Detection of adverse events in administrative databases - appendices

KCE reports 93S

Federaal Kenniscentrum voor de Gezondheidszorg
Centre fédéral d'expertise des soins de santé
Belgian Health Care Knowledge Centre
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1.1 ACCIDENTAL PUNCTURE OR LACERATION

1.1.1 Definition of indicator

This indicator is intended to flag cases of complications that arise due to technical difficulties in medical care and specifically, those involving an accidental puncture or laceration [1].

1.1.2 International prevalence figure in literature

Population rate estimated by AHRQ and available in the "Guide to Patient Safety Indicators" (version 3.0a) was 3.549 events for 1,000 discharges at risk[1].

Different studies applied PSI algorithms on HCUP Nationwide Inpatient Sample[3, 4]. For the year 2000, the rate observed for Accidental puncture and laceration ranged 3.24 per 1,000 discharges at risk to 3.32 events per 1,000 discharges. Most of complications arose in surgical risk pool (10.02 per 1,000 discharges) and were very rare in medical (0.33 per 1,000 discharges) [4]. In the study of Romano [4], accidental punctures and lacerations rose 7% between 1995 and 2000.

Rosen et al implemented the PSI software to Veterans Health Administration (VA) administrative data[5]. The observed rate for this indicator was 2.82 per 1,000 discharges at risk and risk-adjusted rate[a] 3.82 per 1,000 discharges at risk. Taking race and ethnicity into account, Coffey et al found a rate of 3.27 per 1,000 discharges at risk [6].

1.1.3 Summary of indicator

This indicator is intended to flag cases of complications that arise due to accidental puncture or laceration. It was originally proposed as part of the Complications Screening Program [8]. In this set, codes were split between two CSP. Prevalence of Accidental puncture or laceration as describe as PSI has several times been estimated.

Some studies concerned validity of Procedure-related perforation or laceration as CSP but no evidence on validity on diagnosis related to accidental puncture or laceration. However, Romano et al, in study on elective diskectomy, considered diagnosis and procedures related to puncture or laceration complications[21].

1.1.4 Literature review/evidence levels

Coding Validity. Lawthers et al evaluated procedure-related perforation or laceration (CSP) as in-hospital complication[9]. They studied particularly the validity of this indicator for the purpose of identifying in-hospital events on Medicare beneficiaries of 65 years or older in the codification point of view. The indicator was restricted to the major surgical risk pool; PPV and NPV was respectively 81.6% and 99.1%. Lawthers and colleagues estimated this indicator might have some utility in screening for in-hospital complications in surgical cases.

Romano et al. identified 19 of 45 (42.2%) episodes of accidental puncture, laceration or related procedure using discharge abstracts of diskectomy patients; there was one false positive. Note that Romano's definition included Procedures for suture of laceration and diagnosis for Accidental puncture and laceration[21].

Construct validity. Lauwthers et al found that cases with trigger codes corroborating on codes abstracted from an independent re-review (record review) was 94% in surgical cases[9]. The diagnosis appeared to be present on admission in 24% of cases. The overall proportion of cases confirmed as in-hospital events was 71%. The confirmation rate did not exceed 80%; the authors did not validate the indicator in terms of code corroborating and time assumptions.

Weingart et al conducted a validation of the CSP from the medical point of view[11]. In this study, a peer-review organization physician judged the presence of the flagged

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[a] Rates calculated using a logistic regression model that includes patient-level predictors of PSI events, including age, sex, age-sex interactions, modified DRGs and modified comorbidity categories

complication and potential quality-of-care problems. Physician reviewers confirmed a procedure-related perforation or laceration among 58.3% on surgical flagged cases. Among flagged-cases, 36.1% presented a potential quality problem. Among cases with confirmed in-hospital complications, physician reviewers identified at last one potential quality problem in 61.9% of cases. These complications were linked with specific process-of-care deficiencies, in this case a problem with technical care. According to the authors, this CSP-screen may represent complications over which clinicians have considerable control, which are recognized promptly and where the cause is attributed easily.

McCarthy et al determined whether clinical evidence in medical records (review by nurses) confirms discharges with trigger codes from CSP[12]. In this way, they created objective and explicit chart review instruments itemizing key clinical criteria confirming coded diagnosis. Only clinical criteria confirmed by the literature were included, although literature was limited for certain conditions. Clinical criteria used to confirm Procedure-related perforations or lacerations are not available in the publication. Thirty cases were reviewed for procedure-related perforation or laceration. Most of cases reviewed (83.3%) had at least one confirmatory clinical factor, 6.7% had presence of procedure-related perforation or laceration recorded by a physician but lacked specific clinical evidence, and 10.0% had no documented evidence supporting the diagnosis. The authors suggested that this condition generate well-defined and objective clinical findings that are generally well documented.

Rosen et al tested the construct validity of PSIs in exploring positive association among individual indicators[5]. The authors found weak correlations among the indicators, suggesting that each indicator most likely reflects a unique dimension of quality. Rosen et al concluded that the PSIs have good construct validity.

1.1.4.1 Sources

This indicator was originally proposed by Iezzoni et al as part of the Complications Screening Program, although unlike the final PSI, its codes were originally split between two CSP indicators (CSP "technical difficulty with medical care" and "sentinel events")[8] It was also included as one component of a broader indicator ("adverse events and iatrogenic complications") in AHRQ's original HCUP Quality Indicators[23]. It was proposed by Miller at al in the original "AHRQ PSI Algorithms and Groupings" into two broader indicators ("miscellaneous misadventures" and "E codes") [26] This indicator is a part of the AHQR Patient Safety Indicators [1]

1.1.4.2 Specification of numerator/denominator

Numerator	Discharges with ICD-9-CM diagnosis codes for Accidental puncture or laceration (998.2, E870.X) in secondary diagnosis field
Denominator	All medical and surgical discharges defined bys specific DRG Exclude: • discharges with primary diagnosis of Accidental puncture or laceration • all obstetrical discharges in MDC 14
Risk adjustment	Age, sex, DRG, comorbidity categories

1.2 ASPIRATION PNEUMONIA

1.2.1 Definition of indicator

This indicator is intended to flag cases of aspiration pneumonia per 1,000 discharges at risk. It limits aspiration pneumonia codes to secondary diagnosis codes to eliminate complications that were present on admission. It further excludes patients who have principal diagnosis of pneumonia, patients with an immunocompromised state or patients with MDC 04 (Respiratory System), as these patients are likely to have had aspiration pneumonia present on admission.

1.2.2 International prevalence figure in literature

No prevalence found in literature.

1.2.3 Summary of indicator

This indicator tented to flag cases of aspiration pneumonia. It was originally proposed by Iezzoni as part of Complication Screening Programs [8]. Aspiration pneumonia is part of Hospital-acquired pneumonia indicator. No prevalence found in the literature. Some studies evaluated the validity of this indicator.

1.2.4 Literature review/evidence levels

Coding Validity : Lawthers et al studied the validity of this indicator for the purpose of identifying Aspiration Pneumonia in-hospital events on Medicare beneficiaries of 65 years or older in the codification point of view [9]. PPV was 85.7% and NPV 97.4%. Lawthers et al estimated this indicator might have some utility in screening for aspiration pneumonia as in-hospital complication in surgical cases.

Construct validity : Iezzoni tented to validate the CSP as quality indicators by using explicit process of care criteria to determine whether hospital discharges flagged by the CSP experienced more process problems than unflagged discharges[10]. Cases with aspiration pneumonia presented at last one process problem in 68.8% of cases (n=32). In these cases, they were 37.5% with at least one preoperative process problem, 18.8% with at least one intraoperative process problem, 31.2% with at least one postoperative process problem and 3.1% with at least one other process problem. However, the authors noted that flagged-cases did not present significant higher rates of explicit process than unflagged-cases.

In the study of Lauwthers [9], cases with trigger codes corroborating on record review (codes abstracted from an independent re-review) was 94% in surgical cases. In cases flagged for the screen, the diagnosis appeared to be present on admission in 15% of the cases. The overall proportion of cases confirmed as in-hospital events was 77%. The confirmation rate did not exceed 80%; the authors did not validate the indicator in terms of code corroborating and time assumptions.

Weingart et al conducted a validation of the CSP from the medical point of view [11]. In this study, a peer-review organization physician judged the presence of the flagged complication and potential quality-of-care problems. Physician reviewers confirmed aspiration pneumonia among 58.8% on surgical cases. Among cases flagged by CSP, reviewers found at last one potential quality problem in 20.6% of surgical cases. The prevalence of physician-identified potential quality problems among flagged cases did not exceed 50% for any screen, which makes according to the authors the CSP a poor quality-of-care indicator. However, physicians confirmed that complications and potential quality problems occur more often among CSP-flagged cases than among controls. Among cases with confirmed in-hospital complications, physician reviewers identified at last one potential quality problem in 30.7% of surgical flagged cases.

McCarthy et al determined whether clinical evidence in medical records (review by nurses) confirms discharges with trigger codes from CSP[12]. In this way, they created objective and explicit chart review instruments itemizing key clinical criteria confirming coded diagnoses. Only clinical criteria confirmed by the literature were included, although literature was limited for certain conditions. Clinical criteria used to confirm Aspiration Pneumonia are not available in the publication. More than half (53.1%) of cases reviewed for aspiration pneumonia have been supported by at least one clinical criteria, 37.5% of cases were confirmed only on the physician's notes and 9.4% had no documented evidence confirming an aspiration pneumonia diagnosis. For the authors, aspiration pneumonia may require judgement calls; objective clinical evidence may be ambiguous.

1.2.5 Sources

This indicator is originally proposed by Iezzoni as part of Complication Screening Programs [8]. Pneumonia is also a part of the Failure to rescue indicator from AHRQ PSI.

1.2.6 Specification of numerator/denominator

Numerator	Discharges with ICD-9-CM codes for aspiration pneumonia in any secondary diagnosis field.
Denominator	All medical or surgical discharges defined by specific DRGs Exclusion • cases with ICD-9-CM codes for aspiration pneumonia in the principal diagnosis field • cases with principal diagnosis ICD-9-CM codes for pneumonia • cases with any diagnosis ICD-9-CM code for viral & specific pneumonia codes • MDC 04 (respiratory system) • cases with ICD-9-CM codes for diagnosis of immunocompromised state
Risk adjustment	Age, sex, DRG, comorbidity categories

1.3 COMPLICATIONS OF ANESTHESIA

1.3.1 Definition of indicator

Cases of anesthetic overdose, reaction, or endotracheal tube misplacement per 1,000 surgery discharges with an operating room procedure [1]

1.3.2 International prevalence figure in literature

Population rate estimated by AHRQ and available in the "Guide to Patient Safety Indicators" (version 3.0a) was 0.814 events for 1,000 discharges at risk.

In Belgium, rate was 0.58 per 1,000 discharges at risk from 1999 to 2004[2].

Zhan and colleagues applied PSI on HCUP Nationwide Inpatient Sample for the year 2000 [3]. In this study, the rate observed for Complications of anesthesia was 0.71 per 1,000 discharges at risk. Romano et al performed the same study for year 1995 to 2000 [4]. Estimated rate was 0.56 per 1,000 discharges at risk.

Rosen et al also implemented the PSI software to Veterans Health Administration (VA) administrative data [5]. The observed rate for Complications of Anesthesia was 0.56 per 1,000 discharges at risk and risk-adjusted rate[b] 0.59 per 1,000 discharges at risk. Taking race and ethnicity into account, Coffey et al found a rate of 0.689 per 1,000 discharges at risk [6].

1.3.3 Summary of indicator

This indicator is intended to capture cases flagged by external cause-of-injury codes (e-codes) and complications codes for adverse effects from the administration of therapeutic drugs, as well as the overdose of anesthetic agents used in primarily in therapeutic settings [1]. This indicator also included misplacement of endotracheal tube during anesthetic procedure. It was originally suggested by Iezzoni as part of Complication Screening Program[7]. Literature show different evaluation of the prevalence of this indicator but no publishing evidence was found on the validity.

1.3.4 Literature review/evidence levels

Coding Validity : No evidence found in the literature regarding sensibility, specificity or predictive value of this indicator.

Construct Validity : Rosen et al tested the construct validity of PSIs in exploring positive association among individual indicators[5]. The authors found weak correlations among the indicators, suggesting that each indicator most likely reflects a unique dimension of quality. Rosen et al concluded that the PSIs have good construct validity.

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[b] Rates calculated using a logistic regression model that includes patient-level predictors of PSI events, including age, sex, age-sex interactions, modified DRGs and modified comorbidity categories

In the study of Romano et al [4], anesthesia complications decreased from 18% between 1995 and 2000. Infants have the highest risk of anesthesia reactions and complications and white inpatients had a slightly higher risk for this indicator.

1.3.5 Sources

This indicator was originally proposed by Iezzoni as part of Complication Screening Program 8. Actually, this indicator is a part of the AHRQ Patient Safety Indicators [1]. Iezzoni's definition includes poisoning due to centrally acting muscle relaxants and accidental poisoning by nitrogen oxides, which were excluded from the PSI. PSI also include other codes, describing poisoning by other and unspecified general anesthetics and external cause of injury codes for "endotracheal tube wrongly place during anesthetic procedure" and adverse effects of anesthetics in therapeutic use.

1.3.6 Specification of numerator/denominator

Numerator	Discharges with ICD-9-CM diagnosis codes for anesthesia complications in secondary diagnosis field
Denominator	All surgical discharges defined by specific DRGs and an ICD-9-CM code for an operating room procedure Exclude discharges • with ICD-9-CM diagnosis codes for anesthesia complications in the principal diagnosis field • with codes for poisoning due to anesthetics and any diagnosis codes for active drug dependence, acgive non-dependent abuse of drugs, or self-inflected injury
Risk adjustment	Age, sex, DRG, comorbidity categories

1.4 FAILURE-TO-RESCUE

1.4.1 Definition of indicator

Death of a patient with one of five life-threatening complications – pneumonia, shock or cardiac arrest, upper gastro-intestinal bleeding, sepsis or deep vein thrombosis – for which early identification by nurses and medical and nursing interventions can influence the risk of death[13].

According to Rosen : all discharges with disposition of 'deceased' per 1,000 population at risk[5].

1.4.2 International prevalence figure in literature

A review by Smith describes a national average among at-risk Medicare patients of 155.03 per 1,000 hospital admissions[14]. Zhan and colleagues found 169.13 patients with failure-to-rescue per 1,000 discharges at risk. [3] A review on safety initiatives in the health systems of the UK, Canada, Australia and the US reveals an empirical average of 174.24 per 1,000 population at risk according to Arah[15].

Rosen et al implemented the indicator on the Veterans Health Administration and became a risk-adjusted rate of 156.16 per 1,000 eligible discharges. [5] Finally, Needleman et al made a distinction between medical and surgical patients and found an adverse outcome rate of 18.6% and 19.7% respectively. [13] Van den Heede and colleagues made the same distinction and found a crude adverse outcome rate per

1,000 discharges of 240 for medical patients and 211 for surgical patients[16].

1.4.3 Summary of indicator

This indicator is intended to identify patients who die following the development of a complication – due to sepsis, pneumonia, upper gastro-intestinal haemorrhage, shock or cardiac arrest or deep venous thrombosis – for which early identification by nurses and medical and nursing interventions can influence the risk of death.

The indicator involves all in-hospital death whereby patients without sepsis, pneumonia, upper gastro-intestinal bleeding, shock or cardiac arrest or deep venous thrombosis are excluded. Also excluded are patients transferred to and from acute care facilities and patients from a long-term care facility. Finally, principal diagnosis related to the denominator condition are restrained from the inclusion criteria.

1.4.4 Literature review/evidence levels

Coding validity. No data found.

Construct validity. Needleman concluded that a higher proportion of registered-nurse-hours, but not a greater number of registered-nurse-hours per day, was associated with lower rates of failure-to-rescue among medical patients. Among surgical patients, a greater number of licensed-nurse-hours per day and registered-nurse-hours per day was associated with a lower rate of failure-to-rescue. Because most licensed-nurse-hours are provided by registered nurses, these associations are consistent. [13]

Rosen, who implemented the PSI software on Veterans Health Administration data, concluded that additional evidence was provided of PSIs having good construct validity. Although correlations among the indicators were generally weak, these finding suggested that each indicator most likely reflects a unique dimension of quality. [5]

Aiken et al determined the association between the patient-to-nurse ratio and failure-to-rescue among surgical patients. Data were obtained from 168 non-federal adult general hospitals in Pennsylvania. After adjusting for patient and hospital characteristics, each additional patient per nurse was associated with a 7% increase in the odds of failure-to-rescue[17].

1.4.5 Sources

Failure-to-rescue is one of the Patient Safety Indicators of the US Agency for Healthcare Research and Quality (AHRQ) [1]. It was obtained from AHRQ analysis using the 2000 Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID) for 29 states. [15] Needleman identified this indicator as a potential nursing-sensitive patient outcome. [13]

1.4.6 Specification of numerator/denominator

Numerator	Discharge status – death, with sepsis, pneumonia, upper gastro-intestinal bleeding, shock or cardiac arrest, or deep venous thrombosis In-hospital death All discharges with disposition of 'deceased' per 1,000 population at risk
Denominator	Acute renal failure, deep vein thrombosis, pulmonary embolus, pneumonia (including aspiration), shock, cardiac arrest, gastro-intestinal haemorrhage/acute ulcer Discharges with potential complications of care listed in failure to rescue definition (pneumonia, DVT/PE, sepsis, acute renal failure, shock/cardiac arrest, or gastro-intestinal haemorrhage/acute ulcer) Exclude • absence of sepsis, pneumonia, upper gastro-intestinal bleeding, shock or cardiac arrest, or deep venous thrombosis • patients transferred to acute care facility • patients transferred from acute care facility • patients admitted from a long-term care facility • principal diagnosis related to the denominator condition
Risk adjustment	Age, sex, diagnosis related group (DRG) and co-morbidity categories Primary health insurer, whether or not the patient was admitted on an emergency basis, and the presence or absence of 13 chronic diseases [13]

1.5 FOREIGN BODY LEFT IN DURING PROCEDURE

1.5.1 Definition of indicator

Discharges with ICD-9-CM codes for foreign body left in during procedure in any secondary diagnosis field per 1,000 surgical discharges. [5]

1.5.2 International prevalence figure in literature

Zhan and colleagues found 0.09 patients with this indicator per 1,000 discharges at risk. [3] Taking race and ethnicity into account, Coffey et al found a rate of 0.089 per 1,000 discharges. The minority groups (African American, non-Hispanic; Hispanic; Asian and Pacific Islander) had no higher rates of the screen compared to the white population[6]. Rosen et al implemented the indicator on the Veterans Health Administration and became a risk-adjusted rate of 0.17 per 1,000 eligible discharges. [5]

1.5.3 Summary of indicator

This indicator is intended to flag cases of a foreign body accidentally left in body during a procedure for all medical and surgical discharges. No key exclusion criteria are described.

The indicator is defined both on the area level by including all cases, and on the hospital level by restricting cases to those flagged by a secondary diagnosis or procedure code. For the discharged-based PSIs, the rates are adjusted by age, gender, age-gender interaction, DRG cluster and co-morbidity. For the area-based PSIs, the rates are adjusted by age and gender only, because state population estimates by disease and severity are not available[6].

1.5.4 Literature review/evidence levels

No validity data found.

1.5.5 Sources

This indicator is intended to flag cases of a foreign body accidentally left in body during a procedure. 'Foreign body left in during procedure' is one of the Patient Safety Indicators of the US Agency for Healthcare Research and Quality (AHRQ) 1. It was obtained from AHRQ analysis using the 2000 Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID) for 29 states. 15 This PSI was applied to State Inpatient Databases for 16 states that had race/ethnicity data on their hospital discharge records for at least 90% of discharges in the year 2000. 6

1.5.6 Specification of numerator/denominator

Numerator	Discharges with ICD-9-CM codes for foreign body left in during procedure in any secondary procedure field.
Denominator	All medical and surgical surgical discharges. Exclude • none
Risk adjustment	Age, sex, diagnosis related group (DRG) and co-morbidity categories

1.6 GASTRO-INTESTINAL HEMORRHAGE

1.6.1 Definition of indicator

Cases of upper gastrointestinal bleeding per 1,000 discharges at risk.

1.6.2 International prevalence figure in literature

Needleman et al evaluated upper gastrointestinal bleeding as an outcome potentially sensitive to nursing [13]. In medical patients, rate was 10 events per 1,000 discharges and in surgical patients it was 5 events per 1,000 discharges.

Van den Heede et al estimated the prevalence of the same conditions on the Belgian hospitals administrative data[16]. They made distinction between medical and surgical discharges.

Respectively, rate observed were 8.2 and 3.6 per 1,000 discharges at risk (p-value < 0.001). In this study, they also estimated the variability of risk-adjusted adverse outcome rates among the 123 Belgian acute hospitals. The variability (P90/P10) was highest, with 5.4 (IC 95% [4.0;6.8]) in the medical group and 7.9 (IC 95% [4.9;11.0]) in the surgical.

1.6.3 Summary of indicator

This indicator is intended to capture patients with an upper gastrointestinal bleeding. It excludes cases with primary diagnosis codes of upper gastrointestinal bleeding to eliminate cases that were present on admission. It also excludes patients who have diagnosis codes of trauma, burn or alcoholism and these who have major digestive or hepatobiliary and pancreas disorders. Needleman et al identified upper gastrointestinal bleeding as an outcome potentially sensitive to nursing, using the original CSP definition[13]

1.6.4 Literature review/evidence levels

Coding Validity. Lawthers et al studied the validity of this indicator for the purpose of identifying in-hospital events on Medicare beneficiaries of 65 years or older in the codification point of view [9]. PPV for postoperative gastrointestinal hemorrhage was 81.4% and NPV 99.1%. The authors estimated this indicator might have some utility in screening for postoperative gastrointestinal hemorrhage as in-hospital complication in surgical cases. They also found that cases with trigger codes corroborating on codes abstracted from an independent re-review (record review) was 81% in surgical cases. In cases flagged for the screen, the diagnosis appeared to be present on admission in 15% of the surgical cases. The overall proportion of cases confirmed as in-hospital events was 66%. The confirmation rate did not exceed 80%; the authors did not validate the indicator in terms of code corroborating and time assumptions.

Construct validity. Weingart et al conducted a validation of the CSP from the medical point of view [11]. In this study, a peer-review organization physician judged the presence of the flagged complication and potential quality-of-care problems. Physician reviewers confirmed a postoperative gastrointestinal hemorrhage among 72.5% on surgical flagged cases. Among all flagged cases, 37.5% presented a potential quality problem. Among cases with confirmed in-hospital complications, physician reviewers identified at last one potential quality problem in 48.3% of cases. According to the authors, this CSP-screen has high rate of confirmed complications and potential quality problems. It may represent complications over which clinicians have considerable control, which are recognized promptly and where the cause is attributed easily.

McCarthy et al determined whether clinical evidence in medical records (review by nurses) confirms discharges with trigger codes from CSP[12]. In this way, they created objective and explicit chart review instruments itemizing key clinical criteria confirming coded diagnoses. Only clinical criteria confirmed by the literature were included, although literature was limited for certain conditions.

Table illustrates the clinical criteria used to confirm Postoperative Gastrointestinal Hemorrhage. High proportion of cases reviewed (69.2%) had at least one confirmatory clinical factor, 7.7% had presence of gastrointestinal hemorrhage recorded by a physician but lacked specific clinical evidence, and 23.1% had no documented evidence supporting the diagnose.

Table 1 Presence of Clinical Factors Confirming a Complication of Postoperative Gastrointestinal Hemorrhage (n=39)[12]

Clinical Factors	Presence of Clinical Factor, n (%)	Type of Clinical Evidence, n (%)
Postoperative GI bleeding visualized by endoscopy	11 (28.2)	. . .
Postoperative GI bleeding visualized by angiography, or red cell scan	2 (5.1)	. . .
HCT drop of ≥4% or hemoglobin drop of ≥1 mg/dL **AND** new melena documented postoperatively	10 (25.6)	. . .
HCT drop of ≥4% or hemoglobin drop of ≥1 mg/dL **AND** new maroon stool documented postoperatively	4 (10.2)	. . .
New melena documented postoperatively	10 (25.6)	. . .
New maroon stool documented postoperatively	4 (10.2)	. . .
HCT drop of ≥4% or hemoglobin drop of ≥1 mg/dL **AND** new hematochesia	9 (23.1)	. . .
HCT drop of ≥4% or hemoglobin drop of ≥1 mg/dL **AND** new occult positive stool	13 (33.3)	. . .
HCT drop of ≥4% or hemoglobin drop of ≥1 mg/dL **AND** visible blood in NG tube aspirate	9 (23.1)	. . .
HCT drop of ≥4% or hemoglobin drop of ≥1 mg/dL **AND** hematemesis or coffee ground emesis	13 (33.3)	. . .
Possible source of GI bleed seen on upper GI image, endoscopy, angiography, or red cell scan **AND** SBP <90 mm Hg postoperatively within 2 hours before or after positive finding	1 (2.6)	. . .
Possible source of GI bleed seen on upper GI image, endoscopy, angiography, or red cell scan **AND** HCT decreased ≥8% from postoperative level within 24 hours before or after positive finding	3 (7.7)	. . .
Had at least 1 objective clinical factor	. . .	27 (69.2)
Physician note but no objective clinical factor	. . .	3 (7.7)
No clinical factor or physician note	. . .	9 (23.1)

GI indicates gastrointestinal; HCT, hematocrit; NG, nasogastric; and SBP, systolic blood pressure.

Needleman and colleagues considered upper gastrointestinal bleeding as an outcome potentially sensitive of nursing care [13]. They concluded that both a higher proportion of licensed-nurse care provided by registered nurses and more registered –nurse-hours per day were associated with lower rates of hospital-acquired pneumonia among medical patients only.

1.6.5 Sources

This indicator was originally proposed by Iezzoni and collegues as part of Complication Screening Program [8]. It was adapted by Needleman et al who identified upper gastrointestinal bleeding as an outcome potentially sensitive to nursing [13] Postoperative gastrointestinal hemorrhage is included in the Patient Safety Indicator 10 "postoperative physiologic and metabolic derangements" as exclusion criteria of acute renal failure [1].

1.6.6 Specification of numerator/denominator

Numerator	Discharges with ICD-9-CM codes for upper gastrointestinal bleeding in a secondary diagnosis field
Denominator	All medical and surgical discharges defined by specific DRG Exclude : • discharges with ICD-9-CM codes for upper gastrointestinal bleeding in primary diagnosis • discharges in MDC 6 (Digestive System & related condition) • discharges in MDC 7 (Hepatobiliary System and Pancreas & related condition) • discharges with ICD-9-CM codes for trauma, burn, alcoholism in any diagnosis • discharges with ICD-9-CM codes 280.0 or 285.1
Risk adjustment	Age, sex, DRG, comorbidity categories

1.7 HOSPITAL-ACQUIRED PNEUMONIA

1.7.1 Definition of indicator

This indicator is intended to flag cases of hospital-acquired pneumonia per 1,000 discharges at risk. This indicator limits pneumonia codes to secondary diagnosis codes to eliminate complications that were present on admission. It further excludes patients who have principal diagnosis of pneumonia, patients with diseases of respiratory system (MDC 04) or patients with immunosuppressed states; these patients are likely to have had pneumonia present on admission. Two key risk factors for hospital-acquired pneumonia are prolonged immobility, which leads to inadequate ventilation of parts of the lungs, and inappropriate or failure to perform pulmonary hygienic techniques.

1.7.2 International prevalence figure in literature

Van den Heede et al estimated the prevalence of Hospital-acquired Pneumonia defined by Needleman on the Belgian hospitals administrative data [16]. They made distinction between medical and surgical discharges. Respectively, rate observed were 14.1 and 13.5 per 1,000 discharges at risk (p-value = 0.001). In this study, they also estimated the variability of risk-adjusted adverse outcome rates among the 123 Belgian acute hospitals. The variability (P90/P10) was 2.4 (IC 95% [2.1;2.8]) in the medical group and 3.3 (IC 95% [2.7;3.9]) in the surgical.

Needleman et al estimated 23 hospital-acquired pneumonias per 1,000 medical discharges and 12 events per 1,000 surgical discharges [13].

Kovner et al estimated pneumonia after major surgery [22]. The mean of events increased from 7.5 per 1,000 discharges in 1990 to 12.4 per 1,000 discharges in 1996.

1.7.3 Summary of indicator

This indicator is intented to flag cases with pneumonia acquired during hospitalization. Originally it was proposed by Iezzoni as part as the Complication Screening Programm and focused on postoperative pneumonia [8]. It was adpated by Needleman to screen hospital-acquired pneumonia in all medical or surgical discharges [13]

1.7.4 Literature review/evidence levels

Coding Validity. No evidence found in the literature.

Construct validity. Iezzoni tented to validate the CSP as quality indicators by using explicit process of care criteria to determine whether hospital discharges flagged by the CSP experienced more process problems than unflagged discharges[10]. Cases with postoperative pneumonia presented at last one process problem in 82.5% of cases (n=40). In these cases, they were 25.0% with at least one preoperative process problem, 7.5% with at least one intraoperative process problem, 40.0% with at least one postoperative process problem and 30.0% with at least one other process problem. However, the authors noted that flagged-cases did not present significant higher rates of explicit process than unflagged-cases.

Weingart et al conducted a validation of the CSP from the medical point of view [11]. In this study, a peer-review organization physician judged the presence of the flagged complication and potential quality-of-care problems. Physician reviewers confirmed postoperative pneumonia among 64.3% on cases. Among cases flagged by CSP, reviewers found at last one potential quality problem in only 4.8% of cases. The prevalence of physician-identified potential quality problems among flagged cases did not exceed 50% for any screen, which makes according to the authors the CSP a poor quality-of-care indicator. However, physicians confirmed that complications and potential quality problems occur more often among CSP-flagged cases than among controls. Among cases with confirmed in-hospital complications, physician reviewers identified at last one potential quality problem in 7.4 of surgical flagged cases.

McCarthy et al determined whether clinical evidence in medical records (review by nurses) confirms discharges with trigger codes from CSP[12].

In this way, they created objective and explicit chart review instruments itemizing key clinical criteria confirming coded diagnoses. Only clinical criteria confirmed by the literature were included, although literature was limited for certain conditions.

Table 2 illustrates the clinical criteria used to confirm Postoperative Pneumonia. This complication requires such factors as fever, rales or dullness to percussion on chest examination, infiltrate on chest radiograph, elevated white blood cell count, or specific bacteria present in sputum. Half of the 40 cases reviewed for postoperative pneumonia had at least one confirmatory clinical factor, 30% had presence of pneumonia recorded by a physician but lacked specific clinical evidence, and 20% had no documented evidence supporting a pneumonia diagnosis.

Table 2 Presence of clinical factors confirming a complication of Postoperative Pneumonia (n=40) [12]

Clinical Factors	Presence of Clinical Factor, n (%)	Type of Clinical Evidence, n (%)
If preoperative chest radiograph, CT scan, or chest examination normal or respiratory symptoms are new or worsened from preoperative status, new infiltrate found on chest radiograph, **AND** new purulent sputum documented postoperatively within 48 hours of abnormal chest examination, or pneumonia pathogen documented postoperatively **AND** patient had fever, leukocytosis, or respiratory signs/symptoms	15 (37.5)	. . .
If preoperative chest radiograph, CT scan, or chest examination normal, new infiltrate found on chest radiograph, **AND** new purulent sputum documented postoperatively within 48 hours of abnormal chest examination, or pneumonia pathogen documented postoperatively	19 (47.5)	. . .
If preoperative chest radiograph, CT scan, or chest examination normal, new abnormal chest examination, **AND** new purulent sputum documented postoperatively within 48 hours of abnormal chest examination, or pneumonia pathogen documented postoperatively **AND** patient had fever, leukocytosis, or respiratory signs/symptoms	14 (35.0)	. . .
Had at least 1 objective clinical factor	. . .	20 (50.0)
Physician note but no objective clinical factor	. . .	12 (30.0)
No clinical factor or physician note	. . .	8 (20.0)

CT indicates computed tomography.

Needleman and colleagues considered hospital-acquired pneumonia as an outcome potentially sensitive of nursing care [13]. They concluded that both a higher proportion of licensed-nurse care provided by registered nurses and more registered –nurse-hours per day were associated with lower rates of hospital-acquired pneumonia among medical patients only. Kovner et al also found an inverse relationship between registered-nurse staffing and pneumonia after major surgery [22].

1.7.5 Sources

This indicator was originally proposed by Iezzoni as part as the Complication Screening Programm and focused on postoperative pneumonia [8]. It was then adpated by Needleman to screen hospital-acquired pneumonia in all medical or surgical discharges [13] as an outcome potentially sensitive of nursing care. Pneumonia after major surgery is include in AHRQ's original HCUP Quality Indicators[23]. Pneumonia is also include in Failure to rescue from AHRQ PSI[1].

1.7.6 Specification of numerator/denominator

Numerator	Discharges with ICD-9-CM codes for pneumonia in any secondary diagnosis field.
Denominator	All surgical and medical discharges defined by specific DRGs Exclude all cases: • Length of Stay of less than 3 days • with ICD-9-CM codes for pneumonia in the principal diagnosis field • Principal diagnosis 9973 • Viral & specific pneumonia codes • with ICD-9-CM codes and DRG's referring to immunosuppressed states • MDC 4 (Respiratory system)
Risk adjustment	Age, sex, DRG, comorbidity categories

1.8 IATROGENIC PNEUMOTHORAX

1.8.1 Definition of indicator

Discharges with ICD-9-CM code of 512.1 in any secondary diagnosis field per 1,000 discharges.

1.8.2 International prevalence figure in literature

Zhan and colleagues found 0.67 patients with this indicator per 1,000 discharges at risk. [3] Taking race and ethnicity into account, Coffey et al found a rate of 0.724 per 1,000 discharges. The minority groups (African American, non-Hispanic; Hispanic; Asian and Pacific Islander) had lower rates of the screen compared to the white population. According to the author, this was due to a lower utilization by minorities of sophisticated procedures. [6]Rosen et al implemented the indicator on the Veterans Health Administration and became a risk-adjusted rate of 1.20 per 1,000 eligible discharges. [5]

1.8.3 Summary of indicator

This indicator is intended to flag cases of pneumothorax caused by medical care. The indicator is defined both on the area level by including all cases, and on the hospital level by restricting cases to those flagged by a secondary diagnosis or procedure code. For the discharged-based PSIs, the rates are adjusted by age, gender, age-gender interaction, DRG cluster and co-morbidity. For the area-based PSIs, the rates are adjusted by age and gender only, because state population estimates by disease and severity are not available. [6]In order to exclude patients that may be more susceptible to non-preventable

iatrogenic pneumothorax, all trauma patients are excluded as well as patients with any code indicating thoracic surgery or lung or pleural biopsy or cardiac surgery. [5]

1.8.4 Sources

This indicator is intended to flag cases of iatrogenic pneumothorax caused by medical care. 'Iatrogenic pneumothorax' is one of the Patient Safety Indicators of the US Agency for Healthcare Research and Quality (AHRQ)[1]. It was obtained from AHRQ analysis using the 2000 Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID) for 29 states. [15] This PSI was applied to State Inpatient Databases for 16 states that had race/ethnicity data on their hospital discharge records for at least 90% of discharges in the year 2000. [6]

1.8.5 Specification of numerator/denominator

Numerator	Discharges with ICD-9-CM code 512.1 in any secondary diagnosis field.
Denominator	All medical and surgical surgical discharges. Exclude • patients with any diagnosis of trauma • patients with any code indicating thoracic surgery or lung or pleural biopsy or cardiac surgery
Risk adjustment	Age, sex, diagnosis related group (DRG) and co-morbidity categories

1.9 INFECTION DUE TO MEDICAL CARE

1.9.1 Definition of indicator

Discharges with ICD-9-CM code of 999.3 or 996.62 in any secondary diagnosis field per 1,000 discharges. [5]

1.9.2 International prevalence figure in literature

A review by Smith describes a national average among at-risk Medicare patients of 2.84 per 1,000 hospital admissions. [14] Zhan and colleagues found 1.99 patients with this indicator per 1,000 discharges at risk. [3] Taking race and ethnicity into account, Coffey et al found a rate of 2.134 per 1,000 discharges. Each of the minority groups (African American, non-Hispanic; Hispanic; Asian and Pacific Islander) had higher rates of the screen compared to the white population. [6]Rosen et al implemented the indicator on the Veterans Health Administration and became a risk-adjusted rate of 2.37 per 1,000 eligible discharges. [5]

1.9.3 Summary of indicator

This indicator is intended to flag cases of infection due to medical care. The indicator is defined both on the area level by including all cases, and on the hospital level by restricting cases to those flagged by a secondary diagnosis or procedure code. For the discharged-based PSIs, the rates are adjusted by age, gender, age-gender interaction, DRG cluster and co-morbidity. For the area-based PSIs, the rates are adjusted by age and gender only, because state population estimates by disease and severity are not available. [6]In

order to exclude patients that may be more susceptible to non-preventable infections due to medical care, patients with any diagnosis code for immunocompromised state or cancer are excluded. [5]

1.9.4 Literature review/evidence levels

Coding validity. No data found.

Construct validity. Romano et al determined how accurately postoperative complications are reported in administrative data, whether accuracy varies systematically across hospitals, and whether serious complications are more consistently reported. 991 randomly sampled adults who underwent elective lumbar diskectomies at 30 non-federal acute care hospitals in California in 1990 to 1991 were selected. The sensitivity of reporting for this complication was < 35%, the specificity was 98%, the positive predictive value was 82% and the negative predictive value was 84%[21].

1.9.5 Sources

This indicator is intended to flag cases of infections due to medical care. 'Infection due to medical care' is one of the Patient Safety Indicators of the US Agency for Healthcare Research and Quality (AHRQ). It was obtained from AHRQ analysis using the 2000 Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID) for 29 states. [15] This PSI was applied to State Inpatient Databases for 16 states that had race/ethnicity data on their hospital discharge records for at least 90% of discharges in the year 2000. [6]Zhan specified this indicator to infection following infusion, injection or transfusion, or due to vascular device or graft. [3]

1.9.6 Specification of numerator/denominator

Numerator	Discharges with ICD-9-CM code 999.3 or 999.62 in any secondary diagnosis field. Infection following infusion, injection or transfusion, or due to vascular device or graft. [3]
Denominator	All medical and surgical surgical discharges. Exclude • patients with any diagnosis code for immunocompromised state or cancer
Risk adjustment	Age, sex, diagnosis related group (DRG) and co-morbidity categories

1.10 POSTOPERATIVE WOUND DEHISCENCE

1.10.1 Definition of indicator

Discharges with ICD-9-CM codes for re-closure of postoperative disruption of abdominal wall in any secondary procedure field per 1,000 discharges. [5]

1.10.2 International prevalence figure in literature

A review by Smith describes a national average among at-risk Medicare patients of 3.76 per 1,000 hospital admissions. [14] Zhan and colleagues found 2.05 patients with postoperative wound dehiscence per 1,000 discharges at risk. [3] A review on safety initiatives in the health systems of the UK, Canada, Australia and the US reveals an empirical average of 1.93 per 1,000 population at risk according to Arah. [15] Taking race and ethnicity into account, Coffey et al found a rate of 2.130 per 1,000 discharges. African American, Non-Hispanic; Hispanic; Asian and Pacific Islander did not have a higher incidence of wound dehiscence in comparison to the white population. [6]Rosen et al implemented the indicator on the Veterans Health Administration and became a risk-adjusted rate of 4.49 per 1,000 eligible discharges. [5]

1.10.3 Summary of indicator

This indicator is intended to flag cases of wound dehiscence in patients who have undergone abdominal and pelvic surgery. This indicator is defined both on a provider level (by including cases based on secondary diagnosis associated with the same hospitalization) and on an area level (by including all cases of wound dehiscence). [6]Key exclusions are obstetric discharges.

1.10.4 Literature review/evidence levels

Coding validity. No data found.

Construct validity. Romano et al determined how accurately postoperative complications are reported in administrative data, whether accuracy varies systematically across hospitals, and whether serious complications are more consistently reported. 991 randomly sampled adults who underwent elective lumbar diskectomies at 30 non-federal acute care hospitals in California in 1990 to 1991 were selected. The sensitivity of reporting for this complication was < 35%, the specificity was 98%, the positive predictive value was 82% and the negative predictive value was 84%[21].

1.10.5 Sources

Postoperative wound dehiscence is one of the Patient Safety Indicators of the US Agency for Healthcare Research and Quality (AHRQ)[1]. It was obtained from AHRQ analysis using the 2000 Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID) for 29 states. [15]

1.10.6 Specification of numerator/denominator

Numerator	Discharges with ICD-9-CM code 54.61 for re-closure of postoperative disruption of abdominal wall in any secondary procedure field.
Denominator	All abdominopelvic surgical discharges. [5] Exclude • all obstetric admissions (MDC 14 and 15)
Risk adjustment	Age, sex, diagnosis related group (DRG) and co-morbidity categories

1.11 POSTOPERATIVE HAEMORRHAGE OR HAEMATOMA

1.11.1 Definition of indicator

Zhan defined this indicator as postoperative haemorrhage or haematoma with surgical drainage or evacuation per 1,000 surgical discharges. [3] Rosen specified this indicator as discharges with ICD-9-CM codes for postoperative haemorrhage or haematoma in any secondary diagnosis field AND code for postoperative control of haemorrhage or drainage of haematoma in any secondary procedure code field per 1,000 surgical discharges. [5]

1.11.2 International prevalence figure in literature

A review of safety initiatives in the health systems of the UK, Canada, Australia and the US reveals an empirical average of 2.06 postoperative haemorrhage/haematoma cases per 1,000 discharges at risk. [15] Taking race and ethnicity into account, Coffey et al found a rate of 2.273 per 1,000 discharges, which according to the author, is a higher rate for blacks and Asian/Pacific Islanders in comparison to the white population. [6]

Rosen et al implemented the indicator on the Veterans Health Administration and became a risk-adjusted rate of 2.90 per 1,000 eligible discharges. [5] Using the PSI algorithm, Shufelt found an event rate of 1.86 per 1,000 at risk. When postoperative haemorrhage/haematoma were identified by a secondary diagnosis only, the event rate increased to 14.28 per 1,000 at risk[18]. Guse et al found a rate of haemorrhage complicating a procedure of 4.7 per 1,000 discharges[19].

1.11.3 Summary of indicator

This indicator is intended to flag cases of haemorrhage or haematoma following a surgical procedure. It is based on an indicator developed as part of the Complications Screening Program, but the denominator is broader with inclusion of the 6 types of risk pools (major

surgery; minor and miscellaneous surgery; invasive cardiology and radiology procedures; endoscopy; medical patients and complications applicable for all patients[10]. Lawthers [9]and Weingart [11]performed validity studies on this indicator and restricted to the major surgical risk pool and the medical risk pool. Zhan et al limited the indicator to all surgical discharges in which a postoperative haemorrhage or haematoma with surgical drainage or evacuation was a requirement. [3] Rosen applied the indicator to Veterans Health administration data. For this he used surgical discharges with ICD-9-CM codes for postoperative haemorrhage or haematoma in any secondary diagnosis field and a code for postoperative control of haemorrhage or drainage of haematoma in any secondary procedure code field. All obstetric admissions (MDC 14 and 15) were excluded[5].

1.11.4 Literature review/evidence levels

Coding validity. For the purpose of identifying in-hospital events, the surgical screens validated in general much better than the medical screens in a study by Lawthers et al[9] on Medicare beneficiaries of 65 years of age or older. With a positive predictive value (PPV) of 89.7%, Lawthers concluded that this indicator was a good-to-excellent candidate as screen for complications in the major surgical risk pool. The negative predictive value (NPV) was 93.6%. The PPV and NPV in the medical risk pool was 90.6% and 98.6% respectively in the same study. With this, postprocedural haemorrhage or haematoma appeared the only medical screen to be useful as a screening tool according to the author.

Construct validity. McCarthy et al[12] created objective, explicit chart review instruments itemizing key clinical criteria confirming coded diagnoses. Consensus on clinical indicators was reached through discussion with the other clinicians. Only confirmatory clinical criteria that were supported by the literature were included, although the literature was limited for certain conditions. The clinical criteria for post-procedural haemorrhage or haematoma were evaluated in 44 surgical and in 45 medical cases.

Clinical factor confirming complication	n = 24	%
External or superficial bleeding evidenced by tension on suture line or severe pain attributed to haematoma AND drop in haematocit by ≥ 6% or haemodynamic instability, or documented blood loss	16	66.7
External or superficial bleeding evidenced by tension on suture line or severe pain attributed to haematoma AND physician not of significant bleeding or hematocrit drop	8	33.3
Gastro-intestinal bleeding as evidenced by haematemesis, melena, maroon stool, or haematochesia AND drop in haematocrit by ≥ 6% or haemodynamic instability, or documented blood loss	1	4.2
Gastro-intestinal bleeding as evidenced by haematomesis, melena, maroon stool, or haematochesia AND physician note of significant bleeding or haematocrit drop	1	4.2
Pulmonary bleeding as evidenced by haemoptysis or chest/mediastinal tube drainage of blood or return to operating room ≤ 3 hours post-procedurally bleeding AND drop in haematocrit by ≥ 6% or haemodynamic instability, or documented blood loss	3	12.5
Pulmonary bleeding as evidenced by haemoptysis or chest/mediastinal tube drainage of blood or return to operating room ≤ 3 hours post-procedurally for bleeding AND physician note of significant bleeding or haematocrit drop	0	0.0
Intracranial bleeding as evidenced by drainage, aspiration, or re-operation, or CT/MRI scan showing bleeding AND drop in haematocrit by ≥ 6% or haemodynamic instability, or documented blood loss	0	0.0
Intracranial bleeding as evidenced by drainage, aspiration, or re-operation, or CT/MRI scan showing bleeding AND physician note of significant bleeding or haematocrit drop	0	0.0
Retroperitoneal bleeding as evidenced by physical exam findings of supra-inguinal tenderness and fullness or CT scan showing bleeding, AND drop in haematocrit by ≥ 6% or haemodynamic instability, or documented blood loss	1	4.2
Retroperitoneal bleeding as evidenced by physical exam findings of supra-inguinal tenderness and fullness or CT scan showing bleeding, AND physician note of significant bleeding or haematocrit drop	1	4.2
Urinary bleeding as evidenced by haematuria or drainage of blood through Foley or nephrostomy tube AND drop in haematocrit by ≥ 6% or haemo-dynamic instability, or documented blood loss	1	4.2
Urinary bleeding as evidenced by haematuria or drainage of blood through Foley or nephrostomy tube AND physician note of significant bleeding or haematocrit drop	2	8.3
Intraperitoneal bleeding as evidenced by collection of blood found by aspiration or re-operation AND drop in haematocrit by ≥ 6% or haemo-dynamic instability, or documented blood loss	5	20.8
Intraperitoneal bleeding as evidenced by collection of blood found by aspiration or re-operation AND physician note of significant bleeding or haematocrit drop	3	12.5

The final study sample consisted of 398 surgical and 87 medical cases. Medical records contained no clinical evidence or physicians' notes to support the coded condition in 20.5% of surgical cases and in 26.7% of medical cases.

Objective clinical evidence was present in 54.5% of surgical cases and in 33.3% in medical cases. In 25% of surgical cases, only physician notes supported the condition but had no specific objective clinical evidence to confirm the complication. For medical cases, this figure was 40%[12].

The validation study by Lawthers was performed in 2 states, Connecticut and California, using Medicare's fiscal year 1994. The validation was limited to the major surgical risk pool and medical risk pool because these encompassed the majority of hospital cases. 403 major surgery cases were sampled in California and 412 in Connecticut; 233 medical risk pool discharges were selected in California and 252 in Connecticut. Cases with trigger codes corroborating on record review was 91% for both the surgical and medical risk pool. The overall proportion of cases confirmed as in-hospital events was 83% for the major surgical risk pool and only 49% for the medical risk pool. In cases flagged for the screen, the diagnosis appeared to be present on admission in 2% of the major surgical risk pool and in 31% in the medical risk pool. The author concluded that, since the confirmation rate exceeded 80%, the surgical screen validated particularly well in terms of code corroboration and timing assumptions. The medical screen, on the other hand, did not validate for the purpose of identifying in-hospital events, primarily because the CSP trigger code found in the claims data often represented a condition present on admission rather than one that arose during hospitalization[9]. Weingart performed a similar study in a final sample of 703 surgical and 408 medical discharges in California and Connecticut in the fiscal year

1994 : physicians confirmed the flagged CSP screen in 56.5% of surgical and in 54.9% of medical cases. 37% of surgical cases and 31.4% of medical cases flagged by the CSP had a potential quality problem. [11]Guse et al[19] studied the inter-relationships among patient and hospital characteristics and medical injuries that were diagnosed in patients discharged from Winsconsin hospitals, using an administrative data set of hospital discharge records for 2001. One of the 10 most frequent specific injuries according to the author was haemorrhage complicating a procedure. The author found an increased risk associated with co-morbidities, reduced risk in younger people (< 25 years old) and increased risk in older adults, and decreased risk at private for-profit hospitals. Nurse staffing levels, hospital size, and urban location were not found to be associated with medical injury. However, the author concluded that the used medical injury criteria were not designed to be sensitive to nurse staffing levels. Rosen, who implemented the PSI software on Veterans Health Administration data, concluded that additional evidence was provided of PSIs having good construct validity. Although correlations among the indicators were generally weak, these finding suggested that each indicator most likely reflects a unique dimension of quality. [5] Murff et al[20] determined whether an association existed between patient complaints and surgical complications using administrative data collected from July 1995 to December 1999. They found no statistically significant difference in complaint categories between patients who experienced a post-procedural haemorrhage or haematoma and those who did not. Major complications occurred in 19.2% of surgical admissions associated with a patient complaint and in 12.5% admissions not associated with complaints. Surgical admissions associated with a complication had an odds ratio of 1.74 of being associated with a patient complaint. This relationship remained significant after adjusting for patient length of stay, patient age, co-morbid illness, surgical sub-speciality and patient race. Romano et al determined how accurately postoperative complications are reported in administrative data, whether accuracy varies systematically across hospitals, and whether serious complications are more consistently reported. 991 randomly sampled adults who underwent elective lumbar diskectomies at 30 non-federal acute care hospitals in California in 1990 to 1991 were selected. The sensitivity of reporting for this complication was < 35%, the specificity was 98%, the positive predictive value was 82% and the negative predictive value was 84%[21].

1.11.5 Sources

This indicator was originally proposed in 1992 by Iezzoni et al. as part of the CSP, whereby the screen was assigned to all 6 types of risk pools[7]. While the CSP screen for postoperative haemorrhage and haematoma allows for either a secondary diagnosis or secondary procedure, the PSI definition requires both a secondary ICD-9-CM diagnosis code for haemorrhage and a secondary ICD-9-CM procedure code for the control of haemorrhage or a secondary ICD-9-CM diagnosis code for haematoma and a secondary ICD-9-CM procedure code for drainage of haematoma. The requirement of both a secondary diagnosis and procedure in the PSI was imposed to prevent minor complications[18]. Lawthers limited the risk pools to the major surgical group and the medical group only. [9] It was one of the AHRQ's Patient Safety Indicators proposed by Zhan et al. For this purpose the definition required a postoperative haemorrhage or haematoma with a procedure code for surgical drainage or evacuation and applied only to surgical discharges. [3] Rosen et al used the same specified numerator. Moreover, the procedure code for postoperative control of the haemorrhage or haematoma had to occur on the same day or after the principal procedure. Murff et al determined whether an association existed between patient complaints and post-procedural haemorrhage or haematoma using administrative data collected from July 1995 to December 1999. [20]

1.11.6 Specification of numerator/denominator

Numerator	Discharges with ICD-9-CM code of 998.1, 28.7, 49.95, 57.93, 60.94, 39.41, 39.98 in any secondary diagnosis field Procedure code for postoperative control of haemorrhage or haematoma must occur on the same day or after the principal procedure.
Denominator	All surgical discharges 6 types of risk pools : major surgery (A); minor and miscellaneous surgery (B); invasive cardiology and radiology procedures (C); endoscopy (D); medical patients (E); complications applicable for all patients (E) [8] Major surgical risk pool and medical risk pool [9, 10, 12] Medicare beneficiaries ≥ 65 years old [9, 10, 12] Exclude • cases with primary diagnosis of haemorrhage or haematoma • all obstetric admissions (MDC 14 and 15) • long-term care and rehabilitation facilities • speciality hospitals (eye and ear infirmaries, burns) • psychiatric hospitals and substance abuse and detoxification facilities • pediatric DRGs, ungroupable DRGs or length of stay greater than 365 days
Risk adjustment	Age, sex, diagnosis related group (DRG) and co-morbidity categories

1.12 POSTOPERATIVE HIP FRACTURE

1.12.1 Definition of indicator

Cases of in-hospital hip fracture per 1,000 discharges at risk[1].

1.12.2 International prevalence figure in literature

Population rate estimated by AHRQ and available in the "Guide to Patient Safety Indicators" (version 3.0a) was 0.276 events for 1,000 discharges at risk[1].

Different studies applied PSI algorithms on HCUP Nationwide Inpatient Sample[3, 4]. For the year 2000, the rate observed for postoperative hip fracture ranged from 0.77 per 1,000 discharges at risk to 0.80 events per 1,000 discharges. In the study of Romano [4], postoperative hip fracture did not steadily increased between 1995 and 2000.

Rosen et al implemented the PSI software to Veterans Health Administration (VA) administrative data. The observed rate for Postoperative Hip Fracture was 1.14 per 1,000 discharges at risk. Risk-adjusted rate[c] for this indicator was higher, with 1.33 per 1,000 discharges at risk. Taking race and ethnicity into account, Coffey and colleagues found a rate of 0.76 event per 1,000 discharges at risk [6].

1.12.3 Summary of indicator

This indicator is intended to capture cases of in-hospital fractures, specifically hip fractures. This indicator limits diagnosis codes to secondary diagnosis codes to eliminate fractures that were present on admission. It further excludes patients in MDC 8 (musculoskeletal disorders) and patients with indications for trauma or cancer, or principal diagnoses of seizure, syncope, stroke, coma, cardiac arrest, or poisoning, as these patients may have a fracture present on admission. This indicator is limited to surgical cases since previous research suggested that these codes in medical patients often represent conditions present on admission.

1.12.4 Literature review/evidence levels

Coding Validity. Lawthers et al studied the possibility to identifying in-hospital hip fracture and falls as a Complications Screening Program's indicator [9]. They evaluated particularly the validity of this indicator for the purpose of identifying in-hospital events on Medicare beneficiaries of 65 years or older in the codification point of view. It was restricted to the major surgical risk pool and medical risk pool. In the major surgical risk pool, PPV and NPV was respectively 85.0% and 99.2%. In the medical risk pool, PPV was 60.6% and NPV was 99.5%. Lawthers et al estimated this indicator might have some utility in screening for in-hospital complication in surgical cases.

Construct validity. Lauwthers et al[9] found that cases with trigger codes corroborating on codes abstracted from an independent re-review (record review) was 91% in surgical cases and 97% in medical cases. In surgical cases flagged for the screen, the diagnosis appeared to be present on admission in 21%. The overall proportion of cases confirmed as in-hospital events was 57%. In medical cases, 87% of hip fractures and falls were present on admission. The overall proportion of cases confirmed as in-hospital events was very low with 11%. For medical cases, the trigger codes were difficult to locate in those events. The confirmation rate did not exceed 80%; the authors did not validate the indicator in terms of code corroborating and time assumptions. In medical cases, the screen were not validate for the purpose of identifying in-hospital events, primarily because the trigger codes found in the claim data often represent a condition present on admission rather than arose during the hospitalization.

Iezzoni tented to validate the CSP as quality indicators by using explicit process of care criteria to determine whether hospital discharges flagged by the CSP experienced more process problems than unflagged discharges[10]. In surgical group, flagged-cases presented at last one process problem in 76.2% of cases (n=21). In medical group, cases with hip fracture presented at last one process problem in 53.8% of cases (n=39).

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[c] Rates calculated using a logistic regression model that includes patient-level predictors of PSI events, including age, sex, age-sex interactions, modified DRGs and modified comorbidity categories

In the two groups, all the cases have had at least one other process problem (not preoperative, intraoperative or postoperative process problem). However, the authors noted that flagged-cases did not present significant higher rates of explicit process than unflagged-cases (not evaluated on the same criteria).

Weingart et al[11] conducted a validation of the CSP from the medical point of view. In this study, a peer-review organization physician judged the presence of the flagged complication and potential quality-of-care problems. Physician reviewers confirmed an in-hospital fractures or falls among 71.4% on surgical cases and only 10.9% on medical cases. Among cases flagged, reviewers found at last one potential quality problem in 23.8% of surgical and 4.7% of medical cases. The prevalence of physician-identified potential quality problems among flagged cases did not exceed 50% for any screen, which makes according to the authors the CSP a poor quality-of-care indicator. However, physicians confirmed that complications and potential quality problems occur more often among CSP-flagged cases than among controls. Among cases with confirmed in-hospital complications, physician reviewers identified at last one potential quality problem in 26.7% of surgical and 28.6% of medical flagged cases. As a screening tool, the CSP performed better among surgical than medical cases.

Rosen et al[5] tested the construct validity of PSIs in exploring positive association among individual indicators. The authors found weak correlations among the indicators, suggesting that each indicator most likely reflects a unique dimension of quality. Rosen et al concluded that the PSIs have good construct validity.

1.12.5 Sources

This indicator was originally proposed by Iezzoni et al as part of the Complications Screening Programm (CSP 25 "in-hospital hip fracture or fall") [8]. Their definition also includes any documented fall, based on external cause of injury codes. The American Nurses Association, its State associations, and the California Nursing Outcomes Coalition have identified the number of patient falls leading to injury per 1,000 patient days (based on a data collection) as a "nursing-sensitive quality indicator for acute care settings" [Nursing-Sensitive Quality Indicators for Acute Care Settings and ANA's Safety & Quality Initiative]. Postoperative hip fracture is an AHRQ Patient Safety Indicator[1]

1.12.6 Specification of numerator/denominator

Numerator	Discharges with ICD-9-CM code for hip fracture in any secondary diagnosis field
Denominator	All surgical discharges 16 years and older defined by specific DRG and an ICD-9-CM code for an operating room procedure Exclude : • discharges with ICD-9-CM code for hip fracture in the principal diagnosis field • discharges where the only operating room procedure is hip fracture repair • discharges where a procedure for hip fracture repair occurs before or on the same day as the first operating room procedure • discharges with diseases and disorders of the musculokeletal system and connective tissue (MDC 8) • discharges with principal diagnosis codes for seizure, syncope, stroke, coma, cardiac arrest, poisoning, trauma, delirium and other psychoses, or anoxic brain injury • discharges with any diagnosis of metastatic cancer, lymphoid malignancy or bone malignancy, or self-inflicted injury • discharges in MDC14 (Pregnancy, Childbirth and the Puerperium)
Risk adjustment	Age, sex, DRG, comorbidity categories

1.13 POSTOPERATIVE INFECTION (EXCEPT WOUND AND PNEUMONIA)

1.13.1 Definition of indicator

Discharges with ICD-9-CM codes for postoperative infection (except wound and pneumonia) in any secondary diagnosis field per 1,000 patient days.

1.13.2 Summary of indicator

Iezzoni and colleagues introduced this indicator as part of the Complications Screening Program. The particular screen was assigned to the major surgery and minor or miscellaneous surgery risk pool, as well as to the endoscopy risk pool. The author excluded long-term care and rehabilitation facilities, specialty hospitals (eye and ear infirmaries, burns), psychiatric hospitals and substance abuse and detoxification facilities. Cases with pediatric DRGs, ungroupable DRGs or lengths of stay greater than 365 days were also excluded. [10] Lawthers et al studied this indicator for Medicare beneficiaries age 65 year or older. [9] Weingart[11] had a similar patient profile compared to Lawthers.

1.13.3 Literature review/evidence levels

Coding validity. The study done by Lawthers et al[9] examined the validity of the CSP by testing whether ICD-9-CM codes used to identify a complication are coded completely and accurately and whether the algorithm successfully separates conditions present on admission from those occurring in the hospital. It was performed in 2 states, Connecticut and California for the fiscal year 1994. 403 major surgery discharges were included in California and 412 in Connecticut. With a positive predictive value of 96.8%, the author concluded that this indicator is a good-to-excellent candidate as screen for complications. The negative predictive value was 98.3%. Cases with trigger codes corroborated on record review was 94%. The diagnosis was present on admission in 23% of cases. The overall proportion of cases confirmed as in-hospitals event was 72%. [9] Weingart performed a similar study in 703 surgical discharges in the fiscal year 1994 in California and Connecticut. Reviewers confirmed the flagged complication among 73.3% of surgical patients. 40% of surgical cases flagged by the particular CSP had a potential quality problem. The prevalence of physician-identified potential quality problems among flagged cases was only 50%, which makes this CSP a poor quality-of-care indicator according to the author[11].

Construct validity. McCarthy et al[12] created objective, explicit chart review instruments itemizing key clinical criteria confirming coded diagnoses. The clinical criteria created for postoperative infection (except pneumonia and wound) were evaluated in 27 surgical cases.

Clinical factor confirming complication	n = 22	%
Mediastinitis as evidenced by positive retrosternal wound culture	1	4.5
Mediastinitis as evidenced by fever or leukocytosis, AND sternal edema or drainage, AND instability of the sternum, or an operative note stating mediastinitis present. Or x-ray, CT scan, or ultrasound evidence of mediastinitis after postoperative day 5	1	4.5
Pyelonephritis as evidenced by fever, leukocytosis, chills, myalgia, dysuria, or nausea, AND flank pain or tenderness, or white blood cell casts, AND bacteriuria or positive urine culture, AND pyuria	1	4.5
Empyema as evidenced by fever or leukocytosis, AND purulent chest tube drainage, positive pleural fluid culture, or pus from thoracocentesis	0	0.0
Meningitis as evidenced by CSF culture with ≥ 10 wbc/hcf and positive for bacteria	2	9.1
Meningitis as evidenced by CSF culture with ≥ 10 wbc/hcf, and headache, stiff neck, or mental status change documented postoperatively, AND CSF positive for bacteria or if CSF culture negative, patient taking antibiotics within 24 hours prior to culture	0	0.0
Stool culture positive for C. difficile or any stool analysis positive for C. difficile toxin	18	81.8
Colonoscopy or sigmoidoscopy showing pseudo membranes and patient experienced diarrhea, change in bowel habits, or abdominal pain, OR fever or leukocytosis documented postoperatively AND colonoscopy or sigmoidoscopy show pseudo membranes	1	4.5

The final study sample consisted of 398 surgical cases and 87 medical cases. Medical records contained no clinical evidence or physicians' notes to support the coded condition in 14.8% of cases. Objective clinical evidence was present in 81.5%. In 3.7% of cases only physician notes supported the condition but had no specific objective clinical evidence to confirm the complication. Although this condition had one of the most supporting documentation with ≥ 80% having 1 confirmatory clinical criterion present, even this condition lacked any evidence in ≥ 10%. [12] Murff et al determined whether an association existed between patient complaints and surgical complications using administrative data collected from July 1995 to December 1999. They found no statistically significant difference in complaint categories between patients who experienced postoperative infections and those who did not. Surgical admissions associated with a complication had an odds ratio of 1.74 of being associated with a patient complaint. This relationship remained significant after adjusting for patient length of stay, patient age, co-morbid illness, surgical sub-speciality and patient race. [20]

Moro assessed the data quality of postoperative infections in a hospital discharge registry in the Emilia-Romagna region of Italy. The study was based on the linkage of data collected during a prospective survey conducted in the year 2001 in the Emilia-Romagna region with a regional hospital discharge database, involving 31 of the 36 public hospitals. ICD-9-CM codes were not specified. The sensitivity of the hospital discharge database for postoperative surgical infections was 10% when ICD-9-CM codes indicative of postoperative infection were used and 21% when non-specific codes of postoperative complications – not necessarily of infectious origin – were further added. The author concluded that hospital discharge databases could not be used in Italy to monitor postoperative infections developing during hospital stay[25].

Romano et al determined how accurately postoperative complications are reported in administrative data, whether accuracy varies systematically across hospitals, and whether serious complications are more consistently reported. 991 randomly sampled adults who underwent elective lumbar diskectomies at 30 non-federal acute care hospitals in California in 1990 to 1991 were selected. The sensitivity of reporting for

this complication was < 35%, the specificity was 98%, the positive predictive value was 82% and the negative predictive value was 84%[21].

1.13.3.1 Sources

This indicator was originally proposed in 1992 by Iezzoni et al. as part of the CSP.[7]Lawthers [9]and Weingart [11] undertook a validity study of this screen in Connecticut and California for the fiscal year 1994.

1.13.4 Specification of numerator/denominator

Numerator	Discharges with ICD-9-CM codes for postoperative infection (except wound and pneumonia) in any secondary diagnosis field : 008.45, 320.00-320.99, 510.0, 510.9, 513.1, 519.2, 590.10-590.11, 590.80, 683 [12]
Denominator	Surgical cases flagged by the CSP using the hospital-assigned ICD-9-CM diagnosis and procedure codes. [12] Major surgery risk pool and medical risk pools[9] All major surgery and minor/miscellaneous surgery discharges and endoscopy discharges[8]. Medicare beneficiaries ≥ 65 years old[9, 11] Excluded : • patients in long-term care and rehabilitation facilities • patients in specialty hospitals (eye and ear infirmaries, burns) • patients in psychiatric hospitals and substance abuse and detoxification facilities • pediatric DRGs • ungroupable DRGs or lengths of stay greater than 365 days
Risk adjustment	Age, sex, admission source and 12 of 13 chronic conditions (AIDS occurred too rarely for inclusion in this indicator) [9, 11]

1.14 POSTOPERATIVE PHYSIOLOGIC AND METABOLIC DERANGEMENTS

1.14.1 Definition of indicator

Cases of specified physiological or metabolic derangement per 1,000 discharges with an operative room procedure.

1.14.2 International prevalence figure in literature

Population rate estimated by AHRQ and available in the "Guide to Patient Safety Indicators" (version 3.0a) was 1.043 events for 1,000 discharges at risk [1].

Different studies applied PSI algorithms on HCUP Nationwide Inpatient Sample[3, 4]. For the year 2000, the rate observed for this indicator ranged from 0.89 per 1,000 discharges at risk to 1.00 event per 1,000 discharges. In the study of Romano [4], postoperative physiologic and metabolic derangements did not steadily increase between 1995 and 2000.

Rosen et al implemented the PSI software to Veterans Health Administration (VA) administrative data. The observed rate for Postoperative Physiologic and Metabolic Derangements was 1.89 per 1,000 discharges at risk and risk-adjusted rate[d] 1.81 per 1,000 discharges at risk. Taking ethnicity and race into account, Coffey et al found a rate of 1.43 per 1,000 discharges at risk [6].

Needleman et al also estimated metabolic derangement with an adapted definition of CSP and found 68 events per 1,000 surgical discharges [13]. Van den Heede et al[16] used the same definition and estimated the prevalence on the Belgian hospitals administrative data. The rate observed in the surgical cases was 8.98 per 1,000 discharges.

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[d] Rates calculated using a logistic regression model that includes patient-level predictors of PSI events, including age, sex, age-sex interactions, modified DRGs and modified comorbidity categories

In this study, they also estimated the variability of risk-adjusted adverse outcome rates among the 123 Belgian acute hospitals. For this indicator, variability (P90/P10) was high, with 4.7 (IC 95% [3.5;5.8])

1.14.3 Summary of indicator

This indicator is intended to flag cases of postoperative metabolic or physiologic derangements. These derangements consist in acute renal failure and diabetes with ketoacidosis or diabetes with hyperosmolarity or diabetes with other coma. Each diagnosis has specific exclusions designed to reduce the number of flagged cases in which the diagnosis was present on admission or was more likely to be non-preventable [1] This indicator was originally proposed by Iozzeni as part as Complications Screening Program [8] and then adapted by Needleman as an outcome potentially sensitive of nursing care [13]. Prevalence was estimated several times but no evidence was published about the validity of the CSP.

1.14.4 Literature review/evidence levels

Coding Validity . No literature was found in studies validated the CSP. Geraci et al confirmed 5 of 15 episodes of acute renal failure and 12 of 34 episodes of hypoglycaemia reported on discharge abstracts on VA patients hospitalized for congestive heart failure, chronic obstructive pulmonary disease or diabetes mellitus[24].

Construct Validity . Rosen et al tested the construct validity of PSIs in exploring positive association among individual indicators. The authors found weak correlations among the indicators, suggesting that each indicator most likely reflects a unique dimension of quality. Rosen et al concluded that the PSIs have good construct validity.

Romano et al reported no false positive in episodes of acute renal failure (n=1) or hypoglycaemia (n=1) using discharge abstracts of diskectomy patients[21].

In another study of Romano et al [4], the PSI did not steadily increased between 1995 and 2000. African American inpatients had a much higher risk of complications.

AHRQ suggested to limited population at risk to elective surgical patients, because patients undergoing non-elective surgery may develop less preventable derangements [1].

Needleman did not found an association between this condition and staffing by nurses [13].

1.14.5 Sources

This indicator was originally proposed by Iezzoni as part of the Complications Screening Program [8]. It was adapted by Needleman [13]. This indicator is defined as an AHRQ Patient Safety Indicator[1]

1.14.6 Specification of numerator/denominator

Numerator	Discharges with ICD-9-CM codes for physiologic and metabolic derangements in any secondary diagnosis field
Denominator	All elective surgical discharges defined by specific DRG and an ICD-9-CM for an operating room procedure Exclude • discharges with ICD-9-CM codes for physiologic and metabolic derangements in primary diagnosis • discharges with acute renal failure where a procedure for dialysis occurs before or on the same day as the first operating room procedure • discharges with both a diagnosis code of ketoacidosis, hyperosmolarity or other coma and a principal diagnosis of diabetes • discharges with both a secondary diagnosis code for acute renal failure and a principal diagnosis of acute myocardial infarction, cardiac arrhythmia, cardiac arrest, shock, hemorrhage, or gastrointestinal hemorrhage • discharges in MDC 14 (obstetrics)
Risk adjustment	Age, sex, DRG, comorbidity categories

1.15 POSTOPERATIVE RESPIRATORY FAILURE

1.15.1 Definition of indicator

Cases of acute respiratory failure per 1,000 elective surgical discharges with an operating room procedure [1]

1.15.2 International prevalence figure in literature

Different studies applied PSI algorithms on HCUP Nationwide Inpatient Sample[3, 4]. For the year 2000, the rate observed for postoperative respiratory failure turn around 3.58 per 1,000 discharges at risk.

Rosen et al implemented the PSI software to Veterans Health Administration (VA) administrative data. The observed rate for Postoperative Respiratory Failure was 3.43 per 1,000 discharges at risk and risk-adjusted rate[e] 2.00 per 1,000 discharges at risk. Taking race and ethnicity into account, Coffey et al estimated a rate of 4.01 events per 1,000 discharges [6]

In the study of Romano et al [4], the PSI increased steadily between 1995 and 2000. The authors suggested that increase of incidence may have been attributable to the introduction of a new ICD-9-CM code in October 1998 (518.84 "Acute and chronic respiratory failure")

Needleman et al adapted the CSP definition and estimated 12 pulmonary failures per 1,000 surgical discharges [13]. Van den Heede et al estimated the prevalence using the same definition on the Belgian hospitals administrative data. The rate observed in the surgical cases was 14.7 per 1,000 discharges. In this study, they also estimated the variability of risk-adjusted adverse outcome rates among the 123 Belgian acute hospitals. For Pulmonary Failure, variability (P90/P10) was 4.0 (IC 95% [3.2;4.8])

1.15.3 Summary of indicator

This indicator is intended to capture cases of postoperative respiratory failure. It limits the code for respiratory failure to secondary diagnosis codes to eliminate respiratory failure that was present on admission. It further excludes patients who have major respiratory or circulatory disorders and limits the population at risk to elective surgery patients [1].

1.15.4 Literature review/evidence levels

Coding Validity . Lawthers et al studied the validity of this indicator for the purpose of identifying in-hospital events on Medicare beneficiaries of 65 years or older in the codification point of view [9]. PPV for postoperative pulmonary compromise was 92.5% and NPV 96.2%. Lawthers et al estimated this indicator would be good-to-excellent candidates to screens for complications. The authors also found that cases with trigger codes corroborating on codes abstracted from an independent review (record review) was 91% in surgical cases. In cases flagged for the screen, the diagnosis appeared to be present on admission in 12% of the cases. The overall proportion of cases confirmed as in-hospital events was 72%. The confirmation rate did not exceed 80%; the authors did not validate the indicator in terms of code corroborating and time assumptions.

Construct Validity . Iezzoni tented to validate the CSP as quality indicators by using explicit process of care criteria to determine whether hospital discharges flagged by the CSP experienced more process problems than unflagged discharges[10]. Cases with postoperative respiratory compromise presented at last one process problem in 52.3% of cases (n=44). In these cases, none presented at least one preoperative process problem, 38.6% with at least one intraoperative process problem, 9.1% with at least one postoperative process problem and 6.8% with at least one other process problem. However, the authors noted that flagged-cases did not present significant higher rates of explicit process than unflagged-cases.

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[e] Rates calculated using a logistic regression model that includes patient-level predictors of PSI events, including age, sex, age-sex interactions, modified DRGs and modified comorbidity categories

Weingart et al conducted a validation of the CSP from the medical point of view [11]. In this study, a peer-review organization physician judged the presence of the flagged complication and potential quality-of-care problems. Physician reviewers confirmed a postoperative pulmonary compromise among 75% on surgical flagged cases. Among all flagged cases, 20.5% presented a potential quality problem. Among cases with confirmed in-hospital complications, physician reviewers identified at last one potential quality problem in 27.3% of cases. According to the authors, this CSP-screen has high rate of confirmed complications and potential quality problems. It may represent complications over which clinicians have considerable control, which are recognized promptly and where the cause is attributed easily.

Rosen et al tested the construct validity of PSIs in exploring positive association among individual indicators[5]. The authors found weak correlations among the indicators, suggesting that each indicator most likely reflects a unique dimension of quality. Rosen et al concluded that the PSIs have good construct validity.

Needleman and colleagues found that nurse staffing was independent of the occurrence of pulmonary failure among major surgery patients[13]. However, Kovner et al reported that having more registered nurse hours per adjusted patient day was associated with a lower rate of pulmonary compromise after major surgery[22, 27].

1.15.5 Sources

This indicator was originally proposed by Iezzoni et al as part of Complication Screening Program [8] Postoperative pulmonary failure is an indicator from AHRQ Patient Safety Indicators (PSI)[1] CSP definition also includes pulmonary congestion, other (or postoperative) pulmonary insufficiency, and acute pulmonary edema. These conditions were omitted from PSI. AHRQ's original HCUP Quality Indicators adopted the CSP indicator for major surgery patients[23] Needleman et al identified postoperative pulmonary failure as an outcome potentially sensitive to nursing[13]

1.15.6 Specification of numerator/denominator

Numerator	Discharges with ICD-9-CM codes for acute respiratory failure (518.81) in any secondary diagnosis field (After 1999, include 518.84) OR Discharges with ICD-9-CM codes for reintubation procedure as follows: • (96.04) one or more days after the major operating room procedure code • (96.70 or 97.71) two or more days after the major operating room procedure code • (96.72) zero or more days after the major operating room procedure code
Denominator	All elective* surgical discharges age 18 and over defined by specific DRGs and an ICD-9-CM code for an operating room procedure. Exclude: • discharges with ICD-9-CM diagnosis code for acute respiratory failure in the principal diagnosis field • discharges with an ICD-9-CM diagnosis code of neuromuscular disorder • discharges where a procedure for tracheostomy is the only operating room procedure or tracheostomy occurs before the first operating room • discharges in MDC 14 (pregnancy, childbirth, and puerperium) • discharges in MDC 4 (diseases/disorders of respiratory system) • discharges in MDC 5 (diseases/disorders of circulatory system)
Risk adjustment	Age, sex, DRG, comorbidity categories

1.16 REOPENING OF SURGICAL SITE

1.16.1 Definition of indicator

Discharges with ICD-9-CM codes for reopening of surgical site in any secondary diagnosis field per 1,000 discharges.

1.16.2 International prevalence figure in literature

No data found.

1.16.3 Summary of indicator

This screen is intended to flag cases with an indication of reopening of surgical site. The indicator was developed as part of the Complications Screening Program (CSP) where it was assigned to the major surgery and minor and miscellaneous surgery risk pool[7]. Long-term care and rehabilitation facilities, specialty hospitals (eye and ear infirmaries, burns), psychiatric hospitals and substance and detoxification facilities were excluded[8]. Iezzoni[10], Lawthers [9] and Weingart[11] performed a validity study of the CSP thereby limiting the study population to Medicare beneficiaries aged 65 or older in the major surgical risk pool.

1.16.4 Literature review/evidence levels

Coding validity. Lawthers et al performed a validity study for this surgical screen in Medicare beneficiaries of 65 years of age or older. With a positive predictive value (PPV) of 88.2%, Lawthers concluded that this indicator was a good-to-excellent candidate as screen for complications in the major surgical risk pool. The negative predictive value (NPV) was 98%. [9]

Construct validity. The validation study by Lawthers was performed in 2 states, Connecticut and California, using Medicare's fiscal year 1994. The validation was limited to the major surgical risk pool. 403 major surgery cases were sampled in California and 412 in Connecticut. In the major surgical risk pool cases with trigger codes corroborating on record review was 97%. The overall proportion of cases confirmed as in-hospital events was also 97%. In cases flagged for the screen, the diagnosis appeared to be present on admission in 0% of the major surgical risk pool. The author concluded that this screen had one of the highest proportions of cases with trigger codes corroborated on record review. [9] Weingart performed a similar study in a final sample of 703 surgical discharges in California and Connecticut in the fiscal year 1994 : physicians confirmed the flagged CSP screen in 61.3% of surgical cases. 48.4% of cases flagged by the CSP had a potential quality problem. Among cases with confirmed in-hospital complications, physician reviewers identified at least 1 potential quality problem in 42.1% of surgical flagged cases. [11]McCarthy et al[12] created objective, explicit chart review instruments itemizing key clinical criteria confirming coded diagnoses. Consensus on clinical indicators was reached through discussion with the other clinicians. Only confirmatory clinical criteria that were supported by the literature were included, although the literature was limited for certain conditions. The clinical criteria for reopening of surgical site were evaluated in 31 surgical cases.

Clinical factors	**n (%)**
Surgical site reopened postoperatively in second visit To operating room	26 (83.9)
Physician note, but no clinical factor	0 (0.0)
No clinical factor or physician note	4 (12.9)
Complication present on admission	1 (3.2)

The final study sample consisted of 398 surgical. Medical records contained no clinical evidence or physicians' notes to support the coded condition in 13.3% of cases. Objective clinical evidence was present in 86.7% of surgical cases.

In 0.0% of cases, only physician notes supported the condition but had no specific objective clinical evidence to confirm the complication. With this, the indicator has one of the most supporting documentation with ≥ 80% having 1 confirmatory clinical criterion, but even for this condition ≥ 10% lacked any evidence. [12]

Murff et al determined whether an association existed between patient complaints and surgical complications using administrative data collected from July 1995 to December 1999. They found no statistically significant difference in complaint categories between patients who experienced reopening of the surgical site and those who did not. Surgical admissions associated with a complication had an odds ratio of 1.74 of being associated with a patient complaint. This relationship remained significant after adjusting for patient length of stay, patient age, co-morbid illness, surgical sub-speciality and patient race. [20]

Romano et al determined how accurately postoperative complications are reported in administrative data, whether accuracy varies systematically across hospitals, and whether serious complications are more consistently reported. 991 randomly sampled adults who underwent elective lumbar diskectomies at 30 non-federal acute care hospitals in California in 1990 to 1991 were selected. The sensitivity of reporting for this complication was 100%, the specificity was 98%, the positive predictive value was 82% and the negative predictive value was 84%[21].

1.16.5 Sources

This indicator is intended to flag cases with reopening of the surgical site. It was originally proposed in 1992 by Iezzoni et al as part of the CSP, where it was only assigned to the major and minor or miscellaneous surgery risk pool. [7] In their validation study, Lawthers[9] and Weingart[11] limited their denominator to Medicare beneficiaries aged 65 years or older in the major surgical risk pool. Murff et al investigated this indicator in the context of the relationship between patient complaints and surgical complications. [20]

1.16.6 Specification of numerator/denominator

Numerator	Discharges with ICD-9-CM codes 01.23, 03.02, 06.02, 34.03, 35.95, 39.49, 54.12, 54.61 in any secondary diagnosis and procedure field.
Denominator	Major surgery risk pool. Major surgery; minor and miscellaneous surgery. Exclude • long-term care and rehabilitation facilities • specialty hospitals (eye and ear infirmaries, burns) • psychiatric hospitals and substance abuse and detoxification facilities • pediatric DRGs, ungroupable DRGs or lengths or stay greater than 365 days
Risk adjustment	Age, sex, diagnosis related group (DRG) and co-morbidity categories

1.17 SHOCK – CARDIAC ARREST

1.17.1 Definition of indicator

The indicator involves cases of shock or cardiac arrest per 1,000.

1.17.2 International prevalence figure in literature

Needleman found an adverse outcome rate of 0.6% for medical patients and 0.5% for surgical patients. [13] Van den Heede and colleagues found a crude adverse outcome rate per 1,000 discharges of 6.67 for medical patients and 5.32 for surgical patients. [16]

1.17.3 Summary of indicator

This indicator is intended to flag cases of in-hospital shock or cardiac arrest. The indicator was developed as part of the Complications Screening Program (CSP) where it was assigned to the minor and miscellaneous surgery risk pool[7]. Long-term care and rehabilitation facilities, specialty hospitals (eye and ear infirmaries, burns), psychiatric hospitals and substance and detoxification facilities were excluded[8].

Lawthers[9] and Weingart [11] performed a validity study of the CSP thereby limiting the study population to Medicare beneficiaries aged 65 or older in the major surgical risk pool. The indicator was investigated by Needleman et al as an adverse outcome potentially sensitive to nurse staffing levels, thereby including all medical and surgical discharges. Patient in MDC 4 and 5 were excluded, as well as patient with haemorrhage and trauma. [13]

1.17.4 Literature review/evidence levels

Coding validity. Lawthers et al[9] performed a validity study of the Complications Screening Program in 2 states, Connecticut and California in the fiscal year 1994. The final sample involved 403 major surgery discharges in California and 412 in Connecticut. With a positive predictive value of 89.3%, Lawthers concluded that this indicator was a good-to-excellent candidate as screen for complications in the major surgical risk pool.

Construct validity. According to Needleman, a higher proportion of registered-nurse-hours, but not a greater number of registered-nurse-hours per day, was associated with lower rates of cardiac arrest among medical patients in administrative data from 1997 for 799 hospitals in 11 American states covering 5,075,969 discharges of medical patients. No association was found between the measures of registered-nurse staffing and shock or cardiac arrest among surgical patients covering 1,104,659 discharges of surgical patients. [13] McCloskey et al examined in a restrospective study from 1993 through 2000 the effects of New Zealand's Health Reengineering on nursing and patient outcomes. The rate for shock remained stable after reengeneering's 1993 implementation[28]. Considine[30] examined the role of nurses in adverse event prevention, using cardiac arrest as an example. The author concluded that, in many instances, the greater problem appears to be related to health professionals' responses to physiological abnormality, not the identification of abnormal physiological parameters. Early recognition and correction of physiological abnormality can improve patient outcomes by reducing the incidence of adverse events, particularly cardiac arrest.

The validation study by Lawthers[9] was performed in 2 states, Connecticut and California, using Medicare's fiscal year 1994. For this indicator, 403 major surgery cases were sampled in California and 412 in Connecticut. Cases with trigger codes corroborating on record review was 85%. The overall proportion of cases confirmed as in-hospital events was 53%. In cases flagged for the screen, the diagnosis appeared to be present on admission in 29% of surgical cases. Weingart performed a similar study in a final sample of 703 surgical discharges in California and Connecticut in the fiscal year 1994 : physicians confirmed the flagged CSP screen in 74.4% of surgical cases. 17.9% of surgical cases flagged by the CSP had a potential quality problem. [11]

Murff et al determined whether an association existed between patient complaints and surgical complications using administrative data collected from July 1995 to December 1999. They found no statistically significant difference in complaint categories between patients who experienced shock or cardiac arrest and those who did not. In general, major complications occurred in 19.2% of surgical admissions associated with a patient complaint and in 12.5% admissions not associated with complaints. Surgical admissions associated with a complication had an odds ratio of 1.74 of being associated with a patient complaint. This

relationship remained significant after adjusting for patient length of stay, patient age, co-morbid illness, surgical sub-speciality and patient race. [20]

Mattke evaluated the impact of alternative definitions of exclusion rules for defining patient samples used to construct measures of patient outcomes sensitive to nurse staffing in in-patient units of acute care hospitals. Hospital discharge abstracts and nurse staffing data were obtained from 11 American states for calendar year 1997. The final sample included 799 hospitals. For shock or cardiac arrest, adding cardiac patients (MDC 5), who represented a large group of patients with relatively high risk, increased the overall rate of this event considerably. These findings provide evidence that the patient groups affected by the exclusion rules have different clinical characteristics and thus a different propensity to experience hospital-acquired complications[31].

Romano et al determined how accurately postoperative complications are reported in administrative data, whether accuracy varies systematically across hospitals, and whether serious complications are more consistently reported. 991 randomly sampled adults who underwent elective lumbar diskectomies at 30 non-federal acute care hospitals in California in 1990 to 1991 were selected. The sensitivity of reporting for this complication was < 35%, the specificity was 98%, the positive predictive value was 82% and the negative predictive value was 84%[21].

1.17.5 Sources

This indicator was originally proposed in 1992 by Iezzoni et al as part of the CSP, where it was only assigned to the minor or miscellaneous surgery risk pool. [7] In their validation study, Lawthers[9] and Weingart [11] limited their denominator to Medicare beneficiaries aged 65 years or older in the major surgical risk pool. Needleman[13] and McCloskey [28]identified this indicator as a nursing-sensitive patient outcome with all medical and surgical discharges in their denominator.

1.17.6 Specification of numerator/denominator

Numerator	Discharges with ICD-9-CM code of : diagnosis – 427.4, 785.5, 785.50, 785.51, 785.59, 799.1; procedure – 93.93, 99.6, 99.63 in any secondary diagnosis field.
Denominator	All medical and surgical discharges Medicare beneficiaries ≥ 65 years old [9, 11] Major surgery risk pool[9, 11] Minor or miscellaneous surgery [10] Exclude • cases with primary diagnosis of shock or cardiac arrest • MDC 4 and MDC 5 • MDC 14 (obsetrics/gynaecology) • haemorrhage • trauma • patients admitted from a long term care facility and rehabilitation facilities • specialty hospitals (eye and ear infirmaries, burns) • psychiatric hospitals and substance abuse and detoxification facilities • pediatric DRGs • ungroupable DRGs or lengths of stay greater than 365 days • patients from the APR-DRG (version 15) 950-956 that are not assigned to a MDC
Risk adjustment	Age, sex, diagnosis related group (DRG) and co-morbidity categories Primary health insurer, whether or not the patient was admitted on an emergency basis, and the presence or absence of 13 chronic diseases [13]

1.18 TRANSFUSION REACTION

1.18.1 Definition of indicator

Discharges with ICD-9-CM codes for transfusion reaction in any secondary diagnosis field per 1,000 discharges. [5]

1.18.2 International prevalence figure in literature

Zhan and colleagues found 0.004 patients with this indicator per 1,000 discharges at risk. [3] Taking race and ethnicity into account, Coffey et al found a rate of 0.005 per 1,000 discharges. [6]Rosen et al implemented the indicator on the Veterans Health Administration and became a rate of 0.007 per 1,000 eligible discharges. [5] Kaplan et al reviewed the literature on transfusion error. All incidents involving administration of blood to other than the intended patient or the issuance of blood of incorrect ABO or Rh group were reviewed. The author estimated that 1 in 19,000 units of red blood cells are administered to an incorrect patient. A Belgian study suggested much higher error rates, with chart reviews indicating that 1 in 500 units of red blood cells was transfused to an incorrect patient.

1.18.3 Summary of indicator

This indicator is intended to flag cases of transfusion reaction. The indicator is defined both on the area level by including all cases, and on the hospital level by restricting cases to those flagged by a secondary diagnosis or procedure code. For the discharged-based PSIs, the rates are adjusted by age, gender, age-gender interaction, DRG cluster and co-morbidity. For the area-based PSIs, the rates are adjusted by age and gender only, because state population estimates by disease and severity are not available. [6]For this indicator, there are no key exclusion criteria.

1.18.4 Literature review/evidence levels

No data found.

1.18.5 Sources

This indicator is intended to flag cases of transfusion reactions. 'Transfusion reaction' is one of the Patient Safety Indicators of the US Agency for Healthcare Research and Quality (AHRQ). It was obtained from AHRQ analysis using the 2000 Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID) for 29 states. [15] This PSI was applied to State Inpatient Databases for 16 states that had race/ethnicity data on their hospital discharge records for at least 90% of discharges in the year 2000. [6]Zhan specified this indicator to ABO or Rh transfusion reaction. [3]

1.18.6 Specification of numerator/denominator

Numerator	Discharges with ICD-9-CM codes for transfusion reaction in any secondary diagnosis field. [5] ABO or Rh transfusion reaction. [3]
Denominator	All medical and surgical discharges. [5]
Risk adjustment	Age, sex, diagnosis related group (DRG) and co-morbidity categories

1.19 URINARY TRACT INFECTION

1.19.1 Definition of indicator

Nosocomial urinary tract infections that express themselves in hospitalized patients in whom the infection was not present or incubating at the time of admission per 1,000 patient days[32].

A diagnosis of urinary tract infection required positive urine cultures that were treated with antibiotics according to Kreder et al[33].

1.19.2 International prevalence figure in literature

The prevalence of urinary tract infection in the Canadian administrative hospital discharge data was 4.3%. The prevalence of this indicator was identical after reviewing the corresponding medical charts[34]. Needleman et al found an adverse outcome rate of 6.3% in medical patients and 3.3% in surgical patients. [13] Van den Heede and colleagues found a crude adverse outcome rate per 1,000 discharges of 32.3 for medical patients and 17.6 for surgical patients. [16] Kreder et al compared the rate of urinary tract infection for octogenarians versus patients aged 65 to 79 years who underwent total hip or knee arthroplasty[33]. They found a higher incidence of urinary tract infection after both procedures for patients who were 80 years of age or older : total hip arthroplasty had an incidence of 4.4% versus 2.03% in the control group; total knee arthroplasty had an incidence of 3.28% versus 1.78% in the control group.

1.19.3 Summary of indicator

Iezzoni and colleagues introduced the indicator 'postoperative complications relating to urinary tract anatomy' as part of the Complications Screening Program. The screen was assigned to the major surgery risk pool and the minor or miscellaneous surgery risk pool. [10] The same author specified exclusion criteria in 1994 by which long-term care and rehabilitation facilities were eliminated, as well as specialty hospitals (eye and ear infirmaries, burns), psychiatric hospitals and substance abuse and detoxification facilities.

Furthermore, cases with pediatric DRGs, ungroupable DRGs or lengths of stay greater than 365 days were also excluded[8]. Studies done by Quan et al[34], Needleman et al[13and Van den Heede et al{Van Den Heede, 2006 #16 also included surgical and medical discharges in their denominator. Needleman[13], Blegen[32] and McCloskey[28] identified this indicator as a potential nursing-sensitive quality indicator. Kreder[33] restricted his study population to all primary total hip arthroplasties and total knee arthroplasties in patients older than 80 years.

1.19.4 Literature review/evidence levels

Coding validity. No evidence on validity is available from CSP studies. Quan et al[34] assessed the accuracy of this diagnosis-type indicator for flagging complications in administrative data, obtained between April 1, 1996 and March 31, 1997 in Canada. The proportion of the condition coded as complication among those with the condition present amounted to 17.6% for the chart data and 15.7% for administrative data. There was a substantial agreement of the complication status between the 2 databases when cases were restricted to those with a condition present in both the databases (kappa 0.66). The sensitivity was 55.6%; the specificity 99.8%. The positive and negative predictive value were 62.5% and 99.7% respectively. According to the author, these findings suggest that administrative data are generally lacking in validity for identifying urinary tract infection or for distinguishing the medical condition that arose during hospitalization from conditions that were present at time of admission.

Construct validity. Needleman concluded that both a higher proportion of licensed-nurse care provided by registered nurses and more registered-nurse-hours per day were associated with lower rates of urinary tract infections among medical patients. Among surgical patients, a higher proportion of registered-nurse-hours was associated with a lower rate of urinary tract infections. [13] Although not statistically significant, the study results of Blegen et al suggested that urinary tract infections obtained from chart review may be inversely related to the proportion of nursing care delivered by registered nurses[32]. Lichtig et al[35] obtained data from the fiscal years 1992 and 1994 in California and New York : 352 hospitals in 1992 and 295 in 1994 for the state California and 126 hospitals in 1992 and 131 in 1994 for the state New York. The author concluded that in three of the four data sets, a statistically significant relationship existed between nursing skill mix and urinary tract infection (UTI) rates. Each additional percentage of registered nurses was associated with a nearly 0.66% lower UTI rate. Neither total nursing hours per nursing intensity weight nor being a medical school affiliate were statistically related to the UTI rate in any of the data sets. However, if a hospital had any teaching affiliation, it had a lower UTI rate by 12% to 23%. Murff et al determined whether an association existed between patient complaints and surgical complications using administrative data collected from July 1995 to December 1999. They found no statistically significant difference in complaint categories between patients who experienced septicaemia and those who did not. Surgical admissions associated with a complication had an odds ratio of 1.74 of being associated with a patient complaint. This relationship remained significant after adjusting for patient length of stay, patient age, co-morbid illness, surgical sub-speciality and patient race. [20]

Urinary tract infection was one of the nurse sensitive clinical outcomes in the study by McCloskey in medical and surgical patients. There was a statistically significant increase in the rate for urinary tract infections after the reengineering's 1993 implementation : increase of 53% for medical discharges and an increase of 146% in the surgical group. The author concluded that the increase in skill mix was not large enough to overcome the decrease in full time equivalents and hours worked nor to compensate for the additional burden a decreasing

length of stay poses on nursing staff[28].

Romano et al determined how accurately postoperative complications are reported in administrative data, whether accuracy varies systematically across hospitals, and whether serious complications are more consistently reported. 991 randomly sampled adults who underwent elective lumbar diskectomies at 30 non-federal acute care hospitals in California in 1990 to 1991 were selected. The sensitivity of reporting for this complication was < 35%, the specificity was 98%, the positive predictive value was 82% and the negative predictive value was 84%[21].

1.19.5 Sources

This indicator was originally proposed by Iezzoni et al as part of the Complications Screening Program and was called 'postoperative complications relating to urinary tract anatomy'. [10] Needleman [13] and Blegen[32] assessed the indicator urinary tract infection as an outcome which is potentially sensitive to the extent or quality of nursing care. Quan assessed the accuracy of this diagnosis-type indicator for flagging complications in administrative data[34].

1.19.6 Specification of numerator/denominator

Numerator	Discharges with ICD-9-CM codes for urinary tract infection in any secondary diagnosis field : 599.0, 996.64 [13] 590, 595.0, 595.2, 595.3, 595.4, 595.89, 595.9, 599.0[34]
Denominator	All medical and surgical discharges. All major surgery and minor/miscellaneous surgery discharges[8] All primary total hip arthroplasties and total knee arthroplasties in patients > 80 years old[33] Excluded : • patients with a principal diagnosis of urinary tract infection • patients from the APR-DRG (version 15) 950-956 that are not assigned to a MDC 16 • MDC 11 – MDC 15 • ICD-9-CM : 646.60-646.64, 639.8 • ambulatory or outpatient clinics, operating rooms, emergency rooms, delivery rooms32 • total hip arthroplasties or total knee arthroplasties performed for neoplasm, fracture, infection and bilateral surgeries by identification of the appropriate admission diagnostic codes 33
Risk adjustment	Age, sex, DRG, co-morbidity categories. Primary health insurer, whether or not the patient was admitted on an emergency basis, and the presence or absence of 13 chronic diseases [13]

1.20 DEATHS IN LOW MORTALITY DRGS

1.20.1 International prevalence figure in literature

Different studies applied PSI on HCUP Nationwide Inpatient Sample[3][Romano, 2003 #]. For the year 2000, the rate observed for Deaths in low mortality DRGs approached 0.42 per 1,000 discharges at risk. For this indicator, Romano et al made distinction between surgical and medical cases. Rate was higher in medical/obstetric risk pool (0.68 per 1,000 discharges) compared with surgical (0.40 per 1,000 discharges).

Population rate estimated by AHRQ and available in the "Guide to Patient Safety Indicators" [1] was 0.62 deaths for 1,000 discharges at risk.

Rosen et al implemented the PSI software to Veterans Health Administration (VA) administrative data[5]. The observed rate for Deaths in Low Mortality DRGs was 3.29 per 1,000 discharges at risk. Risk-adjusted rate[f] for this indicator was lower, with 1.99 per 1,000 discharges at risk.

1.20.2 Literature review/evidence levels

Construct Validity . Rosen et al tested the construct validity of PSIs in exploring positive association among individual indicators[5]. The authors found weak correlations among the indicators, suggesting that each indicator most likely reflects a unique dimension of quality. Rosen et al concluded that the PSIs have good construct validity.

In the study of Romano et al [4], deaths in low mortality DRGs decreased from 10% between 1995 and 2000. Mortality-related events were similarly frequent across racial/ethnic categories.

[f] Rates calculated using a logistic regression model that includes patient-level predictors of PSI events, including age, sex, age-sex interactions, modified DRGs and modified comorbidity categories

1.21 PNEUMONIA

1.21.1 International prevalence figure in literature

Van den Heede et al estimated the prevalence of Hospital-acquired Pneumonia defined by Needleman on the Belgian hospitals administrative data[16]. They made distinction between medical and surgical discharges. Respectively, rate observed were 14.1 and 13.5 per 1,000 discharges at risk (p-value = 0.001). In this study, they also estimated the variability of risk-adjusted adverse outcome rates among the 123 Belgian acute hospitals. The variability (P90/P10) was 2.4 (IC 95% [2.1;2.8]) in the medical group and 3.3 (IC 95% [2.7;3.9]) in the surgical.

1.21.2 Literature review/evidence levels

Coding Validity. Lawthers et al[9] studied the validity of this indicator for the purpose of identifying Aspiration Pneumonia in-hospital events on Medicare beneficiaries of 65 years or older in the codification point of view. PPV was 85.7% and NPV 97.4%. Lawthers et al estimated this indicator might have some utility in screening for aspiration pneumonia as in-hospital complication in surgical cases.

Construct validity. Lauwthers et al[9] studied aspiration Pneumonia in surgical cases. Cases with trigger codes corroborating on record review (codes abstracted from an independent re-review) was 94% in surgical cases. In cases flagged for the screen, the diagnosis appeared to be present on admission in 15% of the surgical cases. The overall proportion of cases confirmed as in-hospital events was 77%. The authors estimated that the confirmation rate exceeding 80% validate the indicator in terms of code corroborating and time assumptions. The confirmation rate did not exceed 80%; the authors did not validate the indicator in terms of code corroborating and time assumptions.

Weingart et al[11] conducted a validation of the CSP from the medical point of view. In this study, a peer-review organization physician judged the presence of the flagged complication and potential quality-of-care problems. Physician reviewers confirmed aspiration pneumonia among 58.8% on surgical cases. Among cases flagged by CSP, reviewers found at last one potential quality problem in 20.6% of surgical cases. The prevalence of physician-identified potential quality problems among flagged cases did not exceed 50% for any screen, which makes according to the authors the CSP a poor quality-of-care indicator. However, physicians confirmed that complications and potential quality problems occur more often among CSP-flagged cases than among controls. Among cases with confirmed in-hospital complications, physician reviewers identified at last one potential quality problem in 30.7% of surgical flagged cases.

Weingart et al also evaluated postoperative pneumonia. In-hospital complication was confirmed in 64.3% of flagged cases. Among all cases flagged for a postoperative pneumonia, only 4.8% has identifying having at last one potential quality problem and only 7.4% among confirmed-cases.

Mc Carthy et al[12] determined whether clinical evidence in medical records (review by nurses) confirms discharges with trigger codes from CSP. In this way, they created objective and explicit chart review instruments itemizing key clinical criteria confirming coded diagnoses. Only clinical criteria confirmed by the literature were included, although literature was limited for certain conditions.

Table illustrates the clinical criteria used to confirm Postoperative Pneumonia. This complication requires such factors as fever, rales or dullness to percussion on chest examination, infiltrate on chest radiograph, elevated white blood cell count, or specific bacteria present in sputum. Half of the 40 cases reviewed for postoperative pneumonia had at least one confirmatory clinical factor, 30% had presence of pneumonia recorded by a physician but lacked specific clinical evidence, and 20% had no documented evidence supporting a pneumonia diagnosis.

Table 1 Presence of clinical factors confirming a complication of Postoperative Pneumonia (n=40) McCarthy, 2000 #12}

Clinical Factors	Presence of Clinical Factor, n (%)	Type of Clinical Evidence, n (%)
If preoperative chest radiograph, CT scan, or chest examination normal or respiratory symptoms are new or worsened from preoperative status, new infiltrate found on chest radiograph, **AND** new purulent sputum documented postoperatively within 48 hours of abnormal chest examination, or pneumonia pathogen documented postoperatively **AND** patient had fever, leukocytosis, or respiratory signs/symptoms	15 (37.5)	. . .
If preoperative chest radiograph, CT scan, or chest examination normal, new infiltrate found on chest radiograph, **AND** new purulent sputum documented postoperatively within 48 hours of abnormal chest examination, or pneumonia pathogen documented postoperatively	19 (47.5)	. . .
If preoperative chest radiograph, CT scan, or chest examination normal, new abnormal chest examination, **AND** new purulent sputum documented postoperatively within 48 hours of abnormal chest examination, or pneumonia pathogen documented postoperatively **AND** patient had fever, leukocytosis, or respiratory signs/symptoms	14 (35.0)	. . .
Had at least 1 objective clinical factor	. . .	20 (50.0)
Physician note but no objective clinical factor	. . .	12 (30.0)
No clinical factor or physician note	. . .	8 (20.0)

CT indicates computed tomography.

Clinical criteria used to confirm Aspiration Pneumonia are not available in the publication. More than half of cases (53.1%) reviewed for aspiration pneumonia have been supported by at least one clinical criteria, 37.5% of cases were confirmed only on the physician's notes and 9.4% had no documented evidence confirming an aspiration pneumonia diagnosis.

For the authors, postoperative pneumonia and aspiration pneumonia may require judgement calls; objective clinical evidence may be ambiguous. Another explanation is that certain clinical factors are more likely to be documented as they are routinely recorded comparing those requiring specific physician's annotations. Finally, explicit criteria may have been too stringent.

2 APPENDIXES 2

2.1 APPENDIX A OPERATING ROOM PROCEDURES

0044 PROC-VESSEL BIFURCATION (not yet available)

0050 IMPL CRT PACEMAKER SYS (from 2005)

0051 IMPL CRT DEFIBRILLAT SYS (from 2005)

0052 IMP/REP LEAD LF VEN SYS (from 2005)

0053 IMP/REP CRT PACEMAKR GEN (from 2005)

0054 IMP/REP CRT DEFIB GENAT (from 2005)

0056 INS/REP IMPL SENSOR LEAD (not yet available)

0057 IMP/REP SUBCUE CARD DEV (not yet available)

0061 PERC ANGIO PRECEREB VES (from 2005)

0062 PERC ANGIO INTRACRAN VES (from 2005)

0066 PTCA OR CORONARY ATHER (not yet available)

0070 REV HIP REPL-ACETAB/FEM (not yet available)

0071 REV HIP REPL-ACETAB COMP (not yet available)

0072 REV HIP REPL-FEM COMP (not yet available)

0073 REV HIP REPL-LINER/HEAD (not yet available)

0074 HIP REPL SURF-METAL/POLY (not yet available)

0075 HIP REP SURF-METAL/METAL (not yet available)

0076 HIP REP SURF-CERMC/CERMC (not yet available)

0077 HIP REPL SURF-CERMC/POLY (not yet available)

0080 REV KNEE REPLACEMT-TOTAL (not yet available)

0081 REV KNEE REPL-TIBIA COMP (not yet available)

0082 REV KNEE REPL-FEMUR COMP (not yet available)

0083 REV KNEE REPLACE-PATELLA (not yet available)

0084 REV KNEE REPL-TIBIA LIN (not yet available)

0085 RESRF HIPTOTAL-ACET/FEM (not yet available)

0086 RESRF HIPPART-FEM HEAD (not yet available)

0087 RESRF HIPPART-ACETABLUM (not yet available)

0112 OPEN CEREB MENINGES BX

0114 OPEN BRAIN BIOPSY

0115 SKULL BIOPSY

0118 OTHER BRAIN DX PROCEDURE

0119 OTHER SKULL DX PROCEDURE

0121 CRANIAL SINUS I & D

0122 REMOV INTRACRAN STIMULAT (change in 2005)

0123 REOPEN CRANIOTOMY SITE

0124 OTHER CRANIOTOMY

0125 OTHER CRANIECTOMY

0126 INS CATH-CRANIAL CAVITY (not yet available)

0127 REM CATH-CRANIAL CAVITY (not yet available)

0128 INTRACEREB CTH-BURR HOLE (not yet available)

0131 INCISE CEREBRAL MENINGES

0132 LOBOTOMY & TRACTOTOMY

0139 OTHER BRAIN INCISION

0141 THALAMUS OPERATIONS

0142 GLOBUS PALLIDUS OPS

0151 EX CEREB MENINGEAL LES

0152 HEMISPHERECTOMY

0153 BRAIN LOBECTOMY

0159 OTHER BRAIN EXCISION

016 EXCISE SKULL LESION

0201 LINEAR CRANIECTOMY

0202 ELEVATE SKULL FX FRAGMNT

0203 SKULL FLAP FORMATION

0204 BONE GRAFT TO SKULL

0205 SKULL PLATE INSERTION

0206 CRANIAL OSTEOPLASTY NEC

0207 SKULL PLATE REMOVAL

0211 SIMPLE SUTURE OF DURA

0212 BRAIN MENINGE REPAIR NEC

0213 MENINGE VESSEL LIGATION

0214 CHOROID PLEXECTOMY

022 VENTRICULOSTOMY

0231 VENTRICL SHUNT-HEAD/NECK

0232 VENTRI SHUNT-CIRCULA SYS

0233 VENTRICL SHUNT-THORAX

0234 VENTRICL SHUNT-ABDOMEN

0235 VENTRI SHUNT-UNINARY SYS

0239 OTHER VENTRICULAR SHUNT

0242 REPLACE VENTRICLE SHUNT

0243 REMOVE VENTRICLE SHUNT

0291 LYSIS CORTICAL ADHESION

0292 BRAIN REPAIR

0293 IMPLANT BRAIN STIMULATOR (change in 2005)

0294 INSERT/REPLAC SKULL TONG

0299 SKULL & BRAIN OP NEC

0301 REMOVAL FB SPINAL CANAL

0302 REOPEN LAMINECTOMY SITE

0309 SPINAL CANAL EXPLOR NEC

031 INTRASPIN NERVE ROOT DIV

0321 PERCUTANEOUS CHORDOTOMY

0329 OTHER CHORDOTOMY

0332 SPINAL CORD/MENINGES BX

0339 OTHER SPINAL DX PROC

034 EXCIS SPINAL CORD LESION

0351 SPINE MENINGOCELE REPAIR

0352 MYELOMENINGOCEL REPAIR

0353 VERTEBRAL FX REPAIR

0359 SPINAL STRUCT REPAIR NEC

036 SPINAL CORD ADHESIOLYSIS

0371 SUBARACH-PERITON SHUNT

0372 SUBARACH-URETERAL SHUNT

0379 OTH SPINAL THECAL SHUNT

0393 INSERT SPINAL STIMULATOR (change in 2005)

0394 REMOVE SPINAL STIMULATOR (change in 2005)

0397 REVISE SPINE THECA SHUNT

0398 REMOVE SPINE THECA SHUNT

0399 SPINE CANAL STRUC OP NEC

0401 EXCISION ACOUSTC NEUROMA

0402 TRIGEMINAL NERV DIVISION

0403 PERIPH NERVE DIV NEC

0404 PERIPH NERVE INCIS NEC

0405 GASSERIAN GANGLIONECTOMY

0406 PERIPH GANGLIONECT NEC

0407 PERIPH NERV EXCISION NEC

0412 OPEN PERIPH NERVE BIOPSY

0419 PERIPH NERVE DX PROC NEC

043 PERIPHERAL NERVE SUTURE

0441 DECOMPRESS TRIGEM ROOT

0442 CRAN NERV ROOT DECOM NEC

0443 CARPAL TUNNEL RELEASE

0444 TARSAL TUNNEL RELEASE

0449 PER NERVE ADHESIOLYS NEC

045 PERIPHERAL NERVE GRAFT

046 PERIPH NERVE TRANSPOSIT

0471 HYPOGLOSS-FACIAL ANASTOM

0472 ACCESSORY-FACIAL ANASTOM

0473 ACCESS-HYPOGLOSS ANASTOM

0474 PERIPH NERV ANASTOM NEC

0475 POSTOP REVIS PER NERV OP

0476 LATE REPAIR PER NERV INJ

0479 OTHER NEUROPLASTY

0491 NEURECTASIS

0492 IMPLANT PERIPH STIMULAT (change in 2005)

0493 REMOVE PERIPH STIMULATOR (change in 2005)

0499 PERIPHERAL NERVE OPS NEC

050 SYMPATH NERVE DIVISION

0511 SYMPATHETIC NERVE BIOPSY

0519 SYMPATH NRV DX PROC NEC

0521 SPHENOPALATIN GANGLIONEC

0522 CERVICAL SYMPATHECTOMY

0523 LUMBAR SYMPATHECTOMY

0524 PRESACRAL SYMPATHECTOMY

0525 PERIART SYMPATHECTOMY

0529 OTHER SYMPATHECTOMY

0581 SYMPATHETIC NERVE REPAIR

0589 SYMPATHETIC NERVE OP NEC

059 OTHER NERVOUS SYSTEM OPS

0602 REOPEN THYROID FIELD WND

0609 INCIS THYROID FIELD NEC

0612 OPEN THYROID GLAND BX

0613 PARATHYROID BIOPSY

0619 THYR/PARATHY DX PROC NEC

062 UNILAT THYROID LOBECTOMY

0631 EXCISION THYROID LESION

0639 PART THYROIDECTOMY NEC

064 COMPLETE THYROIDECTOMY

0650 SUBSTERN THYROIDECT NOS

0651 PART SUBSTERN THYROIDECT

0652 TOT SUBSTERN THYROIDECT

066 LINGUAL THYROID EXCISION

067 THYROGLOSS DUCT EXCISION

0681 TOTAL PARATHYROIDECTOMY

0689 OTHER PARATHYROIDECTOMY

0691 THYROID ISTHMUS DIVISION

0692 THYROID VESSEL LIGATION

0693 THYROID SUTURE

0694 THYROID REIMPLANTATION

0695 PARATHYROID REIMPLANT

0698 OTHER THYROID OPERATIONS

0699 OTHER PARATHYROID OPS

0700 ADRENAL EXPLORATION NOS

0701 UNILAT ADRENAL EXPLORAT

0702 BILAT ADRENAL EXPLORAT

0712 OPEN ADRENAL GLAND BX

0713 TRANSFRONT PITUITARY BX

0714 TRANSPHEN PITUITARY BX

0715 PITUITARY BIOPSY NOS

0716 THYMUS BIOPSY

0717 PINEAL BIOPSY

0719 ENDOCRINE DX PROC NEC

0721 ADRENAL LESION EXCISION

0722 UNILATERAL ADRENALECTOMY

0729 PART ADRENALECTOMY NEC

073 BILATERAL ADRENALECTOMY

0741 ADRENAL INCISION

0742 ADRENAL NERVE DIVISION

0743 ADRENAL VESSEL LIGATION

0744 ADRENAL REPAIR

0745 ADRENAL REIMPLANTATION

0749 ADRENAL OPERATION NEC

0751 PINEAL FIELD EXPLORATION

0752 PINEAL GLAND INCISION

0753 PARTIAL PINEALECTOMY

0754 TOTAL PINEALECTOMY

0759 PINEAL OPERATION NEC

0761 EXC PITUIT LES-TRANSFRON

0762 EXC PITUIT LES-TRANSPHEN

0763 PART EXCIS PITUITARY NOS

0764 TOT EXC PITUIT-TRANSFRON

0765 TOT EXC PITUIT-TRANSPHEN

0768 TOTAL EXC PITUITARY NEC

0769 TOTAL EXC PITUITARY NOS

0771 PITUITARY FOSSA EXPLORAT

0772 PITUITARY GLAND INCISION

0779 PITUITARY OPERATION NEC

0780 THYMECTOMY NOS

0781 PART EXCISION OF THYMUS

0782 TOTAL EXCISION OF THYMUS

0791 THYMUS FIELD EXPLORATION

0792 INCISION OF THYMUS

0793 REPAIR OF THYMUS

0794 THYMUS TRANSPLANTATION

0799 THYMUS OPERATION NEC

0811 EYELID BIOPSY

0820 REMOVE EYELID LESION NOS

0821 CHALAZION EXCISION

0822 EXCISE MINOR LES LID NEC

0823 EXC MAJ LES LID PRT-THIC

0824 EXC MAJ LES LID FUL-THIC

0825 DESTRUCTION LID LESION

0831 PTOSIS REP-FRONT MUS SUT

0832 PTOSIS REP-FRON MUS SLNG

0833 PTOSIS REP-LEVAT MUS ADV

0834 PTOSIS REP-LEVAT MUS NEC

0835 PTOS REP-TARSAL TECHNIQ

0836 BLEPHAROPTOS REPAIR NEC

0837 REDUC OVERCORRECT PTOSIS

0838 CORRECT LID RETRACTION

0841 THERMOCAUT/ENTROPION REP

0842 SUTURE ENTROPION REPAIR

0843 WEDG RESEC ENTROPION REP

0844 LID RECONS ENTROPION REP

0849 ENTROPION/ECTROP REP NEC

0851 CANTHOTOMY

0852 BLEPHARORRHAPHY

0859 ADJUST LID POSITION NEC

0861 LID RECONST W SKIN GRAFT

0862 LID RECONST W MUC GRAFT

0863 LID RECONST W HAIR GRAFT

0864 LID RECON-TARSOCONJ FLAP

0869 LID RECONSTR W GRAFT NEC

0870 LID RECONSTRUCTION NOS

0871 LID MARG RECON-PART THIC

0872 LID RECONS-PART THIC NEC

0873 LID MARG RECONS FUL THIC

0874 LID RECONST-FUL THIC NEC

0891 ELECTROSURG LID EPILAT

0892 CRYOSURG LID EPILATION

0893 EYELID EPILATION NEC

0899 EYELID OPERATION NEC

090 LACRIMAL GLAND INCISION

0911 LACRIMAL GLAND BIOPSY

0912 LACRIMAL SAC BIOPSY

0919 LACRIMAL SYS DX PROC NEC

0920 EXC LACRIMAL GLAND NOS

0921 EXCIS LES LACRIMAL GLAND

0922 PART DACRYOADENECT NEC

0923 TOTAL DACRYOADENECTOMY

093 OTHER LACRIMAL GLAND OPS

0941 LACRIMAL PUNCTUM PROBE

0942 LAC CANALICULI PROBE

0943 NASOLACRIMAL DUCT PROBE

0944 NASOLAC DUCT INTUBAT

0949 LAC PASSAGE MANIP NEC

0951 LAC PUNCTUM INCISION

0952 LAC CANALICULI INCISION

0953 LACRIMAL SAC INCISION

0959 LACRIM PASSAGE INCIS NEC

096 LACRIM SAC/PASSAGE EXCIS

0971 CORRECT EVERTED PUNCTUM

0972 PUNCTUM REPAIR NEC

0973 CANALICULUS REPAIR

0981 DACRYOCYSTORHINOSTOMY

0982 CONJUNCTIVOCYSTORHINOST

0983 CONJUNCTIVORHINOS W TUBE

0991 LAC PUNCTUM OBLITERATION

0999 LACRIMAL SYSTEM OP NEC

100 INCISE/REMOV CONJUNCT FB

101 CONJUNCTIVA INCISION NEC

1021 CONJUNCTIVAL BIOPSY

1029 CONJUNCTIVA DX PROC NEC

1031 EXCISE CONJUNCTIV LESION

1032 DESTRUCT CONJUNC LES NEC

1033 OTH CONJUNC DESTRUC PROC

1041 SYMBLEPH REP W FREE GRFT

1042 GRAFT CONJUNC CUL-DE-SAC

1043 CONJUN CUL-DE-SAC RX NEC

1044 CONJUNC FREE GRAFT NEC

1049 CONJUNCTIVOPLASTY NEC

105 CONJUNC/LID ADHESIOLYSIS

106 REPAIR CONJUNCT LACERAT

1091 SUBCONJUNCTIVAL INJECT

1099 CONJUNCTIVAL OP NEC

110 MAGNET REMOVAL CORNEA FB

111 CORNEAL INCISION

1121 CORNEAL SCRAPE FOR SMEAR

1122 CORNEAL BIOPSY

1129 CORNEAL DX PROC NEC

1131 PTERYGIUM TRANSPOSITION

1132 PTERYG EXC W CORNEA GRFT

1139 PTERYGIUM EXCISION NEC

1141 MECH REMOV CORNEA EPITH

1142 THERMOCAUT CORNEA LESION

1143 CRYOTHERAP CORNEA LESION

1149 DESTRUCT CORNEA LES NEC

1151 SUTURE CORNEA LACERATION

1152 REP CORNEA POSTOP DEHISC

1153 RX CORNEA LAC W CONJ FLP

1159 CORNEAL REPAIR NEC

1160 CORNEAL TRANSPLANT NOS

1161 LAM KERATPLAST W AUTGRFT

1162 LAMELLAR KERATOPLAST NEC

1163 PERF KERATOPL W AUTOGRFT

1164 PERFORAT KERATOPLAST NEC

1169 CORNEAL TRANSPLANT NEC

1171 KERATOMILEUSIS

1172 KERATOPHAKIA

1173 KERATOPROSTHESIS

1174 THERMOKERATOPLASTY

1175 RADIAL KERATOTOMY

1176 EPIKERATOPHAKIA

1179 CORNEA RECONSTRUCT NEC

1191 CORNEAL TATTOOING

1192 REMOVE CORNEAL IMPLANT

1199 CORNEAL OPERATION NEC

1200 REMOV ANT SEGMNT FB NOS

1201 MAGNET REMOV ANT SEG FB

1202 NONMAG REMOV ANT SEG FB

1211 IRIDOTOMY W TRANSFIXION

1212 IRIDOTOMY NEC

1213 PROLAPSED IRIS EXCISION

1214 IRIDECTOMY NEC

1221 DX ASPIRAT-ANT CHAMBER

1222 IRIS BIOPSY

1229 ANT SEGMENT DX PROC NEC

1231 GONIOSYNECHIAE LYSIS

1232 ANT SYNECHIA LYSIS NEC

1233 POST SYNECHIAE LYSIS

1234 CORNEOVITREAL ADHESIOLYS

1235 COREOPLASTY

1239 IRIDOPLASTY NEC

1240 REMOV ANT SEGMNT LES NOS

1241 NONEXC DESTRUC IRIS LES

1242 EXCISION OF IRIS LESION

1243 NONEXC DESTR CIL BOD LES

1244 EXCISE CILIARY BODY LES

1251 GONIOPUNCTURE

1252 GONIOTOMY

1253 GONIOTOMY W GONIOPUNCTUR

1254 TRABECULOTOMY AB EXTERNO

1255 CYCLODIALYSIS

1259 FACILIT INTRAOC CIRC NEC

1261 TREPHIN SCLERA W IRIDECT

1262 THERMCAUT SCLER W IRIDEC

1263 IRIDENCLEISIS/IRIDOTASIS

1264 TRABECULECTOM AB EXTERNO

1265 SCLER FISTULIZ W IRIDECT

1266 POSTOP REVIS SCL FISTUL

1269 SCLER FISTULIZING OP NEC

1271 CYCLODIATHERMY

1272 CYCLOCRYOTHERAPY

1273 CYCLOPHOTOCOAGULATION

1274 CIL BODY DIMINUTION NOS

1279 GLAUCOMA PROCEDURE NEC

1281 SUTURE SCLERAL LACER

1282 SCLERAL FISTULA REPAIR

1283 REVIS ANT SEG OP WND NEC

1284 DESTRUCT SCLERAL LESION

1285 REPAIR STAPHYLOM W GRAFT

1286 REP SCLER STAPHYLOMA NEC

1287 GRAFT REINFORCE SCLERA

1288 SCLERA REINFORCEMENT NEC

1289 SCLERAL OPERATION NEC

1291 THERAPEUT EVAC ANT CHAMB

1292 ANTERIOR CHAMBER INJECT

1293 REMOV EPITHEL DOWNGROWTH

1297 IRIS OPERATION NEC

1298 CILIARY BODY OP NEC

1299 ANTERIOR CHAMBER OP NEC

1300 REMOVE FB LENS NOS

1301 MAGNET REMOVE FB LENS

1302 NONMAGNET REMOVE FB LENS

1311 TEMP-INF INTRCAP LENS EX

1319 INTRACAPSUL LENS EXT NEC

132 LINEAR EXTRACAP LENS EXT

133 SIMPL ASPIR LENS EXTRACT

1341 CATARAC PHACOEMULS/ASPIR

1342 POST CATARAC FRAG/ASPIR

1343 CATARACT FRAG/ASPIR NEC

1351 TEMP-INF XTRACAP LENS EX

1359 EXTRACAP LENS EXTRAC NEC

1361 EXTRACAP LENS EXTRAC NEC (stop in 1994)

1362 EXTRACAP LENS EXTRAC NEC (stop in 1994)

1363 EXTRACAP LENS EXTRAC NEC (stop in 1994)

1364 AFTER-CATAR DISCISSION

1365 AFTER-CATARACT EXCISION

1366 AFTER CATAR FRAGMNTATION

1369 CATARACT EXTRACTION NEC

1370 INSERT PSEUDOPHAKOS NOS

1371 INSERT LENS AT CATAR EXT

1372 SECONDARY INSERT LENS

138 IMPLANTED LENS REMOVAL

139 OTHER OPERATIONS ON LENS

1390 OPERATION ON LENS (not yet available)

1391 IMPL INTRAOC TELESC PROS (not yet available)

1400 REMOV POST SEGMNT FB NOS

1401 MAGNET REMOV POST SEG FB

1402 NONMAG REMOV POST SEG FB

1411 DIAGNOST VITREOUS ASPIR

1419 DX PROC POST SEG NEC

1421 CHORIORET LES DIATHERMY

1422 CHORIORETIN LES CRYOTHER

1426 CHORIORET LES RADIOTHER

1427 CHORIORET LES RAD IMPLAN

1429 CHORIORET LES DESTR NEC

1431 RETINAL TEAR DIATHERMY

1432 RETINAL TEAR CRYOTHERAPY

1439 RETINAL TEAR REPAIR NEC

1441 SCLERAL BUCKLE W IMPLANT

1449 SCLERAL BUCKLING NEC

1451 DETACH RETINA-DIATHERMY

1452 DETACH RETINA-CRYOTHERAP

1453 DETACH RETINA XENON COAG

1454 DETACH RETINA LASER COAG

1455 DETACH RET PHOTOCOAG NOS

1459 REPAIR RETINA DETACH NEC

146 REMOV PROS MAT POST SEG

1471 ANTERIOR REMOV VITREOUS

1472 VITREOUS REMOVAL NEC

1473 ANTERIOR MECHAN VITRECT

1474 MECH VITRECTOMY NEC

1475 VITREOUS SUBSTITUT INJEC

1479 VITREOUS OPERATION NEC

149 OTHER POST SEGMENT OPS

1501 EXTRAOC MUSC-TEND BIOPSY

1509 EXTRAOC MUSC DX PROC NEC

1511 ONE EXTRAOC MUS RECESS

1512 1 EXTRAOC MUSCL ADVANCE

1513 1 EXTRAOC MUSCL RESECT

1519 XTRAOC MUS OP/DETACH NEC

1521 LENGTHEN 1 EXTRAOC MUSC

1522 SHORTEN 1 EXTRAOC MUSC

1529 OP ON 1 EXTRAOC MUSC NEC

153 TEMP DETACH >1 XTROC MUS

154 OTH OP ON >L EXTRAOC MUS

155 EXTRAOCUL MUS TRANSPOSIT

156 REVIS EXTRAOC MUSC SURG

157 EXTRAOC MUSC INJ REPAIR

159 OTH EXTRAOC MUS-TEND OP

1601 ORBITOTOMY W BONE FLAP

1602 ORBITOTOMY W IMPLANT

1609 ORBITOTOMY NEC

161 REMOVE PENETRAT FB EYE

1622 DIAGNOSTIC ASP OF ORBIT

1623 EYEBALL & ORBIT BIOPSY

1629 EYEBAL/ORBIT DX PROC NEC

1631 EYE EVISC W SYNCH IMPLAN

1639 EYEBALL EVISCERATION NEC

1641 EYE ENUC/IMPLAN/MUSC ATT

1642 EYE ENUC W IMPLANT NEC

1649 EYEBALL ENUCLEATION NEC

1651 RADICAL ORBITOMAXILLECT

1652 ORBIT EXENT W BONE REMOV

1659 ORBITAL EXENTERATION NEC

1661 2NDRY OCULAR IMP INSERT

1662 REVIS/REINSERT OCUL IMP

1663 REVIS ENUC SOCKET W GRFT

1664 ENUC SOCKET REVIS NEC

1665 2NDRY EXENT CAVITY GRAFT

1666 REVIS EXENTER CAVITY NEC

1669 2ND OP POST EYE REM NEC

1671 REMOVE OCULAR IMPLANT

1672 REMOVE ORBITAL IMPLANT

1681 REPAIR OF ORBITAL WOUND

1682 REPAIR EYEBALL RUPTURE

1689 EYE/ORBIT INJ REPAIR NEC

1692 EXCISION ORBITAL LESION

1693 EXCISION EYE LESION NOS

1698 OPERATION ON ORBIT NEC

1699 OPERATION ON EYEBALL NEC

1821 PREAURICULAR SINUS EXCIS

1831 RAD EXCIS EXT EAR LES

1839 EXCIS EXTERNAL EAR NEC

185 CORRECTION PROMINENT EAR

186 EXT AUDIT CANAL RECONSTR

1871 CONSTRUCTION EAR AURICLE

1872 REATTACH AMPUTATED EAR

1879 PLASTIC REP EXT EAR NEC

189 OTHER EXT EAR OPERATIONS

190 STAPES MOBILIZATION

1911 STAPEDECT W REPLAC INCUS

1919 STAPEDECTOMY NEC

1921 REV STAPDEC W INCUS REPL

1929 STAPEDECTOMY REVIS NEC

193 OSSICULAR CHAIN OP NEC

194 MYRINGOPLASTY

1952 TYPE 2 TYMPANOPLASTY

1953 TYPE 3 TYMPANOPLASTY

1954 TYPE 4 TYMPANOPLASTY

1955 TYPE 5 TYMPANOPLASTY

196 TYMPANOPLASTY REVISION

199 MIDDLE EAR REPAIR NEC

2001 MYRINGOTOMY W INTUBATION

2021 MASTOID INCISION

2022 PETRUS PYRAM AIR CEL INC

2023 MIDDLE EAR INCISION

2032 MID & INNER EAR BIOPSY

2039 MID/IN EAR DX PROC NEC

2041 SIMPLE MASTOIDECTOMY

2042 RADICAL MASTOIDECTOMY

2049 MASTOIDECTOMY NEC

2051 EXCISE MIDDLE EAR LESION

2059 MIDDLE EAR EXCISION NEC

2061 INNER EAR FENESTRATION

2062 REVIS INNER EAR FENESTRA

2071 ENDOLYMPHATIC SHUNT

2072 INNER EAR INJECTION

2079 INC/EXC/DESTR IN EAR NEC

2091 TYMPANOSYMPATHECTOMY

2092 MASTOIDECTOMY REVISION

2093 REPAIR OVAL/ROUND WINDOW

2095 ELECMAG HEAR DEV IMPLANT

2096 IMPLT COCHLEAR PROST NOS

2097 IMP/REP SCHAN COCH PROS

2098 IMP/REP MCHAN COCHL PROS

2099 MID-INNER EAR OPS NEC

2104 ETHMOID ART LIGAT-EPIST

2105 MAX ART LIG FOR EPISTAX

2106 EXT CAROT ART LIG-EPIST

2107 NASAL SEPT GRFT-EPISTAX

2109 EPISTAXIS CONTROL NEC

214 RESECTION OF NOSE

215 SUBMUC NASAL SEPT RESECT

2161 DIATHER/CRYO TURBINECTOM

2162 TURBINATE FRACTURE

2169 TURBINECTOMY NEC

2172 OPEN REDUCTION NASAL FX

2182 NASAL FISTULA CLOSURE

2183 TOT NASAL RECONSTRUCTION

2184 REVISION RHINOPLASTY

2185 AUGMENTATION RHINOPLASTY

2186 LIMITED RHINOPLASTY

2187 RHINOPLASTY NEC

2188 SEPTOPLASTY NEC

2189 NASAL REPAIR NEC

2199 NASAL OPERATION NEC

2212 OPEN BIOPSY NASAL SINUS

2231 RADICAL MAXILLARY ANTROT

2239 EXT MAXILLARY ANTROT NEC

2241 FRONTAL SINUSOTOMY

2242 FRONTAL SINUSECTOMY

2250 SINUSOTOMY NOS

2251 ETHMOIDOTOMY

2252 SPHENOIDOTOMY

2253 MULTIPLE SINUS INCISION

2260 SINUSECTOMY NOS

2261 C-LUC EXC MAX SINUS LES

2262 EXC MAX SINUS LESION NEC

2263 ETHMOIDECTOMY

2264 SPHENOIDECTOMY

2271 NASAL SINUS FISTULA CLOS

2279 NASAL SINUS REPAIR NEC

229 OTHER NASAL SINUS OPS

242 GINGIVOPLASTY

244 EXC OF DENTAL LES OF JAW

245 ALVEOLOPLASTY

2502 OPEN BIOPSY OF TONGUE

251 DESTRUCTION TONGUE LES

252 PARTIAL GLOSSECTOMY

253 COMPLETE GLOSSECTOMY

254 RADICAL GLOSSECTOMY

2559 REPAIR OF TONGUE NEC

2594 OTHER GLOSSOTOMY

2599 TONGUE OPERATION NEC

2612 OPEN BX SALIV GLAND/DUCT

2621 SALIVARY CYST MARSUPIAL

2629 SALIV LESION EXCIS NEC

2630 SIALOADENECTOMY NOS

2631 PARTIAL SIALOADENECTOMY

2632 COMPLETE SIALOADENECTOMY

2641 SUTURE OF SALIV GLND LAC

2642 SALIVARY FISTULA CLOSURE

2649 SALIVARY REPAIR NEC

2699 SALIVARY OPERATION NEC

270 DRAIN FACE & MOUTH FLOOR

271 INCISION OF PALATE

2721 BONY PALATE BIOPSY

2722 UVULA AND SOFT PALATE BX

2731 LOC EXC BONY PALATE LES

2732 WIDE EXC BONY PALATE LES

2742 WIDE EXCISION OF LIP LES

2743 EXCISION OF LIP LES NEC

2749 EXCISION OF MOUTH NEC

2753 CLOSURE OF MOUTH FISTULA

2754 REPAIR OF CLEFT LIP

2755 FULL-THICK GRFT TO MOUTH

2756 SKIN GRAFT TO MOUTH NEC

2757 PEDICLE ATTACH TO MOUTH

2759 MOUTH REPAIR NEC

2761 SUTURE OF PALATE LACERAT

2762 CLEFT PALATE CORRECTION

2763 REVIS CLEFT PALAT REPAIR

2769 OTH PLASTIC REPAIR PALAT

2771 INCISION OF UVULA

2772 EXCISION OF UVULA

2773 REPAIR OF UVULA

2779 OTHER UVULA OPERATIONS

2792 MOUTH INCISION NOS

2799 ORAL CAVITY OPS NEC

280 PERITONSILLAR I & D

2811 TONSIL&ADENOID BIOPSY

2819 TONSIL&ADENOID DX OP NEC

282 TONSILLECTOMY

283 TONSILLECTOMY/ADENOIDEC

284 EXCISION OF TONSIL TAG

285 EXCISION LINGUAL TONSIL

286 ADENOIDECTOMY

287 HEMORR CONTRL POST T & A

2891 INCIS TO REMOV TONSIL FB

2892 EXCIS TONSIL/ADENOID LES

2899 TONSIL/ADENOID OPS NEC

290 PHARYNGOTOMY

292 EXC BRANCHIAL CLEFT CYST

293 EXC BRANCHIAL CLEFT CYST (stop in 1994)

2931 CRICOPHARYNGEAL MYOTOMY

2932 PHARYNGEAL DIVERTICULEC

2933 PHARYNGECTOMY

2939 EXCIS/DESTR LES PHAR NEC

294 PLASTIC OP ON PHARYNX

2951 SUTURE OF PHARYNGEAL LAC

2952 CLOS BRANCH CLEFT FISTUL

2953 CLOS PHARYNX FISTULA NEC

2954 LYSIS PHARYNGEAL ADHES

2959 PHARYNGEAL REPAIR NEC

2992 DIVIS GLOSSOPHARYNG NERV

2999 PHARYNGEAL OPERATION NEC

3001 LARYNX CYST MARSUPIALIZ

3009 DESTRUCT LARYNX LES NEC

301 HEMILARYNGECTOMY

3021 EPIGLOTTIDECTOMY

3022 VOCAL CORDECTOMY

3029 OTHER PART LARYNGECTOMY

303 COMPLETE LARYNGECTOMY

304 RADICAL LARYNGECTOMY

3121 MEDIASTINAL TRACHEOSTOMY

3129 OTHER PERM TRACHEOSTOMY

313 INCIS LARYNX TRACHEA NEC

3145 OPN BX LARYNX OR TRACHEA

315 LOCAL DESTRUC TRACH LES

3161 SUTURE OF LARYNGEAL LAC

3162 LARYNGEAL FISTULA CLOS

3163 LARYNGOSTOMY REVISION

3164 LARYNGEAL FX REPAIR

3169 OTHER LARYNGEAL REPAIR

3171 SUTURE OF TRACHEAL LACER

3172 CLOSURE OF TRACHEOSTOMY

3173 TRACHEA FISTULA CLOS NEC

3174 REVISION OF TRACHEOSTOMY

3175 TRACHEAL RECONSTRUCTION

3179 OTHER TRACHEAL REPAIR

3191 LARYNGEAL NERV DIVISION

3192 LYSIS TRACH/LARYNX ADHES

3198 OTH LARYNGEAL OPERATION

3199 OTHER TRACHEAL OPERATION

320 OTHER TRACHEAL OPERATION

3209 OTHER DESTRUC BRONC LES

321 OTHER BRONCHIAL EXCISION

3221 EMPHYSEMA BLEB PLICATION

3222 LUNG VOL REDUCTION SURG

3223 OPEN ABLTN LUNG LES/TISS (not yet available)

3224 PERC ABLTN LUNG LES/TISS (not yet available)

3225 THOR ABLTN LUNG LES/TISS (not yet available)

3226 ABLTN LUNG TISS NEC/NOS (not yet available)

3229 DESTROY LOC LUNG LES NEC

323 SEGMENTAL LUNG RESECTION

324 LOBECTOMY OF LUNG

325 COMPLETE PNEUMONECTOMY

326 RAD DISSEC THORAC STRUCT

329 OTHER EXCISION OF LUNG

330 INCISION OF BRONCHUS

331 INCISION OF LUNG

3325 OPEN BRONCHIAL BIOPSY

3327 CLOS ENDOSCOPIC LUNG BX

3328 OPEN LUNG BIOPSY

3329 BRONCH/LUNG DX PROC NEC

3334 THORACOPLASTY

3339 SURG COLLAPS OF LUNG NEC

3341 BRONCHIAL LACERAT SUTURE

3342 BRONCHIAL FISTULA CLOS

3343 LUNG LACERATION CLOSURE

3348 BRONCHIAL REPAIR NEC

3349 LUNG REPAIR NEC

335 LUNG REPAIR NEC (stop in 1997)

3350 LUNG TRANSPLANT NOS

3351 UNILAT LUNG TRANSPLANT

3352 BILAT LUNG TRANSPLANT

336 COMB HEART/LUNG TRANSPLA

3392 BRONCHIAL LIGATION

3393 PUNCTURE OF LUNG

3398 BRONCHIAL OPERATION NEC

3399 LUNG OPERATION NEC

3402 EXPLORATORY THORACOTOMY

3403 REOPEN THORACOTOMY SITE

341 INCISION OF MEDIASTINUM

3421 TRANSPLEURA THORACOSCOPY

3422 MEDIASTINOSCOPY

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

3459 OTHER PLEURAL EXCISION

346 SCARIFICATION OF PLEURA

3473 CLOS THORACIC FISTUL NEC

3474 PECTUS DEFORMITY REPAIR

3479 OTHER CHEST WALL REPAIR

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

3500 CLOSED VALVOTOMY NOS

3501 CLOSED AORTIC VALVOTOMY

3502 CLOSED MITRAL VALVOTOMY

3503 CLOSED PULMON VALVOTOMY

3504 CLOSED TRICUSP VALVOTOMY

3510 OPEN VALVULOPLASTY NOS

3511 OPN AORTIC VALVULOPLASTY

3512 OPN MITRAL VALVULOPLASTY

3513 OPN PULMON VALVULOPLASTY

3514 OPN TRICUS VALVULOPLASTY

3520 REPLACE HEART VALVE NOS

3521 REPLACE AORT VALV-TISSUE

3522 REPLACE AORTIC VALVE NEC

3523 REPLACE MITR VALV-TISSUE

3524 REPLACE MITRAL VALVE NEC

3525 REPLACE PULM VALV-TISSUE

3526 REPLACE PULMON VALVE NEC

3527 REPLACE TRIC VALV-TISSUE

3528 REPLACE TRICUSP VALV NEC

3531 PAPILLARY MUSCLE OPS

3532 CHORDAE TENDINEAE OPS

3533 ANNULOPLASTY

3534 INFUNDIBULECTOMY

3535 TRABECUL CARNEAE CORD OP

3539 TISS ADJ TO VALV OPS NEC

3542 CREATE SEPTAL DEFECT

3550 PROSTH REP HRT SEPTA NOS

3551 PROS REP ATRIAL DEF-OPN

3552 PROS REPAIR ATRIA DEF-CL

3553 PROST REPAIR VENTRIC DEF

3554 PROS REP ENDOCAR CUSHION

3555 PROS REP VENTRC DEF-CLOS (not yet available)

3560 GRFT REPAIR HRT SEPT NOS

3561 GRAFT REPAIR ATRIAL DEF

3562 GRAFT REPAIR VENTRIC DEF

3563 GRFT REP ENDOCAR CUSHION

3570 HEART SEPTA REPAIR NOS

3571 ATRIA SEPTA DEF REP NEC

3572 VENTR SEPTA DEF REP NEC

3573 ENDOCAR CUSHION REP NEC

3581 TOT REPAIR TETRAL FALLOT

3582 TOTAL REPAIR OF TAPVC

3583 TOT REP TRUNCUS ARTERIOS

3584 TOT COR TRANSPOS GRT VES

3591 INTERAT VEN RETRN TRANSP

3592 CONDUIT RT VENT-PUL ART

3593 CONDUIT LEFT VENTR-AORTA

3594 CONDUIT ARTIUM-PULM ART

3595 HEART REPAIR REVISION

3596 PERC HEART VALVULOPLASTY

3598 OTHER HEART SEPTA OPS

3599 OTHER HEART VALVE OPS

3600 OTHER HEART VALVE OPS

3601 PTCA-1 VES/ATH W/O AGENT

3602 PTCA-1 VES/ATH W AGENT

3603 OPEN CORONRY ANGIOPLASTY

3605 PTCA-MULTIPLE VESSEL/ATH

3609 REM OF COR ART OBSTR NEC

3610 AORTOCORONARY BYPASS NOS

3611 AORTOCOR BYPAS-1 COR ART

3612 AORTOCOR BYPAS-2 COR ART (change in 2005)

3613 AORTOCOR BYPAS-3 COR ART (change in 2005)

3614 AORTCOR BYPAS-4+ COR ART (stop in 2005)

3615 1 INT MAM-COR ART BYPASS

3616 2 INT MAM-COR ART BYPASS

3617 ABD-CORON ARTERY BYPASS

3619 HRT REVAS BYPS ANAS NEC

362 ARTERIAL IMPLANT REVASC

363 ARTERIAL IMPLANT REVASC (stop in 2002)

3631 OPEN CHEST TRANS REVASC (from 2002)

3632 OTH TRANSMYO REVASCULAR (from

2002)

3633 ENDO TRANSMYO REVASCULAR (not yet available)

3634 PERC TRANSMYO REVASCULAR (not yet available)

3639 OTH HEART REVASCULAR

3691 CORON VESS ANEURYSM REP

3699 HEART VESSEL OP NEC

3710 INCISION OF HEART NOS

3711 CARDIOTOMY

3712 PERICARDIOTOMY

3724 PERICARDIAL BIOPSY

3731 PERICARDIECTOMY

3732 HEART ANEURYSM EXCISION

3733 EXC/DEST HRT LESION OPEN (change in 2005)

3734 EXC/DEST HRT LES OTHER (change in 2005)

3735 PARTIAL VENTRICULECTOMY

374 HEART & PERICARD REPAIR

3741 IMPL CARDIAC SUPPORT DEV (not yet available)

3749 HEART/PERICARD REPR NEC (not yet available)

375 HEART & PERICARD REPAIR (stop in 2005)

3751 HEART TRANSPLANTATION (from 2005)

3752 IMPLANT TOT REP HRT SYS (from 2005)

3753 REPL/REP THORAC UNIT HRT (from 2005)

3754 REPL/REP OTH TOT HRT SYS (from 2005)

3761 PULSATION BALLOON IMPLAN

3762 IMPLANT HRT ASST SYS NEC (change in 2005)

3763 REPLACE HRT ASSIST SYST (change in 2005)

3764 REMOVE HEART ASSIST SYS

3765 IMP EXT PUL HRT ASST SYS

3766 IMP IMP PUL HRT ASST SYS

3767 IMP CARDIOMYOSTIMUL SYS (from 2002)

3774 INT OR REPL LEAD EPICAR

3775 REVISION OF LEAD

3776 REPL TV ATRI-VENT LEAD

3777 REMOVAL OF LEAD W/O REPL

3779 REVIS OR RELOCATE POCKET

3780 INT OR REPL PERM PACEMKR

3785 REPL PACEM W 1-CHAM, NON

3786 REPL PACEM 1-CHAM, RATE

3787 REPL PACEM W DUAL-CHAM

3789 REVISE OR REMOVE PACEMAK

3790 INS LEFT ATR APPEND DEV (from 2005)

3791 OPN CHEST CARDIAC MASSAG

3794 IMPLT/REPL CARDDEFIB TOT

3795 IMPLT CARDIODEFIB LEADS

3796 IMPLT CARDIODEFIB GENATR

3797 REPL CARDIODEFIB LEADS

3798 REPL CARDIODEFIB GENRATR

3799 OTHER HEART/PERICARD OPS

3800 INCISION OF VESSEL NOS

3801 INTRACRAN VESSEL INCIS

3802 HEAD/NECK VES INCIS NEC

3803 UPPER LIMB VESSEL INCIS

3804 INCISION OF AORTA

3805 THORACIC VESSEL INC NEC

3806 ABDOMEN ARTERY INCISION

3807 ABDOMINAL VEIN INCISION

3808 LOWER LIMB ARTERY INCIS

3809 LOWER LIMB VEIN INCISION

3810 ENDARTERECTOMY NOS

3811 INTRACRAN ENDARTERECTOMY

3812 HEAD & NECK ENDARTER NEC

3813 UPPER LIMB ENDARTERECTOM

3814 ENDARTERECTOMY OF AORTA

3815 THORACIC ENDARTERECTOMY

3816 ABDOMINAL ENDARTERECTOMY

3818 LOWER LIMB ENDARTERECT

3821 BLOOD VESSEL BIOPSY

3829 BLOOD VESSEL DX PROC NEC

3830 VESSEL RESECT/ANAST NOS

3831 INTRACRAN VES RESEC-ANAS

3832 HEAD/NECK VES RESEC-ANAS

3833 ARM VESSEL RESECT/ANAST

3834 AORTA RESECTION & ANAST

3835 THOR VESSEL RESECT/ANAST

3836 ABD VESSEL RESECT/ANAST

3837 ABD VEIN RESECT & ANAST

3838 LEG ARTERY RESECT/ANAST

3839 LEG VEIN RESECT/ANASTOM

3840 VESSEL RESECT/REPLAC NOS

3841 INTRACRAN VES RESEC-REPL

3842 HEAD/NECK VES RESEC-REPL

3843 ARM VES RESECT W REPLACE

3844 RESECT ABDM AORTA W REPL

3845 RESECT THORAC VES W REPL

3846 ABD ARTERY RESEC W REPLA

3847 ABD VEIN RESECT W REPLAC

3848 LEG ARTERY RESEC W REPLA

3849 LEG VEIN RESECT W REPLAC

3850 VARICOSE V LIG-STRIP NOS

3851 INTCRAN VAR V LIG-STRIP

3852 HEAD/NECK VAR V LIG-STR

3853 ARM VARICOSE V LIG-STRIP

3855 THORAC VAR V LIG-STRIP

3857 ABD VARICOS V LIGA-STRIP

3859 LEG VARICOS V LIGA-STRIP

3860 EXCISION OF VESSEL NOS

3861 INTRACRAN VESSEL EXCIS

3862 HEAD/NECK VESSEL EXCIS

3863 ARM VESSEL EXCISION

3864 EXCISION OF AORTA

3865 THORACIC VESSEL EXCISION

3866 ABDOMINAL ARTERY EXCIS

3867 ABDOMINAL VEIN EXCISION

3868 LEG ARTERY EXCISION

3869 LEG VEIN EXCISION

387 INTERRUPTION VENA CAVA

3880 SURG VESSEL OCCLUS NEC

3881 OCCLUS INTRACRAN VES NEC

3882 OCCLUS HEAD/NECK VES NEC

3883 OCCLUDE ARM VESSEL NEC

3884 OCCLUDE AORTA NEC

3885 OCCLUDE THORACIC VES NEC

3886 OCCLUDE ABD ARTERY NEC

3887 OCCLUDE ABD VEIN NEC

3888 OCCLUDE LEG ARTERY NEC

3889 OCCLUDE LEG VEIN NEC

390 SYSTEMIC-PULM ART SHUNT

391 INTRA-ABD VENOUS SHUNT

3921 CAVAL-PULMON ART ANASTOM

3922 AORTA-SUBCLV-CAROT BYPAS

3923 INTRATHORACIC SHUNT NEC

3924 AORTA-RENAL BYPASS

3925 AORTA-ILIAC-FEMOR BYPASS

3926 INTRA-ABDOMIN SHUNT NEC

3927 DIALYSIS ARTERIOVENOSTOM

3928 EXTRACRAN-INTRACR BYPASS

3929 VASC SHUNT & BYPASS NEC

3930 SUTURE OF VESSEL NOS

3931 SUTURE OF ARTERY

3932 SUTURE OF VEIN

3941 POSTOP VASC OP HEM CONTR

3942 REVIS REN DIALYSIS SHUNT

3943 REMOV REN DIALYSIS SHUNT

3949 VASC PROC REVISION NEC

3950 ANGIO/ATH NON-CORO VES (change in 2005)

3951 CLIPPING OF ANEURYSM

3952 ANEURYSM REPAIR NEC

3953 ARTERIOVEN FISTULA REP

3954 RE-ENTRY OPERATION

3955 REIMPLAN ABERR RENAL VES

3956 REPAIR VESS W TIS PATCH

3957 REP VESS W SYNTH PATCH

3958 REPAIR VESS W PATCH NOS

3959 REPAIR OF VESSEL NEC

397 PER CARDIOPULMON BYPASS (stop in 1997)

3971 ENDO IMPL GRFT ABD AORTA (from 2002)

3972 ENDOVASC REPAIR HEAD VES (from 2005)

3973 ENDO IMP GRFT THOR AORTA (not yet available)

3974 ENDO REM OBS HD/NECK VES (not yet available)

3979 ENDO REPAIR OTHER VESSEL

398 VASCULAR BODY OPERATIONS

3991 FREEING OF VESSEL

3992 VEIN INJECT-SCLEROS AGNT

3993 INSERT VES-TO-VES CANNUL

3994 REPLAC VES-TO-VES CANNUL

3998 HEMORRHAGE CONTROL NOS

3999 VESSEL OPERATION NEC

400 INCIS LYMPHATIC STRUCTUR

4011 LYMPHATIC STRUCT BIOPSY

4019 LYMPHATIC DIAG PROC NEC

4021 EXCIS DEEP CERVICAL NODE

4022 EXCISE INT MAMMARY NODE

4023 EXCISE AXILLARY NODE

4024 EXCISE INGUINAL NODE

4029 SIMP EXC LYMPH STRUC NEC

403 REGIONAL LYMPH NODE EXC

4040 RAD NECK DISSECTION NOS

4041 UNILAT RAD NECK DISSECT

4042 BILAT RAD NECK DISSECT

4050 RAD NODE DISSECTION NOS

4051 RAD DISSEC AXILLARY NODE

4052 RAD DISSEC PERIAORT NODE

4053 RAD DISSECT ILIAC NODES

4054 RADICAL GROIN DISSECTION

4059 RAD NODE DISSECTION NEC

4061 THORAC DUCT CANNULATION

4062 THORACIC DUCT FISTULIZAT

4063 CLOSE THORACIC DUCT FIST

4064 LIGATE THORACIC DUCT

4069 THORACIC DUCT OP NEC

409 LYMPH STRUCTURE OP NEC

410 BONE MARROW TRNSPLNT

4100 BONE MARROW TRNSPLNT NOS

4101 AUTO BONE MT W/O PURG (change in 2002)

4102 ALO BONE MARROW TRNSPLNT

4103 ALLOGRFT BONE MARROW NOS

4104 AUTO HEM STEM CT W/O PUR (change in 2002)

4105 ALLO HEM STEM CT W/O PUR (change in 2002)

4106 CORD BLD STEM CELL TRANS

4107 AUTO HEM STEM CT W PURG (from 2002)

4108 ALLO HEM STEM CT W PURG (from 2002)

4109 AUTO BONE MT W PURGING (from 2002)

412 SPLENOTOMY

4133 OPEN SPLEEN BIOPSY

4141 SPLENIC CYST MARSUPIAL

4142 EXC SPLENIC LESION/TISS

4143 PARTIAL SPLENECTOMY

415 TOTAL SPLENECTOMY

4193 EXC OF ACCESSORY SPLEEN

4194 SPLEEN TRANSPLANTATION

4195 REPAIR OF SPLEEN

4199 SPLEEN OPERATION NEC

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

4239 DESTRUCT ESOPHAG LES NEC

4240 ESOPHAGECTOMY NOS

4241 PARTIAL ESOPHAGECTOMY

4242 TOTAL ESOPHAGECTOMY

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

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

427 ESOPHAGOMYOTOMY

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

4291 LIGATION ESOPH VARIX

430 GASTROTOMY

431 GASTROTOMY

432 OTHER GASTROSTOMY

433 PYLOROMYOTOMY

4342 LOCAL GASTR EXCISION NEC

4349 LOCAL GASTR DESTRUCT NEC

435 PROXIMAL GASTRECTOMY

436 DISTAL GASTRECTOMY

437 PART GASTREC W JEJ ANAST

4381 PART GAST W JEJ TRANSPOS

4389 PARTIAL GASTRECTOMY NEC

4391 TOT GAST W INTES INTERPO

4399 TOTAL GASTRECTOMY NEC

4400 VAGOTOMY NOS

4401 TRUNCAL VAGOTOMY

4402 HIGHLY SELECT VAGOTOMY

4403 SELECTIVE VAGOTOMY NEC

4411 TRANSABDOMIN GASTROSCOPY

4415 OPEN GASTRIC BIOPSY

442 GASTRIC DIAGNOS PROC NEC

4421 DILATE PYLORUS, INCISION

4429 OTHER PYLOROPLASTY

4431 HIGH GASTRIC BYPASS

4432 PERCU GASTROJEJUNOSTOMY (from 2002)

4438 LAP GASTROENTEROSTOMY (from 2005)

4439 GASTROENTEROSTOMY NEC

4440 SUTURE PEPTIC ULCER NOS

4441 SUT GASTRIC ULCER SITE

4442 SUTURE DUODEN ULCER SITE

445 REVISION GASTRIC ANASTOM

4461 SUTURE GASTRIC LACERAT

4463 CLOSE GASTRIC FISTUL NEC

4464 GASTROPEXY

4465 ESOPHAGOGASTROPLASTY

4466 CREAT ESOPHAGASTR SPHINC

4467 LAP CREAT ESOPH SPHINCT (from 2005)

4468 LAPAROSCOP GASTROPLSTY (from 2005)

4469 GASTRIC REPAIR NEC

4491 LIGATE GASTRIC VARICES

4492 INTRAOP GASTRIC MANIPUL

4495 LAP GASTRIC RESTRIC PROC (from 2005)

4496 LAP REV GAST RESTRI PROC (from 2005)

4497 LAP REM GAST RESTRIC DEV (from 2005)

4498 ADJUST GAST RESTRICT DEV (from 2005)

4499 GASTRIC OPERATION NEC

4500 INTESTINAL INCISION NOS

4501 DUODENAL INCISION

4502 SMALL BOWEL INCISION NEC

4503 LARGE BOWEL INCISION

4511 TRANSAB SM BOWEL ENDOSC

4515 OPEN SMALL BOWEL BIOPSY

4521 TRANSAB LG BOWEL ENDOSC

4526 OPEN LARGE BOWEL BIOPSY

4531 OTH EXCISE DUODENUM LES

4532 DESTRUCT DUODEN LES NEC

4533 LOCAL EXCIS SM BOWEL NEC

4534 DESTR SM BOWEL LES NEC

4541 EXCISE LG INTESTINE LES

4549 DESTRUC LG BOWEL LES NEC

4550 INTEST SEG ISOLAT NOS

4551 SM BOWEL SEGMENT ISOLAT

4552 LG BOWEL SEGMENT ISOLAT

4561 MULT SEG SM BOWEL EXCIS

4562 PART SM BOWEL RESECT NEC

4563 TOTAL REMOVAL SM BOWEL

4571 MULT SEG LG BOWEL EXCIS

4572 CECECTOMY

4573 RIGHT HEMICOLECTOMY

4574 TRANSVERSE COLON RESECT

4575 LEFT HEMICOLECTOMY

4576 SIGMOIDECTOMY

4579 PART LG BOWEL EXCIS NEC

458 TOT INTRA-ABD COLECTOMY

4590 INTESTINAL ANASTOM NOS

4591 SM-TO-SM BOWEL ANASTOM

4592 SM BOWEL-RECT STUMP ANAS

4593 SMALL-TO-LARGE BOWEL NEC

4594 LG-TO-LG BOWEL ANASTOM

4595 ANAL ANASTOMOSIS

4601 SM BOWEL EXTERIORIZATION

4602 RESECT EXT SEG SM BOWEL

4603 LG BOWEL EXTERIORIZATION

4604 RESECT EXT SEG LG BOWEL

4610 COLOSTOMY NOS

4611 TEMPORARY COLOSTOMY

4612 TEMPORARY COLOSTOMY (stop in 1994)

4613 PERMANENT COLOSTOMY

4620 ILEOSTOMY NOS

4621 TEMPORARY ILEOSTOMY

4622 CONTINENT ILEOSTOMY

4623 PERMANENT ILEOSTOMY NEC

4640 INTEST STOMA REVIS NOS

4641 SM BOWEL STOMA REVISION

4642 PERICOLOST HERNIA REPAIR

4643 LG BOWEL STOMA REVIS NEC

4650 INTEST STOMA CLOSURE NOS

4651 SM BOWEL STOMA CLOSURE

4652 LG BOWEL STOMA CLOSURE

4660 INTESTINAL FIXATION NOS

4661 SM BOWEL-ABD WALL FIXAT

4662 SMALL BOWEL FIXATION NEC

4663 LG BOWEL-ABD WALL FIXAT

4664 LARGE BOWEL FIXATION NEC

4671 DUODENAL LACERAT SUTURE

4672 DUODENAL FISTULA CLOSURE

4673 SMALL BOWEL SUTURE NEC

4674 CLOSE SM BOWEL FIST NEC

4675 SUTURE LG BOWEL LACERAT

4676 CLOSE LG BOWEL FISTULA

4679 REPAIR OF INTESTINE NEC

4680 INTRA-AB BOWEL MANIP NOS

4681 INTRA-ABD SM BOWEL MANIP

4682 INTRA-ABD LG BOWEL MANIP

4691 MYOTOMY OF SIGMOID COLON

4692 MYOTOMY OF COLON NEC

4693 REVISE SM BOWEL ANASTOM

4694 REVISE LG BOWEL ANASTOM

4697 TRANSPLANT OF INTESTINE (from 2002)

4699 INTESTINAL OP NEC

470 INTESTINAL OP NEC (stop in 1999)

4701 LAP APPENDECTOMY (from 1999)

4709 OTHER APPENDECTOMY (from 1999)

471 OTHER APPENDECTOMY (stop in 1999)

4711 LAP INCID APPENDECTOMY (from 1999)

4719 OTHER INCID APPENDECTOMY (from 1999)

472 DRAIN APPENDICEAL ABSC

4791 APPENDICOSTOMY

4792 CLOSE APPENDICEAL FISTUL

4799 APPENDICEAL OPS NEC

480 PROCTOTOMY

481 PROCTOSTOMY

4821 TRANSAB PROCTOSIGMOIDOSC

4825 OPEN RECTAL BIOPSY

4835 LOCAL EXCIS RECTAL LES

4841 SOAVE SUBMUC RECT RESECT

4849 PULL-THRU RECT RESEC NEC

485 ABD-PERINEAL RECT RESECT

4861 TRANSSAC RECTOSIGMOIDECT

4862 ANT RECT RESECT W COLOST

4863 ANTERIOR RECT RESECT NEC

4864 POSTERIOR RECT RESECTION

4865 DUHAMEL RECTAL RESECTION

4866 DUHAMEL RECTAL RESECTION

4869 RECTAL RESECTION NEC

4871 SUTURE OF RECTAL LACER

4872 CLOSURE OF PROCTOSTOMY

4873 CLOSE RECTAL FIST NEC

4874 RECTORECTOSTOMY

4875 ABDOMINAL PROCTOPEXY

4876 PROCTOPEXY NEC

4879 REPAIR OF RECTUM NEC

4881 PERIRECTAL INCISION

4882 PERIRECTAL EXCISION

4891 INCIS RECTAL STRICTURE

4892 ANORECTAL MYOMECTOMY

4893 REPAIR PERIRECT FISTULA

4899 RECTAL PERIRECT OP NEC

4901 INCIS PERIANAL ABSCESS

4902 PERIANAL INCISION NEC

4904 PERIANAL EXCISION NEC

4911 ANAL FISTULOTOMY

4912 ANAL FISTULECTOMY

493 ANAL/PERIAN DX PROC NEC

4939 OTHER DESTRUC ANUS LES

4944 HEMORRHOID CRYOTHERAPY

4945 HEMORRHOID LIGATION

4946 HEMORRHOIDECTOMY

4949 HEMORRHOID PROCEDURE NEC

4951 LEFT LAT SPHINCTEROTOMY

4952 POST SPHINCTEROTOMY

4959 ANAL SPHINCTEROTOMY NEC

496 EXCISION OF ANUS

4971 SUTURE ANAL LACERATION

4972 ANAL CERCLAGE

4973 CLOSURE OF ANAL FISTULA

4974 GRACILIS MUSC TRANSPLAN

4975 IMPL OR REV ART ANAL SPH

4976 REMOV ART ANAL SPHINCTER (from 2005)

4979 ANAL SPHINCT REPAIR NEC (from 2005)

4991 INCISION OF ANAL SEPTUM

4992 INSERT SUBQ ANAL STIMUL

4993 ANAL INCISION NEC

4994 REDUCTION ANAL PROLAPSE

4995 CONTROL ANAL HEMORRHAGE

4999 ANAL OPERATION NEC

500 HEPATOTOMY

5012 OPEN LIVER BIOPSY

5019 HEPATIC DX PROC NEC

5021 MARSUPIALIZAT LIVER LES

5022 PARTIAL HEPATECTOMY

5023 OPN ABLTN LIVER LES/TISS (not yet available)

5024 PERC ABLTN LIVER LES/TIS (not yet available)

5025 LAP ABLTN LIVER LES/TISS (not yet available)

5026 ABLTN LIVER LES/TISS NEC (not yet available)

5029 DESTRUC HEPATIC LES NEC

503 HEPATIC LOBECTOMY

504 TOTAL HEPATECTOMY

5051 AUXILIARY LIVER TRANSPL

5059 LIVER TRANSPLANT NEC

5061 CLOSURE LIVER LACERAT

5069 LIVER REPAIR NEC

5102 TROCAR CHOLECYSTOSTOMY

5103 CHOLECYSTOSTOMY NEC

5104 CHOLECYSTOTOMY NEC

5113 OPEN BILIARY TRACT BX

5119 BILIARY TR DX PROC NEC

5121 OTH PART CHOLECYSTECTOMY (from 1999)

5122 CHOLECYSTECTOMY

5123 LAPAROSCOPIC CHOLECYSTEC (from 1994)

5124 LAP PART CHOLECYSTECTOMY (from 1999)

5131 GB-TO-HEPAT DUCT ANAST

5132 GB-TO-INTESTINE ANASTOM

5133 GB-TO-PANCREAS ANASTOM

5134 GB-TO-STOMACH ANASTOMOS

5135 GALLBLADDER ANASTOM NEC

5136 CHOLEDOCHOENTEROSTOMY

5137 HEPATIC DUCT-GI ANASTOM

5139 BILE DUCT ANASTOMOS NEC

5141 CDE FOR CALCULUS REMOV

5142 CDE FOR OBSTRUCTION NEC

5143 CHOLEDOCHOHEPAT INTUBAT

5149 INCIS OBSTR BILE DUC NEC

5151 COMMON DUCT EXPLORATION

5159 BILE DUCT INCISION NEC

5161 EXCIS CYST DUCT REMNANT

5162 EXCIS AMPULLA OF VATER

5163 COMMON DUCT EXCIS NEC

5169 BILE DUCT EXCISION NEC

5171 SIMPLE SUT-COMMON DUCT

5172 CHOLEDOCHOPLASTY

5179 BILE DUCT REPAIR NEC

5181 SPHINCTER OF ODDI DILAT

5182 PANCREAT SPHINCTEROTOM

5183 PANCREAT SPHINCTEROPLAS

5189 SPHINCT OF ODDI OP NEC

5191 REPAIR GB LACERATION

5192 CLOSURE CHOLECYSTOSTOMY

5193 CLOS BILIARY FISTUL NEC

5194 REVIS BILE TRACT ANASTOM

5195 REMOVE BILE DUCT PROSTH

5199 BILIARY TRACT OP NEC

5201 CATH DRAIN-PANCREAT CYST

5209 PANCREATOTOMY NEC

5212 OPEN PANCREATIC BIOPSY

5219 PANCREATIC DX PROC NEC

522 PANCREATIC DX PROC NEC

5222 OTHER DESTRU PANCREA LES

523 PANCREAT CYST MARSUPIALI

524 INT DRAIN PANCREAT CYST

5251 PROXIMAL PANCREATECTOMY

5252 DISTAL PANCREATECTOMY

5253 RAD SUBTOT PANCREATECTOM

5259 PARTIAL PANCREATECT NEC

526 TOTAL PANCREATECTOMY

527 RAD PANCREATICODUODENECT

5280 PANCREAT TRANSPLANT NOS

5281 REIMPLANT PANCREATIC TIS

5282 PANCREATIC HOMOTRANSPLAN

5283 PANCREATIC HETEROTRANSPL

5291 TRNSPLNT ISLETS LANG NOS

5292 CANNULATION PANCREA DUC

5295 PANCREATIC REPAIR NEC

5296 PANCREATIC ANASTOMOSIS

5299 PANCREATIC OPERATION NEC

5300 UNILAT ING HERN REP NOS

5301 REPAIR DIRECT ING HERNIA

5302 REPAIR INDIR ING HERNIA

5303 DIR ING HERNIA REP-GRAFT

5304 IND ING HERNIA REP-GRAFT

5305 ING HERNIA REP-GRAFT NOS

5310 BILAT ING HERNIA REP NOS

5311 BILAT DIR ING HERN REP

5312 BILAT IND ING HERN REP

5313 BIL DIR/IND ING HRN REP

5314 BIL DIR ING HRN REP-GRFT

5315 BIL IND ING HRN REP-GRFT

5316 BIL DIR/IND ING HERN-PRO

5317 BIL ING HRN REP-GRFT NOS

5321 UNIL FEMOR HRN REP-GRFT

5329 UNIL FEMOR HERN REP NEC

5331 BIL FEM HERN REPAIR-GRFT (change in 1997)

5339 BIL FEM HERN REPAIR NEC (change in 1997)

5341 UMBIL HERNIA REPAIR-GRFT

5349 UMBIL HERNIA REPAIR NEC

5351 INCISIONAL HERNIA REPAIR

5359 ABD WALL HERN REPAIR NEC

5361 INCIS HERNIA REPAIR-GRFT

5369 ABD HERN REPAIR-GRFT NEC

537 ABD REPAIR-DIAPHR HERNIA

5380 THOR REP-DIAPH HERN NOS

5381 DIAPHRAGMATIC PLICATION

5382 PARASTERN HERNIA REPAIR

539 OTHER HERNIA REPAIR

540 ABDOMINAL WALL INCISION

5411 EXPLORATORY LAPAROTOMY

5412 REOPEN RECENT LAP SITE

5419 LAPAROTOMY NEC

5421 LAPAROSCOPY

5422 ABDOMINAL WALL BIOPSY

5423 PERITONEAL BIOPSY

5429 ABD REGION DX PROC NEC

543 DESTRUCT ABD WALL LESION

544 DESTRUCT PERITONEAL TISS

545 DESTRUCT PERITONEAL TISS (stop in 1999)

5451 LAP PERITON ADHESIOLYSIS (from 1999)

5459 OTH PERITON ADHESIOLYSIS (from 1999)

5461 RECLOSE POST OP DISRUPT

5462 DELAYED CLOS ABD WOUND

5463 ABD WALL SUTURE NEC

5464 PERITONEAL SUTURE

5471 REPAIR OF GASTROSCHISIS

5472 ABDOMEN WALL REPAIR NEC

5473 PERITONEAL REPAIR NEC

5474 OMENTAL REPAIR NEC

5475 MESENTERIC REPAIR NEC

5492 REMOVE FB FROM PERITON

5493 CREATE CUTANPERITON FIST

5494 CREAT PERITONEOVAS SHUNT

5495 PERITONEAL INCISION

5501 NEPHROTOMY

5502 NEPHROSTOMY

5503 PERCU NEPHROSTM W/O FRAG

5504 PERCU NEPHROSTMY W FRAG

5511 PYELOTOMY

5512 PYELOSTOMY

5524 OPEN RENAL BIOPSY

5529 RENAL DIAGNOST PROC NEC

5531 RENAL LES MARSUPIALIZAT

5532 OPN ABLTN RENAL LES/TISS (not yet available)

5533 PERC ABLTN RENL LES/TISS (not yet available)

5534 LAP ABLTN RENAL LES/TISS (not yet available)

5535 ABLTN RENAL LES/TISS NEC (not yet available)

5539 LOC DESTR RENAL LES NEC

554 PARTIAL NEPHRECTOMY

5551 NEPHROURETERECTOMY

5552 SOLITARY KIDNEY NEPHRECT

5553 REJECTED KIDNEY NEPHRECT

5554 BILATERAL NEPHRECTOMY

5561 RENAL AUTOTRANSPLANT

5569 KIDNEY TRANSPLANT NEC

557 NEPHROPEXY

5581 SUTURE KIDNEY LACERATION

5582 CLOSE NEPHROST & PYELOST

5583 CLOSE RENAL FISTULA NEC

5584 REDUCE RENAL PEDICL TORS

5585 SYMPHYSIOTOMY

5586 RENAL ANASTOMOSIS

5587 CORRECT URETEROPELV JUNC

5589 RENAL REPAIR NEC

5591 RENAL DECAPSULATION

5597 IMPLANT MECHANIC KIDNEY

5598 REMOV MECHANICAL KIDNEY

5599 RENAL OPERATION NEC

560 TU REMOV URETER OBSTRUCT

561 URETERAL MEATOTOMY

562 URETEROTOMY

5634 OPEN URETERAL BIOPSY

5639 URETERAL DX PROCEDUR NEC

5640 URETERECTOMY NOS

5641 PARTIAL URETERECTOMY

5642 TOTAL URETERECTOMY

5651 FORM CUTAN ILEOURETEROST

5652 REVIS CUTAN ILEOURETEROS

5661 FORM CUTAN URETEROSTOMY

5662 REVIS CUTAN URETEROS NEC

5671 URIN DIVERSION TO BOWEL

5672 REVIS URETEROENTEROSTOMY

5673 NEPHROCYSTANASTOMOSI NOS

5674 URETERONEOCYSTOSTOMY

5675 TRANSURETEROURETEROSTOM Y

5679 URETERAL ANASTOMOSIS NEC

5681 INTRALUM URETE ADHESIOLY

5682 SUTURE URETERAL LACERAT

5683 URETEROSTOMY CLOSURE

5684 CLOSE URETER FISTULA NEC

5685 URETEROPEXY

5686 REMOVE URETERAL LIGATURE

5689 REPAIR OF URETER NEC

5692 IMPLANT URETERAL STIMUL

5693 REPLACE URETERAL STIMUL

5694 REMOVE URETERAL STIMULAT

5695 LIGATION OF URETER

5699 URETERAL OPERATION NEC

5712 CYSTOTOMY & ADHESIOLYSIS

5718 OTHER SUPRAPU CYSTOSTOMY

5719 CYSTOTOMY NEC

5721 VESICOSTOMY

5722 REVISE CLO VESICOSTOMY

5733 CLOS TRANSURETH BLADD BX

5734 OPEN BLADDER BIOPSY

5739 BLADDER DIAGNOS PROC NEC

5741 TU ADHESIOLYSIS BLADDER

5749 TU DESTRUC BLADD LES NEC

5751 EXCISION OF URACHUS

5759 BLADDER LES DESTRUCT NEC

576 PARTIAL CYSTECTOMY

5771 RADICAL CYSTECTOMY

5779 TOTAL CYSTECTOMY NEC

5781 SUTURE BLADDER LACERAT

5782 CYSTOSTOMY CLOSURE

5783 ENTEROVESICO FIST REPAIR

5784 VESIC FISTULA REPAIR NEC

5785 CYSTOURETHROPLASTY

5786 BLADDER EXSTROPHY REPAIR

5787 BLADDER RECONSTRUCTION

5788 BLADDER ANASTOMOSIS NEC

5789 BLADDER REPAIR NEC

5791 BLADDER SPHINCTEROTOMY

5793 CONTROL BLADD HEMORRHAGE

5796 IMPLANT BLADDER STIMULAT

5797 REPLACE BLADDER STIMULAT

5798 REMOVE BLADDER STIMULAT

5799 BLADDER OPERATION NEC

580 URETHROTOMY

581 URETHRAL MEATOTOMY

5841 SUTURE URETHRAL LACERAT

5842 URETHROSTOMY CLOSURE

5843 CLOSE URETH FISTULA NEC

5844 URETHRAL REANASTOMOSIS

5845 HYPO-EPISPADIUS REPAIR

5846 URETH RECONSTRUCTION NEC

5847 URETHRAL MEATOPLASTY

5849 URETHRAL REPAIR NEC

585 URETH STRICTURE RELEASE

5891 PERIURETHRAL INCISION

5892 PERIURETHRAL EXCISION

5893 IMPLT ARTF URIN SPHINCT

5899 URETH/PERIURETH OP NEC

5900 RETROPERIT DISSECT NOS

5901 RETROPERIT DISSECT NOS (stop in 1999)

5902 PERIREN ADHESIOLYS NEC

5903 LAP LYS PERIREN/URET ADH (from 1999)

5909 PERIREN/URETER INCIS NEC

5911 OTH LYS PERIVES ADHESIO (stop in 1999)

5912 LAP LYS PERIVESURETH ADH (from 1999)

5919 PERIVESICAL INCISION NEC

5921 PERIREN/URETERAL BIOPSY

5929 PERIREN/URET DX PROC NEC

593 URETHROVES JUNCT PLICAT

594 SUPRAPUBIC SLING OP

595 RETROPUBIC URETH SUSPENS

596 PARAURETHRAL SUSPENSION

5971 LEVATOR MUSC SUSPENSION

5979 URIN INCONTIN REPAIR NEC

5991 PERIREN/VESICLE EXCISION

5992 PERIREN/VESICLE OP NEC

600 INCISION OF PROSTATE

6012 OPEN PROSTATIC BIOPSY

6014 OPEN SEMINAL VESICLES BX

6015 PERIPROSTATIC BIOPSY

6018 PROSTATIC DX PROCED NEC

6019 SEMIN VES DX PROCED NEC

602 SEMIN VES DX PROCED NEC (stop in 1997)

6021 TRANSURETH PROSTATECTOMY

(from 1997)

6029 OTH TRANSURETH PROSTATEC (from 1997)

603 SUPRAPUBIC PROSTATECTOMY

604 RETROPUBIC PROSTATECTOMY

605 RADICAL PROSTATECTOMY

6061 LOS EXCIS PROSTATIC LES

6062 PERINEAL PROSTATECTOMY

6069 PROSTATECTOMY NEC

6072 SEMINAL VESICLE INCISION

6073 SEMINAL VESICLE EXCISION

6079 SEMINAL VESICLE OP NEC

6081 PERIPROSTATIC INCISION

6082 PERIPROSTATIC EXCISION

6093 REPAIR OF PROSTATE

6094 CONTROL PROSTATE HEMORR

6095 TRANS BAL DIL PROS URETH (from 1994)

6096 TU DESTR PROSTATE BY MT (from 2002)

6097 OTH TU DESTR PROS – RT (from 2002)

6099 PROSTATIC OPERATION NEC

612 EXCISION OF HYDROCELE

6142 SCROTAL FISTULA REPAIR

6149 SCROTUM/TUNIC REPAIR NEC

6192 EXCISION TUNICA LES NEC

6199 SCROTUM & TUNICA OP NEC

620 INCISION OF TESTES

6212 OPEN TESTICULAR BIOPSY

6219 TESTES DX PROCEDURE NEC

622 TESTICULAR LES DESTRUCT

623 UNILATERAL ORCHIECTOMY

6241 REMOVE BOTH TESTES

6242 REMOVE SOLITARY TESTIS

625 ORCHIOPEXY

6261 SUTURE TESTICULAR LACER

6269 TESTICULAR REPAIR NEC

627 INSERT TESTICULAR PROSTH

6299 TESTICULAR OPERATION NEC

6309 SPERMAT CORD/VAS DX NEC

631 EXC SPERMATIC VARICOCELE

632 EXCISE EPIDIDYMIS CYST

633 EXCISE CORD/EPID LES NEC

634 EPIDIDYMECTOMY

6351 SUTURE CORD & EPID LACER

6353 TRANSPLANT SPERMAT CORD

6359 CORD & EPIDID REPAIR NEC

6381 SUTURE VAS & EPIDID LAC

6382 POSTOP VAS RECONSTRUCT

6383 EPIDIDYMOVASOSTOMY

6385 REMOV VAS DEFERENS VALVE

6389 VAS & EPIDIDY REPAIR NEC

6392 EPIDIDYMOTOMY

6393 SPERMATIC CORD INCISION

6394 SPERM CORD ADHESIOLYSIS

6395 INSERT VALVE IN VAS DEF

6399 CORD/EPID/VAS OPS NEC

640 CIRCUMCISION

6411 PENILE BIOPSY

642 LOCAL EXCIS PENILE LES

643 AMPUTATION OF PENIS

6441 SUTURE PENILE LACERATION

6442 RELEASE OF CHORDEE

6443 CONSTRUCTION OF PENIS

6444 RECONSTRUCTION OF PENIS

6445 REPLANTATION OF PENIS

6449 PENILE REPAIR NEC

645 SEX TRANSFORMAT OP NEC

6492 INCISION OF PENIS

6493 DIVISION OF PENILE ADHES

6495 INS NONINFL PENIS PROSTH

6496 REMOVE INT PENILE PROSTH

6497 INS INFLATE PENIS PROSTH

6498 PENILE OPERATION NEC

6499 MALE GENITAL OP NEC

650 MALE GENITAL OP NEC (stop in 1999)

6501 LAPAROSCOPIC OOPHOROTOMY (from 1999)

6509 OTHER OOPHOROTOMY (from 1999)

6511 OVARIAN ASPIRAT BIOPSY

6512 OVARIAN BIOPSY NEC

6513 LAP BIOPSY OF OVARY (from 1999)

6514 OTH LAP DX PROC OVARIES (from 1999)

6519 OVARIAN DX PROCEDURE NEC

6521 OVARIAN CYST MARSUPIALIZ

6522 OVARIAN WEDGE RESECTION

6523 LAP MARSUP OVARIAN CYST (from 1999)

6524 LAP WEDGE RESECT OVARY (from 1999)

6525 OTH LAP LOC EXC DEST OVA (from 1999)

6529 LOCAL DESTR OVA LES NEC

653 LOCAL DESTR OVA LES NEC (stop in 1999)

6531 LAP UNILAT OOPHORECTOMY (from 1999)

6539 OTH UNILAT OOPHORECTOMY (from 1999)

654 OTH UNILAT OOPHORECTOMY (stop in 1999)

6541 LAP UNI SALPINGO-OOPHOR (from 1999)

6549 OTH UNI SALPINGO-OOPHOR (from 1999)

6551 OTH REMOVE BOTH OVARIES (change in 1999)

6552 OTH REMOVE REMAIN OVARY (change in 1999)

6553 LAP REMOVE BOTH OVARIES (from 1999)

6554 LAP REMOVE REMAIN OVARY (from 1999)

6561 OTH REMOVE OVARIES/TUBES (change in1999)

6562 OTH REMOVE REM OVA/TUBE (change in 1999)

6563 LAP REMOVE OVARIES/TUBES (from 1999)

6564 LAP REMOVE REM OVA/TUBE (from 1999)

6571 OTH SIMPLE SUTURE OVARY (from 1999)

6572 OTH REIMPLANT OF OVARY (change in 1999)

6573 OTH SALPINGO-OOPHOROPLAS (change in 1999)

6574 LAP SIMPLE SUTURE OVARY (from 1999)

6575 LAP REIMPLANT OF OVARY (from 1999)

6576 LAP SALPINGO-OOPHOROPLAS (from 1999)

6579 REPAIR OF OVARY NEC

658 REPAIR OF OVARY NEC (stop in 1999)

6581 LAP ADHESIOLYS OVA/TUBE

6589 ADHESIOLYSIS OVARY/TUBE (from 1999)

6591 ASPIRATION OF OVARY

6592 TRANSPLANTATION OF OVARY

6593 MANUAL RUPT OVARIAN CYST

6594 OVARIAN DENERVATION

6595 OVARIAN TORSION RELEASE

6599 OVARIAN OPERATION NEC

660 OVARIAN OPERATION NEC (stop in 1994)

6601 SALPINGOTOMY (from 1994)

6602 SALPINGOSTOMY (from 1994)

6611 FALLOPIAN TUBE BIOPSY

6619 FALLOP TUBE DX PROC NEC

6621 BILAT ENDOSC CRUSH TUBE

6622 BILAT ENDOSC DIVIS TUBE

6629 BILAT ENDOS OCC TUBE NEC

6631 BILAT TUBAL CRUSHING NEC

6632 BILAT TUBAL DIVISION NEC

6639 BILAT TUBAL DESTRUCT NEC

664 TOTAL UNILAT SALPINGECT

6651 REMOVE BOTH FALLOP TUBES

6652 REMOVE SOLITARY FAL TUBE

6661 DESTROY FALLOP TUBE LES

6662 REMOV TUBE & ECTOP PREG

6663 BILAT PART SALPINGEC NOS

6669 PARTIAL SALPINGECTOM NEC

6671 SIMPL SUTURE FALLOP TUBE

6672 SALPINGO-OOPHOROSTOMY

6673 SALPINGO-SALPINGOSTOMY

6674 SALPINGO-UTEROSTOMY

6679 FALLOP TUBE REPAIR NEC

6692 UNILAT FALLOP TUBE DESTR

6693 IMPL FALLOP TUBE PROSTH

6694 REMOV FALLOP TUBE PROSTH

6695 BLOW THERAPEUT INTO TUBE

6696 FALLOPIAN TUBE DILATION

6697 BURY FIMBRIAE IN UTERUS

6699 FALLOPIAN TUBE OP NEC

6711 ENDOCERVICAL BIOPSY

6712 CERVICAL BIOPSY NEC

6719 CERVICAL DX PROCEDUR NEC

672 CONIZATION OF CERVIX

6731 CERVICAL CYST MARSUPIAL

6732 CERVICAL LES CAUTERIZAT

6733 CERVICAL LES CRYOTHERAPY

6739 CERVICAL LES DESTRUC NEC

674 AMPUTATION OF CERVIX

675 AMPUTATION OF CERVIX (stop in 2002)

6751 TRANSAB CERCLAGE CERVIX (from 2002)

6759 OTH REP INT CERVICAL OS (from 2002)

6761 SUTURE CERVICAL LACERAT

6762 CERVICAL FISTULA REPAIR

6769 CERVICAL REPAIR NEC

680 HYSTEROTOMY

6813 OPEN UTERINE BIOPSY

6814 OPEN UTERINE LIGAMENT BX

6815 CLOS UTERINE LIGAMENT BX

6816 CLOSED UTERINE BIOPSY

6819 UTERUS/ADNEX DX PROC NEC

6821 ENDOMET SYNECHIAE DIVIS

6822 INCISION UTERINE SEPTUM

6823 ENDOMETRIAL ABLATION

6829 UTERINE LES DESTRUCT NEC

683 UTERINE LES DESTRUCT NEC (stop in 2005)

6831 LAP SCERVIC HYSTERECTOMY (from 2005)

6839 OTH SUBTOT ABD HYSTERECT (from 2005)

684 TOTAL ABD HYSTERECTOMY

6841 LAP TOTAL ABDOMINAL HYST (not yet available)

6849 TOTAL ABD HYST NEC/NOS (not yet available)

685 VAGINAL HYSTERECTOMY (stop in 1999)

6851 LAP AST VAG HYSTERECTOMY (from 1999)

6859 VAG HYSTERECTOMY NEC/NOS (from 1999)

686 RADICAL ABD HYSTERECTOMY

6861 LAP RADICAL ABDOMNL HYST (not yet available)

6869 RADICAL ABD HYST NEC/NOS (not yet available)

687 RADICAL VAG HYSTERECTOMY

6871 LAP RADICAL VAGINAL HYST (not yet available)

6879 RADICAL VAG HYST NEC/NOS (not yet available)

688 PELVIC EVISCERATION

689 HYSTERECTOMY NEC/NOS (change in 1997)

6901 D & C FOR PREG TERMINAT

6902 D & C POST DELIVERY

6909 D & C NEC

6911 D & C NEC (stop in 1994)

6919 DESTRUC UTER SUPPORT NEC

6921 INTERPOSIT OP UTERIN LIG

6922 UTERINE SUSPENSION NEC

6923 VAG REPAIR INVERS UTERUS

6929 UTERUS/ADNEXA REPAIR NEC

693 PARACERV UTERINE DENERV

6941 SUTURE UTERINE LACERAT

6942 CLOSURE UTERINE FISTULA

6949 UTERINE REPAIR NEC

6951 ASPIRAT CURET-PREG TERMI

6952 ASPIRAT CURET-POST DELIV

6995 INCISION OF CERVIX

6997 REMOVE PENETRAT CERV FB

6998 UTERINE SUPPORT OP NEC

6999 UTERINE OPERATION NEC

7012 CULDOTOMY

7013 INTRALUM VAG ADHESIOLYS

7014 VAGINOTOMY NEC

7023 CUL-DE-SAC BIOPSY

7024 VAGINAL BIOPSY

7029 VAGIN/CUL-DE-SAC DX NEC

7031 HYMENECTOMY

7032 EXCIS CUL-DE-SAC LESION

7033 EXCISION VAGINAL LESION

704 VAGINAL OBLITERATION

7050 CYSTOCEL/RECTOCEL REPAIR

7051 CYSTOCELE REPAIR

7052 RECTOCELE REPAIR

7061 VAGINAL CONSTRUCTION

7062 VAGINAL RECONSTRUCTION

7071 SUTURE VAGINA LACERATION

7072 REPAIR COLOVAGIN FISTULA

7073 REPAIR RECTOVAG FISTULA

7074 REP VAGINOENT FISTUL NEC

7075 REPAIR VAG FISTULA NEC

7076 HYMENORRHAPHY

7077 VAGINAL SUSPENS & FIXAT

7079 VAGINAL REPAIR NEC

708 VAGINAL VAULT OBLITERAT

7091 VAGINAL OPERATION NEC

7092 CUL-DE-SAC OPERATION NEC

7101 VULVAR ADHESIOLYSIS

7109 INCIS VULVA/PERINEUM NEC

7111 VULVAR BIOPSY

7119 VULVAR DIAGNOS PROC NEC

7122 INCISE BARTHOLIN"S GLAND

7123 BARTHOLIN GLAND MARSUP

7124 DESTRUC BARTHOLIN GLAND

7129 BARTHOLIN"S GLAND OP NEC

713 LOCAL VULVAR EXCIS NEC

714 OPERATIONS ON CLITORIS

715 RADICAL VULVECTOMY

7161 UNILATERAL VULVECTOMY

7162 BILATERAL VULVECTOMY

7171 SUTURE VULVAR LACERATION

7172 REPAIR VULVAR FISTULA

7179 VULVAR/PERIN REPAIR NEC

718 OTHER VULVAR OPERATIONS

719 OTHER FEMALE GENITAL OPS

7394 PUBIOTOMY TO ASSIST DEL

7399 OPS ASSISTING DELIV NEC

740 CLASSICAL C-SECTION

741 LOW CERVICAL C-SECTION

742 EXTRAPERITONEAL C-SECT

743 REM EXTRATUB ECTOP PREG

744 CESAREAN SECTION NEC

7491 HYSTEROTOMY TO TERMIN PG

7499 CESAREAN SECTION NOS

7536 CORRECTION FETAL DEFECT

7550 REPAIR OB LAC UTERUS NOS

7551 REPAIR OB LACERAT CERVIX

7552 REPAIR OB LAC CORP UTERI

7561 REPAIR OB LAC BLAD/URETH

7593 SURG CORR INVERT UTERUS

7599 OBSTETRIC OPERATION NEC

7601 FACIAL BONE SEQUESTRECT

7609 FACIAL BONE INCISION NEC

7611 FACIAL BONE BIOPSY

7619 FACIAL BONE DX PROC NEC

762 DESTRUCT FACIAL BONE LES

7631 PARTIAL MANDIBULECTOMY

7639 PART FACIAL OSTECTOM NEC

7641 TOT MANDIBULEC W RECONST

7642 TOTAL MANDIBULECTOMY NEC

7643 MANDIBULAR RECONST NEC

7644 TOT FACE OSTECT W RECONS

7645 TOT FACE BONE OSTECT NEC

7646 FACIAL BONE RECONSTR NEC

765 TEMPOROMAND ARTHROPLASTY

7661 CL OSTEOPLASTY MAND RAMI

7662 OPEN OSTEOPLAS MAND RAMI

7663 OSTEOPLASTY MANDIBLE BDY

7664 MAND ORTHOGNATHIC OP NEC

7665 SEG OSTEOPLASTY MAXILLA

7666 TOT OSTEOPLASTY MAXILLA

7667 REDUCTION GENIOPLASTY

7668 AUGMENTATION GENIOPLASTY

7669 FACIAL BONE REPAIR NEC

7670 REDUCTION FACIAL FX NOS

7672 OPN REDUCT MALAR/ZYGO FX

7674 OPEN REDUCT MAXILLARY FX

7676 OPEN REDUCT MANDIBLE FX

7677 OPEN REDUCT ALVEOLAR FX

7679 OPEN REDUCT FACE FX NEC

7691 BONE GRAFT TO FACE BONE

7692 SYN IMPLANT TO FACE BONE

7694 OPEN REDUCT TM DISLOCAT

7697 REMOVE INT FIX FACE BONE

7699 FACIAL BONE/JNT OP NEC

7700 SEQUESTRECTOMY NOS

7701 CHEST CAGE SEQUESTREC

7702 HUMERUS SEQUESTRECTOMY

7703 RADIUS & ULNA SEQUESTREC

7704 METACARP/CARP SEQUESTREC

7705 FEMORAL SEQUESTRECTOMY

7706 PATELLAR SEQUESTRECTOMY

7707 TIBIA/FIBULA SEQUESTREC

7708 METATAR/TAR SEQUESTREC

7709 SEQUESTRECTOMY NEC

7710 OTHER BONE INCISION NOS

7711 OTHER CHEST CAGE INCIS

7712 OTHER HUMERUS INCISION

7713 OTHER RADIUS/ULNA INCIS

7714 OTH METACARP/CARP INCIS

7715 OTHER FEMORAL INCISION

7716 OTHER PATELLAR INCISION

7717 OTHER TIBIA/FIBULA INCIS

7718 OTH METATARS/TARS INCIS

7719 BONE INCIS W/O DIV NEC

7720 WEDGE OSTEOTOMY NOS

7721 CHEST CAGE WEDG OSTEOTOM

7722 HUMERUS WEDGE OSTEOTOMY

7723 RADIUS/ULNA WEDG OSTEOTO

7724 METACAR/CAR WEDG OSTEOTO

7725 FEMORAL WEDGE OSTEOTOMY

7726 PATELLAR WEDGE OSTEOTOMY

7727 TIBIA/FIBUL WEDG OSTEOT

7728 METATAR/TAR WEDG OSTEOT

7729 WEDGE OSTEOTOMY NEC

7730 OTHER BONE DIVISION NOS

7731 CHEST CAGE BONE DIV NEC

7732 HUMERUS DIVISION NEC

7733 RADIUS/ULNA DIVISION NEC

7734 METACAR/CAR DIVISION NEC

7735 FEMORAL DIVISION NEC

7736 PATELLAR DIVISION NEC

7737 TIBIA/FIBULA DIV NEC

7738 METATAR/TAR DIVISION NEC

7739 BONE DIVISION NEC

7740 BONE BIOPSY NOS

7741 CHEST CAGE BONE BIOPSY

7742 HUMERUS BIOPSY

7743 RADIUS & ULNA BIOPSY

7744 METACARPAL/CARPAL BIOPSY

7745 FEMORAL BIOPSY

7746 PATELLAR BIOPSY

7747 TIBIA & FIBULA BIOPSY

7748 METATARSAL/TARSAL BIOPSY

7749 BONE BIOPSY NEC

7751 BUNIONECT/SFT/OSTEOTOMY

7752 BUNIONECT/SFT/ARTHRODES

7753 OTH BUNIONECT W SFT CORR

7754 EXC CORRECT BUNIONETTE

7756 REPAIR OF HAMMER TOE

7757 REPAIR OF CLAW TOE

7758 OTH EXC, FUS, REPAIR TOE

7759 BUNIONECTOMY NEC

7760 LOC EXC BONE LESION NOS

7761 EXC CHEST CAGE BONE LES

7762 LOC EXC BONE LES HUMERUS

7763 LOC EXC LES RADIUS/ULNA

7764 LOC EXC LES METACAR/CAR

7765 LOC EXC BONE LES FEMUR

7766 LOC EXC BONE LES PATELLA

7767 LOC EXC LES TIBIA/FIBULA

7768 LOC EXC LES METATAR/TAR

7769 LOC EXC BONE LESION NEC

7770 EXCISE BONE FOR GRFT NOS

7771 EX CHEST CAGE BONE-GFT

7772 EXCISE HUMERUS FOR GRAFT

7773 EXCIS RADIUS/ULNA-GRAFT

7774 EXCIS METACAR/CAR-GRAFT

7775 EXCISE FEMUR FOR GRAFT

7776 EXCISE PATELLA FOR GRAFT

7777 EXCISE TIB/FIB FOR GRAFT

7778 EXCIS METATAR/TAR-GRAFT

7779 EXCISE BONE FOR GFT NEC

7780 OTH PART OSTECTOMY NOS

7781 OTH CHEST CAGE OSTECTOMY

7782 PARTIAL HUMERECTOMY NEC

7783 PART OSTECT-RADIUS/ULNA

7784 PART OSTECT-METACAR/CAR

7785 PART OSTECTOMY-FEMUR

7786 PARTIAL PATELLECTOMY

7787 PART OSTECT-TIBIA/FIBULA

7788 PART OSTECT-METATAR/TAR

7789 PARTIAL OSTECTOMY NEC

7790 TOTAL OSTECTOMY NOS

7791 TOT CHEST CAGE OSTECTOMY

7792 TOTAL OSTECTOMY-HUMERUS

7793 TOT OSTECT-RADIUS/ULNA

7794 TOT OSTECT-METACARP/CARP

7795 TOT OSTECTOMY-FEMUR

7796 TOTAL PATELLECTOMY

7797 TOT OSTECT-TIBIA/FIBULA

7798 TOT OSTECT-METATARS/TARS

7799 TOTAL OSTECTOMY NEC

7800 BONE GRAFT NOS

7801 BONE GRAFT TO CHEST CAGE

7802 BONE GRAFT TO HUMERUS

7803 BONE GRAFT-RADIUS/ULNA

7804 BONE GRFT TO METACAR/CAR

7805 BONE GRAFT TO FEMUR

7806 BONE GRAFT TO PATELLA

7807 BONE GRAFT-TIBIA/FIBULA

7808 BONE GRAFT-METATAR/TAR

7809 BONE GRAFT NEC

7810 APPLIC EXT FIX DEV NOS

7811 APPL EXT FIX-CHEST CAGE

7812 APPLIC EXT FIX-HUMERUS

7813 APPL EXT FIX-RADIUS/ULNA

7814 APPL EXT FIX-METACAR/CAR

7815 APPLIC EXT FIX DEV-FEMUR

7816 APPL EXT FIX DEV-PATELLA

7817 APPL EXT FIX-TIB/FIBULA

7818 APPL EXT FIX-METATAR/TAR

7819 APPLIC EXT FIX DEV NEC

7820 LIMB SHORTEN PROC NOS

7822 LIMB SHORT PROC-HUMERUS

7823 LIMB SHORTEN-RADIUS/ULNA

7824 LIMB SHORTEN-METACAR/CAR

7825 LIMB SHORT PROC-FEMUR

7827 LIMB SHORTEN-TIB/FIBULA

7828 LIMB SHORTEN-METATAR/TAR

7829 LIMB SHORTEN PROC NEC

7830 LIMB LENGTHEN PROC NOS

7831 LIMB LENGTHEN PROC NOS

7832 LIMB LENGTH PROC-HUMERUS

7833 LIMB LENGTH-RADIUS/ULNA

7834 LIMB LENGTH-METACAR/CAR

7835 LIMB LENGTH PROC-FEMUR

7837 LIMB LENGTHEN-TIB/FIBULA

7838 LIMB LENGTHN-METATAR/TAR

7839 LIMB LENGTHEN PROC NEC

7840 OTH BONE REPAIR/PLAST OP

7841 OTH CHEST CAGE REP/PLAST

7842 OTH HUMERUS REPAIR/PLAST

7843 OTH RAD/ULN REPAIR/PLAST

7844 OTH METAC/CARP REP/PLAST

7845 OTH FEMUR REPAIR/PLASTIC

7846 OTH PATELLA REPAIR/PLAST

7847 OTH TIB/FIB REPAIR/PLAST

7848 OTH META/TAR REPA/PLAST

7849 OTH BONE REPA/PLAST NEC

7850 INT FIX W/O FX REDUC NOS

7851 INT FIXATION-CHEST CAGE

7852 INT FIXATION-HUMERUS

7853 INT FIXATION-RADIUS/ULNA

7854 INT FIXATION-METACAR/CAR

7855 INTERNAL FIXATION-FEMUR

7856 INTERNAL FIX-PATELLA

7857 INT FIXATION-TIBIA/FIBUL

7858 INT FIXATION-METATAR/TAR

7859 INT FIX-NO FX REDUCT NEC

7860 REMOVE IMP DEVICE NOS

7861 REMOV IMP DEV-CHEST CAGE

7862 REMOVE IMPL DEV-HUMERUS

7863 REMOV IMP DEV-RADIUS/ULN

7864 REMOV IMP DEV-METAC/CARP

7865 REMOVE IMP DEVICE-FEMUR

7866 REMOV IMP DEVICE-PATELLA

7867 REMOV IMP DEV-TIB/FIBULA

7868 REMOVE IMP DEV-METAT/TAR

7869 REMOVE IMPL DEVICE NEC

7870 OSTEOCLASIS NOS

7871 OSTEOCLASIS-CHEST CAGE

7872 OSTEOCLASIS-HUMERUS

7873 OSTEOCLASIS-RADIUS/ULNA

7874 OSTEOCLASIS-METACAR/CAR

7875 OSTEOCLASIS-FEMUR

7876 OSTEOCLASIS-PATELLA

7877 OSTEOCLASIS-TIBIA/FIBULA

7878 OSTEOCLASIS-METATAR/TAR

7879 OSTEOCLASIS NEC

7880 OTHER BONE DX PROC NOS

7881 OTH DX PROCED-CHEST CAGE

7882 OTH DX PROCED-HUMERUS

7883 OTH DX PROC-RADIUS/ULNA

7884 OTH DX PROC-METACAR/CAR

7885 OTH DX PROCED-FEMUR

7886 OTH DX PROCED-PATELLA

7887 OTH DX PROC-TIBIA/FIBULA

7888 OTH DX PROC-METATAR/TAR

7889 OTHER BONE DX PROC NEC

7890 INSERT BONE STIMUL NOS

7891 INSERT BONE STIMUL-CHEST

7892 INSERT BONE STIM-HUMERUS

7893 INSER BONE STIM-RAD/ULNA

7894 INSER BONE STIM-META/CAR

7895 INSERT BONE STIM-FEMUR

7896 INSERT BONE STIM-PATELLA

7897 INSER BONE STIM-TIB/FIB

7898 INSER BONE STIM-META/TAR

7899 INSERT BONE STIMUL NEC

7910 CL FX REDUC-INT FIX NOS

7911 CLOS RED-INT FIX HUMERUS

7912 CL RED-INT FIX RAD/ULNA

7913 CL RED-INT FIX METAC/CAR

7914 CLOSE RED-INT FIX FINGER

7915 CLOSED RED-INT FIX FEMUR

7916 CL RED-INT FIX TIB/FIBU

7917 CL RED-INT FIX METAT/TAR

7918 CLOSE RED-INT FIX TOE FX

7919 CL FX REDUC-INT FIX NEC

7920 OPEN FX REDUCTION NOS

7921 OPEN REDUC-HUMERUS FX

7922 OPEN REDUC-RADIUS/ULN FX

7923 OPEN REDUC-METAC/CAR FX

7924 OPEN REDUCTION-FINGER FX

7925 OPEN REDUCTION-FEMUR FX

7926 OPEN REDUC-TIBIA/FIB FX

7927 OPEN REDUC-METAT/TARS FX

7928 OPEN REDUCTION-TOE FX

7929 OPEN FX REDUCTION NEC

7930 OPN FX RED W INT FIX NOS

7931 OPEN RED-INT FIX HUMERUS

7932 OP RED-INT FIX RAD/ULNA

7933 OP RED-INT FIX METAC/CAR

7934 OPEN RED-INT FIX FINGER

7935 OPEN REDUC-INT FIX FEMUR

7936 OP RED-INT FIX TIB/FIBUL

7937 OP RED-INT FIX METAT/TAR

7938 OPEN REDUCT-INT FIX TOE

7939 OPN FX RED W INT FIX NEC

7940 CLS REDUC-SEP EPIPHY NOS

7941 CLOSE RED-HUMERUS EPIPHY

7942 CLS RED-RADIUS/UL EPIPHY

7945 CLOSE REDUC-FEMUR EPIPHY

7946 CLS RED-TIBIA/FIB EPIPHY

7949 CLS REDUC-SEP EPIPHY NEC

7950 OPEN RED-SEP EPIPHY NOS

7951 OPN RED-SEP EPIPHY-HUMER

7952 OP RED-RADIUS/ULN EPIPHY

7955 OPN RED-SEP EPIPHY-FEMUR

7956 OP RED-TIBIA/FIB EPIPHYS

7959 OPEN RED-SEP EPIPHY NEC

7960 OPEN FX SITE DEBRIDE NOS

7961 DEBRID OPEN FX-HUMERUS

7962 DEBRID OPN FX-RADIUS/ULN

7963 DEBRID OPN FX-METAC/CAR

7964 DEBRID OPN FX-FINGER

7965 DEBRID OPN FX-FEMUR

7966 DEBRID OPN FX-TIBIA/FIB

7967 DEBRID OPN FX-METAT/TAR

7968 DEBRID OPN FX-TOE

7969 OPEN FX SITE DEBRIDE NEC

7980 OPEN REDUC-DISLOCAT NOS

7981 OPN REDUC DISLOC-SHOULDR

7982 OPEN REDUC-ELBOW DISLOC

7983 OPEN REDUC-WRIST DISLOC

7984 OPN REDUC DISLOC-HAND

7985 OPEN REDUC-HIP DISLOCAT

7986 OPEN REDUC-KNEE DISLOCAT

7987 OPEN REDUC-ANKLE DISLOC

7988 OPN REDUC DISLOC-FT/TOE

7989 OPEN REDUC-DISLOCAT NEC

7990 UNSPEC OP BONE INJ NOS

7991 HUMERUS INJURY OP NOS

7992 RADIUS/ULNA INJ OP NOS

7993 METACARP/CARP INJ OP NOS

7994 FINGER INJURY OP NOS

7995 FEMUR INJURY OP NOS

7996 TIBIA/FIBULA INJ OP NOS

7997 METATARS/TARS INJ OP NOS

7998 TOE INJURY OPERATION NOS

7999 UNSPEC OP-BONE INJ NEC

8000 ARTHROT & PROS REMOV NOS

8001 ARTHROT/PROS REMOV-SHLDR

8002 ARTHROT/PROS REMOV-ELBOW

8003 ARTHROT/PROS REMOV-WRIST

8004 ARTHROT/PROS REMOV-HAND

8005 ARTHROT/PROS REMOV-HIP

8006 ARTHROT/PROS REMOV-KNEE

8007 ARTHROT/PROS REMOV-ANKLE

8008 ARTHROT/PROS REMOV-FOOT

8009 ARTHROT & PROS REMOV NEC

8010 OTHER ARTHROTOMY NOS

8011 OTH ARTHROTOMY-SHOULDER

8012 OTH ARTHROTOMY-ELBOW

8013 OTH ARTHROTOMY-WRIST

8014 OTH ARTHROTOMY-HAND/FNGR

8015 OTH ARTHROTOMY-HIP

8016 OTH ARTHROTOMY-KNEE

8017 OTH ARTHROTOMY-ANKLE

8018 OTH ARTHROTOMY-FOOT/TOE

8019 OTHER ARTHROTOMY NEC

8020 ARTHROSCOPY NOS

8021 SHOULDER ARTHROSCOPY

8022 ELBOW ARTHROSCOPY

8023 WRIST ARTHROSCOPY

8024 HAND & FINGER ARTHROSCOP

8025 HIP ARTHROSCOPY

8026 KNEE ARTHROSCOPY

8027 ANKLE ARTHROSCOPY

8028 FOOT & TOE ARTHROSCOPY

8029 ARTHROSCOPY NEC

8040 JT STRUCTUR DIVISION NOS

8041 SHOULDER STRUCT DIVISION

8042 ELBOW STRUCTURE DIVISION

8043 WRIST STRUCTURE DIVISION

8044 HAND JOINT STRUCT DIVIS

8045 HIP STRUCTURE DIVISION

8046 KNEE STRUCTURE DIVISION

8047 ANKLE STRUCTURE DIVISION

8048 FOOT JOINT STRUCT DIVIS

8049 JT STRUCTUR DIVISION NEC

805 JT STRUCTUR DIVISION NEC

8050 EXC/DEST INTVRT DISC NOS

8051 EXCISION INTERVERT DISC

8059 OTH EXC/DEST INTVRT DISC

806 EXCIS KNEE SEMILUN CARTL

8070 SYNOVECTOMY-SITE NOS

8071 SHOULDER SYNOVECTOMY

8072 ELBOW SYNOVECTOMY

8073 WRIST SYNOVECTOMY

8074 HAND SYNOVECTOMY

8075 HIP SYNOVECTOMY

8076 KNEE SYNOVECTOMY

8077 ANKLE SYNOVECTOMY

8078 FOOT SYNOVECTOMY

8079 SYNOVECTOMY-SITE NEC

8080 DESTRUCT JOINT LES NOS

8081 DESTRUC-SHOULDER LES NEC

8082 DESTRUC-ELBOW LESION NEC

8083 DESTRUC-WRIST LESION NEC

8084 DESTRUC-HAND JT LES NEC

8085 DESTRUCT-HIP LESION NEC

8086 DESTRUCT-KNEE LESION NEC

8087 DESTRUC-ANKLE LESION NEC

8088 DESTRUC-FOOT JT LES NEC

8089 DESTRUCT JOINT LES NEC

8090 EXCISION OF JOINT NOS

8091 EXCISION OF SHOULDER NEC

8092 EXCISION OF ELBOW NEC

8093 EXCISION OF WRIST NEC

8094 EXCISION HAND JOINT NEC

8095 EXCISION OF HIP NEC

8096 EXCISION OF KNEE NEC

8097 EXCISION OF ANKLE NEC

8098 EXCISION FOOT JOINT NEC

8099 EXCISION OF JOINT NEC

8100 SPINAL FUSION NOS

8101 ATLAS-AXIS FUSION

8102 OTHER CERVICAL FUS ANT

8103 OTHER CERVICAL FUS POST

8104 DORSAL/DORSOLUM FUS ANT

8105 DORSAL/DORSOLUM FUS POST

8106 LUMBAR/LUMBOSAC FUS ANT

8107 LUMBAR/LUMBOSAC FUS LAT

8108 LUMBAR/LUMBOSAC FUS POST

8109 LUMBAR/LUMBOSAC FUS POST (stop in 2002)

8111 ANKLE FUSION

8112 TRIPLE ARTHRODESIS

8113 SUBTALAR FUSION

8114 MIDTARSAL FUSION

8115 TARSOMETATARSAL FUSION

8116 METATARSOPHALANGEAL FUS

8117 OTHER FUSION OF FOOT

8118 OTHER FUSION OF FOOT

8120 ARTHRODESIS NOS

8121 ARTHRODESIS OF HIP

8122 ARTHRODESIS OF KNEE

8123 ARTHRODESIS OF SHOULDER

8124 ARTHRODESIS OF ELBOW

8125 CARPORADIAL FUSION

8126 METACARPOCARPAL FUSION

8127 METACARPOPHALANGEAL FUS

8128 INTERPHALANGEAL FUSION

8129 ARTHRODESIS NEC

8130 SPINAL REFUSION NOS (from 2002)

8131 REFUSION OF ATLAS-AXIS (from 2002)

8132 REFUSION OF OTH CERV ANT (from 2002)

8133 REFUS OF OTH CERV POST (from 2002)

8134 REFUSION OF DORSAL ANT (from 2002)

8135 REFUSION OF DORSAL POST (from 2002)

8136 REFUSION OF LUMBAR ANT (from 2002)

8137 REFUSION OF LUMBAR LAT (from 2002)

8138 REFUSION OF LUMBAR POST (from 2002)

8139 REFUSION OF SPINE NEC (from 2002)

8140 REPAIR OF HIP, NEC

8141 REPAIR OF HIP, NEC

8142 FIVE-IN-ONE KNEE REPAIR

8143 TRIAD KNEE REPAIR

8144 PATELLAR STABILIZATION

8145 CRUCIATE LIG REPAIR NEC

8146 COLLATERL LIG REPAIR NEC

8147 OTHER REPAIR OF KNEE

8148 OTHER REPAIR OF KNEE

8149 OTHER REPAIR OF ANKLE

8151 TOTAL HIP REPLACEMENT

8152 PARTIAL HIP REPLACEMENT

8153 REVISE HIP REPLACEMENT

8154 TOTAL KNEE REPLACEMENT

8155 REVISE KNEE REPLACEMENT

8156 TOTAL ANKLE REPLACEMENT

8157 REPL JOINT OF FOOT, TOE (change in 1997)

8159 REV JT REPL LOW EXT NEC

8161 360 SPINAL FUSION (from 2005)

8162 FUS/REFUS 2-3 VERTEBRAE (from 2005)

8163 FUS/REFUS 4-8 VERTEBRAE (from 2005)

8164 FUS/REFUS 9 VERTEBRAE (from 2005)

8165 VERTEBROPLASTY (from 2005)

8166 KYPHOPLASTY (from 2005)

8169 OTH HIP REPAIR JAN80--SEP89 (not yet available)

8171 ARTHROPLAS METACARP WIT

8172 ARTHROPLASTY METACAR W/O

8173 TOTAL WRIST REPLACEMENT

8174 ARTHROPLASTY CARPAL WIT

8175 ARTHROPLASTY CARPAL W/O

8179 OTH REPAIR HAN/FIN/WRIS

8180 TOTAL SHOULDER REPLACE

8181 PARTIAL SHOULDER REPLACE

8182 REP RECUR SHLDER DISLOC

8183 SHOULDER ARTHROPLAST NEC

8184 TOTAL ELBOW REPLACEMENT

8185 ELBOW ARTHROPLASTY NEC

8186 ELBOW ARTHROPLASTY NEC

8187 ELBOW ARTHROPLASTY NEC

8193 SUTUR CAPSUL/LIGAMEN ARM

8194 SUTURE CAPSUL/LIG ANK/FT

8195 SUTUR CAPSUL/LIG LEG NEC

8196 OTHER REPAIR OF JOINT

8197 REV JT REPL UPPER EXTREM (change in 1997)

8198 OTHER JOINT DX PROCEDURE

8199 JOINT STRUCTURE OP NEC

8201 EXPLOR TEND SHEATH-HAND

8202 MYOTOMY OF HAND

8203 BURSOTOMY OF HAND

8209 INC SOFT TISSUE HAND NEC

8211 TENOTOMY OF HAND

8212 FASCIOTOMY OF HAND

8219 DIV SOFT TISSUE HAND NEC

8221 EXC LES TEND SHEATH HAND

8222 EXCISION HAND MUSCLE LES

8229 EXC LES SFT TISS HND NEC

8231 BURSECTOMY OF HAND

8232 EXCIS HAND TEND FOR GRFT

8233 HAND TENONECTOMY NEC

8234 EXC HND MUS/FAS FOR GRFT

8235 HAND FASCIECTOMY NEC

8236 OTHER MYECTOMY OF HAND

8239 HAND SOFT TISSUE EXC NEC

8241 SUTURE TENDN SHEATH HAND

8242 DELAY SUT FLEX TEND HAND

8243 DELAY SUT HAND TEND NEC

8244 SUTUR FLEX TEND HAND NEC

8245 SUTURE HAND TENDON NEC

8246 SUTURE HAND MUSCLE/FASC

8251 HAND TENDON ADVANCEMENT

8252 HAND TENDON RECESSION

8253 HAND TENDON REATTACHMENT

8254 HAND MUSCLE REATTACHMENT

8255 CHNG HND MUS/TEN LNG NEC

8256 TRANSPLANT HAND TEND NEC

8257 TRANSPOSIT HAND TEND NEC

8258 TRANSPLANT HAND MUSC NEC

8259 TRANSPOSIT HAND MUSC NEC

8261 POLLICIZATION OPERATION

8269 THUMB RECONSTRUCTION NEC

8271 HAND TEND PULLEY RECONST

8272 PLAST OP HND-MUS/FAS GRF

8279 PLAST OP HAND W GRFT NEC

8281 TRANSFER OF FINGER

8282 REPAIR OF CLEFT HAND

8283 REPAIR OF MACRODACTYLY

8284 REPAIR OF MALLET FINGER

8285 OTHER TENODESIS OF HAND

8286 OTHER TENOPLASTY OF HAND

8289 HAND PLASTIC OP NEC

8291 LYSIS OF HAND ADHESIONS

8299 HAND MUS/TEN/FAS/OPS NEC

8301 TENDON SHEATH EXPLORAT

8302 MYOTOMY

8303 BURSOTOMY

8309 SOFT TISSUE INCISION NEC

8311 ACHILLOTENOTOMY

8312 ADDUCTOR TENOTOMY OF HIP

8313 OTHER TENOTOMY

8314 FASCIOTOMY

8319 SOFT TISSUE DIVISION NEC

8321 SOFT TISSUE BIOPSY

8329 SOFT TISSUE DX PROC NEC

8331 EXCIS LES TENDON SHEATH

8332 EXCIS LESION OF MUSCLE

8339 EXC LES SOFT TISSUE NEC

8341 TENDON EXCISION FOR GRFT

8342 OTHER TENONECTOMY

8343 MUSC/FASC EXCIS FOR GRFT

8344 OTHER FASCIECTOMY

8345 OTHER MYECTOMY

8349 OTHER SOFT TISSUE EXCIS

835 BURSECTOMY

8361 TENDON SHEATH SUTURE

8362 DELAYED TENDON SUTURE

8363 ROTATOR CUFF REPAIR

8364 OTHER SUTURE OF TENDON

8365 OTHER MUSCLE/FASC SUTURE

8371 TENDON ADVANCEMENT

8372 TENDON RECESSION

8373 TENDON REATTACHMENT

8374 MUSCLE REATTACHMENT

8375 TENDON TRNSFR/TRANSPLANT

8376 OTHER TENDON TRANSPOSIT

8377 MUSCLE TRNSFR/TRANSPLANT

8379 OTHER MUSCLE TRANSPOSIT

8381 TENDON GRAFT

8382 MUSCLE OR FASCIA GRAFT

8383 TENDON PULLEY RECONSTRUC

8384 CLUBFOOT RELEASE NEC

8385 MUSC/TEND LNG CHANGE NEC

8386 QUADRICEPSPLASTY

8387 OTHER PLASTIC OPS MUSCLE

8388 OTHER PLASTIC OPS TENDON

8389 OTHER PLASTIC OPS FASCIA

8391 ADHESIOLYSIS MUS/TEN/FAS

8392 INSERT SKEL MUSC STIMULA

8393 REMOV SKEL MUSC STIMULAT

8399 MUS/TEN/FAS/BUR OP NEC

8400 UPPER LIMB AMPUTAT NOS

8401 FINGER AMPUTATION

8402 THUMB AMPUTATION

8403 AMPUTATION THROUGH HAND

8404 DISARTICULATION OF WRIST

8405 AMPUTATION THRU FOREARM

8406 DISARTICULATION OF ELBOW

8407 AMPUTATION THRU HUMERUS

8408 SHOULDER DISARTICULATION

8409 FOREQUARTER AMPUTATION

8410 LOWER LIMB AMPUTAT NOS

8411 TOE AMPUTATION

8412 AMPUTATION THROUGH FOOT

8413 DISARTICULATION OF ANKLE

8414 AMPUTAT THROUGH MALLEOLI

8415 BELOW KNEE AMPUTAT NEC

8416 DISARTICULATION OF KNEE

8417 ABOVE KNEE AMPUTATION

8418 DISARTICULATION OF HIP

8419 HINDQUARTER AMPUTATION

8421 THUMB REATTACHMENT

8422 FINGER REATTACHMENT

8423 FOREARM/WRIST/HAND REATT

8424 UPPER ARM REATTACHMENT

8425 TOE REATTACHMENT

8426 FOOT REATTACHMENT

8427 LOWER LEG/ANKLE REATTACH

8428 THIGH REATTACHMENT

8429 REATTACHMENT NEC

843 AMPUTATION STUMP REVIS

8440 IMPLNT/FIT PROS LIMB NOS

8444 IMPLANT ARM PROSTHESIS

8448 IMPLANT LEG PROSTHESIS

8458 IMP INTRSPINE DECOMP DEV (not yet available)

8459 INSERT OTH SPIN DEVICE (from 2005)

8460 INSERT DISC PROS NOS (from 2005)

8461 INS PART DISC PROS CERV (from 2005)

8462 INS TOT DISC PROST CERV (from 2005)

8463 INS SPIN DISC PROS THOR (from 2005)

8464 INS PART DISC PROS LUMB (from 2005)

8465 INS TOTL DISC PROS LUMB (from

2005)

8466 REVISE DISC PROST CERV (from 2005)

8467 REVISE DISC PROST THORA (from 2005)

8468 REVISE DISC PROSTH LUMB (from 2005)

8469 REVISE DISC PROSTH NOS (from

2005)

8472 APP EXT FIX DEV-RING SYS (not yet available)

8473 APP HYBRID EXT FIX DEV (not yet available)

8491 AMPUTATION NOS

8492 SEPARAT EQUAL JOIN TWIN

8493 SEPARAT UNEQUL JOIN TWIN

8499 MUSCULOSKELETAL OP NEC

8512 OPEN BREAST BIOPSY

8520 BREAST TISSU DESTRUC NOS

8521 LOCAL EXCIS BREAST LES

8522 QUADRANT RESECT BREAST

8523 SUBTOTAL MASTECTOMY

8524 EXC ECTOPIC BREAST TISSU

8525 EXCISION OF NIPPLE

8531 UNILAT REDUCT MAMMOPLAST

8532 BILAT REDUCT MAMMOPLASTY

8533 UNIL SUBQ MAMMECT-IMPLNT

8534 UNILAT SUBQ MAMMECT NEC

8535 BIL SUBQ MAMMECT-IMPLANT

8536 BILAT SUBQ MAMMECTOM NEC

8541 UNILAT SIMPLE MASTECTOMY

8542 BILAT SIMPLE MASTECTOMY

8543 UNILAT EXTEN SIMP MASTEC

8544 BILAT EXTEND SIMP MASTEC

8545 UNILAT RADICAL MASTECTOM

8546 BILAT RADICAL MASTECTOMY

8547 UNIL EXT RAD MASTECTOMY

8548 BIL EXTEN RAD MASTECTOMY

8550 AUGMENT MAMMOPLASTY NOS

8553 UNILAT BREAST IMPLANT

8554 BILATERAL BREAST IMPLANT

856 MASTOPEXY

857 TOTAL BREAST RECONSTRUCT

8582 BREAST SPLIT-THICK GRAFT

8583 BREAST FULL-THICK GRAFT

8584 BREAST PEDICLE GRAFT

8585 BREAST MUSCLE FLAP GRAFT

8586 TRANSPOSITION OF NIPPLE

8587 NIPPLE REPAIR NEC

8589 MAMMOPLASTY NEC

8593 BREAST IMPLANT REVISION

8594 BREAST IMPLANT REMOVAL

8595 INSER BREAST TISSU EXPAN

8596 REMOV BREAST TISSU EXPAN

8599 BREAST OPERATION NEC

8606 INSERT INFUSION PUMP

8621 EXCISION OF PILONID CYST

8622 EXC WOUND DEBRIDEMENT

8625 DERMABRASION

864 RADICAL EXCIS SKIN LES

8660 FREE SKIN GRAFT NOS

8661 FULL-THICK HAND SKIN GRF

8662 HAND SKIN GRAFT NEC

8663 FULL-THICK SKIN GRFT NEC

8665 HETEROGRAFT TO SKIN

8666 HOMOGRAFT TO SKIN

8667 DERMAL REGENER GRAFT (from 2002)

8669 FREE SKIN GRAFT NEC

8670 PEDICLE GRAFT/FLAP NOS

8671 CUT & PREP PEDICLE GRAFT

8672 PEDICLE GRAFT ADVANCEMEN

8673 ATTACH PEDICLE TO HAND

8674 ATTACH PEDICLE GRAFT NEC

8675 REVISION OF PEDICLE GRFT

8681 REPAIR FACIAL WEAKNESS

8682 FACIAL RHYTIDECTOMY

8683 SIZE REDUCT PLASTIC OP

8684 RELAXATION OF SCAR

8685 SYNDACTYLY CORRECTION

8686 ONYCHOPLASTY

8689 SKIN REPAIR & PLASTY NEC

8691 SKIN EXCISION FOR GRAFT

8693 INSERT TISSUE EXPANDER

8694 INS/REPL SINGLE PUL GEN (from 2005)

8695 INS/REPL DUAL PULSE GEN (from 2005)

8696 INSERT/REPL OTH NEUROST(from 2005)

8697 INS/REP 1 PUL GEN (not yet available)

8698 INS/REP 2 PUL GEN (not yet available)

8753 INTRAOPER CHOLANGIOGRAM

9504 ANESTHETIZED EYE EXAM

2.2 APPENDIX B DECUBITUS ULCER

ICD-9-CM Decubitus Ulcer Diagnosis Codes

7070* DECUBITUS ULCER (stopped in 2005)

70700 DECUBITUS ULCER SITE NOS (from 2005)

70701 DECUBITUS ULCER, ELBOW (from 2005)

70702 DECUBITUS ULCER, UP BACK (from 2005)

70703 DECUBITUS ULCER, LOW BACK (from 2005)

70704 DECUBITUS ULCER, HIP (from 2005)

70705 DECUBITUS ULCER, BUTTOCK (from 2005)

70706 DECUBITUS ULCER, ANKLE (from 2005)

70707 DECUBITUS ULCER, HEEL (from 2005)

70709 DECUBITUS ULCER, SITE NEC (from 2005)

2.3 APPENDIX C HEMIPLEGIA, PARAPLEGIA, OR QUADRIPLEGIA

ICD-9-CM Hemiplegia, Paraplegia, or Quadriplegia diagnosis codes (includes 4th and 5th digits)

33371 ATHETOID CEREBRAL PALSY (not in register)

3420 FLACCID HEMIPLEGIA (stop in 1997, 5th digits from 1997)

3421 SPASTIC HEMIPLEGIA (stop in 1997, 5th digits from 1997, 34211 from 1997)

3428 OTHER SPECIFIED HEMIPLEGIA (34282 from 1997)

3429 HEMIPLEGIA, UNSPECIFIED (stop in 1997, 5th digits from 1997)

3430 INFANTILE CEREBRAL PALSY, DIPLEGIC

3431 INFANTILE CEREBRAL PALSY, HEMIPLEGIC

3432 INFANTILE CEREBRAL PALSY, QUADRIPLEGIC

3433 INFANTILE CEREBRAL PALSY, MONOPLEGIC

3434 INFANTILE CEREBRAL PALSY INFANTILE HEMIPLEGIA

3438 INFANTILE CEREBRAL PALSY OTHER SPECIFIED INFANTILE CEREBRAL PALSY

3439 INFANTILE CEREBRAL PALSY, INFANTILE CEREBRAL PALSY, UNSPECIFIED

3440 QUADRIPLEGIA AND QUADRIPARESIS (stop in 1997, 5th digits from 1997)

3441 PARAPLEGIA

3442 DIPLEGIA OF UPPER LIMBS

3443 MONOPLEGIA OF LOWER LIMB (stop in 1997, 5th digits from 1997)

3444 MONOPLEGIA OF UPPER LIMB (stop in 1997, 5th digits from 1997)

3445 UNSPECIFIED MONOPLEGIA

3446 CAUDA EQUINA SYNDROME

3448 OTHER SPECIFIED PARALYTIC SYNDROMES (stop in 1997, 5th digits from 1997)

3449 PARALYSIS, UNSPECIFIED

4382 HEMIPLEGIA/HEMIPARESIS (from 1999)

4383 MONOPLEGIA OF UPPER LIMB (from 1999)

4384 MONOPLEGIA OF LOWER LIMB (from 1999)

4385 OTHER PARALYTIC SYNDROME (changed in 200)

7687 HYPOXIC-ISCHEMIC ENCEPH (not in register)

2.4 APPENDIX D SPINA BIFIDA OR ANOXIC BRAIN DAMAGE

ICD-9-CM Spina Bifida or Anoxic Brain Damage diagnosis codes

3481 ANOXIC BRAIN DAMAGE

74100 SPINA BIFIDA, W HYDROCEPHALUS UNSPECIFIED REGION

74101 SPINA BIFIDA, W HYDROCEPHALUS CERVICAL REGION

74102 SPINA BIFIDA, W HYDROCEPHALUS DORSAL REGION

74103 SPINA BIFIDA, W HYDROCEPHALUS LUMBAR REGION

74190 SPINA BIFIDA, W/O HYDROCEPHALUS UNSPECIFIED REGION

74191 SPINA BIFIDA, W/O HYDROCEPHALUS CERVICAL REGION

74192 SPINA BIFIDA, W/O HYDROCEPHALUS DORSAL REGION

74193 SPINA BIFIDA, W/O HYDROCEPHALUS LUMBAR REGION

7685 SEVERE BIRTH ASPHYXIA

2.5 APPENDIX E PROCEDURE CODE

FOR DEBRIDEMENT OR PEDICLE GRAFT

ICD-9-CM procedure code for debridement or pedicle graft

8345 OTHER MYECTOMY

8622 EXC WOUND DEBRIDEMENT

8628 NONEXCIS DEBRIDEMENT WND

8670 PEDICLE GRAFT/FLAP NOS

8671 CUT & PREP PEDICLE GRAFT

8672 PEDICLE GRAFT ADVANCEMEN

8674 ATTACH PEDICLE GRAFT NEC

8675 REVISION OF PEDICLE GRFT

2.6 APPENDIX F PULMONARY EMBOLISM/DEEP VEIN THROMBOSIS

ICD-9-CM Pulmonary Embolism diagnosis codes

4151 PULMONARY EMBOLISM AND INFARCTION (stopped in 1997)

41511 IATROGENIC PULMONARY EMBOLISM AND INFARCTION (from 1997)

41519 PULMONARY EMBOLISM AND INFARCTION, OTHER (from 1997)

ICD-9-CM Deep Vein Thrombosis diagnosis codes

45111 PHLEBITIS AND THROMBOSIS OF FEMORAL VEIN (DEEP) (SUPERFICIAL)

45119 PHLEBITIS AND THROMBOPHLEBITIS OF DEEP VESSEL OF LOWER EXTREMITIES OTHER

4512 PHLEBITIS AND THROMBOPHLEBITIS OF LOWER EXTREMITIES UNSPECIFIED

45181 PHLEBITIS AND THROMBOPHLEBITIS OF ILIAC VEIN

4519 PHLEBITIS AND THROMBOPHLEBITIS OF OTHER SITES - OF UNSPECIFIED SITE

45340 DVT-EMBLSM LOWER EXT NOS (since 2005)

45341 DVT-EMB PROX LOWER EXT (since 2005)

45342 DVT-EMB DISTAL LOWER EXT (since 2005)

4538 OTHER VENOUS EMBOLISM AND THROMBOSIS OF OTHER SPECIFIED VEINS

4539 OTHER VENOUS EMBOLISM AND THROMBOSIS OF UNSPECIFIED SITE

2.7 APPENDIX G SEPSIS

ICD-9-CM Sepsis diagnosis codes

0380 STREPTOCOCCAL SEPTICEMIA

0381 STAPHYLOCOCCAL SEPTICEMIA

03810 STAPHYLOCOCCAL SEPTICEMIA, UNSPECIFIED

03811 STAPHYLOCOCCUS AUREUS SEPTICEMIA

03819 OTHER STAPHYLOCOCCAL SEPTICEMIA

0382 PNEUMOCOCCAL SEPTICEMIA (STREPTOCOCCUS PNEUMONIAE SEPTICEMIA)

0383 SEPTICEMIA DUE TO ANAEROBES

78552 SEPTIC SHOCK

78559 OTHER SHOCK W/O MENTION OF TRAUMA

9980 POSTOPERATIVE SHOCK

Septicemia due to:

03840 GRAM-NEGATIVE ORGANISM, UNSPECIFIED

03841 HEMOPHILUS INFLUENZAE

03842 ESCHERICHIA COLI

03843 PSEUDOMONAS

03844 SERRATIA03849 SEPTICEMIA DUE TO OTHER GRAM-NEGATIVE ORGANISMS

0388 OTHER SPECIFIED SEPTICEMIAS

0389 UNSPECIFIED SEPTICEMIA

99591 SYSTEMIC INFLAMMATORY RESPONSE SYNDROME DUE TO INFECTIOUS PROCESS W/O ORGAN DYSFUNCTION

99592 SYSTEMIC INFLAMMATORY RESPONSE SYNDROME DUE TO INFECTIOUS PROCESS W/ ORGAN DYSFUNCTION

2.8 APPENDIX H WOUND INFECTION

ICD-9-CM Wound Infection

99851 INFECTED POSTOPERATIVE SEROMA

99859 OTHER POSTOPERATIVE INFECTION

2.9 APPENDIX I PNEUMONIA

ICD-9-CM Pneumonia diagnosis codes

4820 PNEUMONIA DUE TO KLEBSIELLA PNEUMONIAE

4821 PNEUMONIA DUE TO PSEUDOMONAS

4822 PNEUMONIA DUE TO HEMOPHILUS INFLUENZAE [H. INFLUENZAE]

4823 PNEUMONIA DUE TO STREPTOCOCCUS (stop in 1994)

48230 PNEUMONIA DUE TO STREPTOCOCCUS – STREPTOCOCCUS, UNSPECIFIED (from 1994)

48231 PNEUMONIA DUE TO STREPTOCOCCUS – GROUP A (from 1994)

48232 PNEUMONIA DUE TO STREPTOCOCCUS – GROUP B (from 1994)

48239 PNEUMONIA DUE TO STREPTOCOCCUS – OTHER STREPTOCOCCUS (from 1994)

4824 PNEUMONIA DUE TO STAPHYLOCOCCUS (stop in 2002)

48240 PNEUMONIA DUE TO STAPHYLOCOCCUS – PNEUMONIA DUE TO STAPHYLOCOCCUS, UNSPECIFIED (from 2002)

48241 PNEUMONIA DUE TO STAPHYLOCOCCUS – PNEUMONIA DUE TO STAPHYLOCCOCCUS AUREUS (from 2002)

48249 PNEUMONIA DUE TO STAPHYLOCOCCUS – OTHER STAPHYLOCOCCUS PNEUMONIA (from 2002)

4828 PNEUMONIA DUE TO OTHER SPECIFIED BACTERIA (stop in 1994)

48281 PNEUMONIA DUE TO OTHER SPECIFIED BACTERIA – ANAEROBES (from 1994)

48282 PNEUMONIA DUE TO OTHER SPECIFIED BACTERIA – EXCHERICHIA COLI [E COLI] (from 1994)

48283 PNEUMONIA DUE TO OTHER SPECIFIED BACTERIA – OTHER GRAM-NEGATIVE BACTERIA (from 1994)

48284 PNEUMONIA DUE TO OTHER SPECIFIED BACTERIA – LEGIONNAIRES' DISEASE (from 1994)

48289 PNEUMONIA DUE TO OTHER SPECIFIED BACTERIA – OTHER SPECIFIED BACTERIA (from 1994)

4829 BACTERIAL PNEUMONIA UNSPECIFIED

485 BRONCHOPNEUMONIA, ORGANISM UNSPECIFIED (change in 1999)

486 PNEUMONIA, ORGANISM UNSPECIFIED

5070 DUE TO INHALATION OF FOOD OR VOMITUS

514 PULMONARY CONGESTION AND HYPOSTASIS

2.10 APPENDIX J VIRAL PNEUMONIA

ICD-9-CM Viral Pneumonia diagnosis codes

4800 ADENOVIRAL PNEUMONIA

4801 RESPIRATORY SYNCYTIAL VIRAL PNEUMONIA

4802 PARAINFLUENZA VIRAL PNEUMONIA

4803 PNEUMONIA DUE TO SARS OCT03-

4808 VIRAL PNEUMONIA NOT ELSEWHERE CLASSIFIED

4809 VIRAL PNEUMONIA UNSPECIFIED

481 PNEUMOCOCCAL PNEUMONIA

4830 PNEUMONIA DUE TO MYCOPLASMA PNEUMONIAE(from 1994)

4831 PNEUMONIA DUE TO CHLAMYDIA (from 1994)

4838 PNEUMONIA DUE TO OTHER SPECIFIED ORGANISM (from 1994)

4841 PNEUMONIA IN CYTOMEGALIC INCLUSION DISEASE

4843 PNEUMONIA IN WHOOPING COUGH

4845 PNEUMONIA IN ANTHRAX

4846 PNEUMONIA IN ASPERGILLOSIS

4847 PNEUMONIA IN OTHER SYSTEMIC MYCOSES

4848 PNEUMONIA IN INFECTIOUS DISEASE NOT ELSEWHERE CLASSIFIED

4870 INFLUENZA W/ PNEUMONIA

4871 FLU W/ RESPIRATORY MANIFEST NOT ELSEWHERE CLASSIFIED

4878 FLU W/ MANIFESTATION NOT ELSEWHERE CLASSIFIED

2.11 APPENDIX K IMMUNO-COMPROMISED STATESICD-9-CM IMMUNOCOMPROMISED STATES DIAGNOSIS CODES

042 HUMAN IMMUNODEFICIENCY VIRUS DISEASE

1363 PNEUMOCYSTOSIS (stopped in 1994)

260 KWASHIORKOR

261 NUTRITIONAL MARASMUS

262 OTH SEVERE MALNUTRITION

23873 HI GRDE MYELODYS SYN LES (not in reference list)

23876 MYELOFI W MYELO METAPLAS (not in reference list)

27900 HYPOGAMMAGLOBULINEM NOS

27901 SELECTIVE IGA IMMUNODEF

27902 SELECTIVE IGM IMMUNODEF

27903 SELECTIVE IG DEFIC NEC

27904 CONG HYPOGAMMAGLOBULINEM

27905 IMMUNODEFIC W HYPER-IGM

27906 COMMON VARIABL IMMUNODEF

27909 HUMORAL IMMUNITY DEF NEC

27910 IMMUNDEF T-CELL DEF NOS

27911 DIGEORGES SYNDROME

27912 WISKOTT-ALDRICH SYNDROME

27913 NEZELOFS SYNDROME

27919 DEFIC CELL IMMUNITY NOS

2792 COMBINED IMMUNITY DEFICIENCY

2793 UNSPECIFIED IMMUNITY DEFICIENCY

2794 AUTOIMMUNE DISEASE, NOT ELSEWHERE CLASSIFIED

2798 OTHER SPECIFIED DISORDERS INVOLVING THE IMMUNE MECHANISM

2799 UNSPECIFIED DISORDER OF IMMUNE MECHANISM

28409 CONST APLASTC ANEMIA NEC (not in reference list)

2841 PANCYTOPENIA (not in reference list)

2880 AGRANULOCYTOSIS

28800 NEUTROPENIA NOS (not in reference list)

28801 CONGENITAL NEUTROPENIA (not in reference list)

28802 CYCLIC NEUTROPENIA (not in reference list)

28803 DRUG INDUCED NEUTROPENIA (not in reference list)

28809 NEUTROPENIA NEC (not in reference list)

2881 FUNCTION DIS NEUTROPHILS

2882 GENETIC ANOMALY LEUKOCYT

2884 HEMOPHAGOCYTIC SYNDROMES (not in reference list)

28850 LEUKOCYTOPENIA NOS (not in reference list)

28851 LYMPHOCYTOPENIA (not in reference list)

28859 DECREASED WBC COUNT NEC (not in reference list)

28953 NEUTROPENIC SPLENOMEGALY (not in reference list)

28983 MYELOFIBROSIS (not in reference list)

40301 MAL HYP KIDNEY W CHR KID

40311 BEN HYP KIDNEY W CHR KID

40391 HYP KIDNEY NOS W CHR KID

40402 MAL HY HRT/KID W CHR KID

40403 MAL HYP HRT/KID W HF/KID (changed in 2005)

40412 BEN HYP HT/KID W CHR KID

40413 BEN HYP HT/KID W HF/KID (changed in 2005)

40492 HYP HT/KID NOS W CHR KID

40493 HYP HRT/KID NOS W HF/KID (changed in 2005)

5793 INTEST POSTOP NONABSORB

585 CHRONIC KIDNEY DISEASE

5855 CHRON KIDNEY DIS STAGE V (not in reference list)

5856 END STAGE RENAL DISEASE (not in reference list)

9968 COMPLICATIONS OF TRANSPLANTED ORGAN

99680 COMP ORGAN TRANSPLNT NOS

99681 COMPL KIDNEY TRANSPLANT

99682 COMPL LIVER TRANSPLANT

99683 COMPL HEART TRANSPLANT

99684 COMPL LUNG TRANSPLANT

99685 COMPL MARROW TRANSPLANT

99686 COMPL PANCREAS TRANSPLNT

99687 COMP INTESTINE TRANSPLNT

99689 COMP OTH ORGAN TRANSPLNT

V420 KIDNEY REPLACED BY TRANSPLANT

V421 HEART REPLACED BY TRANSPLANT

V426 LUNG REPLACED BY TRANSPLANT

V427 LIVER REPLACED BY TRANSPLANT

V428 OTHER SPECIFIED ORGAN OR TISSUE

V4281 BONE MARROW SPECIFIED BY TRANSPLANT

V4282 PERIPHERAL STEM CELLS REPLACED BY TRANSPLANT

V4283 PANCREAS REPLACED BY TRANSPLANT

V4284 INTESTINES REPLACE BY TRANSPLANT (from 2002)

V4289 OTHER REPLACED BY TRANSPLANT

V451 RENAL DIALYSIS STATUS

V560 RENAL DIALYSIS ENCOUNTER

V561 FT/ADJ XTRCORP DIAL CATH

V562 FIT/ADJ PERIT DIAL CATH (from 2002)

ICD-9-CM Immunocompromised States procedure codes

0018 INFUS IMMUNOSUP ANTIBODY (not in reference list)

335 LUNG TRANSPLANTATION (stopped in 1997)

3350 LUNG TRANSPLANTATION, NOS (from 1997)

3351 UNILATERAL LUNG TRANSPLANTATION (from 1997)

3352 BILATERAL LUNG TRANSPLANTATION (from 1997)

336 COMBINED HEART-LUNG TRANSPLANTATION

375 HEART TRANSPLANTATION (stopped in 2005)

3751 HEART TRANSPLANTATION (from 2005)

410 OPERATIONS ON BONE MARROW AND SPLEEN

4100 BONE MARROW TRANSPLANT, NOS

4101 AUTOLOGOUS BONE MARROW TRANSPLANT W/O PURGING (changed in 2001)

4102 ALLOGENEIC BONE MARROW TRANSPLANT W/ PURGING

4103 ALLOGENEIC BONE MARROW TRANSPLANT W/O PURGING

4104 AUTOLOGOUS HEMATOPOIETIC STEM CELL TRANSPLANT W/O PURGING (changed in 2002)

4105 ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANT W/O PURGING (changed in 2002)

4106 CORD BLOOD STEM CELL TRANSPLANT (from 2000)

4107 AUTOLOGOUS HEMATOPOIETIC STEM CELL TRANSPLANT W/ PURGING (from 2002)

4108 ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANT W/ PURGING (from 2002)

4109 AUTOLOGOUS BONE MARROW TRANSPLANT W/ PURGING (from 2002)

5051 AUXILIARY LIVER TRANSPLANT

5059 LIVER TRANSPLANT, NEC

5280 PANCREATIC TRANSPLANT, NOS

5281 REIMPLANTATION OF PANCREATIC TISSUE

5282 HOMOTRANSPLANT OF PANCREAS

5283 HETEROTRANSPLANT OF PANCREAS

5285 ALLOTRANSPLANTATION OF CELLS OF ISLETS OF LANGERHANS

5286 TRANSPLANTATION OF CELLS OF ISLETS OF LANGERHANS, NOS

5569 OTHER KIDNEY TRANSPLANTATION

2.12 APPENDIX L CANCERICD-9-CM CANCER DIAGNOSIS CODES (INCLUDES 4TH AND 5TH DIGITS)

140 MALIGNANT NEOPLASM OF LIP

141 MALIGNANT NEOPLASM OF TONGUE

142 MALIGNANT NEOPLASM OF MAJOR SALIVARY GLANDS

143 MALIGNANT NEOPLASM OF GUM

144 MALIGNANT NEOPLASM OF FLOOR OF MOUTH

145 MALIGNANT NEOPLASM OF OTHER AND UNSPECIFIED PARTS OF MOUTH

146 MALIGNANT NEOPLASM OF OROPHARYNX

147 MALIGNANT NEOPLASM OF NASOPHARYNX

148 MALIGNANT NEOPLASM OF HYPOPHARYNX

149 MALIGNANT NEOPLASM OF OTHER AND ILL-DEFINED SITES WITHIN THE LIP, ORAL CAVITY, AND PHARYNX

150 MALIGNANT NEOPLASM OF ESOPHAGUS

151 MALIGNANT NEOPLASM OF STOMACH

152 MALIGNANT NEOPLASM OF SMALL INTESTINE, INCLUDING DUODENUM

153 MALIGNANT NEOPLASM OF COLON

154 MALIGNANT NEOPLASM OF RECTUM, RECTOSIGMOID JUNCTION, AND ANUS

155 MALIGNANT NEOPLASM OF LIVER AND INTRAHEPATIC BILE DUCTS

156 MALIGNANT NEOPLASM OF GALLBLADDER AND EXTRAHEPATIC BILE DUCTS

157 MALIGNANT NEOPLASM OF PANCREAS

158 MALIGNANT NEOPLASM OF RETROPERITONEUM AND PERITONEUM

159 MALIGNANT NEOPLASM OF OTHER AND ILL-DEFINED SITES WITHIN THE DIGESTIVE ORGANS AND PERITONEUM

160 MALIGNANT NEOPLASM OF NASAL CAVITIES, MIDDLE EAR, AND ACCESSORY SINUSES

161 MALIGNANT NEOPLASM OF LARYNX

162 MALIGNANT NEOPLASM OF TRACHEA, BRONCHUS, AND LUNG

163 MALIGNANT NEOPLASM OF PLEURA

164 MALIGNANT NEOPLASM OF THYMUS, HEART, AND MEDIASTINUM

165 MALIGNANT NEOPLASM OF OTHER AND ILL-DEFINED SITES WITHIN THE RESPIRATORY

SYSTEM AND INTRATHORACIC ORGANS

170 MALIGNANT NEOPLASM OF BONE AND ARTICULAR CARTILAGE

171 MALIGNANT NEOPLASM OF CONNECTIVE AND OTHER SOFT TISSUE

172 MALIGNANT MELANOMA OF SKIN

174 MALIGNANT NEOPLASM OF FEMALE BREAST

175 MALIGNANT NEOPLASM OF MALE BREAST

176 KARPOSI'S SARCOMA

179 MALIGNANT NEOPLASM OF UTERUS, PART UNSPECIFIED

180 MALIGNANT NEOPLASM OF CERVIX UTERI

181 MALIGNANT NEOPLASM OF PLACENTA

182 MALIGNANT NEOPLASM OF BODY OF UTERUS

183 MALIGNANT NEOPLASM OF OVARY AND OTHER UTERINE ADNEXA

184 MALIGNANT NEOPLASM OF OTHER AND UNSPECIFIED FEMALE GENITAL ORGANS

185 MALIGNANT NEOPLASM OF PROSTATE

186 MALIGNANT NEOPLASM OF TESTES

187 MALIGNANT NEOPLASM OF PENIS AND OTHER MALE GENITAL ORGANS

188 MALIGNANT NEOPLASM OF BLADDER

189 MALIGNANT NEOPLASM OF KIDNEY AND OTHER AND UNSPECIFIED URINARY ORGANS

190 MALIGNANT NEOPLASM OF EYE

191 MALIGNANT NEOPLASM OF BRAIN

192 MALIGNANT NEOPLASM OF OTHER AND UNSPECIFIED PARTS OF NERVOUS SYSTEM

193 MALIGNANT NEOPLASM OF THYROID GLAND

194 MALIGNANT NEOPLASM OF OTHER ENDOCRINE GLANDS AND RELATED STRUCTURES

195 MALIGNANT NEOPLASM OF OTHER, AND ILL-DEFINED SITES

196 SECONDARY AND UNSPECIFIED MALIGNANT NEOPLASM OF LYMPH NODES

197 SECONDARY MALIGNANT NEOPLASM OF RESPIRATORY AND DIGESTIVE SYSTEMS

198 SECONDARY MALIGNANT NEOPLASM OF OTHER SPECIFIED SITES

199 MALIGNANT NEOPLASM W/O SPECIFICATION OF SITE

200 LYMPHOSARCOMA AND RETICULOSARCOMA

201 HODGKIN'S DISEASE

202 OTHER MALIGNANT NEOPLASMS OF LYMPHOID AND HISTIOCYTIC TISSUES

203 MULTIPLE MYELOMA AND IMMUNOPROLIFERATIVE NEOPLASMS

204 LYMPHOID LEUKEMIA

205 MYELOID LEUKEMIA

206 MONOCYTIC LEUKEMIA

207 OTHER SPECIFIED LEUKEMIA

208 LEUKEMIA OF UNSPECIFIED CELL TYPE

2386 NEOPLASM OF UNCERTAIN BEHAVIOR OF OTHER AND UNSPECIFIED SITES AND TISSUES, PLASMA CELLS

2733 MACROGLOBULINEMIA

Personal history of malignant neoplasm:

V1000 GASTROINTESTINAL TRACT, UNSPECIFIED

V1001 TONGUE

V1002 OTHER AND UNSPECIFIED ORAL CAVITY AND PHARYNX

V1003 ESOPHAGUS

V1004 STOMACH

V1005 LARGE INTESTINE

V1006 RECTUM, RECTOSIGMOID JUNCTION, AND ANUS

V1007 LIVER

V1009 OTHER

V1011 BRONCHUS AND LUNG

V1012 TRACHEA

V1020 RESPIRATORY ORGAN, UNSPECIFIED

V1021 LARYNX

V1022 NASAL CAVITIES, MIDDLE EAR, AND ACCESSORY SINUSES

V1029 OTHER RESPIRATORY AND INTRATHORACIC ORGANS, OTHER

V103 BREAST

V1040 FEMALE GENITAL ORGAN, UNSPECIFIED

V1041 CERVIX UTERI

V1042 OTHER PARTS OF UTERUS

V1043 OVARY

V1044 OTHER FEMALE GENITAL ORGANS

V1045 MALE GENITAL ORGAN, UNSPECIFIED

V1046 PROSTATE

V1047 TESTES

V1048 EPIDIDYMIS

V1049 OTHER MALE GENITAL ORGANS

V1050 URINARY ORGAN, UNSPECIFIED

V1051 BLADDER

V1052 KIDNEY

V1053 RENAL PELVIS

V1059 URINARY ORGANS, OTHER

V1060 LEUKEMIA, UNSPECIFIED

V1061 LYMPHOID LEUKEMIA

V1062 MYELOID LEUKEMIA

V1063 MONOCYTIC LEUKEMIA

V1069 LEUKEMIA, OTHER

V1071 LYMPHOSARCOMA AND RETICULOSARCOMA

V1072 HODGKIN'S DISEASE

V1079 OTHER LYMPHATIC AND HEMATOPOIETIC NEOPLASMS, OTHER

V1081 BONE

V1082 MALIGNANT MELANOMA OF SKIN

V1083 OTHER MALIGNANT NEOPLASM OF SKIN

V1084 EYE

V1085 BRAIN

V1086 OTHER PARTS OF NERVOUS SYSTEM

V1087 THYROID

V1088 OTHER ENDOCRINE GLANDS AND RELATED STRUCTURES

V1089 OTHER

V109 UNSPECIFIED PERSONAL HISTORY OF MALIGNANT NEOPLASM

2.13 APPENDIX E INFECTION DIAGNOSIS CODES

ICD-9-CM Infection diagnosis codes

0010 CHOLERA D/T VIB CHOLERAE

0011 CHOLERA D/T VIB EL TOR

0019 CHOLERA NOS

0020 TYPHOID FEVER

0021 PARATYPHOID FEVER A

0022 PARATYPHOID FEVER B

0023 PARATYPHOID FEVER C

0029 PARATYPHOID FEVER NOS

0030 SALMONELLA ENTERITIS

0031 SALMONELLA SEPTICEMIA

00320 LOCAL SALMONELLA INF NOS

00321 SALMONELLA MENINGITIS

00322 SALMONELLA PNEUMONIA

00323 SALMONELLA ARTHRITIS

00324 SALMONELLA OSTEOMYELITIS

00329 LOCAL SALMONELLA INF NEC

0038 SALMONELLA INFECTION NEC

0039 SALMONELLA INFECTION NOS

0040 SHIGELLA DYSENTERIAE

0041 SHIGELLA FLEXNERI

0042 SHIGELLA BOYDII

0043 SHIGELLA SONNEI

0048 SHIGELLA INFECTION NEC

0049 SHIGELLOSIS NOS

0050 STAPH FOOD POISONING

0051 BOTULISM -

0052 FOOD POIS D/T C. PERFRIN

0053 FOOD POIS: CLOSTRID NEC

0054 FOOD POIS: V. PARAHAEM

00581 FOOD POISN D/T V. VULNIF

00589 BACT FOOD POISONING NEC

0059 FOOD POISONING NOS

00800 INTEST INFEC E COLI NOS (from 1994)

00801 INT INF E COLI ENTRPATH (from 1994)

00802 INT INF E COLI ENTRTOXGN (from 1994)

00803 INT INF E COLI ENTRNVSV (from 1994)

00804 INT INF E COLI ENTRHMRG (from 1994)

00809 INT INF E COLI SPCF NEC (from 1994)

0081 ARIZONA ENTERITIS

0082 AEROBACTER ENTERITIS

0083 PROTEUS ENTERITIS

00841 STAPHYLOCOCC ENTERITIS

00842 PSEUDOMONAS ENTERITIS

00843 INT INFEC CAMPYLOBACTER

00844 INT INF YRSNIA ENTRCLTCA

00845 INT INF CLSTRDIUM DFCILE

00846 INTES INFEC OTH ANEROBES

00847 INT INF OTH GRM NEG BCTR

00849 BACTERIAL ENTERITIS NEC

0085 BACTERIAL ENTERITIS NOS

0200 BUBONIC PLAGUE

0201 CELLULOCUTANEOUS PLAGUE

0202 SEPTICEMIC PLAGUE

0203 PRIMARY PNEUMONIC PLAGUE

0204 SECONDARY PNEUMON PLAGUE

0205 PNEUMONIC PLAGUE NOS

0208 OTHER TYPES OF PLAGUE

0209 PLAGUE NOS

0210 ULCEROGLANDUL TULAREMIA

0211 ENTERIC TULAREMIA

0212 PULMONARY TULAREMIA

0213 OCULOGLANDULAR TULAREMIA

0218 TULAREMIA NEC

0219 TULAREMIA NOS

0220 CUTANEOUS ANTHRAX

0221 PULMONARY ANTHRAX

0222 GASTROINTESTINAL ANTHRAX

0223 ANTHRAX SEPTICEMIA

0228 OTHER ANTHRAX MANIFEST

0229 ANTHRAX NOS

0230 BRUCELLA MELITENSIS

0231 BRUCELLA ABORTUS

0232 BRUCELLA SUIS

0233 BRUCELLA CANIS

0238 BRUCELLOSIS NEC

0239 BRUCELLOSIS NOS

024 GLANDERS

025 MELIOIDOSIS

0260 SPIRILLARY FEVER

0261 STREPTOBACILLARY FEVER

0269 RAT-BITE FEVER NOS

0270 LISTERIOSIS

0271 ERYSIPELOTHRIX INFECTION

0272 PASTEURELLOSIS

0278 ZOONOTIC BACT DIS NEC

0279 ZOONOTIC BACT DIS NOS

0320 FAUCIAL DIPHTHERIA

0321 NASOPHARYNX DIPHTHERIA

0322 ANT NASAL DIPHTHERIA

0323 LARYNGEAL DIPHTHERIA

03281 CONJUNCTIVAL DIPHTHERIA

03282 DIPHTHERITIC MYOCARDITIS

03283 DIPHTHERITIC PERITONITIS

03284 DIPHTHERITIC CYSTITIS

03285 CUTANEOUS DIPHTHERIA

03289 DIPHTHERIA NEC

0329 DIPHTHERIA NOS

0330 BORDETELLA PERTUSSIS

0331 BORDETELLA PARAPERTUSSIS

0338 WHOOPING COUGH NEC

0339 WHOOPING COUGH NOS

0340 STREP SORE THROAT

0341 SCARLET FEVER

035 ERYSIPELAS

0360 MENINGOCOCCAL MENINGITIS

0361 MENINGOCOCC ENCEPHALITIS

0362 MENINGOCOCCEMIA

0363 MENINGOCOCC ADRENAL SYND

03640 MENINGOCOCC CARDITIS NOS

03641 MENINGOCOCC PERICARDITIS

03642 MENINGOCOCC ENDOCARDITIS

03643 MENINGOCOCC MYOCARDITIS

03681 MENINGOCOCC OPTIC NEURIT

03682 MENINGOCOCC ARTHROPATHY

03689 MENINGOCOCCAL INFECT NEC

0369 MENINGOCOCCAL INFECT NOS

037 TETANUS

0380 STREPTOCOCCAL SEPTICEMIA

03810 STAPHYLCOCC SEPTICEM NOS (from 1999)

03811 STAPH AUREUS SEPTICEMIA (from 1999)

03819 STAPHYLCOCC SEPTICEM NEC (from 1999)

0382 PNEUMOCOCCAL SEPTICEMIA

0383 ANAEROBIC SEPTICEMIA

03840 GRAM-NEG SEPTICEMIA NOS

03841 H. INFLUENAE SEPTICEMIA

03842 E COLI SEPTICEMIA

03843 PSEUDOMONAS SEPTICEMIA

03844 SERRATIA SEPTICEMIA

03849 GRAM-NEG SEPTICEMIA NEC

0388 SEPTICEMIA NEC

0389 SEPTICEMIA NOS

0390 CUTANEOUS ACTINOMYCOSIS

0391 PULMONARY ACTINOMYCOSIS

0392 ABDOMINAL ACTINOMYCOSIS

0393 CERVICOFAC ACTINOMYCOSIS

0394 MADURA FOOT

0398 ACTINOMYCOSIS NEC

0399 ACTINOMYCOSIS NOS

0400 GAS GANGRENE

0401 RHINOSCLEROMA

0402 WHIPPLE'S DISEASE

0403 NECROBACILLOSIS

04081 TROPICAL PYOMYOSITIS

04082 TOXIC SHOCK SYNDROME (from 2005)

04089 BACTERIAL DISEASES NEC

04100 STREPTOCOCCUS UNSPECF (from 1994)

04101 STREPTOCOCCUS GROUP A (from 1994)

04102 STREPTOCOCCUS GROUP B (from 1994)

04103 STREPTOCOCCUS GROUP C (from 1994)

04104 ENTEROCOCCUS GROUP D (changed in 1999)

04105 STREPTOCOCCUS GROUP G (from 1994)

04109 OTHER STREPTOCOCCUS (from 1994)

04110 STAPHYLOCOCCUS UNSPCFIED (from 1994)

04111 STAPHYLOCOCCUS AUREUS (from 1994)

04119 OTHER STAPHYLOCOCCUS (from

1994)

0412 PNEUMOCOCCUS INFECT NOS

0413 KLEBSIELLA INFECT NOS

0414 E. COLI INFECT NOS

0415 H. INFLUENZAE INFECT NOS

0416 PROTEUS INFECTION NOS

0417 PSEUDOMONAS INFECT NOS

04182 BACTEROIDES FRAGILIS (changed in 2005)

04183 CLOSTRIDIUM PERFRINGENS (from 1994)

04184 OTHER ANAEROBES (from 1994)

04185 OTH GRAM NEGATV BACTERIA (from 1994)

04186 HELICOBACTER PYLORI (from 1994)

04189 OTH SPECF BACTERIA(from 1994)

0419 BACTERIAL INFECTION NOS (changed in 1997)

0980 ACUTE GC INFECT LOWER GU

09810 GC (ACUTE) UPPER GU NOS

09811 GC CYSTITIS (ACUTE)

09812 GC PROSTATITIS (ACUTE)

09813 GC ORCHITIS (ACUTE)

09814 GC SEM VESICULIT (ACUTE)

09815 GC CERVICITIS (ACUTE)

09816 GC ENDOMETRITIS (ACUTE)

09817 ACUTE GC SALPINGITIS

09819 GC (ACUTE) UPPER GU NEC

0982 CHR GC INFECT LOWER GU

09830 CHR GC UPPER GU NOS

09831 GC CYSTITIS, CHRONIC

09832 GC PROSTATITIS, CHRONIC

09833 GC ORCHITIS, CHRONIC

09834 GC SEM VESICULITIS, CHR

09835 GC CERVICITIS, CHRONIC

09836 GC ENDOMETRITIS, CHRONIC

09837 GC SALPINGITIS (CHRONIC)

09839 CHR GC UPPER GU NEC

09840 GONOCOCCAL CONJUNCTIVIT

09841 GONOCOCCAL IRIDOCYCLITIS

09842 GONOCOCCAL ENDOPHTHALMIA

09843 GONOCOCCAL KERATITIS

09849 GONOCOCCAL EYE NEC

09850 GONOCOCCAL ARTHRITIS

09851 GONOCOCCAL SYNOVITIS

09852 GONOCOCCAL BURSITIS

09853 GONOCOCCAL SPONDYLITIS

09859 GC INFECT JOINT NEC

0986 GONOCOCCAL INFEC PHARYNX

0987 GC INFECT ANUS & RECTUM

09881 GONOCOCCAL KERATOSIS

09882 GONOCOCCAL MENINGITIS

09883 GONOCOCCAL PERICARDITIS

09884 GONOCOCCAL ENDOCARDITIS

09885 GONOCOCCAL HEART DIS NEC

09886 GONOCOCCAL PERITONITIS

09889 GONOCOCCAL INF SITE NEC

3200 HEMOPHILUS MENINGITIS

3201 PNEUMOCOCCAL MENINGITIS

3202 STREPTOCOCCAL MENINGITIS

3203 STAPHYLOCOCC MENINGITIS

3207 MENING IN OTH BACT DIS

32081 ANAEROBIC MENINGITIS (from 1994)

32082 MNINGTS GRAM-NEG BCT NEC (from 1994)

32089 MENINGITIS OTH SPCF BACT (from 1994)

3209 BACTERIAL MENINGITIS NOS

3229 MENINGITIS NOS

3240 INTRACRANIAL ABSCESS

3241 INTRASPINAL ABSCESS

3249 CNS ABSCESS NOS

36000 PURULENT ENDOPHTHALM NOS

36001 ACUTE ENDOPHTHALMITIS

36002 PANOPHTHALMITIS

36004 VITREOUS ABSCESS

37055 CORNEAL ABSCESS

37200 ACUTE CONJUNCTIVITIS NOS

37203 MUCOPUR CONJUNCTIVIT NEC

37204 PSEUDOMEMB CONJUNCTIVIT

37220 BLEPHAROCONJUNCTIVIT NOS

37221 ANGULAR BLEPHAROCONJUNCT

37230 CONJUNCTIVITIS NOS

37300 BLEPHARITIS NOS

37301 ULCERATIVE BLEPHARITIS

37311 HORDEOLUM EXTERNUM

37312 HORDEOLUM INTERNUM

37313 ABSCESS OF EYELID

37500 DACRYOADENITIS NOS

37501 ACUTE DACRYOADENITIS

37530 DACRYOCYSTITIS NOS

37531 ACUTE CANALICULITIS

37532 ACUTE DACRYOCYSTITIS

37600 ACUTE INFLAM NOS, ORBIT

37601 ORBITAL CELLULITIS

37602 ORBITAL PERIOSTITIS

37603 ORBITAL OSTEOMYELITIS

37604 TENONITIS

38010 INFEC OTITIS EXTERNA NOS

38011 ACUTE INFECTION OF PINNA

38012 ACUTE SWIMMERS' EAR

38013 AC INFECT EXTERN EAR NEC

38014 MALIGNANT OTITIS EXTERNA

38150 EUSTACHIAN SALPING NOS

38151 AC EUSTACHIAN SALPING

38200 AC SUPP OTITIS MEDIA NOS

38201 AC SUPP OM W DRUM RUPT

38202 AC SUPP OM IN OTH DIS

3821 CHR TUBOTYMP SUPP OTITIS MEDIA

3822 CHR ATTICOANTRAL SUPP OTITIS

MEDIA

3823 CHR SUPP OTITIS MEDIA NOS

3824 SUPPUR OTITIS MEDIA NOS

3829 OTITIS MEDIA NOS

38300 AC MASTOIDITIS W/O COMPL

38301 SUBPERI MASTOID ABSCESS

38302 AC MASTOIDITIS-COMPL NEC

38320 PETROSITIS NOS

38321 ACUTE PETROSITIS

38400 ACUTE MYRINGITIS NOS

38630 LABYRINTHITIS NOS

38631 SEROUS LABYRINTHITIS

38632 CIRCUMSCRI LABYRINTHITIS

38633 SUPPURATIV LABYRINTHITIS

4200 AC PERICARDIT IN OTH DIS

42090 ACUTE PERICARDITIS NOS

42099 ACUTE PERICARDITIS NEC

4210 AC/SUBAC BACT ENDOCARD

4211 AC/SUBAC INFECT ENDOCARD

4219 AC/SUBAC ENDOCARDIT NOS

42292 SEPTIC MYOCARDITIS

4610 AC MAXILLARY SINUSITIS

4611 AC FRONTAL SINUSITIS

4612 AC ETHMOIDAL SINUSITIS

4613 AC SPHENOIDAL SINUSITIS

4618 OTHER ACUTE SINUSITIS

4619 ACUTE SINUSITIS NOS

462 ACUTE PHARYNGITIS

463 ACUTE TONSILLITIS

46430 AC EPIGLOTTITIS NO OBSTR

46431 AC EPIGLOTTITIS W OBSTR

4660 ACUTE BRONCHITIS

475 PERITONSILLAR ABSCESS

47822 PARAPHARYNGEAL ABSCESS

47824 RETROPHARYNGEAL ABSCESS

481 PNEUMOCOCCAL PNEUMONIA

4820 K. PNEUMONIAE PNEUMONIA

4821 PSEUDOMONAL PNEUMONIA

4822 H.INFLUENZAE PNEUMONIA

48230 STREPTOCOCCAL PNEUMN NOS (from 1994)

48231 PNEUMONIA STRPTOCOCCUS A (from 1994)

48232 PNEUMONIA STRPTOCOCCUS B (from 1994)

48239 PNEUMONIA OTH STREP (from 1994)

48240 STAPHYLOCOCCAL PNEU NOS (from 2002)

48241 STAPH AUREUS PNEUMONIA (from 2002)

48249 STAPH PNEUMONIA NEC (from 2002)

48281 PNEUMONIA ANAEROBES (from 1994)

48282 PNEUMONIA E COLI (from 1994)

48283 PNEUMO OTH GRM-NEG BACT (from 1994)

48284 LEGIONNAIRES' DISEASE (from 1994)

48289 PNEUMONIA OTH SPCF BACT (from 1994)

4829 BACTERIAL PNEUMONIA NOS

4843 PNEUMONIA IN WHOOPING COUGH

4845 PNEUMONIA IN ANTHRAX

4848 PNEUMONIA IN OTHER INF DIS

485 BRONCHOPNEUMONIA ORG NOS

486 PNEUMONIA, ORGANISM NOS

490 BRONCHITIS NOS

49122 OBS CHR BRONC W AC BRONC (from 2005)

4941 BRONCHIECTASIS W AC EXAC

5100 EMPYEMA WITH FISTULA

5109 EMPYEMA W/O FISTULA

5111 BACT PLEUR/EFFUS NOT TB

5130 ABSCESS OF LUNG

5131 ABSCESS OF MEDIASTINUM

51901 TRACHEOSTOMY INFECTION

5192 MEDIASTINITIS

5220 PULPITIS

5225 PERIAPICAL ABSCESS

5227 PERIAPICAL ABSC W SINUS

5230 ACUTE GINGIVITIS

52300 ACUTE GINGITITIS, PLAQUE (not in reference list)

52301 AC GINGIVITIS,NONPLAQUE (not in reference list)

5233 ACUTE PERIODONTITIS

52300 AGGRES PERIODONTITIS NOS (not in reference list)

52331 AGGRES PERIODONTITIS,LOC (not in reference list)

52332 AGGRES PERIODONTITIS,GEN (not in reference list)

52333 ACUTE PERIODONTITIS (not in reference list)

5264 INFLAMMATION OF JAW

5273 SALIVARY GLAND ABSCESS

5283 CELLULITIS/ABSCESS MOUTH

53641 GASTROSTOMY INFECTION (from 2002)

5400 AC APPEND W PERITONITIS

5401 ABSCESS OF APPENDIX

5409 ACUTE APPENDICITIS NOS

541 APPENDICITIS NOS

542 OTHER APPENDICITIS

56201 DVRTCLI SML INT W/O HMRG

56203 DVRTCLI SML INT W HMRHG

56211 DVRTCLI COLON W/O HMRHG

56213 DVRTCLI COLON W HMRHG

566 ANAL & RECTAL ABSCESS

5670 PERITONITIS IN INFEC DIS

5671 PNEUMOCOCCAL PERITONITIS

5672 SUPPURAT PERITONITIS NEC

56721 PERITONITIS (ACUTE) GEN (not in reference list)

56722 PERITONEAL ABSCESS (not in reference list)

56723 SPONTAN BACT PERITONITIS (not in reference list)

56729 SUPPURAT PERITONITIS NEC (not in reference list)

56731 PSOAS MUSCLE ABSCESS (not in reference list)

56738 RETROPERITON ABSCESS NEC (not in reference list)

56739 RETROPERITON INFECT NEC (not in reference list)

56781 CHOLEPERITONITIS (not in reference list)

56782 SCLEROSING MESENTERITIS (not in reference list)

56789 PERITONITIS NEC (not in reference list)

5679 PERITONITIS NOS

5695 INTESTINAL ABSCESS

56961 COLOSTY/ENTEROST INFECTN

5720 ABSCESS OF LIVER

5721 PORTAL PYEMIA

57400 CHOLELITH W AC CHOLECYST

57401 CHOLELITH/AC GB INF-OBST

57430 CHOLEDOCHOLITH/AC GB INF

57431 CHOLEDOCHLITH/AC GB-OBST

57460 GALL&BIL CAL W/AC W/O OB

57461 GALL&BIL CAL W/AC W OBS

57480 GAL&BIL CAL W/AC&CHR W/O

57481 GAL&BIL CAL W/AC&CH W OB

5750 ACUTE CHOLECYSTITIS

57510 CHOLECYSTITIS UNSPEC (from 1999)

57512 AC&CHRON CHOLECYSTITIS (from 1999)

5754 PERFORATION GALLBLADDER

5761 CHOLANGITIS

5763 PERFORATION OF BILE DUCT

5770 ACUTE PANCREATITIS

59010 AC PYELONEPHRITIS NOS

59011 AC PYELONEPHR W MED NECR

5902 RENAL/PERIRENAL ABSCESS

5903 PYELOURETERITIS CYSTICA

59080 PYELONEPHRITIS NOS

59081 PYELONEPHRIT IN OTH DIS

5909 INFECTION OF KIDNEY NOS

5950 ACUTE CYSTITIS

5954 CYSTITIS IN OTH DIS

59581 CYSTITIS CYSTICA

59589 CYSTITIS NEC

5959 CYSTITIS NOS

5970 URETHRAL ABSCESS

59800 URETHR STRICT:INFECT NOS

59801 URETH STRICT:OTH INFECT

5990 URIN TRACT INFECTION NOS

6010 ACUTE PROSTATITIS

6012 ABSCESS OF PROSTATE

6013 PROSTATOCYSTITIS

6014 PROSTATITIS IN OTH DIS

6018 PROSTATITIS

6019 PROSTATITIS NOS

6031 INFECTED HYDROCELE

6040 ORCHITIS WITH ABSCESS

60490 ORCHITIS/EPIDIDYMIT NOS

60491 ORCHITIS IN OTH DISEASE

6071 BALANOPOSTHITIS

6072 INFLAM DIS, PENIS NEC

6080 SEMINAL VESICULITIS

6084 MALE GEN INFLAM DIS NEC

6110 INFLAM DISEASE OF BREAST

6140 AC SALPINGO-OOPHORITIS

6141 CHRON SALPINGITIS OOPHORITIS

6142 SALPINGO-OOPHORITIS NOS

6143 ACUTE PARAMETRITIS

6144 CHRON OR UNSP CELLULITIS

6145 AC PELV PERITONITIS-FEM

6149 PID NOS

6150 AC UTERINE INFLAMMATION

6159 UTERINE INFLAM DIS NOS

6160 CERVICITIS

61610 VAGINITIS NOS

6163 BARTHOLIN'S GLND ABSCESS

6164 ABSCESS OF VULVA NEC

63400 SPON ABOR W PEL INF-UNSP (changed in 1999)

63401 SPON ABOR W PELV INF

63402 SPON ABOR W PEL INF-COMP

63500 LEG ABOR W PELV INF-UNSP

(changed in 1999)

63501 LEG ABOR W PELV INF-INC

63502 LEG ABOR W PELV INF-COMP

63600 ILLEG AB W PELV INF-UNSP (changed in 1999)

63601 ILLEG AB W PELV INF-INC

63602 ILLEG AB W PELV INF-COMP

63700 ABORT NOS W PEL INF-UNSP

(changed in 1999)

63701 ABORT NOS W PEL INF-INC

63702 ABORT NOS W PEL INF-COMP

6380 ATTEM ABORT W PELVIC INF

6390 POSTABORTION GU INFECT

64650 BACTERIURIA PREG-UNSPEC

64651 ASYM BACTERIURIA-DELIVER

64652 ASY BACTERURIA-DEL W P/P

64653 ASY BACTERIURIA-ANTEPART

64654 ASY BACTERIURIA-POSTPART

64660 GU INFECT IN PREG-UNSPEC

64661 GU INFECTION-DELIVERED

64662 GU INFECTION-DELIV W P/P

64663 GU INFECTION-ANTEPARTUM

64664 GU INFECTION-POSTPARTUM

64710 GONORRHEA IN PREG-UNSPEC

64711 GONORRHEA-DELIVERED

64712 GONORRHEA-DELIVER W P/P

64713 GONORRHEA-ANTEPARTUM

64714 GONORRHEA-POSTPARTUM

64780 INF DIS IN PREG NEC-UNSP

64781 INFECT DIS NEC-DELIVERED

64782 INFECT DIS NEC-DEL W P/P

64783 INFECT DIS NEC-ANTEPART

64784 INFECT DIS NEC-POSTPART

64790 INFECT IN PREG NOS-UNSP

64791 INFECT NOS-DELIVERED

64792 INFECT NOS-DELIVER W P/P

64793 INFECT NOS-ANTEPARTUM

64794 INFECT NOS-POSTPARTUM

65840 AMNIOTIC INFECTION-UNSP

65841 AMNIOTIC INFECTION-DELIV

65843 AMNIOTIC INFECT-ANTEPART

67000 MAJOR PUERP INFECT-UNSP

67002 MAJOR PUERP INF-DEL P/P

67004 MAJOR PUERP INF-POSTPART

67500 INFECT NIPPLE PREG-UNSP

67501 INFECT NIPPLE-DELIVERED

67502 INFECT NIPPLE-DEL W P/P

67503 INFECT NIPPLE-ANTEPARTUM

67504 INFECT NIPPLE-POSTPARTUM

67510 BREAST ABSCESS PREG-UNSP

67511 BREAST ABSCESS-DELIVERED

67512 BREAST ABSCESS-DEL W P/P

67513 BREAST ABSCESS-ANTEPART

67514 BREAST ABSCESS-POSTPART

67580 BREAST INF PREG NEC-UNSP

67581 BREAST INFECT NEC-DELIV

67582 BREAST INF NEC-DEL W P/P

67583 BREAST INF NEC-ANTEPART

67584 BREAST INF NEC-POSTPART

67590 BREAST INF PREG NOS-UNSP

67591 BREAST INFECT NOS-DELIV

67592 BREAST INF NOS-DEL W P/P

67593 BREAST INF NOS-ANTEPART

67594 BREAST INF NOS-POSTPART

6800 CARBUNCLE OF FACE

6801 CARBUNCLE OF NECK

6802 CARBUNCLE OF TRUNK

6803 CARBUNCLE OF ARM

6804 CARBUNCLE OF HAND

6805 CARBUNCLE OF BUTTOCK

6806 CARBUNCLE OF LEG

6807 CARBUNCLE OF FOOT

6808 CARBUNCLE, SITE NEC

6809 CARBUNCLE NOS

68100 CELLULITIS, FINGER NOS

68101 FELON

68102 ONYCHIA OF FINGER

68110 CELLULITIS, TOE NOS

68111 ONYCHIA OF TOE

6819 CELLULITIS OF DIGIT NOS

6820 CELLULITIS OF FACE

6821 CELLULITIS OF NECK

6822 CELLULITIS OF TRUNK

6823 CELLULITIS OF ARM

6824 CELLULITIS OF HAND

6825 CELLULITIS OF BUTTOCK

6826 CELLULITIS OF LEG

6827 CELLULITIS OF FOOT

6828 CELLULITIS, SITE NEC

6829 CRLLULITIS, SITE NOS

683 ACUTE LYMPHADENITIS

684 IMPETIGO

68600 PYODERMA NOS (from 1999)

68601 PYODERMA GANGRENOSUM (from 1999)

68609 PYODERMA OTHER (from 1999)

6868 LOCAL SKIN INFECTION NEC

6869 LOCAL SKIN INFECTION NOS

69581 RITTER'S DISEASE

70700 DECUBITUS ULCER SITE NOS (from 2005)

70701 DECUBITUS ULCER,ELBOW (from 2005)

70702 DECUBITUS ULCER,UP BACK (from 2005)

70703 DECUBITUS ULCER,LOW BACK (from 2005)

70704 DECUBITUS ULCER,HIP (from 2005)

70705 DECUBITUS ULCER,BUTTOCK (from 2005)-

70706 DECUBITUS ULCER,ANKLE (from 2005)

70707 DECUBITUS ULCER,HEEL (from 2005)

70709 DECUBITUS ULCER,SITE NEC (from 2005)

71100 PYOGEN ARTHRITIS-UNSPEC

71101 PYOGEN ARTHRITIS-SHLDER

71102 PYOGEN ARTHRITIS-UP/ARM

71103 PYOGEN ARTHRITIS-FOREARM

71104 PYOGEN ARTHRITIS-HAND

71105 PYOGEN ARTHRITIS-PELVIS

71106 PYOGEN ARTHRITIS-L/LEG

71107 PYOGEN ARTHRITIS-ANKLE

71108 PYOGEN ARTHRITIS NEC

71109 PYOGEN ARTHRITIS-MULT

71190 INF ARTHRITIS NOS-UNSPEC

71191 INF ARTHRITIS NOS-SHLDER

71192 INF ARTHRITIS NOS-UP/ARM

71193 INF ARTHRIT NOS-FOREARM

71194 INF ARTHRIT NOS-HAND

71195 INF ARTHRIT NOS-PELVIS

71196 INF ARTHRIT NOS-L/LEG

71197 INF ARTHRIT NOS-ANKLE

71198 INF ARTHRIT NOS-OTH SITE

71199 INF ARTHRITIS NOS-MULT

7280 INFECTIVE MYOSITIS

72886 NECROTIZING FASCIITIS (from 1997)

73000 AC OSTEOMYELITIS-UNSPEC

73001 AC OSTEOMYELITIS-SHLDER

73002 AC OSTEOMYELITIS-UP/ARM

73003 AC OSTEOMYELITIS-FOREARM

73004 AC OSTEOMYELITIS-HAND

73005 AC OSTEOMYELITIS-PELVIS

73006 AC OSTEOMYELITIS-L/LEG

73007 AC OSTEOMYELITIS-ANKLE

73008 AC OSTEOMYELITIS NEC

73009 AC OSTEOMYELITIS-MULT

73010 CHR OSTEOMYELITIS-UNSP

73011 CHR OSTEOMYELIT-SHLDER

73012 CHR OSTEOMYELIT-UP/ARM

73013 CHR OSTEOMYELIT-FOREARM

73014 CHR OSTEOMYELIT-HAND

73015 CHR OSTEOMYELIT-PELVIS

73016 CHR OSTEOMYELIT-L/LEG

73017 CHR OSTEOMYELIT-ANKLE

73018 CHR OSTEOMYELIT NEC

73019 CHR OSTEOMYELIT-MULT

73020 OSTEOMYELITIS NOS-UNSPEC

73021 OSTEOMYELITIS NOS-SHLDER

73022 OSTEOMYELITIS NOS-UP/ARM

73023 OSTEOMYELIT NOS-FOREARM

73024 OSTEOMYELITIS NOS-HAND

73025 OSTEOMYELITIS NOS-PELVIS

73026 OSTEOMYELITIS NOS-L/LEG

73027 OSTEOMYELITIS NOS-ANKLE

73028 OSTEOMYELIT NOS-OTH SITE

73029 OSTEOMYELITIS NOS-MULT

73030 PERIOSTITIS-UNSPEC

73031 PERIOSTITIS-SHLDER

73032 PERIOSTITIS-UP/ARM

73033 PERIOSTITIS-FOREARM

73034 PERIOSTITIS-HAND

73035 PERIOSTITIS-PELVIS

73036 PERIOSTITIS-L/LEG

73037 PERIOSTITIS-ANKLE

73038 PERIOSTITIS NEC

73039 PERIOSTITIS-MULT

73080 BONE INFECT NEC-UNSPEC

73081 BONE INFECT NEC-SHLDER

73082 BONE INFECT NEC-UP/ARM

73083 BONE INFECT NEC-FOREARM

73084 BONE INFECT NEC-HAND

73085 BONE INFECT NEC-PELVIS

73086 BONE INFECT NEC-L/LEG

73087 BONE INFECT NEC-ANKLE

73088 BONE INFECT NEC-OTH SITE

73089 BONE INFECT NEC-MULT

73090 BONE INFEC NOS-UNSP SITE

73091 BONE INFECT NOS-SHLDER

73092 BONE INFECT NOS-UP/ARM

73093 BONE INFECT NOS-FOREARM

73094 BONE INFECT NOS-HAND

73095 BONE INFECT NOS-PELVIS

73096 BONE INFECT NOS-L/LEG

73097 BONE INFECT NOS-ANKLE

73098 BONE INFECT NOS-OTH SITE

73099 BONE INFECT NOS-MULT

7713 TETANUS NEONATORUM

7714 OMPHALITIS OF NEWBORN

7715 NEONATAL INFEC MASTITIS

77181 NB SEPTICEMIA SEPSIS (from 2005)

77182 NB URINARY TRACT INFECTN (from 2005)

77183 BACTEREMIA OF NEWBORN (from 2005)

77189 PERINATAL INFECTION NEC (from 2005)

7775 NECROT ENTEROCOLITIS NB

7854 GANGRENE

78552 SEPTIC SHOCK (from 2005)

7907 BACTEREMIA

9101 ABRASION HEAD-INFECTED

9103 BLISTER HEAD-INFECTED

9105 INSECT BITE HEAD-INFECT

9107 FOREIGN BODY HEAD-INFECT

9109 SUPERF INJ HEAD NEC-INF

9111 ABRASION TRUNK-INFECTED

9113 BLISTER TRUNK-INFECTED

9115 INSECT BITE TRUNK-INFEC

9117 FOREIGN BODY TRUNK-INFEC

9119 SUPERF INJ TRNK NEC-INF

9121 ABRASION SHLDR/ARM-INFEC

9123 BLISTER SHOULDER/ARM-INF

9125 INSECT BITE SHLD/ARM-INF

9127 FB SHOULDER/ARM-INFECT

9129 SUPERF INJ SHLDR NEC-INF

9131 ABRASION FOREARM-INFECT

9133 BLISTER FOREARM-INFECTED

9135 INSECT BITE FOREARM-INF

9137 FOREIGN BODY FOREARM-INF

9139 SUPRF INJ FORARM NEC-INF

9141 ABRASION HAND-INFECTED

9143 BLISTER HAND-INFECTED

9145 INSECT BITE HAND-INFECT

9147 FOREIGN BODY HAND-INFECT

9149 SUPERF INJ HAND NEC-INF

9151 ABRASION FINGER-INFECTED

9153 BLISTER FINGER-INFECTED

9155 INSECT BITE FINGER-INFEC

9157 FOREIGN BODY FINGER-INF

9159 SUPRF INJ FINGER NEC-INF

9161 ABRASION HIP/LEG-INFECT

9163 BLISTER HIP & LEG-INFECT

9165 INSECT BITE HIP/LEG-INF

9167 FOREIGN BDY HIP/LEG-INF

9169 SUPERF INJ LEG NEC-INFEC

9171 ABRASION FOOT/TOE-INFEC

9173 BLISTER FOOT & TOE-INFEC

9175 INSECT BITE FOOT/TOE-INF

9177 FOREIGN BDY FOOT/TOE-INF

9179 SUPERF INJ FOOT NEC-INF

9191 ABRASION NEC-INFECTED

9193 BLISTER NEC-INFECTED

9195 INSECT BITE NEC-INFECTED

9197 SUPERFICIAL FB NEC-INFEC

9199 SUPERFIC INJ NEC-INFECT

99590 SIRS, NOS (from 2005)

99591 SIRS-INFECT W/O ORG DYSF (from 2005)

99592 SIRS-INFECT W ORGAN DYSF (from 2005)

99660 INFECT INFLAMM DEVICE IMPLANT GRAFT NOS

99661 INFECT INFLAMM CARDIAC DEVICE IMPLANT GRAFT

99662 INFECT INFLAMM VASCULAR DEVICE IMPLANT GRAFT

99663 INFECT INFLAMM NERV DEVICE IMPLANT GRAFT

99664 INFECT INFLAMM URINARY CATH

99665 INFECT INFLAMM GU DEVICE IMPLANT GRAFT

99666 INFECT INFLAMM JOINT PROSTH

99667 INFECT INFLAMM OTH ORTHOP DEVICE IMPLANT GRAFT NOS

99669 INFECT INFLAMM OTH DEVICE IMPLANT GRAFT

99762 INFECTION AMPUTAT STUMP

99851 INFECTED POSTOP SEROMA (from 1999)

99859 OTHER POSTOP INFECTION (from 1999)

9993 INFEC COMPL MED CARE NEC

2.14 APPENDIX M INFECTION APR-DRGS

HCFA-DRG	APR-DRG
020 NERVOUS SYSTEM INFECTION EXCEPT VIRAL MENINGITIS	049. Bacterial & Tubercolous Infections of Nervous System 050. Non-Bacterial Infections of Nervous System Except Viral Meningitis
068 OTITIS MEDIA AND URI, AGE GREATER THAN 17 W/ CC 069 OTITIS MEDIA AND URI, AGE GREATER THAN 17 W/O CC 070 OTITIS MEDIA AND URI, AGE LESS THAN OR EQUAL TO 17	113. Epiglottis, Otitis Media, Ury & Langotracheitis
079 RESPIRATORY INFECTIONS AND INFLAMMATIONS, AGE GREATER THAN 17 W/ CC 080 RESPIRATORY INFECTIONS AND INFLAMMATIONS, AGE GREATER THAN 17 W/O CC 081 RESPIRATORY INFECTIONS AND INFLAMMATIONS, AGE 0-17	137. Respiratory Infections & Inflammations
089 SIMPLE PNEUMONIA AND PLEURISY, AGE GREATER THAN 17 W/ CC 090 SIMPLE PNEUMONIA AND PLEURISY, AGE GREATER THAN 17 W/O CC 091 SIMPLE PNEUMONIA AND PLEURISY, AGE LESS THAN OR EQUAL TO 17	139. Simple Pneumonia
126 ACUTE AND SUBACUTE ENDOCARDITIS	193. Acute & Subacute Endocarditis
238 OSTEOMYELITIS	344. Osteomyelitis
242 SEPTIC ARTHRITIS	345. Septic Arthritis
277 CELLULITIS, AGE GREATER THAN 17 W/ CC 278 CELLULITIS, AGE GREATER THAN 17 W/O CC 279 CELLULITIS, AGE 0-17	383. Cellulitis
320 KIDNEY AND URINARY TRACT INFECTIONS, AGE GREATER THAN 17 W/ CC 321 KIDNEY AND URINARY TRACT INFECTIONS, AGE GREATER THAN 17 W/O CC 322 KIDNEY AND URINARY TRACT INFECTIONS, AGE 0-17	463. Kidney & Urinary Tract Infections
HCFA-DRG	**APR-DRG**
368 INFECTIONS OF FEMALE REPRODUCTIVE SYSTEM	531 Infections, female reproductive system
415 OR PROCEDURE FOR INFECTIOUS AND PARASITIC DISEASES	710 O.R. procedure for infectious & parasitic diseases
416 SEPTICEMIA, AGE GREATER THAN 17 417 SEPTICEMIA, AGE 0-17	724 Other infectious & parasitic diseases diagnoses
423 OTHER INFECTIOUS AND PARASITIC DISEASES DIAGNOSES	720. Septicemia

2.15 APPENDIX N CANCER APR-DRGS

HCFA-DRG	APR-DRG
010 NERVOUS SYSTEM NEOPLASMS W CC	041. Nervous Systems Neoplasms
011 NERVOUS SYSTEM NEOPLASMS W/O CC	058. Other Disorders of Nervous System with primary diagnosis 191.XX; 192.XX; 198.3; 198.4
064 EAR, NOSE, MOUTH & THROAT MALIGNANCY	110. Ear, Nose, Mouth & Throat Malignancy
082 RESPIRATORY NEOPLASMS	136. Respiratory Malignancy
172 DIGESTIVE MALIGNANCY W CC	240. Digestive Malignancy
173 DIGESTIVE MALIGNANCY W/O CC	264. Other Hepatobiliary & Pancreas Procedures
199 HEPATOBILIARY DIAGNOSTIC PROCEDURE FOR MALIGNANCY	Procedures with primary diagnoses of cancer
203 MALIGNANCY OF HEPATOBILIARY SYSTEM OR PANCREAS	281. Malignancy of Hepatobilary System & Pancreas
239 PATHOLOGICAL FRACTURES & MUSCULOSKELETAL & CONN TISS MALIGNANCY	343. Musculoskeletal System and Connective Tissue Malignancy and Pathological Fractures
257 TOTAL MASTECTOMY FOR MALIGNANCY W CC	Procedures with primary diagnoses of cancer
258 TOTAL MASTECTOMY FOR MALIGNANCY W/O CC	362. Mastectomy Procedures
259 SUBTOTAL MASTECTOMY FOR MALIGNANCY W CC	Procedures with primary diagnoses of cancer
260 SUBTOTAL MASTECTOMY FOR MALIGNANCY W/O CC	382. Malignant Breast Disorders
274 MALIGNANT BREAST DISORDERS W CC	442. Kidney & Urinary Tract Procedures for Malignancy
275 MALIGNANT BREAST DISORDERS W/O CC	461. Kidney & Urinary Tract Malignancy
303 KIDNEY, URETER AND MAJOR BLADDER PROCEDURES FOR NEOPLASM	483. Testes Procedures with primary diagnoses 185 + 186.0 + 186.9 + 187.1 + 187.2 + 187.3 + 187.4 + 187.5 + 187.6 + 187.7 + 187.8 +187.9 195.3 + 198.82 + 236.4 + 236.5
318 KIDNEY & URINARY TRACT NEOPLASMS W CC	484. Other Male Reproductive System Procedures with primary diagnoses 185 + 186.0 + 186.9 + 187.1 + 187.2 + 187.3 + 187.4 + 187.5 + 187.6 + 187.7 + 187.8 + 187.9 + 195.3 + 198.82 + 236.4 + 236.5
319 KIDNEY & URINARY TRACT NEOPLASMS W/O CC	500. Malignancy, Male Reproductive System
338 TESTES PROCEDURES FOR MALIGNANCY	511. Uterine & Adnexa Procedures for Ovarian & Adnexal Malignancy
344 OTHER MALE REPRODUCTIVE SYSTEM O.R. PROCEDURES FOR MALIGNANCY	512. Uterine & Adnexa Procedures for Non-Ovarian & Non-Adnexal Malignancy
346 MALIGNANCY OF MALE REPRODUCTIVE SYSTEM W/ CC	517. D & C Conization with primary diagnoses 179 + 180.xx + 182.XX + 183.XX + 184.XX + 198.82 + 236.0 + 236.3
347 MALIGNANCY OF MALE REPRODUCTIVE SYSTEM W/O CC	530. Female Reproductive System Malignancy
354 UTERINE AND ADNEXA PROCEDURES FOR NONOVARIAN/ADNEXAL MALIGNANCY W/ CC	680. Lymphoma & Leukemia with Major Procedures
355 UTERINE AND ADNEXA PROCEDURES FOR NONOVARIAN/ADNEXAL MALIGNANCY W/O CC	681. Lymphoma & Leukemia with Any Other Procedures
357 UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIGNANCY	682. Myeloproliferative Disorder & poorly Differntiated Neoplasm with Major Procedure
363 D AND C, CONIZATION AND RADIOIMPLANT FOR MALIGNANCY	683. Myeloproliferative Disorder & poorly Differntiated Neoplasm with Any Other Procedure
367 MALIGNANCY OF FEMALE REPRODUCTIVE SYSTEM W/O CC	690. Acute Leukemia
400 LYMPHOMA & LEUKEMIA W MAJOR O.R. PROCEDURE	691. Lymphoma & Non-Acute Leukemia
401 LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W CC	692. Radiotherapy
402 LYMPHOMA & NON-ACUTE LEUKEMIA W OTHER O.R. PROC W/O CC	693. Chemotherapy
403 LYMPHOMA & NON-ACUTE LEUKEMIA W CC	862. Other Factors Influencing Health Status with primary diagnoses V10.XX + V71.1
404 LYMPHOMA & NON-ACUTE LEUKEMIA W/O CC	694. Other Myeloproliferative Disorder & poorly Differntiated Neoplasms
405 ACUTE LEUKEMIA W/O MAJOR O.R. PROCEDURE AGE 0-17	
406 MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R.PROC W CC	

407 MYELOPROLIF DISORD OR POORLY DIFF NEOPL W MAJ O.R.PROC W/O CC 408 MYELOPROLIF DISORD OR POORLY DIFF NEOPL W OTHER O.R.PROC 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 473 ACUTE LEUKEMIA W/O MAJOR OR PROCEDURE, AGE GREATER THAN 17 492 CHEMOTHERAPY W ACUTE LEUKEMIA AS SECONDARY DIAGNOSIS 539 LYMPHOMA & LEUKEMIA W MAJOR OR PROCEDURE W CC 540 LYMPHOMA & LEUKEMIA W MAJOR OR PROCEDURE W/O CC	

2.16 APPENDIX O ABSTRACTION TOOL

Decubitus (one criteria is required per decubitus ulcer)

	1	2	3
Grade 1 : non-blanchable erythema of intact skin. Discolouration of the skin, warmth, oedema, induration or hardness may also be used as indicators, particularly on individuals with darker skin.	☐	☐	☐
Grade 2 : partial thickness skin loss involving epidermis, dermis, or both. The ulcer is superficial and presents clinically as an abrasion or blister.	☐	☐	☐
Grade 3 : full thickness skin loss involving damage to or necrosis of subcutaneous tissue that may extend down to, but not through underlying fascia.	☐	☐	☐
Grade 4 : extensive destruction, tissue necrosis, or damage to muscle, bone, or supporting structures with or without full thickness skin loss.	☐	☐	☐
Decubitus in medical record, no further specification	☐	☐	☐
No clinical criteria for decubitus	☐		

Deep vein thrombosis/Pulmonary embolism (DVT/PE) (at least one criteria is required)

Surgical procedure performed ☐
New pulmonary embolism based on abnormal pulmonary angiography ☐
High-probability ventilation/perfusion scintigraphy or perfusion scintigraphy alone : single or multiple wedge-shaped perfusion defects with or without matching chest roengenographic abnormalities; wedge-shaped areas of overperfusion usually coexist ☐
New pulmonary embolism based on spiral CT ☐
Diagnostic echocardiography : visualization of embolized thrombi in the central pulmonary arteries or in right heart chambers ☐
Indirect evidence of pulmonary embolism with echocardiography in case of massive PE and hemodynamic instability ☐
Ultrasonography positive for DVT of the lower extremity or positive venogram ☐
DVT/PE in medical record, no further specification ☐
No clinical criteria for DVT/PE ☐

Postoperative Sepsis (at least one criteria is required)

Surgical procedure performed ☐

Infection : inflammatory reaction due to the presence of micro-organisms or the invasion of otherwise sterile tissue by micro-organisms ☐

Sepsis : systemic reaction to infection. The systemic reaction is defined by <u>two or more</u> of the following conditions as a result of infection :

- Temperature > 38 °C or < 36 °C ☐
- Heart rate > 90/min ☐
- Respiration rate > 20/min or $PaCO_2$ < 32 mmHg ☐
- Leukocytes > 12,000/µl or < 4,000/µl or > 10% immature forms ☐

Severe sepsis

- Sepsis associated with a new organ dysfunction ☐
- Sepsis associated with hypoperfusion (ex : lactate acidosis, oliguria (< 30 ml/h or < 0,5 ml/kg/h), or an acute alteration in mental status) ☐
- Sepsis associated with hypotension (systolic arterial pressure < 90 mmHg, MAP (mean arterial pressure) < 60 mmHg or a decrease in systolic blood pressure of ≥ 40 mmHg from baseline in the absence of other causes for hypotension) ☐

Septic shock

Persistent arterial hypotension unexplained by other causes. Hypotension = systolic arterial pressure < 90 mmHg, MAP < 60 mmHg or a reduction in systolic blood pressure of ≥ 40 mmHg from baseline, despite adequate volume resuscitation, in the absence of other causes for hypotension. ☐

Sepsis in medical record, no further specification ☐

No clinical criteria for sepsis ☐

Ventilator associated pneumonia (at least one criteria is required)

Parenchymal lung infection occurring more than 48-72 hours after initiation of mechanical ventilation ☐

and

At least **2 of 3** clinical features :

- o Fever greater than 38°C ☐
- o Leukocytosis (> 10 000/mm³) or leukopenia (< 4 000/mm³) ☐
- o Purulent tracheal secretions (bacteria or inflammatory cells) ☐

Ventilator associated pneumonia in medical record, no further specification ☐

No clinical criteria for ventilator associated pneumonia ☐

Postoperative wound infection (at least one criteria is required)

Surgical procedure performed ☐

Incisional infection as evidenced by superficial drainage and positive gram stain for white blood cells ☐

Incisional infection as evidenced by documentation of red (erythema) and hot or swollen and painful incision site, and clinician note of purulent drainage of infection site ☐

Incisional infection as evidenced by superficial drainage, positive gram stain for white blood cells, and clinician note of purulent drainage of infection site ☐

Incisional infection as evidenced by documentation of red (erythema) and hot or swollen and painful incision site, and fever, leukocytosis, or left shift ☐

Deep infection as evidenced by drainage and positive gram stain for white blood cells count ☐

Deep infection as evidenced by fever, leukocytosis, or left shift and x-ray, CT scan or ultrasound evidence of abscess at anatomical site of surgical incision ☐

Deep infection as evidenced by creptitus in the wound on physical exam or x-ray, CT scan, or ultrasound evidence of gas at anatomical site or surgical incision, and documentation of red (erythema) and hot or swollen and painful incision site with fever ☐

Postoperative wound infection in medical record, no further specification ☐

No clinical criteria for postop wound infection ☐

Definition adverse event (AE) :

an unintended injury or complication which
results in disability, death or prolongation of hospital stay, and is
caused by health care management rather than the patient's disease

a) Was there a patient injury or complication? ☐ Yes ☐ No
if yes, what kind ?

Decubitus	☐	DVT/PE	☐
Sepsis	☐	Ventilator associated pneumonia	☐
Postoperative wound infection	☐	Other	☐

If other, specify : _____

Did that complication present at the time of admission ? ☐ Yes ☐ No

b) Was the patient's injury/complication caused by :

1 Health care management ☐

2 Health care management interacting with disease process ☐
3 Solely by disease process ☐
4 Not documented ☐
5 No object ☐

c) Did the injury or complication result in disability at the time of discharge and/or a prolonged hospital stay (or re-admission or out-patient treatment) or death?
(at least one possibility)

No disability ☐
Harm that contributed to or resulted in temporary harm to the patient and required intervention ☐
Harm that contributed to or resulted in prolonged hospitalization ☐
Harm that contributed to or resulted in permanent patient disability ☐
Harm that required intervention to sustain life ☐
Harm that contributed to or resulted in the death of a patient ☐
Harm after discharge (at home) ☐
Not documented ☐
No object ☐

d) Estimation of extra length of stay as a consequence of the adverse event :

Amount of days ☐☐

e) Existence of Potential quality problems :

Inadequate preparation for surgery ☐
Problem with technical care during a surgical procedur ☐
Problem with anaesthesia care before or during a surgical procedure ☐
Problem with medications administered ☐
Failure to monitor patient condition or medications ☐
Delay in services or treatment ☐
Failure to respond to abnormal findings ☐
Failure to provide preventive care (ex prophylactic antibiotic or anticoagulation) ☐
Failure to recognize procedure contraindication ☐
Failure to recognize medication contraindication ☐
Poor communication or coordination of care ☐
Inadequate or inappropriate equipment or facilities ☐
Inadequate or inappropriate staffing ☐
Not documented ☐
No object ☐

f) Consider the extent to which health care management rather than the disease process is responsible for the AE.

1 Virtually no evidence for management causation/system failure ☐
2 Slight-to-modest evidence for management causation ☐
3 Management causation not likely; less than 50-50 but close call ☐
4 Management causation more likely than not, more than 50-50 but close call ☐
5 Moderate/strong evidence for management causation ☐
6 Virtually certain evidence for management causation ☐

g) Degree of preventability of the adverse event

1 No preventability : virtually no evidence for preventability
☐
2 Low preventability : slight-to-modest evidence for preventability
☐
3 Low preventability : preventability not likely, less than 50-50 but close call
☐
4 High preventability : preventability more likely than not, more than 50-50 but close call
☐
5 High preventability : strong evidence for preventability
☐
6 High preventability : virtually certain evidence for preventability
☐

h) Date of adverse event (dd/mm/yyyy) ☐☐/☐☐/☐☐☐☐
Day of procedure who caused the adverse event ☐☐/☐☐/☐☐☐☐

If available :Time of day : Morning ☐
Afternoon ☐
Evening ☐
Time of adverse event (24 hour clock) ☐☐☐☐

i) Specialty caring for patient

	Specialty patient care	Specialty AE occurrence
Medical admission		
Cardiology – CCU	☐	☐
Dermatology	☐	☐
Endocrinology	☐	☐
Gastro-enterology	☐	☐
Geriatrics	☐	☐
Haematology	☐	☐
Immunology and allergy	☐	☐
Infectious disease	☐	☐
Internal medicine	☐	☐
Medical oncology	☐	☐
Medical ophthalmology	☐	☐
Nephrology	☐	☐
Neurology	☐	☐
Pulmonary disease	☐	☐
Rheumatology	☐	☐
Other (specify)	_____	_____
Surgical admission		
Anaesthesiology	☐	☐
Cardiac surgery	☐	☐
Colon/rectal surgery	☐	☐
General surgery	☐	☐
Neurosurgery	☐	☐

ENT surgery	☐	☐
Orthopaedic surgery	☐	☐
Plastic surgery	☐	☐
Thoracic surgery	☐	☐
Vascular surgery	☐	☐
Urologic surgery	☐	☐
Eye surgery	☐	☐
Other (specify) _____		_____
Emergency department	☐	☐
Intensive care		
Medical intensive care	☐	☐
Surgical intensive care	☐	☐
Uncertain	☐	☐

j) Area where the adverse event occurred :

☐ Emergency department
☐ Ward; specify _____
☐ Operating room
☐ Radiology
☐ Radiology – angiography
☐ Catheterisation lab
☐ Other (specify) _____

k) Additional care as a result of the adverse event

Additional medical care

Additional surgical intervention with general anesthesia or regional anesthesia

Additional surgical intervention under sedation

Technical procedure, non operating room procedure

Consultation or preoperative assessment additional

Cardiac catheterization

Angiography

Invasive diagnostic procedure

Any exam or test with control and nutritional or dietetic supervision

Additional treatment with frequency adjustment of dose and medical supervision

Clinical supervision by doctor (minimum 3 times per day)

Other : specify _____

Additional nursing care

Respiratory care : continuous or intermittent ventilator assistance (3 times per day)

Perfusion IV (continuous, intermittent, alimentation, medication)

Assessment of vital functions (every 2 hours during min 8 hours)

Daily hydro-electrolytic balance (input and output)

Operative or major post traumatic wound care or drains care,

including care of operative site at least 3 times daily

(excluding permanent nasogastric tube or vesical drain)

Nursing supervision of clinical state of patient (minimum 3 times per day)

Isolation measures for prevention of contamination

Other : specify _____

l) Short clinical information for clinical panel experts (if problem with clinical criteria or degree of preventability or process of care or treatment)

_____
_____
_____
_____
_____
_____
_____
_____

If another Adverse event return on paragraph "Definition adverse event (AE)"

2.17 APPENDIX P INFORMED CONSENT

2.17.1 French Informed consent

Collaboration au projet de recherche
« Adverse Events in Acute Hospitals » : Information Au patient

Madame, Monsieur,

Vous venez d'être sélectionné pour participer à un projet de recherche dont l'objectif concerne la qualité des soins dans les hôpitaux en Belgique. Pour cela, nous sollicitons votre permission d'accéder à votre dossier médical à *NOM DE L HOPITAL*.

But de l'étude

L'étude dont il est question s'appelle « Adverse Events in Acute Hospitals » (Les événements indésirables dans les hôpitaux aigus). Elle a pour but d'étudier certains aspects de la qualité des soins hospitaliers.

Pour ce faire, les données administratives de huit hôpitaux (trois en Wallonie, un en Région Bruxelloise et quatre en Flandre) vont être comparées aux données retrouvées dans le dossier médical. Le but de ce projet est de vérifier si les données administratives sont un bon moyen pour effectuer des contrôles de qualité dans un hôpital.

Comment la sélection a-t-elle été effectuée ?

Votre dossier a été choisi au hasard, par une sélection effectuée sur les données administratives de notre hôpital dans lequel vous avez séjourné au cours de l'année 2005.

Suis-je obligé de participer au projet ?

Votre adhésion à ce projet n'est pas obligatoire et c'est vous qui décidez d'y participer ou non. Si vous refusez d'y participer, il vous suffit de nous renvoyer le formulaire ci-joint signé en y indiquant votre souhait.

Tout courrier doit être renvoyé à l'adresse suivante :

ADRESSE DE L HOPITAL

Si vous ne répondez pas à ce courrier dans les quatre semaines suivant sa réception, nous considèrerons que vous acceptez.

Que vous participiez ou non à ce projet n'a aucune influence sur la relation que vous entretenez avec les médecins et les infirmiers de notre institution.

Qu'implique ma participation ?

Votre participation à ce projet n'implique aucune démarche de votre part et n'aura aucune conséquence ni médicale ni financière. Hormis retourner le formulaire ci-joint si vous refusez de participer, vous ne devez rien faire.

Confidentialité

Toutes les données qui seront utilisées dans le cadre de cette étude seront traitées confidentiellement dans le respect de « la loi sur la protection de la vie privée ». Nous vous garantissons que les données consultées dans votre dossier seront traitées anonymement.

Quelles sont les conséquences de cette étude ?

Les résultats obtenus dans les différents hôpitaux seront rassemblés et traités dans un rapport destiné aux instances fédérales. Ni l'identité des patients participants au projet, ni celle des hôpitaux volontaires ne seront mentionnées dans ce rapport.

Les commanditaires et les exécutants du projet

L'étude est commandée par Centre Fédéral d'Expertise des Soins de Santé – KCE. Les rapports d'étude du KCE doivent aider les responsables à prendre les décisions qui conduisent à l'allocation la plus efficace des moyens disponibles dans la dispensation des soins de façon à garantir la plus grande accessibilité à tous les usagers et à préserver le plus haut niveau de santé.

Le projet est coordonné en Wallonie et à Bruxelles par le Service des Informations Médico-Economiques (Simé) du CHU de Liège sous la direction du Dr P Kolh.

Les dossiers médicaux seront consultés par un médecin et une infirmière indépendants des hôpitaux volontaires.

Approbation de l'étude

Ce projet de recherche a été approuvé par le Comité d'Ethique de l'hôpital. Son rôle est de vérifier que toutes les garanties sont prises pour préserver la sécurité de vos données et de vos droits.

Précision

L'étude est dirigée par une équipe de recherche qui est indépendante de la prise en charge médicale et les dossiers médicaux ont été sélectionnés au hasard, c'est pourquoi l'équipe de recherche ignore le fait qu'il puisse s'agir d'une personne défunte. Si c'est le cas, l'équipe de recherche souhaite d'avance présenter ses excuses.

Collaboration au projet de recherche « Adverse Events in Acute Hospitals » : Formulaire de consentement

☐ J'ai pris connaissance de la lettre d'information au patient, je l'ai comprise et je **marque mon accord** pour participer à ce projet

☐ J'ai pris connaissance de la lettre d'information au patient concernant cette étude et je **ne souhaite pas** participer au projet de recherche « Adverse Events in Acute Hospitals »

Clause de confidentialité

L'équipe de recherche garantit que la participation au projet est volontaire, que toutes les données seront traitées confidentiellement et que l'identité des participants ne peut en aucun cas être retrouvée dans le rapport qui sera publié.

Fait à le

Patient (ou son représentant légal) :

_____ _____ _____

Nom Prénom Signature

2.17.2 Dutch Informed consent

Patiënteninformatie en vraag om medewerking aan een onderzoek

Wij willen uw toestemming vragen om uw medisch dossier van het Sint Jozef Ziekenhuis te Malle in te kijken in het kader van een onderzoeksproject over de kwaliteit van zorg in Belgische ziekenhuizen. Alvorens u al dan niet uw toestemming verleent, wordt het doel en de inhoud van deze studie verduidelijkt.

Doel van de studie

De studie met als titel 'Adverse events in acute hospitals' (Ongewenste gebeurtenissen in acute ziekenhuizen) heeft als doel bepaalde aspecten van kwaliteit van zorg in ziekenhuizen na te gaan. Administratieve gegevens van 4 Vlaamse en 4 Waalse ziekenhuizen zullen vergeleken worden met gegevens uit medische dossiers. De bedoeling van deze studie is om na te gaan of deze vergelijking een middel kan zijn om kwalititeitscontrole uit te voeren in het ziekenhuis en vervolgens aanpassingen door te voeren om deze kwaliteit te verbeteren.

Hoe werd de selectie uitgevoerd?

Uw dossier werd op een toevallige manier uitgekozen via administratieve gegevens omdat u tijdens het jaar 2005 in het ziekenhuis verbleef.

Is uw medewerking verplicht?

U beslist vrijwillig of u al dan niet wil deelnemen. Indien u NIET akkoord bent dat uw dossier voor deze studie wordt geanalyseerd, dan vragen we u om dit op het bijgevoegde formulier aan te duiden, en het formulier te ondertekenen en terug te sturen. Indien u WEL akkoord bent dan vragen we ook om dit aan te duiden en het toestemmingsformulier terug te sturen. Indien u niet antwoordt binnen de 4 weken na het versturen van het toestemmingsformulier, zal er echter worden van uitgegaan dat u akkoord bent.

Het al dan niet deelnemen aan deze studie heeft geen enkele invloed op uw relatie met de behandelende artsen en verpleegkundigen in het ziekenhuis.

Gevolgen van deelname aan de studie

Er zijn voor u persoonlijk geen voor- of nadelen verbonden aan deze studie. De bedoeling van de studie is evenwel dat de verkregen resultaten nuttig zouden zijn voor een verbetering van de kwaliteit van de ziekenhuisgeneeskunde. U dient, afgezien van het terugsturen van het toestemmingsformulier, geen andere inspanningen te leveren voor de studie.

Vertrouwelijkheid

Alle gegevens die van u verzameld worden in het kader van deze studie zullen vertrouwelijk behandeld worden zoals bepaald in de "wet op de bescherming van persoonsgegevens". Deze gegevens, samen met deze van andere patiënten worden in een computer ingegeven en anoniem verwerkt. Aan uw dossier wordt een uniek nummer toegekend zodat men uw identiteit buiten het ziekenhuis niet kan achterhalen.

Wat zal er gebeuren met de resultaten van het onderzoek?

De resultaten uit de 4 Vlaamse en 4 Waalse ziekenhuizen worden verzameld en verwerkt in een rapport dat naar het Federaal Kenniscentrum zal verstuurd worden. Noch de identiteit van deelnemende patiënten, noch de identiteit van deelnemende ziekenhuizen zal in het rapport bekend gemaakt worden.

Uitvoerders en opdrachtgevers

De studie wordt uitgevoerd door het Centrum voor Ziekenhuis- en Verplegingswetenschap te Leuven in opdracht van het Federaal Kenniscentrum (KCE) te Brussel. Het KCE geeft advies over bevindingen uit studies aan de Minister van Volksgezondheid teneinde de kwaliteit van zorg in ziekenhuizen te verbeteren.

De studie uitgevoerd in het Centrum voor Ziekenhuis- en Verplegingswetenschap staat onder leiding van Prof. Dr. A. Vleugels. De medische dossiers worden nagekeken door 2 personen, namelijk een arts en een apotheker.

Goedkeuring van de studie

Dit onderzoeksproject werd goedgekeurd door de Commissie voor Medische Ethiek van de faculteit geneeskunde van de KU Leuven. Het is de taak van deze commissie na te gaan of aan alle voorwaarden betreffende uw veiligheid en de vrijwaring van uw rechten wordt voldaan.

Verontschuldigingen bij voorbaat

Vermits de studie wordt uitgevoerd door een onafhankelijke onderzoeksequipe die niet betrokken was bij de patiëntenzorg en vermits dossiers op toevallige basis geselecteerd werden door middel van administratieve gegevens, kan de onderzoeksequipe niet op de hoogte zijn van het feit dat een persoon wiens dossier werd geselecteerd, eventueel reeds kan overleden zijn. Het kan daarom niet uitgesloten worden dat deze brief en het toestemmingsformulier op ongepaste wijze verstuurd werden ter attentie van een persoon die overleden is.

De onderzoeksequipe wenst zich hiervoor reeds bij voorbaat te verontschuldigen.

Toestemmingsformulier

Gelieve aan te kruisen :

- ☐ Ik bevestig dat ik de informatie omtrent deze studie heb gelezen en begrepen en dat ik akkoord ga om deel te nemen aan deze studie.

- ☐ Ik ga niet akkoord met deelname aan deze studie.

_____	_____	_____
Datum	Naam deelnemer	Handtekening deelnemer

Clausule van vertrouwelijkheid

De onderzoekers waarborgen hierbij dat de deelname aan het onderzoek vrijwillig is.

Alle gegevens zullen strikt vertrouwelijk behandeld worden. De identiteit van de deelnemer kan op geen enkele manier uit het gepubliceerde rapport achterhaald worden.

_____	_____	_____
Datum	Naam van de onderzoekers	Handtekening van de onderzoekers

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KCE reports

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36 Pharmacological and surgical treatment of obesity. Residential care for severely obese children in Belgium. D/2006/10.273/30.
37 Magnetic Resonance Imaging. D/2006/10.273/34.
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48 Chronic low back pain. D/2006/10.273.71.
49 Antiviral agents in seasonal and pandemic influenza. Literature study and development of practice guidelines. D/2006/10.273/67.
54 Cost-effectiveness analysis of rotavirus vaccination of Belgian infants D/2007/10.273/11.
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60 Pulmonary Function Tests in Adults D/2007/10.273/29.
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