



HEALTHGRADES®

## Hospital Report Cards™ Mortality and Complication Outcomes 2012 Methodology

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To help consumers evaluate and compare hospital performance, HealthGrades analyzed patient outcomes data for virtually every hospital in the country. HealthGrades used the following data sources.

- Medicare inpatient data from the Medicare Provider Analysis and Review (MedPAR) database (purchased from the Centers for Medicare and Medicaid Services). Medicare data is available for years 2008 through 2010.
  - The MedPAR inpatient data include the first nine diagnoses for every patient admission and the first six procedure codes.
- Inpatient data for appendectomy provided by 19 states that provide all-payer data (AZ, CA, CO, FL, IA, MA, MD, ME, NJ, NV, NY, OR, PA, RI, TX, UT, VA, WA, and WI) for years 2007 through 2009.

Ratings were based upon HealthGrades' risk-adjustment methodology described below. The purpose of risk adjustment is to obtain fair statistical comparisons between disparate populations or groups. Significant differences in demographic and clinical risk factors are found among patients treated in different hospitals. Risk adjustment of the data is needed to make accurate and valid comparisons of clinical outcomes at different hospitals.

## Data Acquisition

The MedPAR data was selected for several reasons.

- Almost every hospital in the country is included in the database, with the exception of military and Veterans Administration hospitals.
- Accuracy is regulated; hospitals are required by law to submit complete and accurate information with substantial penalties for those that report inaccurate or incomplete data.
- The Medicare population represents a majority of the patients for virtually all of the clinical categories studied. For example, Medicare patients account for approximately 55 to 60 percent of all cardiac patients.

However, since the appendectomy cohort includes very few cases over 65 years of age, all-payer state data were used to rate hospitals in those states where state data were available.

For Multivariate Logistic Regression-based Ratings, HealthGrades conducted a series of data quality checks to preserve the integrity of the ratings. Based on the results of these checks, we excluded a limited number of cases because they were inappropriate for inclusion in the database or miscoded.

Examples of excluded patient records are:

- Patients under the age of 65 (except appendectomy).
- Patients who left the hospital against medical advice or who were transferred to another acute care hospital.
- Patients discharged alive with a length of stay that is inconsistent with the reason for admission. (For example, a patient discharged alive with a one day length of stay for valve surgery would be excluded because this procedure requires several days for recovery.)
- Patients who were still in the hospital when the Medicare claim was filed.
- Patients with an invalid gender (for example, a prostatectomy related to a female patient).

HealthGrades' Multivariate Logistic Regression-based Ratings methodology takes into account patient characteristics such as age, gender, and underlying medical conditions that could increase the patient's risk of mortality or complication.

The in-hospital data for 27 diagnoses and procedures on the HealthGrades Web site represent three years of patient discharges from Medicare fiscal year 2008 through 2010. In addition, appendectomy is based exclusively on state data from years 2007 through 2009.

## Cohort Definition and Outcome

For each of the 28 patient cohorts, HealthGrades developed a list of specific procedures and diagnoses that define the cohort and a list of cohort-specific exclusions for rare and/or clinically complex diagnoses and procedures that cannot be adequately risk-adjusted (*Appendix B*).

For each of these cohorts, only hospitals with at least 30 cases across three years of data and at least five cases in the most current year were included.

For 18 of the cohorts, the outcome measure is mortality. For ten of the cohorts, the outcome of measure is in-hospital major complications. For the cohorts where in-hospital major complications are the outcome of study, complications are defined by the use of clinical and coding experts. A list of major in-hospital complications by cohort can be found in *Appendix C*.

Outcomes were binary, with documented major complications either present or not, and patients recorded as either alive or expired. In cohorts where the quality measure is major complications, mortality is considered a complication.

<b>Mortality Cohorts</b>	
Bowel Obstruction	Neurosurgery
Chronic Obstructive Pulmonary Disease (COPD)	Pancreatitis
Coronary Interventional Procedures	Pneumonia
Diabetic Acidosis and Coma	Pulmonary Embolism
Gastrointestinal Bleed	Resection/Replacement Abdominal Aorta
Gastrointestinal Surgeries and Procedures	Respiratory Failure
Heart Attack	Sepsis
Heart Bypass Surgery	Stroke
Heart Failure	Valve Replacement/Repair Surgery

<b>In-hospital Complication Cohorts</b>	
Appendectomy	Hip Fracture Treatment
Back and Neck Surgery (with Spinal Fusion)	Peripheral Vascular Bypass
Back and Neck Surgery (without Spinal Fusion)	Prostatectomy
Carotid Surgery	Total Hip Replacement
Cholecystectomy (Gallbladder Surgery)	Total Knee Replacement

## Defining Inhospital Complications using Administrative Data

In October of 2007 (fiscal year 2008), the Centers for Medicare and Medicaid Services began requiring most hospitals to submit a present on admission (POA) indicator for every diagnosis submitted. This indicator is intended to distinguish hospital-acquired conditions from those present at the time the patient presented to the hospital.

HealthGrades has adopted a phased-in approach to using POA information. In 2008, the POA fill rate was inadequate for reliable modeling. However, in 2009, approximately 90% of patients had at least one diagnosis record with a POA indicator. Below is a summary of the POA indicators listed in the 2009 MedPAR file layout document<sup>1</sup> and how they were used by HealthGrades in determining in-hospital complications in the current 2012 ratings.

POA Indicator (Interpretation)	CMS Description*	Use by HealthGrades
<b>Y</b> (Yes, Present)	Present at the time of inpatient admission	Utilized in the risk-adjustment process
<b>N</b> (No, Not Present)	Not present at the time of inpatient admission	Used to identify in-hospital complications
<b>U, 1, Other</b> (Unknown)	Documentation is insufficient to determine if condition was present on admission Unreported/not used—exempt from POA reporting	May require the co-occurrence of other codes to be a complication, see <i>Records with No POA Indicator</i> section below. If not considered a complication, it may be used in risk adjustment.
<b>W</b> (Clinically Undetermined)	Provider is unable to clinically determine whether condition was present on admission or not.	Not considered a complication nor used in risk adjustment

\* *MedPAR Limited Data Set – Hospital (National) File Layout*. Also known as, *Expanded Modified MedPAR File Layout*. March 2010. Available from the Centers for Medicare and Medicaid Services [www.cms.gov/LimitedDataSets/Downloads/FY09MedPARDec09Layout.pdf](http://www.cms.gov/LimitedDataSets/Downloads/FY09MedPARDec09Layout.pdf).

### Records with No POA Indicator

When utilizing administrative patient records, some conditions can be either pre-existing or hospital-acquired. Only the hospital-acquired conditions should be considered as complications. To differentiate between pre-existing and hospital-acquired conditions when there is no POA indicator, we use the presence of a 900 post-operative complication code. For example, in the case where a patient record contains 427.31 Atrial Fibrillation, that code is considered a comorbid risk if it occurs by itself and a complication if there is a 997.1 Cardiac Complications, NEC code also present in the patient record.

We did not require the presence of a post-operative complication code for diagnoses that were clearly hospital-acquired (e.g., heart attack in an elective procedure such as total knee replacement).

### Records with POA Indicators

When there is a POA indicator present, a diagnosis is only considered an in-hospital complication if the POA indicator is set to No. This means that the condition was not present at the time of admission and was acquired during the hospitalization. Records where the POA indicator is *Unknown* were treated as described for records that have no POA indicator.

## Multivariate Logistic Regression Models

Fair and valid comparisons among hospital providers can be made only to the extent that the risk-adjustment methodology considers important differences in patient demographic and clinical characteristics. The risk-adjustment methodology used by HealthGrades utilizes multivariate logistic regression to identify patient *risk factors* that influence patient outcomes in significant and systematic ways. Risk factors may include age, gender, specific procedure performed, and comorbid conditions such as hypertension, chronic renal failure, heart failure, and diabetes. For each of the 27 cohorts, individual risk models are constructed and tailored for each clinical condition or procedure, and also for each outcome (major complications, or in-hospital, 30-day and 180-day post-admission mortality).

For each cohort, comorbid diagnoses (e.g., hypertension, chronic renal failure, anemia, diabetes), demographic characteristics (e.g., age and gender), and specific procedures (e.g., percutaneous coronary intervention in coronary bypass surgery) were classified as potential risk factors. We used logistic regression to determine which of these potential risk factors were statistically important in predicting the quality measure (e.g., mortality). All risk factors that remained in the final model had to be statistically significant ( $p < 0.05$ ) in predicting the outcome (mortality, in-hospital complications). In addition, risk factors were required to have an odds ratio greater than 1.0. There were occasional exceptions to this rule; for example, risk factors that have been documented in the medical literature to be protective and risk factors that are part of the cohort definition remained in the model even if the odds ratio was less than one (e.g., Streptococcal pneumoniae pneumonia is one type of pneumonia that makes up the pneumonia cohort).

Complications were *not* counted as risk factors because they were considered a result of care received during the admission. See *Appendix D* for a list of the top five risk factors for each procedure or diagnosis. The top five risk factors are procedures/diagnoses that were most likely to lead to the outcome (e.g., highest odds ratio). They are not necessarily those with the highest volume.

The statistical models were checked for validity and finalized. All of the models were highly significant, with c-statistics ranging from ~ 0.6 to ~ 0.9. These cohort and outcome-specific models were then used to estimate the probability of the outcome for each patient in the cohort (predicted rate).

For the 2011 logistic regression models, POA fill rates were included as an additional independent risk factor for the 2009 and 2010 data. The POA fill rate was calculated as the percent of diagnosis codes having a known POA indicator value of Yes, No or Clinically Undetermined among patients in that cohort at that hospital. This additional risk adjustment was necessary due to the fact that critical access hospitals and some Maryland hospitals are exempt from POA reporting. Thus, these hospitals had lower rates of detectable in-hospital complications and conversely, more conditions potentially factored into the acuity adjustment. Testing verified that the inclusion of POA fill rates in the logistic regression model adequately adjusted for the differing overall rates of complications between hospitals reporting POA and the exempt hospitals.

## Assignment of Star Ratings

Once the regression models were developed using the national MedPAR data set, individual hospital ratings were assigned. Developing the HealthGrades ratings involved four steps for each disease state or procedure specific cohort (e.g., coronary bypass surgery) and quality measure (e.g., inhospital mortality or complications).

1. First, the hospital predicted value (predicted number of deaths or complications at each hospital) was obtained by summing the individual patient predicted values determined from using logistic regression models discussed above.
2. Second, the predicted value was compared with the actual or observed value (e.g., actual number of deaths or complications at each hospital).
3. Third, a test was conducted to determine whether the difference between the predicted and actual values was statistically significant. This test was performed to make sure that differences were very unlikely to be caused by chance alone.
4. Fourth, a star rating was assigned based upon the outcome of the test for statistical significance.

Statistical significance tests were performed for each patient cohort to identify, by hospital, whether the actual and predicted rates were significantly different. A z-score was used to establish an approximate 90% confidence interval.

### Assignment of Star Ratings

The following rating system was applied to the data for all procedures and diagnoses.

- ★★★★★ **Best** – Actual performance was better than predicted and the difference was statistically significant.
- ★★★ **As Expected** – Actual performance was not significantly different from what was predicted.
- ★ **Poor** – Actual performance was worse than predicted and the difference was statistically significant.

In general, 70% to 80% of hospitals in each procedure/diagnosis were classified as three stars, with actual results not significantly different from predicted results. Approximately 10% to 15% were 1-star hospitals and 10% to 15% were 5-star hospitals.

## Limitations of the Data Models

It must be understood that while these models may be valuable in identifying hospitals that perform better than others, one should not use this information alone to determine the quality of care provided at each hospital. The models are limited by the following factors.

- Cases may have been coded incorrectly or incompletely by the hospital.
- The models can only account for risk factors that are coded into the billing data—if a particular risk factor was not coded into the billing data, such as a patient’s socioeconomic status and health behavior, then it was not accounted for with these models.
- Although Health Grades, Inc. has taken steps to carefully compile these data using its methodology, no techniques are infallible, and therefore some information may be missing, outdated or incorrect.
- The MedPAR inpatient data contain the first nine diagnoses and the first six procedure codes for an inpatient stay. For some patients, this may not be representative of the full list of codes submitted.

*Please note that a high ranking for a particular hospital is not a recommendation or endorsement by Health Grades, Inc. of a particular hospital; it means that the data associated with a particular hospital has met the foregoing qualifications. Only individual patients can decide whether a particular hospital is suited for their unique needs.*

Also note that if more than one hospital reported to CMS under a single provider ID, HealthGrades analyzed patient outcomes data for those hospitals as a single unit. Throughout this document, therefore, “hospital” refers to one hospital or a group of hospitals reporting under a single provider ID.

## Appendix A. Patient Cohort Definitions

Excluded from each cohort were patients who have had any organ transplant or a complication thereof.

### Appendectomy

Cohort	Inclusions	Exclusions
<b>Appendectomy</b> Principal Procedure	<ul style="list-style-type: none"> <li>Laparoscopic</li> <li>Other open procedures</li> </ul>	

### Cardiac Service Line

Cohort	Inclusions	Exclusions
<b>Coronary Bypass Surgery (CABG)</b> (Isolated) Principal Procedure	<ul style="list-style-type: none"> <li>Coronary bypass for cardiac revascularization with: internal mammary artery or vein</li> <li>One or more vessels</li> <li>Without valve replacement or repair</li> <li>Can have a PCI in this stay</li> </ul>	<ul style="list-style-type: none"> <li>Valve repair and replacement</li> <li>Aortic aneurysm repair</li> <li>Carotid endarterectomy</li> <li>Patients discharged alive with a length of stay &lt; 1 day</li> </ul>
<b>Coronary Interventional Procedures (PCI)</b> Principal Procedure of PCI or Principal Procedure Intra-aortic balloon pump with PCI secondary	<ul style="list-style-type: none"> <li>Removal of coronary artery obstruction</li> <li>Single or multi-vessel</li> <li>Atherectomy or balloon angioplasty with or without thrombolytic agent</li> <li>Stent can be bare metal or drug eluting</li> <li>Can be multi-vessel</li> </ul>	<ul style="list-style-type: none"> <li>Open chest</li> <li>Case associated with CABG or Valve in this stay</li> </ul>
<b>Heart Attack</b> Principal Diagnosis	<ul style="list-style-type: none"> <li>Anterior, inferior, posterior, lateral, RV infarcts                             <ul style="list-style-type: none"> <li>ST elevation</li> <li>Non ST elevation</li> <li>Not otherwise specified</li> </ul> </li> <li>Includes patients who receive thrombolytics, PCI, CABG, or medical management only</li> </ul>	<ul style="list-style-type: none"> <li>Metastatic cancers</li> <li>Palliative care patients (V66.7)</li> <li>Respirator dependent status (V46.11)</li> <li>Left ventricular assist device (V43.21)</li> <li>Discharge to hospice</li> </ul>
<b>Heart Failure</b> Principal Diagnosis	<ul style="list-style-type: none"> <li>Systolic or diastolic, combined, left, valvular, acute or chronic, decompensated or compensated</li> </ul>	<ul style="list-style-type: none"> <li>Dialysis in this stay (39.95)</li> <li>Metastatic cancers</li> <li>Palliative care patients (V66.7)</li> <li>Respirator dependent status (V46.11)</li> <li>Left ventricular assist device (V43.21)</li> <li>Discharge to hospice</li> </ul>
<b>Valve Replacement/Repair Surgery</b> Principal or Secondary Procedure	<ul style="list-style-type: none"> <li>Replacement with repair</li> <li>Open repair</li> <li>Aortic, mitral, pulmonary, or tricuspid</li> <li>With or without CABG</li> </ul>	<ul style="list-style-type: none"> <li>Percutaneous repair</li> <li>Thoracic and aortic dissections</li> <li>Patients discharged alive with a length of stay &lt; 1 day</li> </ul>

**Critical Care Service Line**

Excluded from each cohort were patients who have had any organ transplant or a complication thereof.

Cohort	Inclusions	Exclusions
<b>Diabetic Acidosis and Coma</b> Principal Diagnosis	<ul style="list-style-type: none"> <li>• With coma</li> <li>• Hypoglycemic shock</li> </ul>	<ul style="list-style-type: none"> <li>• Metastatic cancers</li> <li>• Palliative care patients (V66.7)</li> <li>• Left ventricular assist device (V43.21)</li> <li>• Respirator dependent status (V46.11)</li> <li>• Patients discharged alive with a length of stay &lt; 1 day</li> </ul>
<b>Sepsis</b> Principal Diagnosis	<ul style="list-style-type: none"> <li>• Salmonella septicemia</li> <li>• Listeriosis</li> <li>• Meningococemia</li> <li>• Streptococcal septicemia</li> <li>• Staphylococcal septicemia</li> <li>• Staphylococcus aureus</li> <li>• Pneumococcal septicemia</li> <li>• Septicemia due to anaerobes</li> <li>• Gram-negative organisms</li> <li>• Hemophilus influenzae</li> <li>• Escherichia coli</li> <li>• Pseudomonas</li> <li>• Serratia</li> <li>• Unspecified organism</li> <li>• Herpetic septicemia</li> <li>• Septic shock</li> <li>• SIRS</li> </ul>	<ul style="list-style-type: none"> <li>• Metastatic cancers</li> <li>• Palliative care patients (V66.7)</li> <li>• Left ventricular assist device (V43.21)</li> <li>• Patients discharged alive with a length of stay &lt; 1 day</li> <li>• Discharge to hospice</li> </ul>
<b>Pulmonary Embolism</b> Principal Diagnosis	<ul style="list-style-type: none"> <li>• Pulmonary embolism and infarction</li> <li>• Iatrogenic</li> </ul>	<ul style="list-style-type: none"> <li>• Metastatic cancers</li> <li>• Palliative care patients (V66.7)</li> <li>• Left ventricular assist device (V43.21)</li> <li>• Patients discharged alive with a length of stay &lt; 1 day</li> <li>• Discharge to hospice</li> <li>•</li> </ul>
<b>Respiratory Failure</b> Principal Diagnosis	<ul style="list-style-type: none"> <li>• Acute respiratory failure</li> <li>• Acute on chronic respiratory failure</li> </ul>	<ul style="list-style-type: none"> <li>• Metastatic cancers</li> <li>• Palliative care patients (V66.7)</li> <li>• Left ventricular assist device (V43.21)</li> <li>• Discharge to hospice</li> </ul>

### Gastrointestinal Service Line

Excluded from each cohort were patients who have had any organ transplant or a complication thereof.

Cohort	Inclusions	Exclusions
<b>Bowel Obstruction</b> Principal Diagnosis	<ul style="list-style-type: none"> <li>• Duodenal ulcer with obstruction</li> <li>• Gastrojejunal ulcer with obstruction</li> <li>• Pyloric stenosis</li> <li>• Other obstruction of duodenum</li> <li>• Hernia with obstruction</li> <li>• Intestinal obstruction without hernia</li> <li>• Gallstone ileus</li> <li>• Intussusception</li> </ul>	<ul style="list-style-type: none"> <li>• Metastatic cancers</li> <li>• Palliative care patients (V66.7)</li> <li>• Left ventricular assist device (V43.21)</li> <li>• Discharge to hospice</li> <li>• Patients deceased with a length of stay &lt; 1 day</li> </ul>
<b>Cholecystectomy</b> Principal Procedure	<ul style="list-style-type: none"> <li>• Open or laparoscopic</li> <li>• Partial</li> <li>• Revision of prior</li> </ul>	
<b>Gastrointestinal Bleed</b> Principal Diagnosis	<ul style="list-style-type: none"> <li>• Bleeding/hemorrhage in any of the following areas: <ul style="list-style-type: none"> <li>• Esophageal varices</li> <li>• Ulcer of esophagus</li> <li>• Gastric ulcer</li> <li>• Duodenal ulcer</li> <li>• Peptic ulcer</li> <li>• Gastrojejunal</li> <li>• Gastritis or duodenitis</li> <li>• Angiodysplasia of stomach and duodenum</li> <li>• Diverticulosis</li> <li>• Rectum or anus</li> <li>• Dieulafoy lesion of intestine</li> </ul> </li> <li>• Hematemesis</li> <li>• Melena</li> <li>• Hemorrhage of GI tract, unspecified</li> </ul>	<ul style="list-style-type: none"> <li>• Metastatic cancers</li> <li>• Palliative care patients (V66.7)</li> <li>• Left ventricular assist device (V43.21)</li> <li>• Respirator dependent status (V46.11)</li> <li>• Discharge to hospice</li> <li>• Patients deceased with a length of stay &lt; 1 day</li> </ul>
<b>Gastrointestinal Surgery &amp; Procedures</b> Principal Procedure	<ul style="list-style-type: none"> <li>• Gastrectomies</li> <li>• Vagotomies</li> <li>• Gastric repairs</li> <li>• Small and large intestine resections</li> <li>• Small and large intestine anastomoses</li> </ul>	<ul style="list-style-type: none"> <li>• Primary and metastatic cancers</li> </ul>
<b>Pancreatitis</b> Principal Diagnosis	<ul style="list-style-type: none"> <li>• Acute</li> <li>• Chronic</li> </ul>	<ul style="list-style-type: none"> <li>• Metastatic cancers</li> <li>• Palliative care patients (V66.7)</li> <li>• Left ventricular assist device (V43.21)</li> <li>• Respirator dependent status (V46.11)</li> <li>• Discharge to hospice</li> </ul>

**Neurosciences Service Line**

Excluded from each cohort were patients who have had any organ transplant or a complication thereof.

Cohort	Inclusions	Exclusions
<p><b>Stroke</b> Principal Diagnosis</p>	<ul style="list-style-type: none"> <li>• Subarachnoid hemorrhage</li> <li>• Intracerebral hemorrhage</li> <li>• Unspecified intracranial hemorrhage</li> <li>• Occlusion and stenosis of basilar, carotid, and vertebral artery</li> <li>• Cerebral thrombosis, embolism, or occlusion</li> <li>• Acute but ill-defined cerebrovascular disease</li> </ul>	<ul style="list-style-type: none"> <li>• Metastatic cancers</li> <li>• Hospitals transferring more than 10% of their population</li> <li>• Subdural bleeds</li> <li>• Extradural bleeds</li> <li>• Palliative care patients (V66.7)</li> <li>• Left ventricular assist device (V43.21)</li> <li>• Respirator dependent status (V46.11)</li> <li>• Patients deceased with a length of stay &lt; 1 day</li> <li>• Patients discharged alive with a length of stay &lt; 1 day</li> <li>• Discharge to hospice</li> </ul>
<p><b>Neurosurgery</b> Principal Procedure</p>	<ul style="list-style-type: none"> <li>• Intracranial Vascular Procedures for Hemorrhage                             <ul style="list-style-type: none"> <li>• Aneurysm Repairs</li> <li>• Clippings</li> <li>• Coilings</li> <li>• Intracranial Angioplasties</li> </ul> </li> <li>• Craniotomies</li> <li>• Ventricular Shunts</li> </ul>	<ul style="list-style-type: none"> <li>• Head Trauma</li> </ul>

### Orthopedic Service Line

Excluded from each cohort were patients who have had any organ transplant or a complication thereof.

Cohort	Inclusions	Exclusions
<b>Back &amp; Neck Surgery (except Spinal Fusion)</b> Principal Procedure	<ul style="list-style-type: none"> <li>• Cervical, Thoracic, and/or Lumbar spine laminectomy, laminoplasty, foraminectomy,</li> <li>• Repair of vertebral fracture</li> <li>• Elevation of spinal bone fragments</li> <li>• Reduction of vertebral fracture</li> <li>• Removal on bony spicules</li> <li>• Excision or destruction of inter-vertebral disc</li> <li>• Removal of herniated nucleus pulposus</li> <li>• Insertion of posterior spinal motion preservation devices</li> </ul>	<ul style="list-style-type: none"> <li>• Post laminectomy syndrome: cervical, thoracic, or lumbar</li> <li>• Reopening of laminectomy site</li> <li>• Repair of joint structure</li> <li>• Kyphoplasty</li> <li>• Vertebroplasty</li> <li>• Patients with secondary bone cancer</li> <li>• Accidental Injury</li> </ul>
<b>Back &amp; Neck Surgery (Spinal Fusion)</b> Principal Procedure	<ul style="list-style-type: none"> <li>• Fusion at any level: spinal, cervical, dorsal, dorsolumbar, lumbar, lumbosacral</li> <li>• Single incision approach</li> <li>• Any number of vertebrae</li> </ul>	<ul style="list-style-type: none"> <li>• Post laminectomy syndrome</li> <li>• Reopening</li> <li>• Refusion</li> <li>• Kyphoplast</li> <li>• Vertebroplasty</li> <li>• Patients with secondary bone cancer</li> <li>• Accidental Injury</li> </ul>
<b>Hip Fracture Treatment</b> Principal Diagnosis	<ul style="list-style-type: none"> <li>• Femur neck fractures</li> <li>• Trochanter and subtrochanter fractures</li> <li>• Intertrochanter fractures</li> </ul>	<ul style="list-style-type: none"> <li>• Hip replacement/Knee replacement during same hospital stay</li> <li>• Open skull fractures with lacerations</li> <li>• Open transcervical fractures</li> <li>• Open femur neck and trochanter fractures</li> <li>• Femur shaft fractures</li> <li>• Patients discharged alive with a length of stay &lt; 1 day</li> <li>• Palliative care patients (V66.7)</li> <li>• Discharge to hospice</li> </ul>
<b>Total Knee Replacement</b> Principal Procedure	<ul style="list-style-type: none"> <li>• Primary total knee replacement (bicompartamental, tricompartmental, unicompartamental (hemijoint))</li> <li>• Bilaterals</li> </ul>	<ul style="list-style-type: none"> <li>• Revision</li> <li>• Removal of hardware</li> <li>• Hip replacement (total or partial); hip resurfacing</li> <li>• Accidental injury</li> </ul>
<b>Total Hip Replacement</b> Principal Procedure	<ul style="list-style-type: none"> <li>• Primary total hip replacement</li> <li>• Bilaterals</li> <li>• Partial and total hip resurfacing</li> </ul>	<ul style="list-style-type: none"> <li>• Knee replacement</li> <li>• Revision</li> <li>• Removal of hardware</li> <li>• Femur neck fractures</li> <li>• Accidental injury</li> </ul>

### Prostatectomy

Excluded from each cohort were patients who have had any organ transplant or a complication thereof.

Cohort	Inclusions	Exclusions
<b>Prostatectomy</b> Principal Procedure	<ul style="list-style-type: none"> <li>• Transurethral</li> <li>• Suprapubic</li> <li>• Retropubic</li> <li>• Radical</li> <li>• Perineal</li> <li>• Local excision of lesion of prostate</li> </ul>	

### Pulmonary Service Line

Excluded from each cohort were patients who have had any organ transplant or a complication thereof.

Cohort	Inclusions	Exclusions
<b>Chronic Obstructive Pulmonary Disease</b> Principal Diagnosis	<ul style="list-style-type: none"> <li>• Chronic bronchitis</li> <li>• Simple and obstructive bronchitis with and without exacerbation</li> <li>• Other emphysema</li> <li>• Chronic obstructive asthma</li> <li>• Bronchiectasis</li> <li>• Chronic airway obstruction, not elsewhere classified</li> </ul>	<ul style="list-style-type: none"> <li>• Metastatic cancers</li> <li>• Palliative care patients (V66.7)</li> <li>• Left ventricular assist device (V43.21)</li> <li>• Respirator dependent status (V46.11)</li> <li>• Discharge to hospice</li> </ul>
<b>Pneumonia</b> Principal Diagnosis	<ul style="list-style-type: none"> <li>• Streptococcal – Group A and Group B</li> <li>• Staph pneumonia including methicillin resistant</li> <li>• Gram negative</li> <li>• Hemophilus influenzae</li> <li>• Mycoplasma</li> <li>• Chlamydia</li> <li>• Bronchopneumonia</li> <li>• Influenza w/ pneumonia</li> <li>• Legionnaire's</li> <li>• Organism not specified</li> </ul>	<ul style="list-style-type: none"> <li>• SARS-related</li> <li>• Metastatic cancers</li> <li>• Palliative care patients (V66.7)</li> <li>• Left ventricular assist device (V43.21)</li> <li>• Discharge to hospice</li> </ul>

**Vascular Service Line**

Excluded from each cohort were patients who have had any organ transplant or a complication thereof.

Cohort	Inclusions	Exclusions
<b>Carotid Surgery</b> Principal Procedure	<ul style="list-style-type: none"> <li>• Carotid endarterectomy</li> <li>• Endovascular graft</li> <li>• Percutaneous insertion of carotid stent</li> <li>• Percutaneous angioplasty of precerebral vessels</li> </ul>	<ul style="list-style-type: none"> <li>• Patients with coronary bypass surgery</li> <li>• Resection of other peripheral vessel with anastomosis</li> <li>• Subarachnoid, intracerebral and subdural hemorrhage</li> </ul>
<b>Peripheral Vascular Bypass</b> Principal Procedure	<ul style="list-style-type: none"> <li>• Peripheral vascular shunt or bypass:</li> <li>• Axillary-brachial</li> <li>• Axillary-femoral</li> <li>• Brachial</li> <li>• Femoral-femoral</li> <li>• Femoroperoneal</li> <li>• Femoropopliteal</li> <li>• Femorotibial</li> <li>• Popliteal</li> <li>• Vascular bypass not otherwise specified</li> </ul>	<ul style="list-style-type: none"> <li>• Resection of upper extremities vascular procedures</li> <li>• Revisions</li> </ul>
<b>Resection /Replacement Abdominal Aorta</b> Rupture and Elective Principal Procedure	<ul style="list-style-type: none"> <li>• Excision of aneurysm and resection with anastomosis with and without replacement of the aorta</li> <li>• Endovascular implantation of a graft in the abdominal aorta</li> </ul>	<ul style="list-style-type: none"> <li>• Aortic dissection</li> <li>• Patients with CABG and Valves</li> <li>• Incision of vessel for embolectomy or thrombectomy</li> <li>• Aorto-renal bypass</li> <li>• Aorto-iliac-femoral bypass</li> <li>• Angioplasty of non-coronary vessel</li> <li>• Resection of thoracic vessel</li> <li>• Patients that have a combination of stenting/anastomosis procedures</li> </ul>

## Appendix B. Patient Cohorts and Related ICD-9-CM Codes

### Appendectomy

#### Inclusions

Principal Procedure: 47.01, 47.09

#### Exclusions

Diagnoses (Primary or Secondary): 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9

Procedures (Primary or Secondary): 37.51, 37.52, 37.53, 37.54, 37.62, 37.63

### Back and Neck Surgery (Spinal Fusion)

#### Inclusions

Principal Procedure: 81.00, 81.01, 81.02, 81.03, 81.04, 81.05, 81.06, 81.07, 81.08, 81.62, 81.63, 81.64

#### Exclusions

Diagnoses (Primary or Secondary): 198.5, 722.80, 722.81, 722.82, 722.83, 996.45, 996.46, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, E812.0, E812.1, E812.9, E814.7, E815.0, E816.0, E816.1, E819.0, E819.9, E849.1, E849.5, E881.0, E882, E929.0, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9, V45.4

Principal Diagnosis: 996.41, 996.42, 996.43

Procedures (Primary or Secondary): 03.02, 37.51, 37.52, 37.53, 37.54, 78.69, 81.30, 81.31, 81.32, 81.33, 81.34, 81.35, 81.36, 81.37, 81.38, 81.39, 81.65, 81.66, 84.59, 84.60, 84.61, 84.62, 84.63, 84.64, 84.65, 84.66, 84.67, 84.68, 84.69, 84.80, 84.81, 84.82, 84.83, 84.84, 84.85

### Back and Neck Surgery (except Spinal Fusion)

#### Inclusions

Principal Procedure: 03.09, 03.53, 80.50, 80.51, 80.59, 84.59, 84.60, 84.61, 84.62, 84.63, 84.64, 84.65, 84.80, 84.82, 84.84

#### Exclusions

Diagnoses (Primary or Secondary): 198.5, 722.80, 722.81, 722.82, 722.83, 996.45, 996.46, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, E812.0, E819.0, E819.9, E828.2, E849.1, E849.5, E881.0, E929.0, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9, V54.01, V54.09

Principal Diagnosis: 996.41, 996.42, 996.43, 996.47, 996.49, 996.78

Procedures (Primary or Secondary): 03.02, 37.51, 37.52, 37.53, 37.54, 78.49, 78.69, 81.00, 81.01, 81.02, 81.03, 81.04, 81.05, 81.06, 81.07, 81.08, 81.30, 81.31, 81.32, 81.33, 81.34, 81.35, 81.36, 81.37, 81.38, 81.39, 81.62, 81.63, 81.64, 81.65, 81.66, 84.66, 84.67, 84.68, 84.69, 84.81, 84.83, 84.85

### Bowel Obstruction

#### Inclusions

Principal Diagnosis: 532.01, 532.11, 532.21, 532.31, 532.41, 532.51, 532.61, 532.71, 532.91, 534.01, 534.11, 534.21, 534.31, 534.41, 534.51, 534.61, 534.71, 534.91, 537.2, 537.3, 550.10, 550.11, 550.12, 550.13, 552.00, 552.01, 552.02, 552.03, 552.1, 552.20, 552.21, 552.29, 552.8, 552.9, 560.0, 560.1, 560.2, 560.31, 560.39, 560.81, 560.89, 560.9

#### Exclusions

Diagnoses (Primary or Secondary): 196.0, 196.1, 196.2, 196.3, 196.5, 196.6, 196.8, 196.9, 197.0, 197.1, 197.2, 197.3, 197.4, 197.5, 197.6, 197.7, 197.8, 198.0, 198.1, 198.2, 198.3, 198.4, 198.5, 198.6, 198.7, 198.81, 198.82, 198.89, 203.02, 203.12, 203.82, 204.02, 204.12, 204.22, 204.82, 204.92, 205.02, 205.12, 205.22, 205.82, 205.92, 206.02, 206.12, 206.22, 206.82, 206.92, 207.02, 207.12, 207.22, 207.82, 208.02, 208.12, 208.22, 208.82, 208.92, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9, V43.21, V66.7

Procedures (Primary or Secondary): 37.51, 37.52, 37.53, 37.54, 37.62, 37.63, 50.59

### Carotid Surgery

#### Inclusions

Principal Procedure: 00.61, 00.63, 38.12, 39.74

#### Exclusions

Diagnoses (Primary or Secondary): 430, 431, 432.1, 432.9, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9  
Procedures (Primary or Secondary): 36.10, 36.11, 36.12, 36.13, 36.14, 36.15, 36.16, 36.17, 36.19, 37.51, 37.52, 37.53, 37.54, 37.62, 37.63, 38.08, 38.16, 38.18, 38.36, 39.24, 39.25, 39.29, 39.59, 39.90

### Cholecystectomy

#### Inclusions

Principal Procedure: 51.21, 51.22, 51.23, 51.24

#### Exclusions

Diagnoses (Primary or Secondary): 156.0, 197.7, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9  
Procedures (Primary or Secondary): 37.51, 37.52, 37.53, 37.54, 37.62, 37.63

### Chronic Obstructive Pulmonary Disease (COPD)

#### Inclusions

Principal Diagnosis: 91.1, 491.20, 491.21, 491.22, 491.8, 491.9, 492.0, 492.8, 493.20, 493.21, 493.22, 494.0, 494.1, 496

#### Exclusions

Diagnoses (Primary or Secondary): 196.0, 196.1, 196.2, 196.3, 196.5, 196.6, 196.8, 196.9, 197.0, 197.1, 197.2, 197.3, 197.4, 197.5, 197.6, 197.7, 197.8, 198.0, 198.1, 198.2, 198.3, 198.4, 198.5, 198.6, 198.7, 198.81, 198.82, 198.89, 203.02, 203.12, 203.82, 204.02, 204.12, 204.22, 204.82, 204.92, 205.02, 205.12, 205.22, 205.82, 205.92, 206.02, 206.12, 206.22, 206.82, 206.92, 207.02, 207.12, 207.22, 207.82, 208.02, 208.12, 208.22, 208.82, 208.92, 480.3, 480.8, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9, V43.21, V46.11, V66.7  
Procedures (Primary or Secondary): 33.51, 33.52, 37.51, 37.52, 37.53, 37.54, 37.62, 37.63

### Coronary Bypass Surgery

#### Inclusions

Principal Procedure: 36.10, 36.11, 36.12, 36.13, 36.14, 36.15, 36.16, 36.19

#### Exclusions

Diagnoses (Primary or Secondary): 414.06, 414.07, 441.00, 441.01, 441.02, 441.03, 441.2, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9  
Procedures (Primary or Secondary): 35.10, 35.11, 35.12, 35.13, 35.14, 35.20, 35.21, 35.22, 35.23, 35.24, 35.25, 35.26, 35.27, 35.28, 35.33, 35.55, 35.96, 35.97, 36.31, 36.32, 36.33, 36.34, 37.51, 37.52, 37.53, 37.54, 37.62, 37.63, 38.12, 38.34, 38.44, 38.64, 39.71

### Coronary Interventional Procedures

#### Inclusions

Principal Procedure: 00.66, 36.06, 36.07, 36.09

Principal Procedure (only when occurs with 00.66,36.06,36.07,36.09): 37.61

#### Exclusions

Diagnoses (Primary or Secondary): 414.06, 414.07, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9  
Procedures (Primary or Secondary): 35.10, 35.11, 35.12, 35.13, 35.14, 35.20, 35.21, 35.22, 35.23, 35.24, 35.25, 35.26, 35.27, 35.28, 36.10, 36.11, 36.12, 36.13, 36.14, 36.15, 36.16, 36.19, 37.51, 37.52, 37.53, 37.54, 37.62, 37.63

### Diabetic Acidosis and Coma

#### Inclusions

Principal Diagnosis: 250.10, 250.11, 250.12, 250.13, 250.20, 250.21, 250.22, 250.23, 250.30, 250.31, 250.32, 250.33, 250.80, 250.81, 250.82, 250.83

#### Exclusions

Diagnoses (Primary or Secondary): 196.0, 196.1, 196.2, 196.3, 196.5, 196.6, 196.8, 196.9, 197.0, 197.1, 197.2, 197.3, 197.4, 197.5, 197.6, 197.7, 197.8, 198.0, 198.1, 198.2, 198.3, 198.4, 198.5, 198.6, 198.7, 198.81, 198.82, 198.89, 203.02, 203.12, 203.82, 204.02, 204.12, 204.22, 204.82, 204.92, 205.02, 205.12, 205.22, 205.82, 205.92, 206.02, 206.12, 206.22, 206.82, 206.92, 207.02, 207.12, 207.22, 207.82, 208.02, 208.12, 208.22, 208.82, 208.92, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9, V43.21, V46.11, V66.7

Procedures (Primary or Secondary): 37.51, 37.52, 37.53, 37.54, 37.62, 37.63

### Gastrointestinal Bleed

#### Inclusions

Principal Diagnosis: 456.0, 456.20, 530.20, 530.21, 530.7, 530.82, 531.00, 531.01, 531.20, 531.21, 531.40, 531.41, 531.60, 531.61, 532.00, 532.01, 532.20, 532.21, 532.40, 532.41, 532.60, 532.61, 533.00, 533.01, 533.20, 533.21, 533.40, 533.41, 533.60, 533.61, 534.00, 534.01, 534.20, 534.21, 534.40, 534.41, 534.60, 534.61, 535.01, 535.11, 535.21, 535.31, 535.41, 535.51, 535.61, 537.83, 537.84, 562.02, 562.03, 562.12, 562.13, 569.3, 569.82, 569.85, 569.86, 578.0, 578.1, 578.9

#### Exclusions

Diagnoses (Primary or Secondary): 196.0, 196.1, 196.2, 196.3, 196.5, 196.6, 196.8, 196.9, 197.0, 197.1, 197.2, 197.3, 197.4, 197.5, 197.6, 197.7, 197.8, 198.0, 198.1, 198.2, 198.3, 198.4, 198.5, 198.6, 198.7, 198.81, 198.82, 198.89, 203.02, 203.12, 203.82, 204.02, 204.12, 204.22, 204.82, 204.92, 205.02, 205.12, 205.22, 205.82, 205.92, 206.02, 206.12, 206.22, 206.82, 206.92, 207.02, 207.12, 207.22, 207.82, 208.02, 208.12, 208.22, 208.82, 208.92, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9, V43.21, V46.11, V66.7

Procedures (Primary or Secondary): 37.51, 37.52, 37.53, 37.54, 37.62, 37.63

### Gastrointestinal Surgeries and Procedures

#### Inclusions

Principal Procedure: 43.5, 43.6, 43.7, 43.81, 43.89, 43.91, 43.99, 44.00, 44.01, 44.02, 44.03, 44.40, 44.41, 44.42, 44.63, 44.64, 44.65, 44.66, 44.69, 45.61, 45.62, 45.63, 45.71, 45.72, 45.73, 45.74, 45.75, 45.76, 45.79, 45.8, 45.82, 45.83, 45.90, 45.91, 45.92, 45.93, 45.94, 45.95

#### Exclusions

Diagnoses (Primary or Secondary): 151.0, 151.1, 151.2, 151.3, 151.4, 151.5, 151.6, 151.8, 151.9, 152.0, 152.1, 152.2, 152.3, 152.8, 152.9, 153.0, 153.1, 153.2, 153.3, 153.4, 153.5, 153.6, 153.7, 153.8, 153.9, 154.0, 154.1, 154.2, 154.3, 154.8, 155.0, 155.1, 155.2, 156.0, 156.1, 156.2, 156.8, 156.9, 157.0, 157.1, 157.2, 157.3, 157.4, 157.8, 157.9, 158.0, 158.8, 158.9, 159.0, 159.1, 159.8, 159.9, 196.0, 196.1, 196.2, 196.3, 196.5, 196.6, 196.8, 196.9, 197.0, 197.1, 197.2, 197.3, 197.4, 197.5, 197.6, 197.7, 197.8, 198.0, 198.1, 198.2, 198.3, 198.4, 198.5, 198.6, 198.7, 198.81, 198.82, 198.89, 203.02, 203.12, 203.82, 204.02, 204.12, 204.22, 204.82, 204.92, 205.02, 205.12, 205.22, 205.82, 205.92, 206.02, 206.12, 206.22, 206.82, 206.92, 207.02, 207.12, 207.22, 207.82, 208.02, 208.12, 208.22, 208.82, 208.92, 209.00, 209.01, 209.02, 209.03, 209.10, 209.11, 209.12, 209.13, 209.14, 209.15, 209.16, 209.17, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9

### Heart Attack

#### Inclusions

Principal Diagnosis: 410.01, 410.11, 410.21, 410.31, 410.41, 410.51, 410.61, 410.71, 410.81, 410.91

#### Exclusions

Diagnoses (Primary or Secondary): 196.0, 196.1, 196.2, 196.3, 196.5, 196.6, 196.8, 196.9, 197.0, 197.1, 197.2, 197.3, 197.4, 197.5, 197.6, 197.7, 197.8, 198.0, 198.1, 198.2, 198.3, 198.4, 198.5, 198.6, 198.7, 198.81, 198.82, 198.89, 203.02, 203.12, 203.82, 204.02, 204.12, 204.22, 204.82, 204.92, 205.02, 205.12, 205.22, 205.82, 205.92, 206.02, 206.12, 206.22, 206.82, 206.92, 207.02, 207.12, 207.22, 207.82, 208.02, 208.12, 208.22, 208.82, 208.92, 414.06, 414.07, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9, V43.21, V46.11, V66.7

Procedures (Primary or Secondary): 37.51, 37.52, 37.53, 37.54, 37.62, 37.63

### Heart Failure

#### Inclusions

Principal Diagnosis: 398.91, 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93, 428.0, 428.1, 428.20, 428.21, 428.22, 428.23, 428.30, 428.31, 428.32, 428.33, 428.40, 428.41, 428.42, 428.43, 428.9

#### Exclusions

Diagnoses (Primary or Secondary): 196.0, 196.1, 196.2, 196.3, 196.5, 196.6, 196.8, 196.9, 197.0, 197.1, 197.2, 197.3, 197.4, 197.5, 197.6, 197.7, 197.8, 198.0, 198.1, 198.2, 198.3, 198.4, 198.5, 198.6, 198.7, 198.81, 198.82, 198.89, 203.02, 203.12, 203.82, 204.02, 204.12, 204.22, 204.82, 204.92, 205.02, 205.12, 205.22, 205.82, 205.92, 206.02, 206.12, 206.22, 206.82, 206.92, 207.02, 207.12, 207.22, 207.82, 208.02, 208.12, 208.22, 208.82, 208.92, 414.06, 414.07, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9, V43.21, V46.11, V66.7

Procedures (Primary or Secondary): 37.51, 37.52, 37.53, 37.54, 37.62, 37.63, 39.95, 55.69

### Hip Fracture Treatment

#### Inclusions

Principal Diagnosis: 820.00, 820.02, 820.03, 820.09, 820.20, 820.21, 820.22, 820.8

#### Exclusions

Diagnoses (Primary or Secondary): 733.14, 733.15, 733.42, 733.82, 733.96, 800.61, 800.62, 800.63, 800.64, 800.65, 800.66, 800.69, 820.01, 820.10, 820.11, 820.12, 820.13, 820.19, 820.30, 820.31, 820.32, 820.9, 821.00, 821.01, 821.10, 821.11, 821.20, 821.21, 821.22, 821.23, 821.29, 821.30, 821.31, 821.32, 821.33, 821.39, 996.40, 996.41, 996.42, 996.43, 996.44, 996.45, 996.46, 996.47, 996.49, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9, V66.7

Principal Diagnosis: 996.78

Procedures (Primary or Secondary): 37.51, 37.52, 37.53, 37.54, 78.65, 78.66, 78.67, 80.05, 80.06, 81.54, 81.55

Procedures (Secondary only): 81.51, 81.53

### Neurosurgery

#### Inclusions

Principal Procedure: 01.12, 01.14, 01.23, 01.24, 01.25, 01.28, 01.31, 01.39, 01.51, 01.59, 02.02, 02.03, 02.05, 02.06, 02.07, 02.12, 02.2, 02.31, 02.32, 02.33, 02.34, 02.39, 02.42, 02.43, 02.93, 04.01, 04.41, 38.11, 38.81

Principal Procedure (only when occurs when the primary diagnosis is one of the following 430, 431, 432.0, 432.1, 433.01, 433.11, 433.21, 433.31, 433.81, 433.91, 434.00, 434.01, 434.10, 434.11, 434.90, 434.91, 437.3): 00.62, 39.51, 39.52, 39.53, 39.72, 39.74, 39.75, 39.76, 39.79

#### Exclusions

Diagnoses (Primary or Secondary): 800.00, 800.01, 800.02, 800.03, 800.04, 800.05, 800.06, 800.09, 800.10, 800.11, 800.12, 800.13, 800.14, 800.15, 800.16, 800.19, 800.20, 800.21, 800.22, 800.23, 800.24, 800.25, 800.26, 800.29, 800.30, 800.31, 800.32, 800.33, 800.34, 800.35, 800.36, 800.39, 800.40, 800.41, 800.42, 800.43, 800.44, 800.45, 800.46, 800.49, 800.50, 800.51, 800.52, 800.53, 800.54, 800.55, 800.56, 800.59, 800.60, 800.61, 800.62, 800.63, 800.64, 800.65, 800.66, 800.69, 800.70, 800.71, 800.72, 800.73, 800.74, 800.75, 800.76, 800.79, 800.80, 800.81, 800.82, 800.83, 800.84, 800.85, 800.86, 800.89, 800.90, 800.91, 800.92, 800.93, 800.94, 800.95, 800.96, 800.99, 801.00, 801.01, 801.02, 801.03, 801.04, 801.05, 801.06, 801.09, 801.10, 801.11, 801.12, 801.13, 801.14, 801.15, 801.16, 801.19, 801.20, 801.21, 801.22, 801.23, 801.24, 801.25, 801.26, 801.29, 801.30, 801.31, 801.32, 801.33, 801.34, 801.35, 801.36, 801.39, 801.40, 801.41, 801.42, 801.43, 801.44, 801.45, 801.46, 801.49, 801.50, 801.51, 801.52, 801.53, 801.54, 801.55, 801.56, 801.59, 801.60, 801.61, 801.62, 801.63, 801.64, 801.65, 801.66, 801.69, 801.70, 801.71, 801.72, 801.73, 801.74, 801.75, 801.76, 801.79, 801.80, 801.81, 801.82, 801.83, 801.84, 801.85, 801.86, 801.89, 801.90, 801.91, 801.92, 801.93, 801.94, 801.95, 801.96, 801.99, 802.0, 802.1, 802.2, 802.22, 802.23, 802.24, 802.25, 802.26, 802.27, 802.28, 802.29, 802.30, 802.31, 802.32, 802.33, 802.34, 802.35, 802.36, 802.37, 802.38, 802.39, 802.4, 802.5, 802.6, 802.7, 802.8, 802.9, 803.00, 803.01, 803.02, 803.03, 803.04, 803.05, 803.06, 803.09, 803.10, 803.11, 803.12, 803.13, 803.14, 803.15, 803.16, 803.19, 803.20, 803.21, 803.22, 803.23, 803.24, 803.25, 803.26, 803.29, 803.30, 803.31, 803.32, 803.33, 803.34, 803.35, 803.36, 803.39, 803.40, 803.41, 803.42, 803.43, 803.44, 803.45, 803.46, 803.49, 803.50, 803.51, 803.52, 803.53, 803.54, 803.55, 803.56, 803.59, 803.60, 803.61, 803.62, 803.63, 803.64, 803.65, 803.66, 803.69, 803.70, 803.71, 803.72, 803.73, 803.74, 803.75, 803.76, 803.79, 803.80, 803.81, 803.82, 803.83, 803.84, 803.85, 803.86, 803.89, 803.90, 803.91, 803.92, 803.93, 803.94, 803.95, 803.96, 803.99, 804.00, 804.01, 804.02, 804.03, 804.04, 804.05, 804.06, 804.09, 804.10, 804.11, 804.12, 804.13, 804.14, 804.15, 804.16, 804.19, 804.20, 804.21, 804.22, 804.23, 804.24, 804.25, 804.26, 804.29, 804.30, 804.31, 804.32, 804.33, 804.34, 804.35, 804.36, 804.39, 804.40, 804.41, 804.42, 804.43, 804.44, 804.45, 804.46, 804.49, 804.50, 804.51, 804.52, 804.53, 804.54, 804.55, 804.56, 804.59, 804.60, 804.61, 804.62, 804.63, 804.64, 804.65, 804.66, 804.69, 804.70, 804.71, 804.72, 804.73, 804.74, 804.75, 804.76, 804.79, 804.80, 804.81, 804.82, 804.83, 804.84, 804.85, 804.86, 804.89, 804.90, 804.91, 804.92, 804.93, 804.94, 804.95, 804.96, 804.99, 805.00, 805.01, 805.02, 805.03, 805.04, 805.05, 805.06, 805.07, 805.08, 805.10, 805.11, 805.12, 805.13, 805.14, 805.15, 805.16, 805.17, 805.18, 806.00, 806.01, 806.02, 806.03, 806.04, 806.05, 806.06, 806.07, 806.08, 806.09, 806.10, 806.11, 806.12, 806.13, 806.14, 806.15, 806.16, 806.17, 806.18, 806.19, 850.0, 850.1, 850.11, 850.12, 850.2, 850.3, 850.4, 850.5, 850.9, 851.00, 851.01, 851.02, 851.03, 851.04, 851.05, 851.06, 851.09, 851.10, 851.11, 851.12, 851.13, 851.14, 851.15, 851.16, 851.19, 851.20, 851.21, 851.22, 851.23, 851.24, 851.25, 851.26, 851.29, 851.30, 851.31, 851.32, 851.33, 851.34, 851.35, 851.36, 851.39, 851.40, 851.41, 851.42, 851.43, 851.44, 851.45, 851.46, 851.49, 851.50, 851.51, 851.52, 851.53, 851.54, 851.55, 851.56, 851.59, 851.60, 851.61, 851.62, 851.63, 851.64, 851.65, 851.66, 851.69, 851.70, 851.71, 851.72, 851.73, 851.74, 851.75, 851.76, 851.79, 851.80, 851.81, 851.82, 851.83, 851.84, 851.85, 851.86, 851.89, 851.90, 851.91, 851.92, 851.93, 851.94, 851.95, 851.96, 851.99, 852.00, 852.01, 852.02, 852.03, 852.04, 852.05, 852.06, 852.09, 852.10, 852.11, 852.12, 852.13, 852.14, 852.15, 852.16, 852.19, 852.20, 852.21, 852.22, 852.23, 852.24, 852.25, 852.26, 852.29, 852.30, 852.31, 852.32, 852.33, 852.34, 852.35, 852.36, 852.39, 852.40, 852.41, 852.42, 852.43, 852.44, 852.45, 852.46, 852.49, 852.50, 852.51, 852.52, 852.53, 852.54, 852.55, 852.56, 852.59, 853.00, 853.01, 853.02, 853.03, 853.04, 853.05, 853.06, 853.09, 853.10, 853.11, 853.12, 853.13, 853.14, 853.15, 853.16, 853.19, 854.00, 854.01, 854.02, 854.03, 854.04, 854.05, 854.06, 854.09, 854.10, 854.11, 854.12, 854.13, 854.14, 854.15, 854.16, 854.19, 950.0, 950.1, 950.2, 950.3, 950.9, 951.0, 951.1, 951.2, 951.3, 951.4, 951.5, 951.6, 951.7, 951.8, 951.9, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V66.7

Procedures (Primary or Secondary): 37.51

### Pancreatitis

#### Inclusions

Principal Diagnosis: 577.0, 577.1

#### Exclusions

Diagnoses (Primary or Secondary): 196.0, 196.1, 196.2, 196.3, 196.5, 196.6, 196.8, 196.9, 197.0, 197.1, 197.2, 197.3, 197.4, 197.5, 197.6, 197.7, 197.8, 198.0, 198.1, 198.2, 198.3, 198.4, 198.5, 198.6, 198.7, 198.81, 198.82, 198.89, 203.02, 203.12, 203.82, 204.02, 204.12, 204.22, 204.82, 204.92, 205.02, 205.12, 205.22, 205.82, 205.92, 206.02, 206.12, 206.22, 206.82, 206.92, 207.02, 207.12, 207.22, 207.82, 208.02, 208.12, 208.22, 208.82, 208.92, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9, V43.21, V46.11, V66.7

Procedures (Primary or Secondary): 37.51, 37.52, 37.53, 37.54, 37.62, 37.63

### Peripheral Vascular Bypass

#### Inclusions

Hospital Report Cards™ Mortality and Complication Outcomes 2012 Methodology - 20  
Appendix B. Patient Cohorts and Related ICD-9-CM Codes

Principal Diagnosis: 250.60, 250.61, 250.62, 250.63, 250.70, 250.71, 250.72, 250.73, 250.80, 250.81, 250.82, 250.83, 440.20, 440.21, 440.22, 440.23, 440.24, 440.29, 440.30, 440.32, 442.2, 442.3, 443.89, 443.9, 444.22, 444.81, 445.02, 447.1, 681.10, 682.6, 682.7, 686.8, 707.10, 707.12, 707.13, 707.14, 707.15, 707.19, 707.8, 730.06, 730.07, 730.16, 730.17, 730.18, 730.26, 730.27, 785.4, 902.53, 904.41

Principal Procedure: 39.29

**Exclusions**

Diagnoses (Primary or Secondary): 440.31, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9

Principal Diagnosis: 445.01, 996.74

Procedures (Primary or Secondary): 37.51, 37.52, 37.53, 37.54, 37.62, 37.63, 39.25, 39.49

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### Pneumonia

#### Inclusions

Principal Diagnosis: 481, 482.0, 482.1, 482.2, 482.30, 482.31, 482.32, 482.39, 482.40, 482.41, 482.42, 482.49, 482.81, 482.82, 482.83, 482.84, 482.89, 482.9, 483.0, 483.1, 483.8, 485, 486, 487.0

#### Exclusions

Diagnoses (Primary or Secondary): 196.0, 196.1, 196.2, 196.3, 196.5, 196.6, 196.8, 196.9, 197.0, 197.1, 197.2, 197.3, 197.4, 197.5, 197.6, 197.7, 197.8, 198.0, 198.1, 198.2, 198.3, 198.4, 198.5, 198.6, 198.7, 198.81, 198.82, 198.89, 203.02, 203.12, 203.82, 204.02, 204.12, 204.22, 204.82, 204.92, 205.02, 205.12, 205.22, 205.82, 205.92, 206.02, 206.12, 206.22, 206.82, 206.92, 207.02, 207.12, 207.22, 207.82, 208.02, 208.12, 208.22, 208.82, 208.92, 480.3, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9, V43.21, V66.7

Procedures (Primary or Secondary): 37.51, 37.52, 37.53, 37.54, 37.62, 37.63

### Prostatectomy

#### Inclusions

Principal Procedure: 60.21, 60.29, 60.3, 60.4, 60.5, 60.61, 60.62, 60.69

#### Exclusions

Diagnoses (Primary or Secondary): 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9

Procedures (Primary or Secondary): 37.51, 37.52, 37.53, 37.54, 37.62, 37.63

### Pulmonary Embolism

#### Inclusions

Principal Diagnosis: 415.11, 415.19

#### Exclusions

Diagnoses (Primary or Secondary): 196.0, 196.1, 196.2, 196.3, 196.5, 196.6, 196.8, 196.9, 197.0, 197.1, 197.2, 197.3, 197.4, 197.5, 197.6, 197.7, 197.8, 198.0, 198.1, 198.2, 198.3, 198.4, 198.5, 198.6, 198.7, 198.81, 198.82, 198.89, 203.02, 203.12, 203.82, 204.02, 204.12, 204.22, 204.82, 204.92, 205.02, 205.12, 205.22, 205.82, 205.92, 206.02, 206.12, 206.22, 206.82, 206.92, 207.02, 207.12, 207.22, 207.82, 208.02, 208.12, 208.22, 208.82, 208.92, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9, V43.21, V66.7

Procedures (Primary or Secondary): 37.51, 37.52, 37.53, 37.54, 37.62, 37.63

### Resection / Replacement of Abdominal Aorta

#### Inclusions

Principal Procedure: 38.34, 38.44, 39.71

#### Exclusions

Diagnoses (Primary or Secondary): 441.00, 441.01, 441.02, 441.03, 441.1, 441.2, 441.6, 441.7, 441.9, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9

Procedures (Primary or Secondary): 00.61, 35.10, 35.11, 35.12, 35.13, 35.14, 35.20, 35.21, 35.22, 35.23, 35.24, 35.25, 35.26, 35.27, 35.28, 36.10, 36.11, 36.12, 36.13, 36.14, 36.15, 36.16, 36.17, 36.19, 37.51, 37.52, 37.53, 37.54, 37.62, 37.63, 38.08, 38.16, 38.18, 38.36, 38.45, 38.64, 39.59

Procedures (Secondary only): 38.34, 38.44

### Respiratory Failure

#### Inclusions

Principal Diagnosis: 518.81, 518.84

#### Exclusions

Diagnoses (Primary or Secondary): 196.0, 196.1, 196.2, 196.3, 196.5, 196.6, 196.8, 196.9, 197.0, 197.1, 197.2, 197.3, 197.4, 197.5, 197.6, 197.7, 197.8, 198.0, 198.1, 198.2, 198.3, 198.4, 198.5, 198.6, 198.7, 198.81, 198.82, 198.89, 203.02, 203.12, 203.82, 204.02, 204.12, 204.22, 204.82, 204.92, 205.02, 205.12, 205.22, 205.82, 205.92, 206.02, 206.12, 206.22, 206.82, 206.92, 207.02, 207.12, 207.22, 207.82, 208.02, 208.12, 208.22, 208.82, 208.92, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9, V43.21, V66.7

Procedures (Primary or Secondary): 33.51, 37.51, 37.52, 37.53, 37.54, 50.51

### Sepsis

#### Inclusions

Principal Diagnosis: 003.1, 027.0, 036.2, 036.3, 038.0, 038.10, 038.11, 038.12, 038.19, 038.2, 038.3, 038.40, 038.41, 038.42, 038.43, 038.44, 038.49, 038.8, 038.9, 785.52

#### Exclusions

Diagnoses (Primary or Secondary): 196.0, 196.1, 196.2, 196.3, 196.5, 196.6, 196.8, 196.9, 197.0, 197.1, 197.2, 197.3, 197.4, 197.5, 197.6, 197.7, 197.8, 198.0, 198.1, 198.2, 198.3, 198.4, 198.5, 198.6, 198.7, 198.81, 198.82, 198.89, 203.00, 203.02, 203.12, 203.82, 204.02, 204.10, 204.12, 204.22, 204.82, 204.92, 205.02, 205.12, 205.22, 205.82, 205.92, 206.02, 206.12, 206.22, 206.82, 206.92, 207.02, 207.12, 207.22, 207.82, 208.02, 208.12, 208.22, 208.82, 208.92, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9, V43.21, V66.7  
Procedures (Primary or Secondary): 37.51, 37.52, 37.53, 37.54, 37.62, 37.63, 50.59, 50.69

### Stroke

#### Inclusions

Principal Diagnosis: 430, 431, 432.9, 433.01, 433.11, 433.21, 433.31, 433.81, 433.91, 434.01, 434.11, 434.91

#### Exclusions

Diagnoses (Primary or Secondary): 196.0, 196.1, 196.2, 196.3, 196.5, 196.6, 196.8, 196.9, 197.0, 197.1, 197.2, 197.3, 197.4, 197.5, 197.6, 197.7, 197.8, 198.0, 198.1, 198.2, 198.3, 198.4, 198.5, 198.6, 198.7, 198.81, 198.82, 198.89, 203.02, 203.12, 203.82, 204.02, 204.12, 204.22, 204.82, 204.92, 205.02, 205.12, 205.22, 205.82, 205.92, 206.02, 206.12, 206.22, 206.82, 206.92, 207.02, 207.12, 207.22, 207.82, 208.02, 208.12, 208.22, 208.82, 208.92, 432.1, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9, V43.21, V46.11, V66.7  
Procedures (Primary or Secondary): 37.51, 37.52, 37.53, 37.54, 37.62, 37.63

### Total Hip Replacement

#### Inclusions

Principal Procedure: 00.85, 00.86, 00.87, 81.51

#### Exclusions

Diagnoses (Primary or Secondary): 733.14, 820.09, 820.8, 996.45, 996.46, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, E800.0, E800.1, E800.2, E800.3, E800.8, E800.9, E801.0, E801.1, E801.2, E801.3, E801.8, E801.9, E802.0, E802.1, E802.2, E802.3, E802.8, E802.9, E803.0, E803.1, E803.2, E803.3, E803.8, E803.9, E804.0, E804.1, E804.2, E804.3, E804.8, E804.9, E805.0, E805.1, E805.2, E805.3, E805.8, E805.9, E806.0, E806.1, E806.2, E806.3, E806.8, E806.9, E807.0, E807.1, E807.2, E807.3, E807.8, E807.9, E810.0, E810.1, E810.2, E810.3, E810.4, E810.5, E810.6, E810.7, E810.8, E810.9, E811.0, E811.1, E811.2, E811.3, E811.4, E811.5, E811.6, E811.7, E811.8, E811.9, E812.0, E812.1, E812.2, E812.3, E812.4, E812.5, E812.6, E812.7, E812.8, E812.9, E813.0, E813.1, E813.2, E813.3, E813.4, E813.5, E813.6, E813.7, E813.8, E813.9, E814.0, E814.1, E814.2, E814.3, E814.4, E814.5, E814.6, E814.7, E814.8, E814.9, E815.0, E815.1, E815.2, E815.3, E815.4, E815.5, E815.6, E815.7, E815.8, E815.9, E816.0, E816.1, E816.2, E816.3, E816.4, E816.5, E816.6, E816.7, E816.8, E816.9, E817.0, E817.1, E817.2, E817.3, E817.4, E817.5, E817.6, E817.7, E817.8, E817.9, E818.0, E818.1, E818.2, E818.3, E818.4, E818.5, E818.6, E818.7, E818.8, E818.9, E819.0, E819.1, E819.2, E819.3, E819.4, E819.5, E819.6, E819.7, E819.8, E819.9, E820.0, E820.2, E820.3, E820.4, E820.5, E820.6, E820.7, E820.8, E820.9, E821.0, E821.1, E821.2, E821.3, E821.4, E821.5, E821.6, E821.7, E821.8, E821.9, E822.0, E822.1, E822.2, E822.3, E822.4, E822.5, E822.6, E822.7, E822.8, E822.9, E823.0, E823.1, E823.2, E823.3, E823.4, E823.5, E823.6, E823.7, E823.8, E823.9, E824.0, E824.1, E824.2, E824.3, E824.4, E824.5, E824.6, E824.7, E824.8, E824.9, E825.0, E825.1, E825.2, E825.3, E825.4, E825.5, E825.6, E825.7, E825.8, E825.9, E826.0, E826.1, E826.2, E826.3, E826.4, E826.8, E826.9, E827.0, E827.2, E827.3, E827.4, E827.8, E827.9, E828.0, E828.2, E828.4, E828.8, E828.9, E829.0, E829.4, E829.8, E829.9, E830.0, E830.1, E830.2, E830.3, E830.4, E830.5, E830.6, E830.8, E830.9, E831.0, E831.1, E831.2, E831.3, E831.4, E831.5, E831.6, E831.8, E832.0, E832.1, E832.2, E832.3, E832.4, E832.5, E832.6, E832.8, E832.9, E833.0, E833.1, E833.2, E833.3, E833.4, E833.5, E833.6, E833.8, E833.9, E834.0, E834.1, E834.2, E834.3, E834.4, E834.5, E834.6, E834.8, E834.9, E835.0, E835.1, E835.2, E835.3, E835.4, E835.5, E835.6, E835.8, E835.9, E836.0, E836.1, E836.2, E836.3, E836.4, E836.5, E836.6, E836.8, E836.9, E837.0, E837.1, E837.2, E837.3, E837.4, E837.5, E837.6, E837.8, E837.9, E838.0, E838.1, E838.2, E838.3, E838.4, E838.5, E838.6, E838.8, E838.9, E840.0, E840.1, E840.2, E840.3, E840.4, E840.5, E840.6, E840.7, E840.8, E840.9, E841.0, E841.1, E841.2, E841.3, E841.4, E841.5, E841.6, E841.7, E841.8, E841.9, E842.6, E842.7, E842.8, E842.9, E843.0, E843.1, E843.2, E843.3, E843.4, E843.5, E843.6, E843.7, E843.8, E843.9, E844.0, E844.1, E844.2, E844.3, E844.4, E844.5, E844.6, E844.7, E844.8, E844.9, E845.0, E845.8, E845.9, E846, E847, E848, E849.0, E849.1, E849.2, E849.3, E849.4, E849.5, E849.6, E849.7, E849.8, E849.9, E880.0, E880.1, E880.9, E881.0, E881.1, E882, E883.0, E883.1, E883.2, E883.9, E884.0, E884.1, E884.2, E884.3, E884.4, E884.5, E884.6, E884.9, E885.0, E885.1, E885.2, E885.3, E885.4, E885.9, E886.0, E886.9, E887, E888.0, E888.1, E888.8, E888.9, E890.0, E890.8, E891.8, E916, E917.0, E917.1, E917.2, E917.3, E917.4, E917.5, E917.6, E917.7, E917.8, E917.9, E918, E919.0, E919.1, E919.2, E919.3, E919.4, E919.5, E919.6, E919.7, E919.8, E919.9, E920.0, E920.1, E920.2, E920.3, E920.4, E920.5, E920.8, E920.9, E921.0, E921.1, E921.8, E921.9, E922.0, E922.1, E922.2, E922.3, E922.4, E922.5, E922.8, E922.9, E923.0, E923.1, E923.2, E923.8, E923.9, E928.8, E928.9, E929.0, E929.1, E929.2, E929.3, E929.4, E929.5, E929.8, E929.9, E955.0, E955.1, E955.2, E955.3, E955.4, E955.5, E955.6, E955.7, E955.9, E956, E957.0, E957.1, E957.2, E957.9, E958.0, E958.5, E958.6, E960.0, E965.0, E965.1, E965.2, E965.3, E965.4, E965.5, E965.6, E965.7, E965.8, E965.9, E966, E968.1, E968.2, E968.5, E968.6, E969, E970, E973, E974, E977, E985.0, E985.1, E985.2, E985.3, E985.4, E985.5, E985.6, E985.7, E986, E987.0, E987.1, E987.2, E987.9, E988.0, E988.5, E989, V15.5, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9, V58.43, V58.49

Principal Diagnosis: 996.41, 996.43

Procedures (Primary or Secondary): 00.70, 00.71, 00.72, 00.73, 00.80, 00.81, 00.82, 00.83, 00.84, 37.51, 37.52, 37.53, 37.54, 78.65, 78.67, 80.05, 80.06, 81.53, 81.54, 81.55

#### Total Knee Replacement

##### Inclusions

Principal Procedure: 81.54

##### Exclusions

Diagnoses (Primary or Secondary): 996.45, 996.46, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9

Principal Diagnosis: 996.43

Procedures (Primary or Secondary): 00.74, 00.75, 00.76, 00.80, 00.81, 00.82, 00.83, 00.84, 37.51, 37.52, 37.53, 37.54, 78.65, 78.67, 80.05, 80.06, 81.51, 81.52, 81.53, 81.55

#### Valve Replacement/ Repair Surgery

##### Inclusions

Procedures (Primary or Secondary): 35.10, 35.11, 35.12, 35.13, 35.14, 35.20, 35.21, 35.22, 35.23, 35.24, 35.25, 35.26, 35.27, 35.28

##### Exclusions

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Appendix B. Patient Cohorts and Related ICD-9-CM Codes

Diagnoses (Primary or Secondary): 414.06, 414.07, 441.00, 441.01, 441.02, 441.03, 441.2, 996.80, 996.81, 996.82, 996.83, 996.84, 996.85, 996.86, 996.87, 996.89, V42.0, V42.1, V42.4, V42.6, V42.7, V42.81, V42.82, V42.83, V42.84, V42.89, V42.9

Procedures (Primary or Secondary): 35.55, 35.96, 35.97, 36.31, 36.32, 36.33, 36.34, 37.51, 37.52, 37.53, 37.54, 37.62, 37.63, 38.12, 38.34, 38.44, 38.64, 39.71

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## Appendix C. Major Complications

### Appendectomy - Independent Complications

Independent complications are conditions that are clearly hospital-acquired or by the coding definition are defined as post-operative. For 2009 these conditions were not counted as complications if the POA indicator was "Yes" or "Clinically Undetermined."

292.81	DRUG INDUCED DELIRIUM	997.3	SURG COMP-RESP NEC
415.11	IATRO PULM EMBOL/INFARCT	997.31	VENT ASSOC PNEUMONIA
415.12	SEPTIC PULMON EMBOLISM	997.39	OTH SURG COMP-RESP
415.19	PULMON EMBOL/INFARCT NEC	997.4	SURG COMP-DIGESTIVE
423.3	CARDIAC TAMPONADE	997.5	SURG COMP-URINARY NEC
427.41	VENTRICULAR FIBRILLATION	998.0	POSTOPERATIVE SHOCK
427.5	CARDIAC ARREST	998.11	HEMORRHAGE COMP PX
449	SEPTIC ARTERIAL EMBOLISM	998.2	ACCIDENTAL OP LACERATION
512.1	IATROGENIC PNEUMOTHORAX	998.30	DISRUPTION WOUND NOS
518.5	POSTTR PULMON INSUFF	998.31	DISRUPT INTERNAL OP WND
518.7	TRALI	998.32	DISRUPT EXTERNAL OP WND
518.81	AC RESPIRATORY FAILURE	998.59	POSTOP INFECTION NEC
997.02	IATROGEN CV INFARCT/HEM	999.31	INFECT D/T CVC
997.1	SURG COMP-HEART	999.39	INFECT COMP MED CARE NEC

### Appendectomy - Dependent Complications

Dependent complications are conditions that must either have the POA indicator set to "No", or if the POA indicator is set to "Unknown" or is missing, there must also be the listed 900 post-operative complication code present in the patient record.

#### Must occur with 997.1 CARDIAC COMPLICATIONS, NOT ELSEWHERE CLASSIFIED

410.01	ANTEROLAT AMI-INITIAL	427.31	ATRIAL FIBRILLATION
410.11	ANT AMI NEC-INITIAL	427.32	ATRIAL FLUTTER
410.21	INFEROLAT AMI-INITIAL	427.89	OTH CARDIAC DYSRHYTHMIAS
410.51	LAT AMI NEC-INITIAL	428.0	CHF NOS
410.61	POSTERIOR AMI-INITIAL	428.1	LEFT HEART FAILURE
410.71	SUBEND INFARCT-INITIAL	428.21	ACUTE SYSTOLIC HF
410.81	AMI NEC-INITIAL EPISODE	428.23	AC & CHR SYSTOLIC HF
410.91	AMI NOS-INITIAL EPISODE	428.31	ACUTE DIASTOLIC HF
427.0	PSVT	428.33	AC & CHR DIASTOLIC HF
427.1	PVT		

#### Must occur with 997.3 RESPIRATORY COMPLICATIONS or 997.39 OTHER RESPIRATORY COMPLICATIONS

481	PNEUMOCOCCAL PNEUMONIA	482.83	GRAM-NEG PNEUMONIA NEC
482.0	K. PNEUMONIAE PNEUMONIA	482.84	LEGIONNAIRES' DISEASE
482.1	PSEUDOMONAL PNEUMONIA	482.89	BACTERIAL PNEUMONIA NEC
482.2	H. INFLUENZAE PNEUMONIA	482.9	BACTERIAL PNEUMONIA NOS
482.30	STREP PNEUMONIA NOS	483.0	M. PNEUMONIAE PNEUMONIA
482.31	GROUP A STREP PNEUMONIA	483.1	CHLAMYDIAL PNEUMONIA
482.32	GROUP B STREP PNEUMONIA	483.8	PNEUMONIA D/T ORG NEC
482.39	STREP PNEUMONIA NEC	484.3	PNEUMONIA IN WHOOP COUGH
482.40	STAPH PNEUMONIA NOS	484.6	PNEUM IN ASPERGILLOSIS
482.41	MSSA PNEUMONIA	484.7	PNEUM IN SYST MYCOSESNEC
482.42	MRSA PNEUMONIA	485	BRONCHOPNEUMONIA ORG NOS
482.49	STAPH PNEUMONIA NEC	486	PNEUMONIA ORGANISM NOS
482.81	PNEUMONIA D/T ANAEROBES	507.0	FOOD/VOMIT PNEUMONITIS
482.82	E. COLI PNEUMONIA		

**Must occur with 997.4 DIGESTIVE SYSTEM COMPLICATION or 998.2 ACCIDENTAL PUNCTURE OR LACERATION DURING A PROCEDURE**

569.83	INTESTINAL PERFORATION
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**Must occur with 997.5 URINARY COMPLICATIONS, NOT ELSEWHERE CLASSIFIED**

584.5	AC RF W TUBULAR NEPHR	599.0	URINARY TRACT INF NOS
584.8	ACUTE RENAL FAILURE NEC	788.20	RETENTION OF URINE NOS
584.9	ACUTE RENAL FAILURE NOS	788.29	RETENTION OF URINE NEC

**Must occur with 998.11 HEMORRHAGE COMPLICATING A PROCEDURE or 998.2 ACCIDENTAL PUNCTURE OR LACERATION DURING A PROCEDURE**

568.81	HEMOPERITONEUM
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**Must occur with 998.59 OTHER POSTOPERATIVE INFECTION**

038.0	STREPTOCOCCAL SEPTICEMIA	038.41	H. INFLUENZAE SEPTICEMIA
038.10	STAPH SEPTICEMIA NOS	038.42	E. COLI SEPTICEMIA
038.11	MSSA SEPTICEMIA	038.43	PSEUDOMONAS SEPTICEMIA
038.12	MRSA SEPTICEMIA	038.44	SERRATIA SEPTICEMIA
038.19	STAPH SEPTICEMIA NEC	038.49	GRAM-NEG SEPTICEMIA NEC
038.2	PNEUMOCOCCAL SEPTICEMIA	038.8	SEPTICEMIA NEC
038.3	ANAEROBIC SEPTICEMIA	038.9	SEPTICEMIA NOS
038.40	GRAM-NEG SEPTICEMIA NOS	682.2	TRUNK CELLULITIS

## Back and Neck Surgery (except Spinal Fusion) – Independent Complications

Independent complications are conditions that are clearly hospital-acquired or by the coding definition are defined as post-operative. For 2009 these conditions were not counted as complications if the POA indicator was "Yes" or "Clinically Undetermined."

038.0	STREPTOCOCCAL SEPTICEMIA	482.41	MSSA PNEUMONIA
038.10	STAPH SEPTICEMIA NOS	482.42	MRSA PNEUMONIA
038.11	MSSA SEPTICEMIA	482.49	STAPH PNEUMONIA NEC
038.12	MRSA SEPTICEMIA	482.81	PNEUMONIA D/T ANAEROBES
038.19	STAPH SEPTICEMIA NEC	482.82	E. COLI PNEUMONIA
038.2	PNEUMOCOCCAL SEPTICEMIA	482.83	GRAM-NEG PNEUMONIA NEC
038.3	ANAEROBIC SEPTICEMIA	482.84	LEGIONNAIRES' DISEASE
038.40	GRAM-NEG SEPTICEMIA NOS	482.89	BACTERIAL PNEUMONIA NEC
038.41	H. INFLUENZAE SEPTICEMIA	482.9	BACTERIAL PNEUMONIA NOS
038.42	E. COLI SEPTICEMIA	483.0	M. PNEUMONIAE PNEUMONIA
038.43	PSEUDOMONAS SEPTICEMIA	483.1	CHLAMYDIAL PNEUMONIA
038.44	SERRATIA SEPTICEMIA	483.8	PNEUMONIA D/T ORG NEC
038.49	GRAM-NEG SEPTICEMIA NEC	484.1	PNEUMONIA IN CMV DISEASE
038.8	SEPTICEMIA NEC	484.3	PNEUMONIA IN WHOOP COUGH
038.9	SEPTICEMIA NOS	484.6	PNEUM IN ASPERGILLOSIS
292.81	DRUG INDUCED DELIRIUM	484.7	PNEUM IN SYST MYCOSESNEC
293.0	DELIRIUM D/T CCE	486	PNEUMONIA ORGANISM NOS
349.31	ACC LAC DURA DURING PX	507.0	FOOD/VOMIT PNEUMONITIS
410.01	ANTEROLAT AMI-INITIAL	512.1	IATROGENIC PNEUMOTHORAX
410.11	ANT AMI NEC-INITIAL	518.5	POSTTR PULMON INSUFF
410.21	INFEROLAT AMI-INITIAL	518.7	TRALI
410.31	INFEROPOST AMI-INITIAL	518.81	AC RESPIRATORY FAILURE
410.41	INF AMI NEC-INITIAL	584.5	AC KF W TUBULAR NEPHR
410.51	LAT AMI NEC-INITIAL	584.8	ACUTE KIDNEY FAILURE NEC
410.61	POSTERIOR AMI-INITIAL	584.9	ACUTE KIDNEY FAILURE NOS
410.71	SUBEND INFARCT-INITIAL	785.52	SEPTIC SHOCK
410.81	AMI NEC-INITIAL EPISODE	799.1	RESPIRATORY ARREST
410.91	AMI NOS-INITIAL EPISODE	995.91	SEPSIS
415.11	IATRO PULM EMBOL/INFARCT	995.92	SEVERE SEPSIS
415.12	SEPTIC PULMON EMBOLISM	997.02	IATROGEN CV INFARCT/HEM
415.19	PULMON EMBOL/INFARCT NEC	997.09	NERV SYST SURG COMP NEC
423.3	CARDIAC TAMPONADE	997.1	SURG COMP-HEART
449	SEPTIC ARTERIAL EMBOLISM	997.3	SURG COMP-RESP NEC
480.0	ADENOVIRAL PNEUMONIA	997.31	VENT ASSOC PNEUMONIA
480.1	RSV PNEUMONIA	997.39	OTH SURG COMP-RESP
480.2	PARAINFLUENZA VIR PNEUM	997.4	SURG COMP-DIGESTIVE
480.3	SARS PNEUMONIA	997.5	SURG COMP-URINARY NEC
480.8	VIRAL PNEUMONIA NEC	998.0	POSTOPERATIVE SHOCK
481	PNEUMOCOCCAL PNEUMONIA	998.11	HEMORRHAGE COMP PX
482.0	K. PNEUMONIAE PNEUMONIA	998.2	ACCIDENTAL OP LACERATION
482.1	PSEUDOMONAL PNEUMONIA	998.30	DISRUPTION WOUND NOS
482.2	H. INFLUENZAE PNEUMONIA	998.31	DISRUPT INTERNAL OP WND
482.30	STREP PNEUMONIA NOS	998.32	DISRUPT EXTERNAL OP WND
482.31	GROUP A STREP PNEUMONIA	998.59	POSTOP INFECTION NEC
482.32	GROUP B STREP PNEUMONIA	999.31	INFECT D/T CVC
482.39	STREP PNEUMONIA NEC	999.39	INFECT COMP MED CARE NEC
482.40	STAPH PNEUMONIA NOS		

## Back and Neck Surgery (except Spinal Fusion) – Dependent Complications

Dependent complications are conditions that must either have the POA indicator set to "No", or if the POA indicator is set to "Unknown" or is missing, there must also be the listed 900 post-operative complication code present in the patient record.

### Must not occur with 707.20 PRESSURE ULCER, UNSPECIFIED STAGE or 707.21 PRESSURE ULCER, STAGE I or 707.22 PRESSURE ULCER, STAGE II

707.0	PRESSURE ULCER	707.04	PRESSURE ULCER-HIP
707.00	PRESSURE ULCER-SITE NOS	707.05	PRESSURE ULCER-BUTTOCK
707.01	PRESSURE ULCER-ELBOW	707.06	PRESSURE ULCER-ANKLE
707.02	PRESSURE ULCER-UP BACK	707.07	PRESSURE ULCER-HEEL
707.03	PRESSURE ULCER-LOW BACK	707.09	PRESSURE ULCER-SITE NEC

### Must occur with 997.02 IATROGENIC CEREBROVASCULAR INFARCTION OR HEMORRHAGE

434.11	CEREBRAL EMBOL W INFARCT	434.91	CEREB ART OCCL W INFARCT
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### Must occur with 997.1 CARDIAC COMPLICATIONS, NOT ELSEWHERE CLASSIFIED

427.0	PSVT	428.21	ACUTE SYSTOLIC HF
427.1	PVT	428.23	AC & CHR SYSTOLIC HF
427.31	ATRIAL FIBRILLATION	428.31	ACUTE DIASTOLIC HF
427.32	ATRIAL FLUTTER	428.33	AC & CHR DIASTOLIC HF
427.89	OTH CARDIAC DYSRHYTHMIAS	428.41	AC SYS & DIASTOLIC HF
427.9	CARDIAC DYSRHYTHMIA NOS	428.43	ACCHR SYS & DIASTOLIC HF
428.0	CHF NOS	428.9	HEART FAILURE NOS
428.1	LEFT HEART FAILURE		

### Must occur with 997.3 RESPIRATORY COMPLICATIONS or 997.39 OTHER RESPIRATORY COMPLICATIONS

485	BRONCHOPNEUMONIA ORG NOS	518.4	ACUTE LUNG EDEMA NOS
511.9	PLEURAL EFFUSION NOS	518.84	AC & CHR RESP FAILURE

### Must occur with 997.4 DIGESTIVE SYSTEM COMPLICATION

560.1	PARALYTIC ILEUS
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### Must occur with 997.5 URINARY COMPLICATIONS, NOT ELSEWHERE CLASSIFIED

593.9	RENAL/URETER DISORD NOS	788.20	RETENTION OF URINE NOS
599.0	URINARY TRACT INF NOS	788.29	RETENTION OF URINE NEC

### Must occur with 998.59 OTHER POSTOPERATIVE INFECTION

008.45	C. DIFFICILE ENTERITIS
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## Back and Neck Surgery (Spinal Fusion) – Independent Complications

Independent complications are conditions that are clearly hospital-acquired or by the coding definition are defined as post-operative. For 2009 these conditions were not counted as complications if the POA indicator was "Yes" or "Clinically Undetermined."

038.0	STREPTOCOCCAL SEPTICEMIA	482.41	MSSA PNEUMONIA
038.10	STAPH SEPTICEMIA NOS	482.42	MRSA PNEUMONIA
038.11	MSSA SEPTICEMIA	482.49	STAPH PNEUMONIA NEC
038.12	MRSA SEPTICEMIA	482.81	PNEUMONIA D/T ANAEROBES
038.19	STAPH SEPTICEMIA NEC	482.82	E. COLI PNEUMONIA
038.2	PNEUMOCOCCAL SEPTICEMIA	482.83	GRAM-NEG PNEUMONIA NEC
038.3	ANAEROBIC SEPTICEMIA	482.84	LEGIONNAIRES' DISEASE
038.40	GRAM-NEG SEPTICEMIA NOS	482.89	BACTERIAL PNEUMONIA NEC
038.41	H. INFLUENZAE SEPTICEMIA	482.9	BACTERIAL PNEUMONIA NOS
038.42	E. COLI SEPTICEMIA	483.0	M. PNEUMONIAE PNEUMONIA
038.43	PSEUDOMONAS SEPTICEMIA	483.1	CHLAMYDIAL PNEUMONIA
038.44	SERRATIA SEPTICEMIA	483.8	PNEUMONIA D/T ORG NEC
038.49	GRAM-NEG SEPTICEMIA NEC	484.1	PNEUMONIA IN CMV DISEASE
038.8	SEPTICEMIA NEC	484.3	PNEUMONIA IN WHOOP COUGH
038.9	SEPTICEMIA NOS	484.6	PNEUM IN ASPERGILLOSIS
292.81	DRUG INDUCED DELIRIUM	484.7	PNEUM IN SYST MYCOSESNEC
293.0	DELIRIUM D/T CCE	485	BRONCHOPNEUMONIA ORG NOS
349.31	ACC LAC DURA DURING PX	486	PNEUMONIA ORGANISM NOS
410.01	ANTEROLAT AMI-INITIAL	507.0	FOOD/VOMIT PNEUMONITIS
410.11	ANT AMI NEC-INITIAL	512.1	IATROGENIC PNEUMOTHORAX
410.21	INFEROLAT AMI-INITIAL	518.5	POSTTR PULMON INSUFF
410.31	INFEROPOST AMI-INITIAL	518.7	TRALI
410.41	INF AMI NEC-INITIAL	518.81	AC RESPIRATORY FAILURE
410.51	LAT AMI NEC-INITIAL	584.5	AC KF W TUBULAR NEPHR
410.61	POSTERIOR AMI-INITIAL	584.8	ACUTE KIDNEY FAILURE NEC
410.71	SUBEND INFARCT-INITIAL	584.9	ACUTE KIDNEY FAILURE NOS
410.81	AMI NEC-INITIAL EPISODE	785.52	SEPTIC SHOCK
410.91	AMI NOS-INITIAL EPISODE	799.1	RESPIRATORY ARREST
415.11	IATRO PULM EMBOL/INFARCT	995.91	SEPSIS
415.12	SEPTIC PULMON EMBOLISM	995.92	SEVERE SEPSIS
415.19	PULMON EMBOL/INFARCT NEC	997.02	IATROGEN CV INFARCT/HEM
423.3	CARDIAC TAMPONADE	997.09	NERV SYST SURG COMP NEC
449	SEPTIC ARTERIAL EMBOLISM	997.1	SURG COMP-HEART
480.0	ADENOVIRAL PNEUMONIA	997.3	SURG COMP-RESP NEC
480.1	RSV PNEUMONIA	997.31	VENT ASSOC PNEUMONIA
480.2	PARAINFLUENZA VIR PNEUM	997.39	OTH SURG COMP-RESP
480.3	SARS PNEUMONIA	997.4	SURG COMP-DIGESTIVE
480.8	VIRAL PNEUMONIA NEC	997.5	SURG COMP-URINARY NEC
481	PNEUMOCOCCAL PNEUMONIA	998.0	POSTOPERATIVE SHOCK
482.0	K. PNEUMONIAE PNEUMONIA	998.11	HEMORRHAGE COMP PX
482.1	PSEUDOMONAL PNEUMONIA	998.2	ACCIDENTAL OP LACERATION
482.2	H. INFLUENZAE PNEUMONIA	998.30	DISRUPTION WOUND NOS
482.30	STREP PNEUMONIA NOS	998.31	DISRUPT INTERNAL OP WND
482.31	GROUP A STREP PNEUMONIA	998.32	DISRUPT EXTERNAL OP WND
482.32	GROUP B STREP PNEUMONIA	998.59	POSTOP INFECTION NEC
482.39	STREP PNEUMONIA NEC	999.31	INFECT D/T CVC
482.40	STAPH PNEUMONIA NOS	999.39	INFECT COMP MED CARE NEC

## Back and Neck Surgery (Spinal Fusion) – Dependent Complications

Dependent complications are conditions that must either have the POA indicator set to "No", or if the POA indicator is set to "Unknown" or is missing, there must also be the listed 900 post-operative complication code present in the patient record.

### Must not occur with 707.20 PRESSURE ULCER, UNSPECIFIED STAGE or 707.21 PRESSURE ULCER, STAGE I or 707.22 PRESSURE ULCER, STAGE II

707.0	PRESSURE ULCER	707.04	PRESSURE ULCER-HIP
707.00	PRESSURE ULCER-SITE NOS	707.05	PRESSURE ULCER-BUTTOCK
707.01	PRESSURE ULCER-ELBOW	707.06	PRESSURE ULCER-ANKLE
707.02	PRESSURE ULCER-UP BACK	707.07	PRESSURE ULCER-HEEL
707.03	PRESSURE ULCER-LOW BACK	707.09	PRESSURE ULCER-SITE NEC

### Must occur with 997.02 IATROGENIC CEREBROVASCULAR INFARCTION OR HEMORRHAGE

434.11	CEREBRAL EMBOL W INFARCT	434.91	CEREB ART OCCL W INFARCT
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### Must occur with 997.1 CARDIAC COMPLICATIONS, NOT ELSEWHERE CLASSIFIED

427.0	PSVT	428.21	ACUTE SYSTOLIC HF
427.1	PVT	428.23	AC & CHR SYSTOLIC HF
427.31	ATRIAL FIBRILLATION	428.31	ACUTE DIASTOLIC HF
427.32	ATRIAL FLUTTER	428.33	AC & CHR DIASTOLIC HF
427.89	OTH CARDIAC DYSRHYTHMIAS	428.41	AC SYS & DIASTOLIC HF
427.9	CARDIAC DYSRHYTHMIA NOS	428.43	ACCHR SYS & DIASTOLIC HF
428.0	CHF NOS	428.9	HEART FAILURE NOS
428.1	LEFT HEART FAILURE		

### Must occur with 997.3 RESPIRATORY COMPLICATIONS 997.39 OTHER RESPIRATORY COMPLICATIONS

511.9	PLEURAL EFFUSION NOS	518.84	AC & CHR RESP FAILURE
518.4	ACUTE LUNG EDEMA NOS		

### Must occur with 997.4 DIGESTIVE SYSTEM COMPLICATION

560.1	PARALYTIC ILEUS
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### Must occur with 997.5 URINARY COMPLICATIONS, NOT ELSEWHERE CLASSIFIED

593.9	RENAL/URETER DISORD NOS	788.20	RETENTION OF URINE NOS
599.0	URINARY TRACT INF NOS	788.29	RETENTION OF URINE NEC

### Must occur with 998.59 OTHER POSTOPERATIVE INFECTION

008.45	C. DIFFICILE ENTERITIS
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## Carotid Surgery – Independent Complications

Independent complications are conditions that are clearly hospital-acquired or by the coding definition are defined as post-operative. For 2009 these conditions were not counted as complications if the POA indicator was "Yes" or "Clinically Undetermined."

292.81	DRUG INDUCED DELIRIUM	483.8	PNEUMONIA D/T ORG NEC
293.0	DELIRIUM D/T CCE	484.3	PNEUMONIA IN WHOOP COUGH
410.01	ANTEROLAT AMI-INITIAL	484.6	PNEUM IN ASPERGILLOSIS
410.11	ANT AMI NEC-INITIAL	484.7	PNEUM IN SYST MYCOSESNEC
410.21	INFEROLAT AMI-INITIAL	486	PNEUMONIA ORGANISM NOS
410.51	LAT AMI NEC-INITIAL	507.0	FOOD/VOMIT PNEUMONITIS
410.61	POSTERIOR AMI-INITIAL	518.5	POSTTR PULMON INSUFF
410.71	SUBEND INFARCT-INITIAL	518.7	TRALI
410.81	AMI NEC-INITIAL EPISODE	518.81	AC RESPIRATORY FAILURE
410.91	AMI NOS-INITIAL EPISODE	780.01	COMA
415.12	SEPTIC PULMON EMBOLISM	951.7	INJURY HYPOGLOSSAL NERVE
427.5	CARDIAC ARREST	957.1	INJURY TO NERVE NEC
449	SEPTIC ARTERIAL EMBOLISM	997.00	NERV SYST SURG COMP NOS
481	PNEUMOCOCCAL PNEUMONIA	997.01	CNS SURG COMP
482.0	K. PNEUMONIAE PNEUMONIA	997.02	IATROGEN CV INFARCT/HEM
482.1	PSEUDOMONAL PNEUMONIA	997.09	NERV SYST SURG COMP NEC
482.2	H. INFLUENZAE PNEUMONIA	997.1	SURG COMP-HEART
482.30	STREP PNEUMONIA NOS	997.3	SURG COMP-RESP NEC
482.31	GROUP A STREP PNEUMONIA	997.31	VENT ASSOC PNEUMONIA
482.32	GROUP B STREP PNEUMONIA	997.39	OTH SURG COMP-RESP
482.39	STREP PNEUMONIA NEC	997.4	SURG COMP-DIGESTIVE
482.40	STAPH PNEUMONIA NOS	997.5	SURG COMP-URINARY NEC
482.41	MSSA PNEUMONIA	997.91	SURG COMP-HYPERTENSION
482.42	MRSA PNEUMONIA	998.0	POSTOPERATIVE SHOCK
482.49	STAPH PNEUMONIA NEC	998.11	HEMORRHAGE COMP PX
482.81	PNEUMONIA D/T ANAEROBES	998.2	ACCIDENTAL OP LACERATION
482.82	E. COLI PNEUMONIA	998.30	DISRUPTION WOUND NOS
482.83	GRAM-NEG PNEUMONIA NEC	998.31	DISRUPT INTERNAL OP WND
482.84	LEGIONNAIRES' DISEASE	998.32	DISRUPT EXTERNAL OP WND
482.89	BACTERIAL PNEUMONIA NEC	998.59	POSTOP INFECTION NEC
482.9	BACTERIAL PNEUMONIA NOS	999.31	INFECT D/T CVC
483.0	M. PNEUMONIAE PNEUMONIA	999.39	INFECT COMP MED CARE NEC
483.1	CHLAMYDIAL PNEUMONIA		

## Carotid Surgery – Dependent Complications

Dependent complications are conditions that must either have the POA indicator set to "No", or if the POA indicator is set to "Unknown" or is missing, there must also be the listed 900 post-operative complication code present in the patient record.

### Must occur with 997.02 IATROGENIC CEREBROVASCULAR INFARCTION OR HEMORRHAGE

434.11	CEREBRAL EMBOL W INFARCT	434.91	CEREB ART OCCL W INFARCT
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### Must occur with 997.1 CARDIAC COMPLICATIONS, NOT ELSEWHERE CLASSIFIED

427.1	PVT	428.23	AC & CHR SYSTOLIC HF
427.31	ATRIAL FIBRILLATION	428.31	ACUTE DIASTOLIC HF
427.89	OTH CARDIAC DYSRHYTHMIAS	428.33	AC & CHR DIASTOLIC HF
428.0	CHF NOS	428.41	AC SYS & DIASTOLIC HF
428.1	LEFT HEART FAILURE	428.43	ACCHR SYS & DIASTOLIC HF
428.21	ACUTE SYSTOLIC HF	428.9	HEART FAILURE NOS

### Must occur with 997.3 RESPIRATORY COMPLICATIONS or 997.39 OTHER RESPIRATORY COMPLICATIONS

485	BRONCHOPNEUMONIA ORG NOS
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### Must occur with 997.4 DIGESTIVE SYSTEM COMPLICATION

560.1	PARALYTIC ILEUS
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### Must occur with 997.5 URINARY COMPLICATIONS, NOT ELSEWHERE CLASSIFIED

584.5	AC RF W TUBULAR NEPHR	593.9	RENAL/URETER DISORD NOS
584.8	ACUTE KIDNEY FAILURE NEC	599.0	URINARY TRACT INF NOS
584.9	ACUTE KIDNEY FAILURE NOS	788.20	RETENTION OF URINE NOS

### Must occur with 998.59 OTHER POSTOPERATIVE INFECTION

038.0	STREPTOCOCCAL SEPTICEMIA	038.41	H. INFLUENZAE SEPTICEMIA
038.10	STAPH SEPTICEMIA NOS	038.42	E. COLI SEPTICEMIA
038.11	MSSA SEPTICEMIA	038.43	PSEUDOMONAS SEPTICEMIA
038.12	MRSA SEPTICEMIA	038.44	SERRATIA SEPTICEMIA
038.19	STAPH SEPTICEMIA NEC	038.49	GRAM-NEG SEPTICEMIA NEC
038.2	PNEUMOCOCCAL SEPTICEMIA	038.8	SEPTICEMIA NEC
038.3	ANAEROBIC SEPTICEMIA	038.9	SEPTICEMIA NOS
038.40	GRAM-NEG SEPTICEMIA NOS		

## Cholecystectomy – Independent Complications

Independent complications are conditions that are clearly hospital-acquired or by the coding definition are defined as post-operative. For 2009 these conditions were not counted as complications if the POA indicator was "Yes" or "Clinically Undetermined."

292.81	DRUG INDUCED DELIRIUM	997.31	VENT ASSOC PNEUMONIA
293.0	DELIRIUM D/T CCE	997.39	OTH SURG COMP-RESP
415.11	IATRO PULM EMBOL/INFARCT	997.4	SURG COMP-DIGESTIVE
415.12	SEPTIC PULMON EMBOLISM	997.5	SURG COMP-URINARY NEC
415.19	PULMON EMBOL/INFARCT NEC	998.0	POSTOPERATIVE SHOCK
423.3	CARDIAC TAMPONADE	998.11	HEMORRHAGE COMP PX
449	SEPTIC ARTERIAL EMBOLISM	998.2	ACCIDENTAL OP LACERATION
512.1	IATROGENIC PNEUMOTHORAX	998.30	DISRUPTION WOUND NOS
518.5	POSTTR PULMON INSUFF	998.31	DISRUPT INTERNAL OP WND
518.7	TRALI	998.32	DISRUPT EXTERNAL OP WND
518.81	AC RESPIRATORY FAILURE	998.59	POSTOP INFECTION NEC
997.02	IATROGEN CV INFARCT/HEM	999.31	INFECT D/T CVC
997.1	SURG COMP-HEART	999.39	INFECT COMP MED CARE NEC
997.3	SURG COMP-RESP NEC		

## Cholecystectomy – Dependent Complications

Dependent complications are conditions that must either have the POA indicator set to "No", or if the POA indicator is set to "Unknown" or is missing, there must also be the listed 900 post-operative complication code present in the patient record.

### Must occur with 997.1 CARDIAC COMPLICATIONS, NOT ELSEWHERE CLASSIFIED

410.01	ANTEROLAT AMI-INITIAL	427.41	VENTRICULAR FIBRILLATION
410.11	ANT AMI NEC-INITIAL	427.89	OTH CARDIAC DYSRHYTHMIAS
410.21	INFEROLAT AMI-INITIAL	428.0	CHF NOS
410.51	LAT AMI NEC-INITIAL	428.1	LEFT HEART FAILURE
410.61	POSTERIOR AMI-INITIAL	428.21	ACUTE SYSTOLIC HF
410.71	SUBEND INFARCT-INITIAL	428.23	AC & CHR SYSTOLIC HF
410.81	AMI NEC-INITIAL EPISODE	428.31	ACUTE DIASTOLIC HF
410.91	AMI NOS-INITIAL EPISODE	428.33	AC & CHR DIASTOLIC HF
427.0	PSVT	428.41	AC SYS & DIASTOLIC HF
427.1	PVT	428.43	ACCHR SYS & DIASTOLIC HF
427.31	ATRIAL FIBRILLATION	428.9	HEART FAILURE NOS
427.32	ATRIAL FLUTTER		

### Must occur with 997.3 RESPIRATORY COMPLICATIONS or 997.39 OTHER RESPIRATORY COMPLICATIONS

481	PNEUMOCOCCAL PNEUMONIA	482.83	GRAM-NEG PNEUMONIA NEC
482.0	K. PNEUMONIAE PNEUMONIA	482.84	LEGIONNAIRES' DISEASE
482.1	PSEUDOMONAL PNEUMONIA	482.89	BACTERIAL PNEUMONIA NEC
482.2	H. INFLUENZAE PNEUMONIA	482.9	BACTERIAL PNEUMONIA NOS
482.30	STREP PNEUMONIA NOS	483.0	M. PNEUMONIAE PNEUMONIA
482.31	GROUP A STREP PNEUMONIA	483.1	CHLAMYDIAL PNEUMONIA
482.32	GROUP B STREP PNEUMONIA	483.8	PNEUMONIA D/T ORG NEC
482.39	STREP PNEUMONIA NEC	484.3	PNEUMONIA IN WHOOP COUGH
482.40	STAPH PNEUMONIA NOS	484.6	PNEUM IN ASPERGILLOSIS
482.41	MSSA PNEUMONIA	484.7	PNEUM IN SYST MYCOSESNEC
482.42	MRSA PNEUMONIA	485	BRONCHOPNEUMONIA ORG NOS
482.49	STAPH PNEUMONIA NEC	486	PNEUMONIA ORGANISM NOS
482.81	PNEUMONIA D/T ANAEROBES	507.0	FOOD/VOMIT PNEUMONITIS
482.82	E. COLI PNEUMONIA	799.02	HYPOXEMIA

**Must occur with 997.4 DIGESTIVE SYSTEM COMPLICATION or 998.2 ACCIDENTAL PUNCTURE OR LACERATION DURING A PROCEDURE, NOT ELSEWHERE CLASSIFIED**

569.83	INTESTINAL PERFORATION
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**Must occur with 997.5 URINARY COMPLICATIONS, NOT ELSEWHERE CLASSIFIED**

584.5	AC KF W TUBULAR NEPHR	599.0	URINARY TRACT INF NOS
584.8	ACUTE KIDNEY FAILURE NEC	788.20	RETENTION OF URINE NOS
584.9	ACUTE KIDNEY FAILURE NOS	788.29	RETENTION OF URINE NEC

**Must occur with 998.11 HEMORRHAGE COMPLICATING A PROCEDURE or 998.2 ACCIDENTAL PUNCTURE OR LACERATION DURING A PROCEDURE, NOT ELSEWHERE CLASSIFIED**

568.81	HEMOPERITONEUM
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**Must occur with 998.59 OTHER POSTOPERATIVE INFECTION**

008.45	C. DIFFICILE ENTERITIS	038.42	E. COLI SEPTICEMIA
038.0	STREPTOCOCCAL SEPTICEMIA	038.43	PSEUDOMONAS SEPTICEMIA
038.10	STAPH SEPTICEMIA NOS	038.44	SERRATIA SEPTICEMIA
038.11	MSSA SEPTICEMIA	038.49	GRAM-NEG SEPTICEMIA NEC
038.12	MRSA SEPTICEMIA	038.8	SEPTICEMIA NEC
038.19	STAPH SEPTICEMIA NEC	038.9	SEPTICEMIA NOS
038.2	PNEUMOCOCCAL SEPTICEMIA	682.2	TRUNK CELLULITIS
038.3	ANAEROBIC SEPTICEMIA	785.52	SEPTIC SHOCK
038.40	GRAM-NEG SEPTICEMIA NOS	995.91	SEPSIS
038.41	H. INFLUENZAE SEPTICEMIA		

## Hip Fracture Treatment – Independent Complications

Independent complications are conditions that are clearly hospital-acquired or by the coding definition are defined as post-operative. For 2009 these conditions were not counted as complications if the POA indicator was "Yes" or "Clinically Undetermined."

292.81	DRUG INDUCED DELIRIUM	997.31	VENT ASSOC PNEUMONIA
293.0	DELIRIUM D/T CCE	997.39	OTH SURG COMP-RESP
415.11	IATRO PULM EMBOL/INFARCT	997.4	SURG COMP-DIGESTIVE
415.12	SEPTIC PULMON EMBOLISM	997.5	SURG COMP-URINARY NEC
415.19	PULMON EMBOL/INFARCT NEC	998.0	POSTOPERATIVE SHOCK
449	SEPTIC ARTERIAL EMBOLISM	998.11	HEMORRHAGE COMP PX
512.1	IATROGENIC PNEUMOTHORAX	998.30	DISRUPTION WOUND NOS
518.5	POSTTR PULMON INSUFF	998.31	DISRUPT INTERNAL OP WND
518.7	TRALI	998.32	DISRUPT EXTERNAL OP WND
997.02	IATROGEN CV INFARCT/HEM	998.59	POSTOP INFECTION NEC
997.1	SURG COMP-HEART	999.31	INFECT D/T CVC
997.3	SURG COMP-RESP NEC	999.39	INFECT COMP MED CARE NEC

## Hip Fracture Treatment – Dependent Complications

Dependent complications are conditions that must either have the POA indicator set to "No", or if the POA indicator is set to "Unknown" or is missing, there must also be the listed 900 post-operative complication code present in the patient record.

### Must occur with 997.02 IATROGENIC CEREBROVASCULAR INFARCTION OR HEMORRHAGE

434.11	CEREBRAL EMBOL W INFARCT	434.91	CEREB ART OCCL W INFARCT
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### Must occur with 997.1 CARDIAC COMPLICATIONS, NOT ELSEWHERE CLASSIFIED

410.01	ANTEROLAT AMI-INITIAL	427.32	ATRIAL FLUTTER
410.11	ANT AMI NEC-INITIAL	427.89	OTH CARDIAC DYSRHYTHMIAS
410.21	INFEROLAT AMI-INITIAL	427.9	CARDIAC DYSRHYTHMIA NOS
410.31	INFEROPOST AMI-INITIAL	428.0	CHF NOS
410.41	INF AMI NEC-INITIAL	428.1	LEFT HEART FAILURE
410.51	LAT AMI NEC-INITIAL	428.21	ACUTE SYSTOLIC HF
410.61	POSTERIOR AMI-INITIAL	428.23	AC & CHR SYSTOLIC HF
410.71	SUBEND INFARCT-INITIAL	428.31	ACUTE DIASTOLIC HF
410.81	AMI NEC-INITIAL EPISODE	428.33	AC & CHR DIASTOLIC HF
410.91	AMI NOS-INITIAL EPISODE	428.41	AC SYS & DIASTOLIC HF
427.0	PSVT	428.43	ACCHR SYS & DIASTOLIC HF
427.1	PVT	428.9	HEART FAILURE NOS
427.31	ATRIAL FIBRILLATION		

**Must not occur with V15.88 PERSONAL HISTORY OF FALL, PRESENTING HAZARDS TO HEALTH or V42.4 BONE REPLACED BY TRANSPLANT or V43.64 HIP JOINT PREPLACED BY OTHER MEANS or V43.65 KNEE JOINT REPLACED BY OTHER MEANS or V45.4 ARTHRODESIS STATUS or V54.01 ENCOUNTER FOR REMOVAL OF INTERNAL FIXATION DEVICE or V54.02 ENCOUNTER FOR LENGTHENING/ADJUSTMENT OF GROWTH ROD or V54.09 OTHER AFTERCARE INVOLVING INTERNAL FIXATION DEVICE**

996.78	COMP NEC ORTH DEV NEC
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**Must not occur with V42.4 BONE REPLACED BY TRANSPLANT or V43.64 HIP JOINT REPLACED BY OTHER MEANS or V43.65 KNEE JOINT REPLACED BY OTHER MEANS or V45.4 ARTHRODESIS STATUS or V54.01 ENCOUNTER FOR REMOVAL OF INTERNAL FIXATION DEVICES or V54.02 ENCOUNTER FOR LENGTHENING/ADJUSTMENT FOR GROWTH ROD or V54.09 OTHER AFTERCARE INVOLVING INTERNAL FIXATION DEVICE**

996.77	COMP NEC D/T JT PROSTH
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**Must occur with 997.3 RESPIRATORY COMPLICATIONS or 997.39 OTHER RESPIRATORY COMPLICATIONS**

480.0	ADENOVIRAL PNEUMONIA	482.83	GRAM-NEG PNEUMONIA NEC
480.1	RSV PNEUMONIA	482.84	LEGIONNAIRES' DISEASE
480.2	PARAINFLUENZA VIR PNEUM	482.89	BACTERIAL PNEUMONIA NEC
480.3	SARS PNEUMONIA	482.9	BACTERIAL PNEUMONIA NOS
480.8	VIRAL PNEUMONIA NEC	483.0	M. PNEUMONIAE PNEUMONIA
481	PNEUMOCOCCAL PNEUMONIA	483.1	CHLAMYDIAL PNEUMONIA
482.0	K. PNEUMONIAE PNEUMONIA	483.8	PNEUMONIA D/T ORG NEC
482.1	PSEUDOMONAL PNEUMONIA	484.1	PNEUMONIA IN CMV DISEASE
482.2	H. INFLUENZAE PNEUMONIA	484.3	PNEUMONIA IN WHOOP COUGH
482.30	STREP PNEUMONIA NOS	484.6	PNEUM IN ASPERGILLOSIS
482.31	GROUP A STREP PNEUMONIA	484.7	PNEUM IN SYST MYCOSESNEC
482.32	GROUP B STREP PNEUMONIA	485	BRONCHOPNEUMONIA ORG NOS
482.39	STREP PNEUMONIA NEC	486	PNEUMONIA ORGANISM NOS
482.40	STAPH PNEUMONIA NOS	507.0	FOOD/VOMIT PNEUMONITIS
482.41	MSSA PNEUMONIA	511.9	PLEURAL EFFUSION NOS
482.42	MRSA PNEUMONIA	518.4	ACUTE LUNG EDEMA NOS
482.49	STAPH PNEUMONIA NEC	518.81	AC RESPIRATORY FAILURE
482.81	PNEUMONIA D/T ANAEROBES	518.84	AC & CHR RESP FAILURE
482.82	E. COLI PNEUMONIA	799.1	RESPIRATORY ARREST

**Must occur with 997.4 DIGESTIVE SYSTEM COMPLICATION**

560.1	PARALYTIC ILEUS
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**Must occur with 997.5 URINARY COMPLICATIONS, NOT ELSEWHERE CLASSIFIED**

584.5	AC KF W TUBULAR NEPHR	599.0	URINARY TRACT INF NOS
584.8	ACUTE KIDNEY FAILURE NEC	788.20	RETENTION OF URINE NOS
584.9	ACUTE KIDNEY FAILURE NOS	788.29	RETENTION OF URINE NEC
593.9	RENAL/URETER DISORD NOS		

**Must occur with 998.59 OTHER POSTOPERATIVE INFECTION**

008.45	C. DIFFICILE ENTERITIS	038.42	E. COLI SEPTICEMIA
038.0	STREPTOCOCCAL SEPTICEMIA	038.43	PSEUDOMONAS SEPTICEMIA
038.10	STAPH SEPTICEMIA NOS	038.44	SERRATIA SEPTICEMIA
038.11	MSSA SEPTICEMIA	038.49	GRAM-NEG SEPTICEMIA NEC
038.12	MRSA SEPTICEMIA	038.8	SEPTICEMIA NEC
038.19	STAPH SEPTICEMIA NEC	038.9	SEPTICEMIA NOS
038.2	PNEUMOCOCCAL SEPTICEMIA	785.52	SEPTIC SHOCK
038.3	ANAEROBIC SEPTICEMIA	995.91	SEPSIS
038.40	GRAM-NEG SEPTICEMIA NOS	995.92	SEVERE SEPSIS
038.41	H. INFLUENZAE SEPTICEMIA		

## Peripheral Vascular Bypass – Independent Complications

Independent complications are conditions that are clearly hospital-acquired or by the coding definition are defined as post-operative. For 2009 these conditions were not counted as complications if the POA indicator was "Yes" or "Clinically Undetermined."

292.81	DRUG INDUCED DELIRIUM	997.5	SURG COMP-URINARY NEC
293.0	DELIRIUM D/T CCE	998.0	POSTOPERATIVE SHOCK
415.12	SEPTIC PULMON EMBOLISM	998.11	HEMORRHAGE COMP PX
449	SEPTIC ARTERIAL EMBOLISM	998.2	ACCIDENTAL OP LACERATION
518.5	POSTTR PULMON INSUFF	998.30	DISRUPTION WOUND NOS
518.7	TRALI	998.31	DISRUPT INTERNAL OP WND
997.1	SURG COMP-HEART	998.32	DISRUPT EXTERNAL OP WND
997.3	SURG COMP-RESP NEC	998.59	POSTOP INFECTION NEC
997.31	VENT ASSOC PNEUMONIA	999.31	INFECT D/T CVC
997.39	OTH SURG COMP-RESP	999.39	INFECT COMP MED CARE NEC
997.4	SURG COMP-DIGESTIVE		

## Peripheral Vascular Bypass – Dependent Complications

Dependent complications are conditions that must either have the POA indicator set to "No", or if the POA indicator is set to "Unknown" or is missing, there must also be the listed 900 post-operative complication code present in the patient record.

### Must occur with 997.1 CARDIAC COMPLICATIONS, NOT ELSEWHERE CLASSIFIED

410.01	ANTEROLAT AMI-INITIAL	427.89	OTH CARDIAC DYSRHYTHMIAS
410.11	ANT AMI NEC-INITIAL	428.0	CHF NOS
410.21	INFEROLAT AMI-INITIAL	428.1	LEFT HEART FAILURE
410.51	LAT AMI NEC-INITIAL	428.21	ACUTE SYSTOLIC HF
410.61	POSTERIOR AMI-INITIAL	428.23	AC & CHR SYSTOLIC HF
410.71	SUBEND INFARCT-INITIAL	428.31	ACUTE DIASTOLIC HF
410.81	AMI NEC-INITIAL EPISODE	428.33	AC & CHR DIASTOLIC HF
410.91	AMI NOS-INITIAL EPISODE	428.41	AC SYS & DIASTOLIC HF
427.1	PVT	428.43	ACCHR SYS & DIASTOLIC HF
427.31	ATRIAL FIBRILLATION	428.9	HEART FAILURE NOS
427.32	ATRIAL FLUTTER		

### Must occur with 997.3 RESPIRATORY COMPLICATIONS or 997.39 OTHER RESPIRATORY COMPLICATIONS

481	PNEUMOCOCCAL PNEUMONIA	482.83	GRAM-NEG PNEUMONIA NEC
482.0	K. PNEUMONIAE PNEUMONIA	482.84	LEGIONNAIRES' DISEASE
482.1	PSEUDOMONAL PNEUMONIA	482.89	BACTERIAL PNEUMONIA NEC
482.2	H. INFLUENZAE PNEUMONIA	482.9	BACTERIAL PNEUMONIA NOS
482.30	STREP PNEUMONIA NOS	483.0	M. PNEUMONIAE PNEUMONIA
482.31	GROUP A STREP PNEUMONIA	483.1	CHLAMYDIAL PNEUMONIA
482.32	GROUP B STREP PNEUMONIA	483.8	PNEUMONIA D/T ORG NEC
482.39	STREP PNEUMONIA NEC	484.3	PNEUMONIA IN WHOOP COUGH
482.40	STAPH PNEUMONIA NOS	484.6	PNEUM IN ASPERGILLOSIS
482.41	MSSA PNEUMONIA	484.7	PNEUM IN SYST MYCOSESNEC
482.42	MRSA PNEUMONIA	485	BRONCHOPNEUMONIA ORG NOS
482.49	STAPH PNEUMONIA NEC	486	PNEUMONIA ORGANISM NOS
482.81	PNEUMONIA D/T ANAEROBES	507.0	FOOD/VOMIT PNEUMONITIS
482.82	E. COLI PNEUMONIA	518.81	AC RESPIRATORY FAILURE

**Must occur with 997.4 DIGESTIVE SYSTEM COMPLICATION**

560.1	PARALYTIC ILEUS
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**Must occur with 997.5 URINARY COMPLICATIONS, NOT ELSEWHERE CLASSIFIED**

584.5	AC KF W TUBULAR NEPHR	593.9	RENAL/URETER DISORD NOS
584.8	ACUTE KIDNEY FAILURE NEC	599.0	URINARY TRACT INF NOS
584.9	ACUTE KIDNEY FAILURE NOS	788.20	RETENTION OF URINE NOS

**Must occur with 998.59 OTHER POSTOPERATIVE INFECTION**

008.45	C. DIFFICILE ENTERITIS	038.41	H. INFLUENZAE SEPTICEMIA
038.0	STREPTOCOCCAL SEPTICEMIA	038.42	E. COLI SEPTICEMIA
038.10	STAPH SEPTICEMIA NOS	038.43	PSEUDOMONAS SEPTICEMIA
038.11	MSSA SEPTICEMIA	038.44	SERRATIA SEPTICEMIA
038.12	MRSA SEPTICEMIA	038.49	GRAM-NEG SEPTICEMIA NEC
038.19	STAPH SEPTICEMIA NEC	038.8	SEPTICEMIA NEC
038.2	PNEUMOCOCCAL SEPTICEMIA	038.9	SEPTICEMIA NOS
038.3	ANAEROBIC SEPTICEMIA	995.92	SEVERE SEPSIS
038.40	GRAM-NEG SEPTICEMIA NOS		

**Must occur with 998.59 OTHER POSTOPERATIVE INFECTION or 998.51 INFECTED POSTOPERATIVE SEROMA**

041.04	GROUP D STREP INFECTION	041.7	PSEUDOMONAS INFECT NOS
041.11	MSSA		

## Prostatectomy – Independent Complications

Independent complications are conditions that are clearly hospital-acquired or by the coding definition are defined as post-operative. For 2009 these conditions were not counted as complications if the POA indicator was "Yes" or "Clinically Undetermined."

292.81	DRUG INDUCED DELIRIUM	518.5	POSTTR PULMON INSUFF
293.0	DELIRIUM D/T CCE	518.7	TRALI
410.01	ANTEROLAT AMI-INITIAL	518.81	AC RESPIRATORY FAILURE
410.11	ANT AMI NEC-INITIAL	996.76	COMP NEC D/T GU DEVICE
410.21	INFEROLAT AMI-INITIAL	997.1	SURG COMP-HEART
410.31	INFEROPOST AMI-INITIAL	997.3	SURG COMP-RESP NEC
410.41	INF AMI NEC-INITIAL	997.31	VENT ASSOC PNEUMONIA
410.51	LAT AMI NEC-INITIAL	997.39	OTH SURG COMP-RESP
410.61	POSTERIOR AMI-INITIAL	997.4	SURG COMP-DIGESTIVE
410.71	SUBEND INFARCT-INITIAL	997.5	SURG COMP-URINARY NEC
410.81	AMI NEC-INITIAL EPISODE	998.0	POSTOPERATIVE SHOCK
410.91	AMI NOS-INITIAL EPISODE	998.11	HEMORRHAGE COMP PX
415.11	IATRO PULM EMBOL/INFARCT	998.2	ACCIDENTAL OP LACERATION
415.12	SEPTIC PULMON EMBOLISM	998.30	DISRUPTION WOUND NOS
415.19	PULMON EMBOL/INFARCT NEC	998.31	DISRUPT INTERNAL OP WND
423.3	CARDIAC TAMPONADE	998.32	DISRUPT EXTERNAL OP WND
427.5	CARDIAC ARREST	998.4	FB LEFT DURING PROCEDURE
449	SEPTIC ARTERIAL EMBOLISM	998.59	POSTOP INFECTION NEC
453.41	ACUTE DVT PROXIMAL LEG	999.31	INFECT D/T CVC
453.42	ACUTE DVT DISTAL LEG	999.39	INFECT COMP MED CARE NEC
507.0	FOOD/VOMIT PNEUMONITIS		

## Prostatectomy – Dependent Complications

Dependent complications are conditions that must either have the POA indicator set to "No", or if the POA indicator is set to "Unknown" or is missing, there must also be the listed 900 post-operative complication code present in the patient record.

### Must occur with 997.02 IATROGENIC CEREBROVASCULAR INFARCTION OR HEMORRHAGE

434.11	CEREBRAL EMBOL W INFARCT
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### Must occur with 997.1 CARDIAC COMPLICATIONS, NOT ELSEWHERE CLASSIFIED

427.1	PVT	428.23	AC & CHR SYSTOLIC HF
427.31	ATRIAL FIBRILLATION	428.31	ACUTE DIASTOLIC HF
427.89	OTH CARDIAC DYSRHYTHMIAS	428.33	AC & CHR DIASTOLIC HF
428.0	CHF NOS	428.41	AC SYS & DIASTOLIC HF
428.1	LEFT HEART FAILURE	428.43	ACCHR SYS & DIASTOLIC HF
428.21	ACUTE SYSTOLIC HF	428.9	HEART FAILURE NOS

**Must occur with 997.3 RESPIRATORY COMPLICATIONS or 997.39 OTHER RESPIRATORY COMPLICATIONS**

481	PNEUMOCOCCAL PNEUMONIA	482.82	E. COLI PNEUMONIA
482.0	K. PNEUMONIAE PNEUMONIA	482.83	GRAM-NEG PNEUMONIA NEC
482.1	PSEUDOMONAL PNEUMONIA	482.84	LEGIONNAIRES' DISEASE
482.2	H. INFLUENZAE PNEUMONIA	482.89	BACTERIAL PNEUMONIA NEC
482.30	STREP PNEUMONIA NOS	482.9	BACTERIAL PNEUMONIA NOS
482.31	GROUP A STREP PNEUMONIA	483.0	M. PNEUMONIAE PNEUMONIA
482.32	GROUP B STREP PNEUMONIA	483.1	CHLAMYDIAL PNEUMONIA
482.39	STREP PNEUMONIA NEC	483.8	PNEUMONIA D/T ORG NEC
482.40	STAPH PNEUMONIA NOS	484.3	PNEUMONIA IN WHOOP COUGH
482.41	MSSA PNEUMONIA	484.6	PNEUM IN ASPERGILLOSIS
482.42	MRSA PNEUMONIA	484.7	PNEUM IN SYST MYCOSESNEC
482.49	STAPH PNEUMONIA NEC	485	BRONCHOPNEUMONIA ORG NOS
482.81	PNEUMONIA D/T ANAEROBES	486	PNEUMONIA ORGANISM NOS

**Must occur with 997.4 DIGESTIVE SYSTEM COMPLICATION**

560.1	PARALYTIC ILEUS
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**Must occur with 997.5 URINARY COMPLICATIONS, NOT ELSEWHERE CLASSIFIED**

584.5	AC RF W TUBULAR NEPHR	584.9	ACUTE KIDNEY FAILURE NOS
584.8	ACUTE KIDNEY FAILURE NEC	599.0	URINARY TRACT INF NOS

**Must occur with 998.59 OTHER POSTOPERATIVE INFECTION**

038.0	STREPTOCOCCAL SEPTICEMIA	038.41	H. INFLUENZAE SEPTICEMIA
038.10	STAPH SEPTICEMIA NOS	038.42	E. COLI SEPTICEMIA
038.11	MSSA SEPTICEMIA	038.43	PSEUDOMONAS SEPTICEMIA
038.12	MRSA SEPTICEMIA	038.44	SERRATIA SEPTICEMIA
038.19	STAPH SEPTICEMIA NEC	038.49	GRAM-NEG SEPTICEMIA NEC
038.2	PNEUMOCOCCAL SEPTICEMIA	038.8	SEPTICEMIA NEC
038.3	ANAEROBIC SEPTICEMIA	038.9	SEPTICEMIA NOS
038.40	GRAM-NEG SEPTICEMIA NOS	995.91	SEPSIS

## Total Hip Replacement – Independent Complications

Independent complications are conditions that are clearly hospital-acquired or by the coding definition are defined as post-operative. For 2009 these conditions were not counted as complications if the POA indicator was "Yes" or "Clinically Undetermined."

038.0	STREPTOCOCCAL SEPTICEMIA	482.49	STAPH PNEUMONIA NEC
038.10	STAPH SEPTICEMIA NOS	482.81	PNEUMONIA D/T ANAEROBES
038.11	MSSA SEPTICEMIA	482.82	E. COLI PNEUMONIA
038.12	MRSA SEPTICEMIA	482.83	GRAM-NEG PNEUMONIA NEC
038.19	STAPH SEPTICEMIA NEC	482.84	LEGIONNAIRES' DISEASE
038.2	PNEUMOCOCCAL SEPTICEMIA	482.89	BACTERIAL PNEUMONIA NEC
038.3	ANAEROBIC SEPTICEMIA	482.9	BACTERIAL PNEUMONIA NOS
038.40	GRAM-NEG SEPTICEMIA NOS	483.0	M. PNEUMONIAE PNEUMONIA
038.41	H. INFLUENZAE SEPTICEMIA	483.1	CHLAMYDIAL PNEUMONIA
038.42	E. COLI SEPTICEMIA	483.8	PNEUMONIA D/T ORG NEC
038.43	PSEUDOMONAS SEPTICEMIA	484.1	PNEUMONIA IN CMV DISEASE
038.44	SERRATIA SEPTICEMIA	484.3	PNEUMONIA IN WHOOP COUGH
038.49	GRAM-NEG SEPTICEMIA NEC	484.6	PNEUM IN ASPERGILLOSIS
038.8	SEPTICEMIA NEC	484.7	PNEUM IN SYST MYCOSESNEC
038.9	SEPTICEMIA NOS	485	BRONCHOPNEUMONIA ORG NOS
292.81	DRUG INDUCED DELIRIUM	486	PNEUMONIA ORGANISM NOS
293.0	DELIRIUM D/T CCE	507.0	FOOD/VOMIT PNEUMONITIS
410.01	ANTEROLAT AMI-INITIAL	512.1	IATROGENIC PNEUMOTHORAX
410.11	ANT AMI NEC-INITIAL	518.5	POSTTR PULMON INSUFF
410.21	INFEROLAT AMI-INITIAL	518.7	TRALI
410.31	INFEROPOST AMI-INITIAL	518.81	AC RESPIRATORY FAILURE
410.41	INF AMI NEC-INITIAL	584.5	AC KF W TUBULAR NEPHR
410.51	LAT AMI NEC-INITIAL	584.8	ACUTE KIDNEY FAILURE NEC
410.61	POSTERIOR AMI-INITIAL	584.9	ACUTE KIDNEY FAILURE NOS
410.71	SUBEND INFARCT-INITIAL	785.52	SEPTIC SHOCK
410.81	AMI NEC-INITIAL EPISODE	799.1	RESPIRATORY ARREST
410.91	AMI NOS-INITIAL EPISODE	995.91	SEPSIS
415.11	IATRO PULM EMBOL/INFARCT	995.92	SEVERE SEPSIS
415.12	SEPTIC PULMON EMBOLISM	996.42	DISLOCATION JOINT PROSTH
415.19	PULMON EMBOL/INFARCT NEC	996.44	PERI-PROSTHETIC FRACTURE
449	SEPTIC ARTERIAL EMBOLISM	997.02	IATROGEN CV INFARCT/HEM
480.0	ADENOVIRAL PNEUMONIA	997.1	SURG COMP-HEART
480.1	RSV PNEUMONIA	997.3	SURG COMP-RESP NEC
480.2	PARAINFLUENZA VIR PNEUM	997.31	VENT ASSOC PNEUMONIA
480.3	SARS PNEUMONIA	997.39	OTH SURG COMP-RESP
480.8	VIRAL PNEUMONIA NEC	997.4	SURG COMP-DIGESTIVE
481	PNEUMOCOCCAL PNEUMONIA	997.5	SURG COMP-URINARY NEC
482.0	K. PNEUMONIAE PNEUMONIA	998.0	POSTOPERATIVE SHOCK
482.1	PSEUDOMONAL PNEUMONIA	998.11	HEMORRHAGE COMP PX
482.2	H. INFLUENZAE PNEUMONIA	998.30	DISRUPTION WOUND NOS
482.30	STREP PNEUMONIA NOS	998.31	DISRUPT INTERNAL OP WND
482.31	GROUP A STREP PNEUMONIA	998.32	DISRUPT EXTERNAL OP WND
482.32	GROUP B STREP PNEUMONIA	998.59	POSTOP INFECTION NEC
482.39	STREP PNEUMONIA NEC	999.31	INFECT D/T CVC
482.40	STAPH PNEUMONIA NOS	999.39	INFECT COMP MED CARE NEC
482.41	MSSA PNEUMONIA	999.8	TRANSF/INFUS RXN NEC&NOS
482.42	MRSA PNEUMONIA		

## Total Hip Replacement – Dependent Complications

Dependent complications are conditions that must either have the POA indicator set to "No", or if the POA indicator is set to "Unknown" or is missing, there must also be the listed 900 post-operative complication code present in the patient record.

### Must not occur with 707.20 PRESSURE ULCER, UNSPECIFIED STAGE or 707.21 PRESSURE ULCER, STAGE I or 707.22 PRESSURE ULCER, STAGE II

707.0	PRESSURE ULCER	707.04	PRESSURE ULCER-HIP
707.00	PRESSURE ULCER-SITE NOS	707.05	PRESSURE ULCER-BUTTOCK
707.01	PRESSURE ULCER-ELBOW	707.06	PRESSURE ULCER-ANKLE
707.02	PRESSURE ULCER-UP BACK	707.07	PRESSURE ULCER-HEEL
707.03	PRESSURE ULCER-LOW BACK	707.09	PRESSURE ULCER-SITE NEC

### Must occur with 997.02 IATROGENIC CEREBROVASCULAR INFARCTION OR HEMORRHAGE

434.11	CEREBRAL EMBOL W INFARCT	434.91	CEREB ART OCCL W INFARCT
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### Must occur with 997.1 CARDIAC COMPLICATIONS, NOT ELSEWHERE CLASSIFIED

427.0	PSVT	428.21	ACUTE SYSTOLIC HF
427.1	PVT	428.23	AC & CHR SYSTOLIC HF
427.31	ATRIAL FIBRILLATION	428.31	ACUTE DIASTOLIC HF
427.32	ATRIAL FLUTTER	428.33	AC & CHR DIASTOLIC HF
427.89	OTH CARDIAC DYSRHYTHMIAS	428.41	AC SYS & DIASTOLIC HF
427.9	CARDIAC DYSRHYTHMIA NOS	428.43	ACCHR SYS & DIASTOLIC HF
428.0	CHF NOS	428.9	HEART FAILURE NOS
428.1	LEFT HEART FAILURE		

### Must occur with 997.3 RESPIRATORY COMPLICATIONS or 997.39 OTHER RESPIRATORY COMPLICATIONS

511.9	PLEURAL EFFUSION NOS	518.84	AC & CHR RESP FAILURE
518.4	ACUTE LUNG EDEMA NOS		

### Must occur with 997.4 DIGESTIVE SYSTEM COMPLICATION

560.1	PARALYTIC ILEUS
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### Must occur with 997.5 URINARY COMPLICATIONS, NOT ELSEWHERE CLASSIFIED

593.9	RENAL/URETER DISORD NOS	788.20	RETENTION OF URINE NOS
599.0	URINARY TRACT INF NOS	788.29	RETENTION OF URINE NEC

### Must occur with 998.59 OTHER POSTOPERATIVE INFECTION

008.45	C. DIFFICILE ENTERITIS
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### Must not occur with V15.88 PERSONAL HISTORY OF FALL, PRESENTING HAZARDS TO HEALTH or V42.4 BONE REPLACED BY TRANSPLANT or V43.64 HIP JOINT REPLACED BY OTHER MEANS or V43.65 KNEE JOINT REPLACED BY OTHER MEANS or V45.4 ARTHRODESIS STATUS or V54.01 ENCOUNTER FOR REMOVAL OF INTERNAL FIXATION DEVICE or V54.02 ENCOUNTER FOR LENGTHENING/ADJUSTMENT OF GROWTH ROD or V54.09 OTHER AFTERCARE INVOLVING INTERNAL FIXATION DEVICE

996.40	MECH COMP INT ORTH NOS	996.77	COMP NEC D/T JT PROSTH
996.47	MECH COMP JT PROSTH NEC	996.78	COMP NEC ORTH DEV NEC
996.49	MECH COMP INT ORTH NEC		

## Total Knee Replacement – Independent Complications

Independent complications are conditions that are clearly hospital-acquired or by the coding definition are defined as post-operative. For 2009 these conditions were not counted as complications if the POA indicator was "Yes" or "Clinically Undetermined."

038.0	STREPTOCOCCAL SEPTICEMIA	482.42	MRSA PNEUMONIA
038.10	STAPH SEPTICEMIA NOS	482.49	STAPH PNEUMONIA NEC
038.11	MSSA SEPTICEMIA	482.81	PNEUMONIA D/T ANAEROBES
038.12	MRSA SEPTICEMIA	482.82	E. COLI PNEUMONIA
038.19	STAPH SEPTICEMIA NEC	482.83	GRAM-NEG PNEUMONIA NEC
038.2	PNEUMOCOCCAL SEPTICEMIA	482.84	LEGIONNAIRES' DISEASE
038.3	ANAEROBIC SEPTICEMIA	482.89	BACTERIAL PNEUMONIA NEC
038.40	GRAM-NEG SEPTICEMIA NOS	482.9	BACTERIAL PNEUMONIA NOS
038.41	H. INFLUENZAE SEPTICEMIA	483.0	M. PNEUMONIAE PNEUMONIA
038.42	E. COLI SEPTICEMIA	483.1	CHLAMYDIAL PNEUMONIA
038.43	PSEUDOMONAS SEPTICEMIA	483.8	PNEUMONIA D/T ORG NEC
038.44	SERRATIA SEPTICEMIA	484.1	PNEUMONIA IN CMV DISEASE
038.49	GRAM-NEG SEPTICEMIA NEC	484.3	PNEUMONIA IN WHOOP COUGH
038.8	SEPTICEMIA NEC	484.6	PNEUM IN ASPERGILLOSIS
038.9	SEPTICEMIA NOS	484.7	PNEUM IN SYST MYCOSESNEC
292.81	DRUG INDUCED DELIRIUM	485	BRONCHOPNEUMONIA ORG NOS
293.0	DELIRIUM D/T CCE	486	PNEUMONIA ORGANISM NOS
410.01	ANTEROLAT AMI-INITIAL	507.0	FOOD/VOMIT PNEUMONITIS
410.11	ANT AMI NEC-INITIAL	512.1	IATROGENIC PNEUMOTHORAX
410.21	INFEROLAT AMI-INITIAL	518.5	POSTTR PULMON INSUFF
410.31	INFEROPOST AMI-INITIAL	518.7	TRALI
410.41	INF AMI NEC-INITIAL	518.81	AC RESPIRATORY FAILURE
410.51	LAT AMI NEC-INITIAL	584.5	AC KF W TUBULAR NEPHR
410.61	POSTERIOR AMI-INITIAL	584.8	ACUTE KIDNEY FAILURE NEC
410.71	SUBEND INFARCT-INITIAL	584.9	ACUTE KIDNEY FAILURE NOS
410.81	AMI NEC-INITIAL EPISODE	785.52	SEPTIC SHOCK
410.91	AMI NOS-INITIAL EPISODE	799.1	RESPIRATORY ARREST
415.11	IATRO PULM EMBOL/INFARCT	995.91	SEPSIS
415.12	SEPTIC PULMON EMBOLISM	995.92	SEVERE SEPSIS
415.19	PULMON EMBOL/INFARCT NEC	996.42	DISLOCATION JOINT PROSTH
428.31	ACUTE DIASTOLIC HF	996.44	PERI-PROSTHETIC FRACTURE
428.33	AC & CHR DIASTOLIC HF	997.02	IATROGEN CV INFARCT/HEM
449	SEPTIC ARTERIAL EMBOLISM	997.1	SURG COMP-HEART
480.0	ADENOVIRAL PNEUMONIA	997.3	SURG COMP-RESP NEC
480.1	RSV PNEUMONIA	997.31	VENT ASSOC PNEUMONIA
480.2	PARAINFLUENZA VIR PNEUM	997.39	OTH SURG COMP-RESP
480.3	SARS PNEUMONIA	997.4	SURG COMP-DIGESTIVE
480.8	VIRAL PNEUMONIA NEC	997.5	SURG COMP-URINARY NEC
481	PNEUMOCOCCAL PNEUMONIA	998.0	POSTOPERATIVE SHOCK
482.0	K. PNEUMONIAE PNEUMONIA	998.11	HEMORRHAGE COMP PX
482.1	PSEUDOMONAL PNEUMONIA	998.30	DISRUPTION WOUND NOS
482.2	H. INFLUENZAE PNEUMONIA	998.31	DISRUPT INTERNAL OP WND
482.30	STREP PNEUMONIA NOS	998.32	DISRUPT EXTERNAL OP WND
482.31	GROUP A STREP PNEUMONIA	998.59	POSTOP INFECTION NEC
482.32	GROUP B STREP PNEUMONIA	999.31	INFECT D/T CVC
482.39	STREP PNEUMONIA NEC	999.39	INFECT COMP MED CARE NEC
482.40	STAPH PNEUMONIA NOS	999.8	TRANSF/INFUS RXN NEC&NOS
482.41	MSSA PNEUMONIA		

## Total Knee Replacement – Dependent Complications

Dependent complications are conditions that must either have the POA indicator set to "No", or if the POA indicator is set to "Unknown" or is missing, there must also be the listed 900 post-operative complication code present in the patient record.

**Must not occur with 707.20 PRESSURE ULCER, UNSPECIFIED STAGE or 707.21 PRESSURE ULCER, STAGE I or 707.22 PRESSURE ULCER, STAGE II**

707.0	PRESSURE ULCER	707.04	PRESSURE ULCER-HIP
707.00	PRESSURE ULCER-SITE NOS	707.05	PRESSURE ULCER-BUTTOCK
707.01	PRESSURE ULCER-ELBOW	707.06	PRESSURE ULCER-ANKLE
707.02	PRESSURE ULCER-UP BACK	707.07	PRESSURE ULCER-HEEL
707.03	PRESSURE ULCER-LOW BACK	707.09	PRESSURE ULCER-SITE NEC

**Must occur with 997.02 IATROGENIC CEREBROVASCULAR INFARCTION OR HEMORRHAGE**

434.11	CEREBRAL EMBOL W INFARCT	434.91	CEREB ART OCCL W INFARCT
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**Must occur with 997.1 CARDIAC COMPLICATIONS, NOT ELSEWHERE CLASSIFIED**

427.0	PSVT	428.1	LEFT HEART FAILURE
427.1	PVT	428.21	ACUTE SYSTOLIC HF
427.31	ATRIAL FIBRILLATION	428.23	AC & CHR SYSTOLIC HF
427.32	ATRIAL FLUTTER	428.41	AC SYS & DIASTOLIC HF
427.89	OTH CARDIAC DYSRHYTHMIAS	428.43	ACCHR SYS & DIASTOLIC HF
427.9	CARDIAC DYSRHYTHMIA NOS	428.9	HEART FAILURE NOS
428.0	CHF NOS		

**Must occur with 997.3 RESPIRATORY COMPLICATIONS or 997.39 OTHER RESPIRATORY COMPLICATIONS**

511.9	PLEURAL EFFUSION NOS	518.84	AC & CHR RESP FAILURE
518.4	ACUTE LUNG EDEMA NOS		

**Must occur with 997.4 DIGESTIVE SYSTEM COMPLICATION**

560.1	PARALYTIC ILEUS
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**Must occur with 997.5 URINARY COMPLICATIONS, NOT ELSEWHERE CLASSIFIED**

593.9	RENAL/URETER DISORD NOS	788.20	RETENTION OF URINE NOS
599.0	URINARY TRACT INF NOS	788.29	RETENTION OF URINE NEC

**Must occur with 998.59 OTHER POSTOPERATIVE INFECTION**

008.45	C. DIFFICILE ENTERITIS
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**Must not occur with V15.88 PERSONAL HISTORY OF FALL, PRESENTING HAZARDS TO HEALTH or V42.4 BONE REPLACED BY TRANSPLANT or V43.64 HIP JOINT PREPLACED BY OTHER MEANS or V43.65 KNEE JOINT REPLACED BY OTHER MEANS or V45.4 ARTHRODESIS STATUS or V54.01 ENCOUNTER FOR REMOVAL OF INTERNAL FIXATION DEVICE or V54.02 ENCOUNTER FOR LENGTHENING/ADJUSTMENT OF GROWTH ROD or V54.09 OTHER AFTERCARE INVOLVING INTERNAL FIXATION DEVICE**

996.40	MECH COMP INT ORTH NOS	996.49	MECH COMP INT ORTH NEC
996.47	MECH COMP JT PROSTH NEC	996.78	COMP NEC ORTH DEV NEC

**Must not occur with V42.4 BONE REPLACED BY TRANSPLANT or V43.64 HIP JOINT REPLACED BY OTHER MEANS or V43.65 KNEE JOINT REPLACED BY OTHER MEANS or V45.4 ARTHRODESIS STATUS or V54.01 ENCOUNTER FOR REMOVAL OF INTERNAL FIXATION DEVICES or V54.02 ENCOUNTER FOR LENGTHENING/ADJUSTMENT FOR GROWTH ROD or V54.09 OTHER AFTERCARE INVOLVING INTERNAL FIXATION DEVICE**

996.77	COMP NEC D/T JT PROSTH
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## Appendix D. Top Five Risk Factors by Procedure or Diagnosis

<b>Appendectomy</b>	
Diag 584.5, 584.8, 584.9	ACUTE RENAL FAILURE
Diag 785.0	TACHYCARDIA, UNSPECIFIED
Diag 540.0	ACUTE APPENDICITIS WITH GENERALIZED PERITONITIS
Diag 038.0, 038.10, 038.11, 038.19, 038.2, 038.3, 038.40, 038.41, 038.42, 038.43, 038.44, 038.49, 038.8, 038.9	SEPSIS
Diag 540.1	ACUTE APPENDICITIS WITH PERITONEAL ABSCESS
<b>Back and Neck Surgery (Spinal Fusion)</b>	
Diag 260, 261, 262, 263.0, 263.1, 263.2, 263.8, 263.9	MALNUTRITION
Diag 348.30, 348.31, 348.39, 349.82	ENCEPHALOPATHY
Proc 81.04	DORSAL AND DORSOLUMBAR FUSION OF THE ANTERIOR COLUMN, ANTERIOR TECHNIQUE
Diag 344.00	QUADRIPLEGIA, UNSPECIFIED
Diag 428.30, 428.32	CHRONIC DIASTOLIC HEART FAILURE
<b>Back and Neck Surgery (Except Spinal Fusion)</b>	
Diag 260, 261, 262, 263.0, 263.1, 263.2, 263.8, 263.9	MALNUTRITION
Diag 348.30, 348.31, 348.39, 349.82	ENCEPHALOPATHY
Diag 324.1	INTRASPINAL ABSCESS
Diag 491.0, 491.1, 491.20, 491.21, 491.22, 491.8, 491.9	CHRONIC BRONCHITIS
Proc 03.53	REPAIR OF VERTEBRAL FRACTURE
<b>Bowel Obstruction</b>	
Diag 518.81	ACUTE RESPIRATORY FAILURE
Diag 585.6	END STAGE RENAL DISEASE
Diag 038.0, 038.10, 038.11, 038.19, 038.2, 038.3, 038.40, 038.41, 038.42, 038.43, 038.44, 038.49, 038.8, 038.9	SEPSIS
Diag 995.92	SEVERE SEPSIS
Diag 569.83	PERFORATION OF INTESTINE
<b>Carotid Surgery</b>	
Proc 39.74	ENDOVASCULAR REMOVAL OF OBSTRUCTION FROM HEAD AND NECK VESSEL(S)
Diag 348.30, 348.31, 348.39, 349.82	ENCEPHALOPATHY
Diag 491.0, 491.1, 491.20, 491.21, 491.22, 491.8, 491.9	CHRONIC BRONCHITIS
Diag 585.4	CHRONIC KIDNEY DISEASE, STAGE IV (SEVERE)
Diag 584.5, 584.8, 584.9	ACUTE RENAL FAILURE
<b>Cholecystectomy</b>	
Proc 51.21	OTHER PARTIAL CHOLECYSTECTOMY
Proc 51.22	CHOLECYSTECTOMY
Diag 428.31, 428.33	ACUTE DIASTOLIC HEART FAILURE
Diag 511.9	UNSPECIFIED PLEURAL EFFUSION
Diag 276.2	ACIDOSIS
<b>Chronic Obstructive Pulmonary Disease (COPD)</b>	
Diag 038.0, 038.10, 038.11, 038.19, 038.2, 038.3, 038.40, 038.41, 038.42, 038.43, 038.44, 038.49, 038.8, 038.9	SEPSIS
Diag 518.81	ACUTE RESPIRATORY FAILURE
Diag 518.84	ACUTE AND CHRONIC RESPIRATORY FAILURE
Diag 507.0	PNEUMONITIS DUE TO INHALATION OF FOOD OR VOMITUS
Diag 410.71	ACUTE MYOCARDIAL INFARCTION, SUBENDOCARDIAL INFARCTION, INITIAL EPISODE OF CARE

<b>Coronary Bypass Surgery</b>	
Diag 585.6	END STAGE RENAL DISEASE
Proc 37.61	IMPLANT OF PULSATION BALLOON
Diag 584.5, 584.8, 584.9	ACUTE RENAL FAILURE
Diag 427.5	CARDIAC ARREST
Diag 260, 261, 262, 263.0, 263.1, 263.2, 263.8, 263.9	MALNUTRITION
<b>Coronary Interventional Procedures (Angioplasty/Stent)</b>	
Proc 37.61	IMPLANT OF PULSATION BALLOON
Diag 410.01, 410.11, 410.21, 410.51, 410.61, 410.81, 410.91	ANTERIOR/LATERAL WALL AMI
Diag 585.6	END STAGE RENAL DISEASE
Diag 518.81	ACUTE RESPIRATORY FAILURE
Diag 276.2	ACIDOSIS
<b>Diabetic Acidosis and Coma</b>	
Diag 518.81	ACUTE RESPIRATORY FAILURE
Diag 038.0, 038.10, 038.11, 038.19, 038.2, 038.3, 038.40, 038.41, 038.42, 038.43, 038.44, 038.49, 038.8, 038.9	SEPSIS
Diag 403.11, 403.91	HYPERTENSIVE CHRONIC KIDNEY DISEASE
Diag 250.33	DIABETES WITH OTHER COMA, TYPE I [JUVENILE TYPE], UNCONTROLLED
Diag 250.30	DIABETES WITH OTHER COMA, TYPE II OR UNSPECIFIED TYPE, NOT STATED AS UNCONTROLLED
<b>Gastrointestinal Bleed</b>	
Diag 518.81	ACUTE RESPIRATORY FAILURE
Diag 532.60	CHRONIC OR UNSPECIFIED DUODENAL ULCER WITH HEMORRHAGE AND PERFORATION, WITHOUT MENTION OF OBSTRUCTION
Diag 585.6	END STAGE RENAL DISEASE
Diag 507.0	PNEUMONITIS DUE TO INHALATION OF FOOD OR VOMITUS
Diag 789.59	OTHER ASCITES
<b>Gastrointestinal Surgeries and Procedures</b>	
Proc 43.99	OTHER TOTAL GASTRECTOMY
Diag 570	ACUTE AND SUBACUTE NECROSIS OF LIVER
Diag 286.6	DEFIBRINATION SYNDROME
Proc 43.5	PARTIAL GASTRECTOMY WITH ANASTOMOSIS TO ESOPHAGUS
Proc 43.7	PARTIAL GASTRECTOMY WITH ANASTOMOSIS TO JEJUNUM
<b>Heart Attack</b>	
Diag 427.5	CARDIAC ARREST
Proc 37.61	IMPLANT OF PULSATION BALLOON
Diag 410.01, 410.11, 410.21, 410.51, 410.61, 410.81, 410.91	ANTERIOR/LATERAL WALL AMI
Diag 585.6	END STAGE RENAL DISEASE
Diag 518.81	ACUTE RESPIRATORY FAILURE
<b>Heart Failure</b>	
Diag 410.01, 410.11, 410.21, 410.51, 410.61, 410.81, 410.91	ANTERIOR/LATERAL WALL AMI
Diag 518.81	ACUTE RESPIRATORY FAILURE
Diag 507.0	PNEUMONITIS DUE TO INHALATION OF FOOD OR VOMITUS
Diag 585.6	END STAGE RENAL DISEASE
Diag 518.84	ACUTE AND CHRONIC RESPIRATORY FAILURE

<b>Hip Fracture Treatment</b>	
Diag 038.0, 038.10, 038.11, 038.19, 038.2, 038.3, 038.40, 038.41, 038.42, 038.43, 038.44, 038.49, 038.8, 038.9	SEPSIS
Diag 518.81	ACUTE RESPIRATORY FAILURE
Diag 276.2	ACIDOSIS
Diag 507.0	PNEUMONITIS DUE TO INHALATION OF FOOD OR VOMITUS
Diag 428.31, 428.33	ACUTE DIASTOLIC HEART FAILURE
<b>Neurosurgery</b>	
Diag 780.01	COMA
Proc 00.17	INFUSION OF VASOPRESSOR AGENT
Diag 585.6	END STAGE RENAL DISEASE
Diag 430	SUBARACHNOID HEMORRHAGE
Diag 518.81	ACUTE RESPIRATORY FAILURE
<b>Pancreatitis</b>	
Diag 518.81	ACUTE RESPIRATORY FAILURE
Diag 785.52	SEPTIC SHOCK
Diag 038.0, 038.10, 038.11, 038.19, 038.2, 038.3, 038.40, 038.41, 038.42, 038.43, 038.44, 038.49, 038.8, 038.9	SEPSIS
Diag 585.6	END STAGE RENAL DISEASE
Diag 789.59	OTHER ASCITES
<b>Peripheral Vascular Bypass</b>	
Diag 585.4	CHRONIC KIDNEY DISEASE, STAGE IV (SEVERE)
Diag 260, 261, 262, 263.0, 263.1, 263.2, 263.8, 263.9	MALNUTRITION
Diag 491.0, 491.1, 491.20, 491.21, 491.22, 491.8, 491.9	CHRONIC BRONCHITIS
Diag 428.30, 428.32	CHRONIC DIASTOLIC HEART FAILURE
Diag 682.6	CELLULITIS AND ABSCESS OF LEG, EXCEPT FOOT
<b>Pneumonia</b>	
Diag 518.81	ACUTE RESPIRATORY FAILURE
Diag 518.82	OTHER PULMONARY INSUFFICIENCY, NOT ELSEWHERE CLASSIFIED
Diag 162.9	MALIGNANT NEOPLASM OF BRONCHUS AND LUNG, UNSPECIFIED
Diag 518.84	ACUTE AND CHRONIC RESPIRATORY FAILURE
Diag 038.0, 038.10, 038.11, 038.19, 038.2, 038.3, 038.40, 038.41, 038.42, 038.43, 038.44, 038.49, 038.8, 038.9	SEPSIS
<b>Prostatectomy</b>	
Proc 60.3	SUPRAPUBIC PROSTATECTOMY
Proc 60.4	RETROPUBIC PROSTATECTOMY
Proc 60.69	OTHER PROSTATECTOMY
Diag 260, 261, 262, 263.0, 263.1, 263.2, 263.8, 263.9	MALNUTRITION
Proc 60.5	RADICAL PROSTATECTOMY
<b>Pulmonary Embolism</b>	
Diag 518.81	ACUTE RESPIRATORY FAILURE
Diag 276.2	ACIDOSIS
Diag 507.0	PNEUMONITIS DUE TO INHALATION OF FOOD OR VOMITUS
Diag 518.84	ACUTE AND CHRONIC RESPIRATORY FAILURE
Diag 585.6	END STAGE RENAL DISEASE

<b>Resection / Replacement of Abdominal Aorta</b>	
Diag 441.3	ABDOMINAL ANEURYSM, RUPTURED
Diag 557.0	ACUTE VASCULAR INSUFFICIENCY OF INTESTINE
Proc 38.34	RESECTION OF AORTA WITH ANASTOMOSIS
Proc 54.12	REOPENING OF RECENT LAPAROTOMY SITE
Diag 585.6	END STAGE RENAL DISEASE
<b>Respiratory Failure</b>	
Diag 348.1	ANOXIC BRAIN DAMAGE
Diag 780.01	COMA
Diag 427.5	CARDIAC ARREST
Diag 162.9	MALIGNANT NEOPLASM OF BRONCHUS AND LUNG, UNSPECIFIED
Diag 410.01, 410.11, 410.21, 410.51, 410.61, 410.81, 410.91	ANTERIOR/LATERAL WALL AMI
<b>Sepsis</b>	
Diag 427.5	CARDIAC ARREST
Diag 410.01, 410.11, 410.21, 410.51, 410.61, 410.81, 410.91	ANTERIOR/LATERAL WALL AMI
Diag 557.0	ACUTE VASCULAR INSUFFICIENCY OF INTESTINE
Diag 286.6	DEFIBRATION SYNDROME
Diag 348.1	ANOXIC BRAIN DAMAGE
<b>Stroke</b>	
Diag 780.01	COMA
Diag 518.81	ACUTE RESPIRATORY FAILURE
Diag 585.6	END STAGE RENAL DISEASE
Diag 038.0, 038.10, 038.11, 038.19, 038.2, 038.3, 038.40, 038.41, 038.42, 038.43, 038.44, 038.49, 038.8, 038.9	SEPSIS
Diag 430	SUBARACHNOID HEMORRHAGE
<b>Total Hip Replacement</b>	
Diag 276.50, 276.51, 276.52	DEHYDRATION
Diag 403.10, 403.90	NON-MALIGNANT RENAL DISEASE W/O FAILURE
Diag 491.0, 491.1, 491.20, 491.21, 491.22, 491.8, 491.9	CHRONIC BRONCHITIS
Diag 428.30, 428.32	CHRONIC DIASTOLIC HEART FAILURE
Diag V85.4	BODY MASS INDEX 40 AND OVER, ADULT
<b>Total Knee Replacement</b>	
Diag 276.50, 276.51, 276.52	DEHYDRATION
Diag 276.7	HYPERPOTASSEMIA
Diag 428.30, 428.32	CHRONIC DIASTOLIC HEART FAILURE
Diag 403.10, 403.90	NON-MALIGNANT RENAL DISEASE W/O FAILURE
Diag 416.0, 416.1, 416.8, 416.9	PULMONARY HYPERTENSION
<b>Valve Replacement/Repair Surgery</b>	
Proc 37.61	IMPLANT OF PULSATION BALLOON
Diag 585.6	END STAGE RENAL DISEASE
Diag 584.5, 584.8, 584.9	ACUTE RENAL FAILURE
Proc 35.27	REPLACEMENT OF TRICUSPID VALVE WITH TISSUE GRAFT
Proc 35.25	REPLACEMENT OF PULMONARY VALVE WITH TISSUE GRAFT

## Appendix E. Methodology Enhancements for 2012 Ratings Models

The following changes were determined and implemented after input from outside coding and clinical experts. For the following service lines, we describe the major changes for each rated cohort and provide the rationale behind these changes.

### Cardiac

Cohorts Affected	2012 Ratings Model Change	Rationale for Changes
Valve Replacement/Repair Surgery	Added open valve repairs to the cohort definition	Valve repair is increasingly an option for patients with valve disease. Currently, the national volume is not significant enough to rate valve repairs as an independent procedure but due to the growing number of organizations performing these procedures, adding these patients is a more comprehensive view of the overall valve surgery performance of those facilities.

### Orthopedics

Cohorts Affected	2012 Ratings Model Change	Rationale for Changes
Hip Fracture Treatment	<ul style="list-style-type: none"> <li>Changed cohort definition from procedural to diagnosis based.</li> </ul>	Not all patients with hip fractures are treated surgically thus using a diagnosis to identify patients includes those medically managed patients and better reflects the overall hospital care for these patients.

## Appendix F. Hospital Ratings and Ranking Removal Policy

Effective October 19, 2009

HealthGrades rates the nation's nearly 5,000 hospitals using several data sources including data submitted by hospitals to the Centers for Medicare and Medicaid Services (CMS), all-payer data submitted by hospitals to their states, and HCAPS data.

Regardless of the data set utilized, HealthGrades ratings are not voluntary and our objective ratings methodology is applied to every hospital in the same manner.

On rare occasions, HealthGrades identifies new information that impacts its assessment of a hospital. HealthGrades' policy is to remove certain hospitals' ratings and/or awards from its website in the following situations:

- A revocation of a hospital's Medicare license by CMS
- Federal indictment of a hospital for Medicare fraud
- Egregious issues with the integrity of data submitted by a hospital to CMS or to the state in which the hospital resides

In these rare circumstances, the hospital's CEO will be notified in writing of the reason for the ratings removal. The ratings and awards are removed at the discretion of HealthGrades based on which ratings and awards are impacted by the erroneous data and/or fraudulent activities.

Under **no circumstances** will HealthGrades accept data directly from a hospital, nor will HealthGrades manipulate or change a hospital's rating or data in any way. It is the hospital's responsibility to resubmit the data to CMS or to its state. To have a hospital's ratings re-posted, HealthGrades must receive corrected data directly from CMS or from the state during its annual ratings update.

### Rankings and Awards

Using the HealthGrades star ratings, hospitals are rank ordered nationally to determine Specialty Excellence Awards™ and within their state for overall service lines and service line subspecialties. Ranking is done on an annual basis. In the case that a hospital's ratings are removed, it is HealthGrades policy NOT to re-rank hospitals. No hospital shall move up or down at the time when a hospital's ratings are removed. Rankings are conducted annually.