE,MOUTH & NECK DIAGNOSES	011	TRACHEOSTOMY FOR FACE,MOUTH & NECK DIAGNOSES W MCC
PR	S	7799	482	TRACHEOSTOMY FOR FACE,MOUTH & NECK DIAGNOSES	012	TRACHEOSTOMY FOR FACE,MOUTH & NECK DIAGNOSES W CC
PR	S	7799	482	TRACHEOSTOMY FOR FACE,MOUTH & NECK DIAGNOSES	013	TRACHEOSTOMY FOR FACE,MOUTH & NECK DIAGNOSES W/O CC/MCC
PR[1]	S	7799	483	TRAC W MECH VENT 96+HRS OR PDX EXCEPT FACE,MOUTH & NECK		
*[2]	M	8898	469	PRINCIPAL DIAGNOSIS INVALID AS DISCHARGE DIAGNOSIS	998	PRINCIPAL DIAGNOSIS INVALID AS DISCHARGE DIAGNOSIS
*	M	8898	470	UNGROUPABLE	999	UNGROUPABLE
*	S	8899	468	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS	981	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W MCC
*	S	8899	468	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS	982	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W CC
*	S	8899	468	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS	983	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W/O CC/MCC
*	S	8899	476	PROSTATIC O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS	984	PROSTATIC O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W MCC
*	S	8899	476	PROSTATIC O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS	985	PROSTATIC O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W CC

MDC	M/S	MDRG	CMS-DRG	CMS-DRG DESCRIPTION	MS-DRG	MS-DRG DESCRIPTION
*	S	8899	476	PROSTATIC O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS	986	PROSTATIC O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W/O CC/MCC
*	S	8899	477	NON-EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS	987	NON-EXTENSIVE O.R. PROC UNRELATED TO PRINCIPAL DIAGNOSIS W MCC
*	S	8899	477	NON-EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS	988	NON-EXTENSIVE O.R. PROC UNRELATED TO PRINCIPAL DIAGNOSIS W CC
*	S	8899	477	NON-EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS	989	NON-EXTENSIVE O.R. PROC UNRELATED TO PRINCIPAL DIAGNOSIS W/O CC/MCC

[1] These procedure-based DRG are not assigned to an MDC.

[2] These unrelated procedures are not assigned to an MDC.

Table A.3. Major Diagnostic Categories (MDC)

MDC	DESCRIPTION
1	DISEASES & DISORDERS OF THE NERVOUS SYSTEM
2	DISEASES & DISORDERS OF THE EYE
3	DISEASES & DISORDERS OF THE EAR, NOSE, MOUTH & THROAT
4	DISEASES & DISORDERS OF THE RESPIRATORY SYSTEM
5	DISEASES & DISORDERS OF THE CIRCULATORY SYSTEM
6	DISEASES & DISORDERS OF THE DIGESTIVE SYSTEM
7	DISEASES & DISORDERS OF THE HEPATOBILIARY SYSTEM & PANCREAS
8	DISEASES & DISORDERS OF THE MUSCULOSKELETAL SYSTEM & CONN TISSUE
9	DISEASES & DISORDERS OF THE SKIN, SUBCUTANEOUS TISSUE & BREAST
10	ENDOCRINE, NUTRITIONAL & METABOLIC DISEASES & DISORDERS
11	DISEASES & DISORDERS OF THE KIDNEY & URINARY TRACT
12	DISEASES & DISORDERS OF THE MALE REPRODUCTIVE SYSTEM
13	DISEASES & DISORDERS OF THE FEMALE REPRODUCTIVE SYSTEM
14	PREGNANCY, CHILDBIRTH & THE PUERPERIUM
15	NEWBORNS & OTHER NEONATES WITH CONDTN ORIG IN PERINATAL PERIOD
16	DISEASES & DISORDERS OF BLOOD, BLOOD FORMING ORGANS, IMMUNOLOG DISORD
17	MYELOPROLIFERATIVE DISEASES & DISORDERS, POORLY DIFFERENTIATED NEOPLASM
18	INFECTIOUS & PARASITIC DISEASES, SYSTEMIC OR UNSPECIFIED SITES
19	MENTAL DISEASES & DISORDERS
20	ALCOHOL/DRUG USE & ALCOHOL/DRUG INDUCED ORGANIC MENTAL DISORDERS
21	INJURIES, POISONINGS & TOXIC EFFECTS OF DRUGS
22	BURNS
23	FACTORS INFLUENCING HLTH STAT & OTHR CONTACTS WITH HLTH SERVCS
24	MULTIPLE SIGNIFICANT TRAUMA
25	HUMAN IMMUNODEFICIENCY VIRUS INFECTIONS
OTHER	*REPRESENTS ALL OTHER MDCs NOT EXPLICITLY INCLUDED AS A PARAMETER IN THE QI RISK ADJUSTMENT MODEL*

Table A.4. AHRQ Clinical Classification Software (CCS) Categories

CCS	CCS CATEGORY
4	Mycoses
6	Hepatitis
21	Cancer of bone and connective tissue
33	Cancer of kidney and renal pelvis
35	Cancer of brain and nervous system
38	Non-Hodgkins lymphoma
39	Leukemias
41	Cancer, other and unspecified primary
42	Secondary malignancies
48	Thyroid disorders
51	Other endocrine disorders
52	Nutritional deficiencies
56	Cystic fibrosis
57	Immunity disorders
58	Other nutritional, endocrine, and metabolic disorders
62	Coagulation and hemorrhagic disorders
63	Diseases of white blood cells
654	Developmental disorders
661	Substance-related disorders
81	Other hereditary and degenerative nervous system conditions
82	Paralysis
83	Epilepsy, convulsions
85	Coma, stupor, and brain damage
95	Other nervous system disorders
96	Heart valve disorders
98	Essential hypertension
103	Pulmonary heart disease
105	Conduction disorders
106	Cardiac dysrhythmias
108	Congestive heart failure, nonhypertensive

CCS	CCS CATEGORY
133	Other lower respiratory disease
138	Esophageal disorders
151	Other liver diseases
158	Chronic renal failure
161	Other diseases of kidney and ureters
210	Systemic lupus erythematosus and connective tissue disorders
211	Other connective tissue disease
213	Cardiac and circulatory congenital anomalies
214	Digestive congenital anomalies
215	Genitourinary congenital anomalies
216	Nervous system congenital anomalies
217	Other congenital anomalies
219	Short gestation, low birth weight, and fetal growth retardation
221	Respiratory distress syndrome
224	Other perinatal conditions
227	Spinal cord injury

Source: http://hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp

Table A.5. Congenital Anomalies

DIAGNOSTIC RISK GROUP	
1. Gastrointestinal (CONGCAT1)	
756.70	Anomaly of abdominal wall, unspecified
756.79	Other congenital anomalies of abdominal wall
750.3	Tracheoesophageal fistula, esophageal atresia and stenosis
750.4	Other specified anomalies of esophagus
750.5	Congenital hypertrophic pyloric stenosis
750.7	Other specified anomalies of stomach
750.8	Other specified anomalies of upper alimentary tract
750.9	Unspecified anomaly of upper alimentary tract
751.1	Atresia and stenosis of small intestine
751.5	Other anomalies of intestine
751.8	Other specified anomalies of digestive system
751.9	Unspecified anomaly of digestive system
560.2	Volvulus
751.4	Anomalies of intestinal fixation
751.0	Meckel's diverticulum
751.2	Atresia and stenosis of large intestine, rectum, and anal canal
751.3	Hirschsprung's disease and other congenital functional disorders of colon
771.1	Congenital cytomegalovirus infection
751.61	Biliary atresia
751.7	Anomalies of pancreas
751.60	Unspecified anomaly of gallbladder, bile ducts, and liver
751.69	Other anomalies of gallbladder, bile ducts, and liver
2. Genitourinary (CONGCAT2)	
753.0	Renal agenesis and dysgenesis
753.12	Polycystic kidney, unspecified type
753.14	Polycystic kidney, autosomal recessive
753.15	Renal dysplasia
753.10	Cystic kidney disease, unspecified
753.19	Other specified cystic kidney disease
753.3	Other specified anomalies of kidney

DIAGNOSTIC RISK GROUP	
753.4	Other specified anomalies of ureter
753.21	Congenital obstruction of ureteropelvic junction
753.22	Congenital obstruction of ureterovesical junction
753.23	Congenital ureterocele
753.6	Atresia and stenosis of urethra and bladder neck
753.7	Anomalies of urachus
753.8	Other specified anomalies of bladder and urethra
753.9	Unspecified anomaly of urinary system
753.20	Unspecified obstructive defect of renal pelvis and ureter
756.71	Prune belly syndrome
3. CNS (CONGCAT3)	
741.00	With hydrocephalusm, unspecified region
741.01	With hydrocephalusm, cervical region
741.02	With hydrocephalusm, dorsal (thoracic) region
741.03	With hydrocephalusm, lumbar region
741.90	Without mention of hydrocephalus, unspecified region
741.91	Without mention of hydrocephalus, cervical region
741.92	Without mention of hydrocephalus, dorsal (thoracic) region
741.93	Without mention of hydrocephalus, lumbar region
742.59	Other specified anomalies of spinal cord, Other
742.0	Encephalocele
742.1	Microcephalus
742.4	Other specified anomalies of brain
742.2	Reduction deformities of brain
742.3	Congenital hydrocephalus
742.8	Other specified anomalies of nervous system
742.9	Unspecified anomaly of brain, spinal cord, and nervous system
4. Pulmonary (CONGCAT4)	
519.4	Disorders of diaphragm
553.3	Diaphragmatic hernia
750.6	Congenital hiatus hernia
756.6	Anomalies of diaphragm

DIAGNOSTIC RISK GROUP	
748.3	Other anomalies of larynx, trachea, and bronchus
748.9	Unspecified anomaly of respiratory system
748.4	Congenital cystic lung
748.60	Other anomalies of lung, anomaly of lung, unspecified
748.69	Other anomalies of lung, other
748.8	Other specified anomalies of respiratory system
5. Cardiovascular (CONGCAT5)	
746.3	Congenital stenosis of aortic valve
746.4	Congenital insufficiency of aortic valve
424.1	Aortic valve disorders
747.10	Coarctation of aorta (preductal) (postductal)
747.21	Other anomalies of aorta, anomalies of aortic arch
747.29	Other anomalies of aorta, other
747.11	Interruption of aortic arch
747.22	Other anomalies of aorta, atresia and stenosis of aorta
746.81	Subaortic stenosis
746.7	Hypoplastic left heart syndrome
425.3	Endocardial fibroelastosis
746.5	Congenital mitral stenosis
424.0	Mitral valve disorders
746.6	Congenital mitral insufficiency
746.84	Obstructive anomalies of heart, NEC
745.10	Complete transposition of great vessels
745.19	Transposition of great vessels, other
745.12	Corrected transposition of great vessels
746.85	Coronary artery anomaly
425.1	Hypertrophic obstructive cardiomyopathy
745.3	Common ventricle
745.11	Double outlet right ventricle
745.0	Common truncus
746.01	Atresia, congenital
746.83	Infundibular pulmonic stenosis

DIAGNOSTIC RISK GROUP	
746.2	Ebstein's anomaly
746.09	Anomalies of pulmonary valve, other
745.2	Tetralogy of Fallot
746.1	Tricuspid atresia and stenosis, congenital
745.60	Endocardial cushion defect, unspecified type
745.61	Ostium primum defect
745.69	Endocardial cushion defects, other
746.82	Cor triatriatum
747.41	Total anomalous pulmonary venous connection
747.42	Partial anomalous pulmonary venous connection
747.40	Anomaly of great veins, unspecified
747.49	Other anomalies of great veins
6. Skeletal (CONGCAT6)	
756.50	Osteodystrophy, unspecified
756.51	Osteogenesis imperfecta
756.55	Chondroectodermal dysplasia
756.59	Osteodystrophies, other
7. Chromosomal Syndromes (CONGCAT7)	
758.3	Autosomal deletion syndromes
758.5	Other conditions due to autosomal anomalies
758.89	Other conditions due to chromosome anomalies, other
758.9	Conditions due to anomaly of unspecified chromosome
759.89	Other specified anomalies, other
759.9	Congenital anomaly, unspecified
759.7	Multiple congenital anomalies, so described
759.4	Conjoined twins
8. Other (CONGCAT8)	
778.0	Hydrops fetalis not due to isoimmunization
759.6	Other hamartoses, NEC
776.5	Congenital anemia

Table A.6. Indicator Specific Risk Categories

COVARIATE	DEFINITION
GPPD02	Pressure Ulcer Rate Risk Category for PDI #2 (See technical specification for PDI #2 for diagnosis and procedure codes)
1	Low Risk (default)
2	High Risk a) An ICD-9-CM diagnosis code of hemiplegia, paraplegia, quadriplegia, spina bifida or anoxic brain damage in any field; OR b) An ICD-9-CM procedure code for other continuous mechanical ventilation code for 96 or more consecutive hours
GPPD10	Postoperative Sepsis Rate Risk Category for PDI #10 (See Table 2 for the wound classification of DRG codes using Modified DRGs)
1	Clean DRG, Elective
2	Clean DRG, Non-elective
3	Clean contaminated, potentially contaminated or unspecified DRG, Elective
4	Clean contaminated, potentially contaminated or unspecified DRG, Non-elective
5	Likely infected DRG
9	Other surgical DRG
GPPD12	Central Venous Catheter-Related Blood Stream Infection Rate Risk Category for PDI #12 (See technical specification for PDI #12 for diagnosis codes; See technical specification for PDI #11 for transplant procedure codes)
1	Low risk (default)
2	Intermediate risk An ICD-9-CM diagnosis code of Intermediate-risk Immune-compromised State, Cystic fibrosis, Hemophilia, or Hepatic Failure (cirrhosis and (hepatic coma or hepatorenal syndrome)) in any diagnosis field

COVARIATE	DEFINITION
3	High risk a) An ICD-9-CM diagnosis code of High-risk Immune-compromised State or Cancer in any field; OR b) An ICD-9-CM procedure code for Transplant
HPPD01	Accidental Puncture or Laceration Rate Risk Category for PDI #1
1 2 3 4 5 6 7	No therapeutic procedure with any or no diagnostic procedures Only minor therapeutic procedure with any or no diagnostic procedures One major therapeutic without diagnostic procedure One major therapeutic with only minor diagnostic procedure(s) One major therapeutic with major diagnostic procedure(s) Two major therapeutic procedures with any or no diagnostic procedures Three or more major therapeutic procedures with any or no diagnostic procedures (See http://www.hcup-us.ahrq.gov/toolssoftware/procedure/procedure.jsp for the definitions of procedure classes)
HPPD06	RACHS-1 Pediatric Heart Surgery Mortality Rate Risk Category for PDI #6 RACHS-1 Risk Category (See http://www.ncbi.nlm.nih.gov/pubmed/15283367)
1	Risk category 1 (low risk)
2	Risk category 2
3	Risk category 3
4	Risk category 4
5	Risk category 5 (high risk)
6	Risk category 6 (unclassified risk)
HPPD10	Postoperative Sepsis Rate Risk Category for PDI #10 (See technical specification for PDI #12 for diagnosis codes; See technical specification for PDI #11 for transplant procedure codes)
1	Low risk (default)

COVARIATE	DEFINITION
2	Intermediate risk An ICD-9-CM diagnosis code of Intermediate-risk Immune-compromised State, or Hepatic Failure (cirrhosis and (hepatic coma or hepatorenal syndrome)) in any diagnosis field
3	High risk a) An ICD-9-CM diagnosis code of High-risk Immune-compromised State in any field; OR b) An ICD-9-CM procedure code for Transplant
MDX4D	Premature Infant (See technical Specification for PDI #6 for diagnosis codes)
MULTIBTH	Multiple Births 65100 TWIN PREGNANCY-UNSPEC 65101 TWIN PREGNANCY-DELIVERED 65103 TWIN PREGNANCY-ANTEPART 65110 TRIPLET PREGNANCY-UNSPEC 65111 TRIPLET PREGNANCY-DELIV 65113 TRIPLET PREG-ANTEPARTUM 65120 QUADRUPLET PREG-UNSPEC 65121 QUADRUPLET PREG-DELIVER 65123 QUADRUPLET PREG-ANTEPART 65130 TWINS W FETAL LOSS-UNSP 65131 TWINS W FETAL LOSS-DEL 65133 TWINS W FETAL LOSS-ANTE 65140 TRIPLETS W FET LOSS-UNSP 65141 TRIPLETS W FET LOSS-DEL 65143 TRIPLETS W FET LOSS-ANTE 65150 QUADS W FETAL LOSS-UNSP 65151 QUADS W FETAL LOSS-DEL 65153 QUADS W FETAL LOSS-ANTE 65160 MULT GES W FET LOSS-UNSP 65161 MULT GES W FET LOSS-DEL 65163 MULT GES W FET LOSS-ANTE 65180 MULTI GESTAT NEC-UNSPEC 65181 MULTI GESTAT NEC-DELIVER 65183 MULTI GEST NEC-ANTEPART

COVARIATE	DEFINITION
	65190 MULTI GESTAT NOS-UNSPEC
	65191 MULT GESTATION NOS-DELIV
	65193 MULTI GEST NOS-ANTEPART
	65260 MULT GEST MALPRESEN-UNSP
	65261 MULT GEST MALPRES-DELIV
	65263 MULT GES MALPRES-ANTEPAR
	66050 LOCKED TWINS-UNSPECIFIED
	66051 LOCKED TWINS-DELIVERED
	66053 LOCKED TWINS-ANTEPARTUM
	66230 DELAY DEL 2ND TWIN-UNSP
	66231 DELAY DEL 2ND TWIN-DELIV
	66233 DELAY DEL 2 TWIN-ANTEPAR
	7615 MULT PREGNANCY AFF NB
	V271 DELIVER-SINGLE STILLBORN
	V272 DELIVER-TWINS, BOTH LIVE
	V273 DEL-TWINS, 1 NB, 1 SB
	V274 DELIVER-TWINS, BOTH SB
	V275 DEL-MULT BIRTH, ALL LIVE
	V276 DEL-MULT BRTH, SOME LIVE
	V277 DEL-MULT BIRTH, ALL SB
STRCABN	Non-cardiac Structural Anomalies (See http://www.ncbi.nlm.nih.gov/pubmed/15283367)

Table A.7. Categorical Variables Definitions: Transfer, Procedure Days, Point of Origin

CATEGORY	DESCRIPTION	DEFINITION
TRNSFER	Transfer-in	If admission type (ATYPE) not equal to '4' (newborn) and - admission source (ASOURCE) equal to '2' (Another Hospital) or - point of origin (POINTOFORIGINUB04) equal to '4' (Transfer from a Hospital), then TRNSFER=1
NOPOUB04	UB-04 Point-of-Origin Data Not Available	If admission source (ASOURCE) is not equal to missing and point of origin (POINTOFORIGINUB04) is equal to missing, then NOPOUB04=1
NOPRDAY	Procedure Days Data Not Available	If PRDAY1 and PRDAY2 and . . . PRDAYn is equal to missing, where n is the number of Procedure Codes reported in the user's data – then NOPRDAY = 1

NATIONAL QUALITY FORUM—Evidence (subcriterion 1a)

Measure Number (*if previously endorsed*)**:** 344
Measure Title: Accidental Puncture or Laceration Rate (PDI #01)
 IF the measure is a component in a composite performance measure, provide the title of the
Composite Measure here: 532- Pediatric Patient Safety for Selected Indicators (PDI #19)

Date of Submission: Click here to enter a date

Instructions
- *For composite performance measures:*
  - *A separate evidence form is required for each component measure unless several components were studied together.*
  - *If a component measure is submitted as an individual performance measure, attach the evidence form to the individual measure submission.*
- Respond to all questions as instructed with answers immediately following the question. All information needed to demonstrate meeting the evidence subcriterion (1a) must be in this form. An appendix of *supplemental* materials may be submitted, but there is no guarantee it will be reviewed.
- If you are unable to check a box, please highlight or shade the box for your response.
- Maximum of 10 pages (*incudes questions/instructions*; minimum font size 11 pt; do not change margins). ***Contact NQF staff if more pages are needed.***
- Contact NQF staff regarding questions. Check for resources at Submitting Standards webpage.

Note: The information provided in this form is intended to aid the Steering Committee and other stakeholders in understanding to what degree the evidence for this measure meets NQF's evaluation criteria.

1a. Evidence to Support the Measure Focus
The measure focus is evidence-based, demonstrated as follows:
- Health outcome: [3] a rationale supports the relationship of the health outcome to processes or structures of care. Applies to patient-reported outcomes (PRO), including health-related quality of life/functional status, symptom/symptom burden, experience with care, health-related behavior.
- Intermediate clinical outcome: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured intermediate clinical outcome leads to a desired health outcome.
- Process: [5] a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured process leads to a desired health outcome.
- Structure: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured structure leads to a desired health outcome.
- Efficiency: [6] evidence not required for the resource use component.

Notes
3. Generally, rare event outcomes do not provide adequate information for improvement or discrimination; however, serious reportable events that are compared to zero are appropriate outcomes for public reporting and quality improvement.
4. The preferred systems for grading the evidence are the U.S. Preventive Services Task Force (USPSTF) grading definitions and methods, or Grading of Recommendations, Assessment, Development and Evaluation (GRADE) guidelines.
5. Clinical care processes typically include multiple steps: assess → identify problem/potential problem → choose/plan intervention (with patient input) → provide intervention → evaluate impact on health status. If the measure focus is one step in such a multistep process, the step with the strongest evidence for the link to the desired outcome should be selected as the focus of measurement. Note: A measure focused only on collecting PROM data is not a PRO-PM.
6. Measures of efficiency combine the concepts of resource use and quality (see NQF's Measurement Framework: Evaluating Efficiency Across Episodes of Care; AQA Principles of Efficiency Measures).

1a.1.This is a measure of: (*should be consistent with type of measure entered in De.1*)
Outcome
    ☒ Health outcome: Click here to name the health outcome
    ☐Patient-reported outcome (PRO): Click here to name the PRO
        PROs include HRQoL/functional status, symptom/symptom burden, experience with care, health-related behaviors
    ☐ Intermediate clinical outcome (*e.g., lab value*): Click here to name the intermediate outcome
☐ Process: Click here to name the process
☐ Structure: Click here to name the structure
☐ Other: Click here to name what is being measured

_____

HEALTH OUTCOME/PRO PERFORMANCE MEASURE *If not a health outcome or PRO, skip to 1a.3*
1a.2. Briefly state or diagram the path between the health outcome (or PRO) and the healthcare structures, processes, interventions, or services that influence it.

Operator skill and patient level factors including surgical type are thought to have the greatest influence on this indicator. PDI 1 events are associated with the most commonly performed procedures – those of the GI tract and in cardiothoracic and orthopedic surgeries.   By procedure category, the highest rates of PDI 1 have been shown to occur in the transplant (17.6 events per 1000 pediatric surgical patient discharges), gynecology (12.2 events per 1000 pediatric surgical patient discharges), and spine (9.5 events per 1000 pediatric surgical patient discharges) categories[1]. High risk patients for PDI 1 include those with congenital abnormalities (such as gastroshisis, omphalocele, diaphragmatic hernias, cloacal defects, and cardiac defects) that need to come back into the hospital for one of multiple procedures and for whom have had significant scarring from previous procedures. It is in these cases that PDI 1 is thought to be less preventable. Incidents clearly thought to be preventable include those complications associated with line or device placements that subsequently led to punctured vessels, lungs, or organs. Of interest,   a recent nested matched-case control using patients from the US NIS and KID database, spanning years from 1988 to 2005, identified PDI 1 events to be less likely when the admission was coded as emergent compared to those matched patients without a PDI 1 event[2].

1a.2.1. State the rationale supporting the relationship between the health outcome (or PRO) to at least one healthcare structure, process, intervention, or service (*i.e., influence on outcome/PRO*).

Patients with PDI 1 have been shown to have greater mortality, longer LOS, and greater total hospital charges compared with patients without a PDI 1 event. Review of flagged PDI 1 cases can not only raise awareness, but hopefully prompt the need for greater attention to safety and the potential need for the development of additional safeguards and standards.

1. Scanlon MC, Harris JM II, Levy F, et al. Evaluation of the agency for healthcare research and quality pediatric quality indicators. Pediatrics. 2008;121:e1723–e1731.
2. Camp M, Chang DC, Zhang Y, et al. The agency for healthcare research and quality (AHRQ) pediatric quality indicators (PDIs): Accidental puncture or laceration during surgery in children. Annals of Surgery. 2010;1:165-170.

==Note: For health outcome/PRO performance measures, no further information is required; however, you may provide evidence for any of the structures, processes, interventions, or service identified above.==
_____
INTERMEDIATE OUTCOME, PROCESS, OR STRUCTURE PERFORMANCE MEASURE
1a.3. Briefly state or diagram the path between structure, process, intermediate outcome, and health outcomes. Include all the steps between the measure focus and the health outcome.

1a.3.1. What is the source of the <u>systematic review of the body of evidence</u> that supports the performance measure?
☐ Clinical Practice Guideline recommendation – *complete sections <u>1a.4</u>, and <u>1a.7</u>*
☐ US Preventive Services Task Force Recommendation – *complete sections <u>1a.5</u> and <u>1a.7</u>*
☐ Other systematic review and grading of the body of evidence (*e.g., Cochrane Collaboration, AHRQ Evidence Practice Center*) – *complete sections <u>1a.6</u> and <u>1a.7</u>*
☐ Other – *complete section <u>1a.8</u>*

Please complete the sections indicated above for the source of evidence. You may skip the sections that do not apply.
_____
1a.4. CLINICAL PRACTICE GUIDELINE RECOMMENDATION
1a.4.1. Guideline citation (*including date*) and **URL for guideline** (*if available online*):

1a.4.2. Identify guideline recommendation number and/or page number and **quote verbatim, the specific guideline recommendation**.

1a.4.3. Grade assigned to the quoted recommendation <u>with definition</u> of the grade:

1a.4.4. Provide all other grades and associated definitions for recommendations in the grading system. (*Note: If separate grades for the strength of the evidence, report them in section 1a.7.*)

1a.4.5. Citation and URL for methodology for grading recommendations (*if different from 1a.4.1*):

1a.4.6. **If guideline is evidence-based (rather than expert opinion), are the details of the quantity, quality, and consistency of the body of evidence available (e.g., evidence tables)?**

☐ Yes → *complete section 1a.7*

☐ No → *report on another systematic review of the evidence in sections 1a.6 and 1a.7; if another review does not exist, provide what is known from the guideline review of evidence in 1a.7*

_____

1a.5. **UNITED STATES PREVENTIVE SERVICES TASK FORCE RECOMMENDATION**

1a.5.1. Recommendation citation (*including date*) and **URL for recommendation** (*if available online*):

1a.5.2. Identify recommendation number and/or page number and **quote verbatim, the specific recommendation**.

1a.5.3. Grade assigned to the quoted recommendation <u>with definition</u> of the grade:

1a.5.4. Provide all other grades and associated definitions for recommendations in the grading system. (*Note: the grading system for the evidence should be reported in section 1a.7.*)

1a.5.5. Citation and URL for methodology for grading recommendations (*if different from 1a.5.1*)**:**

Complete section 1a.7

_____

1a.6. **OTHER SYSTEMATIC REVIEW OF THE BODY OF EVIDENCE**

1a.6.1. Citation (*including date*) and **URL** (*if available online*):

1a.6.2. Citation and URL for methodology for evidence review and grading (*if different from 1a.6.1*)**:**

Complete section 1a.7

_____

1a.7. FINDINGS FROM SYSTEMATIC REVIEW OF BODY OF THE EVIDENCE SUPPORTING THE MEASURE

If more than one systematic review of the evidence is identified above, you may choose to summarize the one (or more) for which the best information is available to provide a summary of the quantity, quality, and consistency of the body of evidence. Be sure to identify which review is the basis of the responses in this section and if more than one, provide a separate response for each review.

1a.7.1. What was the specific structure, treatment, intervention, service, or intermediate outcome addressed in the evidence review?

1a.7.2. Grade assigned for the quality of the quoted evidence <u>with definition</u> of the grade:

1a.7.3. Provide all other grades and associated definitions for strength of the evidence in the grading system.

1a.7.4. What is the time period covered by the body of evidence? (*provide the date range, e.g., 1990-2010*). **Date range**: Click here to enter date range

QUANTITY AND QUALITY OF BODY OF EVIDENCE
1a.7.5. How many and what type of study designs are included in the body of evidence? (*e.g., 3 randomized controlled trials and 1 observational study*)

1a.7.6. What is the overall quality of evidence <u>across studies</u> in the body of evidence? (*discuss the certainty or confidence in the estimates of effect particularly in relation to study factors such as design flaws, imprecision due to small numbers, indirectness of studies to the measure focus or target population*)

ESTIMATES OF BENEFIT AND CONSISTENCY ACROSS STUDIES IN BODY OF EVIDENCE
1a.7.7. What are the estimates of benefit—magnitude and direction of effect on outcome(s) <u>across studies</u> in the body of evidence? (*e.g., ranges of percentages or odds ratios for improvement/ decline across studies, results of meta-analysis, and statistical significance*)

1a.7.8. What harms were studied and how do they affect the net benefit (benefits over harms)?

UPDATE TO THE SYSTEMATIC REVIEW(S) OF THE BODY OF EVIDENCE
1a.7.9. If new studies have been conducted since the systematic review of the body of evidence, provide for <u>each</u> new study: 1) citation, 2) description, 3) results, 4) impact on conclusions of systematic review.

_____
1a.8 OTHER SOURCE OF EVIDENCE
If source of evidence is NOT from a clinical practice guideline, USPSTF, or systematic review, please describe the evidence on which you are basing the performance measure.

1a.8.1 What process was used to identify the evidence?

1a.8.2. Provide the citation and summary for each piece of evidence.

NATIONAL QUALITY FORUM—Evidence (subcriterion 1a)

Measure Number (*if previously endorsed*)**:** 337
Measure Title: Pressure Ulcer Rate (PDI #02)
 IF the measure is a component in a composite performance measure, provide the title of the
Composite Measure here: 532- Pediatric Patient Safety for Selected Indicators (PDI #19)

Date of Submission: Click here to enter a date

Instructions

- *For composite performance measures:*
  - *A separate evidence form is required for each component measure unless several components were studied together.*
  - *If a component measure is submitted as an individual performance measure, attach the evidence form to the individual measure submission.*
- Respond to all questions as instructed with answers immediately following the question. All information needed to demonstrate meeting the evidence subcriterion (1a) must be in this form. An appendix of *supplemental* materials may be submitted, but there is no guarantee it will be reviewed.
- If you are unable to check a box, please highlight or shade the box for your response.
- Maximum of 10 pages (*incudes questions/instructions*; minimum font size 11 pt; do not change margins). ***Contact NQF staff if more pages are needed.***
- Contact NQF staff regarding questions. Check for resources at Submitting Standards webpage.

Note: The information provided in this form is intended to aid the Steering Committee and other stakeholders in understanding to what degree the evidence for this measure meets NQF's evaluation criteria.

1a. Evidence to Support the Measure Focus
The measure focus is evidence-based, demonstrated as follows:

- Health outcome: [3] a rationale supports the relationship of the health outcome to processes or structures of care. Applies to patient-reported outcomes (PRO), including health-related quality of life/functional status, symptom/symptom burden, experience with care, health-related behavior.
- Intermediate clinical outcome: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured intermediate clinical outcome leads to a desired health outcome.
- Process: [5] a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured process leads to a desired health outcome.
- Structure: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured structure leads to a desired health outcome.
- Efficiency: [6] evidence not required for the resource use component.

Notes
3. Generally, rare event outcomes do not provide adequate information for improvement or discrimination; however, serious reportable events that are compared to zero are appropriate outcomes for public reporting and quality improvement.
4. The preferred systems for grading the evidence are the U.S. Preventive Services Task Force (USPSTF) grading definitions and methods, or Grading of Recommendations, Assessment, Development and Evaluation (GRADE) guidelines.
5. Clinical care processes typically include multiple steps: assess → identify problem/potential problem → choose/plan intervention (with patient input) → provide intervention → evaluate impact on health status. If the measure focus is one step in such a multistep process, the step with the strongest evidence for the link to the desired outcome should be selected as the focus of measurement. Note: A measure focused only on collecting PROM data is not a PRO-PM.
6. Measures of efficiency combine the concepts of resource use and quality (see NQF's Measurement Framework: Evaluating Efficiency Across Episodes of Care; AQA Principles of Efficiency Measures).

1a.1.This is a measure of: (*should be consistent with type of measure entered in De.1*)
Outcome
    ☒ Health outcome: Click here to name the health outcome
    ☐Patient-reported outcome (PRO): Click here to name the PRO
        PROs include HRQoL/functional status, symptom/symptom burden, experience with care, health-related behaviors
    ☐ Intermediate clinical outcome (*e.g., lab value*): Click here to name the intermediate outcome
☐ Process: Click here to name the process
☐ Structure: Click here to name the structure
☐ Other: Click here to name what is being measured

_____

HEALTH OUTCOME/PRO PERFORMANCE MEASURE *If not a health outcome or PRO, skip to* <u>1a.3</u>
1a.2. Briefly state or diagram the path between the health outcome (or PRO) and the healthcare structures, processes, interventions, or services that influence it.

Acutely ill and immobilized neonates and children are at risk for developing hospital acquired pressure ulcer. Most prevention and treatment protocols are extrapolated from adult practice guidelines and are best applied as bundles.   Although pediatric studies on pressure ulcer prevention are limited, studies identifying skin breakdown in the pediatric population are consistent with the adult population. It is important that risk and skin assessment with corresponding interventions are performed early in the admission process, as most pressure ulcers in hospitalized children begin within 2 days of admission.

1a.2.1. State the rationale supporting the relationship between the health outcome (or PRO) to at least one healthcare structure, process, intervention, or service (*i.e., influence on outcome/PRO*).

Most pressure ulcers are thought to be preventable. The development of a pressure may be related to failure of organizational policy and procedures or the enforcement and surveillance of these policies and procedures.   Pressure ulcer events represent an opportunity for improvement.

<mark>*Note*: *For health outcome/PRO performance measures, no further information is required; however, you may provide evidence for any of the structures, processes, interventions, or service identified above.*</mark>

_____

INTERMEDIATE OUTCOME, PROCESS, OR STRUCTURE PERFORMANCE MEASURE
1a.3. Briefly state or diagram the path between structure, process, intermediate outcome, and health outcomes. Include all the steps between the measure focus and the health outcome.

1a.3.1. What is the source of the <u>systematic review of the body of evidence</u> that supports the performance measure?
☐ Clinical Practice Guideline recommendation – *complete sections <u>1a.4</u>, and <u>1a.7</u>*
☐ US Preventive Services Task Force Recommendation – *complete sections <u>1a.5</u> and <u>1a.7</u>*
☐ Other systematic review and grading of the body of evidence (*e.g., Cochrane Collaboration, AHRQ Evidence Practice Center*) – *complete sections <u>1a.6</u> and <u>1a.7</u>*
☐ Other – *complete section <u>1a.8</u>*

Please complete the sections indicated above for the source of evidence. You may skip the sections that do not apply.

_____

1a.4. CLINICAL PRACTICE GUIDELINE RECOMMENDATION

1a.4.1. **Guideline citation** (*including date*) and **URL for guideline** (*if available online*):

1a.4.2. Identify guideline recommendation number and/or page number and **quote verbatim, the specific guideline recommendation**.

1a.4.3. Grade assigned to the quoted recommendation <u>with definition</u> of the grade:

1a.4.4. Provide all other grades and associated definitions for recommendations in the grading system. (*Note: If separate grades for the strength of the evidence, report them in section 1a.7.*)

1a.4.5. Citation and URL for methodology for grading recommendations (*if different from 1a.4.1*)**:**

1a.4.6. If guideline is evidence-based (rather than expert opinion), are the details of the quantity, quality, and consistency of the body of evidence available (e.g., evidence tables)?
☐ Yes → *complete section <u>1a.7</u>*
☐ No → *report on another systematic review of the evidence in sections <u>1a.6</u> and <u>1a.7</u>; if another review does not exist, provide what is known from the guideline review of evidence in <u>1a.7</u>*

_____

1a.5. UNITED STATES PREVENTIVE SERVICES TASK FORCE RECOMMENDATION

1a.5.1. Recommendation citation (*including date*) and **URL for recommendation** (*if available online*):

1a.5.2. Identify recommendation number and/or page number and **quote verbatim, the specific recommendation**.

1a.5.3. Grade assigned to the quoted recommendation <u>with definition</u> of the grade:

1a.5.4. Provide all other grades and associated definitions for recommendations in the grading system. (*Note: the grading system for the evidence should be reported in section 1a.7.*)

1a.5.5. Citation and URL for methodology for grading recommendations (*if different from 1a.5.1*)**:**

Complete section <u>1a.7</u>

_____

1a.6. OTHER SYSTEMATIC REVIEW OF THE BODY OF EVIDENCE

1a.6.1. Citation (*including date*) and **URL** (*if available online*):

1a.6.2. Citation and URL for methodology for evidence review and grading (*if different from 1a.6.1*):

Complete section 1a.7
_____
1a.7. FINDINGS FROM SYSTEMATIC REVIEW OF BODY OF THE EVIDENCE SUPPORTING THE MEASURE
If more than one systematic review of the evidence is identified above, you may choose to summarize the one (or more) for which the best information is available to provide a summary of the quantity, quality, and consistency of the body of evidence. Be sure to identify which review is the basis of the responses in this section and if more than one, provide a separate response for each review.

1a.7.1. What was the specific structure, treatment, intervention, service, or intermediate outcome addressed in the evidence review?

1a.7.2. Grade assigned for the quality of the quoted evidence <u>with definition</u> of the grade:

1a.7.3. Provide all other grades and associated definitions for strength of the evidence in the grading system.

1a.7.4. What is the time period covered by the body of evidence? (*provide the date range, e.g., 1990-2010*). **Date range**: Click here to enter date range

QUANTITY AND QUALITY OF BODY OF EVIDENCE
1a.7.5. How many and what type of study designs are included in the body of evidence? (*e.g., 3 randomized controlled trials and 1 observational study*)

1a.7.6. What is the overall quality of evidence <u>across studies</u> in the body of evidence? (*discuss the certainty or confidence in the estimates of effect particularly in relation to study factors such as design flaws, imprecision due to small numbers, indirectness of studies to the measure focus or target population*)

ESTIMATES OF BENEFIT AND CONSISTENCY ACROSS STUDIES IN BODY OF EVIDENCE
1a.7.7. What are the estimates of benefit—magnitude and direction of effect on outcome(s) <u>across studies</u> in the body of evidence? (*e.g., ranges of percentages or odds ratios for improvement/ decline across studies, results of meta-analysis, and statistical significance*)

1a.7.8. What harms were studied and how do they affect the net benefit (benefits over harms)?

UPDATE TO THE SYSTEMATIC REVIEW(S) OF THE BODY OF EVIDENCE
1a.7.9. If new studies have been conducted since the systematic review of the body of evidence, provide for <u>each</u> new study: 1) citation, 2) description, 3) results, 4) impact on conclusions of systematic review.

_____
1a.8 OTHER SOURCE OF EVIDENCE

If source of evidence is NOT from a clinical practice guideline, USPSTF, or systematic review, please describe the evidence on which you are basing the performance measure.

1a.8.1 What process was used to identify the evidence?

1a.8.2. Provide the citation and summary for each piece of evidence.

Measure Number (*if previously endorsed*)**:** 348
Measure Title: Iatrogenic Pneumothorax Rate (PDI #05)
 IF the measure is a component in a composite performance measure, provide the title of the Composite Measure here: 532- Pediatric Patient Safety for Selected Indicators (PDI #19)

Date of Submission: Click here to enter a date

Instructions
- *For composite performance measures:*
  - *A separate evidence form is required for each component measure unless several components were studied together.*
  - *If a component measure is submitted as an individual performance measure, attach the evidence form to the individual measure submission.*
- Respond to all questions as instructed with answers immediately following the question. All information needed to demonstrate meeting the evidence subcriterion (1a) must be in this form. An appendix of *supplemental* materials may be submitted, but there is no guarantee it will be reviewed.
- If you are unable to check a box, please highlight or shade the box for your response.
- Maximum of 10 pages (*incudes questions/instructions*; minimum font size 11 pt; do not change margins). **Contact NQF staff if more pages are needed.**
- Contact NQF staff regarding questions. Check for resources at Submitting Standards webpage.

Note: The information provided in this form is intended to aid the Steering Committee and other stakeholders in understanding to what degree the evidence for this measure meets NQF's evaluation criteria.

1a. Evidence to Support the Measure Focus
The measure focus is evidence-based, demonstrated as follows:
- Health outcome: [3] a rationale supports the relationship of the health outcome to processes or structures of care. Applies to patient-reported outcomes (PRO), including health-related quality of life/functional status, symptom/symptom burden, experience with care, health-related behavior.
- Intermediate clinical outcome: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured intermediate clinical outcome leads to a desired health outcome.
- Process: [5] a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured process leads to a desired health outcome.
- Structure: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured structure leads to a desired health outcome.
- Efficiency: [6] evidence not required for the resource use component.

Notes
3. Generally, rare event outcomes do not provide adequate information for improvement or discrimination; however, serious reportable events that are compared to zero are appropriate outcomes for public reporting and quality improvement.
4. The preferred systems for grading the evidence are the U.S. Preventive Services Task Force (USPSTF) grading definitions and methods, or Grading of Recommendations, Assessment, Development and Evaluation (GRADE) guidelines.
5. Clinical care processes typically include multiple steps: assess → identify problem/potential problem → choose/plan intervention (with patient input) → provide intervention → evaluate impact on health status. If the measure focus is one step in such a multistep process, the step with the strongest evidence for the link to the desired outcome should be selected as the focus of measurement. Note: A measure focused only on collecting PROM data is not a PRO-PM.
6. Measures of efficiency combine the concepts of resource use and quality (see NQF's Measurement Framework: Evaluating Efficiency Across Episodes of Care; AQA Principles of Efficiency Measures).

1a.1.This is a measure of: (*should be consistent with type of measure entered in De.1*)

Outcome

    ☒ Health outcome: Click here to name the health outcome

    ☐Patient-reported outcome (PRO): Click here to name the PRO

       PROs include HRQoL/functional status, symptom/symptom burden, experience with care, health-related behaviors

    ☐ Intermediate clinical outcome (*e.g., lab value*): Click here to name the intermediate outcome

☐ Process: Click here to name the process

☐ Structure: Click here to name the structure

☐ Other: Click here to name what is being measured

HEALTH OUTCOME/PRO PERFORMANCE MEASURE *If not a health outcome or PRO, skip to 1a.3*

1a.2. **Briefly state or diagram the path between the health outcome (or PRO) and the healthcare structures, processes, interventions, or services that influence it.**

In children, procedures like central line placement, thoracentesis, or pulmonary-artery catheter placement can be technically more complex than in older patients, due to their smaller anatomy (though they are more likely to be performed in a monitored setting). Also, in comparison to adults, iatrogenic pneumothoraces in neonates are primarily due to barotraumas, with the very smallest infants being at greatest risk (as shown by our preliminary empirical analyses). In an older pediatric population, while barotraumas can occur, the risks for iatrogenic pneumothoraces are more clinically similar to an adult population (e.g. at risk while receiving a central line, catheter, or undergoing thoracentesis procedures). Technical skill and training of medical personnel, improved patient management (eg., sedation and monitoring), and use of adjuncts such as ultrasound in placing invasive lines are associated with lower rates of iatrogenic pneumothorax.

1a.2.1. **State the rationale supporting the relationship between the health outcome (or PRO) to at least one healthcare structure, process, intervention, or service (*i.e., influence on outcome/PRO*).**

High iatrogenic pneumothorax events represent an opportunity for improvement, such as improved training and monitoring of medical staff, improved patient monitoring, and increased use and skill of ultrasound and other clinical adjuncts.

<mark>*Note: For health outcome/PRO performance measures, no further information is required; however, you may provide evidence for any of the structures, processes, interventions, or service identified above.*</mark>

INTERMEDIATE OUTCOME, PROCESS, OR STRUCTURE PERFORMANCE MEASURE
1a.3. **Briefly state or diagram the path between structure, process, intermediate outcome, and health outcomes**. Include all the steps between the measure focus and the health outcome.

1a.3.1. **What is the source of the <u>systematic review of the body of evidence</u> that supports the performance measure?**

☐ Clinical Practice Guideline recommendation – *complete sections <u>1a.4</u>, and <u>1a.7</u>*

☐ US Preventive Services Task Force Recommendation – *complete sections <u>1a.5</u> and <u>1a.7</u>*

☐ Other systematic review and grading of the body of evidence (*e.g., Cochrane Collaboration, AHRQ Evidence Practice Center*) – *complete sections <u>1a.6</u> and <u>1a.7</u>*

☐ Other – *complete section <u>1a.8</u>*

Please complete the sections indicated above for the source of evidence. You may skip the sections that do not apply.

1a.4. CLINICAL PRACTICE GUIDELINE RECOMMENDATION

1a.4.1. **Guideline citation** (*including date*) and **URL for guideline** (*if available online*):

1a.4.2. **Identify guideline recommendation number and/or page number** and **quote verbatim, the specific guideline recommendation**.

1a.4.3. **Grade assigned to the quoted recommendation <u>with definition</u> of the grade:**

1a.4.4. **Provide all other grades and associated definitions for recommendations in the grading system.** (*Note: If separate grades for the strength of the evidence, report them in section 1a.7.*)

1a.4.5. **Citation and URL for methodology for grading recommendations** (*if different from 1a.4.1*)**:**

1a.4.6. **If guideline is evidence-based (rather than expert opinion), are the details of the quantity, quality, and consistency of the body of evidence available (e.g., evidence tables)?**

☐ Yes → *complete section <u>1a.7</u>*

☐ No → *report on another systematic review of the evidence in sections <u>1a.6</u> and <u>1a.7</u>; if another review does not exist, provide what is known from the guideline review of evidence in <u>1a.7</u>*

1a.5. UNITED STATES PREVENTIVE SERVICES TASK FORCE RECOMMENDATION

1a.5.1. **Recommendation citation** (*including date*) and **URL for recommendation** (*if available online*):

1a.5.2. Identify recommendation number and/or page number and **quote verbatim, the specific recommendation**.

1a.5.3. Grade assigned to the quoted recommendation <u>with definition</u> of the grade:

1a.5.4. Provide all other grades and associated definitions for recommendations in the grading system. (*Note: the grading system for the evidence should be reported in section 1a.7.*)

1a.5.5. Citation and URL for methodology for grading recommendations (*if different from 1a.5.1*)**:**

Complete section 1a.7
_____
1a.6. OTHER SYSTEMATIC REVIEW OF THE BODY OF EVIDENCE
1a.6.1. Citation (*including date*) and **URL** (*if available online*):

1a.6.2. Citation and URL for methodology for evidence review and grading (*if different from 1a.6.1*)**:**

Complete section 1a.7
_____
1a.7. FINDINGS FROM SYSTEMATIC REVIEW OF BODY OF THE EVIDENCE SUPPORTING THE MEASURE
If more than one systematic review of the evidence is identified above, you may choose to summarize the one (or more) for which the best information is available to provide a summary of the quantity, quality, and consistency of the body of evidence. Be sure to identify which review is the basis of the responses in this section and if more than one, provide a separate response for each review.

1a.7.1. What was the specific structure, treatment, intervention, service, or intermediate outcome addressed in the evidence review?

1a.7.2. Grade assigned for the quality of the quoted evidence <u>with definition</u> of the grade:

1a.7.3. Provide all other grades and associated definitions for strength of the evidence in the grading system.

1a.7.4. What is the time period covered by the body of evidence? (*provide the date range, e.g., 1990-2010*). Date range: Click here to enter date range

QUANTITY AND QUALITY OF BODY OF EVIDENCE
1a.7.5. How many and what type of study designs are included in the body of evidence?
(*e.g., 3 randomized controlled trials and 1 observational study*)

1a.7.6. **What is the overall quality of evidence <u>across studies</u> in the body of evidence**? (*discuss the certainty or confidence in the estimates of effect particularly in relation to study factors such as design flaws, imprecision due to small numbers, indirectness of studies to the measure focus or target population*)

ESTIMATES OF BENEFIT AND CONSISTENCY ACROSS STUDIES IN BODY OF EVIDENCE
1a.7.7. **What are the estimates of benefit—magnitude and direction of effect on outcome(s) <u>across studies</u> in the body of evidence**? (*e.g., ranges of percentages or odds ratios for improvement/ decline across studies, results of meta-analysis, and statistical significance*)

1a.7.8. **What harms were studied and how do they affect the net benefit (benefits over harms)?**

UPDATE TO THE SYSTEMATIC REVIEW(S) OF THE BODY OF EVIDENCE
1a.7.9. **If new studies have been conducted since the systematic review of the body of evidence, provide for <u>each</u> new study: 1) citation, 2) description, 3) results, 4) impact on conclusions of systematic review**.

1a.8 OTHER SOURCE OF EVIDENCE
If source of evidence is NOT from a clinical practice guideline, USPSTF, or systematic review, please describe the evidence on which you are basing the performance measure.

1a.8.1 What process was used to identify the evidence?

1a.8.2. Provide the citation and summary for each piece of evidence.

Measure Number (*if previously endorsed*)**:** Click here to enter NQF number
Measure Title: Postoperative Sepsis Rate (PDI #10)
 IF the measure is a component in a composite performance measure, provide the title of the
Composite Measure here: 532- Pediatric Patient Safety for Selected Indicators (PDI #19)

Date of Submission: Click here to enter a date

Instructions

- *For composite performance measures:*
  - *A separate evidence form is required for each component measure unless several components were studied together.*
  - *If a component measure is submitted as an individual performance measure, attach the evidence form to the individual measure submission.*
- Respond to all questions as instructed with answers immediately following the question. All information needed to demonstrate meeting the evidence subcriterion (1a) must be in this form. An appendix of *supplemental* materials may be submitted, but there is no guarantee it will be reviewed.
- If you are unable to check a box, please highlight or shade the box for your response.
- Maximum of 10 pages (*incudes questions/instructions*; minimum font size 11 pt; do not change margins). ***Contact NQF staff if more pages are needed.***
- Contact NQF staff regarding questions. Check for resources at Submitting Standards webpage.

Note: The information provided in this form is intended to aid the Steering Committee and other stakeholders in understanding to what degree the evidence for this measure meets NQF's evaluation criteria.

1a. Evidence to Support the Measure Focus
The measure focus is evidence-based, demonstrated as follows:
- Health outcome: [3] a rationale supports the relationship of the health outcome to processes or structures of care. Applies to patient-reported outcomes (PRO), including health-related quality of life/functional status, symptom/symptom burden, experience with care, health-related behavior.
- Intermediate clinical outcome: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured intermediate clinical outcome leads to a desired health outcome.
- Process: [5] a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured process leads to a desired health outcome.
- Structure: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured structure leads to a desired health outcome.
- Efficiency: [6] evidence not required for the resource use component.

Notes
3. Generally, rare event outcomes do not provide adequate information for improvement or discrimination; however, serious reportable events that are compared to zero are appropriate outcomes for public reporting and quality improvement.
4. The preferred systems for grading the evidence are the U.S. Preventive Services Task Force (USPSTF) grading definitions and methods, or Grading of Recommendations, Assessment, Development and Evaluation (GRADE) guidelines.
5. Clinical care processes typically include multiple steps: assess → identify problem/potential problem → choose/plan intervention (with patient input) → provide intervention → evaluate impact on health status. If the measure focus is one step in such a multistep process, the step with the strongest evidence for the link to the desired outcome should be selected as the focus of measurement. Note: A measure focused only on collecting PROM data is not a PRO-PM.
6. Measures of efficiency combine the concepts of resource use and quality (see NQF's Measurement Framework: Evaluating Efficiency Across Episodes of Care; AQA Principles of Efficiency Measures).

1a.1.This is a measure of: (*should be consistent with type of measure entered in De.1*)
Outcome
    ☒ Health outcome: Click here to name the health outcome
    ☐Patient-reported outcome (PRO): Click here to name the PRO
       PROs include HRQoL/functional status, symptom/symptom burden, experience with care, health-related behaviors
    ☐ Intermediate clinical outcome (*e.g., lab value*): Click here to name the intermediate outcome
☐ Process: Click here to name the process
☐ Structure: Click here to name the structure
☐ Other: Click here to name what is being measured

_____
HEALTH OUTCOME/PRO PERFORMANCE MEASURE *If not a health outcome or PRO, skip to 1a.3*
1a.2. Briefly state or diagram the path between the health outcome (or PRO) and the healthcare structures, processes, interventions, or services that influence it.

Cases of postoperative sepsis cases can be prevented by compliance to general infection control practices, hand washing principles, and measures to prevent nosocomial infection (such as oral care and proper positioning, care of invasive catheters, skin care, wound care, and application of the Surgical Care Improvement Project process measures associated with antibiotic therapy and skin preparation).   The greatest potential of preventing postoperative sepsis in children is in those relatively well at baseline and those with wound or line infections.   It is important to capture infections present at the time of admission and excluded co–morbidities in the more challenging cases, where sepsis may not be as preventable. In a study of infants less than 6 months of age, laparotomy with enterotomy, thoracotomy and diaphragmatic hernia repair (P<0.05, respectively) as well as low postnatal age and long operation time (P<0.001, respectively) were correlated with an increased incidence of sepsis. Age has been shown to an important factor in the development of sepsis and type of underlying infection.

1a.2.1. State the rationale supporting the relationship between the health outcome (or PRO) to at least one healthcare structure, process, intervention, or service (*i.e., influence on outcome/PRO*).

Sepsis is a threatening postoperative complication especially in small infants. As age is an important factor in the development of sepsis and the type of precursor infection, it is important that interventions type into account age and surgical type.

<mark>*Note:* *For health outcome/PRO performance measures, no further information is required; however, you may provide evidence for any of the structures, processes, interventions, or service identified above.*</mark>
_____
INTERMEDIATE OUTCOME, PROCESS, OR STRUCTURE PERFORMANCE MEASURE
1a.3. Briefly state or diagram the path between structure, process, intermediate outcome, and health outcomes. Include all the steps between the measure focus and the health outcome.

1a.3.1. What is the source of the <u>systematic review of the body of evidence</u> that supports the performance measure?
☐ Clinical Practice Guideline recommendation – *complete sections 1a.4, and 1a.7*
☐ US Preventive Services Task Force Recommendation – *complete sections 1a.5 and 1a.7*

☐ Other systematic review and grading of the body of evidence (*e.g., Cochrane Collaboration, AHRQ Evidence Practice Center*) – ***complete sections 1a.6 and 1a.7***

☐ Other – ***complete section 1a.8***

Please complete the sections indicated above for the source of evidence. You may skip the sections that do not apply.

_____

1a.4. CLINICAL PRACTICE GUIDELINE RECOMMENDATION

1a.4.1. Guideline citation (*including date*) and **URL for guideline** (*if available online*):

1a.4.2. Identify guideline recommendation number and/or page number and **quote verbatim, the specific guideline recommendation**.

1a.4.3. Grade assigned to the quoted recommendation <u>with definition</u> of the grade:

1a.4.4. Provide all other grades and associated definitions for recommendations in the grading system. (*Note: If separate grades for the strength of the evidence, report them in section 1a.7.*)

1a.4.5. Citation and URL for methodology for grading recommendations (*if different from 1a.4.1*):

1a.4.6. If guideline is evidence-based (rather than expert opinion), are the details of the quantity, quality, and consistency of the body of evidence available (e.g., evidence tables)?
  ☐ Yes → ***complete section 1a.7***
  ☐ No → ***report on another systematic review of the evidence in sections 1a.6 and 1a.7; if another review does not exist, provide what is known from the guideline review of evidence in 1a.7***

_____

1a.5. UNITED STATES PREVENTIVE SERVICES TASK FORCE RECOMMENDATION

1a.5.1. Recommendation citation (*including date*) and **URL for recommendation** (*if available online*):

1a.5.2. Identify recommendation number and/or page number and **quote verbatim, the specific recommendation**.

1a.5.3. Grade assigned to the quoted recommendation <u>with definition</u> of the grade:

1a.5.4. Provide all other grades and associated definitions for recommendations in the grading system. (*Note: the grading system for the evidence should be reported in section 1a.7.*)

1a.5.5. Citation and URL for methodology for grading recommendations (*if different from 1a.5.1*):

Complete section 1a.7

_____

1a.6. OTHER SYSTEMATIC REVIEW OF THE BODY OF EVIDENCE
1a.6.1. Citation (*including date*) and **URL** (*if available online*):

1a.6.2. Citation and URL for methodology for evidence review and grading (*if different from 1a.6.1*)**:**

Complete section 1a.7
_____
1a.7. FINDINGS FROM SYSTEMATIC REVIEW OF BODY OF THE EVIDENCE SUPPORTING THE MEASURE
If more than one systematic review of the evidence is identified above, you may choose to summarize the one (or more) for which the best information is available to provide a summary of the quantity, quality, and consistency of the body of evidence. Be sure to identify which review is the basis of the responses in this section and if more than one, provide a separate response for each review.

1a.7.1. What was the specific structure, treatment, intervention, service, or intermediate outcome addressed in the evidence review?

1a.7.2. Grade assigned for the quality of the quoted evidence <u>with definition</u> of the grade:

1a.7.3. Provide all other grades and associated definitions for strength of the evidence in the grading system.

1a.7.4. What is the time period covered by the body of evidence? (*provide the date range, e.g., 1990-2010*). Date range: Click here to enter date range

QUANTITY AND QUALITY OF BODY OF EVIDENCE
1a.7.5. How many and what type of study designs are included in the body of evidence? (*e.g., 3 randomized controlled trials and 1 observational study*)

1a.7.6. What is the overall quality of evidence <u>across studies</u> in the body of evidence? (*discuss the certainty or confidence in the estimates of effect particularly in relation to study factors such as design flaws, imprecision due to small numbers, indirectness of studies to the measure focus or target population*)

ESTIMATES OF BENEFIT AND CONSISTENCY ACROSS STUDIES IN BODY OF EVIDENCE
1a.7.7. What are the estimates of benefit—magnitude and direction of effect on outcome(s) <u>across studies</u> in the body of evidence? (*e.g., ranges of percentages or odds ratios for improvement/ decline across studies, results of meta-analysis, and statistical significance*)

1a.7.8. What harms were studied and how do they affect the net benefit (benefits over harms)?

UPDATE TO THE SYSTEMATIC REVIEW(S) OF THE BODY OF EVIDENCE

1a.7.9. If new studies have been conducted since the systematic review of the body of evidence, provide for <u>each</u> new study: 1) citation, 2) description, 3) results, 4) impact on conclusions of systematic review.

_____
1a.8 OTHER SOURCE OF EVIDENCE
If source of evidence is NOT from a clinical practice guideline, USPSTF, or systematic review, please describe the evidence on which you are basing the performance measure.

1a.8.1 What process was used to identify the evidence?

1a.8.2. Provide the citation and summary for each piece of evidence.

NATIONAL **Q**UALITY **F**ORUM—Evidence (subcriterion 1a)

Measure Number (*if previously endorsed*)**:** 367
Measure Title: Postoperative Wound Dehiscence Rate (PDI #11)
 IF the measure is a component in a composite performance measure, provide the title of the
Composite Measure here: 532- Pediatric Patient Safety for Selected Indicators (PDI #19)

Date of Submission: Click here to enter a date

Instructions
- *For composite performance measures:*
  - *A separate evidence form is required for each component measure unless several components were studied together.*
  - *If a component measure is submitted as an individual performance measure, attach the evidence form to the individual measure submission.*
- Respond to all questions as instructed with answers immediately following the question. All information needed to demonstrate meeting the evidence subcriterion (1a) must be in this form. An appendix of *supplemental* materials may be submitted, but there is no guarantee it will be reviewed.
- If you are unable to check a box, please highlight or shade the box for your response.
- Maximum of 10 pages (*incudes questions/instructions*; minimum font size 11 pt; do not change margins). ***Contact NQF staff if more pages are needed.***
- Contact NQF staff regarding questions. Check for resources at Submitting Standards webpage.

Note: The information provided in this form is intended to aid the Steering Committee and other stakeholders in understanding to what degree the evidence for this measure meets NQF's evaluation criteria.

1a. Evidence to Support the Measure Focus
The measure focus is evidence-based, demonstrated as follows:
- Health outcome: [3] a rationale supports the relationship of the health outcome to processes or structures of care. Applies to patient-reported outcomes (PRO), including health-related quality of life/functional status, symptom/symptom burden, experience with care, health-related behavior.
- Intermediate clinical outcome: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured intermediate clinical outcome leads to a desired health outcome.
- Process: [5] a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured process leads to a desired health outcome.
- Structure: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured structure leads to a desired health outcome.
- Efficiency: [6] evidence not required for the resource use component.

Notes
3. Generally, rare event outcomes do not provide adequate information for improvement or discrimination; however, serious reportable events that are compared to zero are appropriate outcomes for public reporting and quality improvement.
4. The preferred systems for grading the evidence are the U.S. Preventive Services Task Force (USPSTF) grading definitions and methods, or Grading of Recommendations, Assessment, Development and Evaluation (GRADE) guidelines.
5. Clinical care processes typically include multiple steps: assess → identify problem/potential problem → choose/plan intervention (with patient input) → provide intervention → evaluate impact on health status. If the measure focus is one step in such a multistep process, the step with the strongest evidence for the link to the desired outcome should be selected as the focus of measurement. Note: A measure focused only on collecting PROM data is not a PRO-PM.
6. Measures of efficiency combine the concepts of resource use and quality (see NQF's Measurement Framework: Evaluating Efficiency Across Episodes of Care; AQA Principles of Efficiency Measures).

1a.1.This is a measure of: (*should be consistent with type of measure entered in De.1*)
Outcome
    ☒ Health outcome: Click here to name the health outcome
    ☐Patient-reported outcome (PRO): Click here to name the PRO
        PROs include HRQoL/functional status, symptom/symptom burden, experience with care, health-related behaviors
    ☐ Intermediate clinical outcome (*e.g., lab value*): Click here to name the intermediate outcome
☐ Process: Click here to name the process
☐ Structure: Click here to name the structure
☐ Other: Click here to name what is being measured

_____

HEALTH OUTCOME/PRO PERFORMANCE MEASURE *If not a health outcome or PRO, skip to* <u>*1a.3*</u>
1a.2. Briefly state or diagram the path between the health outcome (or PRO) and the healthcare structures, processes, interventions, or services that influence it.

This is a relatively rare event in pediatric patients and the number of studies in children is limited. Wound dehiscence can be caused by inadequate undermining of the wound during surgery; excessive tension on the wound edges caused by lifting, straining, or excessive wound length; or the wound being located on a highly mobile or high tension area. Hannan et al. reported that cases with a secondary diagnosis of wound disruption were 3.0 times more likely to have received care that departed from professionally recognized standards than cases without that code (4.3% versus 1.7%), after adjusting for patient demographic, geographic, and hospital characteristics. [1]   In a study by Scanlon et al targeting children, reviewers, after chart review, thought that a large of number of the dehiscence events were not clearly preventable. For example, they found a number of flagged cases where the diaphragmatic hernia wound was left purposefully open due to swelling and then closed in staged procedures. Other types of cases found to be at high risk for dehiscence included children with short bowel syndrome (15 times higher relative risk compared to all denominator cases) and children with spleen disorders (3.5 x higher relative risk). Besides surgical technical and surgery type, patient crying and coughing, especially after extubation, was found to be another risk factor. A major cause of wound separation in adults is failure of suture to remain anchored in the fascia, suture breakage, knot failure, and excessive stitch interval which allows protrusion of viscera.

Reference:
[1] Hannan EL, Bernard HR, O'Donnell JF, Kilburn H, Jr. A methodology for targeting hospital cases for quality of care record reviews. Am J Public Health 1989;79(4):430-6.

1a.2.1. State the rationale supporting the relationship between the health outcome (or PRO) to at least one healthcare structure, process, intervention, or service (*i.e., influence on outcome/PRO*).

Although a rare procedure in children, surgeon skill and compliance to professional standards of care can help to prevent cases of wound dehiscence.   Better sedation and pain management may also help prevent wound dehiscence.   A common cause of abdominal wound dehiscence is fascial necrosis[2-4] from the surgeon placing the sutures too close to the edge or from the wound being under too much tension.

References:

1. Hannan EL, Bernard HR, O'Donnel JF,Kilburn H, r. A methodology for targeting hospital cases for quality of care record reviews. Am J Publi health 1989; 79(4):430-6.
2. Bartlett LC. Pressure necrosis is the primary cause of wound dehiscence. Can J Surg 1985; 28:27.
3. Herrmann JB. Changes in tensile strength and knot security of surgical sutures in vivo. Arch Surg 1973; 106:707.
4. Pollock AV. Laparotomy. J R Soc Med 1981; 74:480.

==Note: For health outcome/PRO performance measures, no further information is required; however, you may provide evidence for any of the structures, processes, interventions, or service identified above.==
_____
INTERMEDIATE OUTCOME, PROCESS, OR STRUCTURE PERFORMANCE MEASURE
1a.3. **Briefly state or diagram the path between structure, process, intermediate outcome, and health outcomes**. Include all the steps between the measure focus and the health outcome.

1a.3.1. **What is the source of the <u>systematic review of the body of evidence</u> that supports the performance measure?**
☐ Clinical Practice Guideline recommendation – ***complete sections 1a.4, and 1a.7***
☐ US Preventive Services Task Force Recommendation – ***complete sections 1a.5 and 1a.7***
☐ Other systematic review and grading of the body of evidence (*e.g., Cochrane Collaboration, AHRQ Evidence Practice Center*) – ***complete sections 1a.6 and 1a.7***
☐ Other – ***complete section 1a.8***

Please complete the sections indicated above for the source of evidence. You may skip the sections that do not apply.
_____
1a.4. CLINICAL PRACTICE GUIDELINE RECOMMENDATION
1a.4.1. **Guideline citation** (*including date*) and **URL for guideline** (*if available online*):

1a.4.2. **Identify guideline recommendation number and/or page number** and **quote verbatim, the specific guideline recommendation**.

1a.4.3. **Grade assigned to the quoted recommendation <u>with definition</u> of the grade:**

1a.4.4. **Provide all other grades and associated definitions for recommendations in the grading system.** (*Note: If separate grades for the strength of the evidence, report them in section 1a.7.*)

1a.4.5. **Citation and URL for methodology for grading recommendations** (*if different from 1a.4.1*)**:**

1a.4.6. If guideline is evidence-based (rather than expert opinion), are the details of the quantity, quality, and consistency of the body of evidence available (e.g., evidence tables)?
☐ Yes **→ *complete section 1a.7***

☐ No → *report on another systematic review of the evidence in sections 1a.6 and 1a.7; if another review does not exist, provide what is known from the guideline review of evidence in 1a.7*

_____

1a.5. UNITED STATES PREVENTIVE SERVICES TASK FORCE RECOMMENDATION
1a.5.1. Recommendation citation (*including date*) and **URL for recommendation** (*if available online*):

1a.5.2. Identify recommendation number and/or page number and **quote verbatim, the specific recommendation**.

1a.5.3. Grade assigned to the quoted recommendation <u>with definition</u> of the grade:

1a.5.4. Provide all other grades and associated definitions for recommendations in the grading system. (*Note: the grading system for the evidence should be reported in section 1a.7.*)

1a.5.5. Citation and URL for methodology for grading recommendations (*if different from 1a.5.1*)**:**

Complete section 1a.7

_____

1a.6. OTHER SYSTEMATIC REVIEW OF THE BODY OF EVIDENCE
1a.6.1. Citation (*including date*) and **URL** (*if available online*):

1a.6.2. Citation and URL for methodology for evidence review and grading (*if different from 1a.6.1*)**:**

Complete section 1a.7

_____

1a.7. FINDINGS FROM SYSTEMATIC REVIEW OF BODY OF THE EVIDENCE SUPPORTING THE MEASURE
If more than one systematic review of the evidence is identified above, you may choose to summarize the one (or more) for which the best information is available to provide a summary of the quantity, quality, and consistency of the body of evidence. Be sure to identify which review is the basis of the responses in this section and if more than one, provide a separate response for each review.

1a.7.1. What was the specific structure, treatment, intervention, service, or intermediate outcome addressed in the evidence review?

1a.7.2. Grade assigned for the quality of the quoted evidence <u>with definition</u> of the grade:

1a.7.3. Provide all other grades and associated definitions for strength of the evidence in the grading system.

1a.7.4. What is the time period covered by the body of evidence? (*provide the date range, e.g., 1990-2010*). Date range: Click here to enter date range

QUANTITY AND QUALITY OF BODY OF EVIDENCE

1a.7.5. **How many and what type of study designs are included in the body of evidence**? (*e.g., 3 randomized controlled trials and 1 observational study*)

1a.7.6. **What is the overall quality of evidence <u>across studies</u> in the body of evidence**? (*discuss the certainty or confidence in the estimates of effect particularly in relation to study factors such as design flaws, imprecision due to small numbers, indirectness of studies to the measure focus or target population*)

ESTIMATES OF BENEFIT AND CONSISTENCY ACROSS STUDIES IN BODY OF EVIDENCE
1a.7.7. **What are the estimates of benefit—magnitude and direction of effect on outcome(s) <u>across studies</u> in the body of evidence**? (*e.g., ranges of percentages or odds ratios for improvement/ decline across studies, results of meta-analysis, and statistical significance*)

1a.7.8. **What harms were studied and how do they affect the net benefit (benefits over harms)?**

UPDATE TO THE SYSTEMATIC REVIEW(S) OF THE BODY OF EVIDENCE
1a.7.9. **If new studies have been conducted since the systematic review of the body of evidence, provide for <u>each</u> new study: 1) citation, 2) description, 3) results, 4) impact on conclusions of systematic review**.

_____
1a.8 OTHER SOURCE OF EVIDENCE
If source of evidence is NOT from a clinical practice guideline, USPSTF, or systematic review, please describe the evidence on which you are basing the performance measure.

1a.8.1 What process was used to identify the evidence?

1a.8.2. Provide the citation and summary for each piece of evidence.

Measure Number (*if previously endorsed*)**:** Click here to enter NQF number
Measure Title: Central Venous Catheter-Related Blood Stream Infection Rate (PDI #12)
 IF the measure is a component in a composite performance measure, provide the title of the
Composite Measure here: 532- Pediatric Patient Safety for Selected Indicators (PDI #19)

Date of Submission: Click here to enter a date

Instructions
- *For composite performance measures:*
  - *A separate evidence form is required for each component measure unless several components were studied together.*
  - *If a component measure is submitted as an individual performance measure, attach the evidence form to the individual measure submission.*
- Respond to all questions as instructed with answers immediately following the question. All information needed to demonstrate meeting the evidence subcriterion (1a) must be in this form. An appendix of *supplemental* materials may be submitted, but there is no guarantee it will be reviewed.
- If you are unable to check a box, please highlight or shade the box for your response.
- Maximum of 10 pages (*incudes questions/instructions*; minimum font size 11 pt; do not change margins). **Contact NQF staff if more pages are needed.**
- Contact NQF staff regarding questions. Check for resources at Submitting Standards webpage.

Note: The information provided in this form is intended to aid the Steering Committee and other stakeholders in understanding to what degree the evidence for this measure meets NQF's evaluation criteria.

1a. Evidence to Support the Measure Focus
The measure focus is evidence-based, demonstrated as follows:
- Health outcome: [3] a rationale supports the relationship of the health outcome to processes or structures of care. Applies to patient-reported outcomes (PRO), including health-related quality of life/functional status, symptom/symptom burden, experience with care, health-related behavior.
- Intermediate clinical outcome: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured intermediate clinical outcome leads to a desired health outcome.
- Process: [5] a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured process leads to a desired health outcome.
- Structure: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence [4] that the measured structure leads to a desired health outcome.
- Efficiency: [6] evidence not required for the resource use component.

Notes
3. Generally, rare event outcomes do not provide adequate information for improvement or discrimination; however, serious reportable events that are compared to zero are appropriate outcomes for public reporting and quality improvement.
4. The preferred systems for grading the evidence are the U.S. Preventive Services Task Force (USPSTF) grading definitions and methods, or Grading of Recommendations, Assessment, Development and Evaluation (GRADE) guidelines.
5. Clinical care processes typically include multiple steps: assess → identify problem/potential problem → choose/plan intervention (with patient input) → provide intervention → evaluate impact on health status. If the measure focus is one step in such a multistep process, the step with the strongest evidence for the link to the desired outcome should be selected as the focus of measurement. Note: A measure focused only on collecting PROM data is not a PRO-PM.
6. Measures of efficiency combine the concepts of resource use and quality (see NQF's Measurement Framework: Evaluating Efficiency Across Episodes of Care; AQA Principles of Efficiency Measures).

1a.1.This is a measure of: (*should be consistent with type of measure entered in De.1*)
Outcome
    ☒ Health outcome: Click here to name the health outcome
    ☐Patient-reported outcome (PRO): Click here to name the PRO
       PROs include HRQoL/functional status, symptom/symptom burden, experience with care, health-related behaviors
    ☐ Intermediate clinical outcome (*e.g., lab value*): Click here to name the intermediate outcome
☐ Process: Click here to name the process
☐ Structure: Click here to name the structure
☐ Other: Click here to name what is being measured

_____

HEALTH OUTCOME/PRO PERFORMANCE MEASURE *If not a health outcome or PRO, skip to* <u>1a.3</u>
1a.2. Briefly state or diagram the path between the health outcome (or PRO) and the healthcare

The majority of central line related blood stream infections are thought to be preventable through the application of national guidelines such as those published by the Centers for Disease Control and Prevention[1].   Major areas of emphasis include 1) educating and training healthcare personnel who insert and maintain catheters; 2) using maximal sterile barrier precautions during central venous catheter insertion; 3) using a > 0.5% chlorhexidine skin preparation with alcohol for antisepsis; 4) avoiding routine replacement of central venous catheters as a strategy to prevent infection; 5) using antiseptic/antibiotic impregnated short-term central venous catheters and chlorhexidine impregnated sponge dressings if the rate of infection is not decreasing despite adherence to other strategies (i.e., education and training, maximal sterile barrier precautions, and >0.5% chlorhexidine preparations with alcohol for skin antisepsis), and 6) appropriate site placement.   These guidelines also emphasize performance improvement by implementing bundled strategies, and documenting and reporting rates of compliance with all components of the bundle as benchmarks for quality assurance and performance improvement.

1. O'Grady NP, Alexander M, Burns LA, et al. Guidelines for the Prevention of Intravascular Catheter-Related Infections, 2011. Centers for Disease and Prevention, http://www.cdc.gov/hicpac/pdf/guidelines/bsi-guidelines-2011.pdf, accessed November 15, 2013.

  a.2.1. State the rationale supporting the relationship between the health outcome (or PRO) to at least one healthcare structure, process, intervention, or service (*i.e., influence on outcome/PRO*).

High rates of Central Line Related Bloodstream infection represent an opportunity for improvement. The development of CLRBSI associated with clinical care is an important occurrence that can be related to failure of organizational policy and procedures or the enforcement and surveillance of these policies and procedures.

==*Note: For health outcome/PRO performance measures, no further information is required; however, you may provide evidence for any of the structures, processes, interventions, or service identified above.*==
_____
INTERMEDIATE OUTCOME, PROCESS, OR STRUCTURE PERFORMANCE MEASURE

1a.3. **Briefly state or diagram the path between structure, process, intermediate outcome, and health outcomes**. Include all the steps between the measure focus and the health outcome.

1a.3.1. **What is the source of the <u>systematic review of the body of evidence</u> that supports the performance measure?**
☐ Clinical Practice Guideline recommendation – **complete sections <u>1a.4</u>, and <u>1a.7</u>**
☐ US Preventive Services Task Force Recommendation – **complete sections <u>1a.5</u> and <u>1a.7</u>**
☐ Other systematic review and grading of the body of evidence (*e.g., Cochrane Collaboration, AHRQ Evidence Practice Center*) – **complete sections <u>1a.6</u> and <u>1a.7</u>**
☐ Other – **complete section <u>1a.8</u>**

Please complete the sections indicated above for the source of evidence. You may skip the sections that do not apply.
_____
1a.4. CLINICAL PRACTICE GUIDELINE RECOMMENDATION
1a.4.1. Guideline citation (*including date*) and **URL for guideline** (*if available online*):

1a.4.2. Identify guideline recommendation number and/or page number and **quote verbatim, the specific guideline recommendation**.

1a.4.3. Grade assigned to the quoted recommendation <u>with definition</u> of the grade:

1a.4.4. Provide all other grades and associated definitions for recommendations in the grading system. (*Note: If separate grades for the strength of the evidence, report them in section 1a.7.*)

1a.4.5. Citation and URL for methodology for grading recommendations (*if different from 1a.4.1*)**:**

1a.4.6. If guideline is evidence-based (rather than expert opinion), are the details of the quantity, quality, and consistency of the body of evidence available (e.g., evidence tables)?
☐ Yes **→ complete section <u>1a.7</u>**
☐ No **→ report on another systematic review of the evidence in sections <u>1a.6</u> and <u>1a.7</u>; if another review does not exist, provide what is known from the guideline review of evidence in <u>1a.7</u>**

_____
1a.5. UNITED STATES PREVENTIVE SERVICES TASK FORCE RECOMMENDATION
1a.5.1. Recommendation citation (*including date*) and **URL for recommendation** (*if available online*):

1a.5.2. Identify recommendation number and/or page number and **quote verbatim, the specific recommendation**.

1a.5.3. Grade assigned to the quoted recommendation <u>with definition</u> of the grade:

1a.5.4. Provide all other grades and associated definitions for recommendations in the grading system. (*Note: the grading system for the evidence should be reported in section 1a.7.*)

1a.5.5. Citation and URL for methodology for grading recommendations (*if different from 1a.5.1*)**:**

Complete section 1a.7
_____
1a.6. OTHER SYSTEMATIC REVIEW OF THE BODY OF EVIDENCE
1a.6.1. Citation (*including date*) and **URL** (*if available online*):

1a.6.2. Citation and URL for methodology for evidence review and grading (*if different from 1a.6.1*)**:**

Complete section 1a.7
_____
1a.7. FINDINGS FROM SYSTEMATIC REVIEW OF BODY OF THE EVIDENCE SUPPORTING THE MEASURE
If more than one systematic review of the evidence is identified above, you may choose to summarize the one (or more) for which the best information is available to provide a summary of the quantity, quality, and consistency of the body of evidence. Be sure to identify which review is the basis of the responses in this section and if more than one, provide a separate response for each review.

1a.7.1. What was the specific structure, treatment, intervention, service, or intermediate outcome addressed in the evidence review?

1a.7.2. Grade assigned for the quality of the quoted evidence <u>with definition</u> of the grade:

1a.7.3. Provide all other grades and associated definitions for strength of the evidence in the grading system.

1a.7.4. What is the time period covered by the body of evidence? (*provide the date range, e.g., 1990-2010*). Date range: Click here to enter date range

QUANTITY AND QUALITY OF BODY OF EVIDENCE
1a.7.5. How many and what type of study designs are included in the body of evidence? (*e.g., 3 randomized controlled trials and 1 observational study*)

1a.7.6. What is the overall quality of evidence <u>across studies</u> in the body of evidence? (*discuss the certainty or confidence in the estimates of effect particularly in relation to study factors such as design flaws, imprecision due to small numbers, indirectness of studies to the measure focus or target population*)

ESTIMATES OF BENEFIT AND CONSISTENCY ACROSS STUDIES IN BODY OF EVIDENCE
1a.7.7. What are the estimates of benefit—magnitude and direction of effect on outcome(s) <u>across studies</u> in the body of evidence? (*e.g., ranges of percentages or odds ratios for improvement/ decline across studies, results of meta-analysis, and statistical significance*)

1a.7.8. What harms were studied and how do they affect the net benefit (benefits over harms)?

UPDATE TO THE SYSTEMATIC REVIEW(S) OF THE BODY OF EVIDENCE
1a.7.9. If new studies have been conducted since the systematic review of the body of evidence, provide for <u>each</u> new study: 1) citation, 2) description, 3) results, 4) impact on conclusions of systematic review.

_____
1a.8 OTHER SOURCE OF EVIDENCE
If source of evidence is NOT from a clinical practice guideline, USPSTF, or systematic review, please describe the evidence on which you are basing the performance measure.

1a.8.1 What process was used to identify the evidence?

1a.8.2. Provide the citation and summary for each piece of evidence.

Measure Number (*if previously endorsed*)**: 532**
Composite Measure Title: Pediatric Patient Safety for Selected Indicators (PDI #19)
Date of Submission: Click here to enter a date
Composite Construction:

XTwo or more individual performance measure scores combined into one score
☐ All-or-none measures (e.g., all essential care processes received or outcomes experienced by each patient)
☐ Any-or-none measures (e.g., any or none of a list of adverse outcomes experienced, or inappropriate or unnecessary care processes received, by each patient)

Instructions: Please contact NQF staff before you begin.
- If a component measure is submitted as an individual performance measure, the non-composite measure testing form must also be completed and attached to the individual measure submission.
- Measures must be tested for all the data sources and levels of analyses that are specified. *If there is more than one set of data specifications or more than one level of analysis, contact NQF staff* about how to present all the testing information in one form.
- **For all composite measures, sections 1, 2a2, 2b2, 2b3, 2b5, and 2d must be completed.**
- **For composites with outcome and resource use measures**, section **2b4** also must be completed.
- If specified for **multiple data sources/sets of specificaitions** (e.g., claims and EHRs), section **2b6** also must be completed.
- Respond to all questions as instructed with answers immediately following the question. All information on testing to demonstrate meeting the subcriteria for reliability (2a2), validity (2b2-2b6), and composites (2d) must be in this form. An appendix for *supplemental* materials may be submitted, but there is no guarantee it will be reviewed.
- If you are unable to check a box, please highlight or shade the box for your response.
- Maximum of 25 pages (*incuding questions/instructions;* minimum font size 11 pt; do not change margins). *Contact NQF staff if more pages are needed.*
- Contact NQF staff regarding questions. Check for resources at Submitting Standards webpage.

<u>Note</u>**: The information provided in this form is intended to aid the Steering Committee and other stakeholders in understanding to what degree the testing results for this measure meet NQF's evaluation criteria for testing.**

2a2. Reliability testing [10] demonstrates the measure data elements are repeatable, producing the same results a high proportion of the time when assessed in the same population in the same time period and/or that the measure score is precise. For **PRO-PMs and composite performance measures**, reliability should be demonstrated for the computed performance score.

2b2. Validity testing [11] demonstrates that the measure data elements are correct and/or the measure score correctly reflects the quality of care provided, adequately identifying differences in quality. For **PRO-PMs and composite performance measures**, validity should be demonstrated for the computed performance score.

2b3. Exclusions are supported by the clinical evidence; otherwise, they are supported by evidence of sufficient frequency of occurrence so that results are distorted without the exclusion; [12]
AND
If patient preference (e.g., informed decisionmaking) is a basis for exclusion, there must be evidence that the exclusion impacts performance on the measure; in such cases, the measure must be specified so that the information about patient

preference and the effect on the measure is transparent (e.g., numerator category computed separately, denominator exclusion category computed separately). [13]

2b4. For outcome measures and other measures when indicated (e.g., resource use):
- **an evidence-based risk-adjustment strategy** (e.g., risk models, risk stratification) is specified; is based on patient factors that influence the measured outcome (but not factors related to disparities in care or the quality of care) and are present at start of care; [14,15] and has demonstrated adequate discrimination and calibration
OR
- rationale/data support no risk adjustment/ stratification.

2b5. Data analysis of computed measure scores demonstrates that methods for scoring and analysis of the specified measure allow for **identification of statistically significant and practically/clinically meaningful [16] differences in performance**;
OR
there is evidence of overall less-than-optimal performance.

2b6. If multiple data sources/methods are specified, there is demonstration they produce comparable results.

2b7. For **eMeasures, composites, and PRO-PMs** (or other measures susceptible to missing data), analyses identify the extent and distribution of missing data (or nonresponse) and demonstrate that performance results are not biased due to systematic missing data (or differences between responders and nonresponders) and how the specified handling of missing data minimizes bias.

2d. For composite performance measures, empirical analyses support the composite construction approach and demonstrate that:
2d1. the component measures fit the quality construct and add value to the overall composite while achieving the related objective of parsimony to the extent possible; and
2d2.the aggregation and weighting rules are consistent with the quality construct and rationale while achieving the related objective of simplicity to the extent possible.
(*if not conducted or results not adequate, justification must be submitted and accepted*)

Notes
10. Reliability testing applies to both the data elements and computed measure score. Examples of reliability testing for data elements include, but are not limited to: inter-rater/abstractor or intra-rater/abstractor studies; internal consistency for multi-item scales; test-retest for survey items. Reliability testing of the measure score addresses precision of measurement (e.g., signal-to-noise).
11. Validity testing applies to both the data elements and computed measure score. Validity testing of data elements typically analyzes agreement with another authoritative source of the same information. Examples of validity testing of the measure score include, but are not limited to: testing hypotheses that the measures scores indicate quality of care, e.g., measure scores are different for groups known to have differences in quality assessed by another valid quality measure or method; correlation of measure scores with another valid indicator of quality for the specific topic; or relationship to conceptually related measures (e.g., scores on process measures to scores on outcome measures). Face validity of the measure score as a quality indicator may be adequate if accomplished through a systematic and transparent process, by identified experts, and explicitly addresses whether performance scores resulting from the measure as specified can be used to distinguish good from poor quality.
12. Examples of evidence that an exclusion distorts measure results include, but are not limited to: frequency of occurrence, variability of exclusions across providers, and sensitivity analyses with and without the exclusion.
13. Patient preference is not a clinical exception to eligibility and can be influenced by provider interventions.
14. Risk factors that influence outcomes should not be specified as exclusions.
15. Risk models should not obscure disparities in care for populations by including factors that are associated with differences/inequalities in care, such as race, socioeconomic status, or gender (e.g., poorer treatment outcomes of African American men with prostate cancer or inequalities in treatment for CVD risk factors between men and women). It is preferable to stratify measures by race and socioeconomic status rather than to adjust out the differences.

16. With large enough sample sizes, small differences that are statistically significant may or may not be practically or clinically meaningful. The substantive question may be, for example, whether a statistically significant difference of one percentage point in the percentage of patients who received smoking cessation counseling (e.g., 74 percent v. 75 percent) is clinically meaningful; or whether a statistically significant difference of $25 in cost for an episode of care (e.g., $5,000 v. $5,025) is practically meaningful. Measures with overall less-than-optimal performance may not demonstrate much variability across providers.

1. DATA/SAMPLE USED FOR <u>ALL</u> TESTING OF THIS MEASURE

Often the same data are used for all aspects of measure testing. In an effort to eliminate duplication, the first five questions apply to all measure testing. <u>If there are differences by aspect of testing</u>,(e.g., reliability vs. validity) be sure to indicate the specific differences in question 1.7.

1.1. What type of data was used for testing? (*Check all the sources of data identified in the measure specifications and data used for testing the measure. Testing must be provided for <u>all</u> the sources of data specified and intended for measure implementation. If different data sources are used for different components in the composite, indicate the component after the checkbox.*)

Measure Specified to Use Data From: (***must be consistent with data sources entered in S.23***)	Measure Tested with Data From:
☐ abstracted from paper record	☐ abstracted from paper record
X administrative claims	X administrative claims
☐ clinical database/registry	☐ clinical database/registry
☐ abstracted from electronic health record	☐ abstracted from electronic health record
☐ eMeasure (HQMF) implemented in EHRs	☐ eMeasure (HQMF) implemented in EHRs
☐ other: Click here to describe	☐ other: Click here to describe

1.2. If an existing dataset was used, identify the specific dataset (*the dataset used for testing must be consistent with the measure specifications for target population and healthcare entities being measured; e.g., Medicare Part A claims, Medicaid claims, other commercial insurance, nursing home MDS, home health OASIS, clinical registry*).

All analyses were completed using data from the Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID), 2007-2011.HCUP is a family of health care databases and related software tools and products developed through a Federal-State-Industry partnership and sponsored by the Agency for Healthcare Research and Quality (AHRQ). HCUP databases bring together the data collection efforts of State data organizations, hospital associations, private data organizations, and the Federal government to create a national information resource of encounter-level health care data. The HCUP SID contain the universe of the inpatient discharge abstracts in participating States, translated into a uniform format to facilitate multi-State comparisons and analyses. Together, the SID encompass about 97 percent of all U.S. community hospital discharges (in 2011, 46 states participated for a total of more than 38.5 million hospital discharges; of which approximately 5 million hospital discharges were for children 17 years and younger [inclusive of uncomplicated births]). As defined by the American Hospital Association, community hospitals are all non-Federal, short-term, general or other specialty hospitals, excluding hospital units of institutions. Veterans hospitals and other Federal facilities are excluded. Children's general and specialty hospitals are included in the universe of hospitals. Taken from the Uniform Bill-04 (UB-04), the SID data elements include ICD-9-CM coded principal and secondary diagnoses and procedures, additional detailed clinical and service information based on revenue codes, admission and discharge status, patient demographics, expected payment source (Medicare, Medicaid, private insurance as well as the uninsured), total charges and length of stay (www.hcup-us.ahrq.gov)

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP).. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

1.3. What are the dates of the data used in testing? 2007-2011

1.4. What levels of analysis were tested? (*testing must be provided for all the levels specified and intended for measure implementation, e.g., individual clinician, hospital, health plan*)

Measure Specified to Measure Performance of: (*must be consistent with levels entered in item S.26*)	Measure Tested at Level of:
☐ individual clinician	☐ individual clinician
☐ group/practice	☐ group/practice
X hospital/facility/agency	X hospital/facility/agency
☐ health plan	☐ health plan
☐ other: Click here to describe	☐ other: Click here to describe

1.5. How many and which underline measured entities were included in the testing and analysis (by level of analysis and data source)? (*identify the number and descriptive characteristics of measured entities included in the analysis (e.g., size, location, type); if a sample was used, describe how entities were selected for inclusion in the sample*)

The hospital universe is defined as all hospitals located in the U.S. that are open during any part of the calendar year and designated as community hospitals in the AHA Annual Survey Database (Health Forum, LLC © 2011). The AHA defines community hospitals as follows: "All non-Federal, short-term, general, and other specialty hospitals, excluding hospital units of institutions." Starting in 2005, the AHA included long term acute care facilities in the definition of community hospitals. These facilities provide acute care services to patients who need long term hospitalization (stays of more than 25 days). Consequently, Veterans Hospitals and other Federal facilities (Department of Defense and Indian Health Service) are excluded. Beginning in 1998, we excluded short-term rehabilitation hospitals from the universe because the type of care provided and the characteristics of the discharges from these facilities were markedly different from other short-term hospitals. General and specialty children's hospitals are included in the hospital universe.

1.6. How many and which <u>patients</u> were included in the testing and analysis (by level of analysis and data source)? (*identify the number and descriptive characteristics of patients included in the analysis (e.g., age, sex, race, diagnosis); if a sample was used, describe how patients were selected for inclusion in the sample*)

Table 1. Reference Population

Year/ Characteristic	Hospitals	Outcome of Interest	Population at Risk	Overall Composite Performance Score
2011	4,594	-	1,068,839	1.000
2010	4,603	-	1,082,230	1.000
2009	4,532	-	1,116,717	1.000
2008	4,496	-	1,093,153	1.000
2007	4,264	-	1,025,900	1.000
Composite Performance Score Distribution 2011				
5th	**25th**	**Median**	**75th**	**95th**
0.289	0.590	0.898	1.300	2.059

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2007-2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

1.7. If there are differences in the data or sample used for different aspects of testing (e.g., reliability, validity, exclusions, risk adjustment), identify how the data or sample are different for each aspect of testing reported below.

Not applicable

_____

2a2. RELIABILITY TESTING
2a2.1. What level of reliability testing was conducted?
Note*: Current guidance for composite measure evaluation states that reliability must be demonstrated for the composite performance measure score.*
☐ **Performance measure score** (e.g., *signal-to-noise analysis*)

2a2.2. Describe the method of reliability testing and what it tests (*describe the steps—do not just name a method; what type of error does it test; what statistical analysis was used*)

Our metric of reliability is the signal to noise ratio, which is the ratio of the between hospital variance (signal) to the within hospital variance (noise). The formula is signal / (signal + noise). There is hospital-specific signal to noise ratio, which is used as an Empirical Bayes univariate shrinkage estimator. The overall signal to noise ratio is a weighted average of the hospital-specific signal-to-noise ratio, where the weight is [1 / (signal+noise)^2]. The signal is calculated using an iterative method. The analysis reports the reliability of the risk-adjusted rate (before applying the empirical Bayes univirate shrinkage estimator).

2a2.3. What were the statistical results from reliability testing? (e.*g., percent agreement and kappa for the critical data elements; distribution of reliability statistics from a signal-to-noise analysis*)

Note: The provider level composite is a weighted average of reliability- and risk-adjusted component ratios; no reliability metrics are calculated for the composite. Reported are the reliability metrics for the component measures.

Table 2. Reliability by Component Measure

Component	Number of Hospitals	Ave. Number of Patients per Hospital	Ave. Signal-to-Noise Ratio for Hospitals	Percent of Signal Variance Explained by Performance Score
PDI 01	4,699	651.5	0.71820	0.54979
PDI 02	3,347	116.0	0.77829	0.64653
PDI 05	4,690	592.3	0.55336	0.63944
PDI 10	1,972	45.8	0.76229	0.79419
PDI 11	2,520	23.9	0.71705	0.85944
PDI 12	4,594	528.1	0.75911	0.75209

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

2a2.4 What is your interpretation of the results in terms of demonstrating reliability? (i.*e., what do the results mean and what are the norms for the test conducted?*)

The composite is a numerator weighted average of reliablity adjusted component ratios. Therefore the component measures that have greater reliability contribute more to the composite performance score. Eventhough the PDI events are infrequent, the large denominators generally means that the average reliability across all hospitals (patient weighted) is moderate to high.

_____

2b2. VALIDITY TESTING
__*Note*__: *Current guidance for composite measure evaluation states that validity should be demonstrated for the composite performance measure score. If not feasible for initial endorsement, acceptable alternatives include assessment of content or face validity of the composite OR demonstration of validity for each component. Empirical validity testing of the composite measure score is expected by the time of endorsement maintenance.*
2b2.1. What level of validity testing was conducted?
x **Composite performance measure score**
  x **Empirical validity testing**
  ☐ **Systematic assessment of face validity of** __performance measure score__ **as an indicator** of quality or resource use (*i.e., is an accurate reflection of performance on quality or resource use and can distinguish good from poor performance*)
  ☐ **Systematic assessment of content validity**
x **Validity testing for component measures** *(check all that apply)*
  Note: *applies to ALL component measures, unless already endorsed or are being submitted for individual endorsement.*
  x **Endorsed (or submitted) as individual performance measures**
  ☐ **Critical data elements** (*data element validity must address ALL critical data elements*)

☐ **Empirical validity testing of the component measure score(s)**
☐ **Systematic assessment of face validity of <u>component measure score(s)</u> as an indicator** of quality or resource use (*i.e., is an accurate reflection of performance on quality or resource use and can distinguish good from poor performance*)

2b2.2. For each level of testing checked above, describe the method of validity testing and what it tests (*describe the steps—do not just name a method; what was tested, e.g., accuracy of data elements compared to authoritative source, relationship to another measure as expected; what statistical analysis was used*)

We conduct construct validity testing to examine the association between the composite performance score and hospital structural characteristics potentially associated with quality of care, including prior performance, using regression analysis.

Table 3. Structure Measures Used to Estimate Prior Probability

Measure	How it is measured	Rationale
Ln(Volume)	Natural log of the denominator	Practice makes perfect or referral
Reservation Quality	Inverse of average daily census (ADC)	Reflects the excess capacity in the inputs of production (e.g. nurse staffing)
Transfer Out	Overall percent transfer out	Routine transferring of particular categories of patients
Maximum DX	Maximum reported diagnosis codes	Higher prevalence and co-morbidities
Prior Performance	Prior year composite performance score	Share of performance likely to persist

The hypothesized relationship is as follows:
- Volume: Higher volume is associtaed with better outcomes, either because practice makes perfect (volume causes outcome) or referral (outcome causes volume)
- Reservation quality: Higher reservation quality is associated with better outcomes because reservation quality is associated with excess capacity
- Transfer out: Higher transfer out rate is associated with better outcomes because transferred cases have higher risk of mortalityor adverse outcome
- Diagnosis codes: More reported diagnosis codes are associated with more reported comorbidities, therefore higher expected rates, there fore better outcomes

2b2.3. What were the statistical results from validity testing? (*e.g., correlation; t-test*)

Table 4. Regression on Structure Measures

Variable	Label	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lnvol	Ln(Volume)	0.122865	0.012260	10.02	0.0000	0.09883	0.14690
adcinv	Reservation Quality	-0.000137	0.000747	-0.18	0.8550	-0.00160	0.00133
trnsout	Transfer Out	-1.135826	0.310066	-3.66	0.0000	-1.74370	-0.52795
maxdx	Maximum DX	0.009944	0.002045	4.86	0.0000	0.00593	0.01395
_cons	Constant	-0.507002	0.075632	-6.70	0.0000	-0.65528	-0.35873
lnvol	Ln(Volume)	0.050833	0.011181	4.55	0.0000	0.02891	0.07275
adcinv	Reservation Quality	-0.000255	0.000407	-0.63	0.5310	-0.00105	0.00054
trnsout	Transfer Out	-0.716129	0.153400	-4.67	0.0000	-1.01687	-0.41539
maxdx	Maximum DX	-0.001151	0.001016	-1.13	0.2570	-0.00314	0.00084
prior2	Prior Performance	0.695913	0.018140	38.36	0.0000	0.66035	0.73148
_cons	Constant	-0.152698	0.053610	-2.85	0.0040	-0.25780	-0.04760

Note: the dependent variable in the regression is the composite performance score

2b2.4. What is your interpretation of the results in terms of demonstrating validity? (i.*e., what do the results mean and what are the norms for the test conducted?*)

Hospitals with higher volume have worse performance (higher ratio) and hospitals with a higher transfer out rate have better performance (lower ratio). Hospitals that report on average more diagnosis codes have worse performance (higher ratio). Conditional on prior performance, hospitals with higher volumes have worse or better performance (that is, current volume provides new information) and hospitals with higher transfer out rates have better performance (that is, current transfer our rate provides new information). Overall performance is moderately persistent over time.

_____

2b3. EXCLUSIONS ANALYSIS
Note: *Applies to the composite performance measure, as well all component measures unless they are already endorsed or are being submitted for individual endorsement.*
NA ☐ *no exclusions — skip to section 2b4*

2b3.1. Describe the method of testing exclusions and what it tests (*describe the steps—do not just name a method; what was tested, e.g., whether exclusions affect overall performance scores; what statistical analysis was used*)

2b3.2. What were the statistical results from testing exclusions? (*include overall number and percentage of individuals excluded, frequency distribution of exclusions across measured entities, and impact on performance measure scores*)

2b3.3. What is your interpretation of the results in terms of demonstrating that exclusions are needed to prevent unfair distortion of performance results? (*i.e., the value outweighs the burden of increased data collection and analysis. _Note_: **If patient preference is an exclusion**, the measure must be specified*

so that the effect on the performance score is transparent, e.g., scores with and without exclusion)

_____

2b4. RISK ADJUSTMENT/STRATIFICATION FOR OUTCOME OR RESOURCE USE MEASURES
Note: *Applies to all outcome or resource use component measures, unless already endorsed or are being submitted for individual endorsement.*
If not an intermediate or health outcome, or PRO-PM, or resource use measure, skip to section 2b5.

2b4.1. What method of controlling for differences in case mix is used? *(check all that apply)*
☐ **Endorsed (or submitted) as individual performance measures**
x **No risk adjustment or stratification**
☐ **Statistical risk model**
☐ **Stratification by risk categories**
☐ **Other,** Click here to enter description

2b4.2. If an outcome or resource use component measure is <u>not risk adjusted or stratified</u>, provide <u>rationale and analyses</u> to demonstrate that controlling for differences in patient characteristics (case mix) is not needed to achieve fair comparisons across measured entities.

Note: The provider level composite is a weight average of reliability- and risk-adjusted component ratios; no discrimination or calibration metrics are calculated for the composite itself

2b4.3. Describe the conceptual/clinical <u>and</u> statistical methods and criteria used to select patient factors used in the statistical risk model or for stratification by risk (*e.g., potential factors identified in the literature and/or expert panel; regression analysis; statistical significance of p<0.10; correlation of x or higher; patient factors should be present at the start of care and not related to disparities*)

Not applicable

2b4.4. What were the statistical results of the analyses used to select risk factors?

Not applicable

2b4.5. Describe the method of testing/analysis used to develop and validate the adequacy of the statistical model <u>or</u> stratification approach (*describe the steps—do not just name a method; what statistical analysis was used*)

Not applicable

Provide the statistical results from testing the approach to controlling for differences in patient characteristics (case mix) below.
if stratified, skip to 2b4.9

2b4.6. Statistical Risk Model Discrimination Statistics (*e.g., c-statistic, R-squared*)**:**

Not applicable

2b4.7. Statistical Risk Model Calibration Statistics (*e.g., Hosmer-Lemeshow statistic*):

Not applicable

2b4.8. Statistical Risk Model Calibration – Risk decile plots or calibration curves:

Not applicable

2b4.9. Results of Risk Stratification Analysis:

Not applicable

2b4.10. What is your interpretation of the results in terms of demonstrating adequacy of controlling for differences in patient characteristics (case mix)? (i*.e., what do the results mean and what are the norms for the test conducted?*)

Not applicable

*2b4.11. Optional Additional Testing for Risk Adjustment (*not required, but would provide additional support of adequacy of risk model, e.g., testing of risk model in another data set; sensitivity analysis for missing data; other methods that were assessed*)

Not applicable
_____
2b5. IDENTIFICATION OF STATISTICALLY SIGNIFICANT & MEANINGFUL DIFFERENCES IN PERFORMANCE
Note: Applies to the composite performance measure.

2b5.1. Describe the method for determining if statistically significant and clinically/practically meaningful differences in performance measure scores among the measured entities can be identified (*describe the steps—do not just name a method; what statistical analysis was used? Do not just repeat the information provided related to performance gap in 1b*)

We calculate the posterior probability distribution for each hospital parameterized using the Gamma distribution. We then calculate the probability that the hospital is better or worse than the reference population benchmark (20th percentile) or threshold (80th percentile) composite performance score at a 95 percent probability overall and by hospital size decile. The analysis is with the computed composite performance scores for the measure as specified (including shrinkage estimator).

2b5.2. What were the statistical results from testing the ability to identify statistically significant and/or clinically/practically meaningful differences in performance measure scores across measured entities? (e.g., *number and percentage of entities with scores that were statistically significantly different from mean or some benchmark, different from expected; how was meaningful difference defined*)

Table 5. Performance Categories by Hospital Size Decile

Size Decile	Number of Hospitals	Ave. Number of patients per Hospital in Decile	Benchmark Proportion Better	Benchmark Proportion Worse	Threshold Proportion Better	Threshold Proportion Worse
1	460	3.9	0.24130	0.09348	0.28043	0.03043
2	459	12.5	0.66231	0.01089	0.70370	0.00218
3	460	37.1	0.88913	0.00217	0.89348	0.00000
4	459	107.5	0.93246	0.00000	0.93246	0.00000
5	459	248.8	0.94553	0.00000	0.95861	0.00000
6	460	465.3	0.85217	0.00000	0.90870	0.00000
7	459	825.6	0.61002	0.00436	0.76906	0.00000
8	460	1,407.2	0.16739	0.00652	0.44783	0.00217
9	459	2,471.7	0.03486	0.01961	0.13290	0.00218
10	459	8,387.8	0.01961	0.19390	0.08061	0.06100
	4,594	1,396.0	0.53548	0.03309	0.61080	0.00980
Patient weighted			0.12383	0.18340	0.22789	0.06259

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

2b5.3. What is your interpretation of the results in terms of demonstrating the ability to identify statistically significant and/or clinically/practically meaningful differences in performance across measured entities? (i*.e., what do the results mean in terms of statistical and meaningful differences?*)

Small hospitals are more likely to perform better than the benchmark and large hospitals are less likely to perform better than the benchmark.   Very small or very large hospitals are more likely to perform worse than the threshold.

_____

2b6. COMPARABILITY OF PERFORMANCE SCORES WHEN MORE THAN ONE SET OF SPECIFICATIONS
Note: *Applies to all component measures, unless already endorsed or are being submitted for individual endorsement.*
If only one set of specifications for each component, this section can be skipped.

Note*: This criterion is directed to measures with more than one set of specifications/instructions (e.g., one set of specifications for how to identify and compute the measure from medical record abstraction and a different set of specifications for claims or eMeasures). It does not apply to measures that use more than one source of data in one set of specifications/instructions (e.g., claims data to identify the denominator and medical record abstraction for the numerator).* **If comparability is not demonstrated, the different specifications should be submitted as separate measures.**

2b6.1. Describe the method of testing conducted to demonstrate comparability of performance scores for the same entities across the different data sources/specifications (*describe the steps—do not just name a method; what statistical analysis was used*)

2b6.2. What were the statistical results from testing comparability of performance scores for the same entities when using different data sources/specifications? (*e.g., correlation, rank order*)

Not applicable

2b6.3. What is your interpretation of the results in terms of demonstrating comparability of performance measure scores for the same entities across the different data sources/specifications? (i*.e., what do the results mean and what are the norms for the test conducted?*)

Not applicable

_____
2b7. MISSING DATA ANALYSIS AND MINIMIZING BIAS
Note: *Applies to the overall composite measure.*
2b7.1. Describe the method of testing conducted to identify the extent and distribution of missing data (or nonresponse) and demonstrate that performance results are not biased due to systematic missing data (or differences between responders and nonresponders) and how the specified handling of missing data minimizes bias (*describe the steps—do not just name a method; what statistical analysis was used*)

Not applicable

2b7.2. What is the overall frequency of missing data, the distribution of missing data across providers, and the results from testing related to missing data? (*e.g., results of sensitivity analysis of the effect of various rules for missing data/nonresponse; if no empirical sensitivity analysis, identify the approaches for handling missing data that were considered and pros and cons of each*)

Not applicable

2b7.3. What is your interpretation of the results in terms of demonstrating that performance results are not biased due to systematic missing data (or differences between responders and nonresponders) and how the specified handling of missing data minimizes bias**? (**i*.e., what do the results mean in terms of supporting the selected approach for missing data and what are the norms for the test conducted; if no empirical analysis, provide rationale for the selected approach for missing data*)

Not applicable

_____
2d. EMPIRICAL ANALYSIS TO SUPPORT COMPOSITE CONSTRUCTION APPROACH
Note: If empirical analyses do not provide adequate results—or are not conducted—justification must be provided and accepted in order to meet the must-pass criterion of Scientific Acceptability of Measure Properties. Each of the following questions has instructions if there is no empirical analysis.

2d1. Empirical analysis demonstrating that the component measures fit the quality construct, add value to the overall composite, and achieve the object of parsimony to the extent possible.

2d1.1 Describe the method used (*describe the steps—do not just name a method; what statistical analysis was used; if no empirical analysis, provide justification)*

The quality construct is that use of the composite by consumers making selection decisions or providers allocating resources for change is less likely to result in wasted effort. Our method is to conduct a correlation analysis to ensure that worse performance on the composite is associated with worse performance on the component measures.

2d1.2. What were the statistical results obtained from the analysis of the components? (e.g., *correlations, contribution of each component to the composite score, etc.*; *if no empirical analysis, identify the components that were considered and the pros and cons of each*)

	PDI 01	PDI 02	PDI 05	PDI 10	PDI 11	PDI 12
PDI 01	1.0000					
PDI 02	-0.0242	1.0000				
PDI 05	0.2390	0.0325	1.0000			
PDI 10	0.0928	0.0625	0.0754	1.0000		
PDI 11	-0.0153	0.0718	0.1083	0.1655	1.0000	
PDI 12	0.0876	0.0820	0.2716	0.1850	0.0999	1.0000

2d1.3. What is your interpretation of the results in terms of demonstrating that the components included in the composite are consistent with the described quality construct and add value to the overall composite? (i.*e., what do the results mean in terms of supporting inclusion of the components; if no empirical analysis, provide rationale for the components that were selected)*

At the hospital level, the component measures are positively correlated with each other, with the exception of PDI 01 , which is an infrequent event. Therefore use of the composite does not require trade-offs among component measures.

2d2. Empirical analysis demonstrating that the aggregations and weighting rules are consistent with the quality construct and achieve the objective of simplicity to the extent possible

2d2.1 Describe the method used (*describe the steps—do not just name a method; what statistical analysis was used; if no empirical analysis, provide justification*)

The composite is a weighted average of reliability-adjusted observed to expected ratios, where the component weights are the relative frequency of the numerator in the reference population. The concept is the use of the composite minimizes the likelihood of harm associated with a potentially preventable adverse event where that likelihood is expressed as the probability of an potentially preventable adverse event x harm association with the event (in the current specification all events are assigned equal harm). The rationale is that numerator weights reflect the probability that an individual patient would experience a particular adverse event.

2d2.2. What were the statistical results obtained from the analysis of the aggregation and weighting rules? (e.g., *results of sensitivity analysis of effect of different aggregations and/or weighting rules; if no empirical analysis, identify the aggregation and weighting rules that were considered and the pros and cons of each*)

Table 14. NQF Numerator Weights for PDI 19

Indicator	Weight[1]	Ave. Signal-to-Noise Ratio for Hospitals	Correlation With Composite
PDI 01 Accidental Puncture or Laceration Rate	0.3119	0.71820	0.0876
PDI 02 Pressure Ulcer Rate	0.0100	0.77829	0.0820
PDI 05 Iatrogenic Pneumothorax Rate	0.0701	0.55336	0.2716
PDI 010 Postoperative Sepsis Rate	0.2655	0.76229	0.1850
PDI 011 Postoperative Wound Dehiscence Rate	0.0121	0.71705	0.0999
PDI 012 Central Venous Catheter-Related Blood Stream Infection Rate	0.3304	0.75911	1.0000
SUM	1.0000		

[1] Based on the use of present on admission (POA) data (i.e. USEPOA = 1). Indicators with a weight of zero are not included in the composite calculation for Version 4.5.

2d2.3. What is your interpretation of the results in terms of demonstrating the aggregation and weighting rules are consistent with the described quality construct? (i.*e., what do the results mean in terms of supporting the selected rules for aggregation and weighting; if no empirical analysis, provide rationale for the selected rules for aggregation and weighting*)

By construction, adverse events that are less common and less reliable contribute less to the composite performance score. Performance on the composite is most highly associated with performance on PDI 05 and PDI 12, followed by PDI 10. PDI 01, PDI 02 and PDI 11 contribute less.

Measure #: **PDI 19 (NQF 0532)**
Measure Name: **Pediatric Patient Safety for Selected Indicators** (Ratio)

I. Sample
The measure was developed and tested using data from the Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (www.hcup-us.ahrq.gov). The HCUP SID (www.hcup-us.ahrq.gov/sidoverview.jsp) contain the largest collection of all-payer discharge abstracts from the universe of community, non-rehabilitation, non-Federal, short-term, acute care hospitals. Currently, there are 46 States data organizations that participate in the HCUP Project. In 2008, there were 42 states that participated in the project. Together, the SID encompass 98 percent of all U.S. community hospital discharges (approximately 38 million hospital discharges; of which approximately 5 million hospital discharges were for children 17 years and younger [inclusive of uncomplicated births]). Taken from the Uniform Bill-04 (UB-04), the SID data elements include ICD-9-CM coded principal and secondary diagnoses and procedures, additional detailed clinical and service information based on revenue codes, admission and discharge status, patient demographics, expected payment source (Medicare, Medicaid, private insurance as well as the uninsured), total charges and length of stay The information is translated into a uniform format to facilitate both multi-State and national-State comparisons and analyses.

The hospital universe is defined as all hospitals located in the U.S. that are open during any part of the calendar year and designated as community hospitals in the AHA Annual Survey Database (Health Forum, LLC © 2011). The AHA defines community hospitals as follows: "All non-Federal, short-term, general, and other specialty hospitals, excluding hospital units of institutions." Starting in 2005, the AHA included long term acute care facilities in the definition of community hospitals. These facilities provide acute care services to patients who need long term hospitalization (stays of more than 25 days). Consequently, Veterans Hospitals and other Federal facilities (Department of Defense and Indian Health Service) are excluded. Beginning in 1998, we excluded short-term rehabilitation hospitals from the universe because the type of care provided and the characteristics of the discharges from these facilities were markedly different from other short-term hospitals. General and specialty children's hospitals are included in the hospital universe.

II. Empirical Testing
A. Reference Population

Table 1. Reference Population

Year	Hospitals	Outcome of Interest	Population at Risk	Overall Composite Performance Score
2011	4,594	-	1,068,839	1.000
2010	4,603	-	1,082,230	1.000
2009	4,532	-	1,116,717	1.000
2008	4,496	-	1,093,153	1.000
2007	4,264	-	1,025,900	1.000
Composite Performance Score Distribution, 2011				
5th	25th	Median	75th	95th
0.289	0.590	0.898	1.300	2.059

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2007-2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

NOTE: The provider-level composite performance score is a ratio and the overall ratio for each year is 1.0.

B. Reliability

Reliability refers to the portion of the variance in the risk-adjusted rate due to systemic (between-hospital or "signal") and random (within-hospital or "noise") components. Performance on a measure that is more reliability is more likely to be correlated with related process and outcome measures associated with the same quality construct, and to the degree that performance on a measure is persistent, more likely to be correlated with the same measure over time.

Our metric of reliability is the signal to noise ratio, which is the ratio of the between hospital variance (signal) to the within hospital variance (noise). The formula is signal / (signal + noise). There is hospital-specific signal to noise ratio, which is used as an Empirical Bayes univariate shrinkage estimator. The overall signal to noise ratio is a weighted average of the hospital-specific signal-to-noise ratio, where the weight is [1 / (signal+noise)^2]. The signal is calculated using an iterative method. The analysis reports the reliability of the risk-adjusted rate (before applying the empirical Bayes univirate shrinkage estimator).

Note: The provider level composite is a weight average of reliability- and risk-adjusted component ratios; no reliability metrics are calculated for the composite

C. Validity
We conduct construct validity testing to examine the association between the composite performance score and hospital structural characteristics potentially associated with quality of care, including prior performance, using regression analysis.

Table 3. Structure Measures Used to Estimate Prior Probability

Measure	How it is measured	Rationale
Ln(Volume)	Natural log of the denominator	Practice makes perfect or referral
Reservation Quality	Inverse of average daily census (ADC)	Reflects the excess capacity in the inputs of production (e.g. nurse staffing)
Transfer Out	Overall percent transfer out	Routine transferring of particular categories of patients
Maximum DX	Maximum reported diagnosis codes	Higher prevalence and co-morbidities
Prior Performance	Prior year smoothed rate	Share of performance likely to persist

The hypothesized relationship is as follows:
- Volume: Higher volume is associated with better outcomes, either because practice makes perfect (volume causes outcome) or referral (outcome causes volume)
- Reservation quality: Higher reservation quality is associated with better outcomes because reservation quality is associated with excess capacity
- Transfer out: Higher transfer out rate is associated with better outcomes because transferred cases have higher risk of mortality or adverse outcome
- Diagnosis codes: More reported diagnosis codes are associated with more reported comorbidities, therefore higher expected rates, therefore better outcomes

Table 4. Regression Estimates for Two Models on Structure Measures: With and Without Prior Performance

Variable	Label	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lnvol	Ln(Volume)	0.122865	0.012260	10.02	0.0000	0.09883	0.14690
adcinv	Reservation Quality	-0.000137	0.000747	-0.18	0.8550	-0.00160	0.00133
trnsout	Transfer Out	-1.135826	0.310066	-3.66	0.0000	-1.74370	-0.52795
maxdx	Maximum DX	0.009944	0.002045	4.86	0.0000	0.00593	0.01395
_cons	Constant	-0.507002	0.075632	-6.70	0.0000	-0.65528	-0.35873
lnvol	Ln(Volume)	0.050833	0.011181	4.55	0.0000	0.02891	0.07275
adcinv	Reservation Quality	-0.000255	0.000407	-0.63	0.5310	-0.00105	0.00054
trnsout	Transfer Out	-0.716129	0.153400	-4.67	0.0000	-1.01687	-0.41539
maxdx	Maximum DX	-0.001151	0.001016	-1.13	0.2570	-0.00314	0.00084
prior2	Prior Performance	0.695913	0.018140	38.36	0.0000	0.66035	0.73148
_cons	Constant	-0.152698	0.053610	-2.85	0.0040	-0.25780	-0.04760

Note: the dependent variable in the regression is the composite performance score

D. Performance

We calculate the posterior probability distribution for each hospital parameterized using the Gamma distribution. We then calculate the probability that the hospital is better or worse than the reference population benchmark (20th percentile) or threshold (80th percentile) composite performance score at a 95 percent probability overall and by hospital size decile. The analysis is with the computed composite performance scores for the measure as specified (including shrinkage estimator).

The "patient weighted" results show the proportion of patients that go to the better or worse hospitals.

Table 5. Performance Categories by Hospital Size Decile

Size Decile	Number of Hospitals	Ave. Number of patients per Hospital in Decile	Benchmark		Threshold	
			Proportion Better	Proportion Worse	Proportion Better	Proportion Worse
1	460	3.9	0.24130	0.09348	0.28043	0.03043
2	459	12.5	0.66231	0.01089	0.70370	0.00218
3	460	37.1	0.88913	0.00217	0.89348	0.00000
4	459	107.5	0.93246	0.00000	0.93246	0.00000
5	459	248.8	0.94553	0.00000	0.95861	0.00000
6	460	465.3	0.85217	0.00000	0.90870	0.00000
7	459	825.6	0.61002	0.00436	0.76906	0.00000
8	460	1,407.2	0.16739	0.00652	0.44783	0.00217
9	459	2,471.7	0.03486	0.01961	0.13290	0.00218
10	459	8,387.8	0.01961	0.19390	0.08061	0.06100
	4,594	1,396.0	0.53548	0.03309	0.61080	0.00980
Patient weighted			0.12383	0.18340	0.22789	0.06259

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

E. Model Discrimination and Calibration

One calculates the c-statistic by taking all possible pairs of cases consisting of one case that experienced the event of interest and one case that did not experience the event of interest. The c-statistic is the proportion of such pairs in which the case that experienced the event had a higher predicted probability of experiencing the event than the case that did not experience the event.

A model that is well calibration will have observed values similar to predicted values across the predicted value deciles. Although there are statistical tests of such "goodness of fit" the tests generally are not informative for datasets with large sample sizes.

Note: The provider level composite is a weight average of reliability- and risk-adjusted component ratios; no discrimination or calibration metrics are calculated for the composite

4

F. Forecasting

With respect to the persistence of the hospital composite performance score, we conduct a descriptive analysis to examine the distribution of the current year composite performance score by the prior year composite performance score performance decile. The R-square is a statistic for the proportion of variation in the composite performance score captured by variation in the prior year composite performance score.

Table 7. Forecasting

Prior Year Performance Score Quintile	Number of Hospitals Per Quintile	Prior Year Composite Performance Score	Current Year Composite Performance Score
1 (Better)	460	0.000	0.000
2	459	0.000	0.000
3	460	0.000	0.000
4	459	0.000	0.000
5	459	0.087	0.153
6	460	0.192	0.279
7	459	0.302	0.352
8	460	0.483	0.479
9	459	0.948	0.732
10 (Worse)	459	2.342	1.784
R-Squared	0.8547		

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2010-2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp.

AHRQ Quality Indicators
Analytic Template
Version 4.5
(Last Updated 11/15/2013)

Measure #:   PDI 01
Measure Name: Accidental Puncture or Laceration Rate

I. Sample

The hospital universe is defined as all hospitals located in the U.S. that are open during any part
of the calendar year and designated as community hospitals in the AHA Annual Survey Database (Health
Forum, LLC © 2011). The AHA defines community hospitals as follows: "All non-Federal, short-term,
general, and other specialty hospitals, excluding hospital units of institutions." Starting in 2005, the AHA
included long term acute care facilities in the definition of community hospitals. These facilities provide
acute care services to patients who need long term hospitalization (stays of more than 25 days).
Consequently, Veterans Hospitals and other Federal facilities (Department of Defense and Indian Health
Service) are excluded. Beginning in 1998, we excluded short-term rehabilitation hospitals from the
universe because the type of care provided and the characteristics of the discharges from these facilities
were markedly different from other short-term hospitals.
http://hcup-us.ahrq.gov/db/nation/nis/NIS_Introduction_2011.pdf

II. Empirical Testing

A. Reference Population

Table 1. Reference Population

Year/ Characteristic	Hospitals	Outcome of Interest	Population at Risk	Observed Rate Per 1,000
2011	4,699	1,780	3,061,215	0.581
2010	4,703	1,981	3,092,669	0.640
2009	4,631	2,104	3,207,537	0.656
2008	4,582	2,121	3,140,717	0.675
2007	4,336	1,949	2,957,929	0.659
Performance Score Distribution 2011 (Rate per 1,000)				
5th	25th	Median	75th	95th
0.159	0.335	0.518	0.760	1.219

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2007-2011.
Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI
Software Version 4.5)

B. Reliability

Our metric of reliability is the signal to noise ratio, which is the ratio of the between hospital variance (signal) to the within hospital variance (noise). The formula is signal / (signal + noise). There is hospital-specific signal to noise ratio, which is used as an Empirical Bayes univariate shrinkage estimator. The overall signal to noise ratio is a weighted average of the hospital-specific signal-to-noise ratio, where the weight is [1 / (signal+noise)^2]. The signal is calculated using an iterative method. The analysis reports the reliability of the risk-adjusted rate (before applying the empirical Bayes univirate shrinkage estimator).

Table 2. Reliability by Hospital Size Decile

Size Decile	Number of Hospitals	Ave. Number of Patients per Hospital in Decile	Ave. Signal-to-Noise Ratio for Hospitals in Decile	Percent of Signal Variance Explained by Performance Score
1	470	1.8	0.00044	0.35637
2	470	6.5	0.00173	0.35690
3	470	18.5	0.00426	0.35796
4	470	53.8	0.00708	0.35914
5	470	122.0	0.01405	0.36210
6	470	227.8	0.02164	0.36528
7	470	379.8	0.03177	0.36965
8	470	637.0	0.04784	0.37659
9	470	1,103.3	0.08860	0.39489
10	469	3,971.2	0.38796	0.55899
Overall	4,699	651.5	0.71820	0.54979

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

C. Validity

We conduct construct validity testing to examine the association between the risk-adjusted rate and hospital structural characteristics potentially associated with quality of care, including prior performance, using regression analysis.

Table 3. Structure Measures Used to Estimate Prior Probability

Measure	How it is measured	Rationale
Ln(Volume)	Natural log of the denominator	Practice makes perfect or referral
Reservation Quality	Inverse of average daily census (ADC)	Reflects the excess capacity in the inputs of production (e.g. nurse staffing)
Transfer Out	Overall percent transfer out	Routine transferring of particular categories of patients
Maximum DX	Maximum reported diagnosis codes	Higher prevalence and co-morbidities
Prior Performance	Prior year smoothed rate	Share of performance likely to persist

The hypothesized relationship is as follows:
- Volume: Higher volume is associtaed with better outcomes, either because practice makes perfect (volume causes outcome) or referral (outcome causes volume)
- Reservation quality: Higher reservation quality is associated with better outcomes because reservation quality is associated with excess capacity
- Transfer out: Higher transfer out rate is associated with better outcomes because transferred cases have higher risk of mortalityor adverse outcome
- Diagnosis codes: More reported diagnosis codes are associated with more reported comorbidities, therefore higher expected rates, there fore better outcomes

Table 4. Regression on Structure Measures

Variable	Label	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lnvol	Ln(Volume)	-0.000023	0.000019	-1.23	0.2170	-0.00006	0.00001
adcinv	Reservation Quality	-0.000005	0.000002	-3.18	0.0010	-0.00001	0.00000
trnsout	Transfer Out	0.000647	0.000698	0.93	0.3540	-0.00072	0.00201
maxdx	Maximum DX	0.000000	0.000003	-0.11	0.9130	-0.00001	0.00001
_cons	Constant	0.000782	0.000143	5.46	0.0000	0.00050	0.00106
lnvol	Ln(Volume)	-0.000022	0.000017	-1.29	0.1970	-0.00006	0.00001
adcinv	Reservation Quality	-0.000004	0.000002	-2.44	0.0150	-0.00001	0.00000
trnsout	Transfer Out	0.000325	0.000617	0.53	0.5980	-0.00088	0.00154
maxdx	Maximum DX	-0.000001	0.000002	-0.54	0.5890	-0.00001	0.00000
prior2	Prior Performance	0.716510	0.068496	10.46	0.0000	0.58222	0.85080
_cons	Constant	0.000341	0.000142	2.40	0.0170	0.00006	0.00062

Note: the dependent variable in the regression is the risk adjusted rate

D. Performance

We calculate the posterior probability distribution for each hospital parameterized using the Gamma distribution. We then calculate the probability that the hospital is better or worse than the reference population benchmark (20th percentile) or threshold (80th percentile) rate at a 95 percent probability overall and by hospital size decile. The analysis is with the computed performance scores for the measure as specified (including shrinkage estimator).

Table 5. Performance Categories by Hospital Size Decile

| Size Decile | Number of Hospitals | Ave. Number of patients per Hospital in Decile | Benchmark | | Threshold | |
			Proportion Better	Proportion Worse	Proportion Better	Proportion Worse
1	470	1.8	0.30426	0.18511	0.42766	0.00000
2	470	6.5	0.03191	0.38936	0.06596	0.00213
3	470	18.5	0.00000	0.82979	0.00426	0.00000
4	470	53.8	0.00000	0.94894	0.00000	0.00000
5	470	122.0	0.00000	0.76383	0.00000	0.00000
6	470	227.8	0.00000	0.40426	0.00000	0.00426
7	470	379.8	0.00000	0.26596	0.00000	0.00000
8	470	637.0	0.00000	0.31277	0.00000	0.00213
9	470	1,103.3	0.00000	0.30426	0.00638	0.00426
10	469	3,971.2	0.00000	0.34328	0.22388	0.02772
	4,699	651.5	0.03362	0.47478	0.07278	0.00404
Patient weighted			0.00009	0.37888	0.22722	0.02460

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

E. Model Discrimination and Calibration

One calculates the c-statistic by taking all possible pairs of cases consisting of one case that experienced the event of interest and one case that did not experience the event of interest. The c-statistic is the proportion of such pairs in which the case that experienced the event had a higher predicted probability of experiencing the event than the case that did not experience the event.

Table 6. Model Discrimination and Calibration

Predicted Rate Decile	Number of Patients per Decile	Predicted Rate	Observed Rate
1	306,146	0.000010	0.000059
2	306,145	0.000010	0.000007
3	306,145	0.000010	0.000020
4	306,146	0.000013	0.000037
5	306,145	0.000019	0.000038
6	306,145	0.000073	0.000139
7	306,146	0.000121	0.000195
8	306,145	0.000131	0.000101
9	306,145	0.000273	0.000385
10	306,145	0.005153	0.004833
C-statistic	0.949		

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

A model that is well calibration will have observed values similar to predicted values across the predicted value deciles.   Although there are statistical tests of such "goodness of fit" the tests generally are not informative for datasets with large sample sizes.

F. Forecasting

With respect to the persistence of the hospital risk adjusted rate, we conduct a descriptive analysis to examine the distribution of the current year risk-adjusted rate by the prior year performance score performance decile. The R-square is a statistic for the proportion of variation in the risk-adjusted rate captured by variation in the prior year performance score.

Table 7. Forecasting

Prior Year Performance Score Decile	Number of Hospitals Per Decile	Prior Year Performance Score	Current Year Risk-adjusted Rate
1	470	0.000304	0.000195
2	470	0.000540	0.000390
3	470	0.000581	0.000447
4	470	0.000607	0.000799
5	470	0.000627	0.001548
6	470	0.000635	-
7	470	0.000652	0.000985
8	470	0.000676	0.000503
9	470	0.000731	0.000949
10	469	0.000915	0.000818
R-Squared	0.0000		

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2010-2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

G. Preventability

Our metric of preventability is the proportion of events that are potentially preventable if patients selected hospitals performing at the level of the benchmark (i.e. the 20th percentile (better) in the probability distribution). The metric suggests that 53.1% of the events are potentially preventable.

Table 8. Preventability

Performance Score Decile	Ave. Performance Score	Number of Hospitals per Decile	Ave. Number of Patients per Hospital in Decile	Total Number of Patients in Decile	Total Events	Rate Potentially Preventable Events	Potentially Preventable Events	Expected Value of Information
1	0.000160	469.9	651.5	306,121.5	49	0.000000	0.0	
2	0.000262	469.9	651.5	306,121.5	80	0.000000	0.0	
3	0.000339	469.9	651.5	306,121.5	104	0.000041	12.5	
4	0.000411	469.9	651.5	306,121.5	126	0.000113	34.5	
5	0.000484	469.9	651.5	306,121.5	148	0.000186	57.0	
6	0.000563	469.9	651.5	306,121.5	172	0.000265	81.3	
7	0.000655	469.9	651.5	306,121.5	200	0.000357	109.2	
8	0.000768	469.9	651.5	306,121.5	235	0.000470	143.8	
9	0.000930	469.9	651.5	306,121.5	285	0.000632	193.4	
10	0.001408	469.9	651.5	306,121.5	431	0.001110	339.7	
Overall		4,699	651.5	3,061,215	1,830	0.000317	971	
Proportion Preventable							0.5308	

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. (AHRQ QI Software Version 4.5)

H. Information Value

The expected value of information (EVI) is the change in the expected number of potentially preventable events ("opportunity loss") accounting for the uncertainty and low information context in the performance score. A negative EVI means that there is some uncertainty in the expected number of potentially preventable events, while a positive EVI means that the effective sample size might be increased. Ideally the expected value of information would be close to zero.

Table 9. Expected Value of Information

Performance Score Decile	Ave. Performance Score	Number of Hospitals per Decile	Ave. Number of Patients per Hospital in Decile	Total Number of Patients in Decile	Total Events	Rate Potentially Preventable Events	Potentially Preventable Events	Expected Value of Information
1	0.000162	199	342.9	68,235	11	0.000026	2	-2
2	0.000248	62	1,489.3	92,339	23	0.000050	5	-5
3	0.000334	67	2,653.9	177,814	59	0.000091	16	-4
4	0.000408	132	2,198.6	290,210	118	0.000141	41	-6
5	0.000483	259	1,617.9	419,028	202	0.000206	86	-29
6	0.000564	710	840.2	596,530	337	0.000282	168	-87
7	0.000647	1,705	373.7	637,155	412	0.000359	229	-120
8	0.000753	1,246	311.3	387,826	292	0.000463	180	-36
9	0.000900	273	1,054.4	287,863	259	0.000608	175	18
10	0.001200	46	2,265.6	104,215	125	0.000909	95	245
Overall		4,699	651.5	3,061,215	1,839	0.000325	996	-25
Proportion Preventable							0.5416	-0.0252

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. (AHRQ QI Software Version 4.5)

AHRQ Quality Indicators
Analytic Template
Version 4.5
(Last Updated 11/15/2013)

Measure #:   PDI 02
Measure Name: Pressure Ulcer Rate

I. Sample

The hospital universe is defined as all hospitals located in the U.S. that are open during any part
of the calendar year and designated as community hospitals in the AHA Annual Survey Database (Health
Forum, LLC © 2011). The AHA defines community hospitals as follows: "All non-Federal, short-term,
general, and other specialty hospitals, excluding hospital units of institutions." Starting in 2005, the AHA
included long term acute care facilities in the definition of community hospitals. These facilities provide
acute care services to patients who need long term hospitalization (stays of more than 25 days).
Consequently, Veterans Hospitals and other Federal facilities (Department of Defense and Indian Health
Service) are excluded. Beginning in 1998, we excluded short-term rehabilitation hospitals from the
universe because the type of care provided and the characteristics of the discharges from these facilities
were markedly different from other short-term hospitals.
http://hcup-us.ahrq.gov/db/nation/nis/NIS_Introduction_2011.pdf

II. Empirical Testing

A. Reference Population

Table 1. Reference Population

Year/ Characteristic	Hospitals	Outcome of Interest	Population at Risk	Observed Rate Per 1,000
2011	3,347	80	388,183	0.206
2010	3,380	56	388,389	0.145
2009	3,465	49	394,826	0.124
2008	3,521	409	387,746	1.056
2007	3,350	386	368,867	1.046
Performance Score Distribution 2011 (Rate per 1,000)				
5th	**25th**	**Median**	**75th**	**95th**
0.000	0.000	0.010	0.147	1.120

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2007-2011.
Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI
Software Version 4.5)

B. Reliability

Our metric of reliability is the signal to noise ratio, which is the ratio of the between hospital variance (signal) to the within hospital variance (noise). The formula is signal / (signal + noise). There is hospital-specific signal to noise ratio, which is used as an Empirical Bayes univariate shrinkage estimator. The overall signal to noise ratio is a weighted average of the hospital-specific signal-to-noise ratio, where the weight is [1 / (signal+noise)^2]. The signal is calculated using an iterative method. The analysis reports the reliability of the risk-adjusted rate (before applying the empirical Bayes univirate shrinkage estimator).

Table 2. Reliability by Hospital Size Decile

Size Decile	Number of Hospitals	Ave. Number of Patients per Hospital in Decile	Ave. Signal-to-Noise Ratio for Hospitals in Decile	Percent of Signal Variance Explained by Performance Score
1	335	1.0	0.00242	0.09558
2	335	1.2	0.00355	0.09652
3	335	2.1	0.00541	0.09805
4	334	3.5	0.00978	0.10167
5	335	5.8	0.01778	0.10832
6	335	10.0	0.02961	0.11813
7	334	19.2	0.04638	0.13221
8	335	44.8	0.11232	0.18807
9	335	184.4	0.33068	0.37698
10	334	889.6	0.62999	0.64829
Overall	3,347	116.0	0.77829	0.64653

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

C. Validity

We conduct construct validity testing to examine the association between the risk-adjusted rate and hospital structural characteristics potentially associated with quality of care, including prior performance, using regression analysis.

Table 3. Structure Measures Used to Estimate Prior Probability

Measure	How it is measured	Rationale
Ln(Volume)	Natural log of the denominator	Practice makes perfect or referral
Reservation Quality	Inverse of average daily census (ADC)	Reflects the excess capacity in the inputs of production (e.g. nurse staffing)
Transfer Out	Overall percent transfer out	Routine transferring of particular categories of patients
Maximum DX	Maximum reported diagnosis codes	Higher prevalence and co-morbidities
Prior Performance	Prior year smoothed rate	Share of performance likely to persist

The hypothesized relationship is as follows:
- Volume: Higher volume is associaed with better outcomes, either because practice makes perfect (volume causes outcome) or referral (outcome causes volume)
- Reservation quality: Higher reservation quality is associated with better outcomes because reservation quality is associated with excess capacity
- Transfer out: Higher transfer out rate is associated with better outcomes because transferred cases have higher risk of mortalityor adverse outcome
- Diagnosis codes: More reported diagnosis codes are associated with more reported comorbidities, therefore higher expected rates, there fore better outcomes

Table 4. Regression on Structure Measures

Variable	Label	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lnvol	Ln(Volume)	-0.000014	0.000019	-0.75	0.4540	-0.00005	0.00002
adcinv	Reservation Quality	-0.000012	0.000008	-1.53	0.1250	-0.00003	0.00000
trnsout	Transfer Out	-0.000545	0.000210	-2.60	0.0090	-0.00096	-0.00013
maxdx	Maximum DX	0.000013	0.000003	4.55	0.0000	0.00001	0.00002
_cons	Constant	0.000010	0.000113	0.09	0.9300	-0.00021	0.00023
lnvol	Ln(Volume)	-0.000018	0.000018	-0.99	0.3210	-0.00005	0.00002
adcinv	Reservation Quality	-0.000012	0.000008	-1.56	0.1180	-0.00003	0.00000
trnsout	Transfer Out	-0.000368	0.000213	-1.72	0.0850	-0.00079	0.00005
maxdx	Maximum DX	0.000007	0.000003	2.22	0.0260	0.00000	0.00001
prior2	Prior Performance	0.895201	0.294437	3.04	0.0020	0.31791	1.47250
_cons	Constant	0.000062	0.000109	0.57	0.5680	-0.00015	0.00028

Note: the dependent variable in the regression is the risk adjusted rate

D. Performance

We calculate the posterior probability distribution for each hospital parameterized using the Gamma distribution. We then calculate the probability that the hospital is better or worse than the reference population benchmark (20th percentile) or threshold (80th percentile) rate at a 95 percent probability overall and by hospital size decile. The analysis is with the computed performance scores for the measure as specified (including shrinkage estimator).

Table 5. Performance Categories by Hospital Size Decile

| | | | Benchmark | | Threshold | |
Size Decile	Number of Hospitals	Ave. Number of patients per Hospital in Decile	Proportion Better	Proportion Worse	Proportion Better	Proportion Worse
1	335	1.0	0.41194	0.01493	0.56119	0.00000
2	335	1.2	0.36716	0.01194	0.53731	0.00000
3	335	2.1	0.22985	0.03582	0.37612	0.00000
4	334	3.5	0.13473	0.03892	0.34731	0.00000
5	335	5.8	0.10746	0.05373	0.36418	0.00000
6	335	10.0	0.05672	0.06567	0.28060	0.00000
7	334	19.2	0.03293	0.08683	0.21856	0.00000
8	335	44.8	0.05672	0.12836	0.20896	0.01194
9	335	184.4	0.14925	0.09851	0.32239	0.03582
10	334	889.6	0.25749	0.14671	0.59581	0.08982
	3,347	116.0	0.18046	0.06812	0.38124	0.01374
Patient weighted			0.22764	0.20112	0.53864	0.08830

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

E. Model Discrimination and Calibration

One calculates the c-statistic by taking all possible pairs of cases consisting of one case that experienced the event of interest and one case that did not experience the event of interest. The c-statistic is the proportion of such pairs in which the case that experienced the event had a higher predicted probability of experiencing the event than the case that did not experience the event.

Table 6. Model Discrimination and Calibration

Predicted Rate Decile	Number of Patients per Decile	Predicted Rate	Observed Rate
1	38,837	0.000018	0.000071
2	38,836	0.000018	0.000026
3	38,836	0.000026	0.000083
4	38,837	0.000034	0.000052
5	38,836	0.000037	0.000026
6	38,836	0.000054	0.000129
7	38,837	0.000055	0.000052
8	38,836	0.000055	0.000180
9	38,836	0.000061	0.000026
10	38,836	0.001698	0.001412
C-statistic	0.895		

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

A model that is well calibration will have observed values similar to predicted values across the predicted value deciles.   Although there are statistical tests of such "goodness of fit" the tests generally are not informative for datasets with large sample sizes.

F. Forecasting

With respect to the persistence of the hospital risk adjusted rate, we conduct a descriptive analysis to examine the distribution of the current year risk-adjusted rate by the prior year performance score performance decile. The R-square is a statistic for the proportion of variation in the risk-adjusted rate captured by variation in the prior year performance score.

Table 7. Forecasting

Prior Year Performance Score Decile	Number of Hospitals Per Decile	Prior Year Performance Score	Current Year Risk-adjusted Rate
1	335	0.000000	0.000000
2	335	0.000000	0.000000
3	335	0.000000	0.000000
4	334	0.000016	0.000000
5	335	0.000035	0.000001
6	335	0.000053	0.000018
7	334	0.000078	0.000076
8	335	0.000104	0.000023
9	335	0.000108	0.000038
10	334	0.000208	0.000462
R-Squared	0.0049		

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2010-2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

G. Preventability

Our metric of preventability is the proportion of events that are potentially preventable if patients selected hospitals performing at the level of the benchmark (i.e. the 20th percentile (better) in the probability distribution). The metric suggests that 99.9% of the events are potentially preventable.

Table 8. Preventability

Performance Score Decile	Ave. Performance Score	Number of Hospitals per Decile	Ave. Number of Patients per Hospital in Decile	Total Number of Patients in Decile	Total Events	Rate Potentially Preventable Events	Potentially Preventable Events	Expected Value of Information
1	0.000000	334.7	116.0	38,818.3	0	0.000000	0.0	
2	0.000000	334.7	116.0	38,818.3	0	0.000000	0.0	
3	0.000000	334.7	116.0	38,818.3	0	0.000000	0.0	
4	0.000001	334.7	116.0	38,818.3	0	0.000001	0.0	
5	0.000006	334.7	116.0	38,818.3	0	0.000006	0.2	
6	0.000021	334.7	116.0	38,818.3	1	0.000021	0.8	
7	0.000061	334.7	116.0	38,818.3	2	0.000061	2.4	
8	0.000159	334.7	116.0	38,818.3	6	0.000159	6.2	
9	0.000408	334.7	116.0	38,818.3	16	0.000408	15.8	
10	0.001933	334.7	116.0	38,818.3	75	0.001933	75.0	
Overall		3,347	116.0	388,183	101	0.000259	101	
Proportion Preventable							0.9999	

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. (AHRQ QI Software Version 4.5)

H. Information Value

The expected value of information (EVI) is the change in the expected number of potentially preventable events ("opportunity loss") accounting for the uncertainty and low information context in the performance score. A negative EVI means that there is some uncertainty in the expected number of potentially preventable events, while a positive EVI means that the effective sample size might be increased. Ideally the expected value of information would be close to zero.

Table 9. Expected Value of Information

Performance Score Decile	Ave. Performance Score	Number of Hospitals per Decile	Ave. Number of Patients per Hospital in Decile	Total Number of Patients in Decile	Total Events	Rate Potentially Preventable Events	Potentially Preventable Events	Expected Value of Information
1	0.000162	340	104.3	35,471	6	0.000000	0	0
2	0.000248	0	0.0	0	0	0.000000	0	0
3	0.000334	0	0.0	0	0	0.000000	0	0
4	0.000408	24	587.0	14,088	6	0.000002	0	0
5	0.000483	67	420.2	28,154	14	0.000013	0	0
6	0.000564	251	301.2	75,597	43	0.000043	3	-2
7	0.000647	901	111.0	100,037	65	0.000083	8	-6
8	0.000753	1,462	50.8	74,272	56	0.000165	12	-6
9	0.000900	264	144.6	38,165	34	0.000400	15	1
10	0.001200	38	589.4	22,399	27	0.001290	29	46
Overall		3,347	116.0	388,183	61	0.000176	68	32
Proportion Preventable							1.1252	0.3857

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. (AHRQ QI Software Version 4.5)

AHRQ Quality Indicators
Analytic Template
Version 4.5
(Last Updated 11/15/2013)

Measure #:   PDI 05
Measure Name: Iatrogenic Pneumothorax Rate

I. Sample

The hospital universe is defined as all hospitals located in the U.S. that are open during any part
of the calendar year and designated as community hospitals in the AHA Annual Survey Database (Health
Forum, LLC © 2011). The AHA defines community hospitals as follows: "All non-Federal, short-term,
general, and other specialty hospitals, excluding hospital units of institutions." Starting in 2005, the AHA
included long term acute care facilities in the definition of community hospitals. These facilities provide
acute care services to patients who need long term hospitalization (stays of more than 25 days).
Consequently, Veterans Hospitals and other Federal facilities (Department of Defense and Indian Health
Service) are excluded. Beginning in 1998, we excluded short-term rehabilitation hospitals from the
universe because the type of care provided and the characteristics of the discharges from these facilities
were markedly different from other short-term hospitals.
http://hcup-us.ahrq.gov/db/nation/nis/NIS_Introduction_2011.pdf

II. Empirical Testing

A. Reference Population

Table 1. Reference Population

Year/ Characteristic	Hospitals	Outcome of Interest	Population at Risk	Observed Rate Per 1,000
2011	4,690	354	2,777,960	0.127
2010	4,701	387	2,807,138	0.138
2009	4,621	393	2,911,441	0.135
2008	4,573	440	2,841,564	0.155
2007	4,328	341	2,667,339	0.128
Performance Score Distribution 2011 (Rate per 1,000)				
5th	**25th**	**Median**	**75th**	**95th**
0.001	0.013	0.059	0.169	0.486

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2007-2011.
Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI
Software Version 4.5)

B. Reliability

Our metric of reliability is the signal to noise ratio, which is the ratio of the between hospital variance (signal) to the within hospital variance (noise). The formula is signal / (signal + noise). There is hospital-specific signal to noise ratio, which is used as an Empirical Bayes univariate shrinkage estimator. The overall signal to noise ratio is a weighted average of the hospital-specific signal-to-noise ratio, where the weight is [1 / (signal+noise)^2]. The signal is calculated using an iterative method. The analysis reports the reliability of the risk-adjusted rate (before applying the empirical Bayes univirate shrinkage estimator).

Table 2. Reliability by Hospital Size Decile

Size Decile	Number of Hospitals	Ave. Number of Patients per Hospital in Decile	Ave. Signal-to-Noise Ratio for Hospitals in Decile	Percent of Signal Variance Explained by Performance Score
1	469	1.8	0.00111	0.40633
2	469	6.6	0.00408	0.40738
3	469	18.5	0.01021	0.40956
4	469	52.0	0.02316	0.41420
5	469	114.9	0.04575	0.42241
6	469	210.2	0.07892	0.43476
7	469	345.9	0.12539	0.45275
8	469	579.8	0.19903	0.48283
9	469	983.3	0.29744	0.52628
10	469	3,610.0	0.56349	0.67090
Overall	4,690	592.3	0.55336	0.63944

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

C. Validity

We conduct construct validity testing to examine the association between the risk-adjusted rate and hospital structural characteristics potentially associated with quality of care, including prior performance, using regression analysis.

Table 3. Structure Measures Used to Estimate Prior Probability

Measure	How it is measured	Rationale
Ln(Volume)	Natural log of the denominator	Practice makes perfect or referral
Reservation Quality	Inverse of average daily census (ADC)	Reflects the excess capacity in the inputs of production (e.g. nurse staffing)
Transfer Out	Overall percent transfer out	Routine transferring of particular categories of patients
Maximum DX	Maximum reported diagnosis codes	Higher prevalence and co-morbidities
Prior Performance	Prior year smoothed rate	Share of performance likely to persist

The hypothesized relationship is as follows:
- Volume: Higher volume is associated with better outcomes, either because practice makes perfect (volume causes outcome) or referral (outcome causes volume)
- Reservation quality: Higher reservation quality is associated with better outcomes because reservation quality is associated with excess capacity
- Transfer out: Higher transfer out rate is associated with better outcomes because transferred cases have higher risk of mortality or adverse outcome
- Diagnosis codes: More reported diagnosis codes are associated with more reported comorbidities, therefore higher expected rates, there fore better outcomes

Table 4. Regression on Structure Measures

Variable	Label	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lnvol	Ln(Volume)	0.000031	0.000007	4.73	0.0000	0.00002	0.00004
adcinv	Reservation Quality	0.000002	0.000000	4.65	0.0000	0.00000	0.00000
trnsout	Transfer Out	-0.000168	0.000086	-1.97	0.0490	-0.00034	0.00000
maxdx	Maximum DX	0.000003	0.000001	2.66	0.0080	0.00000	0.00000
_cons	Constant	-0.000173	0.000041	-4.22	0.0000	-0.00025	-0.00009
lnvol	Ln(Volume)	0.000001	0.000007	0.18	0.8600	-0.00001	0.00001
adcinv	Reservation Quality	0.000000	0.000000	0.40	0.6910	0.00000	0.00000
trnsout	Transfer Out	-0.000092	0.000089	-1.03	0.3020	-0.00027	0.00008
maxdx	Maximum DX	0.000001	0.000001	0.98	0.3270	0.00000	0.00000
prior2	Prior Performance	0.735434	0.102193	7.20	0.0000	0.53509	0.93578
_cons	Constant	-0.000009	0.000043	-0.22	0.8290	-0.00009	0.00007

Note: the dependent variable in the regression is the risk adjusted rate

D. Performance

We calculate the posterior probability distribution for each hospital parameterized using the Gamma distribution. We then calculate the probability that the hospital is better or worse than the reference population benchmark (20th percentile) or threshold (80th percentile) rate at a 95 percent probability overall and by hospital size decile. The analysis is with the computed performance scores for the measure as specified (including shrinkage estimator).

Table 5. Performance Categories by Hospital Size Decile

| Size Decile | Number of Hospitals | Ave. Number of patients per Hospital in Decile | Benchmark | | Threshold | |
			Proportion Better	Proportion Worse	Proportion Better	Proportion Worse
1	469	1.8	0.32409	0.13006	0.36674	0.00853
2	469	6.6	0.58422	0.02559	0.62900	0.00213
3	469	18.5	0.70362	0.00853	0.75267	0.00000
4	469	52.0	0.68444	0.01066	0.73134	0.00000
5	469	114.9	0.66098	0.00853	0.74200	0.00000
6	469	210.2	0.31130	0.01493	0.69510	0.00000
7	469	345.9	0.08529	0.01919	0.51812	0.00000
8	469	579.8	0.02985	0.05757	0.25373	0.00853
9	469	983.3	0.02559	0.08955	0.17910	0.00853
10	469	3,610.0	0.01066	0.37313	0.22388	0.09595
	4,690	592.3	0.34200	0.07377	0.50917	0.01237
Patient weighted			0.04652	0.35132	0.26551	0.08971

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

E. Model Discrimination and Calibration

One calculates the c-statistic by taking all possible pairs of cases consisting of one case that experienced the event of interest and one case that did not experience the event of interest. The c-statistic is the proportion of such pairs in which the case that experienced the event had a higher predicted probability of experiencing the event than the case that did not experience the event.

Table 6. Model Discrimination and Calibration

Predicted Rate Decile	Number of Patients per Decile	Predicted Rate	Observed Rate
1	277,805	0.000082	0.000077
2	277,804	0.000082	0.000079
3	277,804	0.000082	0.000086
4	277,804	0.000082	0.000083
5	277,804	0.000101	0.000180
6	277,805	0.000143	0.000090
7	277,804	0.000143	0.000151
8	277,804	0.000143	0.000162
9	277,804	0.000203	0.000152
10	277,804	0.000211	0.000212
C-statistic	0.548		

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

A model that is well calibration will have observed values similar to predicted values across the predicted value deciles. Although there are statistical tests of such "goodness of fit" the tests generally are not informative for datasets with large sample sizes.

F. Forecasting

With respect to the persistence of the hospital risk adjusted rate, we conduct a descriptive analysis to examine the distribution of the current year risk-adjusted rate by the prior year performance score performance decile. The R-square is a statistic for the proportion of variation in the risk-adjusted rate captured by variation in the prior year performance score.

Table 7. Forecasting

Prior Year Performance Score Decile	Number of Hospitals Per Decile	Prior Year Performance Score	Current Year Risk-adjusted Rate
1	469	0.000000	0.000115
2	469	0.000000	0.000000
3	469	0.000000	0.000019
4	469	0.000016	0.000124
5	469	0.000037	0.000024
6	469	0.000053	0.000029
7	469	0.000066	0.000027
8	469	0.000085	0.000068
9	469	0.000127	0.000115
10	469	0.000234	0.000130
R-Squared	0.0005		

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2010-2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

G. Preventability

Our metric of preventability is the proportion of events that are potentially preventable if patients selected hospitals performing at the level of the benchmark (i.e. the 20th percentile (better) in the probability distribution). The metric suggests that 94.7% of the events are potentially preventable.

Table 8. Preventability

Performance Score Decile	Ave. Performance Score	Number of Hospitals per Decile	Ave. Number of Patients per Hospital in Decile	Total Number of Patients in Decile	Total Events	Rate Potentially Preventable Events	Potentially Preventable Events	Expected Value of Information
1	0.000001	469.0	592.3	277,796.0	0	0.000000	0.0	
2	0.000005	469.0	592.3	277,796.0	1	0.000000	0.0	
3	0.000014	469.0	592.3	277,796.0	4	0.000006	1.6	
4	0.000028	469.0	592.3	277,796.0	8	0.000019	5.4	
5	0.000048	469.0	592.3	277,796.0	13	0.000039	10.9	
6	0.000076	469.0	592.3	277,796.0	21	0.000067	18.6	
7	0.000115	469.0	592.3	277,796.0	32	0.000107	29.6	
8	0.000174	469.0	592.3	277,796.0	48	0.000165	46.0	
9	0.000275	469.0	592.3	277,796.0	76	0.000266	73.9	
10	0.000666	469.0	592.3	277,796.0	185	0.000658	182.7	
Overall		4,690	592.3	2,777,960	389	0.000133	369	
Proportion Preventable							0.9472	

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. (AHRQ QI Software Version 4.5)

H. Information Value

The expected value of information (EVI) is the change in the expected number of potentially preventable events ("opportunity loss") accounting for the uncertainty and low information context in the performance score. A negative EVI means that there is some uncertainty in the expected number of potentially preventable events, while a positive EVI means that the effective sample size might be increased. Ideally the expected value of information would be close to zero.

Table 9. Expected Value of Information

Performance Score Decile	Ave. Performance Score	Number of Hospitals per Decile	Ave. Number of Patients per Hospital in Decile	Total Number of Patients in Decile	Total Events	Rate Potentially Preventable Events	Potentially Preventable Events	Expected Value of Information
1	0.000000	1,326	56.2	74,552	0	0.000000	0	0
2	0.000006	138	189.5	26,150	0	0.000014	0	0
3	0.000015	290	380.5	110,354	2	0.000023	3	-1
4	0.000028	607	734.7	445,979	13	0.000033	15	-10
5	0.000046	981	652.0	639,589	30	0.000049	31	-20
6	0.000071	572	711.4	406,926	29	0.000070	28	-10
7	0.000111	457	693.4	316,891	35	0.000106	34	-4
8	0.000175	129	1,451.5	187,242	33	0.000170	32	14
9	0.000267	124	2,611.1	323,778	87	0.000262	85	-11
10	0.000480	66	3,734.8	246,499	118	0.000474	117	66
Overall		4,690	592.3	2,777,960	344	0.000124	344	24
Proportion Preventable							1.0000	0.0678

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. (AHRQ QI Software Version 4.5)

AHRQ Quality Indicators
Analytic Template
Version 4.5
(Last Updated 11/15/2013)

Measure #:   PDI 10
Measure Name: Postoperative Sepsis Rate

I. Sample

The hospital universe is defined as all hospitals located in the U.S. that are open during any part of the calendar year and designated as community hospitals in the AHA Annual Survey Database (Health Forum, LLC © 2011). The AHA defines community hospitals as follows: "All non-Federal, short-term, general, and other specialty hospitals, excluding hospital units of institutions." Starting in 2005, the AHA included long term acute care facilities in the definition of community hospitals. These facilities provide acute care services to patients who need long term hospitalization (stays of more than 25 days). Consequently, Veterans Hospitals and other Federal facilities (Department of Defense and Indian Health Service) are excluded. Beginning in 1998, we excluded short-term rehabilitation hospitals from the universe because the type of care provided and the characteristics of the discharges from these facilities were markedly different from other short-term hospitals.
http://hcup-us.ahrq.gov/db/nation/nis/NIS_Introduction_2011.pdf

II. Empirical Testing

A. Reference Population

Table 1. Reference Population

Year/ Characteristic	Hospitals	Outcome of Interest	Population at Risk	Observed Rate Per 1,000
2011	1,972	1,443	90,258	15.986
2010	2,032	1,447	89,501	16.169
2009	2,075	1,576	91,626	17.204
2008	2,188	1,745	94,599	18.443
2007	2,139	1,510	90,480	16.688
Performance Score Distribution 2011 (Rate per 1,000)				
5th	**25th**	**Median**	**75th**	**95th**
2.550	7.344	13.204	21.638	38.928

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2007-2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

B. Reliability

Our metric of reliability is the signal to noise ratio, which is the ratio of the between hospital variance (signal) to the within hospital variance (noise). The formula is signal / (signal + noise). There is hospital-specific signal to noise ratio, which is used as an Empirical Bayes univariate shrinkage estimator. The overall signal to noise ratio is a weighted average of the hospital-specific signal-to-noise ratio, where the weight is $[1 / (signal+noise)^2]$. The signal is calculated using an iterative method. The analysis reports the reliability of the risk-adjusted rate (before applying the empirical Bayes univirate shrinkage estimator).

Table 2. Reliability by Hospital Size Decile

Size Decile	Number of Hospitals	Ave. Number of Patients per Hospital in Decile	Ave. Signal-to-Noise Ratio for Hospitals in Decile	Percent of Signal Variance Explained by Performance Score
1	198	1.0	0.00709	0.18511
2	197	1.0	0.00703	0.18507
3	198	1.0	0.00670	0.18484
4	197	1.7	0.01317	0.18922
5	198	2.2	0.01563	0.19087
6	197	3.3	0.02583	0.19780
7	198	5.2	0.04366	0.20995
8	197	11.1	0.09781	0.24752
9	198	40.2	0.30111	0.39641
10	197	391.3	0.76406	0.78037
Overall	1,972	45.8	0.76229	0.79419

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

C. Validity

We conduct construct validity testing to examine the association between the risk-adjusted rate and hospital structural characteristics potentially associated with quality of care, including prior performance, using regression analysis.

Table 3. Structure Measures Used to Estimate Prior Probability

Measure	How it is measured	Rationale
Ln(Volume)	Natural log of the denominator	Practice makes perfect or referral
Reservation Quality	Inverse of average daily census (ADC)	Reflects the excess capacity in the inputs of production (e.g. nurse staffing)
Transfer Out	Overall percent transfer out	Routine transferring of particular categories of patients
Maximum DX	Maximum reported diagnosis codes	Higher prevalence and co-morbidities
Prior Performance	Prior year smoothed rate	Share of performance likely to persist

The hypothesized relationship is as follows:
- Volume: Higher volume is associtaed with better outcomes, either because practice makes perfect (volume causes outcome) or referral (outcome causes volume)
- Reservation quality: Higher reservation quality is associated with better outcomes because reservation quality is associated with excess capacity
- Transfer out: Higher transfer out rate is associated with better outcomes because transferred cases have higher risk of mortalityor adverse outcome
- Diagnosis codes: More reported diagnosis codes are associated with more reported comorbidities, therefore higher expected rates, there fore better outcomes

Table 4. Regression on Structure Measures

Variable	Label	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lnvol	Ln(Volume)	-0.000849	0.000523	-1.62	0.1050	-0.00187	0.00018
adcinv	Reservation Quality	-0.000375	0.000334	-1.12	0.2610	-0.00103	0.00028
trnsout	Transfer Out	-0.020509	0.050081	-0.41	0.6820	-0.11873	0.07771
maxdx	Maximum DX	0.000186	0.000096	1.94	0.0530	0.00000	0.00037
_cons	Constant	0.016858	0.003109	5.42	0.0000	0.01076	0.02296
lnvol	Ln(Volume)	-0.000841	0.000500	-1.68	0.0920	-0.00182	0.00014
adcinv	Reservation Quality	-0.000286	0.000335	-0.85	0.3950	-0.00094	0.00037
trnsout	Transfer Out	0.013882	0.049755	0.28	0.7800	-0.08370	0.11146
maxdx	Maximum DX	0.000116	0.000089	1.30	0.1950	-0.00006	0.00029
prior2	Prior Performance	0.603668	0.109259	5.53	0.0000	0.38939	0.81794
_cons	Constant	0.008113	0.003315	2.45	0.0140	0.00161	0.01462

Note: the dependent variable in the regression is the risk adjusted rate

D. Performance

We calculate the posterior probability distribution for each hospital parameterized using the Gamma distribution. We then calculate the probability that the hospital is better or worse than the reference population benchmark (20th percentile) or threshold (80th percentile) rate at a 95 percent probability overall and by hospital size decile. The analysis is with the computed performance scores for the measure as specified (including shrinkage estimator).

Table 5. Performance Categories by Hospital Size Decile

| Size Decile | Number of Hospitals | Ave. Number of patients per Hospital in Decile | Benchmark | | Threshold | |
			Proportion Better	Proportion Worse	Proportion Better	Proportion Worse
1	198	1.0	0.01010	0.05556	0.01010	0.00000
2	197	1.0	0.01015	0.03046	0.02538	0.00000
3	198	1.0	0.00505	0.02020	0.02020	0.00000
4	197	1.7	0.01015	0.05076	0.01015	0.00000
5	198	2.2	0.00505	0.01515	0.00505	0.00000
6	197	3.3	0.00508	0.07107	0.00508	0.00508
7	198	5.2	0.00000	0.08586	0.00000	0.00000
8	197	11.1	0.00000	0.14213	0.00000	0.01015
9	198	40.2	0.00000	0.37374	0.03030	0.03535
10	197	391.3	0.00000	0.56853	0.46193	0.07614
	1,972	45.8	0.00456	0.14127	0.05671	0.01266
Patient weighted			0.00014	0.56816	0.51888	0.07989

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

E. Model Discrimination and Calibration

One calculates the c-statistic by taking all possible pairs of cases consisting of one case that experienced the event of interest and one case that did not experience the event of interest. The c-statistic is the proportion of such pairs in which the case that experienced the event had a higher predicted probability of experiencing the event than the case that did not experience the event.

Table 6. Model Discrimination and Calibration

Predicted Rate Decile	Number of Patients per Decile	Predicted Rate	Observed Rate
1	9,067	0.003999	0.003263
2	9,066	0.004705	0.003585
3	9,067	0.005521	0.004010
4	9,066	0.006369	0.006863
5	9,066	0.008884	0.008736
6	9,067	0.009742	0.012365
7	9,066	0.011862	0.010765
8	9,067	0.017488	0.022150
9	9,066	0.023875	0.026024
10	9,066	0.066701	0.061386
C-statistic	0.758		

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

A model that is well calibration will have observed values similar to predicted values across the predicted value deciles.   Although there are statistical tests of such "goodness of fit" the tests generally are not informative for datasets with large sample sizes.

F. Forecasting

With respect to the persistence of the hospital risk adjusted rate, we conduct a descriptive analysis to examine the distribution of the current year risk-adjusted rate by the prior year performance score performance decile. The R-square is a statistic for the proportion of variation in the risk-adjusted rate captured by variation in the prior year performance score.

Table 7. Forecasting

Prior Year Performance Score Decile	Number of Hospitals Per Decile	Prior Year Performance Score	Current Year Risk-adjusted Rate
1	198	0.007849	0.017333
2	197	0.011417	0.008666
3	198	0.012347	0.010507
4	197	0.013152	0.030473
5	198	0.014081	0.006640
6	197	0.015296	0.005568
7	198	0.015880	0.014444
8	197	0.015881	0.016768
9	198	0.016151	0.039646
10	197	0.022738	0.020626
R-Squared	0.0006		

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2010-2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

G. Preventability

Our metric of preventability is the proportion of events that are potentially preventable if patients selected hospitals performing at the level of the benchmark (i.e. the 20th percentile (better) in the probability distribution). The metric suggests that 65.2% of the events are potentially preventable.

Table 8. Preventability

Performance Score Decile	Ave. Performance Score	Number of Hospitals per Decile	Ave. Number of Patients per Hospital in Decile	Total Number of Patients in Decile	Total Events	Rate Potentially Preventable Events	Potentially Preventable Events	Expected Value of Information
1	0.002612	197.5	45.7	9,025.8	24	0.000000	0.0	
2	0.005221	197.5	45.7	9,025.8	47	0.000000	0.0	
3	0.007455	197.5	45.7	9,025.8	67	0.001212	10.9	
4	0.009686	197.5	45.7	9,025.8	87	0.003443	31.1	
5	0.012064	197.5	45.7	9,025.8	109	0.005821	52.5	
6	0.014731	197.5	45.7	9,025.8	133	0.008488	76.6	
7	0.017891	197.5	45.7	9,025.8	161	0.011648	105.1	
8	0.021939	197.5	45.7	9,025.8	198	0.015696	141.7	
9	0.027917	197.5	45.7	9,025.8	252	0.021673	195.6	
10	0.046569	197.5	45.7	9,025.8	420	0.040326	364.0	
Overall		1,975	45.7	90,258	1,499	0.010831	978	
Proportion Preventable							0.6521	

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. (AHRQ QI Software Version 4.5)

H. Information Value

The expected value of information (EVI) is the change in the expected number of potentially preventable events ("opportunity loss") accounting for the uncertainty and low information context in the performance score. A negative EVI means that there is some uncertainty in the expected number of potentially preventable events, while a positive EVI means that the effective sample size might be increased. Ideally the expected value of information would be close to zero.

Table 9. Expected Value of Information

Performance Score Decile	Ave. Performance Score	Number of Hospitals per Decile	Ave. Number of Patients per Hospital in Decile	Total Number of Patients in Decile	Total Events	Rate Potentially Preventable Events	Potentially Preventable Events	Expected Value of Information
1	0.002481	18	130.4	2,347	6	0.000545	1	-1
2	0.005599	22	189.2	4,162	23	0.001665	7	-7
3	0.007454	37	233.1	8,626	64	0.002234	19	-8
4	0.009864	60	251.6	15,094	149	0.004049	61	-30
5	0.012178	104	66.7	6,932	84	0.006414	44	8
6	0.014767	438	34.9	15,306	226	0.008788	135	-58
7	0.017468	1,051	12.7	13,320	233	0.011458	153	-47
8	0.021238	126	82.7	10,426	221	0.015152	158	-16
9	0.028197	80	104.2	8,334	235	0.022093	184	11
10	0.035406	39	146.4	5,711	202	0.029315	167	197
Overall		1,975	45.7	90,258	1,444	0.010301	930	48
Proportion Preventable							0.6438	0.0502

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. (AHRQ QI Software Version 4.5)

AHRQ Quality Indicators
Analytic Template
Version 4.5
(Last Updated 11/15/2013)

Measure #:   PDI 11
Measure Name: Postoperative Wound Dehiscence Rate

I. Sample

The hospital universe is defined as all hospitals located in the U.S. that are open during any part
of the calendar year and designated as community hospitals in the AHA Annual Survey Database (Health
Forum, LLC © 2011). The AHA defines community hospitals as follows: "All non-Federal, short-term,
general, and other specialty hospitals, excluding hospital units of institutions." Starting in 2005, the AHA
included long term acute care facilities in the definition of community hospitals. These facilities provide
acute care services to patients who need long term hospitalization (stays of more than 25 days).
Consequently, Veterans Hospitals and other Federal facilities (Department of Defense and Indian Health
Service) are excluded. Beginning in 1998, we excluded short-term rehabilitation hospitals from the
universe because the type of care provided and the characteristics of the discharges from these facilities
were markedly different from other short-term hospitals.
http://hcup-us.ahrq.gov/db/nation/nis/NIS_Introduction_2011.pdf

II. Empirical Testing

A. Reference Population

Table 1. Reference Population

Year/ Characteristic	Hospitals	Outcome of Interest	Population at Risk	Observed Rate Per 1,000
2011	2,520	57	60,261	0.946
2010	2,684	66	63,070	1.047
2009	2,765	66	67,258	0.981
2008	2,875	73	71,140	1.026
2007	2,804	81	71,937	1.126
Performance Score Distribution 2011 (Rate per 1,000)				
5th	**25th**	**Median**	**75th**	**95th**
0.000	0.000	0.000	0.000	4.970

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2007-2011.
Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI
Software Version 4.5)

B. Reliability

Our metric of reliability is the signal to noise ratio, which is the ratio of the between hospital variance (signal) to the within hospital variance (noise). The formula is signal / (signal + noise). There is hospital-specific signal to noise ratio, which is used as an Empirical Bayes univariate shrinkage estimator. The overall signal to noise ratio is a weighted average of the hospital-specific signal-to-noise ratio, where the weight is [1 / (signal+noise)^2]. The signal is calculated using an iterative method. The analysis reports the reliability of the risk-adjusted rate (before applying the empirical Bayes univirate shrinkage estimator).

Table 2. Reliability by Hospital Size Decile

Size Decile	Number of Hospitals	Ave. Number of Patients per Hospital in Decile	Ave. Signal-to-Noise Ratio for Hospitals in Decile	Percent of Signal Variance Explained by Performance Score
1	252	1.0	0.07991	0.08602
2	252	1.0	0.08571	0.09174
3	252	1.6	0.12694	0.13247
4	252	2.0	0.16502	0.17010
5	252	3.0	0.25264	0.25675
6	252	4.1	0.32586	0.32921
7	252	6.1	0.41561	0.41815
8	252	10.5	0.53700	0.53862
9	252	25.1	0.70476	0.70548
10	252	184.8	0.92297	0.92305
Overall	2,520	23.9	0.71705	0.85944

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

C. Validity

We conduct construct validity testing to examine the association between the risk-adjusted rate and hospital structural characteristics potentially associated with quality of care, including prior performance, using regression analysis.

Table 3. Structure Measures Used to Estimate Prior Probability

Measure	How it is measured	Rationale
Ln(Volume)	Natural log of the denominator	Practice makes perfect or referral
Reservation Quality	Inverse of average daily census (ADC)	Reflects the excess capacity in the inputs of production (e.g. nurse staffing)
Transfer Out	Overall percent transfer out	Routine transferring of particular categories of patients
Maximum DX	Maximum reported diagnosis codes	Higher prevalence and co-morbidities
Prior Performance	Prior year smoothed rate	Share of performance likely to persist

The hypothesized relationship is as follows:
- Volume: Higher volume is associated with better outcomes, either because practice makes perfect (volume causes outcome) or referral (outcome causes volume)
- Reservation quality: Higher reservation quality is associated with better outcomes because reservation quality is associated with excess capacity
- Transfer out: Higher transfer out rate is associated with better outcomes because transferred cases have higher risk of mortality or adverse outcome
- Diagnosis codes: More reported diagnosis codes are associated with more reported comorbidities, therefore higher expected rates, there fore better outcomes

Table 4. Regression on Structure Measures

Variable	Label	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lnvol	Ln(Volume)	0.000240	0.000080	3.00	0.0030	0.00008	0.00040
adcinv	Reservation Quality	-0.000002	0.000007	-0.29	0.7700	-0.00001	0.00001
trnsout	Transfer Out	-0.000767	0.002740	-0.28	0.7800	-0.00614	0.00461
maxdx	Maximum DX	0.000016	0.000025	0.66	0.5130	-0.00003	0.00007
_cons	Constant	-0.000310	0.000336	-0.92	0.3570	-0.00097	0.00035
lnvol	Ln(Volume)	0.000234	0.000093	2.53	0.0120	0.00005	0.00042
adcinv	Reservation Quality	-0.000003	0.000005	-0.60	0.5460	-0.00001	0.00001
trnsout	Transfer Out	-0.001269	0.003660	-0.35	0.7290	-0.00844	0.00591
maxdx	Maximum DX	0.000012	0.000020	0.61	0.5400	-0.00003	0.00005
prior2	Prior Performance	0.088256	0.344917	0.26	0.7980	-0.58809	0.76461
_cons	Constant	-0.000273	0.000271	-1.01	0.3140	-0.00080	0.00026

Note: the dependent variable in the regression is the risk adjusted rate

D. Performance

We calculate the posterior probability distribution for each hospital parameterized using the Gamma distribution. We then calculate the probability that the hospital is better or worse than the reference population benchmark (20th percentile) or threshold (80th percentile) rate at a 95 percent probability overall and by hospital size decile. The analysis is with the computed performance scores for the measure as specified (including shrinkage estimator).

Table 5. Performance Categories by Hospital Size Decile

| Size Decile | Number of Hospitals | Ave. Number of patients per Hospital in Decile | Benchmark | | Threshold | |
			Proportion Better	Proportion Worse	Proportion Better	Proportion Worse
1	252	1.0	0.71032	0.00000	1.00000	0.00000
2	252	1.0	0.63492	0.00000	0.99206	0.00000
3	252	1.6	0.67460	0.00000	1.00000	0.00000
4	252	2.0	0.68254	0.00000	1.00000	0.00000
5	252	3.0	0.73016	0.00000	1.00000	0.00000
6	252	4.1	0.40476	0.00000	0.99206	0.00000
7	252	6.1	0.14286	0.00000	0.97222	0.00000
8	252	10.5	0.00397	0.00794	0.77381	0.00794
9	252	25.1	0.00000	0.02381	0.66667	0.02381
10	252	184.8	0.03571	0.14683	0.82540	0.14683
	2,520	23.9	0.40198	0.01786	0.92222	0.01786
Patient weighted			0.08603	0.19177	0.75523	0.19177

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

E. Model Discrimination and Calibration

One calculates the c-statistic by taking all possible pairs of cases consisting of one case that experienced the event of interest and one case that did not experience the event of interest. The c-statistic is the proportion of such pairs in which the case that experienced the event had a higher predicted probability of experiencing the event than the case that did not experience the event.

Table 6. Model Discrimination and Calibration

Predicted Rate Decile	Number of Patients per Decile	Predicted Rate	Observed Rate
1	-	-	-
2	-	-	-
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-
C-statistic	-	-	-

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

A model that is well calibration will have observed values similar to predicted values across the predicted value deciles. Although there are statistical tests of such "goodness of fit" the tests generally are not informative for datasets with large sample sizes.

F. Forecasting

With respect to the persistence of the hospital risk adjusted rate, we conduct a descriptive analysis to examine the distribution of the current year risk-adjusted rate by the prior year performance score performance decile. The R-square is a statistic for the proportion of variation in the risk-adjusted rate captured by variation in the prior year performance score.

Table 7. Forecasting

Prior Year Performance Score Decile	Number of Hospitals Per Decile	Prior Year Performance Score	Current Year Risk-adjusted Rate
1	252	0.000000	0.000672
2	252	0.000210	0.000000
3	252	0.000339	0.000031
4	252	0.000475	0.000225
5	252	0.000609	0.000024
6	252	0.000745	0.000222
7	252	0.000957	0.000480
8	252	0.001131	0.000000
9	252	0.001157	0.000554
10	252	0.001639	0.000840
R-Squared	0.0016		

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2010-2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

G. Preventability

Our metric of preventability is the proportion of events that are potentially preventable if patients selected hospitals performing at the level of the benchmark (i.e. the 20th percentile (better) in the probability distribution). The metric suggests that 100.0% of the events are potentially preventable.

Table 8. Preventability

Performance Score Decile	Ave. Performance Score	Number of Hospitals per Decile	Ave. Number of Patients per Hospital in Decile	Total Number of Patients in Decile	Total Events	Rate Potentially Preventable Events	Potentially Preventable Events	Expected Value of Information
1	0.000000	252.0	23.9	6,026.1	0	0.000000	0.0	
2	0.000000	252.0	23.9	6,026.1	0	0.000000	0.0	
3	0.000000	252.0	23.9	6,026.1	0	0.000000	0.0	
4	0.000000	252.0	23.9	6,026.1	0	0.000000	0.0	
5	0.000000	252.0	23.9	6,026.1	0	0.000000	0.0	
6	0.000000	252.0	23.9	6,026.1	0	0.000000	0.0	
7	0.000003	252.0	23.9	6,026.1	0	0.000003	0.0	
8	0.000045	252.0	23.9	6,026.1	0	0.000045	0.3	
9	0.000580	252.0	23.9	6,026.1	3	0.000580	3.5	
10	0.015503	252.0	23.9	6,026.1	93	0.015503	93.4	
Overall		2,520	23.9	60,261	97	0.001613	97	
Proportion Preventable							1.0000	

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. (AHRQ QI Software Version 4.5)

H. Information Value

The expected value of information (EVI) is the change in the expected number of potentially preventable events ("opportunity loss") accounting for the uncertainty and low information context in the performance score. A negative EVI means that there is some uncertainty in the expected number of potentially preventable events, while a positive EVI means that the effective sample size might be increased. Ideally the expected value of information would be close to zero.

Table 9. Expected Value of Information

Performance Score Decile	Ave. Performance Score	Number of Hospitals per Decile	Ave. Number of Patients per Hospital in Decile	Total Number of Patients in Decile	Total Events	Rate Potentially Preventable Events	Potentially Preventable Events	Expected Value of Information
1	0.000000	78	1.5	115	0	0.000000	0	0
2	0.000000	0	0.0	0	0	0.000000	0	0
3	0.000000	0	0.0	0	0	0.000000	0	0
4	0.000000	0	0.0	0	0	0.000000	0	0
5	0.000000	0	0.0	0	0	0.000000	0	0
6	0.000000	0	0.0	0	0	0.000000	0	0
7	0.000003	12	1.7	20	0	0.000000	0	0
8	0.000053	847	39.2	33,196	2	0.000126	4	-4
9	0.000282	1,541	11.3	17,475	5	0.000472	8	-5
10	0.005764	42	225.1	9,455	55	0.005788	55	39
Overall		2,520	23.9	60,261	61	0.001114	67	30
Proportion Preventable							1.0975	0.3699

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. (AHRQ QI Software Version 4.5)

AHRQ Quality Indicators
Analytic Template
Version 4.5
(Last Updated 11/15/2013)

Measure #:   PDI 12
Measure Name: Central Venous Catheter-Related Blood Stream Infection Rate

I. Sample

The hospital universe is defined as all hospitals located in the U.S. that are open during any part
of the calendar year and designated as community hospitals in the AHA Annual Survey Database (Health
Forum, LLC © 2011). The AHA defines community hospitals as follows: "All non-Federal, short-term,
general, and other specialty hospitals, excluding hospital units of institutions." Starting in 2005, the AHA
included long term acute care facilities in the definition of community hospitals. These facilities provide
acute care services to patients who need long term hospitalization (stays of more than 25 days).
Consequently, Veterans Hospitals and other Federal facilities (Department of Defense and Indian Health
Service) are excluded. Beginning in 1998, we excluded short-term rehabilitation hospitals from the
universe because the type of care provided and the characteristics of the discharges from these facilities
were markedly different from other short-term hospitals.
http://hcup-us.ahrq.gov/db/nation/nis/NIS_Introduction_2011.pdf

II. Empirical Testing

A. Reference Population

Table 1. Reference Population

Year/ Characteristic	Hospitals	Outcome of Interest	Population at Risk	Observed Rate Per 1,000
2011	4,594	1,848	2,426,240	0.762
2010	4,603	1,813	2,456,635	0.738
2009	4,532	1,738	2,534,920	0.686
2008	4,496	2,522	2,481,431	1.016
2007	4,264	3,545	2,328,768	1.522
Performance Score Distribution 2011 (Rate per 1,000)				
5th	**25th**	**Median**	**75th**	**95th**
0.048	0.238	0.545	1.055	2.214

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2007-2011.
Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI
Software Version 4.5)

B. Reliability

Our metric of reliability is the signal to noise ratio, which is the ratio of the between hospital variance (signal) to the within hospital variance (noise). The formula is signal / (signal + noise). There is hospital-specific signal to noise ratio, which is used as an Empirical Bayes univariate shrinkage estimator. The overall signal to noise ratio is a weighted average of the hospital-specific signal-to-noise ratio, where the weight is [1 / (signal+noise)^2]. The signal is calculated using an iterative method. The analysis reports the reliability of the risk-adjusted rate (before applying the empirical Bayes univirate shrinkage estimator).

Table 2. Reliability by Hospital Size Decile

Size Decile	Number of Hospitals	Ave. Number of Patients per Hospital in Decile	Ave. Signal-to-Noise Ratio for Hospitals in Decile	Percent of Signal Variance Explained by Performance Score
1	460	1.5	0.00084	0.61120
2	460	4.7	0.00232	0.61143
3	459	14.0	0.00564	0.61194
4	460	40.6	0.01242	0.61301
5	459	94.0	0.02121	0.61437
6	460	175.8	0.04241	0.61820
7	460	312.2	0.07731	0.62407
8	459	532.0	0.13139	0.63405
9	460	934.6	0.23848	0.65666
10	459	3,173.4	0.58675	0.77311
Overall	4,594	528.1	0.75911	0.75209

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

C. Validity

We conduct construct validity testing to examine the association between the risk-adjusted rate and hospital structural characteristics potentially associated with quality of care, including prior performance, using regression analysis.

Table 3. Structure Measures Used to Estimate Prior Probability

Measure	How it is measured	Rationale
Ln(Volume)	Natural log of the denominator	Practice makes perfect or referral
Reservation Quality	Inverse of average daily census (ADC)	Reflects the excess capacity in the inputs of production (e.g. nurse staffing)
Transfer Out	Overall percent transfer out	Routine transferring of particular categories of patients
Maximum DX	Maximum reported diagnosis codes	Higher prevalence and co-morbidities
Prior Performance	Prior year smoothed rate	Share of performance likely to persist

The hypothesized relationship is as follows:
- Volume: Higher volume is associtaed with better outcomes, either because practice makes perfect (volume causes outcome) or referral (outcome causes volume)
- Reservation quality: Higher reservation quality is associated with better outcomes because reservation quality is associated with excess capacity
- Transfer out: Higher transfer out rate is associated with better outcomes because transferred cases have higher risk of mortalityor adverse outcome
- Diagnosis codes: More reported diagnosis codes are associated with more reported comorbidities, therefore higher expected rates, there fore better outcomes

Table 4. Regression on Structure Measures

Variable	Label	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lnvol	Ln(Volume)	0.000184	0.000041	4.48	0.0000	0.00010	0.00027
adcinv	Reservation Quality	0.000024	0.000005	4.42	0.0000	0.00001	0.00003
trnsout	Transfer Out	-0.000935	0.000336	-2.78	0.0050	-0.00159	-0.00028
maxdx	Maximum DX	0.000017	0.000005	3.38	0.0010	0.00001	0.00003
_cons	Constant	-0.001128	0.000211	-5.34	0.0000	-0.00154	-0.00071
lnvol	Ln(Volume)	0.000067	0.000033	2.07	0.0380	0.00000	0.00013
adcinv	Reservation Quality	0.000007	0.000005	1.35	0.1770	0.00000	0.00002
trnsout	Transfer Out	-0.000495	0.000364	-1.36	0.1730	-0.00121	0.00022
maxdx	Maximum DX	0.000002	0.000005	0.37	0.7090	-0.00001	0.00001
prior2	Prior Performance	0.673819	0.145392	4.63	0.0000	0.38878	0.95886
_cons	Constant	-0.000347	0.000212	-1.64	0.1020	-0.00076	0.00007

Note: the dependent variable in the regression is the risk adjusted rate

D. Performance

We calculate the posterior probability distribution for each hospital parameterized using the Gamma distribution. We then calculate the probability that the hospital is better or worse than the reference population benchmark (20th percentile) or threshold (80th percentile) rate at a 95 percent probability overall and by hospital size decile. The analysis is with the computed performance scores for the measure as specified (including shrinkage estimator).

Table 5. Performance Categories by Hospital Size Decile

| Size Decile | Number of Hospitals | Ave. Number of patients per Hospital in Decile | Benchmark | | Threshold | |
			Proportion Better	Proportion Worse	Proportion Better	Proportion Worse
1	460	1.5	0.20000	0.32826	0.40000	0.04348
2	460	4.7	0.61739	0.04130	0.82826	0.00217
3	459	14.0	0.88017	0.00436	0.98039	0.00218
4	460	40.6	0.91087	0.00000	0.95870	0.00000
5	459	94.0	0.90414	0.00436	0.96078	0.00000
6	460	175.8	0.74783	0.00435	0.95652	0.00000
7	460	312.2	0.28696	0.01304	0.92174	0.00000
8	459	532.0	0.03704	0.03922	0.89107	0.00218
9	460	934.6	0.01304	0.10217	0.71522	0.00870
10	459	3,173.4	0.00436	0.42048	0.51852	0.06100
	4,594	528.1	0.46018	0.09574	0.81310	0.01197
Patient weighted			0.07310	0.34401	0.63874	0.06377

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

E. Model Discrimination and Calibration

One calculates the c-statistic by taking all possible pairs of cases consisting of one case that experienced the event of interest and one case that did not experience the event of interest. The c-statistic is the proportion of such pairs in which the case that experienced the event had a higher predicted probability of experiencing the event than the case that did not experience the event.

Table 6. Model Discrimination and Calibration

Predicted Rate Decile	Number of Patients per Decile	Predicted Rate	Observed Rate
1	242,701	0.000018	0.000017
2	242,701	0.000028	0.000018
3	242,700	0.000044	0.000027
4	242,701	0.000059	0.000028
5	242,700	0.000142	0.000107
6	242,701	0.000230	0.000153
7	242,701	0.000267	0.000168
8	242,700	0.000432	0.000395
9	242,701	0.000771	0.000561
10	242,700	0.005622	0.006140
C-statistic	0.926		

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

A model that is well calibration will have observed values similar to predicted values across the predicted value deciles.   Although there are statistical tests of such "goodness of fit" the tests generally are not informative for datasets with large sample sizes.

F. Forecasting

With respect to the persistence of the hospital risk adjusted rate, we conduct a descriptive analysis to examine the distribution of the current year risk-adjusted rate by the prior year performance score performance decile. The R-square is a statistic for the proportion of variation in the risk-adjusted rate captured by variation in the prior year performance score.

Table 7. Forecasting

Prior Year Performance Score Decile	Number of Hospitals Per Decile	Prior Year Performance Score	Current Year Risk-adjusted Rate
1	460	0.000000	0.000000
2	460	0.000000	0.000016
3	459	0.000000	0.000000
4	460	0.000000	0.000062
5	459	0.000050	0.000269
6	460	0.000111	0.000119
7	460	0.000175	0.000144
8	459	0.000279	0.000209
9	460	0.000553	0.000058
10	459	0.001352	0.000696
R-Squared	0.0352		

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2010-2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

G. Preventability

Our metric of preventability is the proportion of events that are potentially preventable if patients selected hospitals performing at the level of the benchmark (i.e. the 20th percentile (better) in the probability distribution). The metric suggests that 78.9% of the events are potentially preventable.

Table 8. Preventability

Performance Score Decile	Ave. Performance Score	Number of Hospitals per Decile	Ave. Number of Patients per Hospital in Decile	Total Number of Patients in Decile	Total Events	Rate Potentially Preventable Events	Potentially Preventable Events	Expected Value of Information
1	0.000052	459.6	527.9	242,624.0	13	0.000000	0.0	
2	0.000145	459.6	527.9	242,624.0	35	0.000000	0.0	
3	0.000244	459.6	527.9	242,624.0	59	0.000056	13.6	
4	0.000354	459.6	527.9	242,624.0	86	0.000167	40.4	
5	0.000482	459.6	527.9	242,624.0	117	0.000294	71.3	
6	0.000633	459.6	527.9	242,624.0	154	0.000445	108.1	
7	0.000822	459.6	527.9	242,624.0	199	0.000634	153.8	
8	0.001074	459.6	527.9	242,624.0	261	0.000887	215.1	
9	0.001464	459.6	527.9	242,624.0	355	0.001276	309.6	
10	0.002774	459.6	527.9	242,624.0	673	0.002586	627.4	
Overall	4,596	527.9	2,426,240	1,951	0.000635	1,539	4,596	
Proportion Preventable							0.7889	

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. (AHRQ QI Software Version 4.5)

H. Information Value

The expected value of information (EVI) is the change in the expected number of potentially preventable events ("opportunity loss") accounting for the uncertainty and low information context in the performance score. A negative EVI means that there is some uncertainty in the expected number of potentially preventable events, while a positive EVI means that the effective sample size might be increased. Ideally the expected value of information would be close to zero.

Table 9. Expected Value of Information

Performance Score Decile	Ave. Performance Score	Number of Hospitals per Decile	Ave. Number of Patients per Hospital in Decile	Total Number of Patients in Decile	Total Events	Rate Potentially Preventable Events	Potentially Preventable Events	Expected Value of Information
1	0.000000	2,253	116.2	261,716	0	0.000037	10	-10
2	0.000151	640	568.7	363,958	55	0.000118	43	-43
3	0.000236	667	703.6	469,289	111	0.000162	76	-63
4	0.000339	301	889.3	267,671	91	0.000214	57	-17
5	0.000479	196	929.1	182,103	87	0.000320	58	13
6	0.000627	125	1,600.1	200,014	125	0.000451	90	18
7	0.000813	131	1,552.8	203,414	165	0.000634	129	25
8	0.001058	125	1,624.9	203,114	215	0.000878	178	37
9	0.001444	98	1,644.9	161,199	233	0.001265	204	106
10	0.003287	60	1,896.0	113,762	374	0.003107	353	274
Overall		4,596	527.9	2,426,240	1,450	0.000494	1,199	340
Proportion Preventable							0.8270	0.2497

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. (AHRQ QI Software Version 4.5)

Quality Indicator Empirical Methods

Prepared for:
Agency for Healthcare Research and Quality
U.S. Department of Health and Human Services
540 Gaither Road
Rockville, MD 20850
http://www.qualityindicators.ahrq.gov

Contract No. HHSA290201200001C

Prepared by:
Battelle
505 King Avenue
Columbus, OH 43201

Revised November 2013

Disclaimer

None of the investigators has any affiliations or financial involvement that conflicts with the material presented in this document.

Contents

List of Tables

Overview

This document describes the empirical methods used to calculate the AHRQ Quality Indicators™ (AHRQ QI). The QI measure health care quality and can be used to highlight potential quality concerns, identify areas that need further study and investigation, and track changes over time. The QIs are calculated using software that is freely available at www.qualityindicators.ahrq.gov.

The current AHRQ QI modules represent various aspects of quality:

- Prevention Quality Indicators (PQI) identify hospital admissions in geographic areas that evidence suggests might have been avoided through access to high-quality outpatient care. (first released November 2000, last updated May 2013)

- Inpatient Quality Indicators (IQI) reflect quality of care inside hospitals, as well as across geographic areas, including inpatient mortality for medical conditions and surgical procedures. (first released May 2002, last updated May 2013)

- Patient Safety Indicators (PSI) reflect quality of care inside hospitals, as well as geographic areas, to focus on potentially avoidable complications and iatrogenic events. (first released March 2003, last updated May 2013)

- Pediatric Quality Indicators (PDI) use indicators from the other three modules with adaptations for use among children and neonates to reflect quality of care inside hospitals, as well as geographic areas, and identify potentially avoidable hospitalizations. (first released April 2006, last updated May 2013)

The input data for QI calculation consist of discharge-level administrative records from inpatient hospital stays; this document often refers to them as **discharge records**. Each indicator can be described as giving results at either the **provider-level** (i.e., Did the patient experience an adverse quality-related event while in the healthcare provider's facility?) or **area-level** (Was the inpatient admission for a condition that might have been avoided if the patient's area of the country had more or better preventive or outpatient care?). Some indicators report the number of times a hospital performed a medical **procedure of interest.** These **volume indicators** do not have denominators. Most of the AHRQ QI are ratios where the **numerator** is a count of hospitalizations with the condition or outcome of interest and the **denominator** is an estimate of the population (or hospitalizations) at risk for that outcome. The QI software calculates several rates:

1. **Observed rate** – Conceptually, provider-level rates are the number of discharge records where the patient experienced the QI adverse event divided by the number of discharge records at risk for the event; area-level rates are the number of hospitalizations for the condition of interest divided by the number of persons who live in that area who are at risk for the condition.

2. **Expected rate** – A comparative rate that incorporates information about a **reference population** that is not part of the user's input dataset – what rate would be observed if the

expected level of care observed in the reference population and estimated with risk adjustment regression models, were applied to the mix of patients with demographic and comorbidity distributions observed in the user's dataset? The expected rate is calculated only for risk-adjusted indicators. Chapter 4 describes the QI reference population.

3. **Risk-adjusted rate –** A comparative rate that also incorporates information about a **reference population** that is not part of the input dataset – what rate would be observed if the level of care observed in the user's dataset were applied to a mix of patients with demographics and comorbidities distributed like the reference population? Appendix A lists which QIs are risk-adjusted.

4. **Smoothed rate** – A weighted average of the risk-adjusted rate from the user's input dataset and the rate observed in the **reference population**; the smoothed rate is calculated with a shrinkage estimator to result in a rate near that from the user's dataset if the provider's (or area's) rate is estimated in a stable fashion with minimal noise, or to result in a rate near that of the reference population if the rate from the input dataset is unstable and based on noisy data. In practice, the smoothed rate brings rates toward the mean, and does this more so for outliers (such as rural hospitals).

In data collected beginning October 1, 2007, each diagnosis code may be accompanied by a data element that indicates whether the diagnosed condition was **Present-on-Admission (POA),** and is therefore a pre-existing **comorbidity**, or whether the condition developed during the hospitalization of interest and is therefore a **complication**. Some datasets include POA data, while others do not. Some datasets have POA data for many, but not all of the discharge records. POA is handled in different ways in the QI software depending on a) whether POA data are present in the discharge record and b) whether the user specifies that the software should use the POA data elements when calculating QI rates, or ignore the POA data elements.

This document begins with a brief description of the dataset that a user must assemble to run the QI software and then it describes the methods associated with various types of indicators. Simpler indicators are described first. Volume indicators are the simplest of the QI. Area-level indicators are described next, along with their several possible denominators, and the method used to risk adjust them. Building in complexity, the document describes the calculation of provider-level indicators, where the denominator is tailored to the indicator and the QI may be affected by the POA data element, and how the software accounts for missing POA data. Composite indicators are described next and then the document finishes with a description of the methods used to maintain the QI software – specifically the calculations performed to update the reference population and to update denominator data.

Other Helpful Documents

Readers may wish to access additional QI-related documentation. Helpful examples include:

QI Software Instructions
      SAS: See http://www.qualityindicators.ahrq.gov/software/SAS.aspx
      WinQI: See http://www.qualityindicators.ahrq.gov/Software/WinQI.aspx

QI Technical Specifications
  PQI: See http://www.qualityindicators.ahrq.gov/Modules/PQI_TechSpec.aspx
  IQI: See http://www.qualityindicators.ahrq.gov/Modules/IQI_TechSpec.aspx
  PSI: See http://www.qualityindicators.ahrq.gov/Modules/PSI_TechSpec.aspx
  PDI: See http://www.qualityindicators.ahrq.gov/Modules/PDI_TechSpec.aspx

QI Risk-adjustment Coefficient Tables
  PQI: See http://www.qualityindicators.ahrq.gov/modules/pqi_resources.aspx
  IQI: See http://www.qualityindicators.ahrq.gov/modules/iqi_resources.aspx
  PSI: See http://www.qualityindicators.ahrq.gov/modules/psi_resources.aspx
  PDI: See http://www.qualityindicators.ahrq.gov/modules/pdi_resources.aspx

QI Population Documentation File
  See http://www.qualityindicators.ahrq.gov/software/SAS.aspx

QI Prediction Module Testing Report
  See http://www.qualityindicators.ahrq.gov/Modules/Default.aspx

Healthcare Cost and Utilization Project (HCUP) State Inpatient Database (SID) Documentation
(to better understand the source of the reference population)
  See http://www.hcup-us.ahrq.gov/db/state/siddbdocumentation.jsp

Chapter 1. The User's Dataset

An AHRQ QI software user should prepare the input dataset according to the software instructions.

Table 1.1 Required Data Elements

Data Element	Label	PQI	IQI	PSI	PDI
AGE	Age in years at admission	X	X	X	X
AGEDAY	Age in days (when age < 1 year)				X
ASCHED	Admission scheduled vs. unscheduled			X	X
ASOURCE	Admission source (uniform)	X	X	X	X
ATYPE	Admission type			X	X
DISPUNIFORM	Disposition of patient (uniform)		X	X	X
DQTR	Discharge quarter	X	X	X	X
DRG	DRG in effect on discharge date	X	X	X	X
DRGVER	DRG grouper version used on discharge date	X	X	X	X
DSHOSPID	Data source hospital identifier		X	X	X
DX1-DX30	Diagnosis	X	X	X	X
DXPOA1-DXPOA30	Diagnosis present on admission indicator		X	X	X
E_POA1-E_POA10	E code present on admission indicator		X	X	X
ECODE1-ECODE10	E code		X	X	X
HOSPST	Hospital state postal code		X	X	X
KEY	HCUP record identifier	X	X	X	X
LOS	Length of stay (cleaned)		X	X	X
MDC	MDC in effect on discharge date	X	X	X	X
PAY1	Primary expected payer (uniform)		X	X	X
PAY2	Secondary expected payer (uniform)		X	X	X
POINTOFORIGINUB04	Point of origin for admission or visit, UB-04 standard coding	X	X	X	X
PR1-PR30	Procedure	X	X	X	X
PRDAY1-PRDAY30	Number of days from admission			X	X
PSTCO	Patient state/county FIPS code	X	X	X	X
PSTCO2	Patient state/county FIPS code, possibly derived from ZIP Code	X	X	X	X
RACE	Race (uniform)	X	X	X	X
SEX	Sex	X	X	X	
YEAR	Calendar year	X	X	X	X

Note: The AHRQ QI software deletes discharge records with missing values for SEX.

In preparing a dataset for analysis, data elements and data values shown in the right side of Table 1.2 are constructed from the discharge data elements.

Table 1.2 Data Elements and Data Values To Be Constructed by the User

DISCHARGE DATA (e.g., SID)		AHRQ QI	
Data Element	Data Value	Data Element	Data Value
FEMALE	0 – Male 1 – Female	SEX	1 – Male 2 – Female
ATYPE, ASCHED and AGEDAY	IF ATYPE = Missing AND ASCHED = 1 (Scheduled admission) AND AGEDAY ~= 0	ATYPE	3- Elective
ECODE1-ECODE10	As reported	DX31-DX40	As reported
E_POA1-E_POA10	As reported	DXPOA31-DXPOA40	As reported

Discharge records in the dataset are analyzed as either adult or pediatric data based on age and Major Diagnostic Category (MDC) (Table 1.3). Discharges in MDC 14 (Pregnancy, Childbirth & the Puerperium) are assigned to the adult analysis data regardless of age.

Table 1.3 Analysis Data Inclusion Rule

Analysis data	Inclusion Rule
Adult	AGE greater than or equal to 18 or MDC equal to 14
Pediatric	AGE less than 18 and MDC not equal to 14

Adult analysis data are used to calculate Prevention Quality Indicators (PQI), Inpatient Quality Indicators (IQI), and Patient Safety Indicators (PSI). Pediatric records are used to calculate Pediatric Quality Indicators (PDI), Neonatal Quality Indicators (NQI) and indicators from other modules defined on pediatric discharges (i.e., PQI 09 Low Birth Weight Rate, PSI 17 Birth Trauma Rate – Injury to Neonate).

Chapter 2. Calculating Volume and Count Indicators

Table 2.1 lists the seven **volume indicators** for inpatient procedures for which there is evidence that a higher volume of procedures conducted by a provider is associated with lower mortality. The volume indicators are measured as counts of hospitalizations in which particular procedures were performed.

Table 2.1 AHRQ QI Volume Indicators

Name
IQI 01 – Esophageal Resection Volume*
IQI 02 – Pancreatic Resection Volume*
IQI 04 – Abdominal Aortic Aneurysm (AAA) Repair Volume*
IQI 05 – Coronary Artery Bypass Graft (CABG) Volume
IQI 06 – Percutaneous Coronary Intervention (PCI) Volume
IQI 07 – Carotid Endarterectomy Volume
PDI 07 – RACHS-1 Pediatric Heart Surgery Volume

*IQI 01, IQI 02 and IQI 04 are intended to be reported with IQI 08 IQI 09 and IQI 11, respectively.

Table 2.2 lists the four **count indicators** for serious reportable events.

Table 2.2 AHRQ QI Count Indicators

Name
PSI 05 – Retained Surgical Item or Unretrieved Device Fragment Count
PSI 16 – Transfusion Reaction Count
PDI 03 – Retained Surgical Item or Unretrieved Device Fragment Count
PDI 13 – Transfusion Reaction Count

Discharge Level Indicator Data Element (T)

The phrases **numerator** and **denominator** appear throughout the QI documentation. There are no denominators for volume or count indicators. The quantity of interest at the provider level is the magnitude of the number of times the procedure or the event occurs, and that number is not normalized by or divided by any denominator. The technical specifications do, however, use the phrase "numerator" to define the procedure of interest. Discharge records are flagged for inclusion or exclusion from the numerator of each volume QI based on the data elements, data values, and logic described in the technical specifications for each indicator.

For each discharge record, a binary flag variable is calculated by the software for each volume or count QI. In this document, we denote the discharge level indicator data element with the letter T. Each discharge record has a T variable for each QI, so in the software the data elements have longer names to clarify which QI they describe. (e.g., The variable for IQI 01 is called TPIQ01.)

Numerator

Discharges are flagged for inclusion in the numerator of each volume QI according to the specification for the **procedure of interest** (for volume indicators) or **outcome of interest** (for count indicators). Discharges flagged for inclusion in the numerator are assigned a value of "1" for T.

Exclusions
The specifications often stipulate that records should be excluded from calculation of a volume indicator if the record is missing an important data element. Discharges are also excluded from the numerator of a volume QI if the procedure of interest has more than one component, and the discharge is not in the population at risk for one component but remains in the population at risk for another component. These discharges are assigned a value of "0" for T.

The Observed Value

The observed provider-level value of a volume or count indicator is simply the sum of T over all records for that provider in the dataset.

Chapter 3. Calculating Area-Level Indicators – Observed Rates

Area-level indicators identify hospital admissions that evidence suggests might have been avoided through access to high-quality outpatient or preventive care. The numerator is a count of admissions for the condition of interest. The denominator is an estimate of the number of persons at risk for such a hospitalization. The denominator is usually a population estimate from a U.S. Census Bureau dataset.

Table 3.1 lists the area level indicators.

Table 3.1 AHRQ QI Area-Level Indicators

Name
IQI 26 – Coronary Artery Bypass Graft (CABG) Rate
IQI 27 – Percutaneous Coronary Intervention (PCI) Rate
IQI 28 – Hysterectomy Rate
IQI 29 – Laminectomy or Spinal Fusion Rate
PDI 14 – Asthma Admission Rate
PDI 15 – Diabetes Short-Term Complications Admission Rate
PDI 16 – Gastroenteritis Admission Rate
PDI 17 – Perforated Appendix Admission Rate
PDI 18 – Urinary Tract Infection Admission Rate
PQI 01 – Diabetes Short-Term Complications Admission Rate
PQI 02 – Perforated Appendix Admission Rate
PQI 03 – Diabetes Long-Term Complications Admission Rate
PQI 05 – Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate
PQI 07 – Hypertension Admission Rate
PQI 08 – Heart Failure Admission Rate
PQI 09 – Low Birth Weight Rate
PQI 10 – Dehydration Admission Rate
PQI 11 – Bacterial Pneumonia Admission Rate
PQI 12 – Urinary Tract Infection Admission Rate
PQI 13 – Angina Without Procedure Admission Rate
PQI 14 – Uncontrolled Diabetes Admission Rate
PQI 15 – Asthma in Younger Adults Admission Rate
PQI 16 – Lower-Extremity Amputation Among Patients With Diabetes Rate

The software provides the user with the option of producing output by metropolitan area or by county. The term **metropolitan area (MA)** was adopted by the U.S. Census in 1990 and referred collectively to metropolitan statistical areas (MSAs), consolidated metropolitan statistical areas (CMSAs), and primary metropolitan statistical areas (PMSAs). In addition, "area" could refer to

either 1) FIPS county, 2) modified FIPS county, 3) 1999 OMB Metropolitan Statistical Area, or 4) 2003 OMB Metropolitan Statistical Area. As an aside, Micropolitan Statistical Areas are not used in the QI software.

For information about how the denominators are calculated from Census data, see the QI Population Documentation File at http://www.qualityindicators.ahrq.gov/software/SAS.aspx.

For diabetes-related area measures, the QI software user has an option of calculating rates where the denominator is an estimate of the number of persons living in the state who have diabetes. For information on how those **condition-specific denominators** are estimated, see Chapter 3. The diabetes indicators are PQI 01 Diabetes Short-Term Complications Admission Rate, PQI 3 Diabetes Long-Term Complications Admission Rate, PQI 14 Uncontrolled Diabetes Admission Rate, and PQI 16 Lower-Extremity Amputation among Patients with Diabetes Rate. Chapter 13 describes how the diabetes denominators are estimated.

Future versions of the QI software may include other condition-specific denominator options.

Discharge Level Indicator Data Element (T)

Numerator
Discharges are flagged for inclusion in the numerator of each area-level QI according to the specification for the condition of interest. Discharges flagged for inclusion in the numerator are assigned a value of "1" for T.

Exclusions
Generally, discharges may be flagged for exclusion from the numerator of an area-level AHRQ QI for one (or more) of several reasons.

1. The outcome of interest is very difficult to prevent, and therefore not an indication of substandard care.
2. The patient was transferred from another health care facility.
3. Some exclusion criteria are included for the purpose of enhancing face validity with clinicians.
4. Some exclusion criteria are an inherent part of the QI definition.

Discharge records that meet one or more of the exclusion criteria in the QI technical specification are assigned a value of "missing (.)" for T.

The Observed Rate

The observed rate of an area-level indicator is simply the sum of T over all records for that area of the country divided by the Census population estimate for the area (adult population for adult measures and child population for pediatric measures). For condition-specific indicators, if the

user requests it, the denominator is the estimated count of persons living in that area of the country who are living with the condition of interest.

Area Rates Stratified by Quarter of the Year

The WinQI software has an option to stratify area-level rates by quarter of the year in which they occurred. When the user selects that option, the rate reported for each quarter is the number of admissions for the condition of interest that occurred during that quarter, divided by the Census population for the area <u>divided by four.</u> The four quarterly rates sum to the annual rate.

Chapter 4. Risk Adjustment for Area-Level Indicators

In order to make meaningful comparisons of the area-level rate for one area with that of another area, it is helpful to account statistically for differences in demographics between areas. To do so for most QIs, the software calculates a **risk-adjusted rate** which answers the question: What QI rate would we expect to observe in a particular area of the country if the persons living there shared the same demographic profile of a reference population? In statistical language, the risk-adjustment **controls for demographic differences** via logistic regression.

For area rates, the risk-adjustment models adjust for age-group proportions by gender, and optionally for poverty. That is to say that the models include age (in 5 year groups), gender, and if it is statistically significant, the model includes the interaction between age and gender.

When comparing outcomes from different areas, there may be several reasons for differences in risk-adjusted rates. Some of the most important reasons may be related to the availability of quality preventive and outpatient care, and other reasons may contribute as well, but after risk-adjustment, the differences should <u>not</u> be attributable to differences in the age and gender profiles in the areas.

The AHRQ QI Reference Population

To accomplish risk adjustment, in annual updates of the QI software a **reference population** is analyzed that consists of all HCUP SID data that are available for the year most recently released by AHRQ at the time the QI software is updated. For example when version 4.5 of the QI software was updated in January of 2013 for the May 2013 software release, SID data were available from 2010 from 44 states, so those records serve as the reference population for AHRQ QI software version 4.5.

INSERT text on HCUP data. I believe we have some boilerplate text in some of the other documents – Chris may remember where

For area-level indicators, the reference population plays two important roles:

1. The **reference population rate** for each QI is calculated and included in the software to serve as a comparative standard for areas of the country. One can analyze data to determine which areas have higher or lower rates than the overall reference population. The reference population rates are published on the AHRQ QI website in documents named Benchmark Tables (formerly known as Comparative Data Tables). See the links in the Overview chapter of this document.

2. The **risk adjustment models** are re-estimated on the new reference population dataset in an annual process that is described in Chapter 12 of this document. The models are distributed within the QI software, and they facilitate the calculation of risk-adjusted rates. The risk adjustment model covariates and regression coefficients are published on the AHRQ website. See the links in the Overview chapter of this document.

Chapter 5. Calculating Area-Level Indicators – Expected, Risk-Adjusted, & Smoothed Rates

In addition to observed rates, three other sets of QI rates are calculated for risk-adjusted area-level indicators.

The Expected Rate

The **expected rate** for an area-level QI is the rate that would be observed if the amount and quality of outpatient and preventive care available across the reference population were available to persons living in this specific area. It is predicted for each area using risk-adjustment model coefficients and covariates that summarize the age and gender distribution of the area's population.

The Risk-Adjusted Rate

The AHRQ QI use indirect standardization to calculate the risk-adjusted rate. The risk-adjusted rate equals the reference population rate multiplied by the ratio of observe rate divided by expected rate.

$$Risk\ Adjusted\ Rate\ =\ Reference\ Population\ Rate\ x\ (Observed\ Rate\ /\ Expected\ Rate)$$

Note that for the reference population, the observed rate equals the expected rate equals the reference population rate equals the risk-adjusted rate.

The software estimates the standard error of the risk adjusted rate for each area using a method recommended by Iezzoni and described by Hosmer and Lemeshow (1995) that represents the amount of within provider or area variance due to sampling (i.e. as the number of patients per provider or persons per area increases this variance tends to zero). This standard error is used to calculate lower and upper bound 95% confidence intervals around the risk adjusted rate as [risk adjusted rate +/- 1.96 * risk adjusted rate SE] (stored in a data element with a "L" and "U" prefix). (See Chapter 10 section entitled: Computing the Risk-Adjusted Rate Variance. See also http://qualityindicators.ahrq.gov/Downloads/Resources/Publications/2011/Calculating_Confidence_Intervals_for_the_AHRQ_QI.pdf)

The Smoothed Rate

Each area's **smoothed rate** is a weighted average of the risk-adjusted rate and the reference population rate; the smoothed rate is calculated with an empirical Bayes shrinkage estimator to result in a rate near that from the input dataset if the area's rate is estimated in a stable fashion with minimal noise, or to result in a rate near that of the reference population if the rate from the area is unstable and based on noisy data. Thus, the smoothed rate for a hospital with stable estimates will be similar to the hospital's risk adjusted rate, while the smoothed rate for a hospital with unstable estimates will be more similar to the reference population rate.

The formula for the smoothed rate is:

$$Smoothed\ Rate\ =\ (Risk\ Adjusted\ Rate \times Shrinkage\ Weight)$$
$$+\ Reference\ Population\ Rate\ *\ (1 - Shrinkage\ Weight)$$

where

$$Shrinkage\ Weight\ =\ \frac{Signal\ Variance}{Signal\ Variance\ +\ Noise\ Variance}$$

The noise variance is an estimate of variability in the QI outcome within the area of interest (county), and the signal variance is an estimate of variability across all areas.

$$Noise\ Variance\ \hat{\sigma}_a^2\ =\ \left(\frac{\bar{Y}}{n_a E_a}\right)^2 \sum_{i \epsilon A_a} \hat{Y}_i (1 - \hat{Y}_i)$$

$$Signal\ Variance\ \hat{\tau}^2\ =\ \frac{1}{A}\sum_{a=1}^{A}\frac{1}{(\sigma_a^2)^2}\sum_{a=1}^{A}\frac{1}{(\hat{\tau}^2 + \sigma_a^2)^2}\{(RAR_a - \overline{RAR})^2 - \hat{\sigma}_a^2\}$$

where A is the number of areas with persons at risk for the measure, $\bar{Y}$ is the observed rate for the reference population; $\hat{Y}_i$ is the person-level predicted probability for area i; and for area a, A_a is the collection of persons in the population at risk, n_a is the number of persons, E_a is the expected rate, and RAR_a is the risk-adjusted rate. Note that $\hat{\tau}^2$ appears on both sides of the signal variance equation; it is estimated in an iterative fashion.

For purposes of confidence interval estimation, the *smoothed rate* is assumed to follow a Gamma distribution $G(shape, scale)$ where

$$shape\ =\ \frac{(Smoothed\ Rate)^2}{Posterior\ Variance}$$

$$scale\ =\ \frac{Posterior\ Variance}{Smoothed\ Rate}$$

$$Posterior\ Variance\ =\ Signal\ Variance - (Shrinkage\ Weight\ *\ Signal\ Variance)$$

When there is a fixed comparative rate of interest, it is possible to parameterize the smoothed rate posterior probability based on the Gamma distribution and calculate the probability that the smoothed area rate falls below or above the comparative rate that is of interest.

Chapter 6. Overview of Provider-Level QI & Present-on-Admission (POA)

Provider-level indicators address questions like: Did the patient experience an adverse quality-related event while in the care of a specific healthcare provider? Or did the patient have an inpatient procedure for which there are questions of overuse, underuse, or misuse?

Adverse-event indicators are for medical conditions and procedures that have been shown to have complication/adverse event rates that vary substantially across institutions and for which evidence suggests that high rates may be associated with deficiencies in the quality of care. They usually include only those cases where a secondary diagnosis code flags a potentially preventable complication. A few indicators are based on procedure codes that imply a potential preventable adverse event.

Mortality indicators are for medical conditions and surgical procedures that have been shown to have mortality rates that vary substantially across institutions and for which evidence suggests that high mortality may be associated with deficiencies in the quality of care.

Utilization indicators track procedures where there are questions of overuse, underuse, or misuse. The usage of the procedures being examined varies significantly across hospitals and areas, and high or low rates by themselves do not represent poor quality of care; rather the information is intended to inform consumers about local practice patterns.

Provider-level indicators are measured as rates—number of hospitalizations with the outcome (or procedure) of interest divided by the population at risk for the outcome (or procedure). Recall that area-level indicators each use the same denominator for each area – the Census-derived estimate of the count of persons who live in the area. Provider-level indicators are more complicated because they have **indicator-specific denominators**, to identify only the hospitalizations that were at risk for the outcome of interest.

Recall that area-level indicators all use similar risk-adjustment coefficients: age-groups by gender. But the risk-adjustment models for provider-level measures are more complicated. Each risk-adjusted provider-level indicator uses a customized list of regression covariates that are selected when the QI software is updated annually using methods described in Chapter 12.

Present-on-Admission (POA) status is a third factor that makes provider-level indicators more complex than volume or area-level indicators. Current AHRQ QI that use POA are listed in Appendix A. Some of the indicators look for adverse conditions that develop as **medical complications** during the hospitalization of interest. Evidence suggests that high rates may be associated with lower quality of care. Think, for instance, of pressure ulcers, which are measured with PSI 03. However, some of these complications may have been present on admission, which would not be related to the quality of inpatient care. The AHRQ QI software uses three methods to distinguish between **complications**, which develop during the hospitalization and should be counted in the QI numerator, and **comorbidities**, which are present on admission and should exclude the discharge record from the QI calculation, because the patient is not at risk for the

event. Table 6.1 summarizes those methods, and they are described in more detail in the following chapters, and in Appendix C.

Table 6.1 Methods Used by QI Software to Distinguish Complications from Comorbidities

Method	Description	Can the QI User Turn This Off?
1. The POA-Related Exclusion Method (See Chapter 7.)	Some QIs use data elements other than DX_POA to infer that the condition is more likely than not to be POA. Those records are excluded from the population at risk.	No. The WinQI software does not allow modifications to the exclusion criteria. However, the SAS software can be altered by the User, noting that the User should document any modifications to the program.
2. DX_POA Data Element (See Chapter 8.)	If the diagnosis is flagged as POA using the DX_POA data element, then the record is excluded from the population of interest.	Yes. The user can specify %LET USEPOA = 0; in the CONTROL.SAS program or un-check the WinQI box entitled "Use POA in rate calculation", either of which will cause the software to ignore DX_POA data that are present in the dataset. Every potential complication will be flagged as an adverse event, and if it does not meet any of the exclusion criteria, it will contribute to the QI numerator. For the purposes of risk-adjustment, a set of coefficients will be employed that were estimated ignoring POA; all complications will be treated as comorbidities.
3. Model the effect of missing data when DX_POA is missing for a particular record, or for the entire dataset (See Chapter 9.)	Use a statistical model included with the QI software and updated annually using reference population data to estimate the probability that the outcome of interest is POA. Use that probability along with the other variables in the record to estimate the probability that the patient experienced the adverse event, conditional on the (possibly large or possibly small) probability that the	Yes. The user can specify %LET USEPOA = 0; in the CONTROL.SAS program or un-check the WinQI box entitled "Use POA in rate calculation", either of which will cause the software to skip modeling missing POA data.

Alternatively, the user can provide complete POA data, so there is no missing data to be modeled. Note that for |

	event was <u>not</u> POA. See Chapter 9 and Appendix C.	indicators where POA is a factor in the model, the predicted values are always calculated using the Prediction Module. If the user models the missing POA, then the downstream software uses predictions from the Markov Chain Monte Carlo simulation described in Chapter 9 and Appendix C. If the user ignores POA, then the downstream software uses predictions that the Prediction Module calculates using simple scalar multiplication of regression coefficients times covariate values.

POA Data Element - Background Information

Present-on -Admission was added as a data element to the uniform bill form (UB-04) effective October 1, 2007, and hospitals incurred a payment penalty for not including POA on Medicare records beginning October 1, 2008. Each of the several diagnoses in a discharge record can be flagged as "present at the time the order for inpatient admission occurs"[1] or not. This is accomplished with data element DX_POAi which uses a one-character text code to characterize the POA status of the diagnosis in DXi.   Conditions that develop during an outpatient encounter, including treatment in an emergency department, are considered as present on admission. Most states have adopted POA in the discharge data submitted by hospitals to either the state department of health or the state hospital association.

Table 6.2 lists the possible character values of the POA data elements (Y,N,U,W,E, or missing) along with corresponding numeric values (0 or 1) used in the AHRQ QI software. Additional information about the coding guidelines for POA can be found at: www.cdc.gov/nchs/data/icd/icd9cm_guidelines_2011.pdf Again, current AHRQ QI that use POA are listed in Appendix A.

---

[1] http://www.cdc.gov/nchs/data/icd9/icdguide10.pdf.

Table 6.2 Values for the Present-on-Admission Data Element

ICD-9-CM Guidelines	Description	AHRQ QI POA Data Element	Description
Y - Yes	Diagnosis is present at the time of inpatient admission	1	Diagnosis present at admission
N – No	Diagnosis is not present at the time of inpatient admission	0	Diagnosis not present at admission
U - Unknown	Documentation is insufficient to determine if condition is present on admission	0	Diagnosis not present at admission
W – Clinically undetermined	Provider is unable to clinically determine whether condition was present on admission or not	1	Diagnosis present at admission
E - Unreported/Not used; Also includes UB-04 values previously coded as "1"	Exempt from POA reporting	1	Diagnosis present at admission

Source: http://www.cms.hhs.gov/HospitalAcqCond/05_Coding.asp#TopOfPage;
 http://www.hcup-us.ahrq.gov/db/vars/siddistnote.jsp?var=e_poan.

An individual discharge record might include 20 or more diagnoses. For purposes of the AHRQ QI, the principal diagnosis is always assumed to be present on admission by definition, regardless of the coding of the POA data element in the principal field. Secondary diagnosis codes are considered present on admission if the POA data element is coded with a Y, W, E or 1. Secondary diagnosis codes are considered not present on admission if the POA data element is coded with a N, U or 0.

Chapter 7. Calculating Provider-Level Observed Rates – Ignoring POA

Provider-level QI calculations are simplest when POA is ignored altogether, so those calculations are described first. Later chapters describe what happens when POA data are present and accounted for, and how the calculations are performed when POA data are missing but modeled. The AHRQ QI software user may ignore the influence of DX_POA data, either present or missing, by specifying "%LET USEPOA = 0;" in the CONTROL.SAS file or by or un-checking the WinQI box entitled "Use POA in rate calculation".

When ignoring POA, the main difference between area-level indicators and provider-level indicators is the way the denominator is calculated.

Discharge Level Indicator Data Element (T)

Each provider-level observed QI rate consists of a conceptually simple fraction where the denominator is the count of discharge records at risk and the numerator is the count of the records with the outcome of interest. This fraction is calculated using a single discharge level indicator data element, T, described in earlier chapters for volume and area-level indicators. In those earlier chapters, the T variable took on the value "1" if the discharge record met the definition for the numerator that is spelled out in the technical specifications. For volume and area-level indicators it does not matter whether the T variable takes the value "0" or "missing (.)" for other records, because the numerator is simply the count of records where T=1.

Provider-Level Denominator

Discharges are flagged for inclusion in the denominator of each AHRQ QI according to the specification for the **population at risk.** Discharges flagged for inclusion in the denominator are assigned a value of "0" for T unless the discharge also experienced the outcome of interest in which case the value of "1" is assigned. Discharges that experienced the outcome of interest are in the population at risk by definition.

Denominator Exclusions

Generally, discharges may be flagged for exclusion from the denominator of an AHRQ QI for one (or more) of several reasons.

1. The outcome of interest is more likely than not to be present on admission and conditions that are POA should not "count" as an adverse event.
2. The outcome of interest is very difficult to prevent, and therefore not an indication of substandard care.
3. The exclusion identifies populations who are at very low risk for the adverse event and who are excluded to keep from diluting the QI denominator.

4. Some exclusion criteria are included for the purpose of enhancing face validity with clinicians (e.g., exclude patients from being at risk of a pressure ulcer (PSI 03) if they have not been hospitalized for at least 5 days).
5. Some exclusion criteria are an inherent part of the QI definition (e.g., exclude persons from being at risk for a post-operative hip fracture if the hip repair is the only surgical procedure during the hospitalization).

Discharge records that meet one or more of the denominator exclusion criteria in the QI technical specification are assigned a value of "missing (.)" for T.

Three Values of T

To summarize:

- A "1" in the T variable means that the record was in the population at risk, experienced the outcome of interest, and was not excluded for any reason.
- A "0" in the T variable means the record was in the population at risk, did <u>not</u> experience the outcome of interest, and was not excluded for any reason.
- A "missing (.)" value for the T variable means that the record was not in the population of interest, either because it did not meet the denominator definition, or because it met one or more of the exclusion criteria.

The Observed Rate

For provider-level indicators, the observed rate is simply the arithmetic mean of the T variable over all of the provider's discharge records.

Consequence of Ignoring POA Data

When POA data are ignored, the observed rate calculation will include records where the outcome of interest was indeed present on admission, and so will inflate the numerator, the denominator, and the observed rate, compared with an **unknown but true underlying rate** that excludes records from population at interest when the outcome was truly POA.

Chapter 8. Calculating Provider-Level Observed Rates – With Complete POA Data

Consideration of POA should improve the accuracy of QI rate calculation because pre-existing comorbidities can be distinguished from complications that develop during the hospital stay of interest. Records with outcomes that were POA will no longer appear erroneously in the numerator, denominator, or observed rate, and the risk adjustment models will no longer erroneously treat complications as comorbidities, thus yielding improvement in the comparative expected, risk-adjusted, and smoothed rates above and beyond that in the numerator, denominator, and observed rates.

The degree of improvement attained when accounting for POA will vary depending on the number of records where the outcomes were POA, and with the accuracy of POA coding. This document does not address the topic of POA accuracy. The QI software treats values in the DX_POA data elements as if they were completely accurate.

The QI calculation procedures are more complicated when some or all of the POA data are missing, so this chapter describes the calculations conducted when POA is present for every record. The following chapter addresses missing POA data.

Discharge Level POA Exclusion Data Element (Q)

When accounting for POA, the QI software codes the discharge level indicator data element, T, in the same manner described in Chapter 7, using technical specifications to define which records are included in the denominator, numerator, and which should be excluded for one or more reasons. The meaning and possible values of T are described in Chapter 7.

A second, POA-related binary flag is calculated, also. The **discharge level POA exclusion data element** is abbreviated with the letter Q.[2] Put simply, Q records whether the outcome of interest was present on admission or not. The outcome of interest is considered present on admission (Q is assigned "1") if any of the diagnosis codes that define the outcome of interest are coded as present on admission. Otherwise a value of "0" is assigned to Q. For every record that includes POA data in the SID DX_POA data elements, Q will have a value of "0" or "1" and will <u>not</u> be "missing (.)".

The Observed Rate
Before calculating the observed rate, Q is used to correct the value of T if the condition of interest was POA. If the value of Q is "1" (outcome was POA) then the record is removed from the population at risk by setting T to "missing (.)". The observed rate is simply the arithmetic

---

[2] The letter P was not available, having been used already for the notion of <u>p</u>opulation at risk. In this document the variables are denoted simply as T and Q, but each discharge record has a binary T variable and a binary Q variable for each QI, so the variables have longer names to clarify which QI they describe. (e.g., The variables for PSI 08 are called <u>T</u>PPS08 and <u>Q</u>PPS08.)

mean of the T variable after this correction. Note that if POA had been ignored, as in Chapter 7, every record removed from the population at risk by the Q variable would have appeared as a "1" in both the numerator and the denominator. So accounting for POA data yields lower observed rates than when the POA data are ignored. The <u>magnitude</u> of the difference between the rate estimated when POA are ignored and when POA are incorporated will depend on the proportion of records that are flagged as POA that do not meet any of the other indicator exclusion criterion. The <u>accuracy</u> of the difference between the rate estimated when POA are ignored and the rate estimated when POA are incorporated (via the Q flag) depends both on the magnitude of the difference, and the accuracy of the POA coding.

Chapter 9. Calculating Provider-Level Observed Rates – With Missing POA Data

When POA data are ignored (Chapter 7) or present in the discharge record (Chapter 8) then each record in the population at risk contributes a simple "0" or "1" to the QI denominator and if it is a "1" in the denominator, the record contributes a simple "0" or "1" to the numerator. When POA data are missing, the situation is not as simple. Records that do not meet the denominator criteria, regardless of POA, are still simple…they are not in the population at risk. Records where T=0 ignoring POA are simple because they did not experience the outcome of interest, so it could not have been POA. But for other records, the missing DX_POA flags would determine whether the record was in the population at risk, or not, and if so, whether the patient experienced the outcome of interest. Because we cannot confidently assign a simple 0 or 1 to the numerator and denominator, the QI software calculates expected values of both the numerator and denominator contribution – these expected values fall between 0 and 1, and the software uses them to calculate the observed rate.

The DX_POA flags can affect the patient record in three ways:
1. The outcome of interest is clearly POA and the record should be excluded from the population at risk.
2. The outcome of interest is clearly not POA and the record should be included in the population at risk.
3. DX_POA helps distinguish between comorbidities (present at the time of admission) and complications (developed after admission) which affects the assignment of APR-DRG and risk-adjustment.

If some or all of the discharge records in the user's dataset are missing DX_POA data elements, the dataset can still be analyzed using methods that take POA into account. The missing POA data are modeled using information from the reference population records that had complete POA data to estimate the expected value of the probability that the outcome of interest was POA, and the expected value of the probability that the patient experienced the outcome of interest if it was not POA.

The expected value calculations use Markov Chain Monte Carlo (MCMC) methods and augmented datasets where the missing POA data are modeled based on relationships observed in the reference population. Specifically, the portion of the reference population dataset where POA was observed yields probabilistic insight into the relative frequency of APR-DRG assignment as well as comorbidities versus complications. In the user's dataset, if POA data are missing from a discharge record, then the expected values of both the Q flag and the outcome of interest are estimated using an MCMC to approximate the weighted sums over all possible combinations of missing data. The weights in the sums are the probabilities of observing each combination of missing POA flags.

Prediction Module Nomenclature: Y = T and P = Q and POA improves Z to form X

There is a change of nomenclature between the QI software that calculates discharge level data elements and the Prediction Module (PM) [3] software that models the effect of missing POA. In the PM, the outcome is called Y rather than T and the POA flag is called P rather than Q. In this document we observe this change, and refer to Y and P when talking about values that are calculated by the PM.

The set of relevant covariates as coded from the discharge record are collectively described as the vector Z. After a set of observed or imputed POA flags are applied to the Z vector, and the covariates are re-calculated, the improved covariates form a vector that we call X. Data elements that are not affected by POA (e.g., age and gender) take on the same values in the Z and X vectors. Data elements that might have changed if POA data had been included with the record (e.g., APR-DRG and comorbidities versus complications) may take different values in Z and X. Specifically, the APR-DRG might be changed altogether or shifted to a lower risk of mortality subclass if some of the secondary diagnoses are POA, and some conditions that meet the definition of comorbidity might be changed to complications or vice versa.

Run Prediction Module to Account for Missing POA

With regard to the observed rate, the Prediction Module does two important things:

1. It calculates the expected value of the probability that the outcome of interest was POA: $E[P=1| Y,P,X,Z]$. Conceptually it does this by imputing POA flags many times and re-calculating whether the outcome of interest was POA. The specifics of the actual MCMC expected value calculation are described in Appendix C. The expected value is a number between 0 and 1 and it is used to determine the record's contribution to the QI denominator. For records with complete POA data, the P flag takes the value 0 or 1, and the record contributes 1-P to the denominator. (It contributes 1 if the condition is not POA, and 0 if it is POA.) For records with missing POA data, the expected value of P falls between 0 and 1, and the contribution to the denominator is $1 – E[P=1|Y,P,X,Z]$. That is to say that if there is a 50% chance that the outcome was POA, then the record contributes 0.5 to the denominator. If there is a 99% chance that it was POA, the record contributes 0.01 to the denominator.

2. It calculates the expected value of the contribution of the record to the numerator. If the contribution to the denominator is non-zero and Y=1, then this probability is equal to (1 – the denominator contribution). Otherwise it is zero. If T=Y=0 when POA is missing,

---

[3] The word 'module' is a possible source of confusion. We refer to the four sets of QI as QI *modules: the PQI, IQI, PSI, and PDI.* In a different context, the word 'module' is also used to describe two C++ executable programs that a) estimate the risk-adjustment models during the QI software update process, (the so-called **Analysis Module**) and b) predict the expected value of the outcome in the user's data subject to uncertainty about missing POA (the so-called **Prediction Module).** The Prediction Module is an executable program that is called by SAS or WinQI when the user analyzes their dataset to calculate QI rates.

then Y would not be affected if POA data were present, and the record makes 0 contribution to the QI numerator.

Note that for observations where DX_POA is present in the user's dataset, the prediction module does not model an expected value. The expected value of Y and P is calculated with certainty as being equal to the observed values T and Q, respectively. These observations make contributions of 1-P (=1-Q) to the denominator, and Y * (1-P) (which = T * (1-Q)) to the numerator.

The Observed Rate

The formula for the observed rate is as follows:

$$Observed\ Rate\ = \frac{Sum\ of\ expected\ value\ of\ discharges\ of\ the\ outcome\ of\ interest}{Sum\ of\ expected\ value\ of\ discharges\ in\ the\ population\ at\ risk}$$

Chapter 10. Risk Adjustment for Provider-Level Indicators

This chapter describes risk-adjustment for provider-level QIs. Three special cases are described explicitly: ignoring POA data, accounting for POA in records with complete POA data, and accounting for POA in records with missing POA data.

Provider-level indicators are risk-adjusted in a manner similar to that described in Chapters 4 and 5 for area-level indicators. One important difference is that the list of covariates for provider-level indicators differs from indicator to indicator more than those for the area-level indicators. The next section describes the types of data elements that are considered as potential risk-adjusters.

Where possible, the logistic regression models use a generalized estimating equations (GEE) approach to account for correlation at the provider level. When GEE models do not converge during the annual AHRQ QI software update, then multivariable logistic regression models are employed that do not account for that correlation. See Chapter 12 for more details.

Risk-adjustment Covariates

Each risk-adjusted QI (listed in Appendix A) has a set of covariates that have been identified as useful covariates in a logistic regression risk-adjustment model. Chapter 12 describes the variable selection process.

For the PSIs, covariates indicate whether the discharge record meets the technical specification for gender, age, modified Diagnosis-Related Group (MDRG) and at least one of twenty-five (25) co-morbidities that are used as covariates in the risk-adjustment model.

For the IQIs, covariates indicate whether the discharge record meets the technical specification for gender, age, All Patient Refined Diagnosis Related Groups (APR-DRG) and risk-of-mortality subclass (minor, moderate, major, extreme) that are used as covariates in the risk-adjustment model.

For the PDIs, covariates indicate whether the discharge record meets the technical specification for birth weight, age in days, age in years, modified Diagnosis-Related Group (MDRG), at least one of forty-six (46) clinical classification software (CCS) co-morbidities and some indicator-specific risk categories that are used as covariates in the risk-adjustment model.

The Prediction Module

Regardless of whether POA data are ignored or accounted for, and whether the POA data are complete or missing, the provider-level risk adjustment is accomplished using the AHRQ QI Prediction Module software. In the case of accounting for missing POA, it uses an MCMC approach to calculate relevant expected values, as described below. If the user elects to ignore

POA data, or for records where the POA data are complete, then the Prediction Module simply performs scalar multiplication of covariates and coefficients, which is also described below.

Risk Adjustment Parameters CSV File

Each risk-adjusted provider-level indicator has its risk adjustment parameter estimates stored in a comma separated values (.csv) file that accompanies the QI software. Those files have 21 columns of numbers, and Table 10.1 describes their contents and how they are used in the QI software.

Table 10.1 Parameter Estimates CSV Files for Provider-Level Risk Adjustment

Column Number	Column Headings (if any)	Meaning
1-2	Variable Names	List of numbered Z and X covariate names
3-6	[X|Z]	Probabilities used for imputation: P(X=0|Z=0), P(X=0|Z=1), P(X=1|Z=0), P(X=1|Z=1). Note that if these numbers are 1,0,0,1 respectively then the Markov Chain Monte Carlo (MCMC) imputation always imputes X=Z. If the numbers fall between 0 and 1, then sometimes X = Z and sometimes X ≠ Z.
7-9	[P|X], mse, ese	Regression coefficients (col 7) for the model for POA | X, and their standard errors

Column Number	Column Headings (if any)	Meaning
10-12	[Y|Z], mse, ese	Regression coefficients (col 10) for the model for the QI outcome, Y | Z, and their standard errors. This is the model of the outcome that ignores POA. These are the model coefficients that are employed if the user elects to ignore POA. They are multiplied by the Z vector using simple scalar multiplication; the MCMC is not involved in the estimation of this model's parameters or in the computation of the predicted value using this model.
13-15	[Y|X], mse, ese	Regression coefficients (col 13) and their standard errors for the model that predicts Y given that POA was coded and therefore the vector X is observed. These coefficients are not used in any calculations that affect the user's output at this time.
16-18	[Y|X, P=0], mse, ese	Regression coefficients (col 16) and standard errors for the model that predicts Y given that POA was coded and the outcome Y is known to not have been POA. These coefficients are not used in any calculations that affect the user's output at this time.

Column Number	Column Headings (if any)	Meaning
19-21	[Y|X,P=0, MCMC], mse, ese	Regression coefficients (col 19) and standard errors for the model that uses imputed values of POA in the MCMC to predict the probability of the adverse event. These are the coefficents that are typically published in the risk adjustment tables on the AHRQ QI website, and the ones that are used when the user elects to model the effects of missing POA in the data.

CSV File for the Prediction Module

For each risk-adjusted QI, the software prepares a comma separated values (.csv) file that contains one row per discharge record in the population at risk. The csv file has the following columns:

- Y – For purposes of risk-adjustment, Y=T, the discharge level indicator data element; its value is 0 if the record does not meet the numerator definition, and 1 if it does. Records where T is missing are not at risk for the QI, and are excluded from the QI's csv file.
- P – This is the discharge level POA exclusion data element, Q; its value is 0 if Y = 0; its value is 0 if Y=1 and the outcome of interest was not POA; its value is 1 if Y=1 and the outcome of interest was POA or met a POA exclusion criterion. If POA is missing, its value is missing.
- ZCV1 to ZCVn – A set of n observed risk-adjustment covariates, each of which is coded using 0/1 indicator data elements. The number of data elements in the vector (n), varies from QI to QI. The covariate labels for each QI are listed in the Risk-adjustment Coefficient Tables. (See links in the Overview.)
- XCV1 to XCVn – A vector of n **enhanced risk-adjustment covariates**. When POA data are present, the vector of XCV values is exactly equal to the vector of ZCV values. When POA data are missing, the XCV values are missing and are modeled in the MCMC.

Prediction Module Output

The Prediction Module returns a dataset with one row per discharge record, and the following estimated quantities that are used to estimate QI rates. Note that these quantities correspond to the regression models listed in Table 10.1.

- Y – This is the outcome, T. If POA was observed and the outcome was known to be POA, then T would have been set to missing and the record would have been eliminated from this dataset.
- E[Y|Z] – This is the expected value of the outcome using the risk-adjustment model that ignores POA data. All comorbidities are treated as POA for the purpose of APR-DRG assignment and for comorbidity terms in the risk-adjustment models. This is the contribution to the numerator of the expected rate if POA is being ignored.
- E[Y|P=0] – This is the contribution to the numerator of the observed rate if POA is being accounted for. If Y = 1 and P is missing, then this value is 1- E[P|YPXZ]. If P is observed, accounted for, and 0, then this is the numerator contribution for the record. If P is modeled and accounted for, then this is the numerator contribution for the record.
- E[Y|X,P=0]-MCMC – This is the risk-adjusted expected value of the outcome, given X and P=0. If POA data are observed, this is simply the scalar product of the risk adjustment coefficients and the risk adjustment covariates. If P is missing, this quantity is an expected value calculated with the MCMC. This is the contribution to the expected rate numerator if POA is being accounted for. (Note that in the software a small correction is applied to this figure to ensure that the reference population's observed rate equals its expected rate and equals its risk-adjusted rate.)
- E[P|YPXZ] – is the MCMC modeled probability that the outcome was POA. When P is missing, the denominator contribution of the record is 1 - E[P|YPXZ] and the numerator contribution is between 0 and 1- E[P|YPXZ].

The Expected Rate

To recap, the predicted rate for each discharge comes from the Prediction Module and its method of calculation depends on whether POA is present and being accounted for:

- POA Ignored: E[Y|Z]
- POA Present and accounted for: E[Y|X,P=0] – MCMC holds the scalar product of the risk adjustment coefficients to calculate Y|X,P=0 and the X vector.
- POA Absent but accounted for: E[Y|X,P=0] – MCMC holds the expected value of Y, calculated by using an MCMC to approximate the weighted average over all possible combinations of missing data.

$$Expected\ rate\ = \frac{Sum\ of\ the\ predicted\ rate\ for\ each\ discharge}{Count\ of\ discharges\ in\ the\ population\ at\ risk}$$

The Risk-Adjusted Rate

The AHRQ QI use indirect standardization to calculate the risk-adjusted rate.

$$Risk\ Adjusted\ Rate\ =\ Reference\ Population\ Rate\ \ x\ (Observed\ Rate\ /\ Expected\ Rate)$$

Note that for the reference population, the observed rate equals the expected rate equals the reference population rate equals the risk-adjusted rate.

The software estimates the standard error of the risk adjusted rate for each provider or area using a method recommended by Iezzoni and described by Hosmer and Lemeshow that represents the amount of within provider or area variance due to sampling (i.e. as the number of patients per provider or persons per area increases this variance tends to zero). This standard error is used to calculate lower and upper bound 95% confidence intervals around the risk adjusted rate as [risk adjusted rate +/- 1.96 * risk adjusted rate SE] (stored in a data element with a "L" and "U" prefix). (See the note below entitled: Computing the Risk-Adjusted Rate Variance. See also http://qualityindicators.ahrq.gov/Downloads/Resources/Publications/2011/Calculating_Confidence_Intervals_for_the_AHRQ_QI.pdf)

The Smoothed Rate

The formula for the smoothed rate is:

$$Smoothed\ Rate = (Risk\ Adjusted\ Rate \times Shrinkage\ Weight) + Reference\ Population\ Rate * (1 - Shrinkage\ Weight)$$

where

$$Shrinkage\ Weight = \frac{Signal\ Variance}{Signal\ Variance + Noise\ Variance}$$

The noise variance is calculated for each hospital based on the user's data. The signal variance is a parameter calculated from the reference population. Beginning in Version 4.3, there are two signal variance estimates: one using POA and one ignoring POA data.

$$Noise\ Variance\ \hat{\sigma}_h^2 = \left(\frac{\bar{Y}}{n_h E_h}\right)^2 \sum_{i \in A_h} \hat{Y}_i(1 - \hat{Y}_i)$$

$$Signal\ Variance\ \hat{\tau}^2 = \frac{1}{H}\sum_{h=1}^{H}\frac{1}{(\hat{\tau}^2 + \sigma_h^2)^2}\sum_{h=1}^{H}\frac{1}{(\hat{\tau}^2 + \sigma_h^2)^2}\{(RAR_h - \overline{RAR})^2 - \hat{\sigma}_h^2\}$$

where H is the number of hospitals with patents at risk for the QI, $\bar{Y}$ is the observed rate for all discharges in the reference population; $\hat{Y}_i$ is the patient-level predicted probability; and for hospital h, A_h is the collection of patients, n_h is the number of patients, E_h is the expected rate, and RAR_h is the risk-adjusted rate. Note that $\hat{\tau}^2$ appears on both sides of the signal variance equation; it is estimated in an iterative fashion.

For purposes of confidence interval estimation, the **smoothed rate** is assumed to follow a Gamma distribution $G(shape, scale)$ where

$$shape = \frac{(Smoothed\ Rate)^2}{Posterior\ Variance}$$

$$scale = \frac{Posterior\ Variance}{Smoothed\ Rate}$$

$$Posterior\ Variance = Signal\ Variance - (Shrinkage\ Weight * Signal\ Variance)$$

When there is a fixed comparative rate of interest, it is possible to parameterize the smoothed rate posterior probability based on the Gamma distribution and calculate the probability that the smoothed area rate falls below or above the comparative rate that is of interest.

Computing the Risk-Adjusted Rate Variance

Let
- E_i be the expected (predicted) rate;
- n_h be the number of discharges at hospital h; and
- α be the reference population rate (average outcome in the entire sample).

We define the observed rate at hospital h as

$$O_h = \frac{1}{n_h} \sum_{\substack{i \\ h_i=h}} Y_i$$

the expected rate at hospital h as

$$E_h = \frac{1}{n_h} \sum_{\substack{i \\ h_i=h}} \widehat{\Pi}_i$$

and the Risk Adjusted Rate

$$RAR_h = \alpha \times \frac{O_h}{E_h}$$

Using a Taylor expansion for the formula for the variance of the ratio of two stochastic variables R, S

$$Var\left(\frac{R}{S}\right) \cong \frac{E[R]^2}{E[R]^2}\left(\frac{Var(R)}{E[R]^2} - 2\frac{Cov(R,S)}{E[R]E[S]} + \frac{Var(S)}{E[S]^2}\right)$$

we compute the variance on the risk-adjusted rate

$$Var(RAR_h) \cong \alpha^2 \frac{E[O_h]^2}{E_h{}^2} \left(\frac{Var(O_h)}{E[O_h]^2} - 2 \frac{Cov(O_h, E_h)}{E[O_h]E_h} + \frac{Var(E_h)}{E_h{}^2} \right)$$

It is common practice in these calculations to neglect the variance of the predictor $\widehat{\Pi}_i$ (Hosmer & Lemeshow, 1995) and to consider a normal distribution for the Risk Adjusted Rate (only true in the limit $n_h \to \infty$). In this case the above formula simplifies to

$$Var(RAR_h) \cong \alpha^2 \frac{Var(O_h)}{E_h{}^2}$$

and the 95% confidence intervals are calculated assuming normality. However, arguments to support using non-approximate equations (see Luft & Brown, 1993 for an example) for the **RAR** confidence intervals (in particular when n_h is small) may be considered in future releases of the AHRQ QI software.

Computing the Smoothed Rate Variance

The detailed formula for calculating the probability interval around the smoothed rate is described in Chapter 11 on composite measures. Calculation of the smoothed rate is a step in the process of computing the composite measures. However, the basic formula is:

$$Smoothed\ Rate\ = (Risk\ Adjusted\ Rate \times Shrinkage\ Weight)$$
$$+ Reference\ Population\ Rate\ * (1 - Shrinkage\ Weight)$$

$$Shrinkage\ Weight\ = \frac{Signal\ Variance}{Signal\ Variance\ +\ Noise\ Variance}$$

$$Posterior\ Variance\ =\ Signal\ Variance\ - (Shrinkage\ Weight\ *\ Signal\ Variance)$$

The $smoothed\ rate$ to follows a Gamma distribution $G(shape, scale)$ where

$$shape\ = \frac{(Smoothed\ Rate)^2}{Posterior\ Variance}$$

$$scale\ = \frac{Posterior\ Variance}{Smoothed\ Rate}$$

When there is a fixed comparative rate of interest, it is possible to parameterize the posterior probability based on the Gamma distribution and calculate the probability that the smoothed area rate falls below or above the comparative rate that is of interest.

Chapter 11. Estimating Composite Measures

The general methodology for the AHRQ QI **composite measures** might be described as constructing a "composite of composites." The first "composite" is the reliability-adjusted ratio, which is a weighted average of the risk-adjusted ratio and the reference population ratio, where the weight is determined empirically as described below. The second "composite" is a weighted average of the component indicators, where the weights are selected based on the intended use of the composite measure. These weights might be determined empirically or based on non-empirical considerations.

Composite Value

The basic steps for computing the composite are as follows:

Step 1. Compute the risk-adjusted rate and confidence interval

The AHRQ QI risk-adjusted rate and confidence interval are computed as described above.

Step 2. Scale the risk-adjusted rate using the reference population

The levels of the rates vary from indicator to indicator. To combine the component indicators using a common scale, each indicator's risk-adjusted rate is first divided by the reference population rate to yield a ratio. The components of the composite are therefore defined in terms of a ratio to the reference population rate for each indicator. The component indicators are scaled by the reference population rate so that each indicator reflects the degree of deviation from the overall average performance.

Step 3. Compute the reliability-adjusted ratio

The reliability-adjusted ratio is computed as the weighted average of the risk-adjusted ratio and the reference population ratio, where the weights vary from 0 to 1, depending on the degree of reliability for the indicator and provider (or other unit of analysis).

$$Reliability\ Adjusted\ Ratio\ = (risk - adjusted\ ratio\ \times\ weight)$$
$$+\ reference\ population\ ratio\ \times\ (1 - weight)$$

For small providers, the weight is closer to 0. For large providers, the weight is closer to 1. For a given provider, if the denominator is 0, then the weight assigned is 0 (i.e., the reliability-adjusted ratio is the reference population ratio).

Step 4. Select the component weights

The composite measure is the weighted average of the scaled and reliability-adjusted ratios for the component indicators. The AHRQ QI software user has the ability to

modify these weights in the software, either in the SAS code, or in the WinQI user interface. Options for weights include:

Single indicator weight. In this case, the composite is simply the reliability-adjusted ratio for a single indicator. The reference population rate is the same among all providers.

Equal weight. In this case, each component indicator is assigned an identical weight based on the number of indicators. That is, the weight equals 1 divided by the number of indicators in the composite (e.g., $1/11 = 0.0909$).

Numerator weight. A numerator weight is based on the relative frequency of the numerator for each component indicator in the reference population. In general, a numerator weight reflects the amount of harm in the outcome of interest, in this case a potentially preventable adverse event. One might also use weights that reflect the amount of excess mortality or complications associated with the adverse event, or the amount of confidence one has in identifying events (i.e., the positive predictive value).

Denominator weight. A denominator weight is based on the relative frequency of the denominator for each component indicator in the reference population. In general, a denominator weight reflects the degree of risk of experiencing the outcome of interest in a given population. For example, the denominator weight might be based on the demographic composition of a health plan, the employees of a purchaser, a state, an individual hospital, or a single patient.

Factor weight. A factor weight is based on an analysis that assigns each component indicator a weight that reflects the contribution of that indicator to the common variation among the indicators. The component indicator that is most predictive of that common variation is assigned the highest weight. The weights for each composite are based on a principal components factor analysis of the reliability-adjusted ratios.

Note: The IQI composites (IQI 90 and IQI 91) use denominator weights and the PSI and PDI composites (PSI 90 and PDI 19) use numerator weights.

Step 5. Construct the composite measure

The composite measure is the weighted average of the component indicators using the selected weights and the scaled and reliability-adjusted indicators.

$$Composite = (indicator_1\ RAR \times weight_1) + (indicator_2\ RAR \times weight_2) + \cdots + (indicator_N\ RAR \times weight_N)$$

Composite Variance

The probability interval of the composite measure is based on its standard error, which is the square root of the variance. The variance is computed based on the signal variance-covariance matrix and the reliability weights.

Let M be a $1 \times K$ vector of observed quality measures (for a given hospital, suppress hospital subscript for convenience), noisy measures of the true underlying $1 \times K$ quality vector μ, such that:

$$M = \mu + \varepsilon \tag{11.1}$$

where ϵ is a $1 \times K$ noise vector with zero mean and $K \times K$ variance-covariance matrix $Var(\epsilon) = \Omega_\epsilon$. Let the $K \times K$ signal variance-covariance be $Var(\mu) = \Omega_\mu$.

Let $\hat{\mu}$ a $1 \times K$ vector indicating the posterior (filtered) estimate of μ, such that:

$$\hat{\mu} = \mu + \nu \tag{11.2}$$

where ν is a $1 \times K$ vector with zero mean and $K \times K$ variance-covariance matrix $Var(\nu)$ representing the prediction error of the posterior estimates.

The goal is to estimate the variance for any weighted average of the posterior estimates. For a given $1 \times K$ weighting vector w, this is given by:

$$Var(\nu w) = w'Var(\nu)w$$

where w' indicates the transpose of w.

Thus, we need an estimate of $Var(\nu)$. We simplify the calculation by assuming that the filtered estimates are formed in isolation for each measure (univariate) and the estimation error is assumed not correlated across measures (e.g., each measure is based on a different sample of patients or independent patient outcomes).

Forming each measure in isolation, using superscripts $k = 1, \dots, K$ to indicate the measure , we have:

$$\hat{\mu}^k = M^k \hat{\beta}^k = M^k \left(\Omega_\mu^{kk} + \Omega_\epsilon^{kk} \right)^{-1} \Omega_\mu^{kk} \tag{11.3}$$

$$Var(\nu^k) = \Omega_\mu^{kk} \left(1 - \hat{\beta}^k \right) = \Omega_\mu^{kk} - \Omega_\mu^{kk} \left(\Omega_\mu^{kk} + \Omega_\epsilon^{kk} \right)^{-1} \Omega_\mu^{kk} \tag{11.4}$$

where

$$\hat{\beta}^k = \left(\Omega_\mu^{kk} + \Omega_\epsilon^{kk} \right)^{-1} \Omega_\mu^{kk}$$

is the signal ratio of measure k, the reliability of the measure, and is the r-squared which measures how much of the variation in the true measure can be explained with the filtered measure. Note that in this simplified case the filtered estimate is a univariate shrinkage estimator.

For the non-diagonal elements of the covariance matrix (for $j \neq k$):

$$Cov(v^j, v^k) = E\left[(\mu^j - \hat{\mu}^j)(\mu^k - \hat{\mu}^k)\right] \tag{11.5}$$

assuming independent estimation error in the two measures, one gets the following simplified expression (see supplemental notes below for the derivation):

$$Cov(v^j, v^k) = \Omega_\mu^{jk}(1 - \hat{\beta}^j)(1 - \hat{\beta}^k) \tag{11.6}$$

Note that this is just the signal covariance times 1 minus the signal ratio for each of the measures. Thus, if the signal ratio is 0 for each measure, the covariance in the estimates is simply the signal covariance. As either measure gets a stronger signal ratio (becomes more precise), the covariance in the estimates shrinks to 0.

Also note that if one measure is missing, then the signal ratio is simply set to 0. The filtered estimate is shrunk all the way back to the (conditional) mean, and the variance and covariance are as defined above.

The standard error on the composite is the square root of the variance, which is then used to compute the 95% probability interval.

The $composite\ value$ follows a Gamma distribution $G(shape, scale)$ where

$$shape = \frac{(Composite\ Value)^2}{Posterior\ Variance}$$

$$scale = \frac{Posterior\ Variance}{Composite\ Value}$$

A 95% probability interval can be calculated using the inverse CDF of the gamma distribution as

$$lower\ bound = inv\_cdf\_gamma(0.025, shape, scale)$$
$$upper\ bound = inv\_cdf\_gamma(0.975, shape, scale)$$

Supplemental Notes:

To derive formula (11.6), we substitute

$$\hat{\mu} = M\hat{\beta} = (\mu + \epsilon)\hat{\beta}$$

into (11.5) and obtain (for $j \neq k$)

$$Cov(v^j, v^k) = E\left[\left(\mu^j - (\mu^j + \epsilon^j)\hat{\beta}^j\right)\left(\mu^k - (\mu^k + \epsilon^k)\hat{\beta}^k\right)\right] =$$

$$= E\left[\left(\mu^j(1 - \hat{\beta}^j) - \epsilon^j\hat{\beta}^j\right)\left(\mu^k(1 - \hat{\beta}^k) - \epsilon^k\hat{\beta}^k\right)\right] =$$

$$= E\left[\mu^j\mu^k(1 - \hat{\beta}^j)(1 - \hat{\beta}^k) + \mu^k\epsilon^j(1 - \hat{\beta}^k)\hat{\beta}^j + \mu^j\epsilon^k(1 - \hat{\beta}^j)\hat{\beta}^k + \epsilon^j\epsilon^k\hat{\beta}^j\hat{\beta}^k\right] =$$

$$= E\left[\mu^j\mu^k\right](1 - \hat{\beta}^j)(1 - \hat{\beta}^k) + E\left[\mu^k\epsilon^j\right](1 - \hat{\beta}^k)\hat{\beta}^j + E\left[\mu^j\epsilon^k\right](1 - \hat{\beta}^j)\hat{\beta}^k + E\left[\epsilon^j\epsilon^k\right]\hat{\beta}^j\hat{\beta}^k$$

Assuming $E\left[\mu^j\epsilon^k\right] = E\left[\epsilon^j\mu^k\right] = E\left[\epsilon^j\epsilon^k\right] = 0$ and $E[\mu] = 0$, we have

$$Cov(v^j, v^k) = E\left[\mu^j\mu^k\right](1 - \hat{\beta}^j)(1 - \hat{\beta}^k) =$$

$$= Cov(\mu^j, \mu^k)(1 - \hat{\beta}^j)(1 - \hat{\beta}^k) - E\left[\mu^j\right]E\left[\mu^k\right](1 - \hat{\beta}^j)(1 - \hat{\beta}^k) =$$

$$= Cov(\mu^j, \mu^k)(1 - \hat{\beta}^j)(1 - \hat{\beta}^k).$$

QED.

Chapter 12. Software Maintenance – Updating the Reference Population

In order to maintain the scientific acceptability of the AHRQ QI, the indicators are updated annually to reflect the Uniform Bill (UB-04) coding updates effective each year on July 1st, and the International Classification of Diseases- Ninth Revision- Clinical Modification (ICD-9-CM) and Medicare Severity Diagnosis-related Group (MS-DRG) coding updates effective each fiscal year on October 1st of the prior year. In addition, the annual updates include new Census data on the population of counties and new Healthcare Cost and Utilization Project (HCUP) data for the reference population and risk-adjustment covariate coefficients. This chapter describes the methods employed to update the QI reference population and the associated risk-adjustment covariate coefficients.

If the user wishes to account for missing POA, or calculate comparative expected, risk-adjusted, or smoothed rates, then the software makes use of a data frequencies, QI rates, and model coefficients that were estimated using a reference population. In the AHRQ QI software, the reference population consists of all the AHRQ HCUP SID data that are available at the time of the QI update for the year most recently processed. The v4.5 software, released in May 2013, uses 2010 SID data from 44 states for its reference population.

There are several important steps in the annual update process upstream from risk-adjustment and rate estimation. Changes may be made to QI technical specifications for one reason or another. Those must be implemented in the software. ICD-9 (and soon ICD-10) code sets may be modified. Those need to be updated in the software as well. The software is designed to be backward compatible, applying the appropriate sets of codes to older datasets. This work is accomplished before risk-adjustment models are calculated. Those steps are described briefly in Appendix D.

Estimating risk-adjustment models and calculating QI rates in the reference population involves running the QI software on the reference population dataset.

Assemble the Reference Population Dataset

The user should prepare the input dataset according to the software instructions.

- SID data from all available states are appended together and processed in the manner described in Chapter 1.
- The APR-DRG grouper is run on the adult dataset for the purpose of calculating IQIs. The grouper is run once considering all secondary diagnoses to be POA, and run a second time with POA diagnoses removed. The resulting APR-DRG from the former run is part of the Z vector of IQI covariates and the APR-DRG from the latter run is part of the X vector. This difference captures the fact that when POA is ignored, complications are treated like comorbidities for risk adjustment, and the risk of mortality is probably overstated compared to the risk if the patient were classified using only the conditions that were truly present on admission.

- Missing values of SEX are set to "0" (Male) so they will not be dropped by the QI software. (An alternative would be to impute SEX based on other data elements, like diagnosis codes.)
- Beginning in Version 4.3, discharges from non-community hospitals are deleted from the adult and pediatric analysis data. Community hospitals, as defined by American Hospital Association (AHA), include "all nonfederal, short-term, general and other specialty hospitals, excluding hospital units of institutions." Included among community hospitals are academic medical centers and specialty hospitals such as obstetrics, gynecology, ear nose throat, short-term rehabilitation, orthopedic, and pediatric hospitals. Non-community hospitals include federal hospitals (Veterans Administration, Department of Defense, and Indian Health Service hospitals), long-term hospitals, psychiatric hospitals, alcohol/chemical dependency treatment facilities and hospitals units within institutions such as prisons. (See http://hcup-us.ahrq.gov/db/state/siddist/siddist_hospital.jsp#2008).
- No other edits are applied to the State Inpatient Databases (SID).

Calculate Discharge Level Flags

The discharge level T and Q flags are calculated as described in Chapters 3-8.

Estimate Risk-adjustment Models

There are several steps involved in estimating the QI risk-adjustment models.

1. Construct candidate covariates
2. Select model covariates
3. Estimate the models
4. Evaluate the models

Construct Candidate Covariates for Risk-adjustment

For the PSIs, potential risk-adjustment covariates indicate whether the discharge record meets the technical specification for gender, age, modified Diagnosis-Related Group (MDRG) and at least one of twenty-five (25) co-morbidities that are used as covariates in the risk-adjustment model.

For the IQIs, potential risk-adjustment covariates indicate whether the discharge record meets the technical specification for gender, age, All Patient Refined Diagnosis Related Groups (APR-DRG) and risk-of-mortality subclass (minor, moderate, major, extreme) that are used as covariates in the risk-adjustment model.

For the PDIs, potential risk-adjustment covariates indicate whether the discharge record meets the technical specification for birth weight, age in days, age in years, modified Diagnosis-Related Group (MDRG), at least one of forty-six (46) clinical classification software (CCS) co-morbidities and some indicator-specific risk categories that are used as covariates in the risk-adjustment model.

For the PQIs, potential risk-adjustment indicate whether the discharge record meets the technical specification for gender, age in 5-year groups and poverty category that are used as covariates in the risk-adjustment model.

Covariates are coded for each discharge record based on the data elements, data values, and logic described in the technical specifications and the appendices of the risk-adjustment coefficient tables. For a given covariate, if the discharge meets the technical specification for that covariate a value of "1" is assigned to the discharge level covariate data element. Otherwise a value of "0" is assigned to the discharge level covariate data element. For discharge records with POA data, the software creates a second set of data elements (i.e., the **Z** data elements used in the modeling described in Appendix C) that do not consider secondary diagnosis codes that are not present on admission when assigning comorbidity or risk-of-mortality flags.

Select Model Covariates

For the provider level indicators, each module has a standard set of covariates grouped into four categories: demographics, severity of illness, comorbidities and other (See Appendix B). The standard set is tailored to each indicator to create a parsimonious set of covariates for each indicator. Based on cross tabulations between each covariate and the outcome of interest, only those covariates with at least 30 cases with the outcome of interest are retained. For categories that are mutually exclusive, covariates with fewer than 30 cases are pooled into the next covariate along the risk gradient. For example, age 70 to 74 is combined with age 65 to 69, or risk of mortality subclass 3 is combined with subclass 2. For categories with no risk gradient, covariates are pooled into broader covariates. For example, MS-DRGs are pooled into MDCs.

The omitted covariate within mutually exclusive categories is the reference group for those categories. Reference categories are usually 1) the most common and/or 2) the least risk. The choice of omitted reference category does affect how one might use the model coefficients or odds ratios in an English language sentence, but it does not affect predicted probabilities or model performance.

Once the preliminary multivariable model is specified, it is estimated on the adult or pediatric analytic data, as appropriate. Only those covariates that are statistically significant (p<.05) are retained. For covariates that are not statistically significant in categories that are mutually exclusive, the pooling process described above is repeated until a complete, parsimonious model is specified.

For the area level indicators, the models use the complete set of covariates for gender, age in 5-year age groups, an interaction with gender * age. There is also an optional set of covariates for poverty category based on the county of patient residence.

The final multivariable model parameters are published on the AHRQ website in Risk Adjustment Coefficient Tables. (See links in the Overview chapter.)

Estimate the Models

For models where POA is ignored, the AHRQ QI Analysis Module fits a logistic regression model that can be used to calculate the expected value of Y given Z. When possible, the Analysis Module estimates a Generalized Estimating Equations (GEE) model to properly account for within-hospital correlation. If the GEE model does not converge then the Analysis Module fits a more naïve logistic regression model that ignores that extra correlation. Whether the model is a GEE or not may be inferred by the .CSV filename for the QI. For example, PSI 04 uses a file named gee_pps04_RegressionAnalysisGee.csv. The 'Gee' near the end of the filename indicates that the Analysis Module used a GEE model. On the other hand, PSI 03 uses gee_pps03_RegressionAnalysis.csv. The missing 'Gee' in the filename tells the user that the model is not a GEE.

When POA data is accounted for, the Analysis Module uses Markov Chain Monte Carlo (MCMC) methods to fit several models.
1. It estimates coefficients to predict the expected value of Y given X, P=0 for records where POA is observed.
2. It estimates coefficients for a model for the expected value of the discharge level POA exclusion data element (P) when POA is missing.
3. And it estimates coefficients for the Prediction Module to calculate the expected value of the outcome, Y given P=0 and the observed data, for missing POA.

Computational details are described in Appendix C. The Analysis Module generates a comma-separated values (.csv) file for each risk-adjusted QI that the Prediction Module uses when applying the models to a user's dataset. These files are part of the AHRQ QI software package that is made available on the AHRQ website. See Table 10.1 for a description of the contents of those .csv files.

Calculate Rates

After the new risk-adjustment models are fit, the Prediction Module is run on the data to calculate expected values for P and Y so that observed rates may be calculated for the reference population. Reference population rates and signal variances are calculated both ignoring POA altogether and accounting for missing POA. These rates are stored in .TXT files that are part of the SAS AHRQ QI software package. The rates and variances are entered directly into WinQI program code, and do not appear as separate files in the WinQI package. Updating the risk-adjustment .CSV files and the population rate and signal variance .TXT files are a substantial milestone in the annual update process.

Update Software

In addition to the aforementioned .CSV and .TXT files, the AHRQ QI software must be updated to generate and combine the correct set of covariate variables for each risk adjusted QI. These covariates are generated in the so-called ~SAS3.SAS programs, and whenever the list of covariates in a risk-adjustment model changes, that code must be changed accordingly. Note that

it possible to fit new risk-adjustment model coefficients without updating the list of covariates. In that case, the ~SAS3.SAS program may need very little revision, if any.

Evaluate Models

Two desirable qualities of risk-adjustment models are that they discriminate well between discharge records that experience the outcome of interest and those that do not, and that they be well calibrated, predicting that the outcome will occur in approximately the right proportions, over a wide range of predicted probability.

Discrimination

One common scalar measure of logistic regression discrimination is the c-statistic. This may be calculated by computing the area under the Receiver Operating Characteristic (ROC) curve. Alternatively, it may be calculated by forming every possible pair in a dataset where one member of the pair is a discharge with the outcome of interest and the other member is a discharge without the outcome of interest. The c-statistic is the proportion of such pairs where the predicted probability for the member with the outcome of interest is higher than the predicted probability for the other record. Pairs with tied probabilities each contribute one-half to the numerator and denominator of the proportion. A c-statistic of 0.5 is the same discrimination performance as flipping a coin. A c-statistic of 1.0 indicates perfect discrimination. Hosmer and Lemeshow (2000, p.162) have coined three widely adopted labels for discrimination performance based on the c-statistic:

- $0.70 \leq$ c-statistic < 0.80 indicates **acceptable discrimination**
- $0.80 \leq$ c-statistic < 0.90 indicates **excellent discrimination**
- $0.90 \leq$ c-statistic indicates **outstanding discrimination**

The c-statistics for the AHRQ QI risk-adjustment models are published in on the AHRQ QI website in the Risk Adjustment Coefficient Tables. (See links in the Overview chapter.)

Calibration

Calibration is often described by sorting the dataset based on predicted probability and dividing it into deciles of risk. It is meaningful to compare the proportion of records in each decile that were observed to have the outcome of interest with the proportion of records that are expected to have that outcome. Hosmer and Lemeshow's logistic regression goodness-of-fit statistic (1980) is based on a chi-square test statistic calculated using the observed and expected counts across the ten deciles. Unfortunately that statistic always rejects the null hypothesis good calibration when the number of observations is large, as is the case with the AHRQ QI reference population. Although the test statistic and its p-value are not informative for these models, the models are sometimes characterized by publishing or plotting the observed and expected counts in the ten deciles of risk.

Chapter 13. Software Maintenance – Other Updates

The AHRQ QI software uses several other files or datasets that are updated periodically. This chapter lists those, and either describes the methods used to generate them, or references other stand-alone documents that do so.

Population Reference File

The file that contains stratified population counts by county and metropolitan statistical area is crucial for calculating the denominators of the area-level measures. That file and the method to construct it are described in a file entitled *AHRQ QI Population File Documentation* on the AHRQ website: (http://www.qualityindicators.ahrq.gov/software/SAS.aspx)

Condition-Specific Population File

The AHRQ QI program is conducting current methods research into options for estimating condition-specific denominators. At this time, the only condition-specific denominators are related to diabetes. There is a file name QICTYC13.TXT that is included with the v4.5 AHRQ QI module. That file was calculated using the following steps:

1. Use the population reference file to estimate 2013 population for each combination of state and age category. In the QI software, age categories are coded as:

   VALUE AGECCAT
   0 = '00 to 17'
   1 = '18 to 44'
   2 = '45 to 64'
   3 = '65 to 74'
   4 = '75+'

2. Obtain the latest diabetes prevalence figures broken out by state and age category from the Centers for Disease Control at
   http://www.statehealthfacts.org/comparebar.jsp?ind=73&cat=2 .

3. Apply the diabetes proportions to the populations, to estimate the number of adults in each state in each of the four age categories who would have diabetes in 2013. (Population data from 2013 and proportion data from 2010.)

References

Dempster AP; Laird NM; Rubin DB (1977). Maximum Likelihood from Incomplete Data via the EM Algorithm. *Journal of the Royal Statistical Society, Series B (Methodological)* 39 (1): 1–38.

Dimick JB, Staiger DO, Birkmeyer JD. (2006) Are Mortality Rates for Different Operations Related? Implications for measuring the quality of noncardiac surgery. Med Care Aug;44(8):774-8

Fitzmaurice GM, Laird NM and Ware JH. *Applied Longitudinal Analysis*. John Wiley & Sons, Inc., Thirteenth edition, 2004.

Hammersley JM & Handscomb DC, (1964) *Monte Carlo Methods*. Methuen & Co Ltd, London.

Hosmer DW & Lemeshow S. (2000) *Applied Logistic Regression*, 2nd ed., Wiley, Inc., New York.

Hosmer DW & Lemeshow S. (1980) A goodness-of-fit test for the multiple logistic regression model. *Communications in Statistics*, A10, 1043-1069.

Hosmer DW & Lemeshow S. (1995). Confidence interval estimates of an index of quality performance based on logistic regression. *Statistics in Medicine*, Vol 14, Issue 19, 2161-2172

Iezzoni, Lisa, ed. (2013) *Risk Adjustment for Measuring Health Care Outcomes*, 4th ed. Health Administration Press, Chicago.

Liang KY & Zeger SL. Longitudinal Data Analysis Using Generalized Linear Models. *Biometrika*, 73(1):13-22, April 1986

Little RJA & Rubin DB (2002). *Statistical Analysis with Missing Data*. Wiley, Hoboken, NJ.

Luft, HS & Brown, BW Jr. (1993). Calculating the Probability of Rare Events: Why Settle for an Approximation? *Health Services Research* 28:4, 419-439

McClellan M & Staiger D. (1999) The quality of health care providers. Cambridge, MA: National Bureau of Economic Research. NBER Working Paper #7327. Available at: http://www.nber.org/papers/w7327.

Morris, CN (1983) Parametric Empirical Bayes Inference: Theory and Applications, *Journal of the American Statistical Association*, Vol. 78, No. 381 (Mar., 1983), pp. 47-55.

Press WH., Teukolsky SA, Vetterling WT, Flannery BP, (1992) *Numerical recipes in C (2nd ed.): the art of scientific computing*. Cambridge University Press New York, NY, USA.

Robert CP & Casella G. (2004). *Monte Carlo Statistical Methods*, 2nd Ed. Springer, New York, NY.

Ripley BD, (1987) *Stochastic Simulation*. New York: Wiley & Sons, NY

Rubinstein BY, (1981) *Simulation and the Monte Carlo Method*. Wiley & Sons., NY

Zeger SL & Liang KY. Longitudinal Data Analysis for Discrete and Continuous Outcomes. *Biometrics*, 42(1):121-130, March 1986.

Appendix A. Table of AHRQ QI Risk-adjustment / POA

Appendix Table A.1 denotes which AHRQ QI are risk-adjusted and which use POA data and for what purpose (i.e., for technical specifications or risk-adjustment).

An entry of 'AM/PM' in the column entitled 'Calculate Risk Adjusted Rate' means that the indicator is a provider-level indicator and its risk adjustment model is estimated using the Analysis Module (AM) described in Appendix C. The risk adjustment calculations are carried out using the Prediction Module (PM), also described in Appendix C. An entry of 'SAS' in the column entitled 'Calculate Risk Adjusted Rate' means that the indicator is an area-level indicator and its risk adjustment model is estimated using PROC LOGISTIC in SAS.

An X in the column marked 'Technical Specifications' means that the indicator has an exclusion that explicitly references the POA data element. A QI software user may tell the software to ignore the DX_POA data element for purposes of risk-adjustment, but the software will never ignore DX_POA if it is referenced in the technical specifications for the purpose of defining exclusions, and if the data element is present in the discharge record. When a discharge record is missing the DX_POA data element, the Q flag will be set to "missing (.)" and the software will either ignore it (if USEPOA=0) or impute it (if USEPOA=1).

An X in the column marked 'Risk Adjustment' means that the risk adjustment logistic regression model includes covariates for conditions that are comorbidities if they are POA and are complications if they are not POA. When the discharge record is missing the DX_POA data element, the risk adjustment model will:
- Treat the covariates as comorbidities if the user elects to ignore POA data
- Model the missing POA data via the Markov Chain Monte Carlo (MCMC) if the user elects to account for POA data.

See Chapter 10 for additional details on risk adjustment.

Appendix Table A.1. AHRQ QI Risk-adjustment and Uses of POA

	Calculate Risk Adjusted Rate	Use POA?	
		Technical Specifications	Risk Adjustment
IQI 01 - Esophageal Resection Volume			
IQI 02 - Pancreatic Resection Volume			
IQI 04 - Abdominal Aortic Aneurysm (AAA) Repair Volume			

	Calculate Risk Adjusted Rate	Use POA?	
		Technical Specifications	Risk Adjustment
IQI 05 - Coronary Artery Bypass Graft (CABG) Volume			
IQI 06 - Percutaneous Coronary Intervention (PCI) Volume			
IQI 07 - Carotid Endarterectomy Volume			
IQI 08 - Esophageal Resection Mortality Rate	AM/PM		X
IQI 09 - Pancreatic Resection Mortality Rate	AM/PM		X
IQI 11 - AAA Repair Mortality Rate	AM/PM		X
IQI 12 - CABG Mortality Rate	AM/PM		X
IQI 13 - Craniotomy Mortality Rate	AM/PM		X
IQI 14 - Hip Replacement Mortality Rate	AM/PM		X
IQI 15 - Acute Myocardial Infarction (AMI) Mortality Rate	AM/PM		X
IQI 16 - Heart Failure Mortality Rate	AM/PM		X
IQI 17 - Acute Stroke Mortality Rate	AM/PM		X
IQI 18 - Gastrointestinal Hemorrhage Mortality Rate	AM/PM		X
IQI 19 - Hip Fracture Mortality Rate	AM/PM		X
IQI 20 - Pneumonia Mortality Rate	AM/PM		X
IQI 21 - Cesarean Delivery Rate, Uncomplicated			
IQI 22 - Vaginal Birth After Cesarean (VBAC) Delivery Rate, Uncomplicated			
IQI 23 - Laparoscopic Cholecystectomy Rate			
IQI 24 - Incidental Appendectomy in the Elderly Rate			
IQI 25 - Bi-lateral Cardiac Catheterization Rate			
IQI 26 - Coronary Artery Bypass Graft (CABG) Rate	SAS		
IQI 27 - Percutaneous Coronary Intervention (PCI) Rate	SAS		
IQI 28 – Hysterectomy Rate	SAS		
IQI 29 - Laminectomy or Spinal Fusion Rate	SAS		
IQI 30 - Percutaneous Coronary Intervention (PCI) Mortality Rate	AM/PM		X
IQI 31 - Carotid Endarterectomy Mortality Rate	AM/PM		X

	Calculate Risk Adjusted Rate	Use POA?	
		Technical Specifications	Risk Adjustment
IQI 32 - Acute Myocardial Infarction (AMI) Mortality Rate, Without Transfer Cases	AM/PM		X
IQI 33 - Primary Cesarean Delivery Rate, Uncomplicated			
IQI 34 - Vaginal Birth After Cesarean (VBAC) Rate, All			
PSI 02 - Death Rate in Low-Mortality Diagnosis Related Groups (DRGs)	AM/PM		X
PSI 03 - Pressure Ulcer Rate	AM/PM	X	X
PSI 04 - Death Rate among Surgical Inpatients with Serious Treatable Complications	AM/PM		X
PSI 05 - Retained Surgical Item or Unretrieved Device Fragment Count		X	
PSI 06 - Iatrogenic Pneumothorax Rate	AM/PM	X	X
PSI 07 - Central Venous Catheter-Related Blood Stream Infection Rate	AM/PM	X	X
PSI 08 - Postoperative Hip Fracture Rate	AM/PM	X	X
PSI 09 - Perioperative Hemorrhage or Hematoma Rate	AM/PM	X	X
PSI 10 - Postoperative Physiologic and Metabolic Derangement Rate	AM/PM	X	X
PSI 11 - Postoperative Respiratory Failure Rate	AM/PM	X	X
PSI 12 - Perioperative Pulmonary Embolism or Deep Vein Thrombosis Rate	AM/PM	X	X
PSI 13 - Postoperative Sepsis Rate	AM/PM	X	X
PSI 14 - Postoperative Wound Dehiscence Rate	AM/PM		X
PSI 15 - Accidental Puncture or Laceration Rate	AM/PM	X	X
PSI 16 - Transfusion Reaction Count		X	
PSI 17 - Birth Trauma Rate – Injury to Neonate			
PSI 18 - Obstetric Trauma Rate – Vaginal Delivery With Instrument			
PSI 19 - Obstetric Trauma Rate – Vaginal Delivery Without Instrument			
PDI 01 - Accidental Puncture or Laceration Rate	AM/PM	X	X
PDI 02 - Pressure Ulcer Rate	AM/PM	X	X
PDI 03 - Retained Surgical Item or Unretrieved Device Fragment Count		X	
PDI 05 - Iatrogenic Pneumothorax Rate	AM/PM	X	X

	Calculate Risk Adjusted Rate	Use POA?	
		Technical Specifications	Risk Adjustment
PDI 06 - RACHS-1 Pediatric Heart Surgery Mortality Rate	AM/PM		X
PDI 07 - RACHS-1 Pediatric Heart Surgery Volume			
PDI 08 - Perioperative Hemorrhage or Hematoma Rate	AM/PM	X	X
PDI 09 - Postoperative Respiratory Failure Rate	AM/PM	X	X
PDI 10 - Postoperative Sepsis Rate	AM/PM	X	X
PDI 11 - Postoperative Wound Dehiscence Rate			X
PDI 12 - Central Venous Catheter-Related Blood Stream Infection Rate	AM/PM	X	X
PDI 13 - Transfusion Reaction Count		X	
PDI 14 – Asthma Admission Rate	SAS		
PDI 15 – Diabetes Short-Term Complications Admission Rate	SAS		
PDI 16 – Gastroenteritis Admission Rate	SAS		
PDI 17 – Perforated Appendix Admission Rate	SAS		
PDI 18 – Urinary Tract Infection Admission Rate	SAS		
NQI 01 - Neonatal Iatrogenic Pneumothorax Rate		X	X
NQI 02 - Neonatal Mortality Rate	AM/PM		X
NQI 03 - Neotnatal Blood Stream Infection Rate	AM/PM	X	X
PQI 01 - Diabetes Short-Term Complications Admission Rate	SAS		
PQI 02 - Perforated Appendix Admission Rate	SAS		
PQI 03 - Diabetes Long-Term Complications Admission Rate	SAS		
PQI 05 - Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate	SAS		
PQI 07 - Hypertension Admission Rate	SAS		
PQI 08 - Heart Failure Admission Rate	SAS		
PQI 09 - Low Birth Weight Rate	SAS		
PQI 10 - Dehydration Admission Rate	SAS		
PQI 11 - Bacterial Pneumonia Admission Rate	SAS		

	Calculate Risk Adjusted Rate	Use POA?	
		Technical Specifications	Risk Adjustment
PQI 12 - Urinary Tract Infection Admission Rate	SAS		
PQI 13 - Angina Without Procedure Admission Rate	SAS		
PQI 14 - Uncontrolled Diabetes Admission Rate	SAS		
PQI 15 - Asthma in Younger Adults Admission Rate	SAS		
PQI 16 - Lower-Extremity Amputation Among Patients With Diabetes Rate	SAS		

IQI = Inpatient Quality Indicator; PSI = Patient Safety Indicator; PDI = Pediatric Quality Indicator; NQI = Neonatal Quality Indicator

Appendix B. Table of AHRQ QI Provider-Level Risk-adjustment Covariates

The categories highlighted in blue are mutually exclusive and exhaustive, meaning that every discharge is assigned a value of "1" for one and only one covariate and there must be an omitted covariate (usually the most common or the least risk). If covariates within a highlighted category are excluded because N<30 or p<0.05 then the covariate is combined with another along the risk gradient. For example, combine birth weight 500-999g with 1000-1499g, age 18-24 with age 25-29 or combine ROM subclass "4" with ROM subclass "3".

Appendix Table B.1 Table of AHRQ QI Risk-adjustment Covariates for Provider Level Indicators

Category	Mutually Exclusive	IQI	PSI	PDI	NQI
Demographics		Sex	Sex	Sex	Sex
		Age (5-year age groups)	Age (5-year age groups)	Birth weight (500g groups) Age in days (90 days to 1 year) Age in years (1 year and above)	Birth weight (500g groups)
Severity of Illness	DRGs pool into MDCs	APR-DRG Major Diagnosis Categories (MDC)	Modified MS-DRG* Major Diagnosis Categories (MDC)	Modified MS-DRG* Major Diagnosis Categories (MDC)	Modified MS-DRG* Major Diagnosis Categories (MDC)
Comorbidities		APR-DRG Risk of mortality subclass (1 – minor; 2 - moderate; 3 – major; 4 – extreme)	AHRQ Comorbidities	AHRQ Clinical Classification Software	Congenital anomalies
Other		Transfer-in status Point of Origin status	Transfer-in status Point of Origin status Days to Procedure status	Transfer-in status Point of Origin status Days to Procedure status Indicator-specific risk stratifiers	Transfer-in status Point of Origin status Days to Procedure status

* Prior to October 1, 2007 use CMS-DRGs; highlighted categories are mutually exclusive with an omitted covariate.

Appendix C. Provider-Level Risk Adjustment - Detailed Methods

This appendix gives some statistical detail about how the provider-level risk adjustment models are fit and how they account for missing POA data. The Analysis Module is described first. It is used annually to fit models that are incorporated into updated AHRQ QI software. The Prediction Module is described second. It is called by the SASP3.SAS program for the IQI, PSI, and PDI indicators.

The Analysis Module

The purpose of the Analysis Module (AM) is to fit a set of regression coefficients using the data of the reference population. The input dataset is expected to have variables corresponding to the outcome of interest at discharge Y, one or more indicators of an outcome of interest present on admission (POA indicators P), and covariate vectors X and Z containing demographic, condition, co-morbidity, and potentially any other information, used as explanatory variables. The covariate X is considered an improved measurement of the quantities measured by the covariate Z.

Conceptually, there could be many ways in which X might improve Z. At this time, those improvements are the following:

1. In the Z vector, the discharge level POA exclusion data element is sometimes observed and sometimes missing. In the X vector, the missing values are modeled, when missing.
2. The Z vector uses all secondary diagnoses to assign APR-DRG for the IQI, but the X vector uses the DX_POA data element (observed or modeled) to take into account only the diagnoses that were present on admission.
3. The Z vector considers all comorbidities to be complications for the purpose of calculating the observed rate and all to be comorbidities for the purpose of risk-adjustment. The X vector uses the DX_POA data element (observed or modeled) to distinguish between complications and comorbidities.

The outcome Y and covariate Z variables are never missing, but elements of the covariate X and values of the present-on-admission indicators P can be missing. The dataset also contains a hospital identification number and a record identification number (a key identifying unique discharge records.)

Missing Data

Missing data are handled by integrating the likelihood over all the possible values of the missing variables. This technique for dealing with missing data is well-established in the statistical literature. Little and Rubin (2002) devote several chapters to analyzing missing data by integrating over the distribution, or likelihood, of the missing data. When the integral (or sum) of

the likelihood cannot be feasibly calculated, an alternative method known as the Expectation-Maximization (EM) algorithm can be used. The EM algorithm was developed in the 1970s by Dempster, Laird and Rubin (1977) to solve MLE equations in the presence of missing data. More recently, related methods based on Markov chain Monte Carlo (MCMC) algorithms have become popular for dealing with missing and censored data. MCMC algorithms include methods such as Metropolis-Hastings or Gibbs sampling which are widely used in Bayesian statistical analysis (Robert and Casella, 2004). MCMC methods are general and robust, and can be applied to a large variety of models. These methods are based on simulation, and they produce results that are approximations of the value being estimated. The approximation error can be controlled by the number of MCMC steps used in the simulation. In particular, as the number of MCMC steps goes to infinity, the approximation error goes to zero. We will give detail about the MCMC used in the Analysis and Prediction Modules in the following sections.

Data Notation

Here is the general statistical notation used to describe the model:

- h_i is the hospital associated with the ith record (patient);
- Y_i is a binary variable indicating the outcome of interest at hospital discharge associated with the ith record. $Y_i = 1$ if the patient experiences the outcome of interest, $Y_i = 0$ otherwise;
- P_i is a binary variable indicating whether an outcome of interest is present on admission. Notice that if $Y_i = 0$, then it is assumed that $P_i = 0$. If more than one POA indicators are present, the maximum value is considered;
- $\mathbf{Z}_i$ is a vector of binary explanatory variables associated with the ith record;
- $\mathbf{X}_i$ is a vector of improved binary explanatory variables associated with the ith record.

In the following formulae i indicates the record index while k indicates the component index of the covariate vectors. For example, indicating with K the number of components of the covariate vectors, then $\mathbf{X}_i \in R^K$ indicates the vector of covariates associated with the ith record, X_{ik} indicates the value of the kth covariate associated with the ith record, while X_k without the record index is used to indicate the kth covariate of a generic covariate vector.

The description of the Analysis Module proceeds with a brief outline of the MCMC calculations to account for missing POA data. The outline is a conceptual simplified description using formulae without explicit posterior parameters. The sections after the outline give additional detail

Outline of the MCMC algorithm to fit $[Y|X, P = 0]$ on data sets with missing data.

Before MCMC begins:
- Fit 2 by 2 binary tables $[X_k|Z_k]$ using observations where both X_k and Z_k are measured;
- Fit logistic regression model for $[P|X]$ using observations with complete data.

MCMC loop:

1. Build joint distribution $[Y, X, P, Z] = [Y|X, P][P|X][X|Z]$;
2. Use full conditional distribution $[X|Y, P, Z] = [Y, X, P, Z]/[Y, P, Z]$ to draw missing Xs (Gibbs Sampling); write the drawn missing X values to the chain. This values can be referred to as *imputed data*;
3. Use full conditional distribution $[P|Y, X, Z] = [Y, X, P, Z]/[Y, X, Z]$ to draw missing Ps (Gibbs Sampling); write the drawn missing P values to the chain. This values can be referred to as *imputed data*;
4. Fit logistic model $[Y|X, P = 0]$ using the available data, where measured, and the last imputed data, where X and P are missing (see 2. and 3.) Use either MLE or GEE (depending on the user's choice) to fit the model and obtain the estimated $\hat{\beta}$ and the estimated $\text{var}(\hat{\beta})$;
5. Draw a new set of regression coefficients β from a multivariate normal distribution with mean $\hat{\beta}$ and variance $\text{var}(\hat{\beta})$; write the drawn β values to the chain.
6. Go to 1 until total iterations equals that specified in the input XML file.

Note: the probability distribution density $[Y|X, P]$ is equal to the model probability distribution density $[Y|X, P = 0]$ when $P = 0$; and it is equal to the marginal probability $[Y = 1]$ when $P = 1$.

During the MCMC loop:
- Drop burn-in entries, as specified in input XML file.
- Thin the chain, as specified in input XML file.

After the loop:
- Estimate the regression coefficients $\hat{\beta}_{MCMC}$ and their standard error by calculating the expected values (mean) and the standard deviation of the components of the MCMC chain representing the regression coefficients β associated with the model $[Y|X, P = 0]$.

More Detailed Statistical Model
The main goal of the model is the estimation of Y given X and $P = 0$. We assume the "conditional" binomial model

$$[Y|X, P; \beta_Y] = \prod_i \left(\pi_{Y,i}^{1-P_i}\right)^{Y_i} \left(1 - \pi_{Y,i}^{1-P_i}\right)^{1-Y_i}$$ (C.1)

with logistic link

$$\text{logit}(\pi_{Y,i}) = X_i \beta_Y$$

Another component of the model is the estimation of P given X, which is used to predict P when that value is missing. We assume the binomial model

$$[P|\boldsymbol{X};\boldsymbol{\beta}_P] = \prod_i \pi_{P,i}{}^{Y_i}(1-\pi_{P,i})^{1-Y_i} \tag{C.2}$$

with logistic link

$$\text{logit}(\pi_{P,i}) = X_i\boldsymbol{\beta}_P$$

Furthermore, we estimate $\boldsymbol{X}$ when elements of that vector are missing by using the information contained in $\boldsymbol{Z}$. Since both $\boldsymbol{X}$ and $\boldsymbol{Z}$ contain binary variables, we model $[\boldsymbol{X}|\boldsymbol{Z}]$ using the two vectors of probabilities

$$\pi_{X,k}(0) = \Pr[X_k = 1|Z_k = 0]$$

$$\pi_{X,k}(1) = \Pr[X_k = 1|Z_k = 1]$$

and the likelihood

$$[\boldsymbol{X}|\boldsymbol{Z};\boldsymbol{\pi}_X] = \prod_{ik} \pi_{X,ik}^{X_{ik}}\left(1-\pi_{X,ik}\right)^{1-X_{ik}} \tag{C.3}$$

where

$$\pi_{X,ik} = \pi_{X,k}(Z_{ik})$$

Combining equations (C.1), (C.2) and (C.3), we obtain the likelihood

$$L(Y,\boldsymbol{X},P,\boldsymbol{Z};\boldsymbol{\beta}_Y,\boldsymbol{\beta}_P,\boldsymbol{\pi}_X) = [Y,\boldsymbol{X},P|\boldsymbol{Z};\boldsymbol{\beta}_Y,\boldsymbol{\beta}_P,\boldsymbol{\pi}_X] =$$

$$= [Y|\boldsymbol{X},P;\boldsymbol{\beta}_Y] \times [P|\boldsymbol{X};\boldsymbol{\beta}_P] \times [\boldsymbol{X}|\boldsymbol{Z};\boldsymbol{\pi}_X] =$$

$$= \prod_i \left(\pi_{Y,i}^{1-P_i}\right)^{Y_i}\left(1-\pi_{Y,i}^{1-P_i}\right)^{1-Y_i}\pi_{P,i}{}^{P_i}\left(1-\pi_{P,i}\right)^{1-P_i}\pi_{X,ik}^{X_{ik}}\left(1-\pi_{X,ik}\right)^{1-X_{ik}} \tag{C.4}$$

Likelihood (C.4) is written as a distribution of $Y,\boldsymbol{X},P$ given $\boldsymbol{Z}$. In order to write the model for missing $\boldsymbol{X}$ and P, we introduce the "true" variables $\boldsymbol{X}'$, P' (to which we refer as "imputed") and add the data model

$$[X'_{ik}|X_{ik}] = \begin{cases} X_{ik} & X_{ik}\text{ is measured} \\ 1/2 & \text{otherwise} \end{cases} \tag{C.5}$$

$$[P'_i|P_i] = \begin{cases} P_i & P_i\text{ is measured} \\ 1/2 & \text{otherwise} \end{cases} \tag{C.6}$$

The data model acts as a family of indicator variables, fixing the "imputed" variable to the measured value if the data are not missing. The likelihood integrated (summed) over the missing data can now be written as

$$\tilde{L}(Y,\boldsymbol{X},P,\boldsymbol{Z};\boldsymbol{\beta}_Y,\boldsymbol{\beta}_P,\boldsymbol{\pi}_X) = \sum_{P',X'} L(Y,\boldsymbol{X}',P',\boldsymbol{Z};\boldsymbol{\beta}_Y,\boldsymbol{\beta}_P,\boldsymbol{\pi}_X) \times [\boldsymbol{X}'|\boldsymbol{X}] \times [P'|P] =$$

$$= \sum_{P',X'}[Y|X',P';\boldsymbol{\beta}_Y] \times [P'|X';\boldsymbol{\beta}_P] \times [X'|Z;\boldsymbol{\pi}_X] \times [X'|X] \times [P'|P] \tag{C.7}$$

Since the distribution inside the sum is the product of distributions for each record i, (see equation C.4), using the distributive property we can write

$$\tilde{L}(Y,X,P,Z;\boldsymbol{\beta}_Y,\boldsymbol{\beta}_P,\boldsymbol{\pi}_X) =$$

$$= \prod_i \left\{ \sum_{P'_i,X'_i}[Y_i|X'_i,P'_i;\boldsymbol{\beta}_Y] \times [P'_i|X'_i;\boldsymbol{\beta}_P] \times [X'_i|Z_i;\boldsymbol{\pi}_X] \times [X'_i|X_i] \times [P'_i|P_i] \right\}$$

As the number of components of the covariate vector X increases, to compute the above sum deterministically becomes unfeasible. For example, if X_i has 30 components, then the number of sums for every record i with missing X_i data is $2^{30} > 10^9$, and if the number of components is 100, then the number of sums becomes $2^{100} > 10^{30}$. The AM and PM employ alternative methods for integrating (summing) the likelihood over the missing data.

Model Fitting Approach using MCMC

To fit the $\boldsymbol{\beta}_Y$ coefficients using the *marginal* likelihood (C.7) (that is, the likelihood integrated over the missing data), we use Gibbs sampling, which is a standard MCMC technique (see Robert and Casella, 2004).

After reading the data, the AM fits the coefficients $\widehat{\boldsymbol{\beta}}_P$ and $\widehat{\boldsymbol{\pi}}_X$ using only the records in the dataset that have no missing data. Then, given $\widehat{\boldsymbol{\beta}}_P$ and $\widehat{\boldsymbol{\pi}}_X$, a sample of values of $\boldsymbol{\beta}_Y$, X', and P' is drawn from the posterior distribution:

$$[X',P',\boldsymbol{\beta}_Y]_{post} \propto [Y|X',P';\boldsymbol{\beta}_Y] \times [P'|X';\widehat{\boldsymbol{\beta}}_P] \times [X'|Z;\widehat{\boldsymbol{\pi}}_X] \times [X'|X] \times [P'|P] \tag{C.8}$$

The posterior distribution factors as

$$[X',P',\boldsymbol{\beta}_Y]_{post} = \prod_i [X'_i,P'_i,\boldsymbol{\beta}_Y]_{post}$$

Univariate and multivariate Gibbs sampling is used to sample X', P', and $\boldsymbol{\beta}_Y$. The sampling equations are the following:

- Sampling of P'_i (univariate Gibbs sampling)

$$P'_{i,new} \sim [P'_i|X'_i,\boldsymbol{\beta}_Y]_{post} = \frac{[X'_i,P'_i,\boldsymbol{\beta}_Y]_{post}}{[X'_i,\boldsymbol{\beta}_Y]_{post}} = \frac{[X'_i,P'_i,\boldsymbol{\beta}_Y]_{post}}{[X'_i,P'_i=0,\boldsymbol{\beta}_Y]_{post} + [X'_i,P'_i=1,\boldsymbol{\beta}_Y]_{post}}$$

Notice that posterior conditional distribution $\left[P_i'|\boldsymbol{X}_i',\boldsymbol{\beta}_Y\right]_{post}$ is defined from the joint posterior on the left-hand-side of (C.8), and it is different from the conditional distribution $\left[P'|\boldsymbol{X}';\widehat{\boldsymbol{\beta}}_P\right]$, which appears on the right-hand-side of (C.8). Due to the constraint $Y_i = 0 \Rightarrow P_i = 0$, we have $P_{i,new}' = 0$ if $Y_i = 0$. When $Y_i = 1$, using equation (C.8) and simplifying the common factors in the numerator and the denominator, we can write

$$\left[P_i' = 1|\boldsymbol{X}_i',\boldsymbol{\beta}_Y;Y_i = 1\right]_{post} =$$

$$= \frac{[Y_i = 1|\boldsymbol{X}_i', P_i' = 1;\boldsymbol{\beta}_Y] \times \hat{\pi}_{P,i}}{[Y_i = 1|\boldsymbol{X}_i', P_i' = 0;\boldsymbol{\beta}_Y] \times \left(1 - \hat{\pi}_{P,i}\right) + [Y_i = 1|\boldsymbol{X}', P_i' = 1;\boldsymbol{\beta}_Y] \times \hat{\pi}_{P,i}}$$

where $\hat{\pi}_{P,i}$ is the estimated probability[4] $[P_i' = 1|\boldsymbol{X}_i';\widehat{\boldsymbol{\beta}}_P]$. Noticing that $[Y_i = 1|\boldsymbol{X}_i', P_i' = 1;\boldsymbol{\beta}_Y] = 1$ and $[Y_i = 1|\boldsymbol{X}_i', P_i' = 0;\boldsymbol{\beta}_Y] = \pi_{Y,i}$, we obtain

$$\left[P_i' = 1|\boldsymbol{X}_i',\boldsymbol{\beta}_Y;Y_i = 1\right]_{post} = \frac{\hat{\pi}_{P,i}}{\pi_{Y,i}\left(1 - \hat{\pi}_{P,i}\right) + \hat{\pi}_{P,i}}$$

Hence, the sampling equations for $P_{i,new}'$ become

$$P_{i,new}' = 0, \qquad\qquad\qquad\qquad \text{if } Y_i = 0$$

$$P_{i,new}' \sim \text{Bernoulli}\left(\frac{\hat{\pi}_{P,i}}{\pi_{Y,i}\left(1 - \hat{\pi}_{P,i}\right) + \hat{\pi}_{P,i}}\right), \qquad \text{if } Y_i = 1$$

- Sampling of X_{ik}' (univariate Gibbs sampling)

$$X_{ik,new}' \sim \left[X_{ik}'|\boldsymbol{X}_{ik-}', P_i',\boldsymbol{\beta}_Y\right]_{post} = \frac{\left[X_{ik}',\boldsymbol{X}_{ik-}', P_i',\boldsymbol{\beta}_Y\right]_{post}}{\left[\boldsymbol{X}_{ik-}', P_i',\boldsymbol{\beta}_Y\right]_{post}} =$$

$$= \frac{\left[X_{ik}',\boldsymbol{X}_{ik-}', P_i',\boldsymbol{\beta}_Y\right]_{post}}{\left[X_{ik}' = 0,\boldsymbol{X}_{ik-}', P_i',\boldsymbol{\beta}_Y\right]_{post} + \left[X_{ik}' = 1,\boldsymbol{X}_{ik-}', P_i',\boldsymbol{\beta}_Y\right]_{post}}$$

where $\boldsymbol{X}_{ik-}'$ indicates all the components of the vector $\boldsymbol{X}_i'$ except the k-th one, and $\left[X_{ik}',\boldsymbol{X}_{ik-}', P_i',\boldsymbol{\beta}_Y\right]_{post} \equiv \left[\boldsymbol{X}_i', P_i',\boldsymbol{\beta}_Y\right]_{post}$. Using equation (C.8) and simplifying the common factors in the numerator and the denominator, we can write

$$\left[X_{ik}' = 1|\boldsymbol{X}_{ik-}', P_i',\boldsymbol{\beta}_Y\right]_{post} = \frac{f\left(X_{ik}' = 1\right) \times \hat{\pi}_{X,ik}}{f\left(X_{ik}' = 0\right) \times \left(1 - \hat{\pi}_{X,ik}\right) + f\left(X_{ik}' = 1\right) \times \hat{\pi}_{X,ik}}$$

where

---

[4] As mentioned at the beginning of the paragraph, the Analysis Module estimates $\widehat{\boldsymbol{\beta}}_P$ and $\widehat{\boldsymbol{\pi}}_X$ using only the records with no-missing data before the MCMC analysis.

$$f(X'_{ik}) = [Y_i | X'_{ik}, \boldsymbol{X}'_{ik-}, P'_i; \boldsymbol{\beta}_Y] \times [P'_i | X'_{ik}, \boldsymbol{X}'_{ik-}; \widehat{\boldsymbol{\beta}}_P]$$

and $\hat{\pi}_{X,ik}$ is the estimated probability[4] $[X\_ik = 1 | Z\_ik]$. Hence, the sampling equation for $X'_{ik,new}$ become

$$X'_{ik,new} \sim \text{Bernoulli}\left(\frac{f(X'_{ik} = 1) \times \hat{\pi}_{X,ik}}{f(X'_{ik} = 0) \times (1 - \hat{\pi}_{X,ik}) + f(X'_{ik} = 1) \times \hat{\pi}_{X,ik}}\right)$$

- Sampling of $\boldsymbol{\beta}_Y$ (multivariate Gibbs sampling)

$$\boldsymbol{\beta}_{Y,new} \sim N(\boldsymbol{\mu}, \boldsymbol{\Sigma}) \times N(\boldsymbol{0}, \sigma^2 \, \mathbf{I})$$

where $N(\boldsymbol{\mu}, \boldsymbol{\Sigma})$ is the multivariate normal approximation of the function

$$\boldsymbol{\beta}_Y \to [Y | \boldsymbol{X}', P'; \boldsymbol{\beta}_Y] = \prod_i \left(\pi_{Y,i}^{1-P'_i}\right)^{Y_i} \left(1 - \pi_{Y,i}^{1-P'_i}\right)^{1-Y_i}$$

using a second order Taylor expansion of the log-likelihood, as standard practice in Generalized Linear Models.

The AM includes an option to use Generalized Estimating Equations (Zeger & Liang, 1986, Liang & Zeger, 1986, Fitzmaurice, Laird & Ware, 2004) with an exchangeable correlation model to account for within hospital h_i correlation. The normal distribution $N(\boldsymbol{0}, \sigma^2 \mathbf{I})$ represents a non-informative prior distribution (for small values of the precision $\tau = 1/\sigma^2$) added to regularize cases with separable data.

Analysis Module Output
In addition to the quantities $\widehat{\boldsymbol{\beta}}_Y, \widehat{\boldsymbol{\beta}}_P, \widehat{\boldsymbol{\pi}}_X$ discussed above, the Analysis Module also calculates, for comparison purposes, the regression coefficients of the binomial model $[Y | \boldsymbol{Z}]$ fitted using all the data, the binomial model $[Y | \boldsymbol{X}]$ fitted using all the non-missing data, and the binomial model $[Y | \boldsymbol{X}, P = 0]$ fitted using all the non-missing data with $P = 0$.

The Prediction Module

The purpose of the Prediction Module (PM) is to predict, for each discharge record, the expected value of the adverse health outcome. These predictions are based on: i) the user's input dataset containing the same information, and having the same format as the analysis input dataset; and ii) a set of regression coefficients previously fitted by the Analysis Module using the data from a reference population. Since the adverse health outcome is binary (either it is present or it is not), the expected value for each discharge can be viewed as the probability that the adverse health outcome would have occurred for that discharge. These calculations are straightforward when there are no missing data, but they require high dimensional sums when data are missing.

Overview

If POA data are being ignored, then the relevant output from the PM is the expected value of $Y|Z$. This is calculated with a simple scalar product of regression coefficients and covariates. The calculation is performed in the PM, but it results in the same number that would be obtained using SAS PROC SCORE. There is no MCMC involved in its calculation.

IF POA data are being accounted for in the calculations, then the relevant output from the PM is the expected value of $Y|$X, P=0.

a) For discharge records where POA is observed, this, too, is calculated with a simple scalar product of regression coefficients and covariates. The MCMC is not involved.
b) For discharge records where POA is missing, the expected value is calculated using a Gibbs Sampler MCMC as described below.

Outline of the MCMC algorithm to predict $[Y|X, P = 0]$ using records with missing data

Before the MCMC begins:
- Read the 2 by 2 binary tables $[X_k|Z_k]$ and the estimated regression coefficients of the model $[P|X]$ fitted before the MCMC analysis discussed in the previous section;
- Read the estimated regression coefficients $\hat{\beta}$ of the model $[Y, X, P = 0]$ fitted by the MCMC analysis discusses in the previous section.

MCMC loop:
1. Build joint distribution $[X, P, Z] = [P|X][X|Z]$;
2. Use full conditional distribution $[X|P, Z] = [X, P, Z]/[P, Z]$ to draw missing Xs (Gibbs Sampling); write the drawn missing X values to the chain. These values can be referred to as *imputed data*.
3. Use full conditional distribution $[P|X, Z] = [X, P, Z]/[X, Z]$ to draw missing Ps (Gibbs Sampling); write the drawn missing P values to the chain. These values can be referred to as *imputed data*.

4. Calculate predicted probability of an adverse outcome using the fitted regression coefficient $\hat{\beta}_{MCMC}$, the available X and P data, where measured, and the last imputed data, where X and P are missing (see 2. and 3.) The predicted probability, when $P = 0$, is calculated according to a logistic regression as the inverse logit of the scalar product $\hat{\beta}_{MCMC} \cdot X$.
5. Write the predicted probabilities of an adverse outcome when $P = 0$ to the MCMC chain.
6. Go to 1 until total iterations equals that specified in the input XML file.

Note: points 1 through 3 of this section are similar to points 1 through 3 of the Analysis Module MCMC, only here we do not have Y data, which is what we are predicting.

During the MCMC loop:
- Drop burn-in entries
- Thin the chain, if appropriate (e.g., if the MCMC missing Xs, missing Ps, and the regression coefficients β are correlated in the chain)

After the MCMC loop:
- Calculate the expected values (average) of the components of the MCMC chain representing the predicted adverse outcome when $P = 0$;

Note 1. The MCMC expected values are an unbiased estimated of the predicted adverse outcome assuming that no value is missing;

Note 2. The random numerical relative error introduced by the finiteness of the MCMC chain is inversely proportional to the square root of number of MCMC steps, and it becomes negligible compared to the statistical error of the predictions as the number of MCMC increases. See the 2011 report on Prediction Model accuracy posted on the AHRQ website. (http://www.qualityindicators.ahrq.gov/Modules/Default.aspx)

More Detailed Statistical Model

Let $\hat{\boldsymbol{\beta}}_Y, \hat{\boldsymbol{\beta}}_P, \hat{\boldsymbol{\pi}}_X$ be the regression coefficients fit by the AM as described in the previous section, and set

$$p(X', P') = \left[X', P' \middle| Y, X', P', Z; \hat{\boldsymbol{\beta}}_Y, \hat{\boldsymbol{\beta}}_P, \hat{\boldsymbol{\pi}}_X\right] \propto$$

$$\propto \left[Y | X', P'; \hat{\boldsymbol{\beta}}_Y\right] \times \left[P' \middle| X'; \hat{\boldsymbol{\beta}}_P\right] \times \left[X' | Z; \hat{\boldsymbol{\pi}}_X\right] \times \left[X' \middle| X\right] \times \left[P' \middle| P\right]$$

The main goal of the Prediction Module is to calculate

$$\Pr[Y_i = 1 | X_i, P_i = 0]$$

where we explicitly use the index i to indicate that the prediction is performed at the discharge record. For a record where both P_i and X_i are measured and $P_i = 0$, the predicted probability is simply given by

$$\Pr[Y_i = 1 | \boldsymbol{X_i}, P_i = 0] = \hat{\pi}_Y(\boldsymbol{X_i}) \equiv \text{logit}^{-1}(\boldsymbol{X_i}\widehat{\boldsymbol{\beta}}_Y)$$

If P_i is missing, then we calculate the expected value of $\hat{\pi}_Y(\boldsymbol{X_i})(1 - P_i')$ over the distribution of the missing data $p(\boldsymbol{X_i'}, P_i')$, namely

$$E_i[\hat{\pi}_Y] = \sum_{P_i' = \{0,1\}} \hat{\pi}_Y(\boldsymbol{X_i})(1 - P_i')\, p(\boldsymbol{X_i'}, P_i') = \hat{\pi}_Y(\boldsymbol{X_i})p(\boldsymbol{X_i}, 0) = \text{logit}^{-1}(\boldsymbol{X_i}\widehat{\boldsymbol{\beta}}_Y)p(\boldsymbol{X_i}, 0)$$

which is quick to compute. The general case however, where P_i and/or any combination of components of the vector $\boldsymbol{X_i}$ is missing, requires the sum over all the possible combinations of missing values:

$$E_i[\hat{\pi}_Y] = \sum_{P_i', X_i'} \hat{\pi}_Y(\boldsymbol{X_i'})(1 - P_i')p(\boldsymbol{X_i'}, P_i') =$$

$$= \sum_{P_i', X_i'} \text{logit}^{-1}(\boldsymbol{X_i'}\widehat{\boldsymbol{\beta}}_Y)(1 - P_i')p(\boldsymbol{X_i'}, P_i') \tag{C.9}$$

Following the same argument used in the previous section, as the number of components of the vector of covariate $\boldsymbol{X}$ increases, the deterministic sum quickly becomes unfeasible and an alternative approach is necessary. In this case, we evaluated the multidimensional sum using a Gibbs sampling implementation of the Importance Sampling Monte Carlo integration method (see chapter 7, paragraphs 7.6, 7.7 of the celebrated Numerical Recipes book (Press et al., 1992) for a primer introduction on Monte Carlo integration, references (Hammersley & Handscomb, 1964; Ripley, 1987; Rubinstein, 1981) for a deeper discussion, or many of the papers on the subject that can be freely found online.)

The methods works as follows: we draw a sample of imputed $\boldsymbol{X_i'}, P_i'$ values from the distribution $p(\boldsymbol{X_i'}, P_i')$, namely

$$(\boldsymbol{X_{i,s}'}, P_{i,s}') \sim p(\boldsymbol{X_i'}, P_i') \quad s = 1, \dots, N$$

using Gibbs Sampling to sample $\boldsymbol{X_i'}$ and P_i' discussed in the Analysis Module section, then we approximate the sum (C.9) with the sample sum

$$I_N = \frac{1}{N} \sum_{s=1}^{N} \hat{\pi}_Y(\boldsymbol{X_{i,s}'})(1 - P_{i,s}')$$

Because Gibbs sampling generates a Markov chain, this method can be considered a MCMC method.

The numerical approximation of the Monte Carlo integration is known to be controlled by the sample variance

$$V_N = \frac{1}{N-1} \sum_{s=1}^{N} \left(\hat{\pi}_Y(X'_{i,s})(1 - P'_{i,s}) \right)^2 - \frac{N}{N-1} \left(\frac{1}{N} \sum_{s=1}^{N} \hat{\pi}_Y(X'_{i,s})(1 - P'_{i,s}) \right)^2$$

Since the distribution p has compact support and the function $\hat{\pi}_Y(X_i)$ is bounded, then the variance V_N is also bounded. Therefore, under the assumption that the sample $(X'_{i,s}, P'_{i,s})$ is ergodic (i.e. random), it follows from the central limit theorem that

$$I_N \to E_i[\hat{\pi}_Y]$$

in a probabilistic sense with a standard error equal to

$$\sigma_N = \sqrt{V_N/N}$$

The value V_N can be calculated together with I_N to provide an estimate of the Monte Carlo approximation error. However, regardless of V_N, the error of the MCMC integration scales as $1/\sqrt{N}$.

The PM also calculates, for comparative purposes, the expected values of the predictor $\hat{\pi}_Y$ for the different sets of coefficients $\hat{\boldsymbol{\beta}}_Y$ estimated in the Analysis Module, the expected values of the predictor $\hat{\pi}_P$, and the marginal posterior probability of $P'_i = 1$ given by

$$\sum_{X'_i} p(X'_i, 1)$$

Appendix D. Helpful Background Information

This appendix includes some helpful information on both annual coding updates and software that is related to, or used by the AHRQ QI software. This information is not specifically statistical in nature, but does inform and affect the methods described in the main body of the document.

A. Fiscal year coding updates

Each fiscal year there are new ICD-9-CM and MS-DRG codes and revisions to existing codes. These changes are effective on October 1st. For example, Version 29 (fiscal year 2012) codes were effective October 1, 2011 and were incorporated in the version 4.4 release of the QI software. Diagnosis and procedure codes are used in the numerator and denominator specifications for the Patient Safety Indicators (PSIs), Prevention Quality Indicators (PQIs), Pediatric Quality Indicators (PDIs), and Inpatient Quality Indicators (IQIs). ICD-9-CM procedure codes affect the Centers for Medicare and Medicaid Services (CMS) classification of "major operating room procedure" for postoperative PSIs and PDIs. Another use of ICD-9-CM is in risk stratification used in the AHRQ Comorbidity Software, AHRQ's Clinical Classification System, and 3M's All Patient Refined Diagnosis Related Groups (APR-DRGs). Diagnosis codes are maintained by the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS). Procedure and MS-DRG codes are maintained by the CMS. The activities of both agencies are conducted jointly through the ICD-9-CM Coordination and Maintenance Committee (the Committee). The Committee meets in September and March to consider proposals for new codes and revisions to existing codes.

The Committee has implemented a partial freeze of the ICD-9-CM and ICD-10-CM/PCS codes in preparation for the implementation of ICD-10 codes on October 1, 2013. As a result, the last regular, annual updates to both ICD-9-CM and ICD-10-CM/PCS codes were made on October 1, 2011 (fiscal year 2012). It is anticipated that October 1, 2012 will witness only limited coding updates (from the September 14-15, 2011 and March 5, 2012 meetings of the Committee) to both the ICD-9-CM and ICD-10-CM/PCS codes to capture new technologies and diseases. The Committee meeting agendas and ICD-9-CM timeline is located at the CMS site.

Information on ICD-10-CM coding updates is located on both the NCHS (http://www.cdc.gov/nchs/icd/icd10cm.htm) and CMS (http://www.cms.gov/ICD10/11b14_2012_ICD10CM_and_GEMs.asp and http://www.cms.gov/ICD10/11b15_2012_ICD10PCS.asp#TopOfPage) web sites.

APR-DRG codes are maintained by 3M.

A.1 ICD-9-CM coding updates and coding guidelines

Information on ICD-9-CM coding updates is located on both the NCHS and CMS web sites:
    (http://www.cdc.gov/nchs/icd/icd9cm.htm)

(www.cdc.gov/nchs/data/icd/icd9cm_guidelines_2011.pdf)
(http://www.cms.gov/ICD9ProviderDiagnosticCodes/01_overview.asp)

The anticipated coding updates for the subsequent version of the AHRQ QIs will consist of:
- New codes, if released.
- Limited ICD-9-CM coding revisions or deletions.
- NQF related updates, which may affect one or more indicators (This activity is performed in collaboration with task C.08. A set of NQF requested refinements have been submitted by AHRQ).

Activities during the base year will focus on these coding updates for the subsequent version of the AHRQ QIs. In general, updates to diagnosis and procedure codes are available on the NCHS or CMS web site. Preliminary updates are posted in March and final updates are posted in July. Diagnosis code updates are reported in Volume 1 (a tabular listing containing a numerical list of the disease code numbers) and Volume 2 (an alphabetical index to the disease entries). Procedure code updates are reported in Volume 3 (an alphabetic index and tabular list for surgical, diagnostic, and therapeutic procedures in hospitals and inpatient settings).

The meeting calendar of the Committee will be monitored on an ongoing basis for meeting status and updates to the meeting minutes, and the published coding changes (Volumes 1 and 2 for the diagnosis codes and Volume 3 for the procedure codes) and errata, both preliminary and final, will be reviewed.

The processes for evaluating the updates are described within each subsection below.

Diagnosis Codes

An update consists of three documents.
- ICD-9-CM Index to Diseases Addenda – lists changes to the indexing of codes to diseases.
- ICD-9-CM Diagnosis Tabular Addenda – lists changes to the codes and code categories (defined as the first three digits).
- Conversion Table of New ICD-9-CM Codes – maps current codes to previous codes.

The update process consists of reviewing these documents to identify any coding changes that impact the numerator, denominator or exclusion logic of the AHRQ QI. There are two types of changes:
- A current code is split into two or more sub-codes and the current code is retired. Cases previously assigned to the current code are now assigned to the sub-codes.
- A new code or code category is created. Some cases previously assigned to a current code are now assigned to the new code.

Each change is evaluated to determine whether cases assigned to the codes belong in the numerator, denominator or exclusion logic of one or more AHRQ QI.

Procedure Codes

An update consists of two documents.
- ICD-9-CM Procedure Tabular Addenda – lists changes to the codes and code categories
- Conversion Table of New ICD-9-CM Codes – maps current codes to previous codes.

The update process consists of reviewing these documents to identify any coding changes that impact the numerator, denominator or exclusion logic of the AHRQ QI. There are two types of changes.
- A current code is split into two or more sub-codes and the current code is retired. Cases previously assigned to the current code are now assigned to the sub-codes.
- A new code or code category is created. Some cases previously assigned to a current code are now assigned to the new code.

Each change is evaluated to determine whether cases assigned to the codes belong in the numerator, denominator or exclusion logic of one or more AHRQ QI.

A.2 DRG coding updates

There are two editions of the DRGs. The first edition uses CMS-DRGs and the second edition uses MS-DRGs. The first edition is Version 24 and earlier; the second edition is Version 25 and later.

Updates to CMS-DRG are no longer supported by CMS.

Updates to MS-DRG codes are available on the CMS web site and in the Federal Register. Preliminary updates are posted in May and final updates or corrections are posted by August. (See http://www.cms.gov/AcuteInpatientPPS).

The update process consists of reviewing Table 5, which is a list of MS-DRGs, Relative Weighting Factors and Geometric and Arithmetic Mean Length of Stay and is one of the data tables from the fiscal year Inpatient Prospective Payment System from CMS. Ambiguity around the content of any update may usually be resolved through a review of the Federal Register notice. Prior to the implementation of the MS-DRGs, CMS would add and revise many DRGs annually. However, with the implementation of the MS-DRGs, changes are less frequent.

Activities during the base year will focus on reviewing the MS-DRG updates and determining what measure(s) are impacted with regards to the AHRQ QIs.

3M APR-DRG coding updates

There is no public posting of updates to the APR-DRG. The commercial product is released in October with an update in April. A research license for the commercial product is available from AHRQ. The limited license grouper used in the AHRQ QI software is available on an ad hoc

basis under a voluntary arrangement with 3M. Contact information for the APR-DRG is as follows:

> Anne M. Boucher
> Implementation Manager
> Clinical and Economic Research
> 3M Health Information Systems
> 100 Barnes Road
> Wallingford, CT 06492
> Telephone: (203) 949 6497
> Email: amboucher@mmm.com

Along with the limited license grouper, 3M provides documentation on changes to the APR-DRG logic. APR-DRG uses the same version numbering system used by NCHS and CMS. Prior to Version 23 (fiscal year 2006), 3M released a new version of the APR-DRG only once every five fiscal years with an ICD-9-CM mapping to maintain compatibility. Currently 3M releases a new version each fiscal year.

Updating the APR-DRG consists of the following steps:
1. Running the commercial product on the most recent year of Healthcare Cost and Utilization Project (HCUP) data available.
2. AHRQ has "pre-grouped" the HCUP data for selected states and made APR-DRG and risk-of-mortality subclass data elements available on the HCUP intramural databases. Step number 1 does not need to be done for these states.
3. Tabulating the frequency of APR-DRGs in the denominator of each IQI that uses the APR-DRG for risk-adjustment.
4. Retaining those APR-DRGs with at least 30 cases in the numerator.
5. Ensuring that those retained APR-DRGs are included in the covariate tables.

B. Related software maintained by HCUP at AHRQ

The AHRQ QI software uses other AHRQ software as components of the indicator specifications or risk-adjustment covariate specifications. These software components are also updated annually to reflect coding changes. The AHRQ QI support team does not independently review these changes; rather the coding changes are implemented without further review.

B.1 Comorbidity software

There are two editions of the comorbidity software. The first edition uses CMS-DRGs and the second edition uses MS-DRGs. The comorbidity software has its own version numbering system. The first edition is version 3.4 and earlier; the second edition is version 3.5 and later. (See http://www.hcup-us.ahrq.gov/toolssoftware/comorbidity/comorbidity.jsp).

The comorbidity software consists of two SAS programs. The first program, Creation of Format Library for Comorbidity Groups (Comformat.txt), creates a SAS format library that maps diagnosis codes into comorbidity indicators. Additional formats are also 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 (Comoanaly.txt), applies the formats created above to a data set containing administrative data and then creates the comorbidity variables used to define the risk-adjustment covariates.

Updating the comorbidity software as used in the AHRQ QI software consists of the following steps:
- Comparing the current format program with the previous format program to identify any changes.
- Comparing the current analysis program with the analysis format program to identify any changes.
- Determine whether any of the changes present a problem for backwards compatibility and, if there is such a problem, design a solution.
- Implement any changes and solutions in the AHRQ QI software.

B.2 Clinical Classification Software (CCS)

The CCS for ICD-9-CM is a diagnosis and procedure categorization scheme that collapses individual codes into a smaller number of clinically meaningful categories. The AHRQ QI uses the single-level edition of the CCS for diagnoses and procedures. The software consists of a SAS formats program.
    (See http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp).

Updating the clinical classification software as used in the AHRQ QI software consists of the following steps:
- Comparing the current format program with the previous format program to identify any changes.
- Determine whether any of the changes present a problem for backwards compatibility and, if there is such a problem, design a solution.
- Implement any changes and solutions in the AHRQ QI software.

B.3 Procedure classes

The procedure classes assign ICD-9-CM procedure codes to one of four categories:
- Minor Diagnostic - Non-operating room procedures that are diagnostic.
- Minor Therapeutic - Non-operating room procedures that are therapeutic.
- Major Diagnostic - All procedures considered valid operating room procedures by the DRG grouper and that are performed for diagnostic reasons.
- Major Therapeutic - All procedures considered valid operating room procedures by the DRG grouper and that are performed for therapeutic reasons.
    (See http://www.hcup-us.ahrq.gov/toolssoftware/procedure/procedure.jsp).

There is one file per fiscal year (PC.csv) that includes three elements: ICD-9-CM procedure codes, ICD-9-CM code labels, and procedure class assignments. In general, most of the changes relate to new procedure codes. However, sometimes the procedure class changes for an existing code. In these circumstances, the most recent assignment is used.

Updating the procedure classes as used in the AHRQ QI software consists of the following steps:
- Comparing the current procedure class assignments with the previous procedure class assignments to identify any changes.
- Special attention is given to operating room procedures in classes 3 and 4 (used to identify surgical discharges).
- Implement any changes in the AHRQ QI software.

C. Related classifications maintained by the AHRQ QI support team

The AHRQ QI software also uses other classifications as a component of the indicator specification or risk-adjustment covariate specification. These classification components are updated annually to reflect coding changes. The classifications include the Modified DRGs (MDRGs), birth weight (BWHTCAT), Congenital Anomalies (CONGCAT), and indicator-specification stratifications for the PDIs (HPPD01, GPPD02, GPPD10, HPPD10 and GPPD12).

C.1 Modified DRGs (MDRGs)

The purpose of the MDRG is to maintain a consistent mapping between CMS DRGs and MS-DRGs, and to pool MS-DRGs with and without CCs and MCCs. A new MS-DRG code either divides an existing MS-DRG into sub-MS-DRGs or re-assigns cases from multiple existing MS-DRGs. The MDRG is a four digit code. The first two digits are the Major Diagnosis Category (MDC), and the second two digits are a sequence number (e.g., 01-04) within the MDC.

Updating the modified DRGs consists of the following steps:
- Identify the relevant AHRQ QIs for which the fiscal year MS-DRG changes apply. The MS-DRG changes are identified in the CMS Table 5 (a list of MS-DRGs, Relative Weighting Factors and Geometric and Arithmetic Mean Length of Stay) from the fiscal year Inpatient Prospective Payment System.
- Use the CMS crosswalk to pool CMS-DRGs and MS-DRGs into a single MDRG and compare with the MDRG categories table in the relevant risk adjustment tables document.
- Implement any changes in the AHRQ QI software.

C.2 Birth weight (BWHTCAT)

BWHTCAT in 250g increments are defined by ICD-9-CM codes. Occasionally new codes are derived from existing codes.

Updating the birth weight categories consists of the following steps:
- Identify the relevant ICD-9-CM coding updates that pertain to the definition of the birth weight categories.
- Update the specifications, appendix and change log for the PDIs.
- Implement any changes in the AHRQ QI software.

C.3 Congenital anomalies (CONGCAT)

CONGCAT for gastrointestinal, genitourinary, central nervous system, pulmonary, cardiovascular, skeletal, chromosomal syndromes and selected other congenital anomalies are defined by ICD-9-CM codes (Original source Phibbs, et. al.[5]). Occasionally new codes are derived from existing codes.

Updating the CONGCATs consists of the following steps:
- Identify the relevant ICD-9-CM coding updates that pertain to the definition of the congenital anomalies.
- Update the specifications and change log for the relevant AHRQ QIs.
- Implement any changes in the AHRQ QI software.

C.4 Indicator-specific

Some PDIs have classifications used in stratification and as covariates in risk-adjustment. These classifications are procedure type risk category (HPPD01), pressure ulcer risk category (GPPD02), wound class procedure type (GPPD10), immune-compromised risk category (HPPD10) and bloodstream infection risk category (GPPD12). Occasionally new codes are derived from existing codes.

Updating the indicator-specific classifications consists of the following steps:
- Identify the relevant ICD-9-CM coding updates that pertain to the definition of the classifications.
- Update the specifications, appendix and change log for the relevant AHRQ QIs.
- Implement any changes in the AHRQ QI software.

D. Risk-adjustment for Congenital Heart Surgery (RACHS-1) software

RACHS-1 is a type of specification (the numerator and denominator inclusion and exclusion rules).   The Pediatric Heart Surgery Mortality (PDI 06) measure uses the RACHS-1 software to assign pediatric heart surgery cases to risk strata depending on the type of surgery (HPPD06). The stratification occurs upon running the RACHS-1 syntax which is embedded in the software. The RACHS-1 software is maintained on an ad hoc basis by Children's Hospital in Boston.

---

[5] Phibbs CS, Baker LC, Caughey AB, Danielsen B, Schmitt SK, Phibbs RH. Level and volume of neonatal intensive care and mortality in very-low-birth-weight infants. New England Journal of Medicine. 2007;356(21):2165-2175 & Supplement.

(See http://www.ncbi.nlm.nih.gov/pubmed/15283367).

Updating the RACHS-1 software consists of confirming the coding updates that apply to RACHS-1 from the Children's Hospital in Boston. The RACHS-1 stratifications should be added to the risk adjustment documentation under C.12.4.6 in the C.12 work plan.

AHRQ Quality Indicators

Pediatric Quality Indicators Composite Measure Workgroup

Final Report

AHRQuality Indicators

Agency for Healthcare Research and Quality
Quality Indicators (AHRQ QI)

Pediatric Quality Indicators (PDI)
Composite Measure Workgroup
Final Report
March 2008

Table of Contents

AHRQ Quality Indicators
Pediatric Quality Indicators
Composite Measure Workgroup
Final Report

1. Introduction

Many users of the AHRQ Quality Indicators (AHRQ QI) have expressed interest in the development of one or more composite measures. In particular, the National Healthcare Quality Report and the National Healthcare Disparities Report[1] staff asked the AHRQ QI program to develop composite measures for use in these reports. A composite measure for the Prevention Quality Indicators was developed initially.[2] The goal of the development effort was to develop a composite measure that might be used to monitor performance over time or across regions and populations using a methodology that applied at the national, regional, State, or provider/area level. This report describes the construction of a composite measure for the Pediatric Quality Indicators (PDIs): *Pediatric Patient Safety for Selected Indicators*.

To assist in the development of a composite measure methodology, the AHRQ QI Composite Measure Workgroup held several conference calls to discuss important issues and considerations and to provide feedback on preliminary results. To maintain the focus on the general composite measure methodology, the Workgroup did not consider the merits of including individual indicators in the composites. Rather, all available Pediatric Quality Indicators that met the conceptual criteria were included. The members of the AHRQ QI Composite Measure Workgroup are listed in Appendix A.

This report is very technical in nature. To facilitate future use of the composite, the AHRQ QI program plans to develop more accessible explanatory narrative on the composite measures as part of the reporting template initiative.

For more information on the Pediatric Quality Indicators, including selection criteria, coding, and specifications, see the Pediatric Quality Indicators technical report and the Pediatric Quality Indicators Technical Specifications, available on the AHRQ QI Web site (http://qualityindicators.ahrq.gov).[3]

2. Reasons for Composite Measures

Before considering alternative approaches to composite measures, one might consider why composite measures are potentially useful and for what purpose.

2.1. Benefits of Composite Measures

Composite measures have several potential benefits over individual indicators:

- *Summarize quality across multiple indicators*. There are 13 provider-level PDIs for various types of quality and adverse events, making it difficult to formulate general statements about overall trends or differences in quality and patient safety.

---

[1] The most recent National Healthcare Quality Report and National Healthcare Disparities Report may be found at http://www.ahrq.gov/qual/measurix.htm.
[2] A report describing the composite measure for the Prevention Quality Indicators can be found at: http://www.qualityindicators.ahrq.gov/downloads/technical/AHRQ QI PQI Composite Report Final.pdf.
[3] Guide: http://www.qualityindicators.ahrq.gov/downloads/pdi/pdi_measures_v31.pdf; Technical Specifications: http://www.qualityindicators.ahrq.gov/downloads/pdi/pdi_technical%20specs_v31.pdf.

- *Improve ability to detect quality differences.* Combining information from multiple indicators may result in greater discrimination in performance than is evident from individual indicators.

- *Identify important domains and drivers of quality.* To the extent that certain indicators track together, or track with certain process or structural characteristics of providers, one may identify the important domains and drivers of quality and patient safety.

- *Prioritize action for quality improvement.* Individual indicators that contribute a larger share to the composite may be targets for quality improvement activity.

- *Make current decisions about future (unknown) health care needs.* Depending on how the component indicators are weighted, composites may reflect the likely health outcomes for an individual or population.

- *Avoid cognitive "shortcuts."* Research suggests that individuals faced with too many factors in making a decision take cognitive shortcuts that might not be in their best interest. Composites may help to ensure that decisions are made appropriately.

2.2. Concerns About Composite Measures

Despite these benefits, there are concerns about using composite measures, depending on how the composite measure is constructed:

- *Can mask important differences and relationships among components.* Composite measures might mask the fact that two components are inversely related, or an "average" provider might be high on one component and low on another.

- *May not be actionable.* It might not be clear what action a provider should take given high or low performance on a composite measure.

- *May not identify which parts of the health care system contribute most to quality.* To the extent that the composite is not connected to the interventions important for the component measures, it might be difficult to know how the composite contributes to improving quality and patient safety.

- *Can detract from the impact and credibility of reports.* The composite measure might not reflect the evidence base of the component indicators.

2.3. Potential Uses of Composite Measures

Composite measures have many potential uses:

- *Consumers* might use composite measures to select a hospital or health plan either before or after a health event.

- *Providers* might use composite measures to identify the domains and drivers of quality and patient safety.

- *Purchasers* might use composite measures to select hospitals or health plans in order to improve the health of employees.

- *Policymakers* might use composite measures to set policy priorities in order to improve the health of a population.

3. Alternative Perspectives on Composite Measures

Two alternative perspectives on composite measures guide the development of a composite measure methodology:

- *Signaling perspective*, which seeks to guide decisionmaking by providing information that will result in actions leading to some intended result. The ultimate evaluation criterion for the composite measure is the usefulness of the measure for achieving the intended result. An example of a composite measure reflecting the signaling perspective is the Dow Jones Industrial Average used to guide decisionmaking on allocating investment resources.

- *Psychometric perspective*, which seeks to capture an underlying construct of quality based on multiple single indicators. The ultimate evaluation criterion for the composite measure is the extent to which the components reflect that construct. An example of a composite measure reflecting the psychometric perspective is the IQ test used to capture a construct labeled "intelligence."

The methodology used for the AHRQ QI composite measures reflects the signaling perspective, in that the primary intent of the measures is to guide decisionmaking in terms of where to allocate resources to improve quality rather than to capture an underlying construct of quality.

4. Methodology for the AHRQ QI Composite Measures

4.1. Composite Measure Development Criteria

This report describes the construction of a single composite measure for the PDI: *Pediatric Patient Safety for Selected Indicators*. Appendix B presents PDI composite tables (Tables 1-8). Table 1 shows the reference population, including the incidence rate for each adverse event.

The basic criteria used to guide the development of the methodology were:

- *Evidence based*. The composite measure should be based on indicator components that are important, reliable, valid, and minimally biased.

- *Conceptually coherent*. The components of the composite measure should be related to one another conceptually.

- *Empirically coherent*. The components of the composite measure should be related to one another empirically.

- *Intended use*. The composite measures should be constructed in a manner appropriate to the intended use, whether that is comparative reporting or quality improvement.

Applying these criteria to the PDIs, one could advocate for separate composites based on the type of adverse event (e.g., postoperative). However, in general, the component indicators apply to the same providers (see Table 2) and show at least some positive correlation with one another (see Table 3). Therefore, the initial composite includes all the provider-level indicators (see table below).[4] Future development might examine subcomposites for certain indicators.

AHRQ PDI Composite Measure

Pediatric Patient Safety for Selected Indicators	
PDI #01 Accidental Puncture or Laceration	PDI #09 Postop Respiratory Failure
PDI #02 Decubitus Ulcer	PDI #10 Postop Sepsis
PDI #05 Iatrogenic Pneumothorax	PDI #11 Postop Wound Dehiscence
PDI #08 Postop Hemorrhage or Hematoma	PDI #12 Selected Infections Due to Medical Care

4.2. AHRQ QI Composite Measure Methodology

The general methodology for the AHRQ QI composite measures might be described as constructing a "composite of composites." The first "composite" is the reliability-adjusted ratio, which is a weighted average of the risk-adjusted ratio and the reference population ratio, where the weight is determined empirically. The second "composite" is a weighted average of the component indicators, where the weights are selected based on the intended use of the composite measure. These weights might be determined empirically or based on nonempirical considerations.

4.3. Construction of AHRQ QI Composite Measure

The basic steps for computing the composite follow.

Step 1. Compute the risk-adjusted rate and confidence interval

The AHRQ QI risk-adjusted rate is computed based on a simple logistic regression model[5] for calculating a predicted value for each case. Then the predicted values among all the cases in the hospital are summed to compute the expected rate. The risk-adjusted rate is computed using indirect standardization as the observed rate (OR) divided by the expected rate (ER), with the result multiplied by the reference population rate: $(RR) = (OR/ER \times PR)$. The reference population used in this analysis includes the States participating in the Healthcare Cost &

---

[4] Foreign Body Left During Procedure (PDI #03) and Transfusion Reaction (PDI #13) are serious reportable events (i.e., "never events") and are reported as counts. Iatrogenic Pneumothorax in Neonates (PDI #04) is included in a new neonatal indicator set (release date in fiscal year 2008).

[5] Release 3.1 (fiscal year 2007) of the AHRQ QI software adopted a hierarchical modeling methodology for the risk adjustment, but the composite methodology remains the same.

Utilization Project (HCUP) for 2001-2003, consisting of 38 States and approximately 90 million discharges.[6]

Step 2. Scale the risk-adjusted rate using the reference population

Table 1 shows the reference population numerator, denominator, and rate for each PDI. The relative magnitudes of the rates vary from indicator to indicator. To combine the component indicators using a common scale, each indicator's risk-adjusted rate is divided by the reference population rate to yield a ratio. The components of the composite are therefore defined in terms of a ratio to the reference population rate for each indicator. The component indicators are scaled by the reference population rate so that each indicator reflects the degree of deviation from the overall average performance.

Step 3. Compute the reliability-adjusted ratio

The reliability-adjusted ratio (RAR) is computed as the weighted average of the risk-adjusted ratio and the reference population ratio, where the weights vary from 0 to 1, depending on the degree of reliability for the indicator and provider (or other unit of analysis).

$$\text{RAR} = [\text{risk-adjusted ratio} \times \text{weight}] + [\text{reference population ratio} \times (1 - \text{weight})]$$

Table 4 shows the average reliability weights for the PDIs based on denominator size. For small providers, the weight is closer to 0. For large providers, the weight is closer to 1. For a given provider, if the denominator is 0, then the weight assigned is 0 (i.e., the reliability-adjusted ratio is the reference population ratio).

Step 4. Select the component weights

The composite measure is the weighted average of the scaled and reliability-adjusted ratios for the component indicators. Table 5 shows examples of alternative weights that might be used. Other weights are also possible.

Single indicator weight. In this case, the composite is simply the reliability-adjusted ratio for a single indicator. The reference population rate is the same among all providers (see Figures 1.1 and 1.2 in Appendix C).

---

[6] The State data organizations that participated in the 2001-2003 HCUP State Inpatient Databases are: Arizona Department of Health Services; California Office of Statewide Health Planning and Development; Colorado Health and Hospital Association; Connecticut - Chime, Inc.; Florida Agency for Health Care Administration; Georgia - GHA: An Association of Hospitals and Health Systems; Hawaii Health Information Corporation; Illinois Health Care Cost Containment Council; Indiana Hospital & Health Association; Iowa Hospital Association; Kansas Hospital Association; Kentucky Department for Public Health; Maine Health Data Organization; Maryland Health Services Cost Review Commission; Massachusetts Division of Health Care Finance and Policy; Michigan Health & Hospital Association; Minnesota Hospital Association; Missouri Hospital Industry Data Institute; Nebraska Hospital Association; Nevada Department of Human Resources; New Hampshire Department of Health & Human Services; New Jersey Department of Health and Senior Services; New York State Department of Health; North Carolina Department of Health and Human Services; Ohio Hospital Association; Oregon Association of Hospitals and Health Systems; Pennsylvania Health Care Cost Containment Council; Rhode Island Department of Health; South Carolina Budget & Control Board; South Dakota Association of Healthcare Organizations; Tennessee Hospital Association; Texas Health Care Information Council; Utah Department of Health; Vermont Association of Hospitals and Health Systems; Virginia Health Information; Washington State Department of Health; West Virginia Health Care Authority; Wisconsin Department of Health and Family Services.

Equal weight. In this case, each component indicator is assigned an identical weight based on the number of indicators. That is, the weight equals 1 divided by the number of indicators in the composite (e.g., 1/8 = 0.1250).

Numerator weight. A numerator weight is based on the relative frequency of the numerator for each component indicator in the reference population. In general, a numerator weight reflects the amount of harm in the outcome of interest, in this case a potentially preventable adverse event. One might also use weights that reflect the amount of excess mortality or complications associated with the adverse event, or the amount of confidence one has in identifying events (i.e., the positive predictive value).

Denominator weight. A denominator weight is based on the relative frequency of the denominator for each component indicator in the reference population. In general, a denominator weight reflects the amount of risk of experiencing the outcome of interest in a given population. For example, the denominator weight might be based on the demographic composition of a health plan, the employees of a purchaser, a State, an individual hospital, or a single patient.

Factor weight. A factor weight is based on some sort of analysis that assigns each component indicator a weight that reflects the contribution of that indicator to the common variation among the indicators. The component indicator that is most predictive of that common variation is assigned the highest weight. The weights in Table 5 are based on a principal components factor analysis of the reliability-adjusted ratios.

Step 5. Construct the composite measure

The composite measure is the weighted average of the component indicators using the selected weights and the scaled and reliability-adjusted indicators.

> Composite = [indicator1 RAR × weight1] + [indicator2 RAR × weight2] + . . . + [indicatorN RAR ∗ weightN]

The confidence interval of the composite is based on the standard error of the composite, which is the square root of the variance. The variance is computed based on the signal variance-covariance matrix and the reliability weights. Details of the computation are provided in Appendix D.

4.4. Sample Computation of the Composite Measure

This example demonstrates the construction of the composite for a representative provider beginning with the risk-adjusted rate and standard error for each PDI. An important consideration in the development of the composite measure methodology was that the computation of the composite and the weights be transparent and that a provider be able to trace the computation from the component indicators to the composite and back again.

Step 1. Compute the risk-adjusted rate and standard error

PDI	Average Annual Denominator	Observed Rate	Risk-Adjusted Rate	Rate Std. Error
PDI #01 Accidental Puncture or Laceration	7,120	0.796	0.561	0.169
PDI #02 Decubitus Ulcer	1,149	2.611	2.492	0.938
PDI #05 Iatrogenic Pneumothorax	6,491	0.873	0.645	0.089
PDI #08 Postop Hemorrhage or Hematoma	839	1.192	1.195	0.800
PDI #09 Postop Respiratory Failure	682	11.247	15.891	3.010
PDI #10 Postop Sepsis	445	38.981	39.494	3.795
PDI #11 Postop Wound Dehiscence	416	0.801	0.977	0.875
PDI #12 Selected Infections Due to Medical Care	5,270	10.436	6.141	0.306

Note: Observed and risk-adjusted rate are per 1,000.

This is the output a user would obtain from applying the AHRQ QI software (SAS and Windows) to the user's data.

Step 2. Scale the risk-adjusted rate using the reference population

PDI	Reference Population Rate	Risk-Adjusted Ratio	Ratio Std. Error
PDI #01 Accidental Puncture or Laceration	0.884	0.635	0.191
PDI #02 Decubitus Ulcer	3.285	0.759	0.286
PDI #05 Iatrogenic Pneumothorax	0.209	3.088	0.425
PDI #08 Postop Hemorrhage or Hematoma	1.649	0.725	0.485
PDI #09 Postop Respiratory Failure	13.650	1.164	0.221
PDI #10 Postop Sepsis	22.425	1.761	0.169
PDI #11 Postop Wound Dehiscence	0.784	1.247	1.116
PDI #12 Selected Infections Due to Medical Care	2.661	2.307	0.115

Step 3. Compute the reliability-adjusted ratio

Step S3A. Compute the reliability weight

PDI	Ratio Std. Error	Noise Variance	Signal Variance	Reliability Weight
PDI #01 Accidental Puncture or Laceration	0.191	0.0365	0.3088	0.8942
PDI #02 Decubitus Ulcer	0.286	0.0815	0.0181	0.1814
PDI #05 Iatrogenic Pneumothorax	0.425	0.1809	0.2102	0.5376
PDI #08 Postop Hemorrhage or Hematoma	0.485	0.2352	0.1922	0.4497
PDI #09 Postop Respiratory Failure	0.221	0.0486	0.2500	0.8372
PDI #10 Postop Sepsis	0.169	0.0286	0.1070	0.7889
PDI #11 Postop Wound Dehiscence	1.116	1.2454	0.0183	0.0145
PDI #12 Selected Infections Due to Medical Care	0.115	0.0132	0.4718	0.9727

Note: Noise variance is standard error squared (for details on calculating the noise variance, see Appendix D); reliability weight is signal variance/(signal variance + noise variance).

The noise variance is computed from the user's data as the square of the standard error. The signal variance is a reference population parameter that reflects the amount of provider-level variation remaining after the noise variance is removed. Note that the noise variance will vary by provider and by indicator.

Step S3B. Compute the reliability-adjusted ratio

PDI	Reliability Weight	Risk-Adjusted Ratio	Reference Population Ratio	Reliability-Adjusted Ratio
PDI #01 Accidental Puncture or Laceration	0.8942	0.635	1.006	0.674
PDI #02 Decubitus Ulcer	0.1814	0.759	0.891	0.867
PDI #05 Iatrogenic Pneumothorax	0.5376	3.088	0.806	2.033
PDI #08 Postop Hemorrhage or Hematoma	0.4497	0.725	0.985	0.868
PDI #09 Postop Respiratory Failure	0.8372	1.164	0.877	1.117
PDI #10 Postop Sepsis	0.7889	1.761	0.965	1.593
PDI #11 Postop Wound Dehiscence	0.0145	1.247	0.950	0.954
PDI #12 Selected Infections Due to Medical Care	0.9727	2.307	0.707	2.263

Note: Reliability-adjusted ratio is [risk-adjusted ratio × weight] + [reference population ratio × (1 – weight)].

The first "composite" is the weighted average of the provider's risk-adjusted ratio and the reference population ratio, where the weight reflects the reliability of the provider's risk-adjusted ratio. This "composite" is the reliability-adjusted ratio.

Step 4. Select the component weights

The weights are selected depending on the intended use of the composite. In this example, we use the factor weight.

PDI	Factor Weight
PDI #01 Accidental Puncture or Laceration	0.0584
PDI #02 Decubitus Ulcer	0.1428
PDI #05 Iatrogenic Pneumothorax	0.1908
PDI #08 Postop Hemorrhage or Hematoma	0.0607
PDI #09 Postop Respiratory Failure	0.1224
PDI #10 Postop Sepsis	0.1608
PDI #11 Postop Wound Dehiscence	0.0595
PDI #12 Selected Infections Due to Medical Care	0.2046

Step 5. Construct the composite measure

PDI	Factor Weight (A)	Reliability-Adjusted Ratio (B)	(A) × (B)
PDI #01 Accidental Puncture or Laceration	0.0584	0.674	0.039
PDI #02 Decubitus Ulcer	0.1428	0.867	0.124
PDI #05 Iatrogenic Pneumothorax	0.1908	2.033	0.388
PDI #08 Postop Hemorrhage or Hematoma	0.0607	0.868	0.053
PDI #09 Postop Respiratory Failure	0.1224	1.117	0.137
PDI #10 Postop Sepsis	0.1608	1.593	0.256
PDI #11 Postop Wound Dehiscence	0.0595	0.954	0.057
PDI #12 Selected Infections Due to Medical Care	0.2046	2.263	0.463
Pediatric Patient Safety for Selected Indicators			*1.517*
Standard Error			*0.094*
Confidence Interval at p<0.05		*1.332*	*1.701*

Note: For details on calculating the composite variance (standard error), see Appendix D.

The final composite is the weighted average of the component indicators, which is the sum of A × B for each indicator. Note the potential application of the composite construction for use in quality improvement. The final computation shows that selected infections due to medical care is the largest single contributor to the composite both because the indicator was heavily weighted and because the performance of the provider was worse than average. The incentive created in using the composite is to allocate resources to reducing selected infections due to medical care as the best mechanism to lower the composite score.

5. Performance of the AHRQ QI Composite Measures

5.1. Evaluation Criteria

Tables 6-8 in Appendix B and Figures 2.1-2.5 and 3.1-3.5 in Appendix C show the performance of each composite measure. The composite measures are evaluated using three criteria: discrimination, forecasting, and construct validity.

Discrimination is the ability of the composite measure to differentiate performance as measured by statistically significant deviations from the average performance.

Forecasting is the ability of the composite measure to predict performance for each of the component indicators. Ideally, the forecasting performance would reflect the weighting of the components, in the sense that forecasting would maximize the differences for the most highly weighted components.

Construct validity is the degree of association between the composite and other aggregate measures of quality. In this report we look primarily at the consistency in the composites with one another. A broader analysis of construct validity would examine the relationship between the composites and external measures of quality and patient safety or other factors that might influence quality and patient safety.

5.2. Results

Table 6 shows the discrimination performance of the composite measure *Pediatric Patient Safety for Selected Indicators*. The columns show the percentage of providers that are worse than average, average,

or better than average based on the confidence interval for the composite measure. The discrimination performance varies depending on the weight used. The single and equal weights have the least ability to discriminate. The single indicator used as an example is "postoperative respiratory failure." The numerator weight tends to have the greatest ability to discriminate, followed by the denominator and factor weight.

In general, the composite identifies a relatively small number of providers with performance that is better or worse than average. Figures 2.1-2.5 show the range of values for each composite for 400 randomly selected hospitals, with the 95 percent confidence interval, which illustrates the precision of the composites.

Table 7 shows the forecasting performance of the composite measure. In this analysis each provider is assigned to a quintile (Q1-Q5) based on the performance on the composite in 2001-2003. The columns show the relative difference in the predicted risk-adjusted ratio in 2004 for the best and worst performing quintile relative to the middle 60 percent.

Forecasting performance varies depending on the weights used to construct the composite. In general, the composite is better at forecasting performance on component indicators that are more heavily weighted. In this sense the weights reflect the goals of the composite; more weight is assigned to component indicators where the goal is to reduce variability in performance.

Table 8 shows the correlation among the composite measures using the alternative weights. For *Pediatric Patient Safety for Selected Indicators*, the correlations range from 0.040 to 0.952. The single indicator weight is the least correlated. For other weights, the performance of individual hospitals on the composite tends to be highly correlated.

6. Concluding Comments

The intent of the AHRQ QI Composite Measure project was to develop a general methodology that could be used primarily to monitor performance in national and regional reporting, but that also could be applied to comparative reporting and quality improvement at the provider level. An important caveat in using the composite measures is that the measures are not intended to reflect any broader construct of quality or patient safety than is reflected in the component indicators themselves. The composites are only as useful and valid as are the component indicators that make up the composite. The AHRQ QIs are currently undergoing review through the National Quality Forum (NQF) consensus development processes, and a number of validation studies of the component indicators are underway. The actual content of the composite (i.e., what component indicators to include) and the potential uses of the composite will depend on the results of that process for the component indicators.

As the AHRQ QIs and the data upon which they are based continue to improve, the composite measures will improve as potentially useful tools for decisionmaking in allocating quality improvement resources. For example, potential extensions of the composite measure method include the incorporation of process measures (from other data sources) and measures of cost (estimated from HCUP). We encourage AHRQ QI users to continue to submit comments and suggestions for improvement on the composite measures and the component indicators to the AHRQ QI support team at support@qualityindicators.ahrq.gov.

Appendix A. AHRQ QI Composite Measure Workgroup

Workgroup Members

- John Birkmeyer, University of Michigan
- Bruce Boissonnault, Niagara Health Quality Coalition
- John Bott, Employer Health Care Alliance Cooperative
- Dale Bratzler, Oklahoma Foundation for Medical Quality
- Sharon Cheng, Medicare Payment Advisory Commission (MedPAC)
- Elizabeth Clough, Wisconsin Collaborative for Healthcare Quality
- Nancy Dunton, University of Kansas Medical Center, School of Nursing
- John Hoerner, Hospital Industry Data Institute
- David Hopkins, Pacific Business Group on Health
- Gregg Meyer, Massachusetts General Physicians Organization
- Elizabeth Mort, Massachusetts General
- Janet Muri, National Perinatal Information Center
- Vi Naylor, Georgia Hospital Association
- Eric Peterson, Duke University Medical Center
- Martha Radford, New York University Hospitals Center
- Gulzar Shah, National Association of Health Data Organizations
- Paul Turner, Vermont Program for Quality in Health Care

Liaison Members

- Justine Carr, National Committee on Vital and Health Statistics
- Robert Hungate, National Committee on Vital and Health Statistics
- Sheila Roman, Centers for Medicare & Medicaid Services
- Amy Rosen, Bedford Veterans Affairs Medical Center
- Stephen Schmaltz, Joint Commission on Accreditation of Healthcare Organizations
- Jane Sisk, National Center for Health Statistics
- Ernie Moy, Agency for Healthcare Research and Quality

Technical Advisors

- John Adams, RAND Corporation
- Bob Houchens, Medstat
- Bill Rogers, Rogers Associates
- Chunliu Zhan, Agency for Healthcare Research and Quality

AHRQ QI Support

- Mamatha Pancholi, AHRQ QI Project Officer
- Marybeth Farquhar, AHRQ NQF Project Officer
- Jeffrey Geppert, Project Director, Battelle Memorial Institute
- Theresa Schaaf, Project Manager, Battelle Memorial Institute
- Douglas O. Staiger, Technical Consultant, Dartmouth College

Appendix B. PDI Composite Tables

Table 1. Reference Population

PDI	Numerator	Denominator	Rate
PDI #01 Accidental Puncture or Laceration	7,237	8,189,085	0.884
PDI #02 Decubitus Ulcer	2,962	901,601	3.285
PDI #05 Iatrogenic Pneumothorax	1,544	7,394,640	0.209
PDI #08 Postop Hemorrhage or Hematoma	550	333,435	1.649
PDI #09 Postop Respiratory Failure	3,918	287,028	13.650
PDI #10 Postop Sepsis	6,091	271,612	22.425
PDI #11 Postop Wound Dehiscence	206	262,862	0.784
PDI #12 Selected Infections Due to Medical Care	16,802	6,313,587	2.661

Source: HCUP State Inpatient Databases, 2001-2003; rate per 1,000.

Table 2. Provider-Level Rates

		Risk Adjusted		Reliability Adjusted	
PDI	Hospitals	Rate	Std. Dev.	Rate	Std. Dev.
PDI #01 Accidental Puncture or Laceration	3,602	1.129	4.305	0.897	0.231
PDI #02 Decubitus Ulcer	3,284	2.017	11.422	2.933	0.078
PDI #05 Iatrogenic Pneumothorax	3,602	0.095	0.480	0.170	0.028
PDI #08 Postop Hemorrhage or Hematoma	2,537	1.183	10.718	1.625	0.123
PDI #09 Postop Respiratory Failure	2,530	5.507	30.720	11.897	2.344
PDI #10 Postop Sepsis	2,388	14.686	61.925	21.681	2.379
PDI #11 Postop Wound Dehiscence	3,274	0.646	6.750	0.744	0.004
PDI #12 Selected Infections Due to Medical Care	3,593	0.857	2.707	1.749	0.731

Source: HCUP State Inpatient Databases, 2001-2003; rate per 1,000.

Table 3. Provider-Level Correlation

PDI	PDI #01	PDI #02	PDI #05	PDI #08	PDI #09	PDI #10	PDI #11	PDI #12
PDI #01 Accidental Puncture or Laceration	1.000	0.015	0.071	0.006	-0.021	-0.023	-0.006	-0.006
PDI #02 Decubitus Ulcer		1.000	0.073	-0.007	0.020	0.029	-0.002	0.075
PDI #05 Iatrogenic Pneumothorax			1.000	0.003	0.108	0.073	0.017	0.231
PDI #08 Postop Hemorrhage or Hematoma				1.000	0.000	0.006	-0.004	0.009
PDI #09 Postop Respiratory Failure					1.000	0.071	0.026	0.132
PDI #10 Postop Sepsis						1.000	0.025	0.106
PDI #11 Postop Wound Dehiscence							1.000	0.012
PDI #12 Selected Infections Due to Medical Care								1.000

Source: HCUP State Inpatient Databases, 2001-2003.

Table 4. Reliability Weight by Average Annual Denominator

Average Annual Denominator Size (by quartile)					
PDI	Hospitals	Q1	Q2	Q3	Q4
PDI #01 Accidental Puncture or Laceration	3,602	109	522	1,509	6,950
PDI #02 Decubitus Ulcer	3,284	7	23	79	990
PDI #05 Iatrogenic Pneumothorax	3,602	105	488	1,383	6,233
PDI #08 Postop Hemorrhage or Hematoma	2,537	5	13	31	477
PDI #09 Postop Respiratory Failure	2,530	5	13	30	406
PDI #10 Postop Sepsis	2,388	4	8	21	422
PDI #11 Postop Wound Dehiscence	3,274	6	14	35	266
PDI #12 Selected Infections Due to Medical Care	3,593	67	364	1,130	5,463
Average Reliability Weight					
PDI	Q1	Q2	Q3	Q4	Weighted Average
PDI #01 Accidental Puncture or Laceration	0.0197	0.0609	0.1495	0.4669	0.5183
PDI #02 Decubitus Ulcer	0.0004	0.0012	0.0043	0.0491	0.1351
PDI #05 Iatrogenic Pneumothorax	0.0042	0.0142	0.0376	0.1780	0.2475
PDI #08 Postop Hemorrhage or Hematoma	0.0013	0.0034	0.0082	0.0960	0.3173
PDI #09 Postop Respiratory Failure	0.0062	0.0162	0.0414	0.3300	0.6454
PDI #10 Postop Sepsis	0.0049	0.0104	0.0294	0.3112	0.6322
PDI #11 Postop Wound Dehiscence	0.0001	0.0001	0.0003	0.0041	0.0108
PDI #12 Selected Infections Due to Medical Care	0.0347	0.1262	0.3213	0.7028	0.7012

Source: HCUP State Inpatient Databases, 2001-2003.

Table 5. Alternative Composite Weights

PDI	Single Indicator Weight	Equal Weight	Numerator Weight	Denominator Weight	Factor Weight
PDI #01 Accidental Puncture or Laceration	0.0000	0.1250	0.1841	**0.3419**	0.0584
PDI #02 Decubitus Ulcer	0.0000	0.1250	0.0753	0.0376	0.1428
PDI #05 Iatrogenic Pneumothorax	0.0000	0.1250	0.0393	0.3087	0.1908
PDI #08 Postop Hemorrhage or Hematoma	0.0000	0.1250	0.0140	0.0139	0.0607
PDI #09 Postop Respiratory Failure	**1.0000**	0.1250	0.0997	0.0120	0.1224
PDI #10 Postop Sepsis	0.0000	0.1250	0.1549	0.0113	0.1608
PDI #11 Postop Wound Dehiscence	0.0000	0.1250	0.0052	0.0110	0.0595
PDI #12 Selected Infections Due to Medical Care	0.0000	0.1250	**0.4274**	0.2636	**0.2046**

Source: HCUP State Inpatient Databases, 2001-2003. For each indicator, the most highly weighted component is in **bold**.

Table 6. Discrimination Performance of Alternative Composites

Composite	Providers	Better Than Average	Average	Worse Than Average
Pediatric Patient Safety for Selected Indicators				
Single Indicator Weight	2,530	0.63%	97.94%	1.42%
Equal Weight	3,586	0.08%	98.88%	1.03%
Numerator Weight	3,593	0.47%	96.63%	2.89%
Denominator Weight	3,595	0.25%	97.86%	1.89%
Factor Weight	3,585	0.06%	98.30%	1.65%

Source: HCUP State Inpatient Databases, 2001-2003.

Table 7. Forecasting Performance of Alternative Composites

PDI	PDI #01	PDI #02	PDI #05	PDI #08	PDI #09	PDI #10	PDI #11	PDI #12
Pediatric Patient Safety for Selected Indicators								
Single Indicator Weight								
Best 20%	0.148*	0.025*	0.142*	-0.043*	**-0.329***	-0.123*	0.005*	-0.018
Worst 20%	-0.100*	-0.003	-0.116*	0.025*	**0.685***	0.016	-0.005*	0.055*
Equal Weight								
Best 20%	-0.251*	-0.013*	-0.097*	-0.024*	-0.078*	-0.045*	-0.002*	-0.291*
Worst 20%	0.235*	0.022*	0.356*	0.065*	0.200*	0.175*	0.001	0.701*
Numerator Weight								
Best 20%	-0.206*	-0.012*	-0.079*	-0.017*	-0.054*	-0.032*	-0.003*	**-0.357***
Worst 20%	0.155*	0.026*	0.294*	0.014*	0.154*	0.163*	-0.004*	**0.820***
Denominator Weight								
Best 20%	**-0.287***	-0.012*	-0.107*	-0.027*	-0.017	-0.002	0.000	-0.272*
Worst 20%	**0.366***	0.020*	0.368*	0.039*	0.043*	0.087*	0.004*	0.652*
Factor Weight								
Best 20%	-0.145*	-0.012*	-0.100*	-0.008	-0.052*	-0.046*	-0.002*	**-0.368***
Worst 20%	0.093*	0.024*	0.387*	0.059*	0.177*	0.176*	-0.001	**0.760***

Source: HCUP State Inpatient Databases, 2001-2003;
*Significant at $p<.05$. The forecast predicts performance in 2004 based on performance in 2001-2003 (by quintile) using five alternative measure composite weights. For each indicator, the most highly weighted component is in **bold**.

Table 8. Correlation of Alternative Composites

Composite	Single Indicator Weight	Equal Weight	Numerator Weight	Denominator Weight	Factor Weight
Pediatric Patient Safety for Selected Indicators					
Single Indicator Weight	1.000	0.401	0.221	0.040	0.338
Equal Weight		1.000	0.889	0.897	0.952
Numerator Weight			1.000	0.857	0.935
Denominator Weight				1.000	0.854
Factor Weight					1.000

Source: HCUP State Inpatient Databases, 2001-2003.

Appendix C. Composite Figures

1. Single Indicator Composites

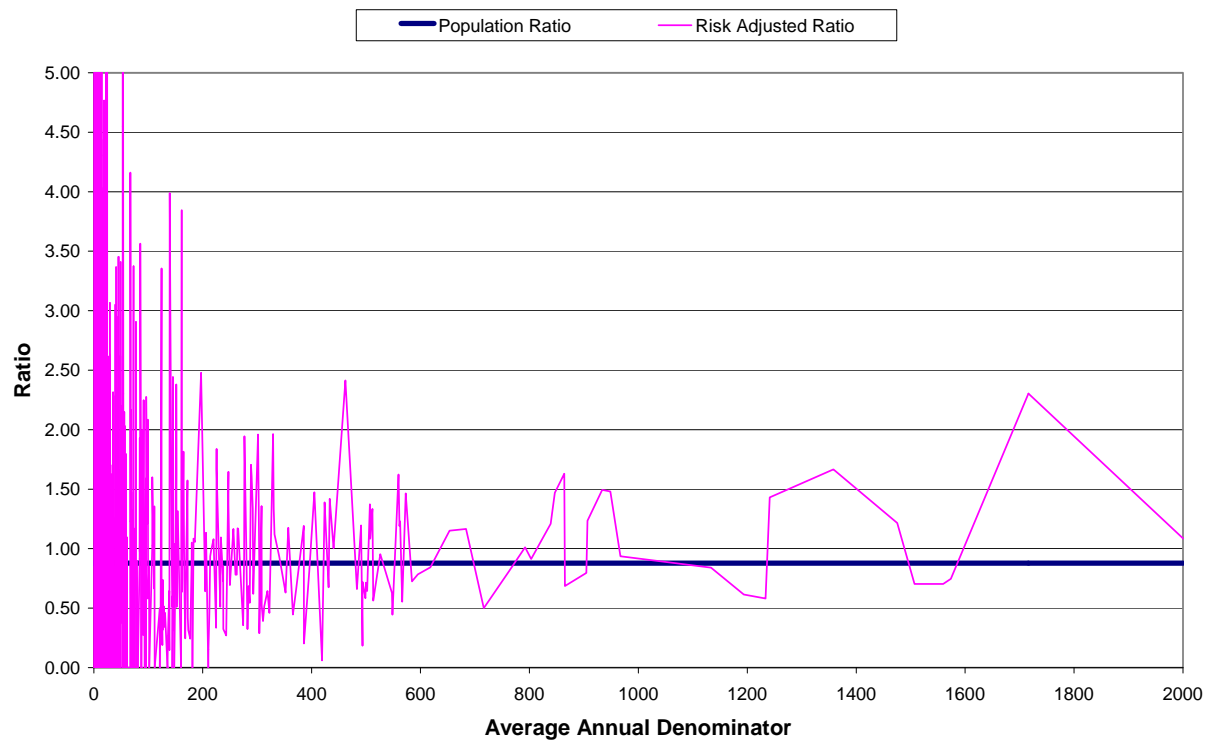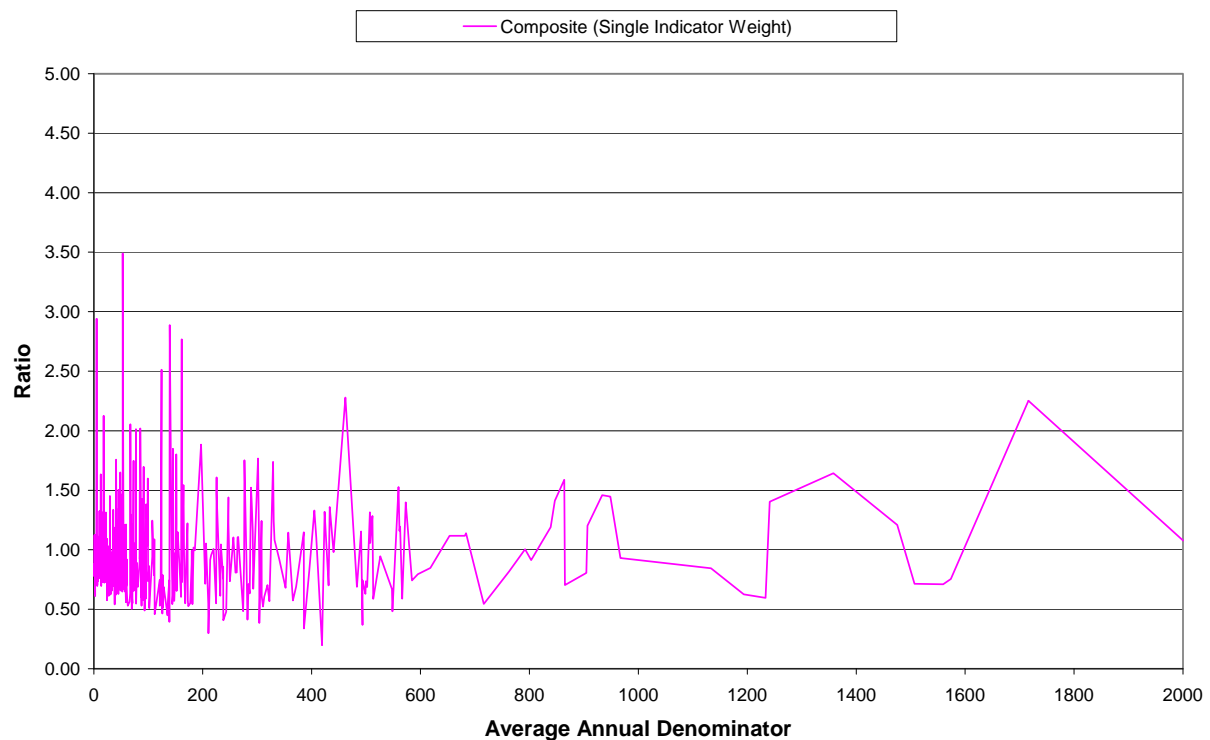**Figure 1.1 - PDI #9 Postoperative Respiratory Failure**

Figure 1.2 - PDI #9 Postoperative Respiratory Failure

2. *Precision of Alternative Composites*

Figure 2.1 - Pediatric Patient Safety for Selected Indicators, Single Indicator Weight
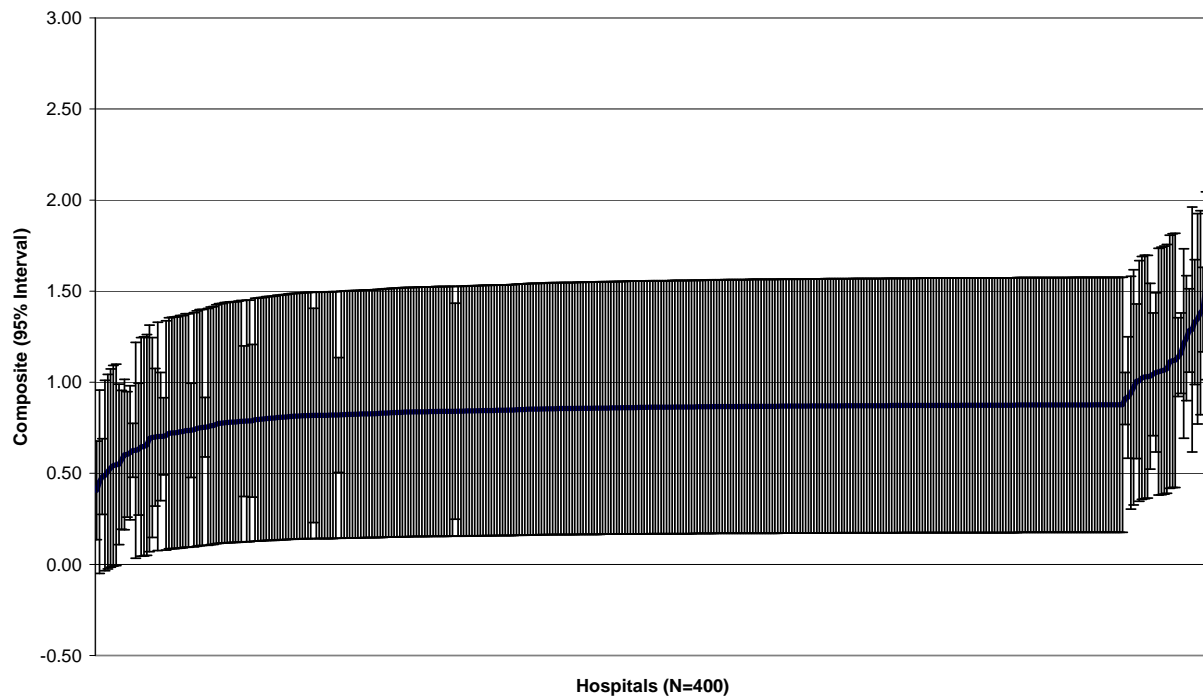

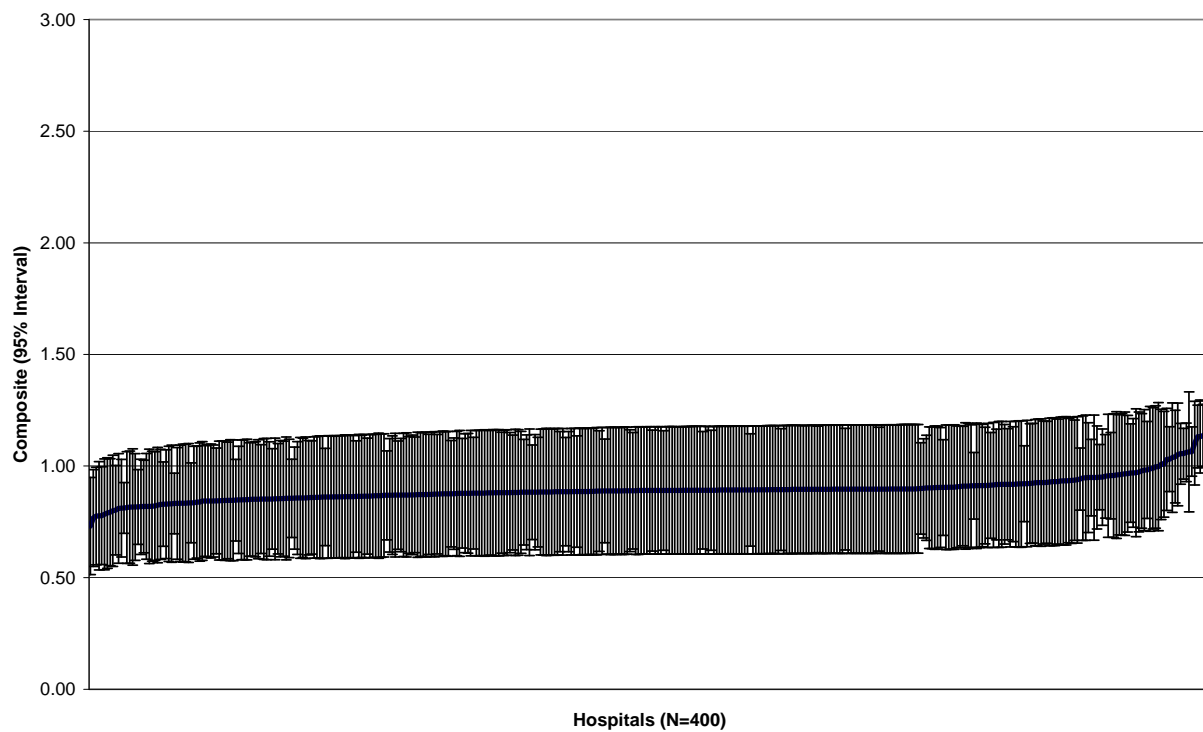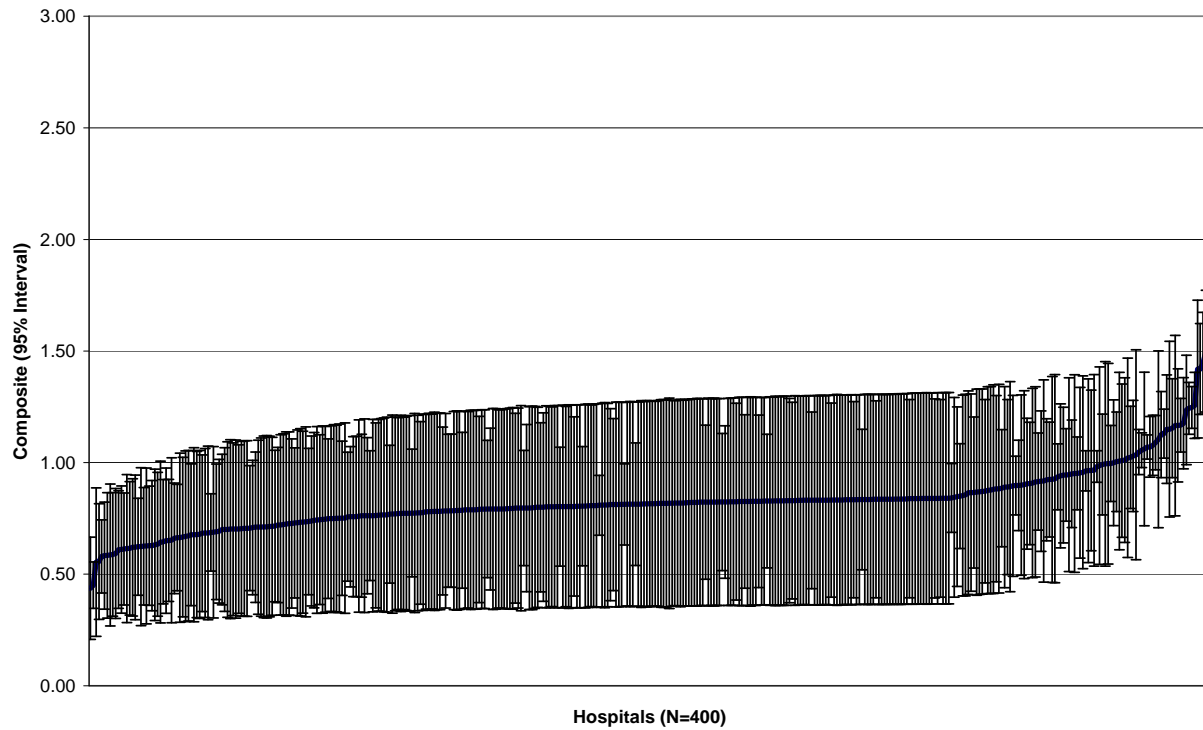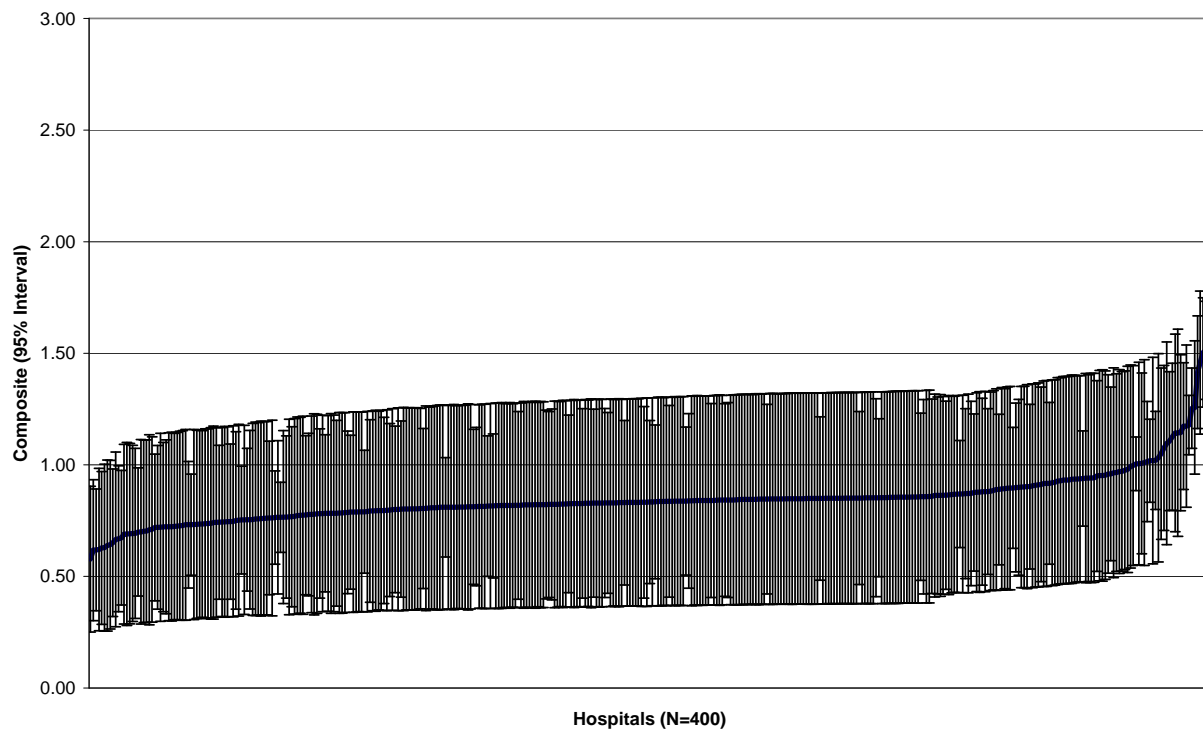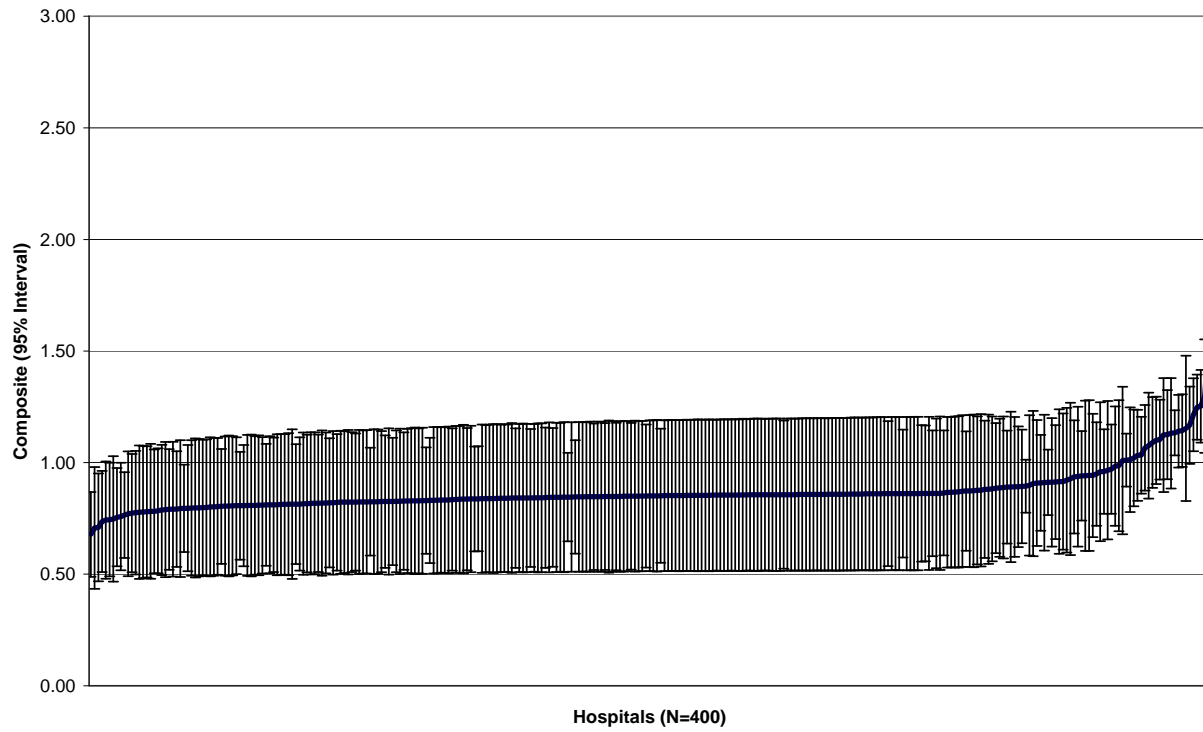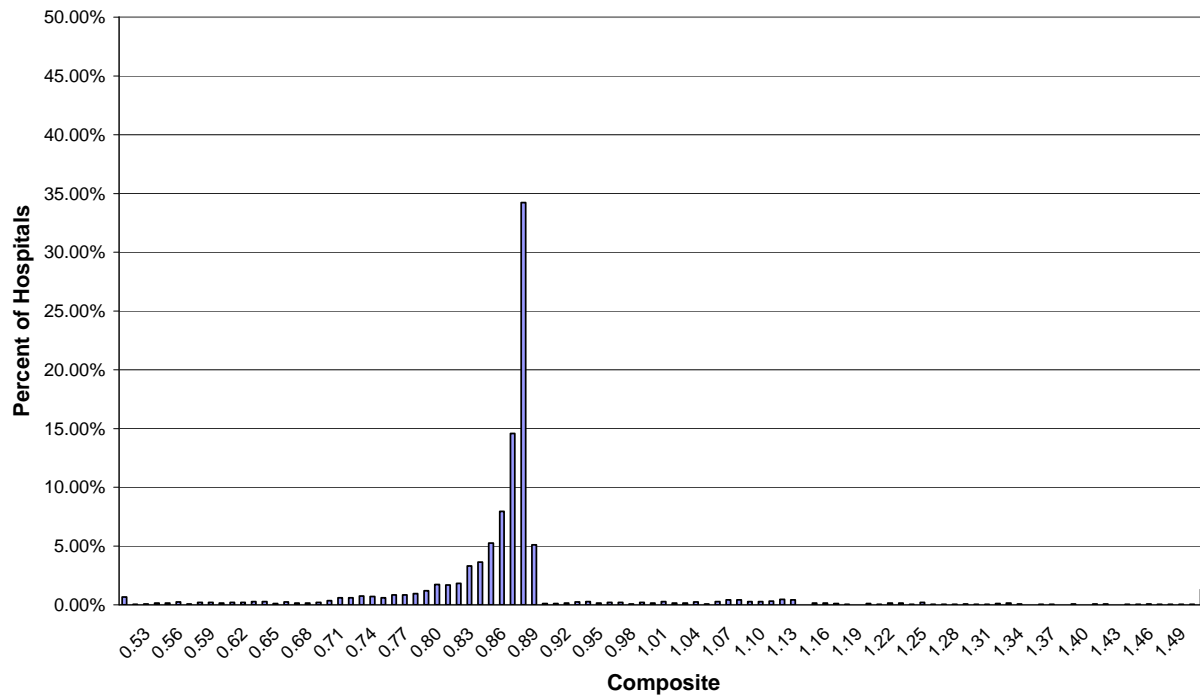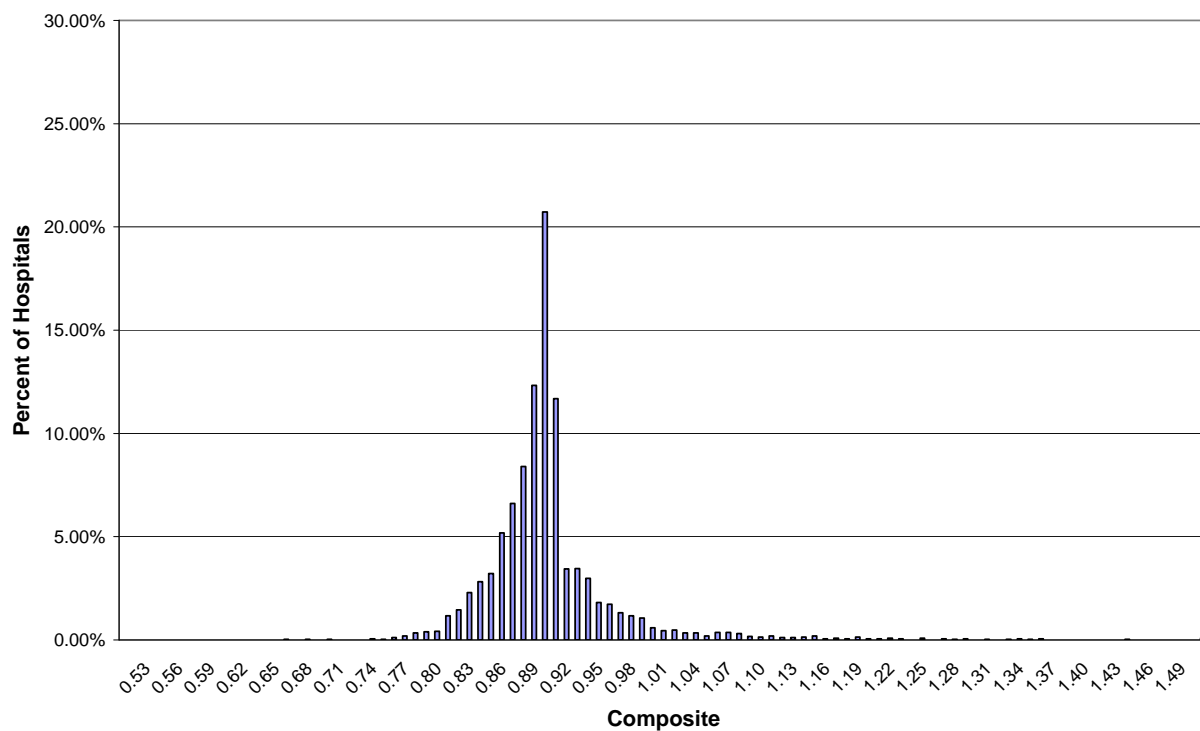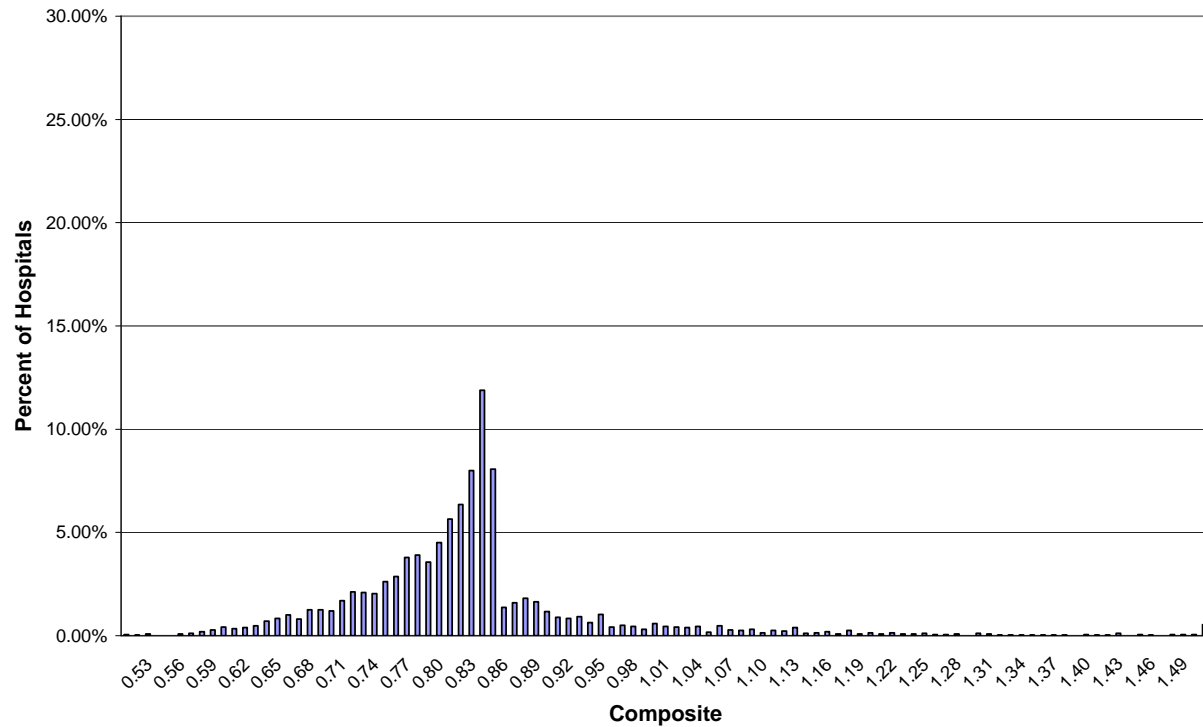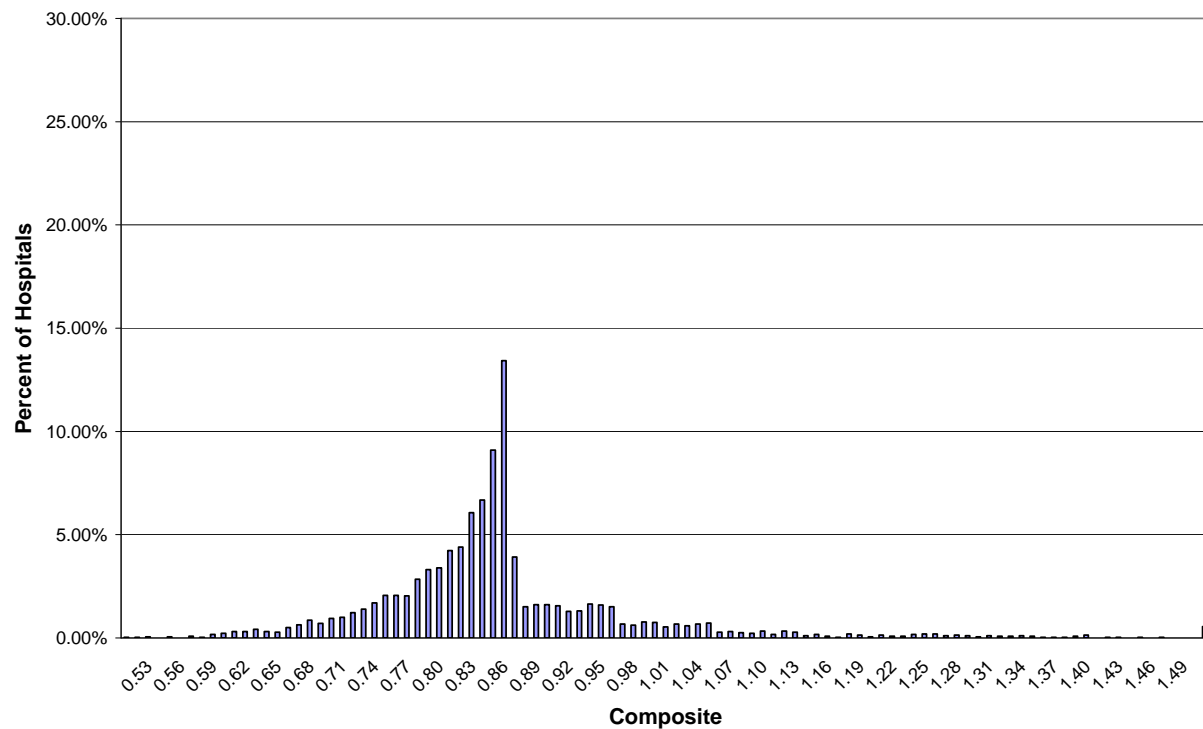**Figure 2.2 - Pediatric Patient Safety for Selected Indicators, Equal Weight**
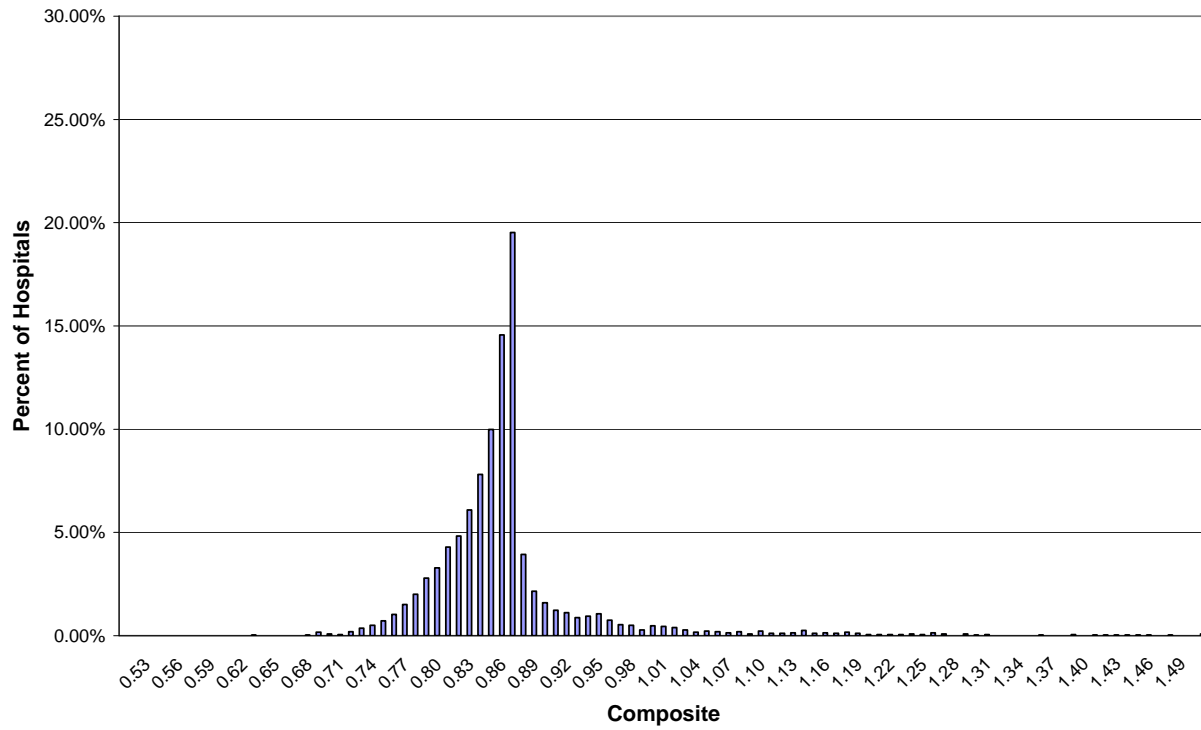
Figure 2.3 - Pediatric Patient Safety for Selected Indicators, Numerator Weight

Figure 2.4 - Pediatric Patient Safety for Selected Indicators, Denominator Weight

Figure 2.5 - Pediatric Patient Safety for Selected Indicators, Factor Weight

3. Distribution of Alternative Composites

**Figure 3.1 - Pediatric Patient Safety for Selected Indicators,
Single Indicator Weight**

Figure 3.2 - Pediatric Patient Safety for Selected Indicators, Equal Weight

Figure 3.3 - Pediatric Patient Safety for Selected Indicators, Numerator Weight

Figure 3.4 - Pediatric Patient Safety for Selected Indicators, Denominator Weight

Figure 3.5 - Pediatric Patient Safety for Selected Indicators, Factor Weight

Appendix D. Empirical Methods

Introduction

The AHRQ Quality Indicator risk-adjustment modules begin with estimating a simple logistic model of a 0/1 outcome variable and a set of patient-level covariates as dependent variables, and using the results to form the predicted outcome for each patient (e.g., P=pr(outcome=1)).

Notation

Y_{ij} = 0 or 1, outcome for patient j in hospital i

X_{ij} = covariates (e.g., gender, age, DRG, comorbidity)

P_{ij} = predicted probability from logit of Y on X

     = $\exp(X_{ij}\beta)/[1+ \exp(X_{ij}\beta)]$

     where β is estimated from logit on entire sample

e_{ij} = Y_{ij} - P_{ij} = logit residual (difference between actual and expected)

N = number of patients in sample at hospital i

α = average outcome in the entire sample* (e.g., Y-bar)

* For the AHRQ QI, the sample is the entire reference population consisting of the discharges in the State Inpatient Databases for the participating States pooled over 3 years (2001-2003). Therefore, the "average outcome for the entire sample" is the population rate.

Computing the Noise Variance

Estimate the risk-adjusted ratio (RAR) and noise variance using the Ratio Method (risk-adjusted rate = (observed rate/expected rate) × population rate) of Indirect Standardization for each hospital:

Estimating RAR

Let $O_i = (1/n_i)\sum(Y_{ij})$ be the observed rate at hospital i
Let $E_i = (1/n_i)\sum(P_{ij})$ be the expected rate at hospital i

RAR_i

     = $\alpha(O_i/E_i) = \alpha\ [(1/n_i)\sum(Y_{ij})]/[(1/n_i)\sum(P_{ij})]$ (where sum is for j = 1 to j = n_i)

     = population rate × observed/expected at hospital i.

Estimating Variance of RAR (standard error is the square root of the variance)

$Var(RAR_i)$

     = $Var[\alpha(O_i/E_i)]$

     = $(\alpha/E_i)^2 Var[O_i]$ (since var(aX) = a^2var(X) for any constant a)

     = $(\alpha/E_i)^2 Var[(1/n_i)\sum(Y_{ij})]$ (by the definition of O_i)

     = $(\alpha/E_i)^2 (1/n_i)^2 Var[\sum(Y_{ij})]$ (since var(aX) = a^2var(X) for any constant a)

     = $(\alpha/E_i)^2 (1/n_i)^2 [\sum Var(Y_{ij})]$ (since var($\sum X_i$)=$\sum$var(X_i) if X_i is independent)

     = $(\alpha/E_i)^2 (1/n_i)^2 \sum [P_{ij}(1-P_{ij})]$ (since Y is 0/1, var(Y) = P(1-P))

Computing the Composite Variance

Setup*

1. Let M be a 1xK vector of observed quality measures (for a given hospital, suppress hospital subscript for convenience), noisy measures of the true underlying 1xK quality vector μ, so that:

   - M = μ + ε
   - Let the KxK signal variance-covariance be $Var(\mu) = \Omega_\mu$
   - Let the KxK noise variance-covariance be $Var(\varepsilon) = \Omega_\varepsilon$

2. Let $\hat{\mu}$ (1xK) be the posterior (filtered) estimate of μ, so that:

   - $\mu = \hat{\mu} + v$, where the 1xK vector v represents the prediction error of the posterior estimates, and Var(v) is the KxK variance-covariance matrix for these posterior estimates.

3. The goal is to estimate the variance for any weighted average of the posterior estimates. For a given (Kx1) weighting vector (w), this is given by:
   - $Var(vw) = w'Var(v)w$

     Thus, we simply need an estimate of Var(v).

* For more information on the empirical Bayes estimator method, see the technical appendix in Dimick JB, Staiger DO, Birkmeyer JD. Are mortality rates for different operations related?: Implications for measuring the quality of noncardiac surgery. Med Care 2006 Aug;44(8):774-8; and McClellan MB and Staiger DO. The quality of healthcare providers. Cambridge, MA: National Bureau of Economic Research, 1999. NBER Working Paper #7327. Available at: http://www.nber.org/papers/w7327.

Special Case

Filtered estimates are formed in isolation for each measure (univariate) and the estimation error is assumed not correlated across measures (e.g., each measure is based on a different sample of patients or independent patient outcomes).

1. Forming each measure in isolation, using superscripts to indicate the measure (k=1,…,K) as above, so:

$$\hat{\mu}^k = M^k \hat{\beta}^k = M^k \left[\Omega_\mu^{kk} + \Omega_\varepsilon^{kk}\right]^{-1} \Omega_\mu^{kk}$$

$$Var(v^k) = \Omega_\mu^{kk} - \Omega_\mu^{kk}\left(\Omega_\mu^{kk} + \Omega_\varepsilon^{kk}\right)^{-1}\Omega_\mu^{kk} = \Omega_\mu^{kk}\left(1 - \hat{\beta}^k\right)$$

   - Note that in this simple case the filtered estimate is a simple shrinkage estimator and:
     - $\hat{\beta}^k$ is the signal ratio of measure k, is the reliability of the measure, and is the r-squared measuring how much of the variation in the true measure can be explained with the filtered measure.
     - The variance of the filtered estimate is simply the signal variance times 1 minus the signal ratio. Thus, if the signal ratio is 0 (no information in the measure), the error in the estimate is equal to the signal variance. But as the signal ratio grows, the error in the estimate shrinks (to 0 if there is a signal ratio of 1 – no noise).

2. The formula for $Var(v^k)$ above provides the diagonal elements of $Var(v)$ (the full KxK variance-covariance matrix of the filtered estimates). So, one gets the covariance elements, which are (for j≠k):

$$Cov(v^j, v^k) = E\left[\left(\mu^j - \hat{\mu}^j\right)\left(\mu^k - \hat{\mu}^k\right)\right]$$

- After some algebra (assuming independent estimation error in the two measures), one gets the following simple expression:

$$Cov(v^j, v^k) = \Omega_\mu^{jk}\left(1 - \hat{\beta}^j\right)\left(1 - \hat{\beta}^k\right)$$

- Note that this is just the signal covariance times 1 minus the signal ratio for each of the measures. Thus, if the signal ratio is 0 for each measure, the covariance in the estimates is simply the signal covariance. As either measure gets a stronger signal ratio (becomes more precise), the covariance in the estimates shrinks to 0.
- Also note that if one measure is missing, then the signal ratio is simply set to 0. The filtered estimate is shrunk all the way back to the (conditional) mean, and the variance and covariance are as defined above.

Quality Indicator User Guide: Pediatric Quality Indicators (PDI) Composite Measures
Version 4.4

Prepared for:

Agency for Healthcare Research and Quality
U.S. Department of Health and Human Services
540 Gaither Road
Rockville, MD 20850
http://www.qualityindicators.ahrq.gov

Prepared by:

Battelle
505 King Avenue
Columbus, OH 43201

March 2012

Contents

Chapter 1. Overview

The goal in developing composite measures was to provide a measure that could be used to monitor performance over time or across regions and populations using a method that applied at the national, regional, State or provider/area level. Potential benefits of composite measures are to: summarize quality across multiple indicators, improve the ability to detect differences, identify important domains and drivers of quality, prioritize action for quality improvement, make current decisions about future (unknown) health care needs and avoid cognitive "shortcuts". Despite these potential advantages there are concerns with composite measures, such as: masking important differences and relations among components, not being actionable, not being representative of parts of the health care system that contribute most to quality or detracting from the impact and credibility of reports. In weighing the benefits and concerns of composite measures there are also a number of potential uses to consider, such as: consumer use for selecting a hospital or health plan, provider use for identifying domains and drivers of quality, purchasers use for selection of hospitals or health plans to improve employee health and policymakers use for setting policy priorities to improve the health of a population. This document provides a technical overview for AHRQ QI users.

What Are the Composites?

Provider-Level Composite

Applying these criteria to the PDIs, one could advocate for separate composites based on the type of adverse event (e.g., postoperative). However, in general, the component indicators apply to the same providers and show at least some positive correlation with one another. Therefore, the initial composite includes all the provider-level indicators (see table below), with the exception of foreign body (PDI #3) and transfusion reaction (PDI #13), which are reported as counts. Future development might examine sub-composites for certain indicators.

Table 1. AHRQ PDI Composite Measure Components[1]

Pediatric Patient Safety for Selected Indicators (PDI #19)
PDI #01 Accidental Puncture or Laceration Rate
PDI #02 Pressure Ulcer Rate
PDI #05 Iatrogenic Pneumothorax Rate
PDI #08 Postoperative Hemorrhage or Hematoma Rate[2]
PDI #09 Postoperative Respiratory Failure Rate[2]
PDI #10 Postoperative Sepsis Rate
PDI #11 Postoperative Wound Dehiscence Rate
PDI #12 Central Venous Catheter-Related Blood Stream Infection Rate

[1] This composite measure (i.e., PDI #19) is endorsed by the National Quality Forum (NQF: #532).
[2] This measure is not included in the NQF endorsed composite measure.

Area-Level Composites (Overall, Acute, and Chronic)

The area-level Pediatric Quality Indicators (PDI) are measures of potentially avoidable hospitalizations for Ambulatory Care Sensitive Conditions (ACSCs), which, though they rely on hospital discharge data, are intended to reflect issues of access to, and quality of, ambulatory care

in a given geographic area. The PDI composites are intended to improve the statistical precision of the individual PDI, allowing for greater discrimination in performance among areas and improved ability to identify potentially determining factors in performance.

An overall composite captures the general concept of potentially avoidable hospitalization connecting the individual PDI measures, which are all rates at the area level. Separate composite measures were created for acute and chronic conditions to investigate different factors influencing hospitalization rates for each condition. See Table 2 for the measures that comprise each of the three PDI composites. The PDI composites provide the following advantages:

- Provide assessment of quality and disparity
- Provide baselines to track progress
- Identify information gaps
- Emphasize interdependence of quality and disparities
- Promote awareness and change

Table 2. AHRQ PDI Composite Measure[1]

Overall Composite (PDI #90)	
PDI #14 Asthma Admission Rate	PDI #16 Gastroenteritis Admission Rate
PDI #15 Diabetes Short-Term Complications Admission Rate	PDI #18 Urinary Tract Infection Admission Rate
Acute Composite (PDI #91)	
PDI #16 Gastroenteritis Admission Rate	PDI #18 Urinary Tract Infection Admission Rate
Chronic Composite (PDI #92)	
PDI #14 Asthma Admission Rate	PDI #15 Diabetes Short-Term Complications Admission Rate

[1] These composite measure (i.e., PDI #90, #91, and #92) are not endorsed by the National Quality Forum.

Chapter 2. Calculation

How Are the Composites Created?

Provider-Level Composite

The composite measures are evaluated using three criteria: discrimination, forecasting, and construct validity.

Discrimination is the ability of the composite measure to differentiate performance as measured by statistically significant deviations from the average performance.

Forecasting is the ability of the composite measure to predict performance for each of the component indicators. Ideally, the forecasting performance would reflect the weighting of the components, in the sense that forecasting would maximize the differences for the most highly weighted components.

Construct validity is the degree of association between the composite and other aggregate measures of quality. In this report we look primarily at the consistency in the composites with one another. A broader analysis of construct validity would examine the relationship between the composites and external measures of quality or other factors that might influence quality.

Steps for creating the composite:

Step 1. Compute the risk-adjusted rate and confidence interval
The AHRQ QI risk-adjusted rate is computed based on a hierarchical logistic regression model for calculating a predicted value for each case. Then the predicted values among all the cases in the hospital are averaged to compute the expected rate. The risk-adjusted rate is computed using indirect standardization as the observed rate (OR) divided by the expected rate (ER), with the result multiplied by the reference population rate: (RR) = (OR/ER × PR).

Step 2. Scale the risk-adjusted rate using the reference population
The relative magnitudes of the rates vary from indicator to indicator. To combine the component indicators using a common scale, each indicator's risk-adjusted rate is divided by the reference population rate to yield a ratio. The components of the composite are therefore defined in terms of a ratio to the reference population rate for each indicator. The component indicators are scaled by the reference population rate, so each indicator reflects the degree of deviation from the overall average performance.

Step 3. Compute the reliability-adjusted ratio
The reliability-adjusted ratio (RAR) is computed as the weighted average of the risk-adjusted ratio and the reference population ratio, where the weights vary from 0 to 1, depending on the degree of reliability for the indicator and provider (or other unit of analysis).
RAR = [risk-adjusted ratio × weight] + [reference population ratio × (1 − weight)]

For small providers, the weight is closer to 0. For large providers, the weight is closer to 1. For a given provider, if the denominator is 0, then the weight assigned is 0 (i.e., the reliability-adjusted ratio is the reference population ratio).

Step 4. Select the component weights
The composite measure is the weighted average of the scaled and reliability-adjusted ratios for the component indicators. Some examples of possible weights follow, though others are possible:

Single indicator weight. In this case, the composite is simply the reliability-adjusted ratio for a single indicator. The reference population rate is the same among all providers.

Equal weight. In this case, each component indicator is assigned an identical weight based on the number of indicators. That is, the weight equals 1 divided by the number of indicators in the composite (e.g., 1/8 = 0.1250).

Numerator weight. A numerator weight is based on the relative frequency of the numerator for each component indicator in the reference population. In general, a numerator weight reflects the amount of harm in the outcome of interest, in this case a potentially preventable adverse event. One might also use weights that reflect the amount of excess mortality or complications associated with the adverse event, or the amount of confidence one has in identifying events (i.e., the positive predictive value).

Denominator weight. A denominator weight is based on the relative frequency of the denominator for each component indicator in the reference population. In general, a denominator weight reflects the amount of risk of experiencing the outcome of interest in a given population. For example, the denominator weight might be based on the demographic composition of a health plan, the employees of a purchaser, a State, an individual hospital, or a single patient.

Factor weight. A factor weight is based on some sort of analysis that assigns each component indicator a weight that reflects the contribution of that indicator to the common variation among the indicators. The component indicator that is most predictive of that common variation is assigned the highest weight.

Step 5. Construct the composite measure
The composite measure is the weighted average of the component indicators using the selected weights and the scaled and reliability-adjusted indicators.

Composite = [indicator1 RAR × weight1] + [indicator2 RAR × weight2] + . . . + [indicatorN RAR × weightN]

The confidence interval of the composite is based on the standard error of the composite, which is the square root of the variance. The variance is computed based on the signal variance covariance matrix and the reliability weights.

Area-Level Composites (Overall, Acute, and Chronic)

The composites were created through a workgroup[1] that included discussion of conceptual issues related to the composite (e.g., single composite vs. separate composites) and analyses using 2003 State Inpatient Data (SID) from the Healthcare Cost and Utilization Project (HCUP)[2].

The PDI composites' components are combined by summing the component numerators (i.e., hospitalizations) because each PDI measure has a common denominator. The Perforated Appendix indicator (PDI #17) is excluded because the denominator differs (i.e., based on a discharge structure).

Weights. The number of hospitalizations (i.e., prevalence of the condition) was used as the "weight" for combining the component indicators. Both hospital days and costs were also examined as possible approaches for weighting the data and yielded substantively similar results.

Calculation. Descriptive statistics for 12 of the PQIs (the adult version of the PDI) were calculated as hospitalizations per 100,000 persons for the entire dataset and by county. Correlations and factor loadings for the county level rates (adjusted for age and gender) were examined. Ultimately, the composites are constructed by summing the hospitalizations across the component conditions and dividing by the population. Rates can optionally be adjusted for age, sex and socio-economic status when comparing across regions or demographic groups.

Validation. The relation between the composite and other area measures potentially related to access to care (e.g., hospital beds per population and primary care physician density) were examined.

---

[1] Agency for Healthcare Research and Quality Quality Indicators. (April 7, 2006). *Prevention Quality Indicators (PQI) Composite Measure Workgroup Final Report.* Available:
http://www.qualityindicators.ahrq.gov/modules/pqi_resources.aspx.
[2] The state data organizations that participated in the 2003 HCUP SID: Arizona Department of Health Services; California Office of Statewide Health Planning & Development; Colorado Health & Hospital Association; Connecticut - Chime, Inc.; Florida Agency for Health Care Administration; Georgia: An Association of Hospitals & Health Systems; Hawaii Health Information Corporation; Illinois Health Care Cost Containment Council; Indiana Hospital & Health Association; Iowa Hospital Association; Kansas Hospital Association; Kentucky Department for Public Health; Maine Health Data Organization; Maryland Health Services Cost Review; Massachusetts Division of Health Care Finance and Policy; Michigan Health & Hospital Association; Minnesota Hospital Association; Missouri Hospital Industry Data Institute; Nebraska Hospital Association; Nevada Department of Human Resources; New Hampshire Department of Health & Human Services; New Jersey Department of Health & Senior Services; New York State Department of Health; North Carolina Department of Health and Human Services; Ohio Hospital Association; Oregon Association of Hospitals & Health Systems; Pennsylvania Health Care Cost Containment Council; Rhode Island Department of Health; South Carolina State Budget & Control Board; South Dakota Association of Healthcare Organizations; Tennessee Hospital Association; Texas Health Care Information Council; Utah Department of Health; Vermont Association of Hospitals and Health Systems; Virginia Health Information; Washington State Department of Health; West Virginia Health Care Authority; Wisconsin Department of Health & Family Services. http://hcup-us.ahrq.gov.

Chapter 3. Use

How Have the Composites Changed?

Provider-Level Composite

With each new release of the AHRQ QI, the reference population is updated to the most current HCUP data available. The numerator and denominator weights are updated to reflect the indicator technical specifications as applied to the reference population.

Area-Level Composites (Overall, Acute, and Chronic)

The specifications of the PDI Composites have not changed since the initial release. There have been changes to the component PDI that constitute the composite, which can be found on the AHRQ QI website in the Log of Coding Updates and Revisions document (http://www.qualityindicators.ahrq.gov/modules/pdi_resources.aspx).

What Are the Current Uses of the Composites?

Provider-Level Composite

Users must use these "NQF Numerator Weights" when using the AHRQ QI software to compute the composite measures using their own data and when comparing the results of the software with the results reported under the Hospital Inpatient Quality Reporting (IQR) Program (formerly known as the Reporting of Hospital Quality Data for Annual Payment Update (RHQDAPU) program). The following table provides the NQF weights for this composite measure. The sum of the weights for the indicators included in the same composite always equals one.

Table 3. NQF Numerator Weights for the Pediatric Patient Safety for Selected Indicators Composite

Indicator	Label	Weight USEPOA = 0[1]	Weight USEPOA = 1[1]
PDI 01	Accidental Puncture or Laceration Rate	0.2431	0.2608
PDI 02	Pressure Ulcer Rate	0.1122	0.1413
PDI 05	Iatrogenic Pneumothorax Rate	0.0548	0.0547
PDI 08[2]	Postoperative Hemorrhage or Hematoma Rate	0.0	0.0
PDI 09[2]	Postoperative Respiratory Failure Rate	0.0	0.0
PDI10	Postoperative Sepsis Rate	0.2257	0.2119
PDI 11	Postoperative Wound Dehiscence Rate	0.0072	0.009
PDI 12	Central Venous Catheter-Related Blood Stream Infection Rate	0.3569	0.3223
SUM		0.9999	1.0000

[1] The use of POA results in different weights for the composite. Without POA, USEPOA = 0; With POA, USEPOA = 1.

Source: 2008 State Inpatient Databases, Healthcare Cost and Utilization Program, Agency for Healthcare Research and Quality.
Note: in Version 3.2, PDI #2 is labeled "Decubitus Ulcer" and PDI #12 is labeled "Selection Infection due to Medical Care."
[2] These weights are set to zero because these measures are not included in the NQF Endorsed Composite.

Area-Level Composites (Overall, Acute, and Chronic)

The PDI composites are intended to be used to provide national estimates that can be tracked over time and to provide state and county level estimates that can be compared with the national estimate and to each other.

The following two questions were examined in the initial creation of the composite:

Does disease prevalence impact variability?

As anticipated, areas with higher rates of diabetes and hypertension show higher hospitalizations, particularly in the chronic composite. However, for asthma the contrary relation is true suggesting other confounding factors.

Is variability driven by poverty status?

Areas with low levels of poverty also show lower hospitalization rates for each of the PDI composites, which is independent of access to care.

Additional Resources

See the AHRQ QI website for additional resources and downloads:
http://www.qualityindicators.ahrq.gov/modules/pdi_resources.aspx.

Agency for Healthcare Research and Quality, "Pediatric Quality Indicators (PDI) Composite Measure Workgroup Final Report," (March 2008). The report is available at
http://www.qualityindicators.ahrq.gov/modules/pdi_resources.aspx.

Perioperative Hemorrhage or Hematoma Rate
Technical Specifications

Pediatric Quality Indicators #8 (PDI #8)
AHRQ Quality Indicators™, Version 4.5, May 2013
Provider-Level Indicator
Type of Score: Rate

Description

Perioperative hemorrhage or hematoma cases with control of perioperative hemorrhage, drainage of hematoma, or a miscellaneous hemorrhage- or hematoma-related procedure following surgery per 1,000 surgical discharges for patients ages 17 years and younger. Includes metrics for discharges grouped by high and low risk. Excludes cases with a diagnosis of coagulation disorder; cases with a principal diagnosis of perioperative hemorrhage or hematoma; cases with a secondary diagnosis of perioperative hemorrhage or hematoma present on admission; cases where the only operating room procedure is control of perioperative hemorrhage, drainage of hematoma, or a miscellaneous hemorrhage- or hematoma-related procedure; obstetric cases; and neonates with birth weight less than 500 grams.

[NOTE: The software provides the rate per hospital discharge. However, common practice reports the measure as per 1,000 discharges. The user must multiply the rate obtained from the software by 1,000 to report events per 1,000 hospital discharges.]

[NOTE: To obtain stratified results, the user must run the PDSASG2.SAS program in the SAS QI Software Version 4.5 or choose to stratify by risk category in the Windows QI Software Version 4.5]

Numerator

Overall:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with either:
- any secondary ICD-9-CM diagnosis codes for perioperative hemorrhage and any-listed ICD-9-CM procedure codes for control of perioperative hemorrhage; or
- any secondary ICD-9-CM diagnosis codes for perioperative hemorrhage and any-listed ICD-9-CM procedure codes for drainage of hematoma; or
- any secondary ICD-9-CM diagnosis codes for perioperative hemorrhage and any-listed ICD-9-CM procedure codes for miscellaneous hemorrhage- or hematoma-related procedure; or

- any secondary ICD-9-CM diagnosis codes for perioperative hematoma and any-listed ICD-9-CM procedure codes for control of perioperative hemorrhage; or
- any secondary ICD-9-CM diagnosis codes for perioperative hematoma and any-listed ICD-9-CM procedure codes for drainage of hematoma; or
- any secondary ICD-9-CM diagnosis codes for perioperative hematoma and any-listed ICD-9-CM procedure codes for miscellaneous hemorrhage or hematoma-related procedure

ICD-9-CM Perioperative hemorrhage diagnosis code:
99811   HEMORRHAGE COMPLIC PROC

ICD-9-CM Perioperative hematoma diagnosis code:
99812   HEMATOMA COMPLIC PROC

ICD-9-CM Control of perioperative hemorrhage procedure codes:

287	HEMORR CONTRL POST T & A	3887	OCCLUDE ABD VEIN NEC
3880	SURG VESSEL OCCLUS NEC	3888	OCCLUDE LEG ARTERY NEC
3881	OCCLUS INTRACRAN VES NEC	3889	OCCLUDE LEG VEIN NEC
3882	OCCLUS HEAD/NECK VES NEC	3941	POSTOP VASC OP HEM CONTR
3883	OCCLUDE ARM VESSEL NEC	3998	HEMORRHAGE CONTROL NOS
3884	OCCLUDE AORTA NEC	4995	CONTROL ANAL HEMORRHAGE
3885	OCCLUDE THORACIC VES NEC	5793	CONTROL BLADD HEMORRHAGE
3886	OCCLUDE ABD ARTERY NEC	6094	CONTROL PROSTATE HEMORR

ICD-9-CM Drainage of hematoma procedure codes:

1809	EXTERNAL EAR INCIS NEC	7014	VAGINOTOMY NEC
540	ABDOMINAL WALL INCISION	7109	INCIS VULVA/PERINEUM NEC
5412	REOPEN RECENT LAP SITE	7591	EVAC OB INC HEMAT PERIN
5919	PERIVESICAL INCISION NEC	7592	EVAC OB HEMAT VULVA/VAG
610	SCROTUM & TUNICA I & D	8604	OTHER SKIN & SUBQ I & D
6998	UTERINE SUPPORT OP NEC		

ICD-9-CM Miscellaneous hemorrhage- or hematoma-related procedure codes:

0121	CRANIAL SINUS I & D	0791	THYMUS FIELD EXPLORATION
0124	OTHER CRANIOTOMY	0792	OTHER INCISION OF THYMUS
0131	INCISE CEREBRAL MENINGES	0795	THORAC INCISION THYMUS
0139	OTHER BRAIN INCISION	0809	OTHER EYELID INCISION
0213	MENINGE VESSEL LIGATION	090	LACRIMAL GLAND INCISION
0239	VENT SHUNT EXTRACRAN NEC	0953	LACRIMAL SAC INCISION
0241	IRRIGATE/EXPL VENT SHUNT	1244	EXCISE CILIARY BODY LES
0309	SPINAL CANAL EXPLOR NEC	1289	SCLERAL OPERATION NEC
0401	EXCISION ACOUSTC NEUROMA	149	OTHER POST SEGMENT OPS
0404	PERIPH NERVE INCIS NEC	1609	ORBITOTOMY NEC
0443	CARPAL TUNNEL RELEASE	1802	EXT AUDITORY CANAL INCIS
0444	TARSAL TUNNEL RELEASE	1809	EXTERNAL EAR INCIS NEC
0602	REOPEN THYROID FIELD WND	1811	OTOSCOPY
0609	INCIS THYROID FIELD NEC	2001	MYRINGOTOMY W INTUBATION
0692	THYROID VESSEL LIGATION	2009	MYRINGOTOMY NEC
0700	ADRENAL EXPLORATION NOS	2021	MASTOID INCISION
0701	UNILAT ADRENAL EXPLORAT	2022	PETRUS PYRAM AIR CEL INC
0702	BILAT ADRENAL EXPLORAT	2023	MIDDLE EAR INCISION
0741	ADRENAL INCISION	2079	INC/EXC/DESTR IN EAR NEC
0743	ADRENAL VESSEL LIGATION	2100	CONTROL OF EPISTAXIS NOS
0751	PINEAL FIELD EXPLORATION	2101	ANT NASAL PACK FOR EPIST
0752	PINEAL GLAND INCISION	2102	POST NASAL PAC FOR EPIST
0771	PITUITARY FOSSA EXPLORAT	2103	CAUTERY TO STOP EPISTAX
0772	PITUITARY GLAND INCISION	2104	ETHMOID ART LIGAT-EPIST

2105	MAX ART LIG FOR EPISTAX	398	CARTD BODY/SINUS/VASC OP#
2106	EXT CAROT ART LIG-EPIST	400	INCIS LYMPHATIC STRUCTUR
2107	NASAL SEPT GRFT-EPISTAX	412	SPLENOTOMY
2109	EPISTAXIS CONTROL NEC	4209	ESOPHAGEAL INCISION NEC
211	INCISION OF NOSE	4221	ESOPHAGOSCOPY BY INCIS
2121	RHINOSCOPY	4222	ESOPHAGOSCOPY THRU STOMA
2219	NASAL SINUS DX PROC NEC	4223	ESOPHAGOSCOPY NEC
2239	EXT MAXILLARY ANTROT NEC	4233	ENDOSC DESTRUC ESOPH LES
2241	FRONTAL SINUSOTOMY	4239	DESTRUCT ESOPHAG LES NEC
2251	ETHMOIDOTOMY	4291	LIGATION ESOPH VARIX
2252	SPHENOIDOTOMY	430	GASTROTOMY
260	INCIS SALIVARY GLND/DUCT	4341	ENDOSC DESTR STOMACH LES
270	DRAIN FACE & MOUTH FLOOR	4411	TRANSABDOMIN GASTROSCOPY
280	PERITONSILLAR I & D	4412	GASTROSCOPY THRU STOMA
2911	PHARYNGOSCOPY	4413	GASTROSCOPY NEC
313	INCIS LARYNX TRACHEA NEC	4440	SUTURE PEPTIC ULCER NOS
3141	TRACHEOSCOPY THRU STOMA	4441	SUT GASTRIC ULCER SITE
3142	LARYGNOSCOPY/TRACHEOSCOP	4442	SUTURE DUODEN ULCER SITE
330	INCISION OF BRONCHUS	4443	ENDOSC CONTROL GAST HEM
331	INCISION OF LUNG	4444	TRANSCATH EMBO GAST HEM
3321	BRONCHOSCOPY THRU STOMA	4449	OTHER CONTROL GAST HEM
3322	FIBER-OPTIC BRONCHOSCOPY	4491	LIGATE GASTRIC VARICES
3323	OTHER BRONCHOSCOPY	4500	INTESTINAL INCISION NOS
3324	CLOSED BRONCHIAL BIOPSY	4501	DUODENAL INCISION
3402	EXPLORATORY THORACOTOMY	4502	SMALL BOWEL INCISION NEC
3403	REOPEN THORACOTOMY SITE	4503	LARGE BOWEL INCISION
3409	OTHER PLEURAL INCISION	4511	TRANSAB SM BOWEL ENDOSC
341	INCISION OF MEDIASTINUM	4512	ENDOSC SM BOWEL THRU ST
3421	TRANSPLEURA THORACOSCOPY	4513	SM BOWEL ENDOSCOPY NEC
3422	MEDIASTINOSCOPY	4516	EGD WITH CLOSED BIOPSY
3582	TOTAL REPAIR OF TAPVC	4521	TRANSAB LG BOWEL ENDOSC
3639	OTH HEART REVASCULAR	4522	ENDOSC LG BOWEL THRU ST
3699	HEART VESSEL OP NEC	4523	COLONOSCOPY
370	PERICARDIOCENTESIS	4524	FLEXIBLE SIGMOIDOSCOPY
3711	CARDIOTOMY	4543	ENDOSC DESTRU LG INT LES
3799	OTHER HEART/PERICARD OPS	4549	DESTRUC LG BOWEL LES NEC
3800	INCISION OF VESSEL NOS	480	PROCTOTOMY
3801	INTRACRAN VESSEL INCIS	4821	TRANSAB PROCTOSIGMOIDOSC
3802	HEAD/NECK VES INCIS NEC	4822	PROCTOSIGMOIDOSC THRU ST
3803	UPPER LIMB VESSEL INCIS	4823	RIGID PROCTOSIGMOIDOSCPY
3804	INCISION OF AORTA	4921	ANOSCOPY
3805	THORACIC VESSEL INC NEC	4945	HEMORRHOID LIGATION
3806	ABDOMEN ARTERY INCISION	500	HEPATOTOMY
3807	ABDOMINAL VEIN INCISION	5110	ENDOSC RETRO CHOLANGIOPA
3808	LOWER LIMB ARTERY INCIS	5111	ENDOSC RETRO CHOLANGIO
3809	LOWER LIMB VEIN INCISION	5141	CDE FOR CALCULUS REMOV
3850	VARICOSE V LIG-STRIP NOS	5142	CDE FOR OBSTRUCTION NEC
3851	INTCRAN VAR V LIG-STRIP	5149	INCIS OBSTR BILE DUC NEC
3852	HEAD/NECK VAR V LIG-STR	5151	COMMON DUCT EXPLORATION
3853	ARM VARICOSE V LIG-STRIP	5159	BILE DUCT INCISION NEC
3855	THORAC VAR V LIG-STRIP	5184	ENDOSC DILATION AMPULLA
3857	ABD VARICOS V LIGA-STRIP	5188	ENDOSC REMOVE BILE STONE
3859	LEG VARICOS V LIGA-STRIP	5196	PERC EXTRAC COM DUC CALC
387	INTERRUPTION VENA CAVA	5198	OTH PERC PROC BIL TRCT
3930	SUTURE OF VESSEL NOS	5209	PANCREATOTOMY NEC
3931	SUTURE OF ARTERY	5213	ENDOSC RETRO PANCREATOG
3932	SUTURE OF VEIN	5411	EXPLORATORY LAPAROTOMY
3952	ANEURYSM REPAIR NEC	5419	LAPAROTOMY NEC
3953	ARTERIOVEN FISTULA REP	5421	LAPAROSCOPY
3972	ENDOVASC EMBOL HD/NK VES	5495	PERITONEAL INCISION
3979	OTH ENDO PROC OTH VESSEL	5501	NEPHROTOMY

5511	PYELOTOMY		6812	HYSTEROSCOPY
5521	NEPHROSCOPY		6995	INCISION OF CERVIX
5522	PYELOSCOPY		700	CULDOCENTESIS
562	URETEROTOMY		7012	CULDOTOMY
5631	URETEROSCOPY		7021	VAGINOSCOPY
5719	CYSTOTOMY NEC		7022	CULDOSCOPY
5731	CYSTOSCOPY THRU STOMA		757	MANUAL EXPLOR UTERUS P/P
5732	CYSTOSCOPY NEC		7710	OTHER BONE INCISION NOS
580	URETHROTOMY		8010	OTHER ARTHROTOMY NOS
5822	URETHROSCOPY NEC		8201	EXPLOR TEND SHEATH-HAND
5909	PERIREN/URETER INCIS NEC		8202	MYOTOMY OF HAND
600	INCISION OF PROSTATE		8203	BURSOTOMY OF HAND
6081	PERIPROSTATIC INCISION		8204	I & D PALMAR/THENAR SPAC
620	INCISION OF TESTES		8209	INC SOFT TISSUE HAND NEC
631	EXC SPERMATIC VARICOCELE		8301	TENDON SHEATH EXPLORAT
636	VASOTOMY		8302	MYOTOMY
6372	SPERMATIC CORD LIGATION		8303	BURSOTOMY
6392	EPIDIDYMOTOMY		8309	SOFT TISSUE INCISION NEC
6393	SPERMATIC CORD INCISION		850	MASTOTOMY
6492	INCISION OF PENIS		8603	INCISION PILONIDAL SINUS
6501	LAPAROSCOPIC OOPHOROTOMY		8609	SKIN & SUBQ INCISION NEC
6509	OTHER OOPHOROTOMY		9621	DILAT FRONTONASAL DUCT
6601	SALPINGOTOMY		9925	INJECT CA CHEMOTHER NEC
680	HYSTEROTOMY		9929	INJECT/INFUSE NEC
6811	DIGITAL EXAM OF UTERUS			

High Risk Category:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with either:
- any secondary ICD-9-CM diagnosis codes for perioperative hemorrhage (see above) and any-listed ICD-9-CM procedure codes for control of perioperative hemorrhage (see above); or
- any secondary ICD-9-CM diagnosis codes for perioperative hemorrhage (see above) and any-listed ICD-9-CM procedure codes for drainage of hematoma (see above); or
- any secondary ICD-9-CM diagnosis codes for perioperative hemorrhage (see above) and any-listed ICD-9-CM procedure codes for miscellaneous hemorrhage- or hematoma-related procedure (see above); or
- any secondary ICD-9-CM diagnosis codes for perioperative hematoma (see above) and any-listed ICD-9-CM procedure codes for control of perioperative hemorrhage (see above); or
- any secondary ICD-9-CM diagnosis codes for perioperative hematoma (see above) and any-listed ICD-9-CM procedure codes for drainage of hematoma (see above); or
- any secondary ICD-9-CM diagnosis codes for perioperative hematoma (see above) and any-listed ICD-9-CM procedure codes for miscellaneous hemorrhage or hematoma-related procedure (see above)

Low Risk Category:

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with either:

- any secondary ICD-9-CM diagnosis codes for perioperative hemorrhage (see above) and any-listed ICD-9-CM procedure codes for control of perioperative hemorrhage (see above); or
- any secondary ICD-9-CM diagnosis codes for perioperative hemorrhage (see above) and any-listed ICD-9-CM procedure codes for drainage of hematoma (see above); or
- any secondary ICD-9-CM diagnosis codes for perioperative hemorrhage (see above) and any-listed ICD-9-CM procedure codes for miscellaneous hemorrhage- or hematoma-related procedure (see above); or
- any secondary ICD-9-CM diagnosis codes for perioperative hematoma (see above) and any-listed ICD-9-CM procedure codes for control of perioperative hemorrhage (see above); or
- any secondary ICD-9-CM diagnosis codes for perioperative hematoma (see above) and any-listed ICD-9-CM procedure codes for drainage of hematoma (see above); or
- any secondary ICD-9-CM diagnosis codes for perioperative hematoma (see above) and any-listed ICD-9-CM procedure codes for miscellaneous hemorrhage or hematoma-related procedure (see above)

Denominator

Overall:

Elective surgical discharges, for patients ages 17 years and under, with any-listed ICD-9-CM procedure code for an operating room procedure. Elective surgical discharges are defined by specific DRG or MS-DRG codes with admission type recorded as elective (SID ATYPE=3).

See *Pediatric Quality Indicators Appendices*:
- Appendix A – Operating Room Procedure Codes
- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission[†]) for perioperative hemorrhage (see above)
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission[†]) for perioperative hematoma (see above)
- with any-listed ICD-9-CM diagnosis codes for coagulation disorder
- where the only operating room procedure is control of perioperative hemorrhage (see above), drainage of hematoma (see above), or miscellaneous hemorrhage- or hematoma-related procedure (see above)

[†] Only for cases that otherwise qualify for the numerator.

- with any secondary ICD-9-CM diagnosis codes for perioperative hemorrhage (see above) and any-listed ICD-9-CM procedure codes for control of perioperative hemorrhage (see above) occurring before the first operating room procedure[‡]
- with any secondary ICD-9-CM diagnosis codes for perioperative hemorrhage (see above) and any-listed ICD-9-CM procedure codes for drainage of hematoma (see above) occurring before the first operating room procedure[‡]
- with any secondary ICD-9-CM diagnosis codes for perioperative hemorrhage (see above) and any-listed ICD-9-CM procedure codes for miscellaneous hemorrhage- or hematoma-related procedure (see above) occurring before the first operating room procedure[‡]
- with any secondary ICD-9-CM diagnosis codes for perioperative hematoma (see above) and any-listed ICD-9-CM procedure codes for control of perioperative hemorrhage (see above) occurring before the first operating room procedure[‡]
- with any secondary ICD-9-CM diagnosis codes for perioperative hematoma (see above) and any-listed ICD-9-CM procedure codes for drainage of hematoma (see above) occurring before the first operating room procedure[‡]
- with any secondary ICD-9-CM diagnosis codes for perioperative hematoma (see above) and any-listed ICD-9-CM procedure codes for miscellaneous hemorrhage- or hematoma-related procedure (see above) occurring before the first operating room procedure[‡]
- neonates with birth weight less than 500 grams (Birth Weight Category 1)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of Neonate, Newborn, Normal, and Outborn
- Appendix L – Low Birth Weight Categories

ICD-9-CM Coagulation disorder diagnosis codes:

2860	CONG FACTOR VIII DISORDER	28652	ACQUIRED HEMOPHILIA
2861	CONG FACTOR IX DISORDER	28659	OT HEM D/T CIRC ANTICOAG
2862	CONG FACTOR XI DISORDER	2866	DEFIBRINATION SYNDROME
2863	CONG DEF CLOT FACTOR NEC	2867	ACQ COAGUL FACTOR DEF
2864	VON WILLEBRAND'S DISEASE	2869	COAGUL DEFECT NEC NOS

High Risk Category:

Elective surgical discharges, for patients ages 17 years and under, with any-listed ICD-9-CM procedure code for an operating room procedure and either any-listed ICD-9-CM diagnosis codes for coagulopathy or any-listed ICD-9-CM procedure codes for extracorporeal membrane oxygenation (ECMO). Elective surgical discharges are defined by specific DRG or MS-DRG codes with admission type recorded as elective (SID ATYPE=3).

See *Pediatric Quality Indicators Appendices*:
- Appendix A – Operating Room Procedure Codes

[‡] If day of procedure is not available in the input data file, the rate may be slightly lower than if the information was available.

- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs

ICD-9-CM Coagulopathy diagnosis codes[1]:

2860	CONG FACTOR VIII DIORD	2871	THROMBOCYTOPATHY
2861	CONG FACTOR IX DISORDER	*2873*	*PRIMARY THROMBOCYTOPENIA*
2862	CONG FACTOR XI DISORDER	28730	PRIM THROMBOCYTOPEN NOS
2863	CONG DEF CLOT FACTOR NEC	28731	IMMUNE THROMBOCYT PURPRA
2864	VON WILLEBRAND'S DISEASE	28732	EVANS' SYNDROME
2865	*CIRCULATING ANTICOAG DIS*	28733	CONG/HERID THROMB PURPRA
28652	ACQUIRED HEMOPHILIA	28739	PRIM THROMBOCYTOPEN NEC
28653	ANTIPHOSPHOLIPID W HEMOR	*2874*	*SECOND THROMBOCYTOPENIA*
28659	OT HEM D/T CIRC ANTICOAG	28741	POSTTRANSFUSION PURPURA
2866	DEFIBRINATION SYNDROME	2875	THROMBOCYTOPENIA NOS
2867	ACQ COAGUL FACTOR DEFIC	2878	HEMORRHAGIC COND NEC
2869	COAGULAT DEFECT NEC NOS	2879	HEMORRHAGIC COND NOS

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

ICD-9-CM Extracorporeal membrane oxygenation (ECMO) procedure code:
3965   EXTRACORPOREAL MEMB OXY

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission[†]) for perioperative hemorrhage (see above)
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission[†]) for perioperative hematoma (see above)
- with any-listed ICD-9-CM diagnosis codes for coagulation disorder (see above)
- where the only operating room procedure is control of perioperative hemorrhage (see above), drainage of hematoma (see above), or miscellaneous hemorrhage- or hematoma-related procedure (see above)
- with any secondary ICD-9-CM diagnosis codes for perioperative hemorrhage (see above) and any-listed ICD-9-CM procedure codes for control of perioperative hemorrhage (see above) occurring before the first operating room procedure[‡]
- with any secondary ICD-9-CM diagnosis codes for perioperative hemorrhage (see above) and any-listed ICD-9-CM procedure codes for drainage of hematoma (see above) occurring before the first operating room procedure[‡]
- with any secondary ICD-9-CM diagnosis codes for perioperative hemorrhage (see above) and any-listed ICD-9-CM procedure codes for miscellaneous hemorrhage- or hematoma-related procedure (see above) occurring before the first operating room procedure[‡]
- with any secondary ICD-9-CM diagnosis codes for perioperative hematoma (see above) and any-listed ICD-9-CM procedure codes for control of perioperative hemorrhage (see above) occurring before the first operating room procedure[‡]
- with any secondary ICD-9-CM diagnosis codes for perioperative hematoma (see above) and any-listed ICD-9-CM procedure codes for drainage of hematoma (see above) occurring before the first operating room procedure[‡]
- with any secondary ICD-9-CM diagnosis codes for perioperative hematoma (see above) and any-listed ICD-9-CM procedure codes for miscellaneous hemorrhage- or hematoma-related procedure (see above) occurring before the first operating room procedure[‡]
- neonates with birth weight less than 500 grams (Birth Weight Category 1)

- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of Neonate, Newborn, Normal, and Outborn
- Appendix L – Low Birth Weight Categories

Low Risk Category:

Elective surgical discharges, for patients ages 17 years and under, with any-listed ICD-9-CM procedure code for an operating room procedure and without any-listed ICD-9-CM diagnosis codes for coagulopathy (see above) and without any-listed ICD-9-CM procedure codes for ECMO (see above). Elective surgical discharges are defined by specific DRG or MS-DRG codes with admission type recorded as elective (SID ATYPE=3).

See *Pediatric Quality Indicators Appendices*:
- Appendix A – Operating Room Procedure Codes
- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission[†]) for perioperative hemorrhage (see above)
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission[†]) for perioperative hematoma (see above)
- with any-listed ICD-9-CM diagnosis codes for coagulation disorder (see above)
- where the only operating room procedure is control of perioperative hemorrhage (see above), drainage of hematoma (see above), or miscellaneous hemorrhage- or hematoma-related procedure (see above)
- with any secondary ICD-9-CM diagnosis codes for perioperative hemorrhage (see above) and any-listed ICD-9-CM procedure codes for control of perioperative hemorrhage (see above) occurring before the first operating room procedure[‡]
- with any secondary ICD-9-CM diagnosis codes for perioperative hemorrhage (see above) and any-listed ICD-9-CM procedure codes for drainage of hematoma (see above) occurring before the first operating room procedure[‡]
- with any secondary ICD-9-CM diagnosis codes for perioperative hemorrhage (see above) and any-listed ICD-9-CM procedure codes for miscellaneous hemorrhage- or hematoma-related procedure (see above) occurring before the first operating room procedure[‡]
- with any secondary ICD-9-CM diagnosis codes for perioperative hematoma (see above) and any-listed ICD-9-CM procedure codes for control of perioperative hemorrhage (see above) occurring before the first operating room procedure[‡]
- with any secondary ICD-9-CM diagnosis codes for perioperative hematoma (see above) and any-listed ICD-9-CM procedure codes for drainage of hematoma (see above) occurring before the first operating room procedure[‡]

- with any secondary ICD-9-CM diagnosis codes for perioperative hematoma (see above) and any-listed ICD-9-CM procedure codes for miscellaneous hemorrhage- or hematoma-related procedure (see above) occurring before the first operating room procedure[‡]
- neonates with birth weight less than 500 grams (Birth Weight Category 1)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of Neonate, Newborn, Normal, and Outborn
- Appendix L – Low Birth Weight Categories

Postoperative Respiratory Failure Rate
Technical Specifications

Pediatric Quality Indicators #9 (PDI #9)
AHRQ Quality Indicators[TM], Version 4.5, May 2013
Provider-Level Indicator
Type of Score: Rate

Description

Postoperative respiratory failure (secondary diagnosis), mechanical ventilation, or reintubation cases per 1,000 elective surgery discharges for patients ages 17 years and younger. Excludes cases in which tracheostomy is the only operating room procedure or in which tracheostomy occurs before the first operating room procedure; cases with neuromuscular disorders, laryngeal or pharyngeal surgery, craniofacial anomalies that had a procedure for the face, esophageal resection, lung cancer, or degenerative neurological disorders; cases with a procedure on the nose, mouth, or pharynx; cases with respiratory or circulatory diseases; neonates with a birth weight less than 500 grams; and obstetric discharges.

[NOTE: The software provides the rate per hospital discharge. However, common practice reports the measure as per 1,000 discharges. The user must multiply the rate obtained from the software by 1,000 to report events per 1,000 hospital discharges.]

Numerator

Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with either
- any secondary ICD-9-CM diagnosis codes for acute respiratory failure; or
- any-listed ICD-9-CM procedure codes for a mechanical ventilation for 96 consecutive hours or more that occurs zero or more days after the first major operating room procedure code (based on days from admission to procedure); or
- any-listed ICD-9-CM procedure codes for a mechanical ventilation for less than 96 consecutive hours (or undetermined) that occurs two or more days after the first major operating room procedure code (based on days from admission to procedure); or
- any-listed ICD-9-CM procedure codes for a reintubation that occurs one or more days after the first major operating room procedure code (based on days from admission to procedure)

ICD-9-CM Acute respiratory failure diagnosis codes[1]:

51851	AC RESP FLR FOL TRMA/SRG	*51881*	*ACUTE RESPIRATRY FAILURE*
51853	AC/CHR RSP FLR FOL TR/SG	*51884*	*ACUTE & CHRONC RESP FAIL*

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

ICD-9-CM Mechanical ventilation for 96 consecutive hours or more procedure code:
9672   CONT INV MEC VEN 96+ HRS

ICD-9-CM Mechanical ventilation for less than 96 consecutive hours (or undetermined) procedure codes:
9670   CON INV MEC VEN-UNSP DUR   9671   CONT INV MEC VEN <96 HRS

ICD-9-CM Reintubation procedure code:
9604   INSERT ENDOTRACHEAL TUBE

Denominator

Elective surgical discharges, for patients ages 17 years and younger, with any-listed ICD-9-CM procedure codes for an operating room procedure. Elective surgical discharges are defined by specific DRG or MS-DRG codes with admission type recorded as elective (SID ATYPE=3).

See *Pediatric Quality Indicators Appendices*:
- Appendix A – Operating Room Procedure Codes
- Appendix B – Surgical DRGs
- Appendix C – Surgical MS-DRGs

Exclude cases:
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) of acute respiratory failure (see above)
- where the only operating room procedure is tracheostomy
- where a procedure for tracheostomy occurs before the first operating room procedure[†]
- with any-listed ICD-9-CM diagnosis codes for neuromuscular disorder
- with any-listed ICD-9-CM procedure codes for laryngeal or pharyngeal surgery
- with any-listed ICD-9-CM procedure codes for the face and any-listed ICD-9-CM diagnosis codes for craniofacial anomalies
- with any-listed ICD-9-CM procedure codes for esophageal resection
- with any-listed ICD-9-CM procedure codes for lung cancer
- with any-listed ICD-9-CM procedure codes for procedure on the nose, mouth and pharynx
- with any-listed ICD-9-CM diagnosis codes for degenerative neurological disorder
- neonates with birth weight less than 500 grams (Birth Weight Category 1)
- MDC 4 (diseases/disorders of respiratory system)
- MDC 5 (diseases/disorders of circulatory system)
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

[†] If day of procedure is not available in the input data file, the rate may be slightly lower than if the information was available.

See *Pediatric Quality Indicators Appendices*:
- Appendix I – Definitions of Neonate, Newborn, Normal Newborn, and Outborn
- Appendix L – Low Birth Weight Categories

ICD-9-CM Tracheostomy procedure codes:

3121	MEDIASTINAL TRACHEOSTOMY	3174	REVISION OF TRACHEOSTOMY
3129	OTHER PERM TRACHEOSTOMY		

ICD-9-CM Neuromuscular disorder diagnosis codes[1]:

3570	AC INFECT POLYNEURITIS	35921	MYOTONIC MUSCULAR DYSTRPHY
35800	MYSTHNA GRVS W/O AC EXAC	35922	MYOTONIA CONGENITA
35801	MYASTHNA GRAVS W AC EXAC	35923	MYOTONIC CHONDRODYSTRPHY
3581	MYASTHENIA IN OTH DIS	35929	OTHER MYOTONIC DISORDER
3582	TOXIC MYONEURAL DISORDER	3593	PERIODIC PARALYSIS
35830	LAMBERT-EATON SYND NOS	3594	TOXIC MYOPATHY
35831	LAMBERT-EATON SYND NEOPL	3595	MYOPATHY IN ENDOCRIN DIS
35839	LAMBERT-EATON SYN OT DIS	3596	INFL MYOPATHY IN OTH DIS
3588	MYONEURAL DISORDERS NEC	35971	INCLUSION BODY MYOSITIS
3589	MYONEURAL DISORDERS NOS	35979	INFLM/IMMUNE MYOPATH NEC
3590	CONG HERED MUSC DYSTRPHY	35981	CRITICAL ILLNESS MYOPTHY
3591	HERED PROG MUSC DYSTRPHY	35989	MYOPATHIES NEC
3592	*MYOTONIC DISORDERS*	3599	MYOPATHY NOS

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

ICD-9-CM Laryngeal or pharyngeal surgery procedure codes:

253	COMPLETE GLOSSECTOMY	3022	VOCAL CORDECTOMY
254	RADICAL GLOSSECTOMY	3029	OTHER PART LARYNGECTOMY
2731	LOC EXC BONY PALATE LES	303	COMPLETE LARYNGECTOMY
290	PHARYNGOTOMY	304	RADICAL LARYNGECTOMY
2933	PHARYNGECTOMY	313	INCIS LARYNX TRACHEA NEC
2939	EXCIS/DESTR LES PHAR NEC	315	LOCAL DESTRUC TRACH LES
294	PLASTIC OP ON PHARYNX	3169	OTHER LARYNGEAL REPAIR
2953	CLOS PHARYNX FISTULA NEC	3173	TRACHEA FISTULA CLOS NEC
2959	PHARYNGEAL REPAIR NEC	3175	TRACHEAL RECONSTRUCTION
2991	PHARYNGEAL DILATION	3179	OTHER TRACHEAL REPAIR
3009	DESTRUCT LARYNX LES NEC	3198	OTH LARYNGEAL OPERATION
3021	EPIGLOTTIDECTOMY	3199	OTHER TRACHEAL OPERATION

ICD-9-CM Face procedure codes:

252	PARTIAL GLOSSECTOMY	2931	CRICOPHARYNGEAL MYOTOMY
2559	REPAIR OF TONGUE NEC	7646	FACIAL BONE RECONSTR NEC
2732	WIDE EXC BONY PALATE LES	7665	SEG OSTEOPLASTY MAXILLA
2762	CLEFT PALATE CORRECTION	7666	TOT OSTEOPLASTY MAXILLA
2763	REVIS CLEFT PALAT REPAIR	7669	FACIAL BONE REPAIR NEC
2769	OTH PLASTIC REPAIR PALAT	7691	BONE GRAFT TO FACE BONE

ICD-9-CM Craniofacial anomalies diagnosis codes:

74483	MACROSTOMIA	7483	LARYNGOTRACH ANOMALY NEC
74484	MICROSTOMIA	7560	ANOMAL SKULL/FACE BONES
7449	CONG FACE/NECK ANOM NOS		

ICD-9-CM Esophageal resection procedure codes[1]:

424	*ESOPHAGECTOMY*	4251	THORAC ESOPHAGOESOPHAGOS
4240	ESOPHAGECTOMY NOS	4252	THORAC ESOPHAGOGASTROST
4241	PARTIAL ESOPHAGECTOMY	4253	THORAC SM BOWEL INTERPOS
4242	TOTAL ESOPHAGECTOMY	4254	THORAC ESOPHAGOENTER NEC
425	*THORAC ESOPHAG ANAST*	4255	THORAC LG BOWEL INTERPOS

4256	THORAC ESOPHAGOCOLOS NEC	4264	STERN ESOPHAGOENTER NEC
4258	THORAC INTERPOSITION NEC	4265	STERN LG BOWEL INTERPOS
4259	THORAC ESOPHAG ANAST NEC	4266	STERN ESOPHAGOCOLOS NEC
426	*STERN ESOPHAG ANAST*	4268	STERN INTERPOSITION NEC
4261	STERN ESOPHAGOESOPHAGOST	4269	STERN ESOPHAG ANAST NEC
4262	STERN ESOPHAGOGASTROSTOM	4399	TOTAL GASTRECTOMY NEC
4263	STERN SM BOWEL INTERPOS		

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

ICD-9-CM Lung cancer procedure codes:

3239	OTH SEG LUNG RESECT NOS	3259	OTHER PNEUMONECTOMY NOS
3249	LOBECTOMY OF LUNG NEC		

ICD-9-CM Procedure on nose, mouth and pharynx procedure codes[1]:

214	RESECTION OF NOSE	2732	WIDE EXC BONY PALATE LES
2161	DIATHER/CRYO TURBINECTOM	2742	WIDE EXCISION OF LIP LES
2162	TURBINATE FRACTURE	2743	EXCISION OF LIP LES NEC
2169	TURBINECTOMY NEC	2749	EXCISION OF MOUTH NEC
2172	OPEN REDUCTION NASAL FX	2753	CLOSURE OF MOUTH FISTULA
2199	NASAL OPERATION NEC	2754	REPAIR OF CLEFT LIP
2231	RADICAL MAXILLARY ANTROT	2755	FULL-THICK GRFT TO MOUTH
2239	EXT MAXILLARY ANTROT NEC	2756	SKIN GRAFT TO MOUTH NEC
2241	FRONTAL SINUSOTOMY	2757	PEDICLE ATTACH TO MOUTH
2242	FRONTAL SINUSECTOMY	2759	MOUTH REPAIR NEC
2250	SINUSOTOMY NOS	2761	SUTURE OF PALATE LACERAT
2251	ETHMOIDOTOMY	2762	CLEFT PALATE CORRECTION
2252	SPHENOIDOTOMY	2763	REVIS CLEFT PALAT REPAIR
2253	MULTIPLE SINUS INCISION	2764	INSERT PALATAL IMPLANT
2260	SINUSECTOMY NOS	2769	OTH PLASTIC REPAIR PALAT
2261	C-LUC EXC MAX SINUS LES	2771	INCISION OF UVULA
2262	EXC MAX SINUS LESION NEC	2772	EXCISION OF UVULA
2263	ETHMOIDECTOMY	2773	REPAIR OF UVULA
2264	SPHENOIDECTOMY	2779	OTHER UVULA OPERATIONS
2271	NASAL SINUS FISTULA CLOS	2792	MOUTH INCISION NOS
2279	NASAL SINUS REPAIR NEC	2799	ORAL CAVITY OPS NEC
229	OTHER NASAL SINUS OPS	280	PERITONSILLAR I & D
242	GINGIVOPLASTY	284	EXCISION OF TONSIL TAG
251	DESTRUCTION TONGUE LES	285	EXCISION LINGUAL TONSIL
252	PARTIAL GLOSSECTOMY	2891	INCIS TO REMOV TONSIL FB
253	COMPLETE GLOSSECTOMY	2892	EXCIS TONSIL/ADENOID LES
254	RADICAL GLOSSECTOMY	2899	TONSIL/ADENOID OPS NEC
2559	REPAIR OF TONGUE NEC	290	PHARYNGOTOMY
2594	OTHER GLOSSOTOMY	292	EXC BRANCHIAL CLEFT CYST
2599	TONGUE OPERATION NEC	*293*	*DESTRUCT PHARYNGEAL LES*
2621	SALIVARY CYST MARSUPIAL	2931	CRICOPHARYNGEAL MYOTOMY
2629	SALIV LESION EXCIS NEC	2932	PHARYNGEAL DIVERTICULEC
2630	SIALOADENECTOMY NOS	2933	PHARYNGECTOMY
2631	PARTIAL SIALOADENECTOMY	2939	EXCIS/DESTR LES PHAR NEC
2632	COMPLETE SIALOADENECTOMY	294	PLASTIC OP ON PHARYNX
2641	SUTURE OF SALIV GLND LAC	2951	SUTURE OF PHARYNGEAL LAC
2642	SALIVARY FISTULA CLOSURE	2952	CLOS BRANCH CLEFT FISTUL
2649	SALIVARY REPAIR NEC	2953	CLOS PHARYNX FISTULA NEC
2699	SALIVARY OPERATION NEC	2954	LYSIS PHARYNGEAL ADHES
270	DRAIN FACE & MOUTH FLOOR	2959	PHARYNGEAL REPAIR NEC
271	INCISION OF PALATE	2992	DIVIS GLOSSOPHARYNG NERV
2731	LOC EXC BONY PALATE LES	2999	PHARYNGEAL OPERATION NEC

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

ICD-9-CM Degenerative neurological disorder diagnosis codes[1]:

2900	SENILE DEMENTIA UNCOMP	29411	DEMENTIA W BEHAVIOR DIST
29010	PRESENILE DEMENTIA	2948	MENTAL DISOR NEC OTH DIS
29011	PRESENILE DELIRIUM	2949	MENTAL DISOR NOS OTH DIS
29012	PRESENILE DELUSION	3100	FRONTAL LOBE SYNDROME
29013	PRESENILE DEPRESSION	3102	POSTCONCUSSION SYNDROME
29020	SENILE DELUSION	*3108*	*NONPSYCHOT BRAIN SYN NEC*
29021	SENILE DEPRESSIVE	31081	PSEUDOBULBAR AFFECT
2903	SENILE DELIRIUM	31089	NONPSYCH MNTL DISORD NEC
29040	VASCULAR DEMENTIA,UNCOMP	3109	NONPSYCHOT BRAIN SYN NOS
29041	VASC DEMENTIA W DELIRIUM	3310	ALZHEIMER'S DISEASE
29042	VASC DEMENTIA W DELUSION	*3311*	*FRONTOTEMPORAL DEMENTIA*
29043	VASC DEMENTIA W DEPRESSN	33111	PICK'S DISEASE
2908	SENILE PSYCHOSIS NEC	33119	FRONTOTEMP DEMENTIA NEC
2909	SENILE PSYCHOT COND NOS	3312	SENILE DEGENERAT BRAIN
2930	DELIRIUM D/T OTHER COND	3316	CORTICOBASAL DEGENERATION
2931	SUBACUTE DELIRIUM	33182	DEMENTIA WITH LEWY BODIES
2940	AMNESTIC DISORD OTH DIS	34882	BRAIN DEATH
2941	*DEMENTIA IN OTH DISEASES*	797	SENILITY W/O PSYCHOSIS
29410	DEMENTIA W/O BEHAV DIST		

[1] The procedure or diagnosis codes are continuously updated. The current list of ICD-9-CM codes is valid for October 2012 through September 2013. Italicized codes are not active in Fiscal Year 2013.

AHRQ Quality Indicators
Analytic Template
Version 4.5
(Last Updated 11/15/2013)

Measure #: PDI 08
Measure Name: Perioperative Hemorrhage or Hematoma Rate

I. Sample

The hospital universe is defined as all hospitals located in the U.S. that are open during any part of the calendar year and designated as community hospitals in the AHA Annual Survey Database (Health Forum, LLC © 2011). The AHA defines community hospitals as follows: "All non-Federal, short-term, general, and other specialty hospitals, excluding hospital units of institutions." Starting in 2005, the AHA included long term acute care facilities in the definition of community hospitals. These facilities provide acute care services to patients who need long term hospitalization (stays of more than 25 days). Consequently, Veterans Hospitals and other Federal facilities (Department of Defense and Indian Health Service) are excluded. Beginning in 1998, we excluded short-term rehabilitation hospitals from the universe because the type of care provided and the characteristics of the discharges from these facilities were markedly different from other short-term hospitals.
http://hcup-us.ahrq.gov/db/nation/nis/NIS_Introduction_2011.pdf

II. Empirical Testing

A. Reference Population

Table 1. Reference Population

Year/ Characteristic	Hospitals	Outcome of Interest	Population at Risk	Observed Rate Per 1,000
2011	2,619	667	131,691	5.066
2010	2,679	637	130,625	4.874
2009	2,745	663	134,450	4.934
2008	2,753	611	134,340	4.546
2007	2,612	519	126,127	4.115
Performance Score Distribution 2011 (Rate per 1,000)				
5th	**25th**	**Median**	**75th**	**95th**
0.924	2.462	4.268	6.811	11.937

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2007-2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

B. Reliability

Our metric of reliability is the signal to noise ratio, which is the ratio of the between hospital variance (signal) to the within hospital variance (noise). The formula is signal / (signal + noise). There is hospital-specific signal to noise ratio, which is used as an Empirical Bayes univariate shrinkage estimator. The overall signal to noise ratio is a weighted average of the hospital-specific signal-to-noise ratio, where the weight is [1 / (signal+noise)^2]. The signal is calculated using an iterative method. The analysis reports the reliability of the risk-adjusted rate (before applying the empirical Bayes univirate shrinkage estimator).

Table 2. Reliability by Hospital Size Decile

Size Decile	Number of Hospitals	Ave. Number of Patients per Hospital in Decile	Ave. Signal-to-Noise Ratio for Hospitals in Decile	Percent of Signal Variance Explained by Performance Score
1	262	1.0	0.00192	0.16924
2	262	1.0	0.00187	0.16920
3	262	1.8	0.00339	0.17025
4	262	2.4	0.00471	0.17117
5	262	3.4	0.00699	0.17275
6	262	4.8	0.01017	0.17496
7	262	7.1	0.01531	0.17854
8	262	12.1	0.02531	0.18551
9	262	30.1	0.05999	0.20994
10	261	440.5	0.45384	0.51843
Overall	2,619	50.3	0.69816	0.64593

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

C. Validity

We conduct construct validity testing to examine the association between the risk-adjusted rate and hospital structural characteristics potentially associated with quality of care, including prior performance, using regression analysis.

Table 3. Structure Measures Used to Estimate Prior Probability

Measure	How it is measured	Rationale
Ln(Volume)	Natural log of the denominator	Practice makes perfect or referral
Reservation Quality	Inverse of average daily census (ADC)	Reflects the excess capacity in the inputs of production (e.g. nurse staffing)
Transfer Out	Overall percent transfer out	Routine transferring of particular categories of patients
Maximum DX	Maximum reported diagnosis codes	Higher prevalence and co-morbidities
Prior Performance	Prior year smoothed rate	Share of performance likely to persist

The hypothesized relationship is as follows:
- Volume: Higher volume is associtaed with better outcomes, either because practice makes perfect (volume causes outcome) or referral (outcome causes volume)
- Reservation quality: Higher reservation quality is associated with better outcomes because reservation quality is associated with excess capacity
- Transfer out: Higher transfer out rate is associated with better outcomes because transferred cases have higher risk of mortalityor adverse outcome
- Diagnosis codes: More reported diagnosis codes are associated with more reported comorbidities, therefore higher expected rates, there fore better outcomes

Table 4. Regression on Structure Measures

Variable	Label	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lnvol	Ln(Volume)	0.000025	0.000209	0.12	0.9060	-0.00038	0.00043
adcinv	Reservation Quality	-0.000033	0.000013	-2.62	0.0090	-0.00006	-0.00001
trnsout	Transfer Out	0.007070	0.016115	0.44	0.6610	-0.02453	0.03867
maxdx	Maximum DX	0.000009	0.000039	0.24	0.8130	-0.00007	0.00009
_cons	Constant	0.004366	0.001196	3.65	0.0000	0.00202	0.00671
lnvol	Ln(Volume)	-0.000205	0.000206	-0.99	0.3200	-0.00061	0.00020
adcinv	Reservation Quality	-0.000021	0.000013	-1.71	0.0870	-0.00005	0.00000
trnsout	Transfer Out	0.014501	0.011968	1.21	0.2260	-0.00897	0.03797
maxdx	Maximum DX	0.000022	0.000038	0.58	0.5620	-0.00005	0.00010
prior2	Prior Performance	0.819308	0.147842	5.54	0.0000	0.52941	1.10921
_cons	Constant	0.001540	0.001225	1.26	0.2090	-0.00086	0.00394

Note: the dependent variable in the regression is the risk adjusted rate

D. Performance

We calculate the posterior probability distribution for each hospital parameterized using the Gamma distribution. We then calculate the probability that the hospital is better or worse than the reference population benchmark (20th percentile) or threshold (80th percentile) rate at a 95 percent probability overall and by hospital size decile. The analysis is with the computed performance scores for the measure as specified (including shrinkage estimator).

Table 5. Performance Categories by Hospital Size Decile

| Size Decile | Number of Hospitals | Ave. Number of patients per Hospital in Decile | Benchmark | | Threshold | |
			Proportion Better	Proportion Worse	Proportion Better	Proportion Worse
1	262	1.0	0.03435	0.08015	0.04580	0.00000
2	262	1.0	0.03435	0.09160	0.03817	0.00000
3	262	1.8	0.02672	0.03435	0.03053	0.00000
4	262	2.4	0.02290	0.02290	0.03435	0.00000
5	262	3.4	0.00382	0.02672	0.01145	0.00382
6	262	4.8	0.01527	0.03053	0.01527	0.00000
7	262	7.1	0.00000	0.05725	0.00382	0.00000
8	262	12.1	0.00000	0.04962	0.00382	0.00382
9	262	30.1	0.00000	0.08779	0.00382	0.00000
10	261	440.5	0.00000	0.29119	0.24521	0.03065
	2,619	50.3	0.01375	0.07713	0.04315	0.00382
Patient weighted			0.00051	0.38372	0.36696	0.05547

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

E. Model Discrimination and Calibration

One calculates the c-statistic by taking all possible pairs of cases consisting of one case that experienced the event of interest and one case that did not experience the event of interest. The c-statistic is the proportion of such pairs in which the case that experienced the event had a higher predicted probability of experiencing the event than the case that did not experience the event.

Table 6. Model Discrimination and Calibration

Predicted Rate Decile	Number of Patients per Decile	Predicted Rate	Observed Rate
1	13,175	0.002719	0.005301
2	13,175	0.002750	0.000531
3	13,175	0.002798	0.003112
4	13,174	0.002798	0.002809
5	13,175	0.002798	0.002505
6	13,175	0.002798	0.002732
7	13,174	0.002798	0.003644
8	13,175	0.002798	0.003719
9	13,175	0.006100	0.005643
10	13,174	0.022283	0.020647
C-statistic	0.629		

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

A model that is well calibration will have observed values similar to predicted values across the predicted value deciles. Although there are statistical tests of such "goodness of fit" the tests generally are not informative for datasets with large sample sizes.

F. Forecasting

With respect to the persistence of the hospital risk adjusted rate, we conduct a descriptive analysis to examine the distribution of the current year risk-adjusted rate by the prior year performance score performance decile. The R-square is a statistic for the proportion of variation in the risk-adjusted rate captured by variation in the prior year performance score.

Table 7. Forecasting

Prior Year Performance Score Decile	Number of Hospitals Per Decile	Prior Year Performance Score	Current Year Risk-adjusted Rate
1	262	0.002087	0.002008
2	262	0.003257	0.003959
3	262	0.003436	0.002501
4	262	0.003564	0.006737
5	262	0.003695	0.003984
6	262	0.003838	0.003465
7	262	0.004048	0.013483
8	262	0.004500	0.008073
9	262	0.004718	0.000926
10	261	0.005401	0.002662
R-Squared	0.0001		

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2010-2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

G. Preventability

Our metric of preventability is the proportion of events that are potentially preventable if patients selected hospitals performing at the level of the benchmark (i.e. the 20th percentile (better) in the probability distribution). The metric suggests that 62.5% of the events are potentially preventable.

Table 8. Preventability

Performance Score Decile	Ave. Performance Score	Number of Hospitals per Decile	Ave. Number of Patients per Hospital in Decile	Total Number of Patients in Decile	Total Events	Rate Potentially Preventable Events	Potentially Preventable Events	Expected Value of Information
1	0.000941	261.9	50.3	13,169.1	12	0.000000	0.0	
2	0.001791	261.9	50.3	13,169.1	24	0.000000	0.0	
3	0.002496	261.9	50.3	13,169.1	33	0.000380	5.0	
4	0.003189	261.9	50.3	13,169.1	42	0.001073	14.1	
5	0.003920	261.9	50.3	13,169.1	52	0.001804	23.8	
6	0.004732	261.9	50.3	13,169.1	62	0.002616	34.4	
7	0.005686	261.9	50.3	13,169.1	75	0.003570	47.0	
8	0.006901	261.9	50.3	13,169.1	91	0.004785	63.0	
9	0.008681	261.9	50.3	13,169.1	114	0.006565	86.5	
10	0.014166	261.9	50.3	13,169.1	187	0.012050	158.7	
Overall		2,619	50.3	131,691	691	0.003284	433	
Proportion Preventable							0.6255	

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. (AHRQ QI Software Version 4.5)

H. Information Value

The expected value of information (EVI) is the change in the expected number of potentially preventable events ("opportunity loss") accounting for the uncertainty and low information context in the performance score. A negative EVI means that there is some uncertainty in the expected number of potentially preventable events, while a positive EVI means that the effective sample size might be increased. Ideally the expected value of information would be close to zero.

Table 9. Expected Value of Information

Performance Score Decile	Ave. Performance Score	Number of Hospitals per Decile	Ave. Number of Patients per Hospital in Decile	Total Number of Patients in Decile	Total Events	Rate Potentially Preventable Events	Potentially Preventable Events	Expected Value of Information
1	0.000674	53	75.3	3,992	3	0.000364	1	-1
2	0.001815	23	352.8	8,115	15	0.000678	6	-6
3	0.002564	45	189.3	8,519	22	0.001020	9	-4
4	0.003202	81	257.6	20,870	67	0.001387	29	-15
5	0.003920	267	82.9	22,127	87	0.002023	45	-21
6	0.004630	1,253	17.4	21,809	101	0.002681	58	-24
7	0.005691	687	17.7	12,183	69	0.003663	45	2
8	0.006691	122	107.0	13,059	87	0.004630	60	3
9	0.008533	69	166.4	11,483	98	0.006469	74	12
10	0.011394	19	501.8	9,535	109	0.009329	89	70
Overall		2,619	50.3	131,691	657	0.003160	416	16
Proportion Preventable							0.6333	0.0385

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. (AHRQ QI Software Version 4.5)

AHRQ Quality Indicators
Analytic Template
Version 4.5
(Last Updated 11/15/2013)

Measure #:   PDI 09
Measure Name: Postoperative Respiratory Failure Rate

I. Sample

The hospital universe is defined as all hospitals located in the U.S. that are open during any part
of the calendar year and designated as community hospitals in the AHA Annual Survey Database (Health
Forum, LLC © 2011). The AHA defines community hospitals as follows: "All non-Federal, short-term,
general, and other specialty hospitals, excluding hospital units of institutions." Starting in 2005, the AHA
included long term acute care facilities in the definition of community hospitals. These facilities provide
acute care services to patients who need long term hospitalization (stays of more than 25 days).
Consequently, Veterans Hospitals and other Federal facilities (Department of Defense and Indian Health
Service) are excluded. Beginning in 1998, we excluded short-term rehabilitation hospitals from the
universe because the type of care provided and the characteristics of the discharges from these facilities
were markedly different from other short-term hospitals.
http://hcup-us.ahrq.gov/db/nation/nis/NIS_Introduction_2011.pdf

II. Empirical Testing

A. Reference Population

Table 1. Reference Population

Year/ Characteristic	Hospitals	Outcome of Interest	Population at Risk	Observed Rate Per 1,000
2011	2,607	1,178	102,907	11.452
2010	2,674	1,116	102,474	10.895
2009	2,743	1,101	105,246	10.461
2008	2,740	1,159	106,016	10.934
2007	2,620	1,191	99,673	11.947
Performance Score Distribution 2011 (Rate per 1,000)				
5th	**25th**	**Median**	**75th**	**95th**
2.359	5.857	9.817	15.285	26.130

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2007-2011.
Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI
Software Version 4.5)

B. Reliability

Our metric of reliability is the signal to noise ratio, which is the ratio of the between hospital variance (signal) to the within hospital variance (noise). The formula is signal / (signal + noise). There is hospital-specific signal to noise ratio, which is used as an Empirical Bayes univariate shrinkage estimator. The overall signal to noise ratio is a weighted average of the hospital-specific signal-to-noise ratio, where the weight is [1 / (signal+noise)^2]. The signal is calculated using an iterative method. The analysis reports the reliability of the risk-adjusted rate (before applying the empirical Bayes univirate shrinkage estimator).

Table 2. Reliability by Hospital Size Decile

Size Decile	Number of Hospitals	Ave. Number of Patients per Hospital in Decile	Ave. Signal-to-Noise Ratio for Hospitals in Decile	Percent of Signal Variance Explained by Performance Score
1	261	1.0	0.00437	0.42937
2	261	1.0	0.00349	0.42906
3	261	1.8	0.00528	0.42964
4	260	2.4	0.00762	0.43044
5	261	3.4	0.00983	0.43114
6	261	4.7	0.01527	0.43295
7	260	7.0	0.02231	0.43529
8	261	11.7	0.04294	0.44237
9	261	27.9	0.11558	0.46857
10	260	334.7	0.58145	0.69764
Overall	2,607	39.5	0.73922	0.75204

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

C. Validity

We conduct construct validity testing to examine the association between the risk-adjusted rate and hospital structural characteristics potentially associated with quality of care, including prior performance, using regression analysis.

Table 3. Structure Measures Used to Estimate Prior Probability

Measure	How it is measured	Rationale
Ln(Volume)	Natural log of the denominator	Practice makes perfect or referral
Reservation Quality	Inverse of average daily census (ADC)	Reflects the excess capacity in the inputs of production (e.g. nurse staffing)
Transfer Out	Overall percent transfer out	Routine transferring of particular categories of patients
Maximum DX	Maximum reported diagnosis codes	Higher prevalence and co-morbidities
Prior Performance	Prior year smoothed rate	Share of performance likely to persist

The hypothesized relationship is as follows:
- Volume: Higher volume is associaed with better outcomes, either because practice makes perfect (volume causes outcome) or referral (outcome causes volume)
- Reservation quality: Higher reservation quality is associated with better outcomes because reservation quality is associated with excess capacity
- Transfer out: Higher transfer out rate is associated with better outcomes because transferred cases have higher risk of mortalityor adverse outcome
- Diagnosis codes: More reported diagnosis codes are associated with more reported comorbidities, therefore higher expected rates, there fore better outcomes

Table 4. Regression on Structure Measures

Variable	Label	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lnvol	Ln(Volume)	0.000944	0.000317	2.97	0.0030	0.00032	0.00157
adcinv	Reservation Quality	-0.000054	0.000017	-3.12	0.0020	-0.00009	-0.00002
trnsout	Transfer Out	-0.041052	0.009744	-4.21	0.0000	-0.06016	-0.02194
maxdx	Maximum DX	0.000093	0.000082	1.13	0.2590	-0.00007	0.00025
_cons	Constant	0.004049	0.001908	2.12	0.0340	0.00031	0.00779
lnvol	Ln(Volume)	0.000148	0.000314	0.47	0.6390	-0.00047	0.00076
adcinv	Reservation Quality	-0.000010	0.000018	-0.56	0.5780	-0.00004	0.00002
trnsout	Transfer Out	-0.014275	0.011913	-1.20	0.2310	-0.03764	0.00909
maxdx	Maximum DX	0.000101	0.000074	1.37	0.1700	-0.00004	0.00025
prior2	Prior Performance	1.004517	0.152065	6.61	0.0000	0.70634	1.30270
_cons	Constant	-0.002424	0.001934	-1.25	0.2100	-0.00622	0.00137

Note: the dependent variable in the regression is the risk adjusted rate

D. Performance

We calculate the posterior probability distribution for each hospital parameterized using the Gamma distribution. We then calculate the probability that the hospital is better or worse than the reference population benchmark (20th percentile) or threshold (80th percentile) rate at a 95 percent probability overall and by hospital size decile. The analysis is with the computed performance scores for the measure as specified (including shrinkage estimator).

Table 5. Performance Categories by Hospital Size Decile

| Size Decile | Number of Hospitals | Ave. Number of patients per Hospital in Decile | Benchmark | | Threshold | |
			Proportion Better	Proportion Worse	Proportion Better	Proportion Worse
1	261	1.0	0.05364	0.00000	0.37931	0.00000
2	261	1.0	0.04598	0.00000	0.41762	0.00000
3	261	1.8	0.05747	0.00000	0.44828	0.00000
4	260	2.4	0.02692	0.00000	0.48462	0.00000
5	261	3.4	0.05747	0.00383	0.56705	0.00383
6	261	4.7	0.02299	0.00000	0.57471	0.00000
7	260	7.0	0.04231	0.00769	0.60769	0.00385
8	261	11.7	0.01916	0.01916	0.48276	0.00383
9	261	27.9	0.00766	0.08046	0.36015	0.00383
10	260	334.7	0.01154	0.46154	0.45000	0.07308
	2,607	39.5	0.03452	0.05715	0.47718	0.00882
Patient weighted			0.01607	0.49094	0.54332	0.07525

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

E. Model Discrimination and Calibration

One calculates the c-statistic by taking all possible pairs of cases consisting of one case that experienced the event of interest and one case that did not experience the event of interest. The c-statistic is the proportion of such pairs in which the case that experienced the event had a higher predicted probability of experiencing the event than the case that did not experience the event.

Table 6. Model Discrimination and Calibration

Predicted Rate Decile	Number of Patients per Decile	Predicted Rate	Observed Rate
1	10,301	0.003241	0.003066
2	10,300	0.003421	0.001909
3	10,301	0.004430	0.003009
4	10,300	0.004713	0.004222
5	10,301	0.005849	0.005837
6	10,300	0.007225	0.006293
7	10,301	0.009003	0.008891
8	10,300	0.010046	0.008968
9	10,301	0.015051	0.021044
10	10,300	0.051433	0.051172
C-statistic	0.765		

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

A model that is well calibration will have observed values similar to predicted values across the predicted value deciles. Although there are statistical tests of such "goodness of fit" the tests generally are not informative for datasets with large sample sizes.

F. Forecasting

With respect to the persistence of the hospital risk adjusted rate, we conduct a descriptive analysis to examine the distribution of the current year risk-adjusted rate by the prior year performance score performance decile. The R-square is a statistic for the proportion of variation in the risk-adjusted rate captured by variation in the prior year performance score.

Table 7. Forecasting

Prior Year Performance Score Decile	Number of Hospitals Per Decile	Prior Year Performance Score	Current Year Risk-adjusted Rate
1	261	0.002210	0.000228
2	261	0.004268	0.009196
3	261	0.004937	0.009479
4	260	0.005550	0.003705
5	261	0.006300	0.003556
6	261	0.007381	0.003045
7	260	0.008486	0.001858
8	261	0.009688	0.002206
9	261	0.010272	0.002069
10	260	0.013294	0.010860
R-Squared	0.0018		

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2010-2011. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/sidoverview.jsp. (AHRQ QI Software Version 4.5)

G. Preventability

Our metric of preventability is the proportion of events that are potentially preventable if patients selected hospitals performing at the level of the benchmark (i.e. the 20th percentile (better) in the probability distribution). The metric suggests that 59.9% of the events are potentially preventable.

Table 8. Preventability

Performance Score Decile	Ave. Performance Score	Number of Hospitals per Decile	Ave. Number of Patients per Hospital in Decile	Total Number of Patients in Decile	Total Events	Rate Potentially Preventable Events	Potentially Preventable Events	Expected Value of Information
1	0.002389	260.7	39.5	10,290.7	25	0.000000	0.0	
2	0.004352	260.7	39.5	10,290.7	45	0.000000	0.0	
3	0.005932	260.7	39.5	10,290.7	61	0.000847	8.7	
4	0.007463	260.7	39.5	10,290.7	77	0.002379	24.5	
5	0.009060	260.7	39.5	10,290.7	93	0.003976	40.9	
6	0.010821	260.7	39.5	10,290.7	111	0.005737	59.0	
7	0.012878	260.7	39.5	10,290.7	133	0.007794	80.2	
8	0.015476	260.7	39.5	10,290.7	159	0.010392	106.9	
9	0.019261	260.7	39.5	10,290.7	198	0.014176	145.9	
10	0.030773	260.7	39.5	10,290.7	317	0.025688	264.4	
Overall		2,607	39.5	102,907	1,218	0.007099	731	
Proportion Preventable							0.5995	

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. (AHRQ QI Software Version 4.5)

H. Information Value

The expected value of information (EVI) is the change in the expected number of potentially preventable events ("opportunity loss") accounting for the uncertainty and low information context in the performance score. A negative EVI means that there is some uncertainty in the expected number of potentially preventable events, while a positive EVI means that the effective sample size might be increased. Ideally the expected value of information would be close to zero.

Table 9. Expected Value of Information

Performance Score Decile	Ave. Performance Score	Number of Hospitals per Decile	Ave. Number of Patients per Hospital in Decile	Total Number of Patients in Decile	Total Events	Rate Potentially Preventable Events	Potentially Preventable Events	Expected Value of Information
1	0.001894	525	17.9	9,405	18	0.000798	8	-8
2	0.004375	508	16.6	8,447	37	0.001525	13	-13
3	0.005847	487	21.9	10,687	62	0.002112	23	-14
4	0.007260	428	29.5	12,630	92	0.002767	35	-10
5	0.008853	412	24.7	10,164	90	0.004065	41	0
6	0.010741	108	113.6	12,272	132	0.005801	71	-12
7	0.012553	52	285.4	14,843	186	0.007569	112	-32
8	0.015040	30	323.1	9,694	146	0.010056	97	9
9	0.018687	31	221.6	6,868	128	0.013710	94	52
10	0.027091	26	303.8	7,899	214	0.022096	175	90
Overall		2,607	39.5	102,907	1,105	0.006500	669	62
Proportion Preventable							0.6052	0.0881

Source: HCUP State Inpatient Databases (SID). Healthcare Cost and Utilization Project (HCUP). 2011. Agency for Healthcare Research and Quality, Rockville, MD. (AHRQ QI Software Version 4.5)

AHRQ Quality Indicators[TM]

PEDIATRIC QUALITY INDICATORS (PDI), LOG OF ICD-9-CM AND DRG CODING UPDATES AND REVISIONS TO PDI DOCUMENTATION AND SOFTWARE
Version 4.5

Table of Contents

1.0 Log of ICD-9-CM and DRG Coding Updates and Revisions to PDI Documentation and Software

The following table summarizes the revisions made to the Pediatric Quality Indicators (PDI) software, software documentation and the technical specification documents, since the original release of these documents in February 2006. It also reflects changes to indicator specifications based on updates to ICD-9-CM and MS-DRG codes through Fiscal Year 2013 (effective October 1, 2012) and incorporates coding updates that were implemented in both versions of the PDI software (both SAS and Windows).

The table lists the version and revision number, the date the revision was made, the component(s) affected by the change and a short summary of the changes that were made. The nature of the change is categorized into one of three types:

1) fiscal year (FY) coding change: occurs because of coding changes to the most recent fiscal year codes dictated by the Centers for Disease Control and Prevention (CDC) National Center for Health Statistics (NCHS) and Centers for Medicare & Medicaid Services (CMS),
2) Specification/ Calculation change: may impact the measure result that is something other than the most recent fiscal year coding change, and
3) Software/ Documentation change: alteration to the software code to calculate the measure as specified, or to the documentation to clarify the measure intent or functionality.

For convenience and ease of use, the changes are listed in reverse chronological order with the most recent changes appearing first in the table. Please note that changes prior to version 4.4 are not classified according to the currently defined types of changes. In addition, each type of change has varied shading to enhance readability. All changes noted below have been incorporated into the software programming code, software documentation and the PDI technical specifications. With this software update, the PDI software now incorporates ICD-9-CM and DRG/MS-DRG codes valid from October 1, 1994 through September 30, 2013.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.5	May 2013	All area PDI	Specification/Calculation	Updated data are used for population estimates (i.e., through 2013). The population data are used to calculate the denominator for the area-level QI.
V4.5	May 2013	All PDI	Specification/Calculation	Updated reference population rates were calculated using 44 state files from the 2010 State Inpatient Databases (SID). New risk adjustment coefficients were calculated using the updated reference population.
V4.5	May 2013	Neonatal Blood Stream Infection Rate (NQI 3)	Specification/Calculation	1. Add numerator inclusion codes for any secondary diagnosis of methicillin resistant staphylococcus aureus septicemia to Criteria #1: 03812 METH RES STAPH AUR SEPT 2. Drop numerator inclusion code for secondary diagnosis of (non-neonatal) bacteremia from Criteria #2: 7907 BACTEREMIA 3. Add numerator inclusion codes for secondary diagnosis of methicillin resistant staphylococcus aureus and Escherichia coli infection to Criteria #3: 04112 MTH RES STAPH AUR 04141 SHIGA TOXIN-PROD E. COLI 04142 SPEC SHIGA TOXIN-PROD E. COLI OTH 04143 SHIGA TOXIN-PROD E. COLI UNS 04149 SHIGA TOXIN-PROD E. COLI OTH/UNS 4. Drop denominator inclusion for transfers into an acute care facility (DISP=2) 5. Add denominator inclusion for transfers from another healthcare facility within two days of birth 6. Add denominator exclusion codes for selected principal diagnosis of sepsis or bacteremia or secondary diagnosis present on admission of sepsis or bactermia: 04104 ENTEROCOCCUS GROUP D 04110 STAPHYLOCOCCUS UNSPCFIED 04111 MTH SUS STPH AUR ELS/NOS 04112 MTH RES STAPH AUR

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
				04119 OTHER STAPHYLOCOCCUS 0413 KLEBSIELLA PNEUMONIAE 0414 E. COLI INFECT NOS 04141 SHIGA TOXIN-PROD E. COLI 04142 SPEC SHIGA TOXIN-PROD E. COLI OTH 04143 SHIGA TOXIN-PROD E. COLI UNS 04149 SHIGA TOXIN-PROD E. COLI OTH/UNS 0417 PSEUDOMONAS INFECT NOS 04185 OTH GRAM NEGATV BACTERIA 1125 DISSEMINATED CANDIDIASIS 77181 SEPTICEMIA OF NEWBORN 77183 BACT OF NEWBORN 7. Add denominator exclusion codes for principal diagnosis (or secondary diagnosis present on admission only for those cases qualifying for the numerator) for sepsis or bacteremia: 1125 DISSEMINATED CANDIDIASIS 77181 SEPTICEMIA OF NEWBORN 77183 BACT OF NEWBORN 7907 BACTEREMIA 8. Drop denominator exclusion codes for principal diagnosis of infection or secondary diagnosis present on admission: PDI Appendix H – Infection Diagnosis Codes 9. Drop denominator exclusion for length of stay less than 2 days 10. Add denominator exclusion for length of stay less than 7 days

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.5	May 2013	Postoperative Hemorrhage or Hematoma Rate (PDI 8)	Specification/Calculation	1. Add denominator exclusion codes for any diagnosis code of coagulation disorder: 2860 CONG FACTOR VIII DISORDER 2861 CONG FACTOR IX DISORDER 2862 CONG FACTOR XI DISORDER 2863 CONG DEF CLOT FACTOR NEC 2864 VON WILLEBRAND'S DISEASE 28652 ACQUIRED HEMOPHILIA 28659 OT HEM D/T CIRC ANTICOAG 2866 DEFIBRINATION SYNDROME 2867 ACQ COAGUL FACTOR DEF 2869 COAGUL DEFECT NEC NOS 2. Add numerator inclusion codes for miscellaneous hemorrhage or hematoma-related procedures: Codes listed in Appendix C
V4.5	May 2013	All mortality PDI and Postoperative Wound Dehiscence Rate (PDI 11)	Specification/Calculation	Modify the parameters in the analysis module for measures that are never present on admission (this is, where P=0 for all cases) by increasing the estimated precision threshold, i.e., modify the precision parameter in the analysis module to less than $1x10^9$. This changed only affected the software. The user will not see the change in parameters as they are embedded in the regression intercept and coefficients that are used by the prediction module. Rationale: Effect will be to change the reference population rate used for shrinkage to be closer to empirically estimated reference population rate given P=0.
V4.5	May 2013	All PDI	Software/Documentation	Respiratory complications diagnosis codes – Corrections were made to assure that three specific diagnosis codes were present in both the SAS and WinQI software. This change only affected the software.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.5	May 2013	All PDI	Software/Documentation	In WinQI there was an error in the smoothed rate calculation involving the noise variance and signal variance. This error was not previously observed because it only became significant in particular cases with relatively unusual variances. This issue was fixed in WinQI Version 4.5.
V4.5	May 2013	All PDI	Software/Documentation	The variable DISCWT in SAS QI v4.5 was set equal to 1 and the variable DISCWT was removed from the KEEP statement associated with the input file. This change ensures that the SAS programs do not account for complex sampling design when calculating QI estimates and standard errors. The SAS QI software, beginning with Version 4.1, does not support weighted QI estimates or standard errors for weighted estimates. The WinQI software has never supported weighted QI estimates or standard errors for weighted estimates.
V4.5	May 2013	All PDI	Software/Documentation	The definitions of Newborn and Outborn were revised in WinQI to better align them with SAS. The differences affected cases where discharge records have some combinations of missing values for one or more of the required data fields (e.g., Age, Age in Days).
V4.5	May 2013	All PDI	Software/Documentation	The installation packages have been improved for Version 4.5 of the SAS and WinQI software, including the Prediction Module and 3M™ APR DRG software. Both the SAS and WinQI software are available in Version 4.5 as either 32-bit or 64-bit applications. The 32-bit applications are targeted for Windows XP operating systems, and the 64-bit applications are targeted for Windows 7 operating systems.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.5	May 2013	All PDI	Software/Documentation	The WinQI software was was corrected to address the following issues: 1. On Step 2 of the Sampling Wizard dialog, the Sample Data File text box was not working correctly. Users were not able to save the file specified using the Browse explorer function. This issue has been fixed in WinQI Version 4.5. 2. Denominators were not being adjusted (i.e., dividing by the number of discharge quarters) when the calculations were being stratified by quarter. This issue has been fixed in WinQI Version 4.5. 3. On the WinQI Additional Options for Data Analysis screen of the Report Wizard, if the "*Ref. Pop. Rate*" is deselected, and then the expected rate and O/E ratio are reported incorrectly. These rates should be disabled on this screen if "*Ref. Pop. Rate*" is not selected. This issue has been included in the software documentation. 4. The compiled C# program was named AHRQ.exe, and this was the same name used for the compiled Prediction Module C++ program. This potential conflict has been fixed in WinQI Version 4.5. 5. Excel files with an .xlsx extension were not recognized. MS Access file types also needed to be updated. These issues were fixed in WinQI Version 4.5.
V4.5	May 2013	Neonatal Blood Stream Infection Rate (NQI 3)	Software/Documentation	1. WinQI was mistakenly including the operating room procedure code 640 which only applies to adults. And, SAS was not consistently excluding this code for all pediatric indicators and cases. This issue was fixed in SAS and WinQI Version 4.5. This change only affected the software. 2. WinQI was mistakenly allowing some adult discharges to be included in the QI calculations in cases where the discharge record presents contradictory information about patient age and admission type. Specifically, software testing found that some adult discharge records include Newborn admission type. WinQI was fixed to make sure these adult cases are properly excluded from any pediatric indicator calculations.

AHRQ Quality Indicators^{TM}

Pediatric Quality Indicators (PDI), Log of ICD-9-CM and DRG Coding Updates and Revisions to PDI Documentation and Software

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.5	May 2013	Volume of Foreign Body Left during Procedure (PDI 3)	Software/Documentation	Rename indicator to "Retained Surgical Item or Unretrieved Device Fragment Count." This change only affected the documentation. Rationale: NQF measure refinements agreed upon with the Surgery Endorsement Maintenance 2010 Steering Committee
V4.5	May 2013	Iatrogenic Pneumothorax Rate (PDI 5)	Software/Documentation	1. Add denominator exclusion codes for any cardiac procdure: 3597 PERC MTRL VLV REPR W IMP 3737 EXC/DEST HRT LES, THRSPC This change only affected the documentation.
V4.5	May 2013	Pediatric Heart Surgery Mortality Rate (PDI 6)	Software/Documentation	Rename indicator to "RACHS-1 Pediatric Heart Surgery Mortality Rate." This change only affected the documentation. Rationale: NQF measure refinements agreed upon with the Surgery Endorsement Maintenance 2010 Steering Committee
V4.5	May 2013	Pediatric Heart Surgery Volume (PDI 7)	Software/Documentation	Rename indicator to "RACHS-1 Pediatric Heart Surgery Volume." This change only affected the documentation. Rationale: NQF measure refinements agreed upon with the Surgery Endorsement Maintenance 2010 Steering Committee

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.5	May 2013	Postoperative Hemorrhage or Hematoma Rate (PDI 8)	Software/Documentation	1. Rename indicator to "Perioperative Hemorrhage or Hematoma Rate." This change only affected the documentation. Rationale: Cases identified included adverse events that occur both peri- and post-operatively 2. For the denominator exclusion criterion that excludes cases where the procedure of interest occurs before the first operating room procedure, explicitly say that a secondary diagnosis for postoperative hemorrhage or postoperative hematoma must also be present in the discharge record for the record to be excluded. This change only affected the documentation. 3. WinQI was mistakenly including the operating room procedure code 640 which only applies to adults. And, SAS was not consistently excluding this code for all pediatric indicaators and cases. This issue was fixed in SAS and WinQI Version 4.5. This change only affected the software.
V4.5	May 2013	Postoperative Respiratory Failure Rate (PDI 9)	Software/Documentation	1. Added the following codes to Neruomuscular disorder diagnosis codes: 35921 MYOTONIC MUSCULAR DYSTRPHY 35929 OTHER MYOTONIC DISORDER This changed affected both the software and documentation. 2. Added the following code to Esophageal resection procedure codes in the technical specification (as it should have been included): 4399 TOTAL GASTRECTOMY NEC This changed only affected the documentation.
V4.5	May 2013	Transfusion Reaction Volume (PDI 13)	Software/Documentation	Rename indicator to "Transfusion Reaction Count." This changed only affected the documentation.
V4.5	May 2013	Urinary Tract Infection Admission Rate (PDI 18)	Software/Documentation	Add numerator exclusion codes for any diagnosis of kidney/urinary tract disorder: 59000 CHR PYELONEPHRITIS NOS 59001 CHR PYELONEPH W MED NECR This change only affected the documentation.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.4	March 2012	All Area PDI	Specification/Calculation	Updated data are used for population estimates (i.e., through 2012). The population data are used to calculate the denominator for the area-level QI. The comparative data tables have been updated using Version 4.4 of the software. Because the risk adjustment models and reference population have not changed for Version 4.4, the Risk Adjustment Coefficients remain as they were in Version 4.3.
V4.4	March 2012	Accidental Puncture or Laceration Rate (PDI 1)	FY Coding Change	Add denominator inclusion for surgical MS-DRGs (PDI Appendix C)

Add code:
016 AUTOLOGOUS BONE MARROW TRANSPLANT W CC/MCC
017 AUTOLOGOUS BONE MARROW TRANSPLANT W/O CC/MCC
570 SKIN DEBRIDEMENT W MCC
571 SKIN DEBRIDEMENT W CC
572 SKIN DEBRIDEMENT W/O CC/MCC |

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.4	March 2012	Pressure Ulcer Rate (PDI 2)	FY Coding Change	1. Add/remove denominator inclusion for operating room procedure codes (PDI Appendix A) Add code: 0221 INSERT/REPLACE EVD 0222 INTRCRAN VENT SHUNT/ANAS 1267 INSERT AQUEOUS DRAIN DEV 1753 PERC ATHER EXTRACRAN VSL 1754 PERC ATHER INTRACRAN VSL 1755 TRANSLUM COR ATHERECTOMY 1756 ATHER OTH NON-VOR VESSEL 3500 CLOSED VALVOTOMY NOS 3505 ENDOVAS REPL AORTC VALVE 3506 TRNSAPCL REP AORTC VALVE 3507 ENDOVAS REPL PULM VALVE 3508 TRNSAPCL REPL PULM VALVE 3509 ENDOVAS REPL UNS HRT VLV 3826 INSRT PRSR SNSR W/O LEAD 3977 TEMP ENDOVSC OCCLS VESSL 3978 ENDOVAS IMPLN GRFT AORTA 4382 LAP VERTICAL GASTRECTOMY 6824 UTERINE ART EMB W COILS 6825 UTERINE ART EMB W/O COIL Remove code: 0058 INS INTRA-ANSM PRES MNTR 0059 INTRAVASC MSMNT COR ART 0067 INTRAVAS MSMNT THORC ART 0068 INTRAVAS MSMT PERIPH ART 0069 INTRAVS MSMT VES NEC/NOS

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
				2. Add denominator includion for surgical MS-DRGs (PDI Appendix C) Add code: 016 AUTOLOGOUS BONE MARROW TRANSPLANT W CC/MCC 017 AUTOLOGOUS BONE MARROW TRANSPLANT W/O CC/MCC 570 SKIN DEBRIDEMENT W MCC 571 SKIN DEBRIDEMENT W CC 572 SKIN DEBRIDEMENT W/O CC/MCC
V4.4	March 2012	Volume of Foreign Body Left During Procedure (PDI 3)	FY Coding Change	Add denominator inclusion for surgical MS-DRGs (PDI Appendix C) Add code: 016 AUTOLOGOUS BONE MARROW TRANSPLANT W CC/MCC 017 AUTOLOGOUS BONE MARROW TRANSPLANT W/O CC/MCC 570 SKIN DEBRIDEMENT W MCC 571 SKIN DEBRIDEMENT W CC 572 SKIN DEBRIDEMENT W/O CC/MCC
V4.4	March 2012	Iatrogenic Pneumothorax Rate (PDI 5)	FY Coding Change	1. Add denominator exclusions for cardiac procedure Add code: 3506 TRNSAPCL REP AORTC VALVE 3508 TRNSAPCL REPL PULM VALVE 2. Add denominator inclusion for surgical MS-DRGs (PDI Appendix C) Add code: 016 AUTOLOGOUS BONE MARROW TRANSPLANT W CC/MCC 017 AUTOLOGOUS BONE MARROW TRANSPLANT W/O CC/MCC 570 SKIN DEBRIDEMENT W MCC 571 SKIN DEBRIDEMENT W CC 572 SKIN DEBRIDEMENT W/O CC/MCC

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.4	March 2012	Pediatric Heart Surgery Mortality Rate (PDI 6)	FY Coding Change	1. Add denominator inclusions for procedures to repair congenital heart defect Add code: 3500 CLOSED VALVOTOMY NOS 3505 ENDOVAS REPL AORTC VALVE 3506 TRNSAPCL REP AORTC VALVE 3507 ENDOVAS REPL PULM VALVE 3508 TRNSAPCL REPL PULM VALVE 2. Add denominator inclusions for diagnosis of congenital heart disease Add code: 74731 PULMON ART COARCT/ATRES 74732 PULMONARY AV MALFORMATN 74739 OTH ANOM PUL ARTERY/CIRC
V4.4	March 2012	Pediatric Heart Surgery Volume (PDI 7)	FY Coding Change	1. Add numerator inclusions for procedures to repair congenital heart defect Add code: 3500 CLOSED VALVOTOMY NOS 3505 ENDOVAS REPL AORTC VALVE 3506 TRNSAPCL REP AORTC VALVE 3507 ENDOVAS REPL PULM VALVE 3508 TRNSAPCL REPL PULM VALVE 2. Add numerator inclusion for diagnosis of congenital heart disease Add code: 74731 PULMON ART COARCT/ATRES 74732 PULMONARY AV MALFORMATN 74739 OTH ANOM PUL ARTERY/CIRC

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.4	March 2012	Postoperative Hemorrhage or Hematoma Rate (PDI 8)	FY Coding Change	1. Add stratification high risk inclusion codes for coagulopathies to high risk group Add code: 28652 ACQUIRED HEMOPHILIA 28653 ANTIPHOSPHOLIPID W HEMOR 28659 OT HEM D/T CIRC ANTICOAG 2. Add/remove denominator inclusion for operating room procedure codes (PDI Appendix A) Add code: 0221 INSERT/REPLACE EVD 0222 INTRCRAN VENT SHUNT/ANAS 1267 INSERT AQUEOUS DRAIN DEV 1753 PERC ATHER EXTRACRAN VSL 1754 PERC ATHER INTRACRAN VSL 1755 TRANSLUM COR ATHERECTOMY 1756 ATHER OTH NON-VOR VESSEL 3500 CLOSED VALVOTOMY NOS 3505 ENDOVAS REPL AORTC VALVE 3506 TRNSAPCL REP AORTC VALVE 3507 ENDOVAS REPL PULM VALVE 3508 TRNSAPCL REPL PULM VALVE 3509 ENDOVAS REPL UNS HRT VLV 3826 INSRT PRSR SNSR W/O LEAD 3977 TEMP ENDOVSC OCCLS VESSL 3978 ENDOVAS IMPLN GRFT AORTA 4382 LAP VERTICAL GASTRECTOMY 6824 UTERINE ART EMB W COILS 6825 UTERINE ART EMB W/O COIL

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
				Remove code: 0058 INS INTRA-ANSM PRES MNTR 0059 INTRAVASC MSMNT COR ART 0067 INTRAVAS MSMNT THORC ART 0068 INTRAVAS MSMT PERIPH ART 0069 INTRAVS MSMT VES NEC/NOS 3. Add denominator inclusion for surgical MS-DRGs (PDI Appendix C) Add code: 016 AUTOLOGOUS BONE MARROW TRANSPLANT W CC/MCC 017 AUTOLOGOUS BONE MARROW TRANSPLANT W/O CC/MCC 570 SKIN DEBRIDEMENT W MCC 571 SKIN DEBRIDEMENT W CC 572 SKIN DEBRIDEMENT W/O CC/MCC

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.4	March 2012	Postopertive Respiratory Failure Rate (PDI 9)	FY Coding Change	1. Add numerator inclusions for diagnosis of acute respiratory failure Add code: 51851 AC RESP FLR FOL TRMA/SRG 51853 AC/CHR RSP FLR FOL TR/SG 2. Remove numerator inclusions for diagnosis of acute respiratory failure Remove code: 51881 ACUTE RESPIRATORY FAILURE 51884 ACUTE & CHRONC RESP FAIL 3. Add denominator exclusions for diagnosis of degenerative neurological disorder Add code: 31081 PSEUDOBULBAR AFFECT 31089 NONPSYCH MNTL DISORD NEC 3316 CORTICOBASAL DEGENERATION 34882 BRAIN DEATH 4. Add denominator exclusions for diagnosis of neuromuscular disorders Add code: 35830 LAMBERT-EATON SYND NOS 35831 LAMBERT-EATON SYND NEOPL 35839 LAMBERT-EATON SYN OT DIS

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
				5. Add/remove denominator inclusion for operating room procedure codes (PDI Appendix A) Add code: 0221 INSERT/REPLACE EVD 0222 INTRCRAN VENT SHUNT/ANAS 1267 INSERT AQUEOUS DRAIN DEV 1753 PERC ATHER EXTRACRAN VSL 1754 PERC ATHER INTRACRAN VSL 1755 TRANSLUM COR ATHERECTOMY 1756 ATHER OTH NON-VOR VESSEL 3500 CLOSED VALVOTOMY NOS 3505 ENDOVAS REPL AORTC VALVE 3506 TRNSAPCL REP AORTC VALVE 3507 ENDOVAS REPL PULM VALVE 3508 TRNSAPCL REPL PULM VALVE 3509 ENDOVAS REPL UNS HRT VLV 3826 INSRT PRSR SNSR W/O LEAD 3977 TEMP ENDOVSC OCCLS VESSL 3978 ENDOVAS IMPLN GRFT AORTA 4382 LAP VERTICAL GASTRECTOMY 6824 UTERINE ART EMB W COILS 6825 UTERINE ART EMB W/O COIL Remove code: 0058 INS INTRA-ANSM PRES MNTR 0059 INTRAVASC MSMNT COR ART 0067 INTRAVAS MSMNT THORC ART 0068 INTRAVAS MSMT PERIPH ART 0069 INTRAVS MSMT VES NEC/NOS

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
				6. Add denominator inclusion for surgical MS-DRGs (PDI Appendix C) Add code: 016 AUTOLOGOUS BONE MARROW TRANSPLANT W CC/MCC 017 AUTOLOGOUS BONE MARROW TRANSPLANT W/O CC/MCC 570 SKIN DEBRIDEMENT W MCC 571 SKIN DEBRIDEMENT W CC 572 SKIN DEBRIDEMENT W/O CC/MCC

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.4	March 2012	Postoperative Sepsis Rate (PDI 10)	FY Coding Change	1. Add denominator exclusions for diagnosis of infection (PDI Appendix H) Add code: 04141 SHIGA TXN-PRODUCE E.COLI 04142 SHGA TXN PROD E.COLI NEC 04143 SHGA TXN PROD E.COLI NOS 04149 E.COLI INFECTION NEC/NOS 53901 INT D/T GASTRC BAND PROC 53981 INF D/T OT BARIATRC PROC 59681 INFECTION OF CYSTOSTOMY 99931 OTH/UNS INF-CEN VEN CATH 99932 BLOOD INF DT CEN VEN CTH 99933 LCL INF DT CEN VEN CTH 99934 AC INF FOL TRANS,INF BLD 2. Add code for high risk immunocompromised states (PDI Appendix F) Add code: 996.88 COMP TP ORGAN-STEM CELL 3. Add numerator inclusions for diagnosis of sepsis Add code: 99800 POSTOPERATIVE SHOCK, NOS 99802 POSTOP SHOCK, SEPTIC 4. Add codefor intermediate risk immunocompromised states (PDI Appendix G): Add code: 573.5 HEPATOPULMONARY SYNDROME

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
				5. Remove numerator inclusion for diagnosis of sepsis

Remove code:
998.0 POSTOPERATIVE SHOCK, NOS

6. Add denominator inclusions operating room procedure codes (PDI Appendix A)

Add code:
0221 INSERT/REPLACE EVD
0222 INTRCRAN VENT SHUNT/ANAS
1267 INSERT AQUEOUS DRAIN DEV
1753 PERC ATHER EXTRACRAN VSL
1754 PERC ATHER INTRACRAN VSL
1755 TRANSLUM COR ATHERECTOMY
1756 ATHER OTH NON-VOR VESSEL
3500 CLOSED VALVOTOMY NOS
3505 ENDOVAS REPL AORTC VALVE
3506 TRNSAPCL REP AORTC VALVE
3507 ENDOVAS REPL PULM VALVE
3508 TRNSAPCL REPL PULM VALVE
3509 ENDOVAS REPL UNS HRT VLV
3826 INSRT PRSR SNSR W/O LEAD
3977 TEMP ENDOVSC OCCLS VESSL
3978 ENDOVAS IMPLN GRFT AORTA
4382 LAP VERTICAL GASTRECTOMY
6824 UTERINE ART EMB W COILS
6825 UTERINE ART EMB W/O COIL

Remove code:
0058 INS INTRA-ANSM PRES MNTR
0059 INTRAVASC MSMNT COR ART
0067 INTRAVAS MSMNT THORC ART
0068 INTRAVAS MSMT PERIPH ART
0069 INTRAVS MSMT VES NEC/NOS |

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
				7. Add denominator and stratification inclusion for surgical MS-DRGs (PDI Appendix C) Add code: 016 AUTOLOGOUS BONE MARROW TRANSPLANT W CC/MCC 017 AUTOLOGOUS BONE MARROW TRANSPLANT W/O CC/MCC 570 SKIN DEBRIDEMENT W MCC 571 SKIN DEBRIDEMENT W CC 572 SKIN DEBRIDEMENT W/O CC/MCC

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.4	March 2012	Postoperative Wound Dehiscence Rate (PDI 11)	FY Coding Change	1. Add denominator inclusion for abdominopelvic procedures Add code: 4382 LAP VERTICAL GASTRECTOMY 2. Add denominator exclusion for diagnosis of high-risk immunocompromised state (PDI Appendix F) Add code: 28411 ANTIN CHEMOP INDCD PANCYT 28412 OTH DRG INDCD PANCYTOPNA 28419 OTHER PANCYTOPENIA 99688 COMP TP ORGAN-STEM CELL 3. Add denominator exclusion for diagnosis of intermediate-risk immunocompromised state (PDI Appendix G) Add code: 5735 HEPATOPULMONARY SYNDROME 4. Add stratification inclusion for surgical MS-DRGs Add code: 016 AUTOLOGOUS BONE MARROW TRANSPLANT W CC/MCC 017 AUTOLOGOUS BONE MARROW TRANSPLANT W/O CC/MCC 570 SKIN DEBRIDEMENT W MCC 571 SKIN DEBRIDEMENT W CC 572 SKIN DEBRIDEMENT W/O CC/MCC

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.4	March 2012	Central Venous Catheter-Related Blood Stream Infection Rate (PDI 12)	FY Coding Change	1. Add numerator definition for diagnosis of central venous catheter-related blood stream infections diagnosed on or after October 1, 2011. Add code: 99931 OTH/UNS INF-CEN VEN CATH 99932 BLOOD INF DT CEN VEN CTH 2. Add denominator inclusion for surgical MS-DRGs (PDI Appendix C) Add code: 016 AUTOLOGOUS BONE MARROW TRANSPLANT W CC/MCC 017 AUTOLOGOUS BONE MARROW TRANSPLANT W/O CC/MCC 570 SKIN DEBRIDEMENT W MCC 571 SKIN DEBRIDEMENT W CC 572 SKIN DEBRIDEMENT W/O CC/MCC 3. Add denominator exclusion for diagnosis of high- risk immunocompromised state (PDI Appendix F) Add code: 28411 ANTIN CHEMOP INDCD PANCYT 28412 OTH DRG INDCD PANCYTOPNA 28419 OTHER PANCYTOPENIA 99688 COMP TP ORGAN-STEM CELL 4. Add denominator exclusion for diagnosis of intermediate-risk immunocompromised state (PDI Appendix G) Add code: 5735 HEPATOPULMONARY SYNDROME

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.4	March 2012	Transfusion Reaction Volume (PDI 13)	FY Coding Change	Add denominator inclusion for surgical MS-DRGs (PDI Appendix C) Add code: 016 AUTOLOGOUS BONE MARROW TRANSPLANT W CC/MCC 017 AUTOLOGOUS BONE MARROW TRANSPLANT W/O CC/MCC 570 SKIN DEBRIDEMENT W MCC 571 SKIN DEBRIDEMENT W CC 572 SKIN DEBRIDEMENT W/O CC/MCC
V4.4	March 2012	Asthma Admission Rate (PDI 14)	FY Coding Change	Add denominator exclusion code for cystic fibrosis and anomalies of the respiratory system Add code: 51661 NEUROEND CELL HYPRPL INF 51662 PULM INTERSTITL GLYCOGEN 51663 SURFACTANT MUTATION LUNG 51664 ALV CAP DYSP W VN MISALN 51669 OTH INTRST LUNG DIS CHLD
V4.4	March 2012	Urinary Tract Infection Admission Rate (PDI 18)	FY Coding Change	1. Add denominator exclusion for diagnosis of high- risk immunocompromised state (PDI Appendix F) Add code for high-risk: 28411 ANTIN CHEMOP INDCD PANCYT 28412 OTH DRG INDCD PANCYTOPNA 28419 OTHER PANCYTOPENIA 99688 COMP TP ORGAN-STEM CELL 2. Add denominator exclusion for diagnosis of intermediate-risk immunocompromised state (PDI Appendix G) Add code for intermediate risk: 5735 HEPATOPULMONARY SYNDROME

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.4	March 2012	Neonatal Iatrogenic Pneumothorax Rate (NQI 1)	FY Coding Change	1. Add denominator exclusion code for cardiac procedure Add code: 3506 TRNSAPCL REP AORTC VALVE 3508 TRNSAPCL REPL PULM VALVE 2. Add denominator inclusion for surgical MS-DRGs (PDI Appendix C) Add code: 016 AUTOLOGOUS BONE MARROW TRANSPLANT W CC/MCC 017 AUTOLOGOUS BONE MARROW TRANSPLANT W/O CC/MCC 570 SKIN DEBRIDEMENT W MCC 571 SKIN DEBRIDEMENT W CC 572 SKIN DEBRIDEMENT W/O CC/MCC

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.4	March 2012	Neonatal Blood Stream Infection Rate (NQI 3)	FY Coding Change	1. Add denominator exclusions for diagnosis of infection (PDI Appendix H) Add code: 04141 SHIGA TXN-PRODUCE E.COLI 04142 SHGA TXN PROD E.COLI NEC 04143 SHGA TXN PROD E.COLI NOS 04149 E.COLI INFECTION NEC/NOS 53901 INT D/T GASTRC BAND PROC 53981 INF D/T OT BARIATRC PROC 59681 INFECTION OF CYSTOSTOMY 99931 OTH/UNS INF-CEN VEN CATH 99932 BLOOD INF DT CEN VEN CTH 99933 LCL INF DT CEN VEN CTH 99934 AC INF FOL TRANS,INF BLD 2. Add denominator exclusions for diagnosis of sepsis Add code: 99800 POSTOPERATIVE SHOCK, NOS 99802 SHOCK FOLLOW TRAUMA OR SURGERY, SEPTIC 3. Remove denominator exclusion for diagnosis of sepsis Remove code: 9980 POSTOPERATIVE SHOCK

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
				4. Add/remove denominator inclusion for Operating Room Procedure Codes (PDI Appendix A) Add code: 0221 INSERT/REPLACE EVD 0222 INTRCRAN VENT SHUNT/ANAS 1267 INSERT AQUEOUS DRAIN DEV 1753 PERC ATHER EXTRACRAN VSL 1754 PERC ATHER INTRACRAN VSL 1755 TRANSLUM COR ATHERECTOMY 1756 ATHER OTH NON-VOR VESSEL 3500 CLOSED VALVOTOMY NOS 3505 ENDOVAS REPL AORTC VALVE 3506 TRNSAPCL REP AORTC VALVE 3507 ENDOVAS REPL PULM VALVE 3508 TRNSAPCL REPL PULM VALVE 3509 ENDOVAS REPL UNS HRT VLV 3826 INSRT PRSR SNSR W/O LEAD 3977 TEMP ENDOVSC OCCLS VESSL 3978 ENDOVAS IMPLN GRFT AORTA 4382 LAP VERTICAL GASTRECTOMY 6824 UTERINE ART EMB W COILS Remove code: 0058 INS INTRA-ANSM PRES MNTR 0059 INTRAVASC MSMNT COR ART 0067 INTRAVAS MSMNT THORC ART 0068 INTRAVAS MSMT PERIPH ART 0069 INTRAVS MSMT VES NEC/NOS 6825 UTERINE ART EMB W/O COIL
V4.4	March 2012	Software	Software/ Documentaion	Revised the data step of creating permanent data set containing all records which are deleted from the analysis because key variable values having missing data

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.4	March 2012	Software	Software/ Documentaion	PDI 12: Modified inclusion logic to include time dependent logic to discharges before October 1, 2011 and after October 1, 2011 for central line-associated blood stream infection diagnosis codes
V4.4	March 2012	Software	Software/ Documentaion	WinQI v4.3 and v4.4 do not check for a possible issue with user-defined composite weighting – users must set weights for all possible individual indicators, including zero weights for indicators that are not to be included in the composite. This requirement has been included in the software documentation.
V4.4	March 2012	Software	Software/ Documentaion	PDI 09: Modified inclusion logic to include time dependent logic to discharges before October 1, 2011 and after October 1, 2011 for acute Respiratory Failure diagnosis codes
V4.4	March 2012	Software	Software/ Documentaion	Both SAS and WinQI v4.3 were improperly truncating the (Observed rate)/(Expected rate) ratio and associated upper confidence bound (95%) to be <= 1.0 in cases where a stratification of the rates was being implemented. This issue was fixed in both SAS and WinQI so that this truncation only applies in cases where no stratification is being performed.
V4.4	March 2012	Software	Software/ Documentaion	SAS and WinQI v4.4 remain 32-bit applications developed on a Windows XP operating system. Some limited testing has been performed to ensure that these applications will run successfully under a 64-bit, Windows 7 environment. One additional installation requirement related to administrator rights has been included in the software documentation.
V4.4	March 2012	Software	Software/ Documentaion	WinQI v4.3 was missing the PRPED5D code set and codes 7454 and 7455. This issue was fixed in v4.4 of WinQI and affects PDI 06 only.
V4.4	March 2012	Software	Software/ Documentaion	The WinQI v4.3 patient-level report showed incorrect POA exclusions in some cases. This issue was fixed in v4.4 of WinQI.
V4.4	March 2012	Software	Software/ Documentaion	WinQI v4.3 was not properly calculating quarterly rates when requested by the user. This issue was fixed in v4.4 of WinQI.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.4	March 2012	Software	Software/ Documentaion	SAS v4.3 did not properly handle stratifications where the user requested a two-way stratification that overlapped with a one-way stratification (e.g., Age-by-Gender at the same time as Age by itself). This issue was in fixed in v4.4 of SAS.
V4.4	March 2012	Software	Software/ Documentaion	Sort routine was (PROC SORT) was introduced to PDSASP3 and PDSASA3 programs before merging all the indicators together to sorting problems in SAS whenever user selects multiple stata (e.g. stratifies by age, gender, and age by gender)
V4.4	March 2012	Software	Software/ Documentaion	WinQI v4.3 did not properly implement a user selection of years later than 2009 during area report generation. Users were unable to select the year 2010 or 2011 to derive the denominator for area indicators. This issue, which affected all area-level QI, was fixed in v4.4 of WinQI.
V4.4	March 2012	Software	Software/ Documentaion	The files of shrinkage factors (MSXPDP43.TXT) which were applied to the risk-adjusted were revised using re-calculated signal variance.
V4.4	March 2012	Software	Software/ Documentaion	PDI 09: Modified the order of denominator exclusion/inclusions and numerator flags.
V4.4	March 2012	Software	Software/ Documentaion	PDSASA2.SAS program was revised to include denominator adjustment when the population count for certain combination of strata was zero.
V4.4	March 2012	Software	Software/ Documentaion	Minor SAS versus WinQI coding differences were corrected in the implementation of the technical specifications (e.g., differences in the order in which statements were evaluated) for PDI 01 and PDI 02.
V4.4	March 2012	Software	Software/ Documentaion	PDI 15 (Diabetes Short-term Complications Admission Rate) can be calculated using the number of diabetics in the state as the denominator, stratified by age.

AHRQ Quality Indicators^{TM}

Pediatric Quality Indicators (PDI), Log of ICD-9-CM and DRG Coding Updates and Revisions to PDI Documentation and Software

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.4	March 2012	Software	Software/ Documentaion	Changes were made to the SAS and WinQI software to implement a re-estimation of the signal variance in order to correct the fact that the smoothed rates in v4.3 of the software were constant for all providers for four indicators (IQI-11, IQI-14, NQI-01 and PSI-08).
V4.3	April 2011	Iatrogenic Pneumothorax (PDI 5) Denominator (Exclusion, thoracic procedure)	Coding	Add code: 3227 BRNC THRMPLSTY, ABLT MSCL
V4.3	April 2011	Iatrogenic Pneumothorax (PDI 5) Denominator (Exclusion, cardiac procedure)	Coding	Add code: 3597 PERC MRTL VLV REPR W IMP 3737 EXC/DEST HRT LES, THRSPC
V4.3	April 2011	Postoperative Hemorrhage or Hematoma (PDI 8)	Coding	Add to risk category for diagnosis of coagulopathy 28741 POSTTRANSFUSION PURPURA
V4.3	April 2011	Transfusion Reaction (PDI 13) Numerator (Inclusion, transfusion reaction)	Coding	Add code: 99960 ABO INCOMPAT REACT NOS 99961 ABO INCOMP/HTR NEC 99962 ABO INCOMPAT/ACUTE HTR 99963 ABO INCOMPAT/DELAY HTR 99969 ABO INCOMPAT REACTN NEC 99970 RH INCOMPAT REACTION NOS 99971 RH INCOMP/HTR NEC 99972 RH INCOMPAT/ACUTE HTR 99973 RH INCMPAT/DELAY HTR 99974 RH INCOMPAT REACTION NEC

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.3	April 2011	AHRQ Procedure Class	Coding	Add to procedure class: Class 1: 1771 NON-CORONARY IFVA Class 2: 0060 INS D-E STNT SUP FEM ART 3897 CV CATH PLCMT W GUIDANCE Class 4: 0120 IMP/REPL BRAIN PULSE GEN 0129 REM BRAIN PULSE GENERATR 3227 BRNC THRMPLSTY ABLT MSCL 3597 PERC MTRL VLV REPR W IMP 3737 EXC/DEST HRT LES THRSPC 3981 IMP CRTD SINUS STMTOTL 3982 IMP/REP CRTD SINUS LEAD 3983 IMP/RED CRTD SINUS GNRTR 3984 REV CRTD SINUS STM LEADS 3985 REV CRTD SINUS PULSE GEN 3986 REM CRTD SINUS STM TOTL 3987 REM CRTD SINUS STM LEAD 3988 REM CRTD SINUS PULSE GEN 3989 OTH CARTD BODY/SINUS OP 8188 RVRS TOTL SHLDR REPLACMT 8494 INS STRN FIX W RGD PLATE 8555 FAT GRAFT TO BREST 8687 FAT GRFT SKIN/SUBQ TISS 8690 EXT FAT FOR GRFT/BANKING

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.3	April 2011	Major Operating Room Procedure	Coding	Add codes: 0120 IMP/REPL BRAIN PULSE GEN 0129 REM BRAIN PULSE GENERATR 3227 BRNC THRMPLSTY ABLT MSCL 3597 PERC MTRL VLV REPR W IMP 3737 EXC/DEST HRT LES THRSPC 3981 IMP CRTD SINUS STMTOTL 3982 IMP/REP CRTD SINUS LEAD 3983 IMP/REP CRTD SINUS GNRTR 3984 REV CRTD SIMUS STM LEADS 3985 REV CRTD SINUS PULSE GEN 3986 REM CRTF SINUS STM TOTL 3987 REM CRTD SINUS STM LEAD 3988 REM CRTD SINUS PULSE GEN 3989 OTH CARTD BODY/SINUS OP 8188 RVRS TOTL SHLDR REPLACMT 8494 INS STRN FIX W RGD PLATE 8555 FAT GRAFT TO BREAST 8587 FAT GRFT SKIN/SUBQ TISS 8690 EXT FAT FOR GRFT/BANKING

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.3	April 2011	AHRQ Clinical Classification Software	Coding	Add codes: CCS 58: 27501 HEREDIT HEMOCHROMATOSIS 27502 HEMOCHROMATOS-RBC TRANS 27503 HEMOCHROMATOSIS NEC 27509 DISORD IRON METABLSM NEC 27803 OBESITY HYPOVENTS SYND V8541 BMI 40.0-44.9, ADULT V8542 BMI 45.0-49.9, ADULT V8543 BMI 50.0-59.9, ADULT V8544 BMI 60-69.9, ADULT V8545 BMI 70 AND OVER, ADULT CCS 62: 28749 SEC THROMBOCYTPENIA NEC CCS 83: 78033 POST TRAUMATIC SEIZURES CCS 95: 78452 FLNCY DSORD COND ELSEWHR 79951 ATTN/CONCENTRATE DEFICIT 79952 COG COMMUNICATE DEFICIT 79953 VISUOSPATIAL DEFICIT 79954 PSYCHOMOTOR DEFICIT 79955 FRONTAL LOBE DEFICIT 79959 COGNITION SIGN/SYMPT NEC CCS 133: 78630 HEMOPTYSIS NOS 78631 AC IDIO PUL HEMRG INFANT 78639 HEMOPTYSIS NEC

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
				CCS 213: V1365 HX-CONG MALFORM-HEART CCS 214: V1367 HX-CONG MALFORM-DIGEST CCS 215: 75231 AGENESIS OF UTERUS 75232 HYPOPLASIA OF UTERUS 75233 UNICORNUATE UTERUS 75234 BICORNUATE UTERUS 75235 SEPTATE UTERUS 75236 ARCUATE UTERUS 75239 ANOMALIES OF UTERUS NEC 75243 CERVIAL AGENESIS 75244 CERVICAL DUPLICATION 75245 VAGINAL AGENESIS 75246 TRANSV VAGINAL SEPTUM 75247 LONGITUD VAGINAL SEPTUM V1362 HX-CONG MALFORM-CU CCS 216: V1363 HX-CONG MALFORM-NERVOUS CCS 217: V1364 HX-CONG MALFORM-EYE,FACE V1366 HX-CONG MALFORM-RESP SYS V1368 HX-CONG MALFORM-SKIN,MS CCS 654: 31535 CHLDHD ONSET FLNCY DISOR
V4.3	April 2011	Surgical MS-DRG	Coding	Add to numerator inclusion for Surgical D RG 014 ALLOGENIC BONE MARROW TRANSPLANT 015 AUTOLOGOUS BONE MARROW TRANSPLANT
V4.3	April 2011	Software (SAS and WinQI) and Documentation	Software/ Documents	PDI #2: Modified inclusion logic to remove exclusion of pressure ulcer in stage I or II to capture diagnosis of stage III or IV ulcers.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.3	April 2011	Software (SAS and WinQI) and Documentation	Software/ Documents	PDI #5: Added denominator exclusions for thoracic procedures (43.5, 43.99, 44.67, 77.81, 77.91)
V4.3	April 2011	Software (SAS and WinQI) and Documentation	Software/ Documents	PDI #9: Added denominator exclusion for esophageal resection procedure (MDC 4), lung cancer procedures (32.39, 32.49, 32.59), ENT/neck procedures (CCS 33), and degenerative neurological disorders (CCS 653)
V4.3	June 30, 2011	Software (SAS and WinQI) and Documentation	Software/ Documents	AHRQ Clinical Classification Software: Modified CCS 65 to CCS 654 and CCS 67 to CCS 661. Added codes: 307.0, 307.9, 315.00, 315.01, 315.02, 315.09, 315.1, 315.2, 315.31, 315.32, 315.34, 315.35, 315.39, 315.4, 315.5, 315.8, 315.9, V40.0, V40.1, 648.30, 648.31, 648.32, 648.33, 648.34, 655.50, 655.51, 655.53, 760.72, 760.73, 760.75, 779.5, 965.00, 965.01, 965.02, 965.09, V65.42. Removed codes:305.1, 305.10, 305.11, 305.12, 305.13, V15.82
V4.3	June 30, 2011	Guide	Software/ Documents	Revised and updated all sections of the guide document to reflect current state of indicators, software and body of evidence.
V4.2	September 30, 2010	Pressure Ulcer (PDI 2)	Coding	Add diagnosis codes to stratifiers by hemiplegia, paraplegia, or quadriplegia 768.70 Hypoxic-ischemic encephalopathy, unspecified 768.72 Moderate hypoxic-ischemic encephalopathy 768.73 Severe hypoxic-ischemic encephalopathy
V4.2	September 30, 2010	Postoperative Respiratory Failure (PDI 9) Denominator (Exclusion, neuromuscular disorders)	Coding	359.71 Inclusion body myositis IBM 359.79 Other inflammatory and immune myopathies, NEC

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.2	September 30, 2010	Postoperative Sepsis (PDI 10) Denominator (Exclusion, Infection)	Coding	670.00 Major puerperal infection NOS-unsp 670.02 Major puerperal Infection NOS-del p/p 670.04 Major puerperal infection NOS-p/p 670.10 Puerperal endometritis-unsp 670.12 Puerperal endometritis del w p/p 670.14 Puerperal endometritis-postpart 670.20 Puerperal sepsis-unsp 670.22 Puerperal sepsis-del w p/p 670.24 Puerperal sepsis-postpart 670.30 Puerperal septic thrombophlebitis-unsp 670.32 Puerperal septic thrombophlebitis-del w p/p 670.34 Puerperal septic thrombophlebitis-postpart 670.80 Major puerperal infection NEC-suspec 670.82 Major puerperal infection NEC-dl w p/p 670.84 Major puerperal infection NEC-p/p
V4.2	September 30, 2010	Postoperative Wound Dehiscence (PDI 11) Denominator (Exclusion, high risk group)	Coding	279.41 Autoimmune lymphoproliferative syndrome ALPS 279.49 Autoimmune disease, not elsewhere classified

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.2	September 30, 2010	Multiple PDI Indicators	Coding	Add procedure codes: 0049 Superstat O2 Therapy 0058 Ins Intra-ansm Pres Mntr 0059 Intravasc Msmnt Cor Art 0067 Intravas Msmnt Thorc Art 0068 Intravas MsMt Periph Art 0069 Intravs Msmt Ves NEC/NOS 1751 Implant CCM, total system 1752 Implant CCM pulse gentr 1761 LITT lesn brain, guidance 1762 LITT les hd/nck, guidance 1763 LITT lesn liver, guidance 1769 LITT lesn, guide oth/NOS 1770 Intravenous Infusion of Clofarabine 3373 Endo ins/re brnc val, mul 3824 Intravas img corves OCT 3825 Intravas img non-cor OCT 3975 Endo emb hd/nk, bare coil 3976 Endo em hed/nk, bioac coil 4686 Endo insrt colonic stent 4687 Insert colonic stent NEC 3850 ABDPERNEAL RES RECTM NOS 8570 TOTL RECONSTC Breast NOS

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.2	September 30, 2010	Multiple PDI Indicators	Coding	Change procedure codes: 3760 Imp Bivn Ext Hrt Ast Sys 4840 Pull-thru Res Rectum NOS Change procedure codes category assignments: 0044 PROC-VESSEL BIFURCATION 0074 HIP REPL SURFMETAL/POLY 0075 HIP REP SURFMETAL/METAL 0076 HIP REP SURFCERMC/CERMC 0077 HIP REPL SURF- CERMC/POLY 0094 HITRA-OP NEUROPHYS MONTR 0110 INTRACRAN PRESSURE MONTR 0116 INTRACRANIAL 02 MONITOR 0117 BRAIN TEMP MONITORING 0126 INS CATHCRANIAL CAVITY 0127 REM CATHCRANIAL CAVITY 1741 OPEN ROBOTIC ASSIST PROC 1742 LAP ROBOTIC ASSIST PROC 1743 PERC ROBOTIC ASSIST PROC 1744 ENDO ROBOTIC ASSIST PROC 1745 THORACO ROBOTIC AST PROC 1749 ROBOTIC AST PROC NEC/NOS 3372 ENDO PULM ARWY FLOW MSMT 3736 EXC LEFT A TRAIL APPENDAG 3768 PERCUTAN HRT ASSIST SYST 3790 INS LEFT ATR APPEND DEV 3823 INTRAVASCLR SPECTROSCOPY 5013 TRANSJUGULAR LIVER BX 7094 INSERT BIOLOGICAL GRAFT 7095 INSERT SYNTH GRAFT/PROST 8472 APP EXT FIX DEVRING SYS 8473 APP HYBRID EXT FIX DEV 9227 RADIOACTIVE ELEM IMPLANT

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.2	September 30, 2010	Multiple PDI Indicators	Coding	Add new operating procedure codes: 1751 Implant CCM, total system 1752 Implant CCM pulse gentr 1761 LITT lesn brain, guidance 1762 LITT les hd/nck, guidance 1763 LITT lesn liver, guidance 1769 LITT lesn, guide oth/NOS 3975 Endo emb hd/nk, bare coil 3976 Endo em hed/nk, bioac coil 4850 ABDPERNEAL RES RECTM NOS 8570 TOTL RECONSTC BREAST NOS Modify: 9227 RADIOACTIVE ELEM IMPLANT 3760 IMP BIVN EXT HRT AST SYS 4840 PULL-THRU RES RECTUM NOS 3768 PERCUTAN HRT ASSIST SYST

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.2	September 30, 2010	Multiple PDI Indicators	Coding	Remove operating procedure codes: 0044 PROC-VESSEL BIFURCATION 0074 HIP REPL SURFMETAL/POLY 0075 HIP REP SURFMETAL/METAL 0076 HIP REP SURFCERMC/CERMC 0077 HIP REPL SURF- CERMC/POLY 0126 INS CATHCRANIAL CAVITY 0127 REM CATHCRANIAL CAVITY 1741 OPEN ROBOTIC ASSIST PROC 1742 LAP ROBOTIC ASSIST PROC 1743 PERC ROBOTIC ASSIST PROC 1744 ENDO ROBOTIC ASSIST PROC 1745 THORACO ROBOTIC AST PROC 1749 ROBOTIC AST PROC NEC/NOS 3372 ENDO PULM ARWY FLOW MSMT 3736 EXC LEFT A TRAIL APPENDAG 3790 INS LEFT ATR APPEND DEV 3823 INTRAVASCLR SPECTROSCOPY 7094 INSERT BIOLOGICAL GRAFT 7095 INSERT SYNTH GRAFT/PROST 8472 APP EXT FIX DEVRING SYS 8473 APP HYBRID EXT FIX DEV
V4.2	September 30, 2010	Multiple PDI Indicators	Coding	Add ICD-9-CM codes to the corresponding CCS categories, per Table 2 in Appendix.
V4.1	December 2, 2009	SAS Software and Documentation	Software/ Documents	PQI #9 – Low Birth Weight and PSI #17 – Birth Trauma Injury to Neonates – now calculated in the PDI SAS module. Technical Specifications for these indicators are distributed with their respective (PQI and PSI) set of documents.
V 4.0	June 30, 2009	Software and Documentation	Software/ Documents	PDI #2 – Pressure Ulcer (formerly Decubitus Ulcer) – added diagnosis code to denominator exclusion for hemi- and paraplegia (334.1)

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V 4.0	June 30, 2009	Software and Documentation	Software/ Documents	NQI #1 and PDI #5 – Iatrogenic Pneumothorax – 1) replaced the DRG denominator exclusion for cardiac surgery with procedure code denominator exclusion for cardiac procedures; 2) added procedure codes to denominator exclusion for thoracic procedures
V 4.0	June 30, 2009	Software and Documentation	Software/ Documents	PDI #4 – Iatrogenic Pneumothorax in Neonates has been redesignated as NQI #1. It is still calculated by the PDI SAS module.
V 4.0	June 30, 2009	Software and Documentation	Software/ Documents	PDI #9 – Postoperative respiratory failure – added denominator exclusion for craniofacial anomalies with 1) a procedure code for laryngeal or pharyngeal surgery or 2) a procedure on face and a diagnosis code of craniofacial abnormalities.
V 4.0	June 30, 2009	Software and Documentation	Software/ Documents	PDI #10 – Postoperative sepsis – removed diagnosis code from numerator inclusion for sepsis for discharges after 2004Q4 (effective October 1, 2004)
V 4.0	June 30, 2009	Software and Documentation	Software/ Documents	PDI #12 – Central Line-associated Bloodstream Infection – renamed the indicator from "Selected infections due to medical care"
V 4.0	June 30, 2009	Software and Documentation	Software/ Documents	PDI #16 – Gastroenteritis – added diagnosis code to numerator exclusion for gastrointestinal abnormalities (538 Gastrointestinal mucositis (ulcerative))
V 4.0	June 30, 2009	Software and Documentation	Software/ Documents	Multiple – Infection – 1) removed diagnosis codes for non-bacterial infections from denominator exclusion for infection; 2) Add diagnosis code to denominator exclusion for infection (078.3 CAT-SCRATCH DISEASE)
V 4.0	June 30, 2009	Software and Documentation	Software/ Documents	Multiple – Major Operating Room Procedures – removed selected procedure codes from the denominator inclusion for major operating room procedures
V 4.0	June 30, 2009	Software and Documentation	Software/ Documents	Medical DRGs – replaced the DRG denominator inclusion for medical discharges with the MS-DRG denominator inclusion for medical discharges for discharges after 2007Q4 (effective October 1, 2007).

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V 4.0	June 30, 2009	Software and Documentation	Software/ Documents	Surgical DRGs – replaced the DRG denominator inclusion for surgical discharges with the MS-DRG denominator exclusion for surgical discharges for discharges after 2007Q4 (effective October 1, 2007)
V 4.0	June 30, 2009	Software and Documentation	Software/ Documents	Adult DRGs – dropped the DRG denominator inclusion for adult DRGs.
V 4.0	June 30, 2009	Software and Documentation	Software/ Documents	Pediatric Heart Surgery Mortality (PDI #6) – excluded cases with any diagnosis of ASD or VSD with PDA as the only procedure
V 4.0	June 30, 2009	Software and Documentation	Software/ Documents	Iatrogenic Pneumothorax – Neonates (PDI #4) – renamed PDI #4 to NQI #1
V 4.0	June 30, 2009	Software and Documentation	Software/ Documents	Neonatal Mortality (NQI #2) – added the Neonatal Mortality indicator
V 4.0	June 30, 2009	Software and Documentation	Software/ Documents	Blood Stream Infection – Neonates (NQI #3) – added the Blood Stream Infection – Neonates indicator
V4.0	June 30,2009	Software and Documentation	Software/ Documents	Implement UB-04 – The UB-04 (effective October 1, 2007) changes were implemented including new data elements for point-of-origin and present on admission
V4.0	June 30,2009	Software and Documentation	Software/ Documents	Update Benchmarking Data to 2007 – used data from the 2007 SID for computation of benchmarks
V4.0	February 25, 2009	Accidental Puncture or Laceration (PDI 1) Denominator (Inclusion, spinal surgeries)	Coding	Add procedure codes to denominator inclusion for spinal surgeries ($SPINEP) Add codes: 80.53 Repair of the annulus fibrosus with graft or prosthesis 80.54 Other and unspecified repair of the anulus fibrosus

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.0	February 25, 2009	Pressure Ulcer (PDI 2) Denominator (Exclusion, diagnosis of Stage I or Stage II)	Coding	Add denominator exclusion for diagnosis of Stage I or Stage II ($DECUBVD) Add code: 707.20 PRESSURE ULCER, STAGE NOS 707.21 PRESSURE ULCER, STAGE I 707.22 PRESSURE ULCER, STAGE II
V4.0	February 25, 2009	Iatrogenic Pneumothorax (PDI 4 and 5) Denominator (Exclusion, diaphragmatic surgery repair)	Coding	Add procedure codes to denominator exclusion for diaphragmatic surgery repair ($DIAPHRP) Add code: 53.71 Laparoscopic repair of diaphragmatic hernia, abdominal approach 53.72 Other and open repair of diaphragmatic hernia, abdominal approach 53.75 Repair of diaphragmatic hernia, abdominal approach, NOS 55.83 Laparoscopic repair of diaphragmatic hernia, with thoracic approach 55.84 Other and open repair of diaphragmatic hernia, with thoracic approach
V4.0	February 25, 2009	Iatrogenic Pneumothorax (PDI 4 and 5) Denominator (Exclusion, pleural effusion)	Coding	Add diagnosis codes to denominator exclusion for pleural effusion ($PLEURAD) Add code: 511.81 Malignant pleural effusion 511.89 Other specified forms of effusion, except tuberculosis
V4.0	February 25, 2009	Iatrogenic Pneumothorax (PDI 4 and 5) Denominator (Exclusion)	Coding	Replace the DRG denominator exclusion for cardiac surgery ($CARDSDR) with a procedure code denominator exclusion for cardiac procedures ($CARDSIP). See Table 1 in Appendix for cardiac procedure codes. Add code: 37.36 Excision or destruction of left atrial appendage (LAA) 37.55 Removal of internal biventricular heart replacement system 37.60 Implantation or insertion of biventricular external heart assist system

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.0	February 25, 2009	Pediatric Heart Surgery (PDI 6 and 7) Denominator (Inclusion, procedures to repair congenital heart defect)	Coding	Add procedure code to denominator inclusion for procedures to repair congenital heart defect ($PRPED1P) Add code: 37.36 Excision or destruction of left atrial appendage (LAA)
V4.0	February 25, 2009	Postoperative Sepsis (PDI 10) Numerator (Inclusion, sepsis)	Coding	Add diagnosis code to numerator inclusion for sepsis ($SEPTIID) Modify code: 038.11 Methicillin susceptible staphylococcus aureus septicemia Add code: 038.12 Methicillin resistant Staphylococcus aureus septicemia
V4.0	February 25, 2009	Postoperative Wound Dehiscence (PDI 11) Denominator (Inclusion, abdominopelvic procedures)	Coding	Add procedure codes to denominator inclusion for abdominopelvic procedures ($ABDOMIP) Add codes: 17.31 Laparoscopic multiple segmental resection of large intestine 17.32 Laparoscopic cecectomy 17.33 Laparoscopic right hemicolectomy 17.34 Laparoscopic resection of transverse colon 17.35 Laparoscopic left hemicolectomy 17.36 Laparoscopic sigmoidectomy 17.39 Other laparoscopic partial excision of large intestine 45.81 Laparoscopic total intra-abdominal colectomy 45.82 Open total intra-abdominal colectomy 45.83 Other and unspecified total intra-abdominal colectomy 48.40 Pull-through resection of rectum, not otherwise specified 48.43 Open pull-through resection of rectum 48.50 Abdominoperineal resection of the rectum, NOS 48.52 Open abdominoperineal resection of the rectum 48.59 Other abdominoperineal resection of the rectum 53.75 Repair of diaphragmatic hernia, abdominal approach, NOS

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.0	February 25, 2009	Gastroenteritis (PDI 16) Numerator (Exclusion, gastrointestinal abnormalities)	Coding	Add diagnosis codes to numerator exclusion for gastrointestinal abnormalities ($ACGDISD) Add codes: 53570 EOSINOPHIL GASTRT WO HEM 53571 EOSINOPHILC GASTRT W HEM 558.41 Eosinophilic gastroenteritis 558.42 Eosinophilic colitis

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.0	February 25, 2009	Multiple – Immunocompromised Denominator (Exclusion, high risk immuno-compromised)	Coding	Add diagnosis codes to denominator exclusion for high risk immunocompromised ($IMMUNHD) Add codes: 199.2 Malignant neoplasm associated with transplanted organ 238.79 Other lymphatic and hematopoietic tissues 238.77 Post-transplant lymphoproliferative disorder 279.50 Graft-versus-host disease, unspecified 279.51 Acute graft-versus-host disease 279.52 Chronic graft-versus-host disease 279.53 Acute on chronic graft-versus-host disease V45.11 Renal dialysis status Add codes: 203.02 MULT MYELOMA IN RELAPSE 203.12 PLSM CEL LEUK IN RELAPSE 203.82 OTH IMNPRLF NEO-RELAPSE 204.02 ACT LYMP LEUK IN RELAPSE 204.12 CHR LYMP LEUK IN RELAPSE 204.22 SBAC LYM LEUK IN RELAPSE 204.82 OTH LYM LEUK IN RELAPSE 204.92 LYMP LEUK NOS RELAPSE 205.02 ACT MYEL LEUK IN RELAPSE 205.12 CHR MYEL LEUK IN RELAPSE 205.22 SBAC MYL LEUK IN RELAPSE 205.32 MYEL SARCOMA IN RELAPSE 205.82 OTH MYEL LEUK IN RELAPSE 205.92 MYEL LEUK NOS IN RELAPSE 206.02 ACT MONO LEUK IN RELAPSE 206.12 CHR MONO LEUK IN RELAPSE 206.22 SBAC MONO LEU IN RELAPSE 206.82 OTH MONO LEUK IN RELAPSE 206.92 MONO LEUK NOS RELAPSE

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
				207.02 AC ERTH/ERYLK IN RELAPSE 207.12 CHR ERYTHRMIA IN RELAPSE 207.22 MGKRYCYT LEUK IN RELAPSE 207.82 OTH SPF LEUK IN RELAPSE 208.02 AC LEUK UNS CL RELAPSE 208.12 CH LEU UNS CL IN RELAPSE 208.22 SBAC LEU UNS CL-RELAPSE 208.82 OTH LEUK UNS CL-RELAPSE 208.92 LEUKEMIA NOS IN RELAPSE

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.0	February 25, 2009	Multiple – Infection Denominator (Exclusion, infection)	Coding	Add diagnosis codes to denominator exclusion for infection ($INFECID) Modify codes: 038.11 Methicillin susceptible staphylococcus aureus septicemia 041.11 Methicillin susceptible staphylococcus aureus 482.41 Methicillin susceptible pneumonia due to staphylococcus aureus Add codes: 038.12 Methicillin resistant Staphylococcus aureus septicemia 041.12 Methicillin resistant Staphylococcus aureus (MRSA) 482.42 Methicillin resistant pneumonia due to staphylococcus aureus 707.20 Pressure ulcer unspecified stage 707.22 Pressure ulcer stage II 707.23 Pressure ulcer stage III 707.24 Pressure ulcer stage IV 777.50 Necrotizing enterocolitis in newborn, unspecified 777.51 Stage I necrotizing enterocolitis in newborn 777.52 Stage II necrotizing enterocolitis in newborn 777.53 Stage III necrotizing enterocolitis in newborn Delete codes (for discharges after 2008Q4 effective October 1, 2008): 707.00 PRESSURE ULCER, SITE NOS 707.01 PRESSURE ULCER, ELBOW 707.02 PRESSURE ULCER, UPR BACK 707.03 PRESSURE ULCER, LOW BACK 707.04 PRESSURE ULCER, HIP 707.05 PRESSURE ULCER, BUTTOCK 707.06 PRESSURE ULCER, ANKLE 707.07 PRESSURE ULCER, HEEL 707.09 PRESSURE ULCER, SITE NEC

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.0	February 25, 2009	Pressure Ulcer (PDI 2) Denominator (Exclusion, hemi- and paraplegia)	Indicator Specification Change	Add diagnosis code to denominator exclusion for hemi- and paraplegia ($HEMIPID) Add code: 334.1 Hereditary spastic paraplegia
V4.0	February 25, 2009	Iatrogenic Pneumothorax (PDI 4 and 5) Denominator (Exclusion)	Indicator Specification Change	Replace the DRG denominator exclusion for cardiac surgery ($CARDSDR) with procedure code denominator exclusion for cardiac procedures ($CARDSIP). See Table 1 in Appendix for cardiac procedure codes.
V4.0	February 25, 2009	Iatrogenic Pneumothorax (PDI 4 and 5) Denominator (Exclusion, thoracic procedures)	Indicator Specification Change	Add procedure codes to denominator exclusion for thoracic procedures ($THORAIP) Add codes: 05.22 Sympathectomy Cervical 05.23 Sympathectomy Lumbar 05.29 Other sympathectomy and ganglionectomy 07.80 Thymectomy, not otherwise specified 07.81 Other partial excision of thymus 07.82 Other total excision of thymus 07.83 Thoracoscopic partial excision of thymus 07.84 Thoracoscopic total excision of thymus 32.49 Other lobectomy of lung

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.0	February 25, 2009	Postoperative Respiratory Failure (PDI 9) Denominator (Exclusion)	Indicator Specification Change	Add denominator exclusion for craniofacial anomalies with 1) a procedure code for laryngeal or pharyngeal surgery ($CRANI1P) *or* 2) a procedure on face ($CRANI2P) *and* a diagnosis code of craniofacial abnormalities ($CRANIID). Add codes for pharyngeal surgery ($CRANI1P): 25.3 Complete glossectomy 25.4 Radical glossectomy 27.31 Local excision or destruction of lesion or tissue of bony palate 29.0 Pharyngotomy 29.33 Pharyngectomy (partial) 29.39 Other excision or destruction of lesion or tissue of pharynx 29.4 Plastic operation on pharynx 29.53 Closure of other fistula of pharynx 29.59 Other repair of pharynx 29.91 Dilation of pharynx 30.09 Other excision or destruction of lesion or tissue of larynx 30.21 Epiglottidectomy 30.22 Vocal cordectomy 30.29 Other partial laryngectomy 30.3 Complete laryngectomy 30.4 Radical laryngectomy 31.3 Other incision of larynx or trachea 31.5 Local excision or destruction of lesion or tissue of trachea 31.69 Other repair of larynx 31.73 Closure of other fistula of trachea 31.75 Reconstruction of trachea and construction of artificial larynx 31.79 Other repair and plastic operations on trachea 31.98 Other operations on larynx 31.99 Other operations on trachea

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
				Add codes for procedure on face ($CRANI2P): 25.2 Partial glossectomy 25.59 Other repair and plastic operations on tongue 27.32 Wide excision or destruction of lesion or tissue of bony palate 27.62 Correction of cleft palate 27.63 Revision of cleft palate repair 27.69 Other plastic repair of palate 29.31 Cricopharyngeal myotomy 76.65 Segmental osteoplasty [osteotomy] of maxilla 76.66 Total osteoplasty [osteotomy] of maxilla 76.46 Other reconstruction of other facial bone 76.69 Other facial bone repair 76.91 Bone graft to facial bone Add codes for craniofacial abnormalities ($CRANIID). 744.83 Macrostomia 744.84 Microstomia 744.9 Unspecified anomalies of face and neck 748.3 Congenital anomalies of skull and face bones 756.0 Tracheomalacia and congenital tracheal stenosis
V4.0	February 25, 2009	Postoperative Sepsis (PDI 10) Numerator (Inclusion)	Indicator Specification Change	Remove diagnosis code from numerator inclusion for sepsis ($SEPTIID) for discharges after 2004Q4 (effective October 1, 2004) Drop code: 785.59 Shock without mention of trauma, other
V4.0	February 25, 2009	Hospital Acquired Vascular Catheter Related Infections (PDI 12)	Indicator Specification Change	Rename the indicator from "Selected infections due to medical care" to "Hospital acquired vascular catheter related infections"

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.0	February 25, 2009	Gastroenteritis (PDI 16) Numerator (Exclusion, gastrointestinal abnormalities)	Indicator Specification Change	Add diagnosis code to numerator exclusion for gastrointestinal abnormalities ($ACGDISD) Add code: 538 Gastrointestinal mucositis (ulcerative)
V4.0	February 25, 2009	Multiple – Infection Denominator (Exclusion, infection)	Indicator Specification Change	Remove diagnosis codes for non-bacterial infections from denominator exclusion for infection ($INFECID) Drop codes: 376.00 ACUTE INFLAM NOS, ORBIT 386.30 LABYRINTHITIS NOS 386.31 SEROUS LABYRINTHITIS 386.32 CIRCUMSCRI LABYRINTHITIS 598.00 URETHR STRICT:INFECT NOS 598.01 URETH STRICT:OTH INFECT 686.01 PYODERMA GANGRENOSUM Add diagnosis code to denominator exclusion for infection ($INFECID) Add codes: 078.3 CAT-SCRATCH DISEASE

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V4.0	February 25, 2009	Multiple – Major Operating Room Procedures Denominator (Inclusion)	Indicator Specification Change	Remove procedure codes from the denominator inclusion for major operating room procedures ($ORPROC) Drop codes: 38.7 INTERRUPTION VENA CAVA 41.0 LYMPH STRUCTURE OP NEC 41.00 BONE MARROW TRNSPLNT NOS 41.01 AUTO BONE MT W/O PURG 41.02 ALO BONE MARROW TRNSPLNT 41.03 ALLOGRFT BONE MARROW NOS 41.04 AUTO HEM STEM CT W/O PUR 41.05 ALLO HEM STEM CT W/O PUR 41.06 CORD BLD STEM CELL TRANS 41.07 AUTO HEM STEM CT W PURG 41.08 ALLO HEM STEM CT W PURG 41.09 AUTO BONE MT W PURGING
V4.0	February 25, 2009	Iatrogenic Pneumothorax – Neonates (PDI 4)	Indicator Specification Change	Rename PDI 4 to NQI 1
V4.0	February 25, 2009	Neonatal Mortality (NQI 2)	Indicator Specification Change	Add the Neonatal Mortality indicator
V4.0	February 25, 2009	Blood Stream Infection – Neonates (NQI 3)	Indicator Specification Change	Add the Blood Stream Infection – Neonates indicator

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V 3.2	March 10, 2008	Iatrogenic Pneumothorax (PDI #5) Denominator (Exclusion, Thoracic Surgery)	Coding	Added new codes: 32.20 THORAC EXC LUNG LESION 32.30 THORAC SEG LUNG RESECT 32.39 OTH SEG LUNG RESECT NOS 32.41 THORAC LOBECTOMY LUNG 32.50 THORACOSPC PNEUMONECTOMY 32.59 OTHER PNEUMONECTOMY NOS 33.20 THORACOSCOPC LUNG BIOPSY 34.20 THORACOSCOPIC PLEURAL BX 34.52 THORACOSCOPC DECORT LUNG
V 3.2	March 10, 2008	Selected Infections due to Medical Care (PDI #12) Numerator (Inclusion)	Coding	Added new code 999.31 INFECT D/T CENT VEN CATH
V 3.2	March 10, 2008	Multiple PDI Indicators Exclusion (Infection)	Coding	Add new codes 040.41 INFANT BOTULISM and 040.42 WOUND BOTULISM
V 3.2	March 10, 2008	Multiple PDI Indicators	Coding	Updated DRG to Version 25.0
V 3.2	March 10, 2008	Software and Documentation	Software/ Documents	PDI #1 (Accidental puncture or laceration) – Added an exclusion for discharges with an ICD-9-CM procedure code for spine surgery PDI #13 (Transfusion Reaction) – Revised the indicator from a rate to a count PDI #3 (Foreign Body left in During Procedure) – Revised the indicator from a rate to a count and to require the POA flag
V 3.1a	March 16, 2007	SAS Software and Documentation	Software/ Documents	Added program to calculate the pediatric patient safety composite measure. The new files are PDI_COMPOSITE.SAS and MSXPDC31.TXT.

AHRQ Quality Indicators^{TM}

Pediatric Quality Indicators (PDI), Log of ICD-9-CM and DRG Coding Updates and Revisions to PDI Documentation and Software

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V 3.1a	March 16, 2007	Software (PDSASA2)	Software/ Documents	Amended the aggregation algorithm to correctly sum the numerator and denominator counts across stratifiers.
V 3.1	March 12, 2007	Software (SAS and Windows) and Technical Specifications	Software/ Documents	Revised numerator inclusion criteria for Postoperative Hemorrhage and Hematoma (PDI #8) to include a diagnosis of hemorrhage or hematoma and a procedure for control of hemorrhage or drainage of hematoma.
V 3.1	March 12, 2007	Covariates. Software (SAS and Windows),	Software/ Documents	Based on recommendations of the Risk Adjustment and Hierarchical Modeling (RAHM) Workgroup, computed covariates using logistic regression model with a hospital random-effect instead of the existing simple logistic model. Because the AHRQ QI use a large sample, the impact on the covariates of using the hierarchical model (and hence the impact on the risk-adjusted rates) is minor. Updated the coefficients used in the calculation of expected and risk-adjusted rates to the reference population, based on the 2002-2004 State Inpatient Data (SID).
V 3.1	March 12, 2007	Covariates, Software (SAS and Windows), Software Documentation	Software/ Documents	Included an option to incorporate the present on admission indicator into the specifications. In general, cases where the outcome of interest is present on admission will be excluded from the denominator, as these cases are no longer at risk of having the outcome of interest occur during the hospitalization. The release also includes alternative parameter files of risk-adjustment covariates and population rates using 2002-2004 SID data from California and New York.
V 3.1	March 12, 2007	Software (SAS and Windows)	Software/ Documents	Age-, race-, gender- and county-specific population estimates used for AHRQ QI area rates were updated to use revised post-censal estimates for years 2001 through 2005 and projections for the years 2006 and 2007. Added capability to apply weight value to each discharge. The syntax will compute risk-adjusted rates and observed-to-expected ratios for the pre-defined set of stratification variables (e.g., age, gender, payer, race). When stratifications other than hospital or area are selected, the RPPDxx variables and their confidence intervals are observed/expected ratios to avoid confounding with risk adjustment variables.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V 3.0b	September 29, 2006	Windows	Software/ Documents	Implemented the pediatric risk adjustment.
V 3.0b	September 29, 2006	SAS Software	Software/ Documents	Changed the PAGECAT stratification data element to correctly assign non-integer AGE values. Changed PHS_RACHS1.TXT syntax to correctly assign the risk category when AGE > 0 and AGEDAY is missing. In general, these cases are now assigned to a lower risk category (impacts about 3% of cases).
V 3.0b	September 29, 2006	Technical Specifications and Software	Software/ Documents	PedQI #1, #3, #6, #10-12. Changed the exclusion from newborns less than 500g to neonates less than 500g.
V 3.0b	September 29, 2006	Measures	Software/ Documents	Revised the text to clarify clinical panel recommendations of indicators for inclusion in Pediatric module and those deferred for further development. Added description of Pediatric Heart Surgery Volume.
V 3.0a	May 1, 2006	SAS	Software/ Documents	Implemented the pediatric risk adjustment.
V 3.0a	May 1, 2006	SAS Software	Software/ Documents	PDSAS1.SAS – Corrected the principal diagnosis exclusion for PedQI #8. PDSASA2.SAS – Corrected the denominator calculation for PedQI #17
V 3.0a	May 1, 2006	Technical Specifications	Software/ Documents	PedQI #2 – Added exclusion for cases with an ICD-9-CM procedure code of debridement or pedicle graft as the only major operating room procedures (surgical cases only) PedQI #4/#5 – Added exclusion for cases with ICD-9-CM procedure code of diaphragmatic surgery repair PedQIs #16 and #18– Modified exclusion to cases with age less than or equal to 90 days (or neonates if age in days is missing) Deleted ICD-9-CM procedure code 41.0 from the list of major operating room procedure codes Intermediate Risk Immuno-compromised state – Clarified that codes for hepatic failure must be accompanied by codes for cirrhosis.

VERSION/ REVISION NUMBER	DATE	COMPONENT	NATURE OF CHANGE	CHANGES
V 3.0a	May 1, 2006	Technical Specifications and Software	Software/ Documents	Corrected ICD-9-CM diagnosis codes 590.00 and 590.01 in the numerator exclusion for PedQI #18. Dropped ICD-9-CM diagnosis codes 585.1, 585.2, 585.3, 585.4 and 585.9 from the high risk immunocompromised state specification. Added ICD-9-CM diagnosis codes 276.50, 276.51 and 276.52 to the numerator specification for PedQI #16. Refined the definition of neonate by dropping the DRG and MDC inclusion criteria. Refined the newborn definition by requiring that age in days be equal to zero (or missing if there is a liveborn diagnosis code).
V 3.0	February 20, 2006	Technical Specifications and Software	Software/ Documents	Dropped ICD-9-CM diagnosis code 5185 from numerator specification for PedQI #9. Dropped exclusion of all newborns and neonates transferring from another institution, added exclusion of neonates for PedQI #10.

Appendices

Appendix A - Cardiac Procedure Codes as of February 2009

3510	OPEN VALVULOPLASTY NOS		3613	AORTOCOR BYPAS-3 COR ART
3511	OPN AORTIC VALVULOPLASTY		3614	AORTCOR BYPAS-4+ COR ART
3512	OPN MITRAL VALVULOPLASTY		3615	1 INT MAM-COR ART BYPASS
3513	OPN PULMON VALVULOPLASTY		3616	2 INT MAM-COR ART BYPASS
3514	OPN TRICUS VALVULOPLASTY		3617	ABD-CORON ARTERY BYPASS
3520	OPN/OTH REP HRT VLV NOS		3619	HRT REVAS BYPS ANAS NEC
3521	OPN/OTH REP AORT VLV-TIS		362	ARTERIAL IMPLANT REVASC
3522	OPN/OTH REP AORTIC VALVE		3631	OPEN CHEST TRANS REVASC
3523	OPN/OTH REP MTRL VLV-TIS		3632	OTH TRANSMYO REVASCULAR
3524	OPN/OTH REP MITRAL VALVE		3639	OTH HEART REVASCULAR
3525	OPN/OTH REP PULM VLV-TIS		3691	CORON VESS ANEURYSM REP
3526	OPN/OTH REPL PUL VALVE		3699	HEART VESSEL OP NEC
3527	OPN/OTH REP TCSPD VLV-TS		370	PERICARDIOCENTESIS
3528	OPN/OTH REPL TCSPD VALVE		3710	INCISION OF HEART NOS
3531	PAPILLARY MUSCLE OPS		3711	CARDIOTOMY
3532	CHORDAE TENDINEAE OPS		3712	PERICARDIOTOMY
3533	ANNULOPLASTY		3731	PERICARDIECTOMY
3534	INFUNDIBULECTOMY		3732	HEART ANEURYSM EXCISION
3535	TRABECUL CARNEAE CORD OP		3733	EXC/DEST HRT LESION OPEN
3539	TISS ADJ TO VALV OPS NEC		3735	PARTIAL VENTRICULECTOMY
3550	PROSTH REP HRT SEPTA NOS		3741	IMPL CARDIAC SUPPORT DEV
3551	PROS REP ATRIAL DEF-OPN		3749	HEART/PERICARD REPR NEC
3553	PROS REP VENTRIC DEF-OPN		3751	HEART TRANSPLANTATION
3554	PROS REP ENDOCAR CUSHION		3752	IMP TOT INT BI HT RP SYS
3560	GRFT REPAIR HRT SEPT NOS		3753	REPL/REP THR UNT TOT HRT
3561	GRAFT REPAIR ATRIAL DEF		3754	REPL/REP OTH TOT HRT SYS
3562	GRAFT REPAIR VENTRIC DEF		3761	PULSATION BALLOON IMPLAN
3563	GRFT REP ENDOCAR CUSHION		3762	INSRT NON-IMPL CIRC DEV
3570	HEART SEPTA REPAIR NOS		3763	REPAIR HEART ASSIST SYS
3571	ATRIA SEPTA DEF REP NEC		3764	REMVE EXT HRT ASSIST SYS
3572	VENTR SEPTA DEF REP NEC		3765	IMP VENT EXT HRT AST SYS
3573	ENDOCAR CUSHION REP NEC		3766	IMPLANTABLE HRT ASSIST
3581	TOT REPAIR TETRAL FALLOT		3767	IMP CARDIOMYOSTIMUL SYS
3582	TOTAL REPAIR OF TAPVC		3791	OPN CHEST CARDIAC MASSAG
3583	TOT REP TRUNCUS ARTERIOS		3804	INCISION OF AORTA
3584	TOT COR TRANSPOS GRT VES		3805	THORACIC VESSEL INC NEC
3591	INTERAT VEN RETRN TRANSP		3844	RESECT ABDM AORTA W REPL
3592	CONDUIT RT VENT-PUL ART		3845	RESECT THORAC VES W REPL
3593	CONDUIT LEFT VENTR-AORTA		3864	EXCISION OF AORTA
3594	CONDUIT ARTIUM-PULM ART		3865	THORACIC VESSEL EXCISION
3595	HEART REPAIR REVISION		3884	OCCLUDE AORTA NEC
3598	OTHER HEART SEPTA OPS		3885	OCCLUDE THORACIC VES NEC
3599	OTHER HEART VALVE OPS		390	SYSTEMIC-PULM ART SHUNT
3603	OPEN CORONRY ANGIOPLASTY		3921	CAVAL-PULMON ART ANASTOM
3610	AORTOCORONARY BYPASS NOS		3922	AORTA-SUBCLV-CAROT BYPAS
3611	AORTOCOR BYPAS-1 COR ART		3923	INTRATHORACIC SHUNT NEC
3612	AORTOCOR BYPAS-2 COR ART			

Appendix B - ICD-9-CM codes for corresponding CCS categories as of September 2010

0700	HEPATITIS A WITH COMA		20048	MANTLE CELL LYMPH MULTIP
0701	HEPATITIS A W/O COMA		20050	PRIMARY CNS LYMPH XTRNDL
0702	HEPATITIS B WITH COMA*		20051	PRIMARY CNS LYMPH HEAD
07020	HPT B ACTE COMA WO DLTA		20052	PRIMARY CNS LYMPH THORAX
07021	HPT B ACTE COMA W DLTA		20053	PRIMARY CNS LYMPH ABDOM
07022	HPT B CHRN COMA WO DLTA		20054	PRIMARY CNS LYMPH AXILLA
07023	HPT B CHRN COMA W DLTA		20055	PRIMARY CNS LYM INGUIN
0703	HEPATITIS B W/O COMA*		20056	PRIMARY CNS LYMPH PELVIC
07030	HPT B ACTE WO CM WO DLTA		20057	PRIMARY CNS LYMPH SPLEEN
07031	HPT B ACTE WO CM W DLTA		20058	PRIMARY CNS LYMPH MULTIP
07032	HPT B CHRN WO CM WO DLTA		20060	ANAPLASTIC LYMPH XTRNDL
07033	HPT B CHRN WO CM W DLTA		20061	ANAPLASTIC LYMPH HEAD
0704	VIRAL HEPAT NEC W COMA*		20061	ANAPLASTIC LYMPH HEAD
07041	HPT C ACUTE W HEPAT COMA		20062	ANAPLASTIC LYMPH THORAX
07042	HPT DLT WO B W HPT COMA		20062	ANAPLASTIC LYMPH THORAX
07043	HPT E W HEPAT COMA		20063	ANAPLASTIC LYMPH ABDOM
07044	CHRNC HPT C W HEPAT COMA		20063	ANAPLASTIC LYMPH ABDOM
07049	OTH VRL HEPAT W HPT COMA		20064	ANAPLASTIC LYMPH AXILLA
0705	VIRAL HEPAT NEC W/O COMA*		20064	ANAPLASTIC LYMPH AXILLA
07051	HPT C ACUTE WO HPAT COMA		20065	ANAPLASTIC LYMPH INGUIN
07052	HPT DLT WO B WO HPT COMA		20065	ANAPLASTIC LYMPH INGUIN
07053	HPT E WO HEPAT COMA		20066	ANAPLASTIC LYMPH PELVIC
07054	CHRNC HPT C WO HPAT COMA		20066	ANAPLASTIC LYMPH PELVIC
07059	OTH VRL HPAT WO HPT COMA		20067	ANAPLASTIC LYMPH SPLEEN
0706	VIRAL HEPAT NOS W COMA		20067	ANAPLASTIC LYMPH SPLEEN
07070	HPT C W/O HEPAT COMA NOS		20068	ANAPLASTIC LYMPH MULTIP
07071	HPT C W HEPATIC COMA NOS		20068	ANAPLASTIC LYMPH MULTIP
0709	VIRAL HEPAT NOS W/O COMA		20070	LARGE CELL LYMPH XTRNDL
20030	MARGNL ZONE LYM XTRNDL		20070	LARGE CELL LYMPH XTRNDL
20030	MARGNL ZONE LYM XTRNDL		20071	LARGE CELL LYMPHOMA HEAD
20031	MARGIN ZONE LYM HEAD		20071	LARGE CELL LYMPHOMA HEAD
20031	MARGIN ZONE LYM HEAD		20072	LARGE CELL LYMPH THORAX
20032	MARGIN ZONE LYM THORAX		20072	LARGE CELL LYMPH THORAX
20032	MARGIN ZONE LYM THORAX		20073	LARGE CELL LYMPH ABDOM
20033	MARGIN ZONE LYM ABDOM		20073	LARGE CELL LYMPH ABDOM
20033	MARGIN ZONE LYM ABDOM		20074	LARGE CELL LYMPH AXILLA
20034	MARGIN ZONE LYM AXILLA		20074	LARGE CELL LYMPH AXILLA
20034	MARGIN ZONE LYM AXILLA		20075	LARGE CELL LYMPH INGUIN
20035	MARGIN ZONE LYM INGUIN		20075	LARGE CELL LYMPH INGUIN
20035	MARGIN ZONE LYM INGUIN		20076	LARGE CELL LYMPH PELVIC
20036	MARGIN ZONE LYM PELVIC		20077	LARGE CELL LYMPH SPLEEN
20037	MARGIN ZONE LYMPH SPLEEN		20078	LARGE CELL LYMPH MULTIP
20038	MARGIN ZONE LYMPH MULTIP		20270	PERIPH T CELL LYM XTRNDL
20040	MANTLE CELL LYM XTRRNDL		20271	PERIPH T CELL LYMPH HEAD
20041	MANTLE CELL LYMPH HEAD		20272	PERIPH T CELL LYM THORAX
20042	MANTLE CELL LYMPH THORAX		20273	PERIPH T CELL LYM ABDOM
20043	MANTLE CELL LYMPH ABDOM		20274	PERIPH T CELL LYM AXILLA
20044	MANTLE CELL LYMPH AXILLA		20275	PERIPH T CELL LYM INGUIN
20045	MANTLE CELL LYMPH INGUIN		20276	PERIPH T CELL LYM PELVIC
20046	MANTLE CELL LYMPH PELVIC		20277	PERIPH T CELL LYM SPLEEN
20047	MANTLE CELL LYMPH SPLEEN		20278	PERIPH T CELL LYM MULTIP

20312	PLSM CEL LEUK IN RELAPSE	32730	CIRCADIAN RHYM SLEEP NOS
20402	ACT LYMP LEUK IN RELAPSE	32731	CIRCADIAN RHY-DELAY SLP
20412	CHR LYMP LEUK IN RELAPSE	32732	CIRCADIAN RHY-ADVC SLEEP
20422	SBAC LYM LEUK IN RELAPSE	32733	CIRCADIAN RHYM-IRREG SLP
20482	OTH LYM LEUK IN RELAPSE	32734	CIRCADIAN RHYM-FREE RUN
20482	OTH LYM LEUK IN RELAPSE	32735	CIRCADIAN RHYTHM-JETLAG
20492	LYMP LEUK NOS RELAPSE	32736	CIRCADIAN RHY-SHIFT WORK
20502	ACT MYEL LEUK IN RELAPSE	32737	CIRCADIAN RHYM OTH DIS
20512	CHR MYEL LEUK IN RELAPSE	32739	CIRCADIAN RHYM SLEEP NEC
20522	SBAC MYL LEUK IN RELAPSE	32753	SLEEP RELATED BRUXISM
20532	MYEL SARCOMA IN RELAPSE	3315	NORML PRESSURE HYDROCEPH
20582	OTH MYEL LEUK IN RELAPSE	33183	MILD COGNITIVE IMPAIREMT
20592	MYEL LEUK NOS IN RELAPSE	33700	IDIO PERPH AUTO NEUR NOS
20602	ACT MONO LEUK IN RELAPSE	33701	CAROTID SINUS SYNDROME
20612	CHR MONO LEUK IN RELAPSE	33709	IDIO PERPH AUTO NEUR NEC
20622	SBAC MONO LEU IN RELAPSE	34881	TEMPORAL SCLEROSIS
20682	OTH MONO LEUK IN RELAPSE	34889	BRAIN CONDITIONS NEC
20692	MONO LEUK NOS RELAPSE	34939	DURAL TEAR NEC
20702	AC ERTH/ERYLK IN RELAPSE	35921	MYOTONIC MUSCLR DYSTRPHY
20712	CHR ERYTHRMIA IN RELAPSE	35922	MYOTONIA CONGENITA
20722	MGKRYCYT LEUK IN RELAPSE	35923	MYOTONIC CHONDRODYSTRPHY
20782	OTH SPF LEUK IN RELAPSE	35924	DRUG INDUCED MYOTONIA
20802	AC LEUK UNS CL RELAPSE	35929	MYOTONIC DISORDER NEC
20812	CH LEU UNS CL IN RELAPSE	35971	INCLUSION BODY MYOSITIS
20822	SBAC LEU UNS CL-RELAPSE	35979	INFLM/IMMUNE MYOPATH NEC
20882	OTH LEUK UNS CL-RELAPSE	4041	BEN HYPERT HRT/RENAL DIS*
20892	LEUKEMIA NOS IN RELAPSE	41512	SEPTIC PULMONARY EMBOLSM
20922	MALIG CARCINOID THYMUS	4162	CHR PULMONARY EMBOLISM
20924	MALIG CARCINOID KIDNEY	42682	LONG QT SYNDROME
20924	MALIG CARCINOID KIDNEY	51181	MALIGNANT PLEURAL EFFUSN
20925	MAL CARCNOID FOREGUT NOS	53013	EOSINOPHILIC ESOPHAGITIS
20926	MAL CARCINOID MIDGUT NOS	57142	AUTOIMMUNE HEPATITIS
20927	MAL CARCNOID HINDGUT NOS	72990	SOFT TISSUE DISORD NOS
20971	SEC NEUROEND TU DIST LYM	72991	POST-TRAUMATIC SEROMA
20972	SEC NEUROEND TUMOR-LIVER	72992	NONTRAUMA HEMA SOFT TISS
20973	SEC NEUROENDO TUMOR-BONE	72999	SOFT TISSUE DISORDER NEC
20974	SEC NEUROENDO TU-PERITON	75672	OMPHALOCELE
25541	GLUCOCORTICOID DEFICIENT	75673	GASTROSCHISIS
25542	MINERALCORTICOID DEFCNT	76061	AMNIOCENTESIS AFFECT NB
25801	MULT ENDO NEOPLAS TYPE I	76062	IN UTERO PROC NEC AFF NB
25950	ANDROGEN INSENSITVTY NOS	76063	MAT SURG DUR PREG AFF NB
25951	ANDROGEN INSENSITVTY SYN	76064	PREV MATERN SURG AFF NB
25952	PART ANDROGEN INSNSITVTY	77750	NEC ENTEROCOLTIS NB NOS
2755	HUNGRY BONE SYNDROME	77751	STG I NEC ENTEROCOL NB
27941	AUTOIMMUN LYMPHPROF SYND	77752	STG II NEC ENTEROCOL NB
27949	AUTOIMMUNE DISEASE NEC	77753	STG III NEC ENTEROCOL NB
2865	INTR CIRCUL ANTICOAG DIS#	77931	NB FEEDING PROBLEMS
2866	DEFIBRINATION SYNDROME	77932	NB BILIOUS VOMITING
2867	ACQ COAGUL FACTOR DEFIC	77933	NB OTHER VOMITING
2874	SECOND THROMBOCYTOPENIA#	77934	NB FAILURE TO THRIVE
28866	BANDEMIA	78072	FUNCTIONAL QUADRIPLEGIA
28982	SEC HYPERCOAGULABLE ST	782	SKIN/OTH INTEGUMENT SYMP*
28984	HEPARIN-INDU THROMBOCYTO	78451	DYSARTHRIA
32702	INSOMNIA DT MENTAL DISOR	78459	SPEECH DISTURBANCE NEC
32715	HYPERSOM DT MENTAL DISOR	78951	MALIGNANT ASCITES

78959	ASCITES NEC	V1053	HX MALIG RENAL PELVIS
7897	COLIC	V1053	HX MALIG RENAL PELVIS
79510	ABN GLAND PAP SMR VAGINA	V1090	HX MALIG NEOPLASM NOS
79511	PAP SMEAR VAG W ASC-US	V1091	HX MALIG NEUROENDO TUMOR
79512	PAP SMEAR VAGINA W ASC-H	V1359	HX MUSCULOSKLETL DIS NEC
79513	PAP SMEAR VAGINA W LGSIL	V4511	RENAL DIALYSIS STATUS
79514	PAP SMEAR VAGINA W HGSIL	V4512	NONCMPLNT W RENAL DIALYS

Appendix C – Miscellaneous Hemorrhage or Hematoma-related Procedure Codes as of December 2012

0121	CRANIAL SINUS I & D		2109	EPISTAXIS CONTROL NEC
0124	OTHER CRANIOTOMY		211	INCISION OF NOSE
0131	INCISE CEREBRAL MENINGES		2121	RHINOSCOPY
0139	OTHER BRAIN INCISION		2219	NASAL SINUS DX PROC NEC
0213	MENINGE VESSEL LIGATION		2239	EXT MAXILLARY ANTROT NEC
0239	VENT SHUNT EXTRACRAN NEC		2241	FRONTAL SINUSOTOMY
0241	IRRIGATE/EXPL VENT SHUNT		2251	ETHMOIDOTOMY
0309	SPINAL CANAL EXPLOR NEC		2252	SPHENOIDOTOMY
0401	EXCISION ACOUSTC NEUROMA		260	INCIS SALIVARY GLND/DUCT
0404	PERIPH NERVE INCIS NEC		270	DRAIN FACE & MOUTH FLOOR
0443	CARPAL TUNNEL RELEASE		280	PERITONSILLAR I & D
0444	TARSAL TUNNEL RELEASE		2911	PHARYNGOSCOPY
0602	REOPEN THYROID FIELD WND		313	INCIS LARYNX TRACHEA NEC
0609	INCIS THYROID FIELD NEC		3141	TRACHEOSCOPY THRU STOMA
0692	THYROID VESSEL LIGATION		3142	LARYGNOSCOPY/TRACHEOSCOP
0700	ADRENAL EXPLORATION NOS		330	INCISION OF BRONCHUS
0701	UNILAT ADRENAL EXPLORAT		331	INCISION OF LUNG
0702	BILAT ADRENAL EXPLORAT		3322	FIBER-OPTIC BRONCHOSCOPY
0741	ADRENAL INCISION		3323	OTHER BRONCHOSCOPY
0743	ADRENAL VESSEL LIGATION		3324	CLOSED BRONCHIAL BIOPSY
0751	PINEAL FIELD EXPLORATION		3402	EXPLORATORY THORACOTOMY
0752	PINEAL GLAND INCISION		3403	REOPEN THORACOTOMY SITE
0771	PITUITARY FOSSA EXPLORAT		3409	OTHER PLEURAL INCISION
0772	PITUITARY GLAND INCISION		341	INCISION OF MEDIASTINUM
0791	THYMUS FIELD EXPLORATION		3421	TRANSPLEURA THORACOSCOPY
0792	OTHER INCISION OF THYMUS		3422	MEDIASTINOSCOPY
0795	THORAC INCISION THYMUS		3582	TOTAL REPAIR OF TAPVC
0809	OTHER EYELID INCISION		3639	OTH HEART REVASCULAR
090	LACRIMAL GLAND INCISION		3699	HEART VESSEL OP NEC
0953	LACRIMAL SAC INCISION		370	PERICARDIOCENTESIS
1244	EXCISE CILIARY BODY LES		3711	CARDIOTOMY
1289	SCLERAL OPERATION NEC		3799	OTHER HEART/PERICARD OPS
149	OTHER POST SEGMENT OPS		3800	INCISION OF VESSEL NOS
1609	ORBITOTOMY NEC		3801	INTRACRAN VESSEL INCIS
1802	EXT AUDITORY CANAL INCIS		3802	HEAD/NECK VES INCIS NEC
1809	EXTERNAL EAR INCIS NEC		3803	UPPER LIMB VESSEL INCIS
1811	OTOSCOPY		3804	INCISION OF AORTA
2001	MYRINGOTOMY W INTUBATION		3805	THORACIC VESSEL INC NEC
2009	MYRINGOTOMY NEC		3806	ABDOMEN ARTERY INCISION
2021	MASTOID INCISION		3807	ABDOMINAL VEIN INCISION
2022	PETRUS PYRAM AIR CEL INC		3808	LOWER LIMB ARTERY INCIS
2023	MIDDLE EAR INCISION		3809	LOWER LIMB VEIN INCISION
2079	INC/EXC/DESTR IN EAR NEC		3850	VARICOSE V LIG-STRIP NOS
2100	CONTROL OF EPISTAXIS NOS		3851	INTCRAN VAR V LIG-STRIP
2101	ANT NASAL PACK FOR EPIST		3852	HEAD/NECK VAR V LIG-STR
2102	POST NASAL PAC FOR EPIST		3853	ARM VARICOSE V LIG-STRIP
2103	CAUTERY TO STOP EPISTAX		3855	THORAC VAR V LIG-STRIP
2104	ETHMOID ART LIGAT-EPIST		3857	ABD VARICOS V LIGA-STRIP
2105	MAX ART LIG FOR EPISTAX		3859	LEG VARICOS V LIGA-STRIP
2106	EXT CAROT ART LIG-EPIST		387	INTERRUPTION VENA CAVA
2107	NASAL SEPT GRFT-EPISTAX		3930	SUTURE OF VESSEL NOS

3931	SUTURE OF ARTERY	5184	ENDOSC DILATION AMPULLA
3932	SUTURE OF VEIN	5188	ENDOSC REMOVE BILE STONE
3952	ANEURYSM REPAIR NEC	5196	PERC EXTRAC COM DUC CALC
3953	ARTERIOVEN FISTULA REP	5198	OTH PERC PROC BIL TRCT
3972	ENDOVASC EMBOL HD/NK VES	5209	PANCREATOTOMY NEC
3979	OTH ENDO PROC OTH VESSEL	5213	ENDOSC RETRO PANCREATOG
398	CARTD BODY/SINUS/VASC OP#	5411	EXPLORATORY LAPAROTOMY
400	INCIS LYMPHATIC STRUCTUR	5419	LAPAROTOMY NEC
412	SPLENOTOMY	5421	LAPAROSCOPY
4209	ESOPHAGEAL INCISION NEC	5495	PERITONEAL INCISION
4221	ESOPHAGOSCOPY BY INCIS	5501	NEPHROTOMY
4222	ESOPHAGOSCOPY THRU STOMA	5511	PYELOTOMY
4223	ESOPHAGOSCOPY NEC	5521	NEPHROSCOPY
4233	ENDOSC DESTRUC ESOPH LES	5522	PYELOSCOPY
4239	DESTRUCT ESOPHAG LES NEC	562	URETEROTOMY
4291	LIGATION ESOPH VARIX	5631	URETEROSCOPY
430	GASTROTOMY	5719	CYSTOTOMY NEC
4341	ENDOSC DESTR STOMACH LES	5731	CYSTOSCOPY THRU STOMA
4411	TRANSABDOMIN GASTROSCOPY	5732	CYSTOSCOPY NEC
4412	GASTROSCOPY THRU STOMA	580	URETHROTOMY
4413	GASTROSCOPY NEC	5822	URETHROSCOPY NEC
4440	SUTURE PEPTIC ULCER NOS	5909	PERIREN/URETER INCIS NEC
4441	SUT GASTRIC ULCER SITE	600	INCISION OF PROSTATE
4442	SUTURE DUODEN ULCER SITE	6081	PERIPROSTATIC INCISION
4443	ENDOSC CONTROL GAST HEM	620	INCISION OF TESTES
4444	TRANSCATH EMBO GAST HEM	631	EXC SPERMATIC VARICOCELE
4449	OTHER CONTROL GAST HEM	636	VASOTOMY
4491	LIGATE GASTRIC VARICES	6372	SPERMATIC CORD LIGATION
4500	INTESTINAL INCISION NOS	6392	EPIDIDYMOTOMY
4501	DUODENAL INCISION	6393	SPERMATIC CORD INCISION
4502	SMALL BOWEL INCISION NEC	6492	INCISION OF PENIS
4503	LARGE BOWEL INCISION	6501	LAPAROSCOPIC OOPHOROTOMY
4511	TRANSAB SM BOWEL ENDOSC	6509	OTHER OOPHOROTOMY
4512	ENDOSC SM BOWEL THRU ST	6601	SALPINGOTOMY
4513	SM BOWEL ENDOSCOPY NEC	680	HYSTEROTOMY
4516	EGD WITH CLOSED BIOPSY	6811	DIGITAL EXAM OF UTERUS
4521	TRANSAB LG BOWEL ENDOSC	6812	HYSTEROSCOPY
4522	ENDOSC LG BOWEL THRU ST	6995	INCISION OF CERVIX
4523	COLONOSCOPY	700	CULDOCENTESIS
4524	FLEXIBLE SIGMOIDOSCOPY	7012	CULDOTOMY
4543	ENDOSC DESTRU LG INT LES	7021	VAGINOSCOPY
4549	DESTRUC LG BOWEL LES NEC	7022	CULDOSCOPY
480	PROCTOTOMY	757	MANUAL EXPLOR UTERUS P/P
4822	PROCTOSIGMOIDOSC THRU ST	7710	OTHER BONE INCISION NOS
4823	RIGID PROCTOSIGMOIDOSCPY	8010	OTHER ARTHROTOMY NOS
4921	ANOSCOPY	8201	EXPLOR TEND SHEATH-HAND
4945	HEMORRHOID LIGATION	8202	MYOTOMY OF HAND
500	HEPATOTOMY	8203	BURSOTOMY OF HAND
5110	ENDOSC RETRO CHOLANGIOPA	8204	I & D PALMAR/THENAR SPAC
5111	ENDOSC RETRO CHOLANGIO	8209	INC SOFT TISSUE HAND NEC
5141	CDE FOR CALCULUS REMOV	8301	TENDON SHEATH EXPLORAT
5142	CDE FOR OBSTRUCTION NEC	8302	MYOTOMY
5149	INCIS OBSTR BILE DUC NEC	8303	BURSOTOMY
5151	COMMON DUCT EXPLORATION	8309	SOFT TISSUE INCISION NEC
5159	BILE DUCT INCISION NEC	850	MASTOTOMY

8603	INCISION PILONIDAL SINUS	9925	INJECT CA CHEMOTHER NEC
8609	SKIN & SUBQ INCISION NEC	9929	INJECT/INFUSE NEC
9621	DILAT FRONTONASAL DUCT		