Cardiol Young 2008; 18(Suppl. 2): 282–530

ISSN 1047-9511
doi:10.1017/S1047951108003351

Original Article

Part IV – the dictionary of definitions of complications associated with the treatment of patients with congenital cardiac disease

The Multi-Societal Database Committee for Pediatric and Congenital Heart Disease was established in 2005 with the goal of providing the *infrastructure, spanning geographical and subspecialty boundaries, for collaboration between health care professionals* interested in the analysis of outcomes of treatments provided to patients with congenital cardiac disease, with the ultimate aim of improvement in the quality of care provided to these patients. The purpose of these collaborative efforts is to promote the highest quality comprehensive cardiac care to all patients with congenital heart disease, from the fetus to the adult, regardless of the patient's economic means, with an emphasis on excellence in teaching, research and community service. This 2008 Supplement to Cardiology in the Young is a product of the efforts of The Multi-Societal Database Committee for Pediatric and Congenital Heart Disease.

In this Supplement, we provide a Long List of Complications and a Short List of Complications, with consensus-based definitions provided in each List. Obviously, a Short List is short and a Long List is long. Each type of list is designed to serve a different purpose. A Long List is designed to support research studies, academic databases, echocardiography software, and electronic medical records. A Short List is designed to support registries, the assessment of outcomes, and initiatives designed to improve quality.

- The Long List of Complications presented in Part IV of this Supplement contains and defines 2836 terms and is named: "*The Long List of Complications of The Multi-Societal Database Committee for Pediatric and Congenital Heart Disease*", with the abbreviated short name: "*Multi-Societal Long List of Complications*". Although the act of navigating a list with 2836 terms can initially seem quite daunting, it can become quite simple and enjoyable with the

Table 1.

Organ System
General definitions
No complications
Death
Readmission
Multiple
Shock
Cardiac
Cardiac – Metabolic
Cardiac – Residual and Recurrent cardiac lesions
Operative/Procedural
Operative/Procedural-retained equipment
Mechanical support utilization
Cardiopulmonary bypass and Mechanical support
Echocardiography
Arrhythmia
Arrhythmia – Arrhythmia necessitating pacemaker
Arrhythmia – Atrial
Arrhythmia – Junctional
Arrhythmia – Supraventricular
Arrhythmia – Supraventricular tachycardia (SVT)
Arrhythmia – Ventricular
Arrhythmia – Other
Arrhythmia-Atrioventricular conduction disorder
Arrhythmia-Complication of Device
Pulmonary
Renal
Hematologic
Infectious
Neurologic
Gastrointestinal
Endocrine
Integument
Vascular
Vascular-Line(s)
Wound
Transplant
Anesthesia
Anesthesia-regional
Anesthesia-transport
Communication
Equipment
Medication
Other

aid of computerized navigation tools designed to support the hierarchal structure of the list.
- The Short List of Complications presented as Table 11 of the Introductory manuscript to this Supplement contains and defines 56 terms. This Short List of Complications provides the latest version of the *Short List of Complications prepared for The Congenital Heart Surgery Databases of The European Association for Cardio-Thoracic Surgery and The Society of Thoracic Surgeons*. This version is a draft work in progress that was developed by updating the current version 2.50 Short List of Complications of The Society of Thoracic Surgeons and The European Association for Cardio-Thoracic Surgery, so that the new Short List of Complications shown in Table 11 of the Introductory manuscript to this Supplement is consistent and harmonized with the Multi-Societal Long List of Complications published in Part IV of this Supplement.

The International Paediatric and Congenital Cardiac Code is available free of charge via the Internet at [http://www.IPCCC.NET]. At this Web site, one may download the Short Lists and Long Lists of the International Paediatric and Congenital Cardiac Code. Three versions of the International Paediatric and Congenital Cardiac Code are available:

- The version of the International Paediatric and Congenital Cardiac Code derived from the nomenclature of the International Congenital Heart Surgery Nomenclature and Database Project of The European Association for Cardio-Thoracic Surgery and The Society of Thoracic Surgeons.
- The version of the International Paediatric and Congenital Cardiac Code derived from the nomenclature of the European Paediatric Cardiac Code of The Association for European Paediatric Cardiology.
- The version of the International Paediatric and Congenital Cardiac Code derived from the nomenclature of the Fyler Codes of Boston Children's Hospital and Harvard University.

The Long List of Complications of The Multi-Societal Database Committee for Pediatric and Congenital Heart Disease, as published in Part IV of this Supplement, represents the List Of Complications for the version of the International Paediatric and Congenital Cardiac Code derived from the nomenclature of the International Congenital Heart Surgery Nomenclature and Database Project of The European Association for Cardio-Thoracic Surgery and The Society of Thoracic Surgeons. As stated above, The International Paediatric and Congenital Cardiac Code has three versions, with mapping to the following alphanumeric codes:

- The International Pediatric and Congenital Cardiac Code.
- The 9th revision of the International Classification of Diseases (ICD-9).
- The 10th revision of the International Classification of Diseases (ICD-10).
- Current Procedural Terminology (CPT) Codes of the United States of America.

Although Table 2 in Part IV of this Supplement provides the List Of Complications for the version of the International Paediatric and Congenital Cardiac Code derived from the nomenclature of the International Congenital Heart Surgery Nomenclature and Database Project of The European Association for Cardio-Thoracic Surgery and The Society of Thoracic Surgeons, it should be emphasized that all of these terms have been mapped to corresponding terms in the version of the International Paediatric and Congenital Cardiac Code derived from the nomenclature of the European Paediatric Cardiac Code of The Association for European Paediatric Cardiology. It should also be emphasized that although Table 2 in Part IV of this Supplement provides the codes for the 9th revision of the International Classification of Diseases (ICD-9), all of these terms have also been mapped to 10th revision of the International Classification of Diseases (ICD-10). Therefore, The International Paediatric and Congenital Cardiac Code contains the Short and Long List of Complications in two versions, with mapping to both the ICD-9 and ICD-10, and all of this information is available free of charge via the Internet at [http://www.IPCCC.NET]. Finally, as stated in the Introductory manuscript of this Supplement, clearly, this Dictionary of Complications is a living, breathing document that will continue to evolve.

Therefore, Part IV of this Supplement provides "The Dictionary of Definitions of Complications associated with the Treatment of Patients with Congenital Cardiac Disease". The Dictionary in Part IV has two components. Table 1 in Part IV provides the list of 43 "Organ Systems" by which the 2836 terms in Table 2 in Part IV are organized. In Table 2 in Part IV, each of these 2836 terms is assigned to an "organ system", listed, defined, and given alphanumeric codes in both The International Pediatric and Congenital Cardiac Code and the 9th revision of the International Classification of Diseases.

https://doi.org/10.1017/S1047951108003351 Published online by Cambridge University Press

Table 2.

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
998.9	15.90.00	General definitions	Complication	A complication is an event or occurrence that is associated with a disease or a healthcare intervention, is a departure from the desired course of events, and may cause, or be associated with, suboptimal outcome. A complication does not necessarily represent a breech in the standard of care that constitutes medical negligence or medical malpractice. An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.
998.9	Q1.91.32	General definitions	Complication-modifier for complication type, Adverse event	An adverse event is a complication that is associated with a healthcare intervention and is associated with suboptimal outcome. Adverse events represent a subset of complications. Not all medical errors result in an adverse event; the administration of an incorrect dose of a medication is a medical error, but it does not always result in an adverse event. Similarly, not all adverse events are the result of medical error. A child may develop pneumonia after an atrial septal defect repair despite intra- and peri-operative management that is free of error. Complications of the underlying disease state, which are not related to a medical intervention, are not adverse events. For example, a patient who presents for medical care with metastatic lung cancer has already developed a complication (Metastatic spread) of the primary lung cancer without any healthcare intervention. Furthermore, complications not associated with suboptimal outcome or harm are not adverse events and are known as no harm events. The patient who receives an incorrect dose of a medication without harm has experienced a no harm event, but not an adverse event.
998.9	Q1.91.33	General definitions	Complication-modifier for complication type, Complication associated with harm	Harm is defined as a suboptimal outcome. A complication associated with a suboptimal outcome is a complication that causes harm. An error associated with a suboptimal outcome is an error that causes harm. Not all complications cause harm. Not all errors cause harm.
998.9	Q1.91.34	General definitions	Complication-modifier for complication type, Complication not associated with harm (No harm event or no harm complication)	A "no harm complication" is a complication not associated with a suboptimal outcome, in other words, a complication that does not cause harm. Harm is defined as a suboptimal outcome. An error associated with a suboptimal outcome is an error that causes harm. Not all complications cause harm. Not all errors cause harm. Furthermore, complications not associated with suboptimal outcome or harm are not adverse events and are known as no harm events. The patient who receives an incorrect dose of a medication without harm has experienced a no harm event, but not an adverse event.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
998.9	Q1.90.53	General definitions	Complication-modifier for complication type, Iatrogenic complication	An iatrogenic complication is a complication that is associated with a healthcare intervention. In other words, an iatrogenic complication is an event or occurrence that is associated with a healthcare intervention, is a departure from the desired course of events, and may cause, or be associated with, suboptimal outcome.
998.9	Q1.91.35	General definitions	Complication-modifier for complication type, Medical error	A medical error is a health care intervention, that may be an act of commission or omission, where a planned action fails to be completed as intended or the use of a wrong plan is implemented to achieve an aim; this event is a departure from the desired course of events, is less than ideal, and may cause or be associated with suboptimal outcome. Not all complications are caused by medical error. Medical error does not necessarily imply negligence or malpractice, and such errors may be latent within the system of care rather than solely the responsibility of the medical practitioner.
998.9	Q1.91.36	General definitions	Complication-modifier for complication type, Near miss	A near miss is a complication that is either not associated with harm or suboptimal outcome, or is associated with minimized harm, because the unwanted consequence is minimized or prevented secondary to a recovery by identification and correction of the failure. This recovery could be caused by a planned or unplanned barrier.
998.9	Q1.90.88	General definitions	Complication-modifier for laterality, Bilateral	A complication involving both the left side and the right side.
998.9	Q1.90.66	General definitions	Complication-modifier for laterality, Left	A complication involving the left side.
998.9	Q1.90.65	General definitions	Complication-modifier for laterality, Right	A complication involving the right side.
998.9	Q1.91.75	General definitions	Complication-modifier for timing, Complication that occurs during period of anesthetic care	A complication that occurs during the period of anesthetic care. The period of anesthetic care is the time interval that begins when the anesthesia team assumes responsibility for patient care (either at Operating Room Entry Date and Time or at the time when the patient is picked up by the anesthesia team from another unit in the hospital) and ends: (1). When the anesthesia team relinquishes responsibility for patient management (when the patient is turned over to the postoperative care team, commonly the intensive care unit team); or (2). At the time of discharge from the recovery room (if the patient is transported to the recovery room) or when another healthcare team assumes responsibility for the patient; or (3). When report is given to the intensive care unit nurses, in instances where the anesthesiologist is also the intensivist. In addition, the period of anesthetic care includes any time spent in the preoperative period during which the patient is being evaluated by the anesthesia care team.
998.9	Q1.91.71	General definitions	Complication-modifier for timing, Intraoperative	An intraoperative complication is any complication that occurs or is recognized during the time interval between the database field, Operating Room Entry Date and Time, and the database field, Operating Room Exit Date and Time.
998.9	Q1.91.61	General definitions	Complication-modifier for timing, Intraprocedural	An intraprocedural complication is any complication that occurs or is recognized during the time interval between the database field,

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				Operating Room Entry Date and Time, and the database field, Operating Room Exit Date and Time.
998.9	Q1.91.74	General definitions	Complication-modifier for timing, Operative	An operative complication is any complication that occurs during the time interval between Operating Room Entry Date and Time and the end of the period of operative and procedural data collection, and thus includes both intraoperative and postoperative complications.
998.9	Q1.91.72	General definitions	Complication-modifier for timing, Postoperative	A postoperative complication is any complication that occurs or is recognized during the time interval between Operating Room Exit Date and Time and the end of the period of operative and procedural data collection.
998.9	Q1.90.64	General definitions	Complication-modifier for timing, Postprocedural	A postprocedural complication is any complication that occurs or is recognized during the time interval between Operating Room Exit Date and Time and the end of the period of operative and procedural data collection.
E876.9	Q1.91.70	General definitions	Complication-modifier for timing, Preoperative	A preoperative complication is any complication that occurs or is recognized before the database field, Operating Room Entry Date and Time.
E876.9	Q1.90.63	General definitions	Complication-modifier for timing, Preprocedural	A preprocedural complication is any complication that occurs or is recognized before the database field, Operating Room Entry Date and Time.
998.9	Q1.91.73	General definitions	Complication-modifier for timing, Procedural	A procedural complication is any complication that occurs during the time interval between Operating Room Entry Date and Time and the end of the period of data collection, and thus includes both intraprocedural and postprocedural complications.
998.9	15.90.05	General definitions	Iatrogenic event	Iatrogenic events are events caused by the health care delivery team and these events may result in positive or negative outcomes.
998.9	15.90.07	General definitions	Morbidity	"Morbidity" ROOT Definition = Morbidity is a state of illness or lack of health, and includes physical, mental, or emotional disability. Morbidity can occur without complication. For example, a 6-day-old full-term neonate undergoes an arterial switch operation, is extubated on postoperative day 1 and is discharged home on postoperative day 5, while an 18-day-old full-term neonate undergoes an arterial switch operation, is extubated on postoperative day 5, and is discharged home on postoperative day 10. Both patients are discharged home in excellent condition and neither had complications. The second infant, however, manifested more morbidity than the first, as measured by a longer period of mechanical ventilatory support, a longer hospital stay, and increased resource consumption; i.e., morbidity without complication.
998.9	15.90.09	General definitions	Morbidity, Operative morbidity	Morbidity (ROOT Definition) + Procedural morbidity is the temporary or permanent disability observed during and after an operation. In the congenital cardiac surgery databases of The Society of Thoracic Surgeons and The European Association for Cardio-Thoracic Surgery, procedural morbidity is defined as any morbidity

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				that occurs during the time interval between Operating Room Entry Date and Time and the end of the period of data collection. Importantly, the most successful operation is still associated with some degree of temporary disability. Therefore, an operation with zero morbidity is impossible to achieve, while an operation without complications may be achievable. Procedural morbidity is any morbidity, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural morbidity includes both intraoperative/intraprocedural morbidity and postoperative/postprocedural morbidity in this time interval.
998.9	15.90.08	General definitions	Morbidity, Procedural morbidity	Morbidity (ROOT Definition) + Procedural morbidity is the temporary or permanent disability observed during and after a procedure. In the STS and EACTS Congenital Heart Databases, procedural morbidity is defined as any morbidity that occurs during the time interval between Operating Room Entry Date and Time and the end of the period of data collection. Importantly, the most successful procedure is still associated with some degree of temporary disability. Therefore, a procedure with zero morbidity is impossible to achieve, while a procedure without complications may be achievable. Procedural morbidity is any morbidity, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural morbidity includes both intraoperative/intraprocedural morbidity and postoperative/postprocedural morbidity in this time interval.
998.9	15.90.06	General definitions	Sentinel Event	The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) of the United States of America states that "A sentinel event is an unexpected occurrence involving death or serious physical or psychological injury, or the risk thereof. Serious injury specifically includes loss of limb or function. The phrase, "or the risk thereof" includes any process variation for which a recurrence would carry a significant chance of a serious adverse outcome. Such events are called "sentinel" because they signal the need for immediate investigation and response"
0	15.90.03	No complications	No complications	No complications occurred. A complication is an event or occurrence that is associated with a disease or a healthcare intervention, is a departure from the desired course of events, and may cause, or be associated with, suboptimal outcome. A complication does not necessarily represent a breech in the standard of care that constitutes medical negligence or medical malpractice.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
0	15.90.11	No complications	No complications during the intraoperative and postoperative time periods (No complications prior to discharge and no complications within < or = 30 days of surgery)	No intraoperative/intraprocedural or postoperative/postprocedural complication occurred prior to hospital discharge or within < or = 30 days of surgery or intervention. A complication is an event or occurrence that is associated with a disease or a healthcare intervention, is a departure from the desired course of events, and may cause, or be associated with, suboptimal outcome. A complication does not necessarily represent a breech in the standard of care that constitutes medical negligence or medical malpractice.
799	15.90.99	Death	Intraoperative death or intraprocedural death	Patient died in the operating room or procedure room (such as catheterization laboratory or hybrid suite).
799	15.90.97	Death	Operative mortality	Operative Mortality is defined as any death, regardless of cause occurring (1) within 30 days after surgery in or out of the hospital, and (2) after 30 days during the same hospitalization subsequent to the operation.
E876.9	15.90.90	Readmission	Unplanned readmission to the hospital within 30 days of surgery or intervention	Any unplanned readmission to the hospital within 30 days of surgery or intervention
998	15.80.16	Multiple	Multi-System Organ Failure (MSOF) = Multi-Organ Dysfunction Syndrome (MODS)	Multi-System Organ Failure (MSOF) is a condition where more than one organ system has failed (for example, respiratory failure requiring mechanical ventilation combined with renal failure requiring dialysis). Please code the individual organ system failures as well. If MSOF is associated with sepsis as well, please also code: "Sepsis, Multi-system Organ Failure". Multi-System Organ Failure (MSOF) is synonymous with Multi-Organ Dysfunction Syndrome (MODS).
785.5	15.67.01	Shock	Shock	"Shock" ROOT Definition = Shock is defined as "a state of inadequate tissue perfusion". A modern definition according to Simeone states that shock is a "clinical condition characterized by signs and symptoms which arise when the cardiac output is insufficient to fill the arterial tree with blood under sufficient pressure to provide organs and tissues with adequate blood flow." A historic definition according to Blalock in 1940 is that "Shock is a peripheral circulatory failure, resulting from a discrepancy in the size of the vascular bed and the volume of the intravascular fluid".
995.00	15.67.02	Shock	Shock, Anaphylactic	Shock (ROOT Definition) + Shock is a state of inadequate tissue perfusion. Anaphylactic shock is a state of inadequate tissue perfusion associated with a severe allergic reaction.
785.5	15.67.03	Shock	Shock, Cardiogenic	Shock (ROOT Definition) + Shock is a state of inadequate tissue perfusion. Cardiogenic shock is a state of inadequate tissue perfusion caused by cardiac dysfunction, failure of the heart as a pump, and diminished cardiac output from various causes.
785.59	15.67.04	Shock	Shock, Hypovolemic = Oligemic = Hematogenic	Shock (ROOT Definition) + Shock is a state of inadequate tissue perfusion. Hypovolemic shock is a state of inadequate tissue perfusion caused by inadequate intravascular volume.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
308.9	15.67.05	Shock	Shock, Neurogenic	Shock (ROOT Definition) + Shock is a state of inadequate tissue perfusion. Neurogenic shock is a state of inadequate tissue perfusion caused primarily by nervous influences, neurologic injury, or neurologic disease.
785.52	15.90.56	Shock	Shock, Septic	Shock (ROOT Definition) + Shock is a state of inadequate tissue perfusion. Septic shock is a state of inadequate tissue perfusion caused by sepsis. (Sepsis is defined as "evidence of serious infection accompanied by a deleterious systemic response". In the time period of the first 48 postoperative or postprocedural hours, the diagnosis of sepsis requires the presence of a Systemic Inflammatory Response Syndrome (SIRS) resulting from a proven infection (such as bacteremia, fungemia or urinary tract infection). In the time period after the first 48 postoperative or postprocedural hours, sepsis may be diagnosed by the presence of a SIRS resulting from suspected or proven infection. During the first 48 hours, a SIRS may result from the stress associated with surgery and/or cardiopulmonary bypass. Thus, the clinical criteria for sepsis during this time period should be more stringent. A systemic inflammatory response syndrome (SIRS) is present when at least two of the following criteria are present: hypo- or hyperthermia (>38.5 or <36.0), tachycardia or bradycardia, tachypnea, leukocytosis or leukopenia, and thrombocytopenia.)
785.9	15.67.07	Shock	Shock, Vasogenic	Shock (ROOT Definition) + Shock is a state of inadequate tissue perfusion. Vasogenic shock is a state of inadequate tissue perfusion caused initially by decreased vascular resistance and increased vascular capacity.
997.1	11.00.21	Cardiac	Cardiac arrest	"Cardiac arrest" ROOT Definition = A cardiac arrest is the cessation of effective cardiac mechanical function.
427.5	11.00.21 + Q1.00.32	Cardiac	Cardiac arrest, Arrhythmic	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to cardiac rhythm problem.
427.5	11.00.21 + Q1.00.31	Cardiac	Cardiac arrest, Asystolic	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to asystole
427.5	11.00.21 + Q1.0037	Cardiac	Cardiac arrest, Drug induced	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a medication or drug
427.5	11.00.21 + Q1.00.33	Cardiac	Cardiac arrest, Due to mechanical obstruction to flow	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a mechanical obstruction to blood flow
427.5	11.00.21 + Q1.00.35	Cardiac	Cardiac arrest, Due to primary respiratory arrest	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a primary respiratory cause
427.5	11.00.21 + Q1.00.34	Cardiac	Cardiac arrest, Due to rupture of cardiac structure	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to rupture of a cardiac structure (i.e. valve, free wall of ventricle, etc)
427.5	11.00.21 + Q1.00.38	Cardiac	Cardiac arrest, Electromechanical dissociation (EMD)	Cardiac arrest (ROOT Definition) + Cessation of effective cardiac mechanical function (contractile heart function, cardiac ejection, and pulsatile blood flow) with preserved electrocardiographic (EKG) signals
427.5	11.00.21 + Q1.00.36	Cardiac	Cardiac arrest, Metabolically induced	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to metabolic derangement
427.5	11.00.21 + Q1.00.36 + Q1.81.00	Cardiac	Cardiac arrest, Metabolically induced, With specific metabolic derangement	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a specific metabolic derangement

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.5	11.00.21 + Q1.00.36 - + Q1.81.17	Cardiac	Cardiac arrest, Metabolically induced, With specific metabolic derangement, Drug induced derangement	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a specific metabolic derangement, Associated with a drug or medication
427.5	11.00.21 + Q1.00.36 + Q1.81.10	Cardiac	Cardiac arrest, Metabolically induced, With specific metabolic derangement, Hypercalcemia	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a specific metabolic derangement, Associated with hypercalcemia
427.5	11.00.21 + Q1.00.36 + Q1.81.14	Cardiac	Cardiac arrest, Metabolically induced, With specific metabolic derangement, Hyperglycemia	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a specific metabolic derangement, Associated with hyperglycemia
427.5	11.00.21 + Q1.00.36 + Q1.81.06	Cardiac	Cardiac arrest, Metabolically induced, With specific metabolic derangement, Hyperkalemia	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a specific metabolic derangement, Associated with hyperkalemia
427.5	11.00.21 + Q1.00.36 + Q1.81.12	Cardiac	Cardiac arrest, Metabolically induced, With specific metabolic derangement, Hypermagnesemia	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a specific metabolic derangement, Associated with hypermagnesemia
427.5	11.00.21 + Q1.00.36 + Q1.81.08	Cardiac	Cardiac arrest, Metabolically induced, With specific metabolic derangement, Hypernatremia	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a specific metabolic derangement, Associated with hypernatremia
427.5	11.00.21 + Q1.00.36 + Q1.81.09	Cardiac	Cardiac arrest, Metabolically induced, With specific metabolic derangement, Hypocalcemia	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a specific metabolic derangement, Associated with hypocalcemia
427.5	11.00.21 + Q1.00.36 + Q1.81.13	Cardiac	Cardiac arrest, Metabolically induced, With specific metabolic derangement, Hypoglycemia	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a specific metabolic derangement, Associated with hypoglycemia
427.5	11.00.21 + Q1.00.36 + Q1.81.05	Cardiac	Cardiac arrest, Metabolically induced, With specific metabolic derangement, Hypokalemia	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a specific metabolic derangement, Associated with hypokalemia
427.5	11.00.21 + Q1.00.36 + Q1.81.11	Cardiac	Cardiac arrest, Metabolically induced, With specific metabolic derangement, Hypomagnesemia	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a specific metabolic derangement, Associated with hypomagnesemia
427.5	11.00.21 + Q1.00.36 + Q1.81.07	Cardiac	Cardiac arrest, Metabolically induced, With specific metabolic derangement, Hyponatremia	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a specific metabolic derangement, Associated with hyponatremia
427.5	11.00.21 + Q1.00.36 + Q1.81.01	Cardiac	Cardiac arrest, Metabolically induced, With specific metabolic derangement, Metabolic acidosis	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a specific metabolic derangement, Associated with metabolic acidosis
427.5	11.00.21 + Q1.00.36 + Q1.81.02	Cardiac	Cardiac arrest, Metabolically induced, With specific metabolic derangement, Metabolic alkalosis	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a specific metabolic derangement, Associated with metabolic alkalosis
427.5	11.00.21 + Q1.00.36 + Q1.81.16	Cardiac	Cardiac arrest, Metabolically induced, With specific metabolic derangement, Organic acidemia	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a specific metabolic derangement, Associated with organic acidemia
427.5	11.00.21 + Q1.00.36 + Q1.81.03	Cardiac	Cardiac arrest, Metabolically induced, With specific metabolic derangement, Respiratory acidosis	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a specific metabolic derangement, Associated with respiratory acidosis

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.5	11.00.21 + Q1.00.36 + Q1.81.04	Cardiac	Cardiac arrest, Metabolically induced, With specific metabolic derangement, Respiratory alkalosis	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a specific metabolic derangement, Associated with respiratory alkalosis
427.5	11.00.21 + Q1.00.36 + Q1.81.15	Cardiac	Cardiac arrest, Metabolically induced, With specific metabolic derangement, Uremia	Cardiac arrest (ROOT Definition) + Cardiac arrest is due to a specific metabolic derangement, Associated with uremia
427.5	11.00.21 + Q1.90.78	Cardiac	Cardiac arrest, Of unknown etiology	Cardiac arrest (ROOT Definition) + Cardiac arrest is of unknown ideology
997.1	15.00.23	Cardiac	Cardiac arrest, Timing = Cardiac arrest (MI) during or following procedure (Perioperative/Periprocedural = Intraoperative/Intraprocedural and/or Postoperative/Postprocedural)	Cardiac arrest (ROOT Definition) + This complication should be selected if the cardiac arrest developed after OR Entry Date and Time.
997.1	11.00.22	Cardiac	Cardiac arrest, Timing = Cardiac arrest before procedure (Preoperative/Preprocedural)	Cardiac arrest (ROOT Definition) + This complication should be selected if the cardiac arrest developed before OR Entry Date and Time.
997.1	15.00.01	Cardiac	Cardiac arrest, Timing = Cardiac arrest during procedure (Intraoperative/Intraprocedural)	Cardiac arrest (ROOT Definition) + This complication should be selected if the cardiac arrest developed during the time interval of "Operating Room Time" (between OR Entry Date and Time and OR Exit Date and Time).
997.1	15.00.02	Cardiac	Cardiac arrest, Timing = Cardiac arrest following procedure (Postoperative/Postprocedural)	Cardiac arrest (ROOT Definition) + This complication should be selected if the cardiac arrest developed after OR Exit Date and Time.
427.5	Title	Cardiac	Cardiac arrest-modifier for sequelae & outcome after cardiac arrest	Cardiac arrest (ROOT Definition) + modifier for sequelae & outcome after cardiac arrest, Select the children terms of this code to designate the sequelae & outcome after a cardiac arrest. This choice may also be selected and accompanied by free text in a "Comments" field if none of the children terms are appropriate.
427.5	Q1.00.51	Cardiac	Cardiac arrest-modifier for sequelae & outcome after cardiac arrest, Causing low cardiac output	Cardiac arrest (ROOT Definition) + modifier for sequelae & outcome after cardiac arrest, Causing low cardiac output
427.5	Q1.00.53	Cardiac	Cardiac arrest-modifier for sequelae & outcome after cardiac arrest, Failed resuscitation	Cardiac arrest (ROOT Definition) + modifier for sequelae & outcome after cardiac arrest, Failed resuscitation
427.5	Q1.00.54	Cardiac	Cardiac arrest-modifier for sequelae & outcome after cardiac arrest, Leading to abandonment of procedure	Cardiac arrest (ROOT Definition) + modifier for sequelae & outcome after cardiac arrest, Leading to abandonment of procedure
427.5	Q1.00.55	Cardiac	Cardiac arrest-modifier for sequelae & outcome after cardiac arrest, Leading to commencement of extracorporeal life support	Cardiac arrest (ROOT Definition) + modifier for sequelae & outcome after cardiac arrest, Leading to commencement of extracorporeal life support
427.5	Q1.00.52	Cardiac	Cardiac arrest-modifier for sequelae & outcome after cardiac arrest, Successful resuscitation	Cardiac arrest (ROOT Definition) + modifier for sequelae & outcome after cardiac arrest, Successful resuscitation
997.1	15.00.00	Cardiac	Cardiac complication	Any complication involving the cardiac system. An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
428.9	15.00.11	Cardiac	Cardiac dysfunction resulting in low cardiac output	Low cardiac output state characterized by some of the following: tachycardia, oliguria, decreased skin perfusion, need for increased inotropic support (10% above baseline at admission), metabolic acidosis, widened Arterial – Venous oxygen saturation, need to open the chest, or need for mechanical support. If the cardiac dysfunction is of a severity that results in inotrope dependence, mechanical circulatory support, or listing for cardiac transplantation, please also code as "Cardiac failure (severe cardiac dysfunction)".
428.2	15.00.12	Cardiac	Cardiac dysfunction resulting in low cardiac output, Acute	Low cardiac output state characterized by some of the following: tachycardia, oliguria, decreased skin perfusion, need for increased inotropic support (10% above baseline at admission), metabolic acidosis, widened Arterial – Venous oxygen saturation, need to open the chest, or need for mechanical support. If the cardiac dysfunction is of a severity that results in inotrope dependence, mechanical circulatory support, or listing for cardiac transplantation, please also code as "Cardiac failure (severe cardiac dysfunction)". Use this code if the cardiac dysfunction is of sudden new onset.
428	15.00.11 + Q1.31.03	Cardiac	Cardiac dysfunction resulting in low cardiac output, Biventricular	Low cardiac output state characterized by some of the following: tachycardia, oliguria, decreased skin perfusion, need for increased inotropic support (10% above baseline at admission), metabolic acidosis, widened Arterial – Venous oxygen saturation, need to open the chest, or need for mechanical support. If the cardiac dysfunction is of a severity that results in inotrope dependence, mechanical circulatory support, or listing for cardiac transplantation, please also code as "Cardiac failure (severe cardiac dysfunction)". Use this code if the cardiac dysfunction involves both ventricles in a biventricular heart.
428.2	15.00.13	Cardiac	Cardiac dysfunction resulting in low cardiac output, Chronic	Low cardiac output state characterized by some of the following: tachycardia, oliguria, decreased skin perfusion, need for increased inotropic support (10% above baseline at admission), metabolic acidosis, widened Arterial – Venous oxygen saturation, need to open the chest, or need for mechanical support. If the cardiac dysfunction is of a severity that results in inotrope dependence, mechanical circulatory support, or listing for cardiac transplantation, please also code as "Cardiac failure (severe cardiac dysfunction)". Use this code if the cardiac dysfunction is long term ventricular dysfunction.
428.3	15.00.11 + Q1.31.12	Cardiac	Cardiac dysfunction resulting in low cardiac output, Diastolic	High end-diastolic filling pressures, typically measured during catheterization
428.90	15.00.11 + Q1.31.10	Cardiac	Cardiac dysfunction resulting in low cardiac output, Functional or anatomic single ventricle	Low cardiac output state characterized by some of the following: tachycardia, oliguria, decreased skin perfusion, need for increased inotropic support (10% above baseline at admission), metabolic acidosis, widened Arterial – Venous oxygen saturation, need to open the chest, or need for mechanical support. If the cardiac dysfunction is of a severity that results in inotrope dependence, mechanical circulatory

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				support, or listing for cardiac transplantation, please also code as "Cardiac failure (severe cardiac dysfunction)". Use this code if the cardiac dysfunction involves a functional or anatomic single ventricle
428.1	15.00.11 + Q1.31.09	Cardiac	Cardiac dysfunction resulting in low cardiac output, Systemic ventricle	Low cardiac output state characterized by some of the following: tachycardia, oliguria, decreased skin perfusion, need for increased inotropic support (10% above baseline at admission), metabolic acidosis, widened Arterial – Venous oxygen saturation, need to open the chest, or need for mechanical support. If the cardiac dysfunction is of a severity that results in inotrope dependence, mechanical circulatory support, or listing for cardiac transplantation, please also code as "Cardiac failure (severe cardiac dysfunction)". Use this code if the cardiac dysfunction involves only the Systemic Ventricle in a biventricular heart.
428.9	15.00.11 + Q1.31.08	Cardiac	Cardiac dysfunction resulting in low cardiac output, Pulmonary ventricle	Low cardiac output state characterized by some of the following: tachycardia, oliguria, decreased skin perfusion, need for increased inotropic support (10% above baseline at admission), metabolic acidosis, widened Arterial – Venous oxygen saturation, need to open the chest, or need for mechanical support. If the cardiac dysfunction is of a severity that results in inotrope dependence, mechanical circulatory support, or listing for cardiac transplantation, please also code as "Cardiac failure (severe cardiac dysfunction)". Use this code if the cardiac dysfunction involves only the Pulmonary Ventricle in a biventricular heart.
428.2	15.00.11 + Q1.31.11	Cardiac	Cardiac dysfunction resulting in low cardiac output, Systolic	Ventricular dysfunction characterized by echocardiographic signs systolic ventricular dysfunction.
410.90	15.00.11, 07.00.02	Cardiac	Cardiac dysfunction resulting in low cardiac output, Thrombus formation in ventricle	Cardiac dysfunction resulting in low cardiac output, with the presence of new thrombus in either ventricle.
428.9	15.00.14	Cardiac	Cardiac failure (severe cardiac dysfunction)	Low cardiac output state characterized by some of the following: tachycardia, oliguria, decreased skin perfusion, need for increased inotropic support (10% above baseline at admission), metabolic acidosis, widened Arterial – Venous oxygen saturation, need to open the chest, or need for mechanical support. This complication should be selected if the cardiac dysfunction is of a severity that results in inotrope dependence, mechanical circulatory support, or listing for cardiac transplantation.
997.1	15.00.14 + Q1.91.61	Cardiac	Cardiac failure (severe cardiac dysfunction), Intraoperative/Intraprocedural	Low cardiac output state characterized by some of the following: tachycardia, oliguria, decreased skin perfusion, need for increased inotropic support (10% above baseline at admission), metabolic acidosis, widened Arterial – Venous oxygen saturation, need to open the chest, or need for mechanical support. This complication should be selected if the cardiac dysfunction is of a severity that results in inotrope dependence, mechanical circulatory support, or listing for cardiac transplantation. This complication should be selected if the low cardiac output state developed during the time interval of "Operating Room Time" (between OR Entry Date and Time and OR Exit Date and Time).

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
429.4	15.00.14 + Q1.90.64	Cardiac	Cardiac failure (severe cardiac dysfunction), Postoperative/Postprocedural	Low cardiac output state characterized by some of the following: tachycardia, oliguria, decreased skin perfusion, need for increased inotropic support (10% above baseline at admission), metabolic acidosis, widened Arterial – Venous oxygen saturation, need to open the chest, or need for mechanical support. This complication should be selected if the cardiac dysfunction is of a severity that results in inotrope dependence, mechanical circulatory support, or listing for cardiac transplantation. This complication should be selected if the low cardiac output state developed after OR Exit Date and Time.
428.9	15.00.14 + Q1.90.63	Cardiac	Cardiac failure (severe cardiac dysfunction), Preoperative/Preprocedural	Low cardiac output state characterized by some of the following: tachycardia, oliguria, decreased skin perfusion, need for increased inotropic support (10% above baseline at admission), metabolic acidosis, widened Arterial – Venous oxygen saturation, need to open the chest, or need for mechanical support. This complication should be selected if the cardiac dysfunction is of a severity that results in inotrope dependence, mechanical circulatory support, or listing for cardiac transplantation. This complication should be selected if the low cardiac output state developed before OR Entry Date and Time.
997.1	15.90.12	Cardiac	Cardiac repair-Complication	Complication directly related to cardiac repair (i.e. CHB, patch dehiscence, or aortic valve damage after VSD closure, SVC stenosis after SVC cannulation, etc.)
E876.5	15.90.13	Cardiac	Cardiac repair-Failure	Failure of initial cardiac repair (need to take-down initial repair)
996.1	15.90.62	Cardiac	Cavopulmonary connection complication involving superior cavopulmonary connection	Any complication directly related to superior cavopulmonary connection, such as symptomatic cyanosis, chylothorax, SVC syndrome
996.1	15.90.64	Cardiac	Cavopulmonary connection complication involving superior cavopulmonary connection, Elevated superior vena cava (SVC) pressure	Superior vena cava (SVC) pressure >18 mmHg 24 hrs after surgery
459.2	15.90.63	Cardiac	Cavopulmonary connection complication involving superior cavopulmonary connection, Stenosis	>3 mmHg mean gradient across superior cavopulmonary connection, or symptomatic stenosis
459.2	15.90.63 + Q1.91.37	Cardiac	Cavopulmonary connection complication involving superior cavopulmonary connection, Stenosis, Requiring reintervention	>3 mmHg mean gradient across superior cavopulmonary connection, or symptomatic stenosis, requiring surgery or intervention
459.2	15.90.63 + Q1.91.38	Cardiac	Cavopulmonary connection complication involving superior cavopulmonary connection, Stenosis, Requiring reintervention, During same admission	>3 mmHg mean gradient across superior cavopulmonary connection, or symptomatic stenosis, requiring surgery or intervention, during same admission
E876.9	15.41.00	Cardiac	Coronary arterial complication	"Coronary arterial complication" ROOT Definition = Any complication involving the coronary artery(ies). If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
E876.9	15.41.75	Cardiac	Coronary arterial complication, Complications following repair of anomalous aortic origin of coronary	"Coronary arterial complication, Complications following repair of anomalous aortic origin of coronary" ROOT Definition = Coronary complication occurring after repair of anomalous aortic origin of coronary (including complications after repair of coronary artery origin from the wrong sinus).

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
441.01	15.41.76	Cardiac	Coronary arterial complication, Complications following repair of anomalous aortic origin of coronary, Aortic wall dissection	Coronary arterial complication, Complications following repair of anomalous aortic origin of coronary (ROOT Definition) + Aortic wall dissection after repair of anomalous aortic origin of coronary (including aortic wall dissection after repair of coronary artery origin from the wrong sinus).
E876.9	15.41.77	Cardiac	Coronary arterial complication, Complications following repair of anomalous pulmonary origin of coronary	"Coronary arterial complication, Complications following repair of anomalous pulmonary origin of coronary" ROOT Definition = Coronary complication occurring after repair of anomalous pulmonary origin of coronary. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
E876.9	15.41.78	Cardiac	Coronary arterial complication, Complications following repair of anomalous pulmonary origin of coronary, Complications following repair via direct anastomosis of coronary to aorta	Coronary arterial complication, Complications following repair of anomalous pulmonary origin of coronary (ROOT Definition) + Coronary complication occurring after repair of anomalous coronary artery origin from the pulmonary artery via direct anastomosis of coronary to aorta.
E876.9	15.41.79	Cardiac	Coronary arterial complication, Complications following repair of anomalous pulmonary origin of coronary, Complications following repair via Takeuchi operation (Intrapulmonary tunnel)	Coronary arterial complication, Complications following repair of anomalous pulmonary origin of coronary (ROOT Definition) + Coronary complication occurring after repair of anomalous coronary artery origin from the pulmonary artery via the Takeuchi operation (Intrapulmonary tunnel).
E876.9	15.41.73	Cardiac	Coronary arterial complication, Complications following repair of anomalous pulmonary origin of coronary, Complications following repair via Takeuchi operation (Intrapulmonary tunnel), Postprocedural pulmonary trunk baffle leak after intrapulmonary trunk tunnel (Takeuchi) for anomalous coronary artery	Coronary arterial complication, Complications following repair of anomalous pulmonary origin of coronary (ROOT Definition) + Coronary complication occurring after repair of anomalous coronary artery origin from the pulmonary artery via the Takeuchi operation (Intrapulmonary tunnel), Intrapulmonary tunnel leak after repair of anomalous coronary origin from the pulmonary artery via the Takeuchi operation (Intrapulmonary tunnel).
E876.9	15.41.74	Cardiac	Coronary arterial complication, Complications following repair of anomalous pulmonary origin of coronary, Complications following repair via Takeuchi operation (Intrapulmonary tunnel), Postprocedural pulmonary trunk baffle obstruction after intrapulmonary trunk tunnel (Takeuchi) for anomalous coronary artery	Coronary arterial complication, Complications following repair of anomalous pulmonary origin of coronary (ROOT Definition) + Coronary complication occurring after repair of anomalous coronary artery origin from the pulmonary artery via the Takeuchi operation (Intrapulmonary tunnel), Intrapulmonary tunnel obstruction after repair of anomalous coronary artery origin from the pulmonary artery via the Takeuchi operation (Intrapulmonary tunnel).
E876.9	15.41.80	Cardiac	Coronary arterial complication, Complications following repair of anomalous pulmonary origin of coronary, Complications following repair via Takeuchi operation (Intrapulmonary tunnel), Postprocedural pulmonary trunk baffle stenosis after intrapulmonary trunk tunnel (Takeuchi) for anomalous coronary artery	Coronary arterial complication, Complications following repair of anomalous pulmonary origin of coronary (ROOT Definition) + Coronary complication occurring after repair of anomalous coronary artery origin from the pulmonary artery via the Takeuchi operation (Intrapulmonary tunnel), Intrapulmonary tunnel stenosis after repair of anomalous coronary artery origin from the pulmonary artery via the Takeuchi operation (Intrapulmonary tunnel).

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E876.9	15.41.72	Cardiac	Coronary arterial complication, Complications following repair of anomalous pulmonary origin of coronary, Complications following repair via Takeuchi operation (Intrapulmonary tunnel), Postprocedural pulmonary trunk stenosis after intrapulmonary trunk tunnel (Takeuchi) for anomalous coronary artery	Coronary arterial complication, Complications following repair of anomalous pulmonary origin of coronary (ROOT Definition) + Coronary complication occurring after repair of anomalous coronary artery origin from the pulmonary artery via the Takeuchi operation (Intrapulmonary tunnel), Pulmonary trunk stenosis repair of anomalous coronary artery origin from the pulmonary artery via the Takeuchi operation (Intrapulmonary tunnel).
E876.9	15.41.71	Cardiac	Coronary arterial complication, Complications following repair of anomalous pulmonary origin of coronary, Complications following repair via Takeuchi operation (Intrapulmonary tunnel), Pulmonary trunk related complication following anomalous coronary arterial repair (Takeuchi)	Coronary arterial complication, Complications following repair of anomalous pulmonary origin of coronary (ROOT Definition) + Coronary complication occurring after repair of anomalous coronary artery origin from the pulmonary artery via the Takeuchi operation (Intrapulmonary tunnel), Any pulmonary trunk complication after repair of anomalous coronary artery origin from the pulmonary artery via the Takeuchi operation (Intrapulmonary tunnel).
414.11	15.41.50	Cardiac	Coronary arterial complication, Coronary arterial aneurysm	"Coronary arterial complication, Coronary arterial aneurysm" ROOT Definition = Aneurysm of coronary artery. An aneurysm is an abnormal dilation of a tube or cardiac chamber. In this case, it is an abnormal dilation of a coronary artery.
414.11	15.41.53	Cardiac	Coronary arterial complication, Coronary arterial aneurysm, After angioplasty	Coronary arterial complication, Coronary arterial aneurysm (ROOT Definition) + Aneurysm of coronary artery after angioplasty.
414.11	15.41.52	Cardiac	Coronary arterial complication, Coronary arterial aneurysm, After cardiac catheterization	Coronary arterial complication, Coronary arterial aneurysm (ROOT Definition) + Aneurysm of coronary artery after cardiac catheterization.
414.11	15.41.54	Cardiac	Coronary arterial complication, Coronary arterial aneurysm, After endomyocardial biopsy	Coronary arterial complication, Coronary arterial aneurysm (ROOT Definition) + Aneurysm of coronary artery after endomyocardial biopsy.
414.11	15.41.51	Cardiac	Coronary arterial complication, Coronary arterial aneurysm, After surgery	Coronary arterial complication, Coronary arterial aneurysm (ROOT Definition) + Aneurysm of coronary artery after surgery.
901.9	15.41.56	Cardiac	Coronary arterial complication, Coronary arterial avulsion	Coronary artery avulsion. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
447.1	15.41.57	Cardiac	Coronary arterial complication, Coronary arterial compression	Coronary artery compression from any cause. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
447.1	15.50.61	Cardiac	Coronary arterial complication, Coronary arterial compression following transluminal prosthesis implantation	Coronary arterial compression following transluminal prosthesis implantation. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
414.12	15.41.06	Cardiac	Coronary arterial complication, Coronary arterial dissection	A coronary artery dissection is a tear in its intimal layer, followed by formation and propagation of a subintimal hematoma. The dissecting hematoma commonly occupies about half and occasionally the entire circumference of the affected artery. This produces a false lumen which can reduce blood flow to branches arising from the affected artery. Aneurysmal dilation can also occur. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
410.9	15.41.02	Cardiac	Coronary arterial complication, Coronary arterial embolus	A coronary embolism is a particle (clot, cholesterol crystals, atheroma, other) that breaks away from its site of origin/formation and lodges in a

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				coronary artery. A coronary embolism often leads to coronary ischemia. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
904.9	15.41.11	Cardiac	Coronary arterial complication, Coronary arterial hematoma	Hematoma of coronary artery. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
459	15.41.10	Cardiac	Coronary arterial complication, Coronary arterial laceration	Laceration of coronary artery. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
904.9	15.41.10 + Q1.91.71	Cardiac	Coronary arterial complication, Coronary arterial laceration, Intraoperative	intraoperative laceration of coronary artery. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
410.9	15.41.03	Cardiac	Coronary arterial complication, Coronary arterial occlusion	Occlusion of coronary artery, any cause. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
904.9	15.41.09	Cardiac	Coronary arterial complication, Coronary arterial perforation	Perforation of coronary artery. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
904.9	15.41.07	Cardiac	Coronary arterial complication, Coronary arterial rupture	Rupture of coronary artery. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
410.9	15.41.04	Cardiac	Coronary arterial complication, Coronary arterial side branch occlusion	Coronary arterial side branch occlusion. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
443.9	15.41.05	Cardiac	Coronary arterial complication, Coronary arterial spasm	Coronary arterial spasm. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
411.81	15.41.01	Cardiac	Coronary arterial complication, Coronary arterial stenosis	Stenosis of coronary artery, any cause. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
411.81	15.41.55	Cardiac	Coronary arterial complication, Coronary arterial stenosis, Ostial stenosis	Ostial stenosis of coronary artery. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
410.9	15.41.08	Cardiac	Coronary arterial complication, Coronary arterial thrombosis	Thrombosis of coronary artery. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
414.19	15.41.12	Cardiac	Coronary arterial complication, Coronary arteriovenous fistula	Fistulous communication between coronary artery and vein. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
414.19	15.41.17	Cardiac	Coronary arterial complication, Coronary arteriovenous fistula, After angioplasty	Fistulous communication between coronary artery and vein, after angioplasty. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
414.19	15.41.16	Cardiac	Coronary arterial complication, Coronary arteriovenous fistula, After cardiac catheterization	Fistulous communication between coronary artery and vein, after cardiac catheterization
414.19	15.41.18	Cardiac	Coronary arterial complication, Coronary arteriovenous fistula, After endomyocardial biopsy	Fistulous communication between coronary artery and vein, after endomyocardial biopsy. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
414.19	15.41.15	Cardiac	Coronary arterial complication, Coronary arteriovenous fistula, After surgery	Fistulous communication between coronary artery and vein, after surgery. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
414.06	15.95.27	Cardiac	Coronary arterial complication, Coronary atherosclerosis in the transplanted heart of a patient who has undergone cardiac transplantation	Coronary atherosclerosis occurring after heart transplantation in the transplanted heart.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E876.9	15.41.58	Cardiac	Coronary arterial complication, Inadequate procedure to relieve coronary arterial muscle bridging	Inadequate relief of coronary stenosis due to myocardial bridge. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
411.81	15.41.14	Cardiac	Coronary arterial complication, Inadvertent compromise of right ventricle dependent coronary circulation	Inadvertent compromise of right ventricle dependent coronary circulation. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
E876.9	15.41.00 + Q1.91.37	Cardiac	Coronary arterial complication, Requiring reintervention	Coronary problem resulting in the need for reoperation or intervention. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
E876.9	15.41.00 + Q1.91.38	Cardiac	Coronary arterial complication, Requiring reintervention, During same admission	Coronary problem resulting in the need for reoperation or intervention, during same admission. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
996.03	Q5.99.29	Cardiac	Coronary arterial complication-modifier for involved bypass graft	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft, Select the children terms of this code to designate the involved bypass graft. This choice may also be selected and accompanied by free text in a "Comments" field if none of the children terms are appropriate.
996.03	Q5.99.49	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is a nonautologous biological coronary bypass graft	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = a nonautologous biological coronary bypass graft
996.03	Q5.99.50	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is a nonbiological coronary bypass graft	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = a nonbiological coronary bypass graft
996.03	Q5.99.37	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is a venous graft	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = a venous graft
996.03	Q5.99.44	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is a venous graft, Cephalic vein	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = a venous graft, Cephalic vein
996.03	Q5.99.46	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is a venous graft, Cephalic vein, Left cephalic vein	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = a venous graft, Cephalic vein, Left cephalic vein
996.03	Q5.99.45	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is a venous graft, Cephalic vein, Right cephalic vein	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = a venous graft, Cephalic vein, Right cephalic vein
996.03	Q5.99.11	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is a venous graft, Greater saphenous vein	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = a venous graft, Greater saphenous vein
996.03	Q5.99.41	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is a venous graft, Greater saphenous vein, Left greater saphenous vein	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = a venous graft, Greater saphenous vein, Left greater saphenous vein
996.03	Q5.99.40	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is a venous graft, Greater saphenous vein, Right greater saphenous vein	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = a venous graft, Greater saphenous vein, Right greater saphenous vein

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.03	Q5.99.12	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is a venous graft, Lesser saphenous vein	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = a venous graft, Lesser saphenous vein
996.03	Q5.99.43	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is a venous graft, Lesser saphenous vein, Left Lesser saphenous vein	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = a venous graft, Lesser saphenous vein, Left Lesser saphenous vein
996.03	Q5.99.42	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is a venous graft, Lesser saphenous vein, Right Lesser saphenous vein	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = a venous graft, Lesser saphenous vein, Right Lesser saphenous vein
996.03	Q5.99.51	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is an arterial graft	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = an arterial graft
996.03	Q5.99.04	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is an arterial graft, Gastroepiploic artery	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = an arterial graft, Gastroepiploic artery
996.03	Q5.99.39	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is an arterial graft, Internal mammary artery	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = an arterial graft, Internal mammary artery
996.03	Q5.99.03	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is an arterial graft, Internal mammary artery, Left internal mammary artery (LIMA)	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = an arterial graft, Internal mammary artery, Left internal mammary artery (LIMA)
996.03	Q5.99.02	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is an arterial graft, Internal mammary artery, Right internal mammary artery (RIMA)	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = an arterial graft, Internal mammary artery, Right internal mammary artery (RIMA)
996.03	Q5.99.22	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is an arterial graft, Radial artery	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = an arterial graft, Radial artery
996.03	Q5.99.07	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is an arterial graft, Radial artery, Left radial artery	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = an arterial graft, Radial artery, Left radial artery
996.03	Q5.99.06	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is an arterial graft, Radial artery, Right radial artery	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = an arterial graft, Radial artery, Right radial artery
996.03	Q5.99.24	Cardiac	Coronary arterial complication-modifier for involved bypass graft that is an unspecified type of bypass graft	Coronary arterial complication (ROOT Definition) + modifier for involved bypass graft = an unspecified type of bypass graft
411.8	Q1.46.80	Cardiac	Coronary arterial complication-modifier for involved native coronary artery	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery, Select the children terms of this code to designate the involved native coronary artery. This choice may also be selected and accompanied by free text in a "Comments" field if none of the children terms are appropriate.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
411.8	Q1.45.58	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Acute marginal	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Acute marginal
411.8	Q1.45.53	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Circumflex (Cx)	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Circumflex (Cx)
411.8	Q5.23.64	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Diagonal 1	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Diagonal 1
411.8	Q5.23.65	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Diagonal 2	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Diagonal 2
411.8	Q1.45.52	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Left anterior descending (LAD)	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Left anterior descending (LAD)
411.8	Q5.23.62	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Left main	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Left main
411.8	Q5.23.76	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Left ventricular branch (LVB)	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Left ventricular branch (LVB)
411.8	Q5.23.69	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Obtuse marginal 1 (OM1)	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Obtuse marginal 1 (OM1)
411.8	Q5.23.70	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Obtuse marginal 2 (OM2)	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Obtuse marginal 2 (OM2)
411.8	Q5.23.71	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Obtuse marginal 3 (OM3)	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Obtuse marginal 3 (OM3)
411.8	Q5.24.54	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Ostial	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Ostial
411.8	Q5.24.56	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Ostial, Left	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Ostial, Left
411.8	Q5.24.55	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Ostial, Right	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Ostial, Right
411.8	Q1.45.61	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Posterior Descending Artery (PDA)	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Posterior Descending Artery (PDA)
411.8	Q5.23.72	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Posterior Descending Artery (PDA), Left Posterior Descending Artery (LPDA)	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Posterior Descending Artery (PDA), Left Posterior Descending Artery (LPDA)
411.8	Q5.23.75	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Posterior Descending Artery (PDA), Right Posterior Descending Artery (RPDA)	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Posterior Descending Artery (PDA), Right Posterior Descending Artery (RPDA)

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
411.8	Q5.23.67	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Ramus intermedius	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Ramus intermedius
411.8	Q1.45.54	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Right main	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Right main
411.8	Q1.46.81	Cardiac	Coronary arterial complication-modifier for involved native coronary artery, Unspecified coronary artery	Coronary arterial complication (ROOT Definition) + modifier for involved native coronary artery = Unspecified coronary artery
411.8	Q5.99.52	Cardiac	Coronary arterial complication-modifier for involved vessel that is unspecified type of vessel – native or graft	Coronary arterial complication (ROOT Definition) + modifier for involved vessel that is unspecified type of vessel – native or graft, Select this code when it is not known or specified whether the involved vessel is a native coronary artery or a bypass graft.
411.81	15.41.59	Cardiac	Coronary arterial ischemia	Coronary ischemia diagnosed by EKG changes, cardiac catheterization, echocardiography, arrhythmias, cardiac dysfunction, or symptoms.
411.81	15.41.59 + Q1.91.37	Cardiac	Coronary arterial ischemia, Requiring reintervention	Coronary ischemia diagnosed by EKG changes, cardiac catheterization, echocardiography, arrhythmias, cardiac dysfunction, or symptoms, Resulting in the need for reoperation or intervention.
411.81	15.41.59 + Q1.91.38	Cardiac	Coronary arterial ischemia, Requiring reintervention, During same admission	Coronary ischemia diagnosed by EKG changes, cardiac catheterization, echocardiography, arrhythmias, cardiac dysfunction, or symptoms, Resulting in the need for reoperation or intervention, During same admission.
996.72	15.41.39	Cardiac	Coronary artery bypass graft (CABG) complication	"Coronary artery bypass graft (CABG) complication" ROOT Definition = Complication occurring during or after coronary artery bypass grafting. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
996.72	15.41.34	Cardiac	Coronary artery bypass graft (CABG) complication, Aneurysm of coronary artery bypass graft (CABG)	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Aneurysm of coronary artery bypass graft (CABG)
996.72	15.41.36	Cardiac	Coronary artery bypass graft (CABG) complication, Atherosclerosis of coronary artery bypass graft (CABG)	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Atherosclerosis of coronary artery bypass graft (CABG)
996.72	15.41.41	Cardiac	Coronary artery bypass graft (CABG) complication, Avulsion of coronary artery bypass graft (CABG)	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Avulsion of coronary artery bypass graft (CABG). If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
996.72	15.41.42	Cardiac	Coronary artery bypass graft (CABG) complication, Avulsion of coronary artery bypass graft (CABG), Avulsion of coronary artery bypass graft (CABG) from aorta	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Avulsion of coronary artery bypass graft (CABG), Avulsion of coronary artery bypass graft (CABG) from aorta ("proximal" anastomosis). If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
996.72	15.41.43	Cardiac	Coronary artery bypass graft (CABG) complication, Avulsion of coronary artery bypass graft (CABG), Avulsion of coronary	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Avulsion of coronary artery bypass graft (CABG), Avulsion of coronary artery bypass graft (CABG) from

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
			artery bypass graft (CABG) from coronary artery	coronary artery ("distal" anastomosis). If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
996.72	15.41.35	Cardiac	Coronary artery bypass graft (CABG) complication, Calcification of coronary artery bypass graft (CABG)	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Calcification of coronary artery bypass graft (CABG)
996.72	15.41.26	Cardiac	Coronary artery bypass graft (CABG) complication, Coronary artery bypass graft (CABG) embolus	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Coronary artery bypass graft (CABG) embolus. An embolism is a particle (clot, cholesterol crystals, atheroma, other) that breaks away from its site of origin/formation and lodges in a distant location. A Coronary artery bypass graft (CABG) embolus often leads to coronary ischemia. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
996.72	15.41.33	Cardiac	Coronary artery bypass graft (CABG) complication, Coronary artery bypass graft (CABG) hematoma	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Coronary artery bypass graft (CABG) hematoma. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
996.72	15.41.27	Cardiac	Coronary artery bypass graft (CABG) complication, Coronary artery bypass graft (CABG) occlusion	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Coronary artery bypass graft (CABG) occlusion. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
996.03	15.41.30	Cardiac	Coronary artery bypass graft (CABG) complication, Coronary artery bypass graft (CABG) perforation	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Coronary artery bypass graft (CABG) perforation. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
996.72	15.41.31	Cardiac	Coronary artery bypass graft (CABG) complication, Coronary artery bypass graft (CABG) rupture	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Coronary artery bypass graft (CABG) rupture. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
996.72	15.41.28	Cardiac	Coronary artery bypass graft (CABG) complication, Coronary artery bypass graft (CABG) spasm	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Coronary artery bypass graft (CABG) spasm. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
996.72	15.41.25	Cardiac	Coronary artery bypass graft (CABG) complication, Coronary artery bypass graft (CABG) stenosis	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Coronary artery bypass graft (CABG) stenosis (any cause). If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
996.72	15.41.29	Cardiac	Coronary artery bypass graft (CABG) complication, Coronary artery bypass graft (CABG) thrombosis	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Coronary artery bypass graft (CABG) thrombosis. If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
996.03	15.41.22	Cardiac	Coronary artery bypass graft (CABG) complication, Coronary artery bypass graft (CABG) too long	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Coronary artery bypass graft (CABG) too long. A coronary artery bypass graft (CABG) that is too long will risk kinking or stenosis (with or without symptoms). If this complication results in coronary ischemia, also code "Coronary arterial ischemia".

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.03	15.41.23	Cardiac	Coronary artery bypass graft (CABG) complication, Coronary artery bypass graft (CABG) too short	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Coronary artery bypass graft (CABG) too short. A coronary artery bypass graft (CABG) that is too short will risk avulsion or stenosis (with or without symptoms). If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
996.72	15.41.32 + Q1.91.71	Cardiac	Coronary artery bypass graft (CABG) complication, Intraoperative coronary artery bypass graft (CABG) laceration	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Intraoperative laceration of a coronary artery bypass graft (CABG).
996.72	15.41.21	Cardiac	Coronary artery bypass graft (CABG) complication, Malposition of coronary artery bypass graft (CABG)	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Malposition of coronary artery bypass graft (CABG). The coronary artery bypass graft (CABG) is in an unfavorable position, risking kinking, stenosis or avulsion (with or without symptoms). If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
996.03	15.41.24	Cardiac	Coronary artery bypass graft (CABG) complication, Twisting of coronary artery bypass graft (CABG)	Coronary artery bypass graft (CABG) complication (ROOT Definition) + Twisting of coronary artery bypass graft (CABG). A twisted coronary artery bypass graft (CABG) risks kinking, stenosis or avulsion (with or without symptoms). If this complication results in coronary ischemia, also code "Coronary arterial ischemia".
996.72	Title	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft, Select the children terms of this code to designate the involved bypass graft. This choice may also be selected and accompanied by free text in a "Comments" field if none of the children terms are appropriate.
996.72	Q5.99.49	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is a nonautologous biological coronary bypass graft	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = a nonautologous biological coronary bypass graft
996.72	Q5.99.50	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is a nonbiological coronary bypass graft	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = a nonbiological coronary bypass graft
996.72	Q5.99.37	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is a venous graft	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = a venous graft
996.72	Q5.99.44	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is a venous graft, Cephalic vein	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = a venous graft, Cephalic vein
996.72	Q5.99.46	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is a venous graft, Cephalic vein, Left cephalic vein	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = a venous graft, Cephalic vein, Left cephalic vein

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.72	Q5.99.45	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is a venous graft, Cephalic vein, Right cephalic vein	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = a venous graft, Cephalic vein, Right cephalic vein
996.72	Q5.99.11	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is a venous graft, Greater saphenous vein	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = a venous graft, Greater saphenous vein
996.72	Q5.99.41	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is a venous graft, Greater saphenous vein, Left greater saphenous vein	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = a venous graft, Greater saphenous vein, Left greater saphenous vein
996.72	Q5.99.40	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is a venous graft, Greater saphenous vein, Right greater saphenous vein	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = a venous graft, Greater saphenous vein, Right greater saphenous vein
996.72	Q5.99.12	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is a venous graft, Lesser saphenous vein	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = a venous graft, Lesser saphenous vein
996.72	Q5.99.43	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is a venous graft, Lesser saphenous vein, Left Lesser saphenous vein	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = a venous graft, Lesser saphenous vein, Left Lesser saphenous vein
996.72	Q5.99.42	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is a venous graft, Lesser saphenous vein, Right Lesser saphenous vein	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = a venous graft, Lesser saphenous vein, Right Lesser saphenous vein
996.72	Q5.99.51	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is an arterial graft	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = an arterial graft
996.72	Q5.99.04	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is an arterial graft, Gastroepiploic artery	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = an arterial graft, Gastroepiploic artery
996.72	Q5.99.39	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is an arterial graft, Internal mammary artery	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = an arterial graft, Internal mammary artery
996.72	Q5.99.03	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is an arterial graft, Internal mammary artery, Left internal mammary artery (LIMA)	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = an arterial graft, Internal mammary artery, Left internal mammary artery (LIMA)
996.72	Q5.99.02	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is an arterial graft, Internal mammary artery, Right internal mammary artery (RIMA)	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = an arterial graft, Internal mammary artery, Right internal mammary artery (RIMA)

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.72	Q5.99.22	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is an arterial graft, Radial artery	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = an arterial graft, Radial artery
996.72	Q5.99.07	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is an arterial graft, Radial artery, Left radial artery	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = an arterial graft, Radial artery, Left radial artery
996.72	Q5.99.06	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is an arterial graft, Radial artery, Right radial artery	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = an arterial graft, Radial artery, Right radial artery
996.72	Q5.99.24	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for involved bypass graft that is an unspecified type of bypass graft	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for involved bypass graft = an unspecified type of bypass graft
996.72	Title	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for number of coronary artery bypass graft(s) (CABG) affected	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for number of coronary artery bypass graft(s) (CABG) affected, Select the children terms of this code to designate the number of coronary artery bypass graft(s) (CABG) affected. This choice may also be selected and accompanied by free text in a "Comments" field if none of the children terms are appropriate.
996.72	Q1.39.01	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for number of coronary artery bypass graft(s) (CABG) affected, 1 graft	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for number of coronary artery bypass graft(s) (CABG) affected = 1 graft
996.72	Q1.39.02	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for number of coronary artery bypass graft(s) (CABG) affected, 2 grafts	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for number of coronary artery bypass graft(s) (CABG) affected = 2 grafts
996.72	Q1.39.03	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for number of coronary artery bypass graft(s) (CABG) affected, 3 grafts	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for number of coronary artery bypass graft(s) (CABG) affected = 3 grafts
996.72	Q1.39.04	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for number of coronary artery bypass graft(s) (CABG) affected, 4 grafts	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for number of coronary artery bypass graft(s) (CABG) affected = 4 grafts
996.72	Q1.39.05	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for number of coronary artery bypass graft(s) (CABG) affected, 5 grafts	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for number of coronary artery bypass graft(s) (CABG) affected = 5 grafts
996.72	Q1.39.06	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for number of coronary artery bypass graft(s) (CABG) affected, 6 grafts	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for number of coronary artery bypass graft(s) (CABG) affected = 6 grafts

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.72	Q1.39.07	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for number of coronary artery bypass graft(s) (CABG) affected, 7 grafts	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for number of coronary artery bypass graft(s) (CABG) affected = 7 grafts
996.72	Q1.39.08	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for number of coronary artery bypass graft(s) (CABG) affected, 8 grafts	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for number of coronary artery bypass graft(s) (CABG) affected = 8 grafts
996.72	Q1.39.09	Cardiac	Coronary artery bypass graft (CABG) complication-modifier for number of coronary artery bypass graft(s) (CABG) affected, 9 grafts	Coronary artery bypass graft (CABG) complication (ROOT Definition) + modifier for number of coronary artery bypass graft(s) (CABG) affected = 9 grafts
996	15.50.60	Cardiac	Device complication	Any complication involving an implantable device, Device placed via open surgical technique
996.70	15.50.37	Cardiac	Device complication, Device embolism	Embolism of any device during placement or after initial proper positioning
996	15.52.14	Cardiac	Device complication, Ductal occluder malposition	Ductal occluding device in incorrect position
996.0	15.52.15	Cardiac	Device complication, Ductal occluder malposition resulting in aortic arch gradient	Ductal occluding device in incorrect position, causing aortic arch gradient
996.7	15.02.12	Cardiac	Device complication, Hemolysis after placement	Hemolysis after device placement
996.0	15.52.16	Cardiac	Device complication, Septal occluding device malposition	Septal occluding device in incorrect position, with or without symptoms
996.0	15.52.17	Cardiac	Device complication, Septal occluding device malposition, Resulting in residual ASD	Septal occluding device in incorrect position, with or without symptoms. ASD device occluder resulting in significant residual ASD. (A residual ASD is defined as an unplanned residual ASD (>3 mm) after cardiac repair.)
996.0	15.52.18	Cardiac	Device complication, Septal occluding device malposition, Resulting in residual VSD	Septal occluding device in incorrect position, with or without symptoms. VSD device occluder resulting in significant residual VSD. (A residual VSD is defined as an unplanned residual VSD, either single or in aggregate, that meets at least 1 of the following 3 criteria: >3 mm in diameter, or causing symptoms, or Qp:Qs > or = 1.5:1, after cardiac repair.)
996.0	15.52.19	Cardiac	Device complication, Septal occluding device malposition, Resulting in valvar insufficiency	Septal occluding device in incorrect position, with or without symptoms. Septal occluding device resulting in more than pre-intervention valve insufficiency.
996.0	15.50.74	Cardiac	Device complication, Stent malposition	Stent either in incorrect position or migrated
996.0/996.7	13.05.18	Cardiac	Device complication-modifier, Device placed in catheterization laboratory	Any complication involving an implantable device, Device placed in catheterization laboratory
996.0/996.7	13.05.19	Cardiac	Device complication-modifier, Device placed in operating room	Any complication involving an implantable device, Device placed in operating room
996.0/996.7	12.40.10	Cardiac	Device complication-modifier, Device placed via open technique	Any complication involving an implantable device, Device placed via transcatheter technique

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.0/996.7	12.40.07	Cardiac	Device complication-modifier, Device placed via transcatheter technique	Any complication involving an implantable device. An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/ intraprocedural complications and postoperative/postprocedural complications in this time interval.
421.9	10.06.04	Cardiac	Endocarditis-postprocedural infective endocarditis	Infective endocarditis in the setting of a heart which has been altered by surgery or intervention. Endocarditis that involves a prosthetic valve should be coded under "Valvar, Prosthetic valve endocarditis". Duke Criteria for the Diagnosis of Infective Endocarditis (IE): The definitive diagnosis of infective endocarditis requires one of the following four situations: 1) Histologic and/or microbiologic evidence of infection at surgery or autopsy such as positive valve culture or histology; 2) Two major criteria; 3) One major criterion and three minor criteria; 4) Five minor criteria. The two major criteria are: 1) Blood cultures positive for IE 2) Evidence of endocardial involvement. Blood cultures positive for IE requires: 1) Typical microorganism consistent with IE isolated from 2 separate blood cultures, as noted in number two below (viridans streptococci, Streptococcus bovis, Staphylococcus aureus, or HACEK group [HACEK, Haemophilus species {H. aprophilus and H. paraaphrophilus}, Actinobacillus actinoinycetemcomitans, Cardiobacterium hominis, Eikenella corrodens, and Kingella kingae.]) or (Community-acquired enterococci in the absence of a primary focus); 2) Microorganisms consistent with IE isolated from persistently positive blood cultures defined as: (At least 2 positive cultures of blood samples obtained >12 hours apart) or (All of 3 or a majority of 4 or more separate cultures of blood, the first and the last sample obtained >1 hr apart); 3) Single blood culture positive for Coxiella burnetii or an antiphase I IgG antibody titer of >1 : 800. Evidence of endocardial involvement requires 1) Positive results of echocardiography for IE defined as: (Oscillating intracardiac mass on the valve or supporting structures in the path of regurgitant jets or on implanted material in the absence of an alternative anatomic explanation) or (Abscess) or (New partial dehiscence of a valvar prosthesis) or 2) New valvar regurgitation (worsening or changing or preexisting murmur not sufficient). The six minor criteria are: 1) Predisposing heart disease or injection drug use (IVDA); 2) Temperature of >38C; 3) Vascular phenomenon (major arterial emboli, septic pulmonary infarcts, mycotic aneurysm, intracranial or conjunctival hemorrhage, Janeway's lesions); 4) Immunologic phenomenon (glomerulonephritis, Osler's

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				nodes, Roth's spots, rheumatoid factor); 5) Microbiologic evidence (a positive blood culture that does not meet a major criterion as noted above) or serologic evidence of active infection with an organism consistent with IE; 6) Echocardiographic findings that are consistent with IE but do not meet a major criterion as noted above. References: 1) Dhawan VK Infectious Endocarditis in Elderly Patients. Clin. Infect. Dis. 2002; 34: 806–812. 2) Durack DT, Lukes AS, Bright DK. New criteria for diagnosis of infective endocarditis: utilization of specific echocardiographic findings. Duke Endocarditis Service. Am. J. Med. 1994; 96: 200–209. 3) Li IS, Sexton DJ, Mick N, et al. Proposed modifications to the Duke criteria for the diagnosis of infective endocarditis. Clin. Infect. Dis. 2000;30 : 633–638. 4) http://gold.aecom.yu.edu/id/almanac/dukeendocarditis.htm, accessed July 5, 2006.
421.0	10.06.71	Cardiac	Endocarditis-postprocedural infective endocarditis, Abscess formation	Infective endocarditis with abscess formation in the setting of a heart which has been altered by surgery or intervention. Endocarditis that involves a prosthetic valve should be coded under "Valvar, Prosthetic valve endocarditis". Duke Criteria for the Diagnosis of Infective Endocarditis (IE): The definitive diagnosis of infective endocarditis requires one of the following four situations: 1) Histologic and/or microbiologic evidence of infection at surgery or autopsy such as positive valve culture or histology; 2) Two major criteria; 3) One major criterion and three minor criteria; 4) Five minor criteria. The two major criteria are: 1) Blood cultures positive for IE 2) Evidence of endocardial involvement. Blood cultures positive for IE requires: 1) Typical microorganism consistent with IE isolated from 2 separate blood cultures, as noted in number two below (viridans streptococci, Streptococcus bovis, Staphylococcus aureus, or HACEK group [HACEK, Haemophilus species {H. aprophilus and H. paraaphrophilus}, Actinobacillus actinoinycetemcomitans, Cardiobacterium hominis, Eikenella corrodens, and Kingella kingae.]) or (Community-acquired enterococci in the absence of a primary focus); 2) Microorganisms consistent with IE isolated from persistently positive blood cultures defined as: (At least 2 positive cultures of blood samples obtained $>$12 hours apart) or (All of 3 or a majority of 4 or more separate cultures of blood, the first and the last sample obtained $>$1 hr apart); 3) Single blood culture positive for Coxiella burnetii or an antiphase I IgG antibody titer of $>$1 : 800. Evidence of endocardial involvement requires 1) Positive results of echocardiography for IE defined as: (Oscillating intracardiac mass on the valve or supporting structures in the path of regurgitant jets or on implanted material in the absence of an alternative anatomic explanation) or (Abscess) or (New partial dehiscence of a valvar prosthesis) or 2) New valvar

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				regurgitation (worsening or changing or preexisting murmur not sufficient). The six minor criteria are: 1) Predisposing heart disease or injection drug use (IVDA); 2) Temperature of >38C; 3) Vascular phenomenon (major arterial emboli, septic pulmonary infarcts, mycotic aneurysm, intracranial or conjunctival hemorrhage, Janeway's lesions); 4) Immunologic phenomenon (glomerulonephritis, Osler's nodes, Roth's spots, rheumatoid factor); 5) Microbiologic evidence (a positive blood culture that does not meet a major criterion as noted above) or serologic evidence of active infection with an organism consistent with IE; 6) Echocardiographic findings that are consistent with IE but do not meet a major criterion as noted above. References: 1) Dhawan VK Infectious Endocarditis in Elderly Patients. Clin. Infect. Dis. 2002; 34: 806–812. 2) Durack DT, Lukes AS, Bright DK. New criteria for diagnosis of infective endocarditis: utilization of specific echocardiographic findings. Duke Endocarditis Service. Am. J. Med. 1994; 96: 200–209. 3) Li IS, Sexton DJ, Mick N, et al. Proposed modifications to the Duke criteria for the diagnosis of infective endocarditis. Clin. Infect. Dis. 2000; 30: 633–638. 4) http://gold.aecom.yu.edu/id/almanac/dukeendocarditis.htm, accessed July 5, 2006.
421.0	10.06.72	Cardiac	Endocarditis-postprocedural infective endocarditis, Abscess formation, Perivalvar	Infective endocarditis with abscess formation at, below, or above a cardiac valve in the setting of a heart which has been altered by surgery or intervention. Endocarditis that involves a prosthetic valve should be coded under "Valvar, Prosthetic valve endocarditis". Duke Criteria for the Diagnosis of Infective Endocarditis (IE): The definitive diagnosis of infective endocarditis requires one of the following four situations: 1) Histologic and/or microbiologic evidence of infection at surgery or autopsy such as positive valve culture or histology; 2) Two major criteria; 3) One major criterion and three minor criteria; 4) Five minor criteria. The two major criteria are: 1) Blood cultures positive for IE 2) Evidence of endocardial involvement. Blood cultures positive for IE requires: 1) Typical microorganism consistent with IE isolated from 2 separate blood cultures, as noted in number two below (viridans streptococci, Streptococcus bovis, Staphylococcus aureus, or HACEK group [HACEK, Haemophilus species {H. aprophilus and H. paraaphrophilus}, Actinobacillus actinoinycetemcomitans, Cardiobacterium hominis, Eikenella corrodens, and Kingella kingae.]) or (Community-acquired enterococci in the absence of a primary focus); 2) Microorganisms consistent with IE isolated from persistently positive blood cultures defined as: (At least 2 positive cultures of blood samples obtained >12 hours apart) or (All of 3 or a majority of 4 or more separate cultures of blood, the first and the last

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				sample obtained >1 hr apart); 3) Single blood culture positive for Coxiella burnetii or an antiphase I IgG antibody titer of >1 : 800. Evidence of endocardial involvement requires 1) Positive results of echocardiography for IE defined as: (Oscillating intracardiac mass on the valve or supporting structures in the path of regurgitant jets or on implanted material in the absence of an alternative anatomic explanation) or (Abscess) or (New partial dehiscence of a valvar prosthesis) or 2) New valvar regurgitation (worsening or changing or preexisting murmur not sufficient). The six minor criteria are: 1) Predisposing heart disease or injection drug use (IVDA); 2) Temperature of >38C; 3) Vascular phenomenon (major arterial emboli, septic pulmonary infarcts, mycotic aneurysm, intracranial or conjunctival hemorrhage, Janeway's lesions); 4) Immunologic phenomenon (glomerulonephritis, Osler's nodes, Roth's spots, rheumatoid factor); 5) Microbiologic evidence (a positive blood culture that does not meet a major criterion as noted above) or serologic evidence of active infection with an organism consistent with IE; 6) Echocardiographic findings that are consistent with IE but do not meet a major criterion as noted above. References: 1) Dhawan VK Infectious Endocarditis in Elderly Patients. Clin. Infect. Dis. 2002; 34: 806–812. 2) Durack DT, Lukes AS, Bright DK. New criteria for diagnosis of infective endocarditis: utilization of specific echocardiographic findings. Duke Endocarditis Service. Am. J. Med. 1994; 96: 200–209. 3) Li IS, Sexton DJ, Mick N, et al. Proposed modifications to the Duke criteria for the diagnosis of infective endocarditis. Clin. Infect. Dis. 2000; 30: 633–638. 4) http://gold.aecom.yu.edu/id/almanac/dukeendocarditis.htm, accessed July 5, 2006.
421.0	10.06.04, 10.06.41	Cardiac	Endocarditis-postprocedural infective endocarditis, Bacterial	Infective endocarditis of bacterial etiology in the setting of a heart which has been altered by surgery or intervention. Endocarditis that involves a prosthetic valve should be coded under "Valvar, Prosthetic valve endocarditis". Duke Criteria for the Diagnosis of Infective Endocarditis (IE): The definitive diagnosis of infective endocarditis requires one of the following four situations: 1) Histologic and/or microbiologic evidence of infection at surgery or autopsy such as positive valve culture or histology; 2) Two major criteria; 3) One major criterion and three minor criteria; 4) Five minor criteria. The two major criteria are: 1) Blood cultures positive for IE 2) Evidence of endocardial involvement. Blood cultures positive for IE requires: 1) Typical microorganism consistent with IE isolated from 2 separate blood cultures, as noted in number two below (viridans streptococci, Streptococcus bovis, Staphylococcus aureus, or HACEK group [HACEK, Haemophilus species {H. aprophilus and H. paraaphrophilus}, Actinobacillus actinoinycetemcomitans, Cardiobacterium hominis, Eikenella

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				corrodens, and Kingella kingae.]) or (Community-acquired enterococci in the absence of a primary focus); 2) Microorganisms consistent with IE isolated from persistently positive blood cultures defined as: (At least 2 positive cultures of blood samples obtained >12 hours apart) or (All of 3 or a majority of 4 or more separate cultures of blood, the first and the last sample obtained >1 hr apart); 3) Single blood culture positive for Coxiella burnetii or an antiphase I IgG antibody titer of >1 : 800. Evidence of endocardial involvement requires 1) Positive results of echocardiography for IE defined as: (Oscillating intracardiac mass on the valve or supporting structures in the path of regurgitant jets or on implanted material in the absence of an alternative anatomic explanation) or (Abscess) or (New partial dehiscence of a valvar prosthesis) or 2) New valvar regurgitation (worsening or changing or preexisting murmur not sufficient). The six minor criteria are: 1) Predisposing heart disease or injection drug use (IVDA); 2) Temperature of >38C; 3) Vascular phenomenon (major arterial emboli, septic pulmonary infarcts, mycotic aneurysm, intracranial or conjunctival hemorrhage, Janeway's lesions); 4) Immunologic phenomenon (glomerulonephritis, Osler's nodes, Roth's spots, rheumatoid factor); 5) Microbiologic evidence (a positive blood culture that does not meet a major criterion as noted above) or serologic evidence of active infection with an organism consistent with IE; 6) Echocardiographic findings that are consistent with IE but do not meet a major criterion as noted above. References: 1) Dhawan VK Infectious Endocarditis in Elderly Patients. Clin. Infect. Dis. 2002; 34: 806–812. 2) Durack DT, Lukes AS, Bright DK. New criteria for diagnosis of infective endocarditis: utilization of specific echocardiographic findings. Duke Endocarditis Service. Am. J. Med. 1994; 96: 200–209. 3) Li IS, Sexton DJ, Mick N, et al. Proposed modifications to the Duke criteria for the diagnosis of infective endocarditis. Clin. Infect. Dis. 2000; 30: 633–638. 4) http://gold.aecom.yu.edu/id/almanac/dukeendocarditis.htm, accessed July 5, 2006.
421.0	10.06.04, 10.06.42	Cardiac	Endocarditis-postprocedural infective endocarditis, Fungal	Infective endocarditis of fungal etiology in the setting of a heart which has been altered by surgery or intervention. Endocarditis that involves a prosthetic valve should be coded under "Valvar, Prosthetic valve endocarditis". Duke Criteria for the Diagnosis of Infective Endocarditis (IE): The definitive diagnosis of infective endocarditis requires one of the following four situations: 1) Histologic and/or microbiologic evidence of infection at surgery or autopsy such as positive valve culture or histology; 2) Two major criteria; 3) One major criterion and three minor criteria; 4) Five minor criteria. The two major criteria are: 1) Blood cultures positive for IE 2) Evidence of endocardial involvement. Blood cultures

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				positive for IE requires: 1) Typical microorganism consistent with IE isolated from 2 separate blood cultures, as noted in number two below (viridans streptococci, Streptococcus bovis, Staphylococcus aureus, or HACEK group [HACEK, Haemophilus species {H. aprophilus and H. paraaphrophilus}, Actinobacillus actinoinycetemcomitans, Cardiobacterium hominis, Eikenella corrodens, and Kingella kingae.]) or (Community-acquired enterococci in the absence of a primary focus); 2) Microorganisms consistent with IE isolated from persistently positive blood cultures defined as: (At least 2 positive cultures of blood samples obtained >12 hours apart) or (All of 3 or a majority of 4 or more separate cultures of blood, the first and the last sample obtained >1 hr apart); 3) Single blood culture positive for Coxiella burnetii or an antiphase I IgG antibody titer of >1 : 800. Evidence of endocardial involvement requires 1) Positive results of echocardiography for IE defined as: (Oscillating intracardiac mass on the valve or supporting structures in the path of regurgitant jets or on implanted material in the absence of an alternative anatomic explanation) or (Abscess) or (New partial dehiscence of a valvar prosthesis) or 2) New valvar regurgitation (worsening or changing or preexisting murmur not sufficient). The six minor criteria are: 1) Predisposing heart disease or injection drug use (IVDA); 2) Temperature of >38C; 3) Vascular phenomenon (major arterial emboli, septic pulmonary infarcts, mycotic aneurysm, intracranial or conjunctival hemorrhage, Janeway's lesions); 4) Immunologic phenomenon (glomerulonephritis, Osler's nodes, Roth's spots, rheumatoid factor); 5) Microbiologic evidence (a positive blood culture that does not meet a major criterion as noted above) or serologic evidence of active infection with an organism consistent with IE; 6) Echocardiographic findings that are consistent with IE but do not meet a major criterion as noted above. References: 1) Dhawan VK Infectious Endocarditis in Elderly Patients. Clin. Infect. Dis. 2002; 34: 806–812. 2) Durack DT, Lukes AS, Bright DK. New criteria for diagnosis of infective endocarditis: utilization of specific echocardiographic findings. Duke Endocarditis Service. Am. J. Med. 1994; 96: 200–209. 3) Li IS, Sexton DJ, Mick N, et al. Proposed modifications to the Duke criteria for the diagnosis of infective endocarditis. Clin. Infect. Dis. 2000;30 : 633–638. 4) http://gold.aecom.yu.edu/id/almanac/dukeendocarditis.htm, accessed July 5, 2006.
466	15.90.73, 15.81.01	Cardiac	Fontan complication, Plastic bronchitis	Plastic bronchitis is a condition in which large bronchial casts with rubber-like consistency develop in the tracheobronchial tree and cause airway obstruction.
E876.8	15.90.74	Cardiac	Fontan complication, Premature closure of fenestration	In a patient with a Fontan circulation, any unplanned premature closure of fenestration, with or without physiologic consequences.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
511.8	15.90.75	Cardiac	Fontan complication, Prolonged chest tube output	Need for chest tube drainage >5 days after Fontan creation.
410.9/429.89	15.90.73, 15.10.15	Cardiac	Fontan complication, Thrombotic complication, Physiologic left atrium	In a patient with a Fontan circulation, any new thrombus formation in systemic atrium.
410.9/429.89	15.90.73, 15.10.14	Cardiac	Fontan complication, Thrombotic complication, Physiologic right atrium	In a patient with a Fontan circulation, any new thrombus formation in the Fontan baffle of conduit or in the pulmonary atrium.
E876.5	15.90.60	Cardiac	Fontan failure	"Fontan failure" ROOT Definition = Failure of Fontan operation to adequately sustain perfusion and gas exchange, resulting in Fontan take-down, Fontan revision, mechanical circulatory support, or listing for cardiac transplantation.
E876.5	15.90.65	Cardiac	Fontan failure, Any cause, Acute	Fontan failure (ROOT Definition) + Within 24 hrs of Fontan creation.
E878.8	15.90.67	Cardiac	Fontan failure, Any cause, Chronic	Fontan failure (ROOT Definition) + After hospital discharge from Fontan creation and after 30 days after Fontan creation.
E878.8	15.90.66	Cardiac	Fontan failure, Any cause, Subacute	Fontan failure (ROOT Definition) + Fontan failure greater than or equal to 24 hours after Fontan creation but during same hospitalization as Fontan creation, or Fontan failure (ROOT Definition) + Fontan failure greater than or equal to 24 hrs after Fontan creation and after hospital discharge from Fontan creation but within 30 days of Fontan creation.
427.9	15.90.60	Cardiac	Fontan failure, Arrhythmia	Fontan failure (ROOT Definition) + Secondary to arrhythmia
782.5	15.90.68	Cardiac	Fontan failure, Cyanosis	Fontan failure (ROOT Definition) + Secondary to cyanosis
428.9	15.90.69	Cardiac	Fontan failure, Low cardiac output	Fontan failure (ROOT Definition) + Secondary to low cardiac output
E876.8	15.90.70	Cardiac	Fontan failure, Pathway obstruction	Fontan failure (ROOT Definition) + Secondary to pathway obstruction
997.4	15.90.71	Cardiac	Fontan failure, Post-procedural protein losing enteropathy (PLE)	Fontan failure (ROOT Definition) + Secondary to post-procedural protein losing enteropathy (PLE)
417.0	15.90.72	Cardiac	Fontan failure, Pulmonary AV fistula[s] (Pulmonary arteriovenous malformation[s] [AVM])	Fontan failure (ROOT Definition) + Secondary to Pulmonary AV fistula[s] (Pulmonary arteriovenous malformation[s] [AVM])
789.5	15.90.60, 15.82.40	Cardiac	Fontan failure, Severe intractable ascites	Fontan failure (ROOT Definition) + Secondary to severe intractable ascites
511.8	15.90.60, 15.80.63	Cardiac	Fontan failure, Severe intractable pleural effusion	Fontan failure (ROOT Definition) + Secondary to severe intractable pleural effusion
E876.9	15.02.90	Cardiac	Incomplete preoperative/preprocedural cardiac diagnosis	Incomplete preoperative/preprocedural cardiac anatomical diagnosis, with or without clinical consequences adverse events.
E876.9	15.02.91	Cardiac	Incomplete preoperative/preprocedural cardiac diagnosis, With clinical consequences	Incomplete preoperative/preprocedural cardiac anatomical diagnosis, with clinical consequences or adverse events.
E876.9	15.02.92	Cardiac	Incomplete preoperative/preprocedural cardiac diagnosis, Without clinical consequences	Incomplete preoperative/preprocedural cardiac anatomical diagnosis, without clinical consequences or adverse events.
428.9	15.00.03	Cardiac	Low cardiac output	Low cardiac output state characterized by some of the following: tachycardia, oliguria, decreased skin perfusion, need for increased inotropic support (10% above baseline at admission), metabolic acidosis, widened Arterial – Venous oxygen saturation or need for mechanical support. In other words, persistent decrease in blood

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				pressure, decrease in peripheral perfusion (e.g., reduced pulses; cool, mottled skin), or reduced end organ perfusion (e.g., decreased urine output).
410.9	10.18.00	Cardiac	Myocardial infarction (MI)	"Myocardial infarction (MI)" ROOT Definition = Diagnosis of acute myocardial infarction (ECG, elevated CK-MB, troponin) in the perioperative/periprocedural period. According the STS Adult Cardiac Database: (0–24 hours post-op): Indicate the presence of a peri-operative MI (0–24 hours post-op) as documented by the following criteria: The CK-MB (or CK if MB not available) must be greater than or equal to 5 times the upper limit of normal, with or without new Q waves present in two or more contiguous ECG leads. No symptoms required. (>24 hours post-op): Indicate the presence of a peri-operative MI (>24 hours post-op) as documented by at least one of the following criteria: (1) Evolutionary ST- segment elevations; (2) Development of new Q- waves in two or more contiguous ECG leads; (3) New or presumably new LBBB pattern on the ECG; (4) The CK-MB (or CK if MB not available) must be greater than or equal to 3 times the upper limit of normal. Because normal limits of certain blood tests may vary, please check with your lab for normal limits for CK-MB and total CK. (Defining Reference Control Values [Upper Limit of Normal]: Reference values must be determined in each laboratory by studies using specific assays with appropriate quality control, as reported in peer-reviewed journals. Acceptable imprecision [coefficient of variation] at the 99th percentile for each assay should be defined as < or = to 10%. Each individual laboratory should confirm the range of reference values in their specific setting.). This element should not be coded as an adverse event for evolving MI's unless their enzymes peak, fall, then have a second peak. Disclaimer: In pediatric heart surgery, these criteria need to be less rigid because of the variabilities of pediatric heart surgery and the frequency of a surgical ventriculotomy. Thus, in pediatric heart surgery, a perioperative myocardial infarction should be documented by the combination of ECG changes, biochemical abnormalities, and unexpected regional wall motion abnormalities on echocardiography.
410.9	10.20.47	Cardiac	Myocardial infarction (MI), Timing = Myocardial infarction (MI) before procedure (Preoperative/ Preprocedural)	Myocardial infarction (ROOT Definition) + This complication should be selected if the myocardial infarction developed before OR Entry Date and Time.
410.9	15.00.06 + Q1.91.78	Cardiac	Myocardial infarction (MI), Timing = Myocardial infarction (MI) during or following procedure (Perioperative/Periprocedural = Intraoperative/ Intraprocedural and/or Postoperative/ Postprocedural)	Myocardial infarction (ROOT Definition) + This complication should be selected if the myocardial infarction developed after OR Entry Date and Time.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
410.9	15.00.05	Cardiac	Myocardial infarction (MI), Timing = Myocardial infarction (MI) during procedure (Intraoperative/Intraprocedural)	Myocardial infarction (ROOT Definition) + This complication should be selected if the myocardial infarction developed during the time interval of "Operating Room Time" (between OR Entry Date and Time and OR Exit Date and Time).
410.9	15.00.06	Cardiac	Myocardial infarction (MI), Timing = Myocardial infarction (MI) following procedure (Postoperative/Postprocedural)	Myocardial infarction (ROOT Definition) + This complication should be selected if the myocardial infarction developed after OR Exit Date and Time.
420.9	15.83.10	Cardiac	Pericardial effusion	Abnormal accumulation of fluid in the pericardial space, typically diagnosed by echocardiography.
420.9	15.83.10 + Q1.83.01	Cardiac	Pericardial effusion, Requiring drainage	Abnormal accumulation of fluid in the pericardial space, Requiring drainage, By any technique.
420.9	15.83.10 + Q1.83.02	Cardiac	Pericardial effusion, Requiring drainage, Pericardial window	Abnormal accumulation of fluid in the pericardial space, Requiring drainage, By pericardial window
420.9	15.83.10 + Q1.83.03	Cardiac	Pericardial effusion, Requiring drainage, Pericardiocentesis	Abnormal accumulation of fluid in the pericardial space, Requiring drainage, By pericardiocentesis
420.9	15.83.10 + Q1.83.04	Cardiac	Pericardial effusion, Requiring drainage, Tube pericardiostomy	Abnormal accumulation of fluid in the pericardial space, Requiring drainage, By pericardial tube
420.9	15.83.10 + Q1.83.05	Cardiac	Pericardial effusion, Resolved with medical management without drainage procedure	Abnormal accumulation of fluid in the pericardial space, That resolves without pericardiocentesis or pericardial tube placement or operative drainage.
423	10.08.11	Cardiac	Post-pericardiotomy syndrome	Febrile illness with an inflammatory reaction that typically involves the pleura and pericardium. A pericardial effusion typically accompanies the syndrome.
414.1	10.06.73	Cardiac	Pseudoaneurysm formation-Cardiac pseudoaneurysm formation	"Pseudoaneurysm formation-Cardiac pseudoaneurysm formation" ROOT Definition = Collection of blood originating from a defect in the heart wall (or vessel wall), contained by blood clot, adventitia, or surrounding structures (also known as a false aneurysm).
441.01	15.37.80	Cardiac	Pseudoaneurysm formation-Cardiac pseudoaneurysm formation, Aorta	Outpouching of the aorta (also known as a false aneurysm), involving a defect in the 2 innermost layers (tunica intima and media) with continuity of the outermost layer (adventitia). Alternatively, all three layers are damaged and the bleeding is contained by a blood clot or surrounding structures.
441.01	15.36.18	Cardiac	Pseudoaneurysm formation-Cardiac pseudoaneurysm formation, Aortic root	Outpouching of the aortic root (also known as a false aneurysm), involving a defect in the 2 innermost layers (tunica intima and media) with continuity of the outermost layer (adventitia). Alternatively, all three layers are damaged and the bleeding is contained by a blood clot or surrounding structures.
414.1	15.21.30	Cardiac	Pseudoaneurysm formation-Cardiac pseudoaneurysm formation, Left ventricle	Pseudoaneurysm formation-Cardiac pseudoaneurysm formation (ROOT Definition) + Location = Involving the left ventricle.
414.10	15.21.24	Cardiac	Pseudoaneurysm formation-Cardiac pseudoaneurysm formation, LVOT	Pseudoaneurysm formation-Cardiac pseudoaneurysm formation (ROOT Definition) + Location = Originating from LVOT.
417.10	15.32.51	Cardiac	Pseudoaneurysm formation-Cardiac pseudoaneurysm formation, Pulmonary artery	Outpouching of the pulmonary artery (also known as a false aneurysm), involving a defect in the 2 innermost layer (tunica intima and media) with continuity of the outermost layer (adventitia). Alternatively, all

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				three layers are damaged and the bleeding is contained by a blood clot or surrounding structures.
414.1	15.20.28	Cardiac	Pseudoaneurysm formation-Cardiac pseudoaneurysm formation, Right ventricle	Pseudoaneurysm formation-Cardiac pseudoaneurysm formation (ROOT Definition) + Location = Involving the right ventricle.
414.10	15.20.26	Cardiac	Pseudoaneurysm formation-Cardiac pseudoaneurysm formation, RVOT	Pseudoaneurysm formation-Cardiac pseudoaneurysm formation (ROOT Definition) + Location = Originating from RVOT.
416.80	15.80.36	Cardiac	Pulmonary hypertension	Clinically significant elevation of pulmonary arterial pressure, requiring intervention. Typically the mean pulmonary arterial pressure is greater than 25 mmHg in the presence of a normal pulmonary arterial occlusion pressure (wedge pressure).
416.8	15.80.36 + Q1.13.73	Cardiac	Pulmonary hypertension (PA pressure > systemic pressure)	Clinically significant elevation of pulmonary arterial pressure, requiring intervention, with the pulmonary arterial pressure being greater than the systemic arterial pressure (supra-systemic pulmonary arterial pressure).
416.8	15.80.37	Cardiac	Pulmonary hypertension during PA line pull	Clinically significant elevation of pulmonary arterial pressure while pulmonary artery catheter is being removed. Typically the mean pulmonary arterial pressure is greater than 25 mmHg in the presence of a normal pulmonary arterial occlusion pressure (wedge pressure).
416.8	15.80.37 + Q1.13.73	Cardiac	Pulmonary hypertension during PA line pull (PA pressure > systemic pressure)	Clinically significant elevation of pulmonary arterial pressure while pulmonary artery catheter is being removed, with the pulmonary arterial pressure being greater than the systemic arterial pressure (supra-systemic pulmonary arterial pressure). Code this complication if the pulmonary arterial pressure is greater than the systemic arterial pressure while pulmonary artery catheter is being removed.
416.8	15.80.22	Cardiac	Pulmonary hypertensive crisis	An acute state of inadequate systemic perfusion associated with pulmonary hypertension.
416.8	15.80.22 + Q1.13.73	Cardiac	Pulmonary hypertensive crisis (PA pressure > systemic pressure)	An acute state of inadequate systemic perfusion associated with pulmonary hypertension, when the pulmonary arterial pressure is greater than the systemic arterial pressure.
417.9	15.80.38	Cardiac	Pulmonary overcirculation	A condition characterized by excessive pulmonary blood flow in relation to systemic blood flow, with high oxygen saturation and low systemic perfusion, requiring need for intervention.
747.4	15.05.26	Cardiac	Pulmonary vein obstruction	Clinically significant stenosis or obstruction of pulmonary veins. Typically diagnosed by echocardiography or cardiac catheterization, this may present with or without symptoms.
E876.9	15.10.70	Cardiac	Restrictive ASD after intended atrial septostomy or atrial septectomy	>2 mmHg mean gradient between atrial chambers, or symptomatic restrictive ASD
E876.9	15.10.70 + Q1.91.38	Cardiac	Restrictive ASD after intended atrial septostomy or atrial septectomy requiring during this admission	>2 mmHg mean gradient between atrial chambers, or symptomatic restrictive ASD, requiring surgery or intervention, during same admission
E876.8	15.10.70 + Q1.91.37	Cardiac	Restrictive ASD after intended atrial septostomy or atrial septectomy requiring reintervention	>2 mmHg mean gradient between atrial chambers, or symptomatic restrictive ASD, requiring surgery or intervention

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.7	15.56.11	Cardiac	Shunt thrombosis	Acute thrombotic complication of systemic-to-pulmonary artery shunt or Sano shunt.
996.7	15.56.11 + Q1.91.37	Cardiac	Shunt thrombosis, Reintervention required	Acute thrombotic complication of systemic-to-pulmonary artery shunt or Sano shunt, Requiring unplanned reoperation or intervention.
996.7	15.56.11 + Q1.91.38	Cardiac	Shunt thrombosis, Reintervention required during this admission	Acute thrombotic complication of systemic-to-pulmonary artery shunt or Sano shunt, requiring unplanned reoperation or intervention, during same admission.
998.9	15.20.84	Cardiac	Single ventricle-complication	Any complication in a patient with a functionally univentricular heart. An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.
789.5	15.20.84, 15.82.36	Cardiac	Single ventricle-complication, Post-procedural ascites	Post-procedural ascites in a patient with a functionally univentricular heart
511.8	15.20.84, 15.80.50	Cardiac	Single ventricle-complication, Post-procedural pleural effusion	Post-procedural pleural effusion in a patient with a functionally univentricular heart. If during the same hospitalization as a procedure, use this code if the patient demonstrates a need for chest tube drainage >5 days after the procedure. If after hospitalization for a procedure, use this code if the patient requires readmission to the hospital (after hospital discharge after a procedure) secondary to a pleural effusion.
997.4	15.20.84, 15.82.33	Cardiac	Single ventricle-complication, Post-procedural protein losing enteropathy (PLE)	Post-procedural protein losing enteropathy (PLE) in a patient with a functionally univentricular heart
417.0	15.20.84, 15.32.47	Cardiac	Single ventricle-complication, Pulmonary AV fistula[s] (Pulmonary arteriovenous malformation[s] [AVM])	Pulmonary AV fistula[s] (Pulmonary arteriovenous malformation[s] [AVM]) in a patient with a functionally univentricular heart
459.2	15.04.39	Cardiac	Systemic vein obstruction	Clinically significant stenosis or obstruction of any major systemic vein (e.g., superior vena cava, inferior vena cava, femoral veins, internal jugular veins, etc.).
459.2	15.04.39 + Q1.86.46	Cardiac	Systemic vein obstruction, Femoral vein	Clinically significant stenosis or obstruction of the femoral vein
459.2	15.04.39 + Q1.86.48	Cardiac	Systemic vein obstruction, Femoral vein, Left	Clinically significant stenosis or obstruction of the left femoral vein
459.2	15.04.39 + Q1.86.47	Cardiac	Systemic vein obstruction, Femoral vein, Right	Clinically significant stenosis or obstruction of the right femoral vein
459.2	15.04.39 + Q1.86.49	Cardiac	Systemic vein obstruction, Iliac vein	Clinically significant stenosis or obstruction of the iliac vein
459.2	15.04.39 + Q1.86.54	Cardiac	Systemic vein obstruction, Iliac vein, Left	Clinically significant stenosis or obstruction of the left iliac vein
459.2	15.04.39 + Q1.86.50	Cardiac	Systemic vein obstruction, Iliac vein, Right	Clinically significant stenosis or obstruction of the right iliac vein
459.2	15.04.39 + Q1.85.01	Cardiac	Systemic vein obstruction, Inferior vena cava	Clinically significant stenosis or obstruction of the inferior vena cava.
459.2	15.04.39 + Q1.86.81	Cardiac	Systemic vein obstruction, Internal jugular vein	Clinically significant stenosis or obstruction of the internal jugular vein
459.2	15.04.39 + Q1.86.45	Cardiac	Systemic vein obstruction, Internal jugular vein, Left	Clinically significant stenosis or obstruction of the left internal jugular vein
459.2	15.04.39 + Q1.86.42	Cardiac	Systemic vein obstruction, Internal jugular vein, Right	Clinically significant stenosis or obstruction of the right internal jugular vein

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
459.2	15.04.39 + Q1.86.83	Cardiac	Systemic vein obstruction, Renal vein	Clinically significant stenosis or obstruction of the renal vein
459.2	15.04.39 + Q1.86.85	Cardiac	Systemic vein obstruction, Renal vein, Left	Clinically significant stenosis or obstruction of the left renal vein
459.2	15.04.39 + Q1.86.84	Cardiac	Systemic vein obstruction, Renal vein, Right	Clinically significant stenosis or obstruction of the right renal vein
459.2	15.04.39 + Q1.86.36	Cardiac	Systemic vein obstruction, Subclavian vein	Clinically significant stenosis or obstruction of the subclavian vein
459.2	15.04.39 + Q1.86.38	Cardiac	Systemic vein obstruction, Subclavian vein, Left	Clinically significant stenosis or obstruction of the left subclavian vein
459.2	15.04.39 + Q1.86.37	Cardiac	Systemic vein obstruction, Subclavian vein, Right	Clinically significant stenosis or obstruction of the right subclavian vein
459.2	15.04.39 + Q1.85.02	Cardiac	Systemic vein obstruction, Superior vena cava	Clinically significant stenosis or obstruction of the superior vena cava
423.9	15.83.14	Cardiac	Tamponade	Accumulation of fluid (typically bloody or serous) around the heart causing impairment in filling and resulting in decreased or loss of perfusion. This diagnosis may be made clinically or by echocardiography.
423.9	15.83.14 + Q1.83.02	Cardiac	Tamponade requiring pericardiocentesis	Accumulation of fluid (typically bloody or serous) around the heart causing impairment in filling and resulting in decreased or loss of perfusion. This diagnosis may be made clinically or by echocardiography. In this choice, the patient requires pericardiocentesis to drain the fluid.
423.9	15.83.14 + Q1.83.02 - + Q1.91.38	Cardiac	Tamponade requiring pericardiocentesis during this admission	Accumulation of fluid (typically bloody or serous) around the heart causing impairment in filling and resulting in decreased or loss of perfusion. This diagnosis may be made clinically or by echocardiography. In this choice, the patient requires pericardiocentesis to drain the fluid, and the pericardiocentesis is required during the same hospitalization as the operation under evaluation.
423.9	15.83.14 + Q1.83.02 - + Q1.91.38	Cardiac	Tamponade requiring pericardiocentesis followed by reoperation	Accumulation of fluid (typically bloody or serous) around the heart causing impairment in filling and resulting in decreased or loss of perfusion. This diagnosis may be made clinically or by echocardiography. In this choice, the patient requires pericardiocentesis for stabilization followed by reoperation.
423.9	15.83.14 + Q1.83.09	Cardiac	Tamponade requiring pericardiocentesis followed by reoperation during this admission	Accumulation of fluid (typically bloody or serous) around the heart causing impairment in filling and resulting in decreased or loss of perfusion. This diagnosis may be made clinically or by echocardiography. In this choice, the patient requires pericardiocentesis for stabilization followed by reoperation, and these procedures are required during the same hospitalization as the operation under evaluation.
423.9	15.83.14 + Q1.83.10	Cardiac	Tamponade requiring reoperation	Accumulation of fluid (typically bloody or serous) around the heart causing impairment in filling and resulting in decreased or loss of perfusion. This diagnosis may be made clinically or by echocardiography. In this choice, the patient requires reoperation to drain the fluid.
423.9	15.83.14 + Q1.83.11	Cardiac	Tamponade requiring reoperation during this admission	Accumulation of fluid (typically bloody or serous) around the heart causing impairment in filling and resulting in decreased or loss of

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				perfusion. This diagnosis may be made clinically or by echocardiography. In this choice, the patient requires reoperation to drain the fluid, and the reoperation is required during the same hospitalization as the operation under evaluation.
996.71	15.02.14	Cardiac	Valvar, Anticoagulant complication	Any complication related to anticoagulation secondary to a heart valve. This complication includes bleeding and thrombotic complications. This complication includes valvar dysfunction directly related to inadequate anticoagulant levels (typically acute or sub-acute thrombosis of mechanical valve).
996.71	15.02.13	Cardiac	Valvar, Hemolysis after prosthetic valve placement	Hemolysis occurring immediately or soon after prosthetic valve placement.
996.71	15.35.08 + Q1.38.21	Cardiac	Valvar, Non-structural dysfunction – Aortic valve	Clinical or echocardiographic diagnosis of aortic valve malfunction without evidence for structural cause
996.71	15.12.09 + Q1.17.40	Cardiac	Valvar, Non-structural dysfunction – Mitral valve	Clinical or echocardiographic diagnosis of mitral valve malfunction without evidence for structural cause
996.71	15.30.08 + Q1.38.21	Cardiac	Valvar, Non-structural dysfunction – Pulmonary valve	Clinical or echocardiographic diagnosis of pulmonary valve malfunction without evidence for structural cause
996.71	15.11.08 + Q1.17.40	Cardiac	Valvar, Non-structural dysfunction – Tricuspid valve	Clinical or echocardiographic diagnosis of tricuspid valve malfunction without evidence for structural cause
996.61	15.35.08 + Q1.38.06	Cardiac	Valvar, Prosthetic valve endocarditis – Aortic valve	Persistent positive blood cultures (>3) with evidence of new vegetation on prosthetic aortic valve. Endocarditis that does not involve a prosthetic valve is coded under "Endocarditis-postprocedural infective endocarditis".
996.61	15.12.09 + Q1.17.26	Cardiac	Valvar, Prosthetic valve endocarditis – Mitral valve	Persistent positive blood cultures (>3) with evidence of new vegetation on prosthetic mitral valve. Endocarditis that does not involve a prosthetic valve is coded under "Endocarditis-postprocedural infective endocarditis".
996.61	15.30.08 + Q1.38.06	Cardiac	Valvar, Prosthetic valve endocarditis – Pulmonary valve	Persistent positive blood cultures (>3) with evidence of new vegetation on prosthetic pulmonary valve. Endocarditis that does not involve a prosthetic valve is coded under "Endocarditis-postprocedural infective endocarditis".
996.61	15.11.08 + Q1.17.26	Cardiac	Valvar, Prosthetic valve endocarditis – Tricuspid valve	Persistent positive blood cultures (>3) with evidence of new vegetation on prosthetic tricuspid valve. Endocarditis that does not involve a prosthetic valve is coded under "Endocarditis-postprocedural infective endocarditis".
996.02	15.35.08 + Q1.38.17	Cardiac	Valvar, Structural deterioration – Aortic valve	Structural deterioration of a prosthetic aortic valve prosthesis (typically leaflet calcification of biological prosthesis leading to stenosis or regurgitation)
996.02	15.12.09 + Q1.17.37	Cardiac	Valvar, Structural deterioration – Mitral valve	Structural deterioration of a prosthetic mitral valve prosthesis (typically leaflet calcification of biological prosthesis leading to stenosis or regurgitation)
996.02	15.30.08 + Q1.38.17	Cardiac	Valvar, Structural deterioration – Pulmonary valve	Structural deterioration of a prosthetic pulmonary valve prosthesis (typically leaflet calcification of biological prosthesis leading to stenosis or regurgitation)

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.02	15.11.08 + Q1.17.37	Cardiac	Valvar, Structural deterioration – Tricuspid valve	Structural deterioration of a prosthetic tricuspid valve prosthesis (typically leaflet calcification of biological prosthesis leading to stenosis or regurgitation)
996.71	15.81.50	Cardiac	Valvar, Thromboembolism	Thromboembolic complications in patient with valve prosthesis
996.71	15.35.08 + Q1.38.04	Cardiac	Valvar, Thrombosis of prosthetic valve – Aortic valve	Presence of new thrombus on prosthetic aortic valve
996.71	15.12.09 + Q1.17.24	Cardiac	Valvar, Thrombosis of prosthetic valve – Mitral valve	Presence of new thrombus on prosthetic mitral valve
996.71	15.30.08 + Q1.38.04	Cardiac	Valvar, Thrombosis of prosthetic valve – Pulmonary valve	Presence of new thrombus on prosthetic pulmonary valve
996.71	15.11.08 + Q1.17.24	Cardiac	Valvar, Thrombosis of prosthetic valve – Tricuspid valve	Presence of new thrombus on prosthetic tricuspid valve
E876.9	15.02.93	Cardiac	Wrong preoperative/preprocedural cardiac diagnosis	Wrong preoperative/preprocedural cardiac anatomical diagnosis, with or without clinical consequences or adverse events.
E876.9	15.02.94	Cardiac	Wrong preoperative/preprocedural cardiac diagnosis, With clinical consequences	Wrong preoperative/preprocedural cardiac anatomical diagnosis, with clinical consequences or adverse events
E876.9	15.02.95	Cardiac	Wrong preoperative/preprocedural cardiac diagnosis, Without clinical consequences	Wrong preoperative/preprocedural cardiac anatomical diagnosis, without clinical consequences or adverse events
276.2	15.81.52	Cardiac – Metabolic	Acidosis	Persistent clinical state of acidosis with decrease in blood pH, requiring treatment. This condition is often characterized by elevated lactate. It can occur preoperatively/preprocedurally, intraoperatively/intraprocedurally, or postoperatively/postprocedurally.
276.2	15.81.51	Cardiac – Metabolic	Acidosis, Intraoperative/Intraprocedural acidosis	Persistent intraoperative/intraprocedural clinical state of acidosis with decrease in blood pH, requiring treatment. This condition is often characterized by elevated lactate. This complication should be selected if the acidosis developed during the time interval of "Operating Room Time" (between OR Entry Date and Time and OR Exit Date and Time).
276.2	15.80.15	Cardiac – Metabolic	Acidosis, Postoperative/Postprocedural acidosis	Persistent postoperative/postprocedural clinical state of acidosis with decrease in blood pH, requiring treatment. This condition is often characterized by elevated lactate. This complication should be selected if the acidosis developed after OR Exit Date and Time.
276.2	10.20.05	Cardiac – Metabolic	Acidosis, Preoperative/Preprocedural acidosis	Persistent preoperative/preprocedural clinical state of acidosis with decrease in blood pH, requiring treatment. This condition is often characterized by elevated lactate. This complication should be selected if the acidosis developed before OR Entry Date and Time.
E876.9	15.56.18	Cardiac – Residual and Recurrent cardiac lesions	Asymmetric pulmonary blood flow after non-systemic artery to pulmonary artery shunt	More then 70/30 discrepancy in flow after non-systemic artery to pulmonary artery shunt, if pre-op equal distribution
E876.5	15.56.18 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Asymmetric pulmonary blood flow after non-systemic artery to pulmonary artery shunt, Requiring reoperation or reintervention	More then 70/30 discrepancy in flow after non-systemic artery to pulmonary artery shunt, if pre-op equal distribution, requiring surgery or intervention

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E876.5	15.56.18 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Asymmetric pulmonary blood flow after non-systemic artery to pulmonary artery shunt, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	More then 70/30 discrepancy after in flow non-systemic artery to pulmonary artery shunt, if pre-op equal distribution, requiring surgery or intervention, during same admission
E876.9	15.56.17	Cardiac – Residual and Recurrent cardiac lesions	Asymmetric pulmonary blood flow after systemic artery to pulmonary artery shunt	More then 70/30 discrepancy in flow after systemic artery to pulmonary artery shunt, if pre-op equal distribution
E876.5	15.56.17 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Asymmetric pulmonary blood flow after systemic artery to pulmonary artery shunt, Requiring reoperation or reintervention	More then 70/30 discrepancy in flow after systemic artery to pulmonary artery shunt, if pre-op equal distribution, requiring surgery or intervention
E876.5	15.56.17 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Asymmetric pulmonary blood flow after systemic artery to pulmonary artery shunt, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	More then 70/30 discrepancy in flow after systemic artery to pulmonary artery shunt, if pre-op equal distribution, requiring surgery or intervention, during same admission
411.8	15.41.60	Cardiac – Residual and Recurrent cardiac lesions	Coronary problems after arterial switch operation	Coronary problems after arterial switch operation
E876.5	15.41.60 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Coronary problems after arterial switch operation, Requiring reoperation or reintervention	Coronary problems after arterial switch operation, requiring surgery or intervention
E876.5	15.41.60 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Coronary problems after arterial switch operation, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Coronary problems after arterial switch operation, requiring surgery or intervention, during same admission
E876.9	15.05.27	Cardiac – Residual and Recurrent cardiac lesions	Pulmonary vein, Residual gradient or stenosis after relief of pulmonary venous stenosis	Pulmonary venous stenosis of >4 mmHg mean gradient or symptomatic residual or recurrent pulmonary vein stenosis after surgery for pulmonary venous stenosis.
E876.5	15.05.27 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Pulmonary vein, Residual gradient or stenosis after relief of pulmonary venous stenosis, Requiring reoperation or reintervention	Pulmonary venous stenosis of >4 mmHg mean gradient or symptomatic residual or recurrent pulmonary vein stenosis after surgery for pulmonary venous stenosis, Requiring surgery or intervention.
E876.5	15.05.27 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Pulmonary vein, Residual gradient or stenosis after relief of pulmonary venous stenosis, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Pulmonary venous stenosis of >4 mmHg mean gradient or symptomatic residual or recurrent pulmonary vein stenosis after surgery for pulmonary venous stenosis, Requiring surgery or intervention, During same admission.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
747.42	15.05.24	Cardiac – Residual and Recurrent cardiac lesions	Pulmonary vein, Residual PAPVR	Any residual or recurrent PAPVR in context of initial intention to repair all anomalous pulmonary venous return
E876.5	15.05.24 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Pulmonary vein, Residual PAPVR, Requiring reoperation or reintervention	Any residual or recurrent PAPVR in context of initial intention to repair all anomalous pulmonary venous return, requiring surgery or intervention
E876.5	15.05.24 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Pulmonary vein, Residual PAPVR, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Any residual or recurrent PAPVR in context of initial intention to repair all anomalous pulmonary venous return, requiring surgery or intervention, during same admission
415.19	15.05.28	Cardiac – Residual and Recurrent cardiac lesions	Pulmonary vein, Thrombosis after surgery for pulmonary venous stenosis	Pulmonary venous thrombosis after surgery for pulmonary venous stenosis
415.19	15.05.28 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Pulmonary vein, Thrombosis after surgery for pulmonary venous stenosis, Requiring reoperation or reintervention	Pulmonary venous thrombosis after surgery for pulmonary venous stenosis, requiring surgery or intervention
415.19	15.05.28 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Pulmonary vein, Thrombosis after surgery for pulmonary venous stenosis, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Pulmonary venous thrombosis after surgery for pulmonary venous stenosis, requiring surgery or intervention, during same admission
747.22	15.37.14	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent aortic arch gradient	>25 mmHg MIG (Maximum Instantaneous Gradient), or arm/leg gradient >20 mmHg, or gradient on cardiac catheterization >20 mmHg (peak-peak), or symptomatic aortic arch gradient
E876.8	15.37.14 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent aortic arch gradient, Requiring reoperation or reintervention	Residual or recurrent aortic arch gradient, requiring reoperation or intervention
E876.8	15.37.14 + Q1.91.38	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent aortic arch gradient, Requiring reoperation or reintervention, during same admission	Residual or recurrent aortic arch gradient, Requiring reoperation or reintervention during this admission, or requiring reoperation or reintervention within 30 days of the original operation or intervention.
747.29	15.36.22	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent aorto-cameral channel	Any residual or recurrent flow through a repaired aorto-cameral fistula
745	15.36.20	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent aortopulmonary window	Any residual or recurrent flow through a repaired aortopulmonary window
747.3	15.36.21	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent aorto-ventricular channel	Any residual or recurrent flow through a repaired aorto-ventricular fistula
745.5	15.10.72	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent ASD	Unplanned residual or recurrent ASD (>3 mm) after cardiac repair

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E876.8	15.10.72 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent ASD, Requiring reoperation or reintervention	Unplanned residual or recurrent ASD (>3 mm) after cardiac repair, requiring surgery or intervention
E876.8	15.10.72 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent ASD, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Unplanned residual or recurrent ASD (>3 mm) after cardiac repair, requiring surgery or intervention, during same admission
E876.8	15.10.73	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent atrial baffle leakage	Unplanned residual or recurrent >3 mm or symptomatic residual or recurrent baffle leak after atrial level baffle, diagnosed by echocardiography or cardiac catheterization
E876.8	15.10.73 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent atrial baffle leakage, Requiring reoperation or reintervention	Unplanned residual or recurrent >3 mm or symptomatic residual or recurrent baffle leak after atrial level baffle, diagnosed by echocardiography or cardiac catheterization, requiring surgery or intervention
E876.8	15.10.73 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent atrial baffle leakage, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Unplanned residual or recurrent >3 mm or symptomatic residual or recurrent baffle leak after atrial level baffle, diagnosed by echocardiography or cardiac catheterization, requiring surgery or intervention, during same admission
E876.8	15.10.74	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent atrial baffle stenosis	>4 mmHg mean gradient stenosis or symptomatic residual or recurrent baffle stenosis, after atrial level baffle, diagnosed by echocardiography or cardiac catheterization
E876.8	15.10.74 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent atrial baffle stenosis, Requiring reoperation or reintervention	>4 mmHg mean gradient stenosis or symptomatic residual or recurrent baffle stenosis, after atrial level baffle, diagnosed by echocardiography or cardiac catheterization, requiring surgery or intervention
E876.8	15.10.74 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent atrial baffle stenosis, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	>4 mmHg mean gradient stenosis or symptomatic residual or recurrent baffle stenosis, after atrial level baffle, diagnosed by echocardiography or cardiac catheterization, requiring surgery or intervention, during same admission
747.3	15.32.52	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent branch pulmonary arterial stenosis	Residual or recurrent branch pulmonary arterial stenosis resulting in symptoms
E876.8	15.32.52 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent branch pulmonary arterial stenosis, Requiring reoperation or reintervention	Residual or recurrent branch pulmonary arterial stenosis, requiring surgery or intervention
E876.8	15.32.52 + Q1.91.38	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent branch pulmonary arterial stenosis, Requiring reoperation or reintervention, during this admission	Residual or recurrent branch pulmonary arterial stenosis, requiring surgery or intervention, during same admission
E876.8	10.02.02	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent cardiac lesion	"Residual or recurrent cardiac lesion" ROOT Definition = A residual lesion is a lesion that is present at the time of the completion of an operation or intervention. Residual lesions may be secondary to three etiologies: (1) Attempted therapy to treat the lesion may have

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				failed, (2) The lesion may have been intentionally not treated and purposefully left present, and (3) Knowledge of the lesion may not have existed until completion of the operation or intervention. A recurrent lesion is a lesion that was present at the beginning of an operation or intervention and was not present at the completion of the operation or intervention but then develops at some time after the completion of the operation or intervention. In many cases, it may not be possible to know with certainty if a complication is residual or recurrent. If it is known with certainty that a complication is truly recurrent or truly residual, one may select and code the following modifiers: "Residual or recurrent cardiac lesion-modifier for recurrent cardiac lesion" or "Residual or recurrent cardiac lesion-modifier for residual cardiac lesion".
E876.8	10.02.02 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent cardiac lesion, Requiring reoperation or reintervention	Residual or recurrent cardiac lesion (ROOT Definition) + Requiring reoperation or intervention.
E876.8	10.02.02 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent cardiac lesion, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Residual or recurrent cardiac lesion (ROOT Definition) + Requiring reoperation or reintervention during this admission, or requiring reoperation or reintervention within 30 days of the original operation or intervention.
E876.8	Q1.90.72	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent cardiac lesion-modifier for recurrent cardiac lesion	Residual or recurrent cardiac lesion (ROOT Definition) + A recurrent lesion is a lesion that was present at the beginning of an operation or intervention and was not present at the completion of the operation or intervention but then develops at some time after the completion of the operation or intervention.
E876.8	Q1.90.54	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent cardiac lesion-modifier for residual cardiac lesion	Residual or recurrent cardiac lesion (ROOT Definition) + A residual lesion is a lesion that is present at the time of the completion of an operation or intervention. Residual lesions may be secondary to three etiologies: (1) Attempted therapy to treat the lesion may have failed, (2) The lesion may have been intentionally not treated and purposefully left present, and (3) Knowledge of the lesion may not have existed until completion of the operation or intervention.
746.81	15.21.31	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent LVOT obstruction	>35 mmHg MIG (Maximum Instantaneous Gradient) remaining after surgery for LVOTO, or symptomatic LVOTO
E876.8	15.21.31 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent LVOT obstruction, Requiring reoperation or reintervention	>35 mmHg MIG (Maximum Instantaneous Gradient) remaining after surgery for LVOTO, or symptomatic LVOTO, requiring reoperation or intervention.
E876.8	15.21.31 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent LVOT obstruction, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	>35 mmHg MIG (Maximum Instantaneous Gradient) remaining after surgery for LVOTO, or symptomatic LVOTO, Requiring reoperation or reintervention during this admission, or requiring reoperation or reintervention within 30 days of the original operation or intervention.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
747	15.39.06	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent PDA	Any residual or recurrent flow through PDA, detected by echocardiography or cardiac catheterization, after surgery or intervention
E876.8	15.39.06 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent PDA, Requiring reoperation or reintervention	Residual or recurrent PDA after surgery or intervention requiring re-intervention or re-operation
E876.8	15.39.06 + Q1.91.38	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent PDA, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Residual or recurrent PDA after surgery or intervention requiring re-intervention or re-operation, during same admission
746.83	15.20.29	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent RVOT obstruction	>35 mmHg MIG (Maximum Instantaneous Gradient) remaining after surgery for RVOTO, or symptomatic RVOTO
E876.8	15.20.29 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent RVOT obstruction, Requiring reoperation or reintervention	>35 mmHg MIG (Maximum Instantaneous Gradient) remaining after surgery for RVOTO, or symptomatic RVOTO, requiring reoperation or intervention.
E876.8	15.20.29 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent RVOT obstruction, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	>35 mmHg MIG (Maximum Instantaneous Gradient) remaining after surgery for RVOTO, or symptomatic RVOTO, Requiring reoperation or reintervention during this admission, or requiring reoperation or reintervention within 30 days of the original operation or intervention.
747.22	15.36.19	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent supravalvar aortic obstruction	Residual or recurrent supravalvar aortic stenosis with >25 mmHg MIG (Maximum Instantaneous Gradient) remaining after surgery on ascending aorta, or symptomatic supravalvar aortic stenosis
E876.8	15.36.19 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent supravalvar aortic obstruction, Requiring reoperation or reintervention	Residual or recurrent supravalvar aortic stenosis with >25 mmHg MIG (Maximum Instantaneous Gradient) remaining after surgery on ascending aorta, or symptomatic supravalvar aortic stenosis, requiring reoperation or intervention.
E876.8	15.36.19 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent supravalvar aortic obstruction, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Residual or recurrent supravalvar aortic stenosis with >25 mmHg MIG (Maximum Instantaneous Gradient) remaining after surgery on ascending aorta, or symptomatic supravalvar aortic stenosis, Requiring reoperation or reintervention during this admission, or requiring reoperation or reintervention within 30 days of the original operation or intervention.
747.3	15.32.09	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent supravalvar pulmonary obstruction	Residual or recurrent supravalvar pulmonary stenosis with >35 mmHg MIG (Maximum Instantaneous Gradient) remaining after surgery on main pulmonary artery, or symptomatic supravalvar pulmonary stenosis
E876.8	15.32.09 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent supravalvar pulmonary obstruction, Requiring reoperation or reintervention	Residual or recurrent supravalvar pulmonary stenosis with >35 mmHg MIG (Maximum Instantaneous Gradient) remaining after surgery on main pulmonary artery, or symptomatic supravalvar pulmonary stenosis, requiring reoperation or intervention.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E876.8	15.32.09 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent supravalvar pulmonary obstruction, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Residual or recurrent supravalvar pulmonary stenosis with >35 mmHg MIG (Maximum Instantaneous Gradient) remaining after surgery on main pulmonary artery, or symptomatic supravalvar pulmonary stenosis, Requiring reoperation or reintervention during this admission, or requiring reoperation or reintervention within 30 days of the original operation or intervention.
746.4	15.35.14	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve regurgitation – Aortic valve	Moderate or greater aortic regurgitation, or symptomatic aortic regurgitation, with or without diastolic flow reversal in descending aorta, after surgery on aortic valve
E876.8	15.35.14 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve regurgitation – Aortic valve, Requiring reoperation or reintervention	Moderate or greater aortic regurgitation after surgery on aortic valve, requiring reoperation or intervention
E876.8	15.35.14 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve regurgitation – Aortic valve, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Moderate or greater aortic regurgitation after surgery on aortic valve, Requiring reoperation or reintervention during this admission, or requiring reoperation or reintervention within 30 days of the original operation or intervention.
746.6	15.11.14	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve regurgitation – Mitral valve	Moderate or greater mitral regurgitation (jet > 4 mm), or symptomatic mitral regurgitation, after surgery on mitral valve
E876.8	15.11.14 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve regurgitation – Mitral valve, Requiring reoperation or reintervention	Moderate or greater mitral regurgitation (jet > 4 mm) after surgery on mitral valve, requiring reoperation or intervention
E876.8	15.11.14 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve regurgitation – Mitral valve, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Moderate or greater mitral regurgitation (jet > 4 mm) after surgery on mitral valve, Requiring reoperation or reintervention during this admission, or requiring reoperation or reintervention within 30 days of the original operation or intervention.
746.09	15.30.15	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve regurgitation – Pulmonary valve	Unplanned pulmonary regurgitation (i.e. a transannular patch does not qualify), or causing symptoms.
E876.8	15.30.15 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve regurgitation – Pulmonary valve, Requiring reoperation or reintervention	Residual or recurrent pulmonary regurgitation after pulmonary valve surgery/intervention, requiring reoperation or intervention
E876.8	15.30.15 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve regurgitation – Pulmonary valve, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Residual or recurrent pulmonary regurgitation after pulmonary valve surgery/intervention, Requiring reoperation or reintervention during this admission, or requiring reoperation or reintervention within 30 days of the original operation or intervention.
446.6	15.11.21	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve regurgitation – Single atrio-ventricular valve	Moderate or greater single atrio-ventricular valve regurgitation (jet > 4 mm), or symptomatic single atrio-ventricular valve regurgitation, after surgery on single atrio-ventricular valve

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E876.8	15.11.21 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve regurgitation – Single atrio-ventricular valve, Requiring reoperation or reintervention	Moderate or greater single atrio-ventricular valve regurgitation (jet > 4 mm) after surgery on single atrio-ventricular valve, requiring reoperation or intervention
E876.8	15.11.21 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve regurgitation – Single atrio-ventricular valve, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Moderate or greater single atrio-ventricular valve regurgitation (jet > 4 mm) after surgery on single atrio-ventricular valve, Requiring reoperation or reintervention during this admission, or requiring reoperation or reintervention within 30 days of the original operation or intervention.
746.4/746.09	15.24.31	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve regurgitation – Single semilunar valve	Moderate or greater single semilunar valve regurgitation, or symptomatic single semilunar valve regurgitation, with or without diastolic flow reversal in descending aorta, after surgery on single semilunar valve
E876.8	15.24.31 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve regurgitation – Single semilunar valve, Requiring reoperation or reintervention	Moderate or greater single semilunar valve regurgitation after surgery on single semilunar valve, requiring reoperation or intervention.
E876.8	15.24.31 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve regurgitation – Single semilunar valve, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Moderate or greater single semilunar valve regurgitation after surgery on single semilunar valve, Requiring reoperation or reintervention during this admission, or requiring reoperation or reintervention within 30 days of the original operation or intervention.
746.2	15.12.13	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve regurgitation – Tricuspid valve	Moderate or greater tricuspid regurgitation (jet > 4 mm), or symptomatic tricuspid regurgitation, after surgery on tricuspid valve.
E876.8	15.12.13 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve regurgitation – Tricuspid valve, Requiring reoperation or reintervention	Moderate or greater tricuspid regurgitation (jet > 4 mm) after surgery on tricuspid valve, requiring reoperation or intervention.
E876.8	15.12.13 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve regurgitation – Tricuspid valve, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Moderate or greater tricuspid regurgitation (jet > 4 mm) after surgery on tricuspid valve, Requiring reoperation or reintervention during this admission, or requiring reoperation or reintervention within 30 days of the original operation or intervention.
746.3	15.35.13	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve stenosis – Aortic valve	>35 mmHg MIG (Maximum Instantaneous Gradient) or symptomatic gradient after surgery on aortic valve
E876.8	15.35.13 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve stenosis – Aortic valve, Requiring reoperation or reintervention	Residual or recurrent gradient after surgery on aortic valve, requiring reoperation or intervention.
E876.8	15.35.13 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve stenosis – Aortic valve, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Residual or recurrent gradient after surgery on aortic valve, Requiring reoperation or reintervention during this admission, or requiring reoperation or reintervention within 30 days of the original operation or intervention.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
746.5	15.12.12	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve stenosis – Mitral valve (or systemic atrioventricular valve)	>8 mmHg MIG (Maximum Instantaneous Gradient) or symptomatic gradient after surgery on mitral valve
E876.8	15.12.12 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve stenosis – Mitral valve (or systemic atrioventricular valve), Requiring reoperation or reintervention	Residual or recurrent gradient after surgery on mitral valve, requiring reoperation or intervention.
E876.8	15.12.12 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve stenosis – Mitral valve (or systemic atrioventricular valve), Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Residual or recurrent gradient after surgery on mitral valve, Requiring reoperation or reintervention during this admission, or requiring reoperation or reintervention within 30 days of the original operation or intervention.
746	15.30.14	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve stenosis – Pulmonary valve	>35 mmHg MIG (Maximum Instantaneous Gradient), or pulmonary stenosis causing symptoms
E876.8	15.30.14 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve stenosis – Pulmonary valve, Requiring reoperation or reintervention	>35 mmHg MIG (Maximum Instantaneous Gradient), or pulmonary stenosis causing symptoms, requiring reoperation or intervention.
E876.8	15.30.14 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve stenosis – Pulmonary valve, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	>35 mmHg MIG (Maximum Instantaneous Gradient), or pulmonary stenosis causing symptoms, Requiring reoperation or reintervention during this admission, or requiring reoperation or reintervention within 30 days of the original operation or intervention.
746.5	15.11.20	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve stenosis – Single atrio-ventricular valve	>8 mmHg MIG (Maximum Instantaneous Gradient) or symptomatic stenosis after surgery on atrioventricular valve
E876.8	15.11.20 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve stenosis – Single atrio-ventricular valve, Requiring reoperation or reintervention	>8 mmHg MIG (Maximum Instantaneous Gradient) or symptomatic stenosis after surgery on atrioventricular valve, requiring reoperation or intervention.
E876.8	15.11.20 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve stenosis – Single atrio-ventricular valve, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	>8 mmHg MIG (Maximum Instantaneous Gradient) or symptomatic stenosis after surgery on atrioventricular valve, Requiring reoperation or reintervention during this admission, or requiring reoperation or reintervention within 30 days of the original operation or intervention.
746.3/746.00	15.24.30	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve stenosis – Single semilunar valve	>35 mmHg MIG (Maximum Instantaneous Gradient), or stenosis causing symptoms
E876.8	15.24.30 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve stenosis – Single semilunar valve, Requiring reoperation or reintervention	>35 mmHg MIG (Maximum Instantaneous Gradient), or stenosis causing symptoms, requiring reoperation or intervention.
E876.8	15.24.30 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve stenosis – Single semilunar valve, Requiring reoperation or reintervention during this admission or	>35 mmHg MIG (Maximum Instantaneous Gradient), or stenosis causing symptoms, Requiring reoperation or reintervention during

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
			requiring reoperation or reintervention within 30 days of the original operation or intervention	this admission, or requiring reoperation or reintervention within 30 days of the original operation or intervention.
746.1	15.11.13	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve stenosis – Tricuspid valve (or pulmonary atrioventricular valve)	>8 mmHg MIG (Maximum Instantaneous Gradient) or symptomatic TS after surgery on tricuspid valve
E876.8	15.11.13 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve stenosis – Tricuspid valve (or pulmonary atrioventricular valve), Requiring reoperation or reintervention	>8 mmHg MIG (Maximum Instantaneous Gradient) or symptomatic TS after surgery on tricuspid valve, requiring reoperation or intervention.
E876.8	15.11.13 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent valve stenosis – Tricuspid valve (or pulmonary atrioventricular valve), Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	>8 mmHg MIG (Maximum Instantaneous Gradient) or symptomatic TS after surgery on tricuspid valve, Requiring reoperation or reintervention during this admission, or requiring reoperation or reintervention within 30 days of the original operation or intervention.
745.4	15.22.13	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent VSD	Unplanned residual or recurrent VSD, either single or in aggregate, that meets at least 1 of the following 3 criteria: >3 mm in diameter, or causing symptoms, or Qp:Qs > or = 1.5:1, after cardiac repair
E876.8	15.22.13 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent VSD, Requiring reoperation or reintervention	Unplanned residual or recurrent VSD, either single or in aggregate, that meets at least 1 of the following 3 criteria: >3 mm in diameter, or causing symptoms, or Qp:Qs > or = 1.5:1, after cardiac repair, requiring surgery or intervention
E876.8	15.22.13 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Residual or recurrent VSD, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Unplanned residual or recurrent VSD, either single or in aggregate, that meets at least 1 of the following 3 criteria: >3 mm in diameter, or causing symptoms, or Qp:Qs > or = 1.5:1, after cardiac repair, requiring surgery or intervention, during same admission
996.09	15.56.20	Cardiac – Residual and Recurrent cardiac lesions	Shunt – systemic artery to pulmonary artery, Technical problem	A technical problem with a systemic artery to pulmonary artery shunt
E876.8	15.56.20 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Shunt – systemic artery to pulmonary artery, Technical problem, Requiring reoperation or reintervention	A technical problem with a systemic artery to pulmonary artery shunt, requiring surgery or intervention
E876.8	15.56.20 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Shunt – systemic artery to pulmonary artery, Technical problem, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	A technical problem with a systemic artery to pulmonary artery shunt, requiring surgery or intervention, during same admission
E876.5	15.37.11	Cardiac – Residual and Recurrent cardiac lesions	Unintended aortic (descending aortic) ligation	Unintended aortic (descending aortic) ligation during the performance of a cardiovascular procedure such as PDA ligation
E876.5	15.37.11 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Unintended aortic (descending aortic) ligation, Requiring reoperation or reintervention	Unintended aortic (descending aortic) ligation during the performance of a cardiovascular procedure such as PDA ligation, requiring surgery or intervention

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E876.5	15.37.11 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Unintended aortic (descending aortic) ligation, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Unintended aortic (descending aortic) ligation during the performance of a cardiovascular procedure such as PDA ligation, requiring surgery or intervention, during same admission
E876.5	15.32.53	Cardiac – Residual and Recurrent cardiac lesions	Unintended pulmonary artery ligation	Unintended pulmonary artery ligation during the performance of a cardiovascular procedure such as coarctation repair or PDA ligation
E876.5	15.32.53 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Unintended pulmonary artery ligation, Requiring reoperation or reintervention	Unintended pulmonary artery ligation during the performance of a cardiovascular procedure such as coarctation repair or PDA ligation, requiring surgery or intervention
E876.5	15.32.53 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Unintended pulmonary artery ligation, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Unintended pulmonary artery ligation during the performance of a cardiovascular procedure such as coarctation repair or PDA ligation, requiring surgery or intervention, during same admission
747.21	15.37.13	Cardiac – Residual and Recurrent cardiac lesions	Vascular ring – Inadequate relief of vascular ring	Evidence of residual or recurrent vascular ring. (Possible source of evidence include barium swallow, echocardiography, CT scan, cardiac catheterization or MRI.)
E876.5	15.37.13 + Q1.91.37	Cardiac – Residual and Recurrent cardiac lesions	Vascular ring – Inadequate relief of vascular ring, Requiring reoperation or reintervention	Evidence of residual or recurrent vascular ring. (Possible source of evidence include barium swallow, echocardiography, CT scan, cardiac catheterization or MRI.) Requiring surgery or intervention
E876.5	15.37.13 + Q1.91.39	Cardiac – Residual and Recurrent cardiac lesions	Vascular ring – Inadequate relief of vascular ring, Requiring reoperation or reintervention during this admission or requiring reoperation or reintervention within 30 days of the original operation or intervention	Evidence of residual or recurrent vascular ring. (Possible source of evidence include barium swallow, echocardiography, CT scan, cardiac catheterization or MRI.) Requiring surgery or intervention, during same admission
998.11	15.02.37	Operative/Procedural	Bleeding from transthoracic line	Bleeding from transthoracic line, either at cardiac entry or chest wall site, resulting in excessive chest tube output, need for blood product administration, reexploration, or sternal re-entry
998.11	15.02.37 + Q1.02.41	Operative/Procedural	Bleeding from transthoracic line, Requiring blood product administration but not reexploration	Bleeding from transthoracic line, either at cardiac entry or chest wall site, resulting in excessive chest tube output and the need for blood product administration, but not reexploration or sternal re-entry
998.11	15.02.37 + Q1.02.42	Operative/Procedural	Bleeding from transthoracic line, Requiring reexploration	Bleeding from transthoracic line, either at cardiac entry or chest wall site, resulting in reexploration or sternal re-entry.
998.11	15.02.15	Operative/Procedural	Bleeding, Coagulopathy	Bleeding likely due to coagulopathy
998.11	15.02.16	Operative/Procedural	Bleeding, Coagulopathy, Dilutional	Bleeding likely due to dilutional coagulopathy
998.11	15.02.65	Operative/Procedural	Bleeding, Requiring reoperation	Postoperative/postprocedural bleeding requiring reoperation
998.11	15.02.17	Operative/Procedural	Bleeding, Requiring reoperation, While on mechanical support	Postoperative/postprocedural bleeding requiring reoperation, while on mechanical support
998.11	15.02.18	Operative/Procedural	Bleeding, Resolved without reoperation	Postoperative/postprocedural bleeding requiring multiple transfusions that resolves without reexploration
998.11	Title	Operative/Procedural	Bleeding-modifier for location	Select the children terms of this code as a modifier to designate the location of bleeding. This choice may also be selected and

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				accompanied by free text in a "Comments" field if none of the children terms are appropriate.
998.11	Q1.02.30	Operative/Procedural	Bleeding-modifier for location, Groin incision	Select this term as a modifier to designate the location of bleeding = Groin incision
998.11	Q1.02.32	Operative/Procedural	Bleeding-modifier for location, Groin incision, Left	Select this term as a modifier to designate the location of bleeding = Groin incision, Left
998.11	Q1.02.31	Operative/Procedural	Bleeding-modifier for location, Groin incision, Right	Select this term as a modifier to designate the location of bleeding = Groin incision, Right
998.11	Q1.02.33	Operative/Procedural	Bleeding-modifier for location, Leg incision	Select this term as a modifier to designate the location of bleeding = Leg incision
998.11	Q1.02.35	Operative/Procedural	Bleeding-modifier for location, Leg incision, Left	Select this term as a modifier to designate the location of bleeding = Leg incision, Left
998.11	Q1.02.34	Operative/Procedural	Bleeding-modifier for location, Leg incision, Right	Select this term as a modifier to designate the location of bleeding = Leg incision, Right
998.11	Q1.02.36	Operative/Procedural	Bleeding-modifier for location, Neck incision	Select this term as a modifier to designate the location of bleeding = Neck incision
998.11	Q1.02.38	Operative/Procedural	Bleeding-modifier for location, Neck incision, Left	Select this term as a modifier to designate the location of bleeding = Neck incision, Left
998.11	Q1.02.37	Operative/Procedural	Bleeding-modifier for location, Neck incision, Right	Select this term as a modifier to designate the location of bleeding = Neck incision, Right
998.11	15.03.13	Operative/Procedural	Bleeding-modifier for location, Sternotomy	Select this term as a modifier to designate the location of bleeding = Sternotomy
998.11	15.03.36	Operative/Procedural	Bleeding-modifier for location, Thoracotomy	Select this term as a modifier to designate the location of bleeding = Thoracotomy
998.11	15.03.61	Operative/Procedural	Bleeding-modifier for location, Thoracotomy, Left	Select this term as a modifier to designate the location of bleeding = Thoracotomy, Left
998.11	15.03.62	Operative/Procedural	Bleeding-modifier for location, Thoracotomy, Right	Select this term as a modifier to designate the location of bleeding = Thoracotomy, Right
E870.0	15.80.69	Operative/Procedural	Intraoperative/Intraprocedural injury to airway	Use this code when a known injury occurs during an operation and/or procedure.
E870.0	15.80.69 + Q1.80.93	Operative/Procedural	Intraoperative/Intraprocedural injury to airway, Intraoperative/Intraprocedural bronchial injury	Use this code when a known injury occurs during an operation and/or procedure.
E870.0	15.80.69 + Q1.80.82	Operative/Procedural	Intraoperative/Intraprocedural injury to airway, Intraoperative/Intraprocedural bronchial injury, Left bronchial tree	Use this code when a known injury occurs during an operation and/or procedure.
E870.0	15.80.69 + Q1.80.81	Operative/Procedural	Intraoperative/Intraprocedural injury to airway, Intraoperative/Intraprocedural bronchial injury, Right bronchial tree	Use this code when a known injury occurs during an operation and/or procedure.
E870.0	15.80.69 + Q1.80.80	Operative/Procedural	Intraoperative/Intraprocedural injury to airway, Intraoperative/Intraprocedural carinal injury	Use this code when a known injury occurs during an operation and/or procedure.
E870.0	15.80.69 + Q1.80.53	Operative/Procedural	Intraoperative/Intraprocedural injury to airway, Intraoperative/Intraprocedural tracheal injury	Use this code when a known injury occurs during an operation and/or procedure.
E870.0	15.80.42	Operative/Procedural	Intraoperative/Intraprocedural injury to chylous system	Use this code when a known injury occurs during an operation and/or procedure.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E870.0	15.80.40	Operative/Procedural	Intraoperative/Intraprocedural injury to lung	Use this code when a known injury occurs during an operation and/or procedure.
E870.0	15.80.41	Operative/Procedural	Intraoperative/Intraprocedural injury to lung, Lung laceration	Use this code when a known injury occurs during an operation and/or procedure.
E870.0	15.80.90	Operative/Procedural	Intraoperative/Intraprocedural injury to phrenic nerve injury (paralyzed diaphragm)	Use this code when a known injury occurs during an operation and/or procedure.
E870.0	15.80.98	Operative/Procedural	Intraoperative/Intraprocedural injury to phrenic nerve injury (paralyzed diaphragm), Bilateral	Use this code when a known injury occurs during an operation and/or procedure.
E870.0	15.80.92	Operative/Procedural	Intraoperative/Intraprocedural injury to phrenic nerve injury (paralyzed diaphragm), Left	Use this code when a known injury occurs during an operation and/or procedure.
E870.0	15.80.91	Operative/Procedural	Intraoperative/Intraprocedural injury to phrenic nerve injury (paralyzed diaphragm), Right	Use this code when a known injury occurs during an operation and/or procedure.
E870.0	15.80.93	Operative/Procedural	Intraoperative/Intraprocedural injury to recurrent laryngeal nerve	Use this code when a known injury occurs during an operation and/or procedure.
E870.0	15.81.82	Operative/Procedural	Intraoperative/Intraprocedural injury to recurrent laryngeal nerve, Bilateral	Use this code when a known injury occurs during an operation and/or procedure.
E870.0	15.81.81	Operative/Procedural	Intraoperative/Intraprocedural injury to recurrent laryngeal nerve, Left	Use this code when a known injury occurs during an operation and/or procedure.
E870.0	15.81.80	Operative/Procedural	Intraoperative/Intraprocedural injury to recurrent laryngeal nerve, Right	Use this code when a known injury occurs during an operation and/or procedure.
997.1	15.00.15	Operative/Procedural	Intraoperative/Intraprocedural institution of mechanical circulatory support	Institution of intraoperative/intraprocedural mechanical support, any type, for resuscitation/CPR or support
997.1	15.00.15 + Q1.73.01	Operative/Procedural	Intraoperative/Intraprocedural institution of mechanical circulatory support (IABP, VAD, ECMO, or CPS)	Institution of intraoperative/intraprocedural mechanical support, any type, for resuscitation/CPR or support
997.1	15.00.15 + Q1.73.05	Operative/Procedural	Intraoperative/Intraprocedural institution of mechanical circulatory support, BiVAD	Institution of intraoperative/intraprocedural mechanical support, BiVAD, for resuscitation/CPR or support
997.1	15.00.15 + Q1.73.07	Operative/Procedural	Intraoperative/Intraprocedural institution of mechanical circulatory support, CPS	Institution of intraoperative/intraprocedural mechanical support, CPS, for resuscitation/CPR or support
997.1	15.00.15 + Q1.73.02	Operative/Procedural	Intraoperative/Intraprocedural institution of mechanical circulatory support, ECMO	Institution of intraoperative/intraprocedural mechanical support, ECMO, for resuscitation/CPR or support
997.1	15.00.15 + Q1.73.06	Operative/Procedural	Intraoperative/Intraprocedural institution of mechanical circulatory support, IABP	Institution of intraoperative/intraprocedural mechanical support, IABP, for resuscitation/CPR or support
997.1	15.00.15 + Q1.73.03	Operative/Procedural	Intraoperative/Intraprocedural institution of mechanical circulatory support, LVAD	Institution of intraoperative/intraprocedural mechanical support, LVAD, for resuscitation/CPR or support
997.1	15.00.15 + Q1.73.04	Operative/Procedural	Intraoperative/Intraprocedural institution of mechanical circulatory support, RVAD	Institution of intraoperative/intraprocedural mechanical support, RVAD, for resuscitation/CPR or support
997.1	15.00.15 + Q1.73.08	Operative/Procedural	Intraoperative/Intraprocedural institution of mechanical circulatory support-modifier, Planned Intraoperative/Intraprocedural implementation of mechanical circulatory support (Ungerleider approach)	Institution of intraoperative/intraprocedural mechanical support, any type, for resuscitation/CPR or support, Planned intraoperative/intraprocedural implementation of mechanical circulatory support (Ungerleider approach)
997.1	15.00.15 + Q1.73.09	Operative/Procedural	Intraoperative/Intraprocedural institution of mechanical circulatory support-modifier,	Institution of intraoperative/intraprocedural mechanical support, any type, for resuscitation/CPR or support, Unplanned

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
			Unplanned Intraoperative/Intraprocedural implementation of mechanical circulatory support	intraoperative/intraprocedural implementation of mechanical circulatory support
E876.2	15.04.40	Operative/Procedural	Ligation of wrong vessel or structure	Incorrect vessel or structure ligated, with or without consequences
E870.0	15.03.17	Operative/Procedural	Major cardiovascular injury during redo-sternotomy	Any injury to the heart or great vessels occurring during the conduct of a redo-sternotomy, resulting either in emergent CPB, or massive volume administration
E870.0	15.03.18	Operative/Procedural	Major cardiovascular injury during redo-sternotomy, Necessitating emergent institution of cardiopulmonary bypass	Any injury to the heart or great vessels occurring during the conduct of a redo-sternotomy, resulting in emergent CPB
998.90	15.90.14	Operative/Procedural	Operative/procedural complication	Any operative and/or procedural complication.
E876.5	15.90.19	Operative/Procedural	Reoperation during this admission (unplanned reoperation)	Any additional unplanned operation prior to discharge.
E876.5	15.90.15	Operative/Procedural	Reoperation, Cardiac	Unplanned cardiac reoperation
996.72	15.00.16	Operative/Procedural	Reoperation, Cardiac, Graft occlusion	Reoperation for graft occlusion
996.72	15.00.16 + Q1.83.11	Operative/Procedural	Reoperation, Cardiac, Graft occlusion, Requiring reoperation during this admission	Reoperation for graft occlusion during same admission
E876.5	15.90.16	Operative/Procedural	Reoperation, Cardiac, Requiring unplanned reoperation during this admission	Unplanned cardiac reoperation during same admission
996.02	15.11.22	Operative/Procedural	Reoperation, Cardiac, Valve dysfunction	Unplanned reoperation for valve dysfunction
996.02	15.11.23	Operative/Procedural	Reoperation, Cardiac, Valve dysfunction, Requiring reoperation during this admission	Unplanned reoperation for valve dysfunction during same admission
E976.5	15.90.17	Operative/Procedural	Reoperation, Noncardiac	Unplanned noncardiac reoperation
E976.5	15.90.18	Operative/Procedural	Reoperation, Noncardiac, Requiring reoperation during this admission	Unplanned noncardiac reoperation during same admission
E872.0	15.02.96	Operative/Procedural	Sterile technique breached during performance of an operation or procedure	Breach in sterile technique for any reason
997.1	15.03.53	Operative/Procedural	Sternum left open	Sternum was left open postoperatively (i.e. planned or unplanned). The goal is for delayed sternotomy closure.
997.1	15.03.57	Operative/Procedural	Sternum left open, Planned	Sternum was left open postoperatively with preoperative plans to leave the sternum open postoperatively (i.e. planned). The goal is for delayed sternotomy closure.
997.1	15.03.58	Operative/Procedural	Sternum left open, Unplanned	Sternum was left open postoperatively without preoperative plans to leave the sternum open postoperatively (i.e. unplanned). The goal is for delayed sternotomy closure.
E876.2	15.03.71	Operative/Procedural	Suture line disruption, Acute	Acute suture line disruption resulting in massive hemorrhage
E876.2	15.03.72	Operative/Procedural	Suture line disruption, Subacute	Subacute suture line disruption resulting in bleeding or pseudoaneurysm
E870.0	15.90.47	Operative/Procedural	Technical mistake	Technical mistake occurring during the performance of an invasive procedure
E870.0	15.90.48	Operative/Procedural	Technical mistake, Cardiac laceration	Inadvertent heart laceration during the conduct of an operation
E870.0	15.03.20	Operative/Procedural	Technical mistake, Off midline sternotomy	Midline sternotomy performed at the edge of or outside of sternum
E870.0	15.90.49	Operative/Procedural	Technical mistake, Vessel laceration	Inadvertent large vessel laceration during the conduct of an operation

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E876.9	15.90.91	Operative/Procedural	Unplanned cardiac reoperation during the postoperative or postprocedural time period	Any additional unplanned cardiac operation occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. A cardiac operation is defined as any operation that is of the operation type of "CPB" or "No CPB Cardiovascular".
E876.9	15.90.92	Operative/Procedural	Unplanned interventional cardiovascular catheterization procedure during the postoperative or postprocedural time period	Any unplanned interventional cardiovascular catheterization procedure occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention.
E876.9	15.90.46	Operative/Procedural	Unplanned reinstitution of cardiopulmonary bypass	Unplanned reinstitution of CPB during performance of cardiac surgery
E876.9	15.90.93	Operative/Procedural	Unplanned reoperation during the postoperative or postprocedural time period	Any additional unplanned operation occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention.
998.4	15.80.17 + Q1.93.17	Operative/Procedural-retained equipment	Retained chest tube	Inability to achieve complete remove of a chest tube (any type of indwelling thoracic tube drainage) without surgery.
998.4	15.80.17 + Q1.93.17 - + Q1.93.30	Operative/Procedural-retained equipment	Retained chest tube, Removed surgically	Inability to achieve complete remove of a chest tube (any type of indwelling thoracic tube drainage) without surgery, With patient undergoing surgical removal.
998.4	15.80.17 + Q1.93.17 - + Q1.93.31	Operative/Procedural-retained equipment	Retained chest tube, Removed surgically during this admission	Inability to achieve complete remove of a chest tube (any type of indwelling thoracic tube drainage) without surgery, With patient undergoing surgical removal during the same hospitalization that the tube was inserted.
998.4	15.80.17	Operative/Procedural-retained equipment	Retained foreign body	Act of inadvertently leaving a foreign body, of any kind, within a surgical field.
998.4	15.80.17 + Q1.93.30	Operative/Procedural-retained equipment	Retained foreign body, Removed surgically	Act of inadvertently leaving a foreign body, of any kind, within a surgical field necessitating surgical removal.
998.4	15.80.17 + Q1.93.31	Operative/Procedural-retained equipment	Retained foreign body, Removed surgically during this admission	Act of inadvertently leaving a foreign body, of any kind, within a surgical field necessitating surgical removal during this admission.
998.4	15.80.17 + Q1.93.05	Operative/Procedural-retained equipment	Retained instrument	Act of inadvertently leaving a surgical instrument, of any kind, within a surgical field.
998.4	15.80.17 + Q1.93.05 - + Q1.93.30	Operative/Procedural-retained equipment	Retained instrument, Removed surgically	Act of inadvertently leaving a surgical instrument, of any kind, within a surgical field necessitating surgical removal.
998.4	15.80.17 + Q1.93.05 - + Q1.93.31	Operative/Procedural-retained equipment	Retained instrument, Removed surgically during this admission	Act of inadvertently leaving a surgical instrument, of any kind, within a surgical field necessitating surgical removal during this admission.
998.4	15.80.17 + Q1.93.13	Operative/Procedural-retained equipment	Retained lap	Act of inadvertently leaving a surgical "lap" sponge, of any kind, within a surgical field.
998.4	15.80.17 + Q1.93.13 - + Q1.93.30	Operative/Procedural-retained equipment	Retained lap, Removed surgically	Act of inadvertently leaving a surgical "lap" sponge of any kind, within a surgical field necessitating surgical removal.
998.4	15.80.17 + Q1.93.13 - + Q1.93.31	Operative/Procedural-retained equipment	Retained lap, Removed surgically during this admission	Act of inadvertently leaving a surgical "lap" sponge of any kind, within a surgical field necessitating surgical removal during this admission.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
998.4	15.80.17 + Q1.93.07	Operative/Procedural-retained equipment	Retained needle	Act of inadvertently leaving a surgical needle of any kind, within a surgical field.
998.4	15.80.17 + Q1.93.07 - + Q1.93.30	Operative/Procedural-retained equipment	Retained needle, Removed surgically	Act of inadvertently leaving a surgical needle of any kind, within a surgical field necessitating surgical removal.
998.4	15.80.17 + Q1.93.07 - + Q1.93.31	Operative/Procedural-retained equipment	Retained needle, Removed surgically during this admission	Act of inadvertently leaving a surgical needle of any kind, within a surgical field necessitating surgical removal during this admission.
998.4	15.80.17 + Q1.93.08	Operative/Procedural-retained equipment	Retained sponge	Act of inadvertently leaving a surgical sponge, of any kind, within a surgical field.
998.4	15.80.17 + Q1.93.08 - + Q1.93.30	Operative/Procedural-retained equipment	Retained sponge, Removed surgically	Act of inadvertently leaving a surgical sponge of any kind, within a surgical field necessitating surgical removal.
998.4	15.80.17 + Q1.93.08 - + Q1.93.31	Operative/Procedural-retained equipment	Retained sponge, Removed surgically during this admission	Act of inadvertently leaving a surgical sponge of any kind, within a surgical field necessitating surgical removal during this admission.
998.4	15.80.17 + Q1.93.09	Operative/Procedural-retained equipment	Retained temporary pacer wire	Inability to achieve complete remove of a temporary pacing wire without surgery.
998.4	15.80.17 + Q1.93.09 + Q1.93.30	Operative/Procedural-retained equipment	Retained temporary pacer wire, Removed surgically	Inability to achieve complete remove of a temporary pacing wire without surgery, With patient undergoing surgical removal.
998.4	15.80.17 + Q1.93.09 + Q1.93.31	Operative/Procedural-retained equipment	Retained temporary pacer wire, Removed surgically during this admission	Inability to achieve complete remove of a temporary pacing wire without surgery, With patient undergoing surgical removal during the same hospitalization that the wire was inserted.
998.4	15.80.17 + Q1.93.16	Operative/Procedural-retained equipment	Retained transthoracic line	Inability to achieve complete remove of a transthoracic line without surgery.
998.4	15.80.17 + Q1.93.16 + Q1.93.30	Operative/Procedural-retained equipment	Retained transthoracic line, Removed surgically	Inability to achieve complete remove of a transthoracic line without surgery, With patient undergoing surgical removal.
998.4	15.80.17 + Q1.93.16 + Q1.93.31	Operative/Procedural-retained equipment	Retained transthoracic line, Removed surgically during this admission	Inability to achieve complete remove of a transthoracic line without surgery, With patient undergoing surgical removal during the same hospitalization that the line was inserted.
997.1	15.00.09	Mechanical support utilization	Postoperative/Postprocedural mechanical circulatory support	Utilization of postoperative/postprocedural mechanical support, of any type, for resuscitation/CPR or support, during the postoperative/postprocedural time period. Code this complication if it occurs (1) within 30 days after surgery or intervention regardless of the date of hospital discharge, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention.
997.1	15.00.09 + Q1.73.01	Mechanical support utilization	Postoperative/Postprocedural mechanical circulatory support (IABP, VAD, ECMO, or CPS)	Utilization of postoperative/postprocedural mechanical support, of any type (IABP, VAD, ECMO, or CPS), for resuscitation/CPR or support, during the postoperative/postprocedural time period. Code this complication if it occurs (1) within 30 days after surgery or intervention regardless of the date of hospital discharge, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention.
997.1	15.00.09 + Q1.73.05	Mechanical support utilization	Postoperative/Postprocedural mechanical circulatory support, BiVAD	Utilization of postoperative/postprocedural mechanical support, BiVAD, for resuscitation/CPR or support, during the postoperative/postprocedural time period. Code this complication if it occurs (1) within 30 days after surgery or intervention regardless of the date of hospital discharge, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
997.1	15.00.09 + Q1.73.07	Mechanical support utilization	Postoperative/Postprocedural mechanical circulatory support, CPS	Utilization of postoperative/postprocedural mechanical support, CPS, for resuscitation/CPR or support, during the postoperative/ postprocedural time period. Code this complication if it occurs (1) within 30 days after surgery or intervention regardless of the date of hospital discharge, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention.
997.1	15.00.09 + Q1.73.02	Mechanical support utilization	Postoperative/Postprocedural mechanical circulatory support, ECMO	Utilization of postoperative/postprocedural mechanical support, ECMO, for resuscitation/CPR or support, during the postoperative/ postprocedural time period. Code this complication if it occurs (1) within 30 days after surgery or intervention regardless of the date of hospital discharge, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention.
997.1	15.00.09 + Q1.73.06	Mechanical support utilization	Postoperative/Postprocedural mechanical circulatory support, IABP	Utilization of postoperative/postprocedural mechanical support, IABP, for resuscitation/CPR or support, during the postoperative/ postprocedural time period. Code this complication if it occurs (1) within 30 days after surgery or intervention regardless of the date of hospital discharge, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention.
997.1	15.00.09 + Q1.73.03	Mechanical support utilization	Postoperative/Postprocedural mechanical circulatory support, LVAD	Utilization of postoperative/postprocedural mechanical support, LVAD, for resuscitation/CPR or support, during the postoperative/ postprocedural time period. Code this complication if it occurs (1) within 30 days after surgery or intervention regardless of the date of hospital discharge, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention.
997.1	15.00.09 + Q1.73.04	Mechanical support utilization	Postoperative/Postprocedural mechanical circulatory support, RVAD	Utilization of postoperative/postprocedural mechanical support, RVAD, for resuscitation/CPR or support, during the postoperative/ postprocedural time period. Code this complication if it occurs (1) within 30 days after surgery or intervention regardless of the date of hospital discharge, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention.
E874	15.77.00	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication	Any complication involving cardiopulmonary bypass (CPB). Cardiopulmonary bypass is defined as the process of diverting venous blood from a patient's heart and lungs to a gas exchange system for the addition of oxygen, removal of carbon dioxide, and subsequent re-infusion to the patient's arterial system.
E874.1	15.77.01	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Air complication with air in circuit	Presence of air in circuit creating risk for emboli or air lock
999.1	15.77.01 + Q1.67.01	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Air complication with air in circuit, Air complication with evidence of major air embolism (manifest with evidence of neurologic change [stroke] or necessitating treatment with hyperbaric therapy	This complication includes all cases where air embolism is thought to cause major neurologic changes such as strokes and all cases where patients are treated with hyperbaric therapy during or after support because of air embolism.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
999.1	15.77.01 + Q1.67.02	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Air complication with air in circuit, Air embolism with EKG transient changes	Air in the coronary arteries causing transient EKG changes
E874.1	15.77.01 + Q1.67.04	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Air complication with air in circuit, Gaseous emboli in arterial line – mechanically detected	Mechanically detected gaseous emboli in the arterial line of the cardiopulmonary bypass circuit
E874.1	15.77.01 + Q1.67.05	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Air complication with air in circuit, Gaseous emboli in arterial line – visually detected	Visually detected gaseous emboli in the arterial line of the cardiopulmonary bypass circuit
E874.1	15.77.01 + Q1.67.06	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Air complication with air in circuit, Gaseous emboli in arterial line – visually detected, Not visibly infused to patient	Visually detected gaseous emboli in the arterial line of the cardiopulmonary bypass circuit, That is not infused to the patient
E874.1	15.77.01 + Q1.67.07	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Air complication with air in circuit, Gaseous emboli in arterial line – visually detected, Visibly infused to patient	Visually detected gaseous emboli in the arterial line of the cardiopulmonary bypass circuit, That is infused to the patient
E874.1	15.77.01 + Q1.67.09	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Air complication with air in circuit, Gaseous emboli in venous line – mechanically detected	Mechanically detected gaseous emboli in the venous line of the cardiopulmonary bypass circuit
E874.1	15.77.01 + Q1.67.10	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Air complication with air in circuit, Gaseous emboli in venous line – visually detected	Visually detected gaseous emboli in the venous line of the cardiopulmonary bypass circuit
E874.1	15.77.01 + Q1.67.11	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Air complication with air in circuit, Gaseous emboli in venous line causing venous air lock	Air emboli in the venous line of the cardiopulmonary bypass circuit that causes an air lock and interruption in CPB flow
E874.2	15.77.03	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Calibration error of arterial pump head	Arterial pump calibrated for incorrect tubing size
E874.2	15.77.02	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Cannula complication	Complication stemming from CPB cannulae including dislodgment and leakage
E870.2	15.77.02 + Q1.67.20	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Cannula complication, Arterial dissection	Arterial dissection during CPB
E870.2	15.77.02 + Q1.67.21	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Cannula complication, Arterial dissection, Aortic dissection	Arterial dissection during CPB, Aortic dissection
E870.2	15.77.02 + Q1.67.22	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Cannula complication, Arterial dissection, Femoral artery dissection	Arterial dissection during CPB, Femoral dissection
E876.4	15.77.02 + Q1.67.23	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Cannula complication, Dislodgement of arterial cannula	Dislodgement of the arterial cannula during CPB

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E876.4	15.77.02 + Q1.67.24	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Cannula complication, Dislodgement of venous cannula	Dislodgement of the venous cannula during CPB
E876.4	15.77.02 + Q1.67.25	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Cannula complication, Malposition of arterial cannula	Malposition of arterial cannula causing altered distribution of blood flow producing hypoperfusion and/or hyperperfusion of tissues/ organs
E876.4	15.77.02 + Q1.67.26	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Cannula complication, Malposition of venous cannula	Malposition of venous cannula causing a persistent reduction in venous return and subsequent reduction in CPB flow below calculated full flow
E874.2	15.77.14	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Device complication	Any device-related cardiopulmonary bypass complication
E874.2	15.77.15	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Device complication, Heart-lung machine complication	Malfunction of pumps or modules of the heart/lung machine
E874.2	15.77.12	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Device complication, Heater/cooler complication	Malfunction of the heater/cooler device
E874.2	15.77.12 + Q1.67.40	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Device complication, Heater/cooler complication, Heat exchanger with blood to water leak	Blood to water leak in heat exchanger
E874.2	15.77.12 + Q1.67.41	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Device complication, Heater/cooler complication, Heat exchanger with water to blood leak	Water to blood leak in heat exchanger
E874.2	15.77.13 + Q1.67.43	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Device complication, Oxygenator device failure causing hypoxemia	Inability of the oxygenator device to exchange oxygen and carbon dioxide due to internal device failure, associated with hypoxemia.
E874.2	15.77.14 + Q1.67.44	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Device complication, Oxygenator with blood to gas phase leak	Blood to gas phase leak in oxygenator
E874.2	15.77.16	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Device complication, Tubing or connector complication	CPB circuit tubing complication including unplanned tubing disconnection, or tubing connector leakage or rupture
E874.2	15.77.16 + Q1.67.50	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Device complication, Tubing or connector complication, Raceway or tubing rupture	CPB raceway tubing rupture requiring interruption of CPB flow for emergent replacement
E876.8	15.77.17	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Excessive hemodilution	Excessive hemodilution due to inappropriate amount of fluid administration resulting in deviations from departmental clinical practice guidelines (for Hgb level)
286.6	15.77.18	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Excessive hemolysis	Excessive hemolysis while on CPB. Excessive hemolysis may be documented by plasma free hemoglobin levels during CPB greater than 50 mg/dl
E876.8	15.77.19	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Excessive rewarming	Hyperthermia with perfusate temperature in excess of 38 degrees Celsius or associated with desaturation or hemolysis due to excessive rewarming

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E873.0	15.77.21	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Excessive volume administration	Excessive volume administration during conduct of CPB, resulting in deviations from departmental clinical practice guidelines (for Hgb level) or grossly skewed fluid balance or gross edema
996.7	15.77.22 + Q1.68.54	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Hematuria	Hematuria (Blood in the urine) that was unrecognized prior to CPB.
996.7	15.77.23	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Hypoxemia due to loss of ventilatory gas flow	Inability of the oxygenator device to exchange oxygen and carbon dioxide due to either loss of medical gas supply, gas supply line obstruction, or disconnected gas supply line.
E876.9	15.77.14 + Q1.67.45	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Inappropriate oxygenator choice	Oxygenator used in excess of manufacturer rated flow resulting in a venous saturation below institutional protocol.
E876.9	15.77.24	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Medication error via CPB circuit	Any medication administered to the CPB circuit in error including inappropriate dosage. This complication includes errors that result in underdose, overdose, clotting, bleeding, hypotension, and hypertension
E874.2	15.77.04	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Modified ultrafiltration (MUF) circuit complication	Air entrapment or tubing rupture in circuit causing interruption of MUF flow,
E876.9	15.77.05	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Modified ultrafiltration (MUF) procedure complication	Inappropriate volume management causing hemodynamic instability
E874.2	15.77.06	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Myocardial protection complication	Complication from myocardial protection including cardioplegia delivery complications, inadequate myocardial protection, myocardial infarction, etc
E874.2	15.77.06 + Q1.67.70	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Myocardial protection complication, Cardioplegia delivery complication secondary to mechanical or technical problems at the level of the circuit	Compromised cardioplegia delivery due to mechanical or technical problems at the level of the circuit including under occluded pump head, incorrectly calibrated pump head, or introduction of gaseous emboli
E874.2	15.77.06 + Q1.67.71	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Myocardial protection complication, Cardioplegia delivery complication secondary to mechanical or technical problems at the level of the patient	Compromised cardioplegia delivery due to mechanical or technical problems at the level of the patient including patient anatomy or suboptimal cross clamp position or application
E874.2	15.77.06 + Q1.67.72	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Myocardial protection complication, Cardioplegia delivery complication secondary to pharmacologic problem	Administration of incorrect or expired cardioplegia solution
E874.2	15.77.09	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Power failure	Sudden loss of pump function either due to electrical or battery or other power failure
E874.2	15.77.09 + Q1.67.75	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Power failure, Managed with battery back-up	Sudden loss of pump function either due to electrical or battery or other power failure, Managed with battery back-up

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E874.2	15.77.09 + Q1.67.76	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Power failure, Managed with both handcrank and battery back-up	Sudden loss of pump function either due to electrical or battery or other power failure, Managed with both handcrank and battery back-up
E874.2	15.77.09 + Q1.67.77	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Power failure, Managed with handcrank	Sudden loss of pump function either due to electrical or battery or other power failure, Managed with handcrank
E874.2	15.77.07+Q1.67.80	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Pump set-up complication	Incorrect pump set-up, whether connections, sizes, medications, or other
E874.2	15.77.07 + Q1.67.81	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Pump set-up complication, Forgetting to connect O2 tank resulting in O2 not being delivered	Forgetting to connect O2 tank resulting in non-oxygenated blood being delivered to patient
996.7	15.77.10	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Thrombo-embolic complication	Any thrombo-embolic complication during CPB
996.7	15.77.10 + Q1.67.30	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Thrombo-embolic complication, Central thromboembolism	Any thrombo-embolic complication during CPB involving the head, chest, abdomen, or pelvis
996.70	15.77.10 + Q1.67.31	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Thrombo-embolic complication, Central thromboembolism, Intracranial thromboembolism	Any intracranial thrombo-embolic complication during CPB
996.70	15.77.10 + Q1.67.32	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Thrombo-embolic complication, Mechanically detected thromboemboli with intervention	Thrombo-embolic events mechanically detected during CPB with subsequent intervention
996.70	15.77.10 + Q1.67.33	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Thrombo-embolic complication, Mechanically detected thromboemboli with no subsequent intervention	Thrombo-embolic events mechanically detected during CPB with no subsequent intervention
996.70	15.77.10 + Q1.67.34	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Thrombo-embolic complication, Visually detected thromboemboli with intervention	Thrombo-embolic events visually detected during CPB with subsequent intervention
996.70	15.77.10 + Q1.67.35	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Thrombo-embolic complication, Visually detected thromboemboli with no subsequent intervention	Thrombo-embolic events visually detected during CPB with no subsequent intervention
996.70	15.77.11	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Thrombotic complication	Any thrombotic complication during CPB
996.70	15.77.11 + Q1.68.01	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Thrombotic complication, Thrombus in CPB circuit during CPB	Thrombus visualized in CPB circuit during CPB
996.70	15.77.11 + Q1.68.02	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Thrombotic complication, Thrombus in CPB circuit during or after protamine	Thrombus visualized in CPB circuit during or after protamine administration

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E874.2	15.77.16	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Tubing (line) complication	Incorrect size or type of tubing, tubing malfunction, or unplanned tubing disconnection
E874.2	15.77.16 + Q1.67.51	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Tubing (line) complication, Line dislodgment or displacement	Unwanted line dislodgment or displacement
E874.2	15.77.16 + Q1.67.52	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Tubing (line) complication, Line dislodgment or displacement, Inadvertent dislodgment or displacement of arterial line	Unwanted line dislodgment or displacement, Inadvertent disconnection of arterial line
E874.2	15.77.16 + Q1.67.53	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Tubing (line) complication, Line dislodgment or displacement, Inadvertent dislodgment or displacement of venous line	Unwanted line dislodgment or displacement, Inadvertent disconnection of venous line
E874.2	15.77.16 + Q1.67.54	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Tubing (line) complication, Reversal of arterial and venous lines	Unplanned reversal of CPB arterial and venous lines recognized after initiation of CPB flow
E876.9	15.77.25	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Uncontrolled aortopulmonary collateral(s) or aortopulmonary shunt(s)	Failure to control aortopulmonary collateral(s) or aortopulmonary shunt(s) resulting in under-perfusion of essential organs and tissues.
E876.9	15.77.26	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Uncontrolled CPB circuit shunts	Presence of CPB circuit shunts resulting in hypoperfusion of essential organs and tissues.
E876.9	15.77.27	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Under occluded arterial pump head	Under occlusion of arterial pump head requiring adjustment during CPB
E876.9	15.77.28	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Unwanted exsanguination	Unwanted sudden drainage of venous blood in the CPB reservoir
E876.9	15.77.08	Cardiopulmonary bypass and Mechanical support	Cardiopulmonary bypass complication, Wrong prime	Incorrect prime composition recognized after initiation of CPB
E874.2	15.57.02	Cardiopulmonary bypass and Mechanical support	ECMO complication	Any complication involving extracorporeal membrane oxygenation (ECMO). Extracorporeal membrane oxygenation is defined as the process of diverting venous blood from a patient to a gas exchange system for the addition of oxygen, removal of carbon dioxide, and subsequent re-infusion to the patient's arterial or venous system.
E874.1	15.57.33	Cardiopulmonary bypass and Mechanical support	ECMO complication, Air complication with air in circuit	Presence of air in circuit creating risk for emboli or air lock
999.1	15.57.33 + Q1.67.01	Cardiopulmonary bypass and Mechanical support	ECMO complication, Air complication with air in circuit, Air complication with evidence of major air embolism (manifest with evidence of neurologic change [stroke] or necessitating treatment with hyperbaric therapy	This complication includes all cases where air embolism is thought to cause major neurologic changes such as strokes and all cases where patients are treated with hyperbaric therapy during or after support because of air embolism.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
999.1	15.57.33 + Q1.67.02	Cardiopulmonary bypass and Mechanical support	ECMO complication, Air complication with air in circuit, Air embolism with EKG transient changes	Air in the coronary arteries causing transient EKG changes
E874.1	15.57.33 + Q1.67.04	Cardiopulmonary bypass and Mechanical support	ECMO complication, Air complication with air in circuit, Gaseous emboli in arterial line – mechanically detected	Mechanically detected gaseous emboli in the arterial line of the ECMO circuit
E874.1	15.57.33 + Q1.67.05	Cardiopulmonary bypass and Mechanical support	ECMO complication, Air complication with air in circuit, Gaseous emboli in arterial line – visually detected	Visually detected gaseous emboli in the arterial line of the ECMO circuit
E874.1	15.57.33 + Q1.67.06	Cardiopulmonary bypass and Mechanical support	ECMO complication, Air complication with air in circuit, Gaseous emboli in arterial line – visually detected, Not visibly infused to patient	Visually detected gaseous emboli in the arterial line of the ECMO circuit, That is not infused to the patient
E874.1	15.57.33 + Q1.67.07	Cardiopulmonary bypass and Mechanical support	ECMO complication, Air complication with air in circuit, Gaseous emboli in arterial line – visually detected, Visibly infused to patient	Visually detected gaseous emboli in the arterial line of the ECMO circuit, That is infused to the patient
E874.1	15.57.33 + Q1.67.09	Cardiopulmonary bypass and Mechanical support	ECMO complication, Air complication with air in circuit, Gaseous emboli in venous line – mechanically detected	Mechanically detected gaseous emboli in the venous line of the ECMO circuit
E874.1	15.57.33 + Q1.67.10	Cardiopulmonary bypass and Mechanical support	ECMO complication, Air complication with air in circuit, Gaseous emboli in venous line – visually detected	Visually detected gaseous emboli in the venous line of the ECMO circuit
E874.1	15.57.33 + Q1.67.11	Cardiopulmonary bypass and Mechanical support	ECMO complication, Air complication with air in circuit, Gaseous emboli in venous line causing venous air lock	Air emboli in the venous line of the ECMO circuit that causes an air lock and interruption in ECMO flow
996.7	15.57.36	Cardiopulmonary bypass and Mechanical support	ECMO complication, Bleeding on ECMO	Bleeding complication while on ECMO
996.7	15.57.36 + Q1.68.60	Cardiopulmonary bypass and Mechanical support	ECMO complication, Bleeding on ECMO, Cannulation site bleeding	Bleeding at cannulation site (>10 ml/kg/hr) requiring transfusion or other intervention.
996.70	15.57.36 + Q1.68.61	Cardiopulmonary bypass and Mechanical support	ECMO complication, Bleeding on ECMO, Cannulation site bleeding, Arterial cannulation site	Bleeding at arterial cannulation site (>10 ml/kg/hr) requiring transfusion or other intervention.
996.70	15.57.36 + Q1.68.62	Cardiopulmonary bypass and Mechanical support	ECMO complication, Bleeding on ECMO, Cannulation site bleeding, Venous cannulation site	Bleeding at venous cannulation site (>10 ml/kg/hr) requiring transfusion or other intervention.
996.70	15.57.36 + Q1.68.63	Cardiopulmonary bypass and Mechanical support	ECMO complication, Bleeding on ECMO, Cerebral hemorrhage	Cerebral hemorrhage occurring while on ECMO
996.70	15.57.36 + Q1.68.64	Cardiopulmonary bypass and Mechanical support	ECMO complication, Bleeding on ECMO, Gastrointestinal hemorrhage	Gastrointestinal hemorrhage occurring while on ECMO
996.70	15.57.36 + Q1.68.55	Cardiopulmonary bypass and Mechanical support	ECMO complication, Bleeding, Coagulopathy related	Excessive bleeding (>10 ml/kg/hr) despite attempting to maintain platelets, fibrinogen, TEG, and INR values within departmental ECMO protocols.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E874.2	15.57.04 + Q1.67.93	Cardiopulmonary bypass and Mechanical support	ECMO complication, Calibration error of arterial pump head	Arterial pump calibrated for incorrect tubing size
E874.2	15.57.02	Cardiopulmonary bypass and Mechanical support	ECMO complication, Cannula complication	Complication stemming from ECMO cannulae including dislodgment and leakage
E870.2	15.57.02 + Q1.67.20	Cardiopulmonary bypass and Mechanical support	ECMO complication, Cannula complication, Arterial dissection	Arterial dissection during ECMO
E870.2	15.57.02 + Q1.67.21	Cardiopulmonary bypass and Mechanical support	ECMO complication, Cannula complication, Arterial dissection, Aortic dissection	Arterial dissection during ECMO, Aortic dissection
E870.2	15.57.02 + Q1.67.27	Cardiopulmonary bypass and Mechanical support	ECMO complication, Cannula complication, Arterial dissection, Axillary artery dissection	Arterial dissection during ECMO, Axillary artery dissection
E870.2	15.57.02 + Q1.67.22	Cardiopulmonary bypass and Mechanical support	ECMO complication, Cannula complication, Arterial dissection, Femoral artery dissection	Arterial dissection during ECMO, Femoral dissection
E870.2	15.57.02 + Q1.67.28	Cardiopulmonary bypass and Mechanical support	ECMO complication, Cannula complication, Arterial dissection, Right carotid artery dissection	Arterial dissection during ECMO, Right carotid artery dissection
E876.4	15.57.02 + Q1.67.23	Cardiopulmonary bypass and Mechanical support	ECMO complication, Cannula complication, Dislodgement of arterial cannula	Dislodgement of the arterial cannula during ECMO
E876.4	15.57.02 + Q1.67.24	Cardiopulmonary bypass and Mechanical support	ECMO complication, Cannula complication, Dislodgement of venous cannula	Dislodgement of the venous cannula during ECMO
E876.4	15.57.02 + Q1.67.25	Cardiopulmonary bypass and Mechanical support	ECMO complication, Cannula complication, Malposition of arterial cannula	Malposition of arterial cannula causing altered distribution of blood flow producing hypoperfusion and/or hyperperfusion of tissues/organs
E876.4	15.57.02 + Q1.67.26	Cardiopulmonary bypass and Mechanical support	ECMO complication, Cannula complication, Malposition of venous cannula	Malposition of venous cannula causing a persistent reduction in venous return and subsequent reduction in ECMO flow below calculated full flow
E874.2	15.57.13	Cardiopulmonary bypass and Mechanical support	ECMO complication, Conversion of venovenous ECMO to venoarterial ECMO	Conversion of venovenous ECMO to venoarterial ECMO
E874.2	15.57.13 + Q1.67.95	Cardiopulmonary bypass and Mechanical support	ECMO complication, Conversion of venovenous ECMO to venoarterial ECMO, Secondary to inadequate blood pressure	Conversion of venovenous ECMO to venoarterial ECMO, Secondary to inadequate blood pressure
E874.2	15.57.13 + Q1.67.96	Cardiopulmonary bypass and Mechanical support	ECMO complication, Conversion of venovenous ECMO to venoarterial ECMO, Secondary to inadequate ECMO flow	Conversion of venovenous ECMO to venoarterial ECMO, Secondary to inadequate ECMO flow
E874.2	15.57.13 + Q1.67.97	Cardiopulmonary bypass and Mechanical support	ECMO complication, Conversion of venovenous ECMO to venoarterial ECMO, Secondary to inadequate oxygenation	Conversion of venovenous ECMO to venoarterial ECMO, Secondary to inadequate oxygenation

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E874.2	15.57.05	Cardiopulmonary bypass and Mechanical support	ECMO complication, Device complication	Any device-related ECMO complication
E874.2	15.57.11	Cardiopulmonary bypass and Mechanical support	ECMO complication, Device complication, Circuit pigtail crack	Crack in pigtail requiring interruption of ECMO flow for replacement of pigtail
E874.2	15.57.09 + Q1.67.42	Cardiopulmonary bypass and Mechanical support	ECMO complication, Device complication, ECMO heat exchanger malfunction	Malfunction of ECMO circuit heat exchanger requiring replacement or intervention.
E874.2	15.57.12	Cardiopulmonary bypass and Mechanical support	ECMO complication, Device complication, ECMO machine component malfunction	Pump component malfunction that is resolved with replacement of pump component.
E874.2	15.57.09	Cardiopulmonary bypass and Mechanical support	ECMO complication, Device complication, Heater/cooler complication	Malfunction of the heater/cooler device
E874.2	15.57.09 + Q1.67.40	Cardiopulmonary bypass and Mechanical support	ECMO complication, Device complication, Heater/cooler complication, Heat exchanger with blood to water leak	Blood to water leak in heat exchanger
E874.2	15.57.09 + Q1.67.41	Cardiopulmonary bypass and Mechanical support	ECMO complication, Device complication, Heater/cooler complication, Heat exchanger with water to blood leak	Water to blood leak in heat exchanger
E874.2	15.57.10 + Q1.57.44	Cardiopulmonary bypass and Mechanical support	ECMO complication, Device complication, Oxygenator device failure	Inability of the oxygenator device to exchange oxygen and carbon dioxide due to internal device failure
E874.2	15.57.10 + Q1.67.43	Cardiopulmonary bypass and Mechanical support	ECMO complication, Device complication, Oxygenator device failure causing hypoxemia	Inability of the oxygenator device to exchange oxygen and carbon dioxide due to internal device failure, associated with hypoxemia.
E874.2	15.57.10 + Q1.67.44	Cardiopulmonary bypass and Mechanical support	ECMO complication, Device complication, Oxygenator with blood to gas phase leak	Blood to gas phase leak in oxygenator
E874.2	15.57.04 + Q1.67.82	Cardiopulmonary bypass and Mechanical support	ECMO complication, Device complication, Pump problem-Centrifugal pump malfunction requiring replacement of pump	ECMO centrifugal pump malfunction requiring replacement of centrifugal pump driver or console
E874.2	15.57.04 + Q1.67.83	Cardiopulmonary bypass and Mechanical support	ECMO complication, Device complication, Pump problem-Roller pump head calibration error	ECMO roller pump calibrated for incorrect tubing size
E874.2	15.57.04 + Q1.67.84	Cardiopulmonary bypass and Mechanical support	ECMO complication, Device complication, Pump problem-Roller pump head under-occlusion	Under occlusion of ECMO roller pump head requiring adjustment during ECMO
E874.2	15.57.04 + Q1.67.85	Cardiopulmonary bypass and Mechanical support	ECMO complication, Device complication, Pump problem-Roller pump malfunction requiring replacement of pump	ECMO roller pump malfunction requiring replacement of roller pump
E874.2	15.57.14	Cardiopulmonary bypass and Mechanical support	ECMO complication, Device complication, Stopcock crack/disconnect	Stopcock crack or disconnect requiring interruption of ECMO flow for replacement of stopcock

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E874.2	15.57.15	Cardiopulmonary bypass and Mechanical support	ECMO complication, Device complication, Tubing or connector complication	ECMO circuit tubing complication including unplanned tubing disconnection, or tubing connector leakage or rupture
E874.2	15.57.15 + Q1.67.50	Cardiopulmonary bypass and Mechanical support	ECMO complication, Device complication, Tubing or connector complication, Raceway or tubing rupture	Raceway rupture resulting in need for circuit change
E876.8	15.57.17	Cardiopulmonary bypass and Mechanical support	ECMO complication, Excessive hemodilution	Excessive hemodilution due to inappropriate amount of fluid administration resulting in deviations from departmental clinical practice guidelines (for Hgb level)
996.7	15.57.18	Cardiopulmonary bypass and Mechanical support	ECMO complication, Excessive hemolysis	Plasma free hemoglobin levels during ECMO greater than 50 mg/dl
E876.8	15.57.19	Cardiopulmonary bypass and Mechanical support	ECMO complication, Excessive rewarming	Hyperthermia with perfusate temperature in excess of 38 degrees Celsius or associated with desaturation or hemolysis due to excessive rewarming
E873.0	15.57.20	Cardiopulmonary bypass and Mechanical support	ECMO complication, Excessive volume administration	Excessive volume administration during conduct of ECMO, resulting in deviations from departmental clinical practice guidelines (for Hgb level) or grossly skewed fluid balance or gross edema
996.7	15.57.35	Cardiopulmonary bypass and Mechanical support	ECMO complication, Hematologic complication	Any hematologic complication manifested after initiation of ECMO. This includes any complication involving an anticoagulation, antifibrinolytic, or hemostatic drug.
996.7	15.57.35 + Q1.68.50	Cardiopulmonary bypass and Mechanical support	ECMO complication, Hematologic complication, Anticoagulant complication secondary to heparin	Complication secondary to ECMO heparin,. Manifestations can include excessive bleeding requiring transfusion, intra-cerebral hemorrhage or within-tissue hemorrhage, or purpura,. Also includes heparin induced thrombocytopenia (HIT).
996.70	15.57.35 + Q1.68.51	Cardiopulmonary bypass and Mechanical support	ECMO complication, Hematologic complication, ECMO circuit replacement for hematologic concerns	ECMO circuit replacement related to excessive plasma free hemoglobin >50–100 mg/dl, hematuria, increasing fibrin degradation products and decreasing fibrinogen.
996.70	15.57.35 + Q1.68.52	Cardiopulmonary bypass and Mechanical support	ECMO complication, Hematologic complication, Factor VIIa (NovoSeven) complication with thrombus formation	Thrombus formation in ECMO circuit and or patient following administration of Factor VIIa (NovoSeven)
996.70	15.57.35 + Q1.68.53	Cardiopulmonary bypass and Mechanical support	ECMO complication, Hematologic complication, Heparin resistance	Difficulty obtaining acceptable ACT levels/Heparin assays, necessitating the administration of Thrombate (AT-III) or Fresh Frozen Plasma (FFP)
996.70	15.57.35 + Q1.68.54	Cardiopulmonary bypass and Mechanical support	ECMO complication, Hematuria	Hematuria (Blood in the urine) that was unrecognized prior to ECMO.
996.70	15.57.37	Cardiopulmonary bypass and Mechanical support	ECMO complication, Hypoxemia due to loss of ventilatory gas flow	Inability of the oxygenator device to exchange oxygen and carbon dioxide due to either loss of medical gas supply, gas supply line obstruction, or disconnected gas supply line.
E876.9	15.57.38	Cardiopulmonary bypass and Mechanical support	ECMO complication, Inadequate LA or LV drainage	Inadequate LA drainage, typically in context of poor systemic ventricular function, associated with LA or LV distension

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E876.9	15.57.39	Cardiopulmonary bypass and Mechanical support	ECMO complication, Inadequate LA or LV drainage, Resulting in an intervention designed to achieve LA or LV decompression	Inadequate LA drainage, typically in context of poor systemic ventricular function, associated with LA or LV distension, Resulting in an intervention designed to achieve LA or LV decompression
E876.9	15.57.40	Cardiopulmonary bypass and Mechanical support	ECMO complication, Inadequate venous drainage	Inadequate venous drainage, resulting in decreased ECMO flows, and/or the need for repositioning, addition, or changing of venous drainage cannula
E876.8	15.57.10 + Q1.67.45	Cardiopulmonary bypass and Mechanical support	ECMO complication, Inappropriate oxygenator choice	Oxygenator used in excess of manufacturer rated flow resulting in a venous saturation below institutional protocol.
E876.8	15.57.41	Cardiopulmonary bypass and Mechanical support	ECMO complication, Medication error via ECMO circuit	Any medication administered to the ECMO circuit in error including inappropriate dosage. This complication includes errors that result in underdose, overdose, clotting, bleeding, hypotension, and hypertension
E874.2	15.57.42	Cardiopulmonary bypass and Mechanical support	ECMO complication, Need for emergent circuit change for any reason other than circuit thrombus	Need for emergent ECMO circuit change, for any reason other than circuit thrombus.
276.2	15.57.43	Cardiopulmonary bypass and Mechanical support	ECMO complication, Persistent metabolic acidosis while on ECMO	Persistent metabolic acidosis >8 hours while on ECMO indicating failure of mechanical support to adequately perfuse end-organs or tissues. This state is also characterized by a persistently elevated lactate.
276.2	15.57.44	Cardiopulmonary bypass and Mechanical support	ECMO complication, Persistent metabolic acidosis while on ECMO, Acidosis is refractory to treatment	Persistent metabolic acidosis >8 hours while on ECMO indicating failure of mechanical support to adequately perfuse end-organs or tissues. This state is also characterized by a persistently elevated lactate. Refractory to treatment.
E874.2	15.57.06	Cardiopulmonary bypass and Mechanical support	ECMO complication, Power failure	Sudden loss of pump function either due to electrical or battery or other power failure
E874.2	15.57.06 + Q1.67.75	Cardiopulmonary bypass and Mechanical support	ECMO complication, Power failure, Managed with battery back-up	Sudden loss of pump function either due to electrical or battery or other power failure, Managed with battery back-up
E874.2	15.57.06 + Q1.67.76	Cardiopulmonary bypass and Mechanical support	ECMO complication, Power failure, Managed with both handcrank and battery back-up	Sudden loss of pump function either due to electrical or battery or other power failure, Managed with both handcrank and battery back-up
E874.2	15.57.06 + Q1.67.77	Cardiopulmonary bypass and Mechanical support	ECMO complication, Power failure, Managed with handcrank	Sudden loss of pump function either due to electrical or battery or other power failure, Managed with handcrank
E876.9	15.57.04 + Q1.67.80	Cardiopulmonary bypass and Mechanical support	ECMO complication, Pump set-up complication	Incorrect pump set-up, whether connections, sizes, medications, or other
E876.9	15.57.04 + Q1.67.81	Cardiopulmonary bypass and Mechanical support	ECMO complication, Pump set-up complication, Forgetting to connect O_2 tank resulting in O_2 not being delivered	Forgetting to connect O_2 tank resulting in non-oxygenated blood being delivered to patient
996.7	15.57.07	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombo-embolic complication	Any thrombo-embolic complication during ECMO

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.7	15.57.07 + Q1.67.30	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombo-embolic complication, Central thromboembolism	Any thrombo-embolic complication during ECMO involving the head, chest, abdomen, or pelvis
996.70	15.57.07 + Q1.67.31	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombo-embolic complication, Central thromboembolism, Intracranial thromboembolism	Any intracranial thrombo-embolic complication during ECMO
996.70	15.57.07 + Q1.67.32	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombo-embolic complication, Mechanically detected thromboemboli with intervention	Thrombo-embolic events mechanically detected during ECMO with subsequent intervention
996.70	15.57.07 + Q1.67.33	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombo-embolic complication, Mechanically detected thromboemboli with no subsequent intervention	Thrombo-embolic events mechanically detected during ECMO with no subsequent intervention
996.70	15.57.07 + Q1.67.37	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombo-embolic complication, Mechanically detected thromboemboli with replacement of circuit	Thromboembolic events mechanically detected during ECMO with subsequent replacement of circuit
996.70	15.57.07 + Q1.67.34	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombo-embolic complication, Visually detected thromboemboli with intervention	Thrombo-embolic events visually detected during ECMO with subsequent intervention
996.70	15.57.07 + Q1.67.35	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombo-embolic complication, Visually detected thromboemboli with no subsequent intervention	Thrombo-embolic events visually detected during ECMO with no subsequent intervention
996.70	15.57.07 + Q1.67.36	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombo-embolic complication, Visually detected thromboemboli with replacement of circuit	Thromboembolic events visually detected during ECMO with subsequent replacement of circuit
996.70	15.57.08	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication	Any thrombotic complication during ECMO
996.70	15.57.08 + Q1.68.03	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO	Thrombus visualized in ECMO circuit during ECMO
E874.2	15.57.08 + Q1.68.04	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO, Circuit thrombus necessitating circuit change	Thrombus formation in any portion of circuit, with the need to change the circuit
E874.2	15.57.08 + Q1.68.05	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO, Circuit thrombus necessitating emergent circuit change	Thrombus formation in any portion of circuit, with the need to emergently change the circuit
996.7	15.57.08 + Q1.68.06	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO, Thrombus formation in ECMO circuit "bladder" not requiring component replacement	Thrombus formation in ECMO circuit "bladder" without need for component replacement

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E874.2	15.57.08 + Q1.68.07	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO, Thrombus formation in ECMO circuit "bladder" requiring component replacement	Thrombus formation in ECMO circuit "bladder" with need for component replacement
996.70	15.57.08 + Q1.68.08	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO, Thrombus formation in ECMO circuit "bridge" not requiring component replacement	Thrombus formation in ECMO circuit "bridge" without need for component replacement
E874.2	15.57.08 + Q1.68.09	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO, Thrombus formation in ECMO circuit "bridge" requiring component replacement	Thrombus formation in ECMO circuit "bridge" with need for component replacement
996.70	15.57.08 + Q1.68.10	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO, Thrombus formation in ECMO circuit "centrifugal pump" not requiring component replacement	Thrombus formation in ECMO circuit "centrifugal pump" without need for component replacement
E874.2	15.57.08 + Q1.68.11	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO, Thrombus formation in ECMO circuit "centrifugal pump" requiring component replacement	Thrombus formation in ECMO circuit "centrifugal pump" with need for component replacement
996.70	15.57.08 + Q1.68.12	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO, Thrombus formation in ECMO circuit "flow sensor" not requiring component replacement	Thrombus formation in ECMO circuit "flow sensor" without need for component replacement
E874.2	15.57.08 + Q1.68.13	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO, Thrombus formation in ECMO circuit "flow sensor" requiring component replacement	Thrombus formation in ECMO circuit "flow sensor" with need for component replacement
996.70	15.57.08 + Q1.68.14	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO, Thrombus formation in ECMO circuit "heat exchanger" not requiring component replacement	Thrombus formation in ECMO circuit "heat exchanger" without need for component replacement
E874.2	15.57.08 + Q1.68.15	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO, Thrombus formation in ECMO circuit "heat exchanger" requiring component replacement	Thrombus formation in ECMO circuit "heat exchanger" with need for component replacement

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.70	15.57.08 + Q1.68.16	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO, Thrombus formation in ECMO circuit "hemoconcentrator" not requiring component replacement	Thrombus formation in ECMO circuit "hemoconcentrator" without need for component replacement
E874.2	15.57.08 + Q1.68.17	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO, Thrombus formation in ECMO circuit "hemoconcentrator" requiring component replacement	Thrombus formation in ECMO circuit "hemoconcentrator" with need for component replacement
996.70	15.57.08 + Q1.68.18	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO, Thrombus formation in ECMO circuit "oxygenator" not requiring component replacement	Thrombus formation in ECMO circuit "oxygenator" without need for component replacement
E874.2	15.57.08 + Q1.68.19	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO, Thrombus formation in ECMO circuit "oxygenator" requiring component replacement	Thrombus formation in ECMO circuit "oxygenator" with need for component replacement
996.70	15.57.08 + Q1.68.20	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO, Thrombus formation in ECMO circuit "shunts" not requiring component replacement	Thrombus formation in ECMO circuit "shunts" without need for component replacement
E874.2	15.57.08 + Q1.68.21	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during ECMO, Thrombus formation in ECMO circuit "shunts" requiring component replacement	Thrombus formation in ECMO circuit "shunts" with need for component replacement
996.70	15.57.08 + Q1.68.02	Cardiopulmonary bypass and Mechanical support	ECMO complication, Thrombotic complication, Thrombus in ECMO circuit during or after protamine	Thrombus visualized in ECMO circuit during or after protamine administration
E876.9	15.57.02, 15.90.40	Cardiopulmonary bypass and Mechanical support	ECMO complication, Transport problem	A complication due to transport of patient while on ECMO
E874.2	15.57.15	Cardiopulmonary bypass and Mechanical support	ECMO complication, Tubing (line) complication	Incorrect size or type of tubing, tubing malfunction, or unplanned tubing disconnection
E874.2	15.57.15 + Q1.67.51	Cardiopulmonary bypass and Mechanical support	ECMO complication, Tubing (line) complication, Line dislodgment or displacement	Unwanted line dislodgment or displacement
E874.2	15.57.15 + Q1.67.52	Cardiopulmonary bypass and Mechanical support	ECMO complication, Tubing (line) complication, Line dislodgment or displacement, Inadvertent dislodgment or displacement of arterial line	Unwanted line dislodgment or displacement, Inadvertent disconnection of arterial line

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E874.2	15.57.15 + Q1.67.53	Cardiopulmonary bypass and Mechanical support	ECMO complication, Tubing (line) complication, Line dislodgment or displacement, Inadvertent dislodgment or displacement of venous line	Unwanted line dislodgment or displacement, Inadvertent disconnection of venous line
E874.2	15.57.15 + Q1.67.55	Cardiopulmonary bypass and Mechanical support	ECMO complication, Tubing (line) complication, Raceway tubing fatigue	ECMO raceway tubing fatigue requiring interruption of ECMO flow for non-emergent raceway replacement
E874.2	15.57.15 + Q1.67.50	Cardiopulmonary bypass and Mechanical support	ECMO complication, Tubing (line) complication, Raceway tubing rupture	ECMO raceway tubing rupture requiring interruption of ECMO for emergent replacement
E874.2	15.57.15 + Q1.67.54	Cardiopulmonary bypass and Mechanical support	ECMO complication, Tubing (line) complication, Reversal of arterial and venous lines	Unplanned reversal of ECMO arterial and venous lines recognized after initiation of ECMO
E874.2	15.57.15 + Q1.67.56	Cardiopulmonary bypass and Mechanical support	ECMO complication, Tubing (line) complication, Tubing connector crack	Crack in connectors requiring interruption of ECMO flow for replacement of connector
E876.9	15.57.15 + Q1.67.57	Cardiopulmonary bypass and Mechanical support	ECMO complication, Tubing (line) complication, Tubing disconnect	Unplanned tubing disconnect from any ECMO circuit component
E876.9	15.57.31	Cardiopulmonary bypass and Mechanical support	ECMO complication, Uncontrolled aortopulmonary collateral(s) or aortopulmonary shunt(s)	Failure to control aortopulmonary collateral(s) or aortopulmonary shunt(s) resulting in under-perfusion of essential organs and tissues.
E876.9	15.57.32	Cardiopulmonary bypass and Mechanical support	ECMO complication, Uncontrolled ECMO circuit shunts	Presence of ECMO circuit shunts resulting in hypoperfusion of essential organs and tissues.
E876.9	15.57.04 + Q1.67.94	Cardiopulmonary bypass and Mechanical support	ECMO complication, Under occluded arterial pump head	Under occlusion of arterial pump head requiring adjustment during ECMO
E876.9	15.57.34	Cardiopulmonary bypass and Mechanical support	ECMO complication, Unwanted exsanguinations	Unwanted sudden drainage of blood from the patient while on ECMO
E876.1	15.57.16	Cardiopulmonary bypass and Mechanical support	ECMO complication, Wrong prime	Incorrect prime composition recognized after initiation of ECMO
E874	15.57.21	Cardiopulmonary bypass and Mechanical support	IABP complication	Any complication involving an intra-aortic balloon pump (IABP). The IABP is a balloon catheter that is placed into the descending aorta, usually through the femoral artery. This balloon then inflates during diastole to provide systemic hemodynamic augmentation and increased diastolic coronary blood flow. The balloon then deflates during systole and decreases left ventricular afterload.
441.01	15.77.54	Cardiopulmonary bypass and Mechanical support	IABP complication, Aortic dissection during IABP	Dissection of the aorta during IABP support
E876.8	15.77.50	Cardiopulmonary bypass and Mechanical support	IABP complication, Compartment syndrome with IABP	IABP with compartment syndrome in the limb where the IABP catheter is inserted

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E870.8	15.77.55	Cardiopulmonary bypass and Mechanical support	IABP complication, IABP catheter insertion with perforation of aorta	IABP catheter insertion with perforation of aorta
E874.8	15.57.22	Cardiopulmonary bypass and Mechanical support	IABP complication, IABP catheter rupture during IABP support	Rupture of the IABP catheter during IABP support
E874.8	15.77.53	Cardiopulmonary bypass and Mechanical support	IABP complication, IABP helium tank depletion	IABP helium tank depletion with interruption of IABP support to replace tank
E876.4	15.77.52	Cardiopulmonary bypass and Mechanical support	IABP complication, IABP with limb ischemia of limb where catheter is inserted	IABP with limb ischemia in the limb where the IABP catheter is inserted
E876.4	15.57.29	Cardiopulmonary bypass and Mechanical support	IABP complication, Malposition of IABP catheter causing brain ischemia	Malposition of IABP catheter causing compromised great vessel perfusion and brain ischemia
E876.4	15.57.30	Cardiopulmonary bypass and Mechanical support	IABP complication, Malposition of IABP catheter causing limb ischemia	Malposition of IABP catheter causing compromised great vessel perfusion limb ischemia
E876.4	15.77.51	Cardiopulmonary bypass and Mechanical support	IABP complication, Malposition of IABP catheter causing renal ischemia	Malposition of IABP catheter causing compromised renal perfusion and renal ischemia
996.7	15.57.28	Cardiopulmonary bypass and Mechanical support	IABP complication, Thrombo-embolic complication	IABP with thromboembolic event(s) related to insertion of the IABP catheter, removal of the IABP catheter, or during IABP support
996.7	15.57.28 + Q1.67.32	Cardiopulmonary bypass and Mechanical support	IABP complication, Thrombo-embolic complication, Mechanically detected thromboemboli with intervention	Thrombo-embolic events mechanically detected during IABP with subsequent intervention
996.70	15.57.28 + Q1.67.33	Cardiopulmonary bypass and Mechanical support	IABP complication, Thrombo-embolic complication, Mechanically detected thromboemboli with no subsequent intervention	Thrombo-embolic events mechanically detected during IABP with no subsequent intervention
996.70	15.57.28 + Q1.67.38	Cardiopulmonary bypass and Mechanical support	IABP complication, Thrombo-embolic complication, Mechanically detected thromboemboli with replacement of IABP	Thromboembolic events mechanically detected during IABP with subsequent replacement of IABP
996.70	15.57.28 + Q1.67.34	Cardiopulmonary bypass and Mechanical support	IABP complication, Thrombo-embolic complication, Visually detected thromboemboli with intervention	Thrombo-embolic events visually detected during IABP with subsequent intervention
996.70	15.57.28 + Q1.67.35	Cardiopulmonary bypass and Mechanical support	IABP complication, Thrombo-embolic complication, Visually detected thromboemboli with no subsequent intervention	Thrombo-embolic events visually detected during IABP with no subsequent intervention
996.70	15.57.28 + Q1.67.39	Cardiopulmonary bypass and Mechanical support	IABP complication, Thrombo-embolic complication, Visually detected thromboemboli with replacement of IABP	Thromboembolic events visually detected during IABP with subsequent replacement of IABP
E874	15.57.03	Cardiopulmonary bypass and Mechanical support	VAD complication	Any complication involving a ventricular assist device (VAD). A mechanical circulatory support device is defined as a pump or apparatus that augments or replaces the function of the failing heart.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				Two types of mechanical circulatory support device are a ventricular assist device (VAD) and an intra-aortic balloon pump (IABP). The International Consortium for Evidence-Based Perfusion prefers the term "mechanical circulatory support device". The list of complications developed by The MultiSocietal Database Committee for Pediatric and Congenital Heart Disease, working in collaboration with The International Consortium for Evidence-Based Perfusion, will retain the term ventricular assist device, but will acknowledge that the term "mechanical circulatory support device" is a preferred term by perfusionists. The rationale for retaining the term ventricular assist device is that this term is widely used at this time and is used in the Adult Cardiac Surgery Database of The Society of Thoracic Surgeons. In fact, the Adult Cardiac Surgery Database of The Society of Thoracic Surgeons is in the process of developing a specific module to track data about ventricular assist devices. This list of complications will list the complications associated with ventricular assist devices and the complications associated with and intra-aortic balloon pump separately.
E874.1	15.57.51	Cardiopulmonary bypass and Mechanical support	VAD complication, Air complication with air in circuit	Presence of air in circuit creating risk for emboli or air lock
999.1	15.57.36 + Q1.67.01	Cardiopulmonary bypass and Mechanical support	VAD complication, Air complication with air in circuit, Air complication with evidence of major air embolism (manifest with evidence of neurologic change [stroke] or necessitating treatment with hyperbaric therapy	This complication includes all cases where air embolism is thought to cause major neurologic changes such as strokes and all cases where patients are treated with hyperbaric therapy during or after support because of air embolism.
999.1	15.57.36 + Q1.67.02	Cardiopulmonary bypass and Mechanical support	VAD complication, Air complication with air in circuit, Air embolism with EKG transient changes	Air in the coronary arteries causing transient EKG changes
E874.1	15.57.36 + Q1.67.12	Cardiopulmonary bypass and Mechanical support	VAD complication, Air complication with air in circuit, Gaseous emboli in inflow line of the VAD circuit – mechanically detected	Mechanically detected gaseous emboli in the inflow line of the VAD circuit
E874.1	15.57.36 + Q1.67.13	Cardiopulmonary bypass and Mechanical support	VAD complication, Air complication with air in circuit, Gaseous emboli in inflow line of the VAD circuit – visually detected	Visually detected gaseous emboli in the inflow line of the VAD circuit
E874.1	15.57.36 + Q1.67.14	Cardiopulmonary bypass and Mechanical support	VAD complication, Air complication with air in circuit, Gaseous emboli in inflow line of the VAD circuit causing an air lock	Air emboli in the inflow line of the VAD circuit that causes an air lock and interruption in VAD flow
E874.1	15.57.36 + Q1.67.15	Cardiopulmonary bypass and Mechanical support	VAD complication, Air complication with air in circuit, Gaseous emboli in outflow line of the VAD circuit – mechanically detected	Mechanically detected gaseous emboli in the outflow line of the VAD circuit
E874.1	15.57.36 + Q1.67.16	Cardiopulmonary bypass and Mechanical support	VAD complication, Air complication with air in circuit, Gaseous emboli in outflow line of the VAD circuit – visually detected	Visually detected gaseous emboli in the outflow line of the VAD circuit

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E874.1	15.57.36 + Q1.67.17	Cardiopulmonary bypass and Mechanical support	VAD complication, Air complication with air in circuit, Gaseous emboli in outflow line of the VAD circuit – visually detected, Not visibly infused to patient	Visually detected gaseous emboli in the outflow line of the VAD circuit, That is not infused to the patient
E874.1	15.57.36 + Q1.67.18	Cardiopulmonary bypass and Mechanical support	VAD complication, Air complication with air in circuit, Gaseous emboli in outflow line of the VAD circuit – visually detected, Visibly infused to patient	Visually detected gaseous emboli in the outflow line of the VAD circuit, That is infused to the patient
E874	15.57.59 + Q1.67.91	Cardiopulmonary bypass and Mechanical support	VAD complication, Axial flow blood pump housing damage requiring replacement	Damaged axial flow blood pump housing requiring replacement of pump
E870.2	15.57.71	Cardiopulmonary bypass and Mechanical support	VAD complication, Bleeding on VAD	Bleeding complication while on VAD
E870.2	15.57.71 + Q1.68.60	Cardiopulmonary bypass and Mechanical support	VAD complication, Bleeding on VAD, Cannulation site bleeding	Bleeding at cannulation site (>10 ml/kg/hr) requiring transfusion or other intervention.
E870.2	15.57.71 + Q1.68.65	Cardiopulmonary bypass and Mechanical support	VAD complication, Bleeding on VAD, Cannulation site bleeding, VAD inflow cannulation site	Bleeding at VAD inflow cannulation site (>10 ml/kg/hr) requiring transfusion or other intervention.
E870.2	15.57.71 + Q1.68.66	Cardiopulmonary bypass and Mechanical support	VAD complication, Bleeding on VAD, Cannulation site bleeding, VAD outflow cannulation site	Bleeding at VAD outflow cannulation site (>10 ml/kg/hr) requiring transfusion or other intervention.
E870.2	15.57.71 + Q1.68.63	Cardiopulmonary bypass and Mechanical support	VAD complication, Bleeding on VAD, Cerebral hemorrhage	Cerebral hemorrhage occurring while on VAD
E870.2	15.57.71 + Q1.68.64	Cardiopulmonary bypass and Mechanical support	VAD complication, Bleeding on VAD, Gastrointestinal hemorrhage	Gastrointestinal hemorrhage occurring while on VAD
E870.2	15.57.71 + Q1.68.55	Cardiopulmonary bypass and Mechanical support	VAD complication, Bleeding, Coagulopathy related	Excessive bleeding (>10 ml/kg/hr) despite attempting to maintain platelets, fibrinogen, TEG, and INR values within departmental VAD protocols.
E874.2	15.57.59 + Q1.67.92	Cardiopulmonary bypass and Mechanical support	VAD complication, Calibration error of arterial pump head	Arterial pump calibrated for incorrect tubing size
E874.2	15.57.52	Cardiopulmonary bypass and Mechanical support	VAD complication, Cannula complication	Complication stemming from VAD cannulae including dislodgment and leakage
E870.2	15.57.52 + Q1.67.20	Cardiopulmonary bypass and Mechanical support	VAD complication, Cannula complication, Arterial dissection	Arterial dissection during VAD support
E870.2	15.57.52 + Q1.67.21	Cardiopulmonary bypass and Mechanical support	VAD complication, Cannula complication, Arterial dissection, Aortic dissection	Arterial dissection during VAD support, Aortic dissection

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E870.2	15.57.52 + Q1.67.27	Cardiopulmonary bypass and Mechanical support	VAD complication, Cannula complication, Arterial dissection, Axillary artery dissection	Arterial dissection during VAD support, Axillary artery dissection
E870.2	15.57.52 + Q1.67.22	Cardiopulmonary bypass and Mechanical support	VAD complication, Cannula complication, Arterial dissection, Femoral artery dissection	Arterial dissection during VAD support, Femoral dissection
E870.2	15.57.52 + Q1.67.28	Cardiopulmonary bypass and Mechanical support	VAD complication, Cannula complication, Arterial dissection, Right carotid artery dissection	Arterial dissection during VAD support, Right carotid artery dissection
E876.4	15.57.52 + Q1.67.29	Cardiopulmonary bypass and Mechanical support	VAD complication, Cannula complication, Dislodgement of the inflow cannula of the VAD circuit	Dislodgement of the inflow cannula of the VAD circuit during VAD support
E876.4	15.57.52 + Q1.67.47	Cardiopulmonary bypass and Mechanical support	VAD complication, Cannula complication, Dislodgement of the outflow cannula of the VAD circuit	Dislodgement of the outflow cannula of the VAD circuit during VAD support
E876.4	15.57.52 + Q1.67.48	Cardiopulmonary bypass and Mechanical support	VAD complication, Cannula complication, Malposition of the inflow cannula of the VAD circuit	Malposition of the inflow cannula of the VAD circuit causing a persistent reduction in venous return and subsequent reduction in VAD flow below calculated full flow
E876.4	15.57.52 + Q1.67.49	Cardiopulmonary bypass and Mechanical support	VAD complication, Cannula complication, Malposition of the outflow cannula of the VAD circuit	Malposition of the outflow cannula of the VAD circuit causing altered distribution of blood flow producing hypoperfusion and/or hyperperfusion of tissues/organs
996.09	15.57.59 + Q1.67.88	Cardiopulmonary bypass and Mechanical support	VAD complication, Centrifugal blood pump housing damage requiring replacement	Damaged centrifugal blood pump housing requiring replacement of pump
996.09	15.57.60	Cardiopulmonary bypass and Mechanical support	VAD complication, Device complication	Any device-related VAD complication
996.09	15.57.59 + Q1.67.89	Cardiopulmonary bypass and Mechanical support	VAD complication, Device complication, Calibration error of VAD pump head	VAD pump calibrated for incorrect tubing size
996.09	15.57.59 + Q1.67.82	Cardiopulmonary bypass and Mechanical support	VAD complication, Device complication, Centrifugal pump malfunction	Centrifugal pump malfunction requiring replacement of centrifugal pump driver or console
996.09	15.57.61	Cardiopulmonary bypass and Mechanical support	VAD complication, Device complication, Circuit pigtail crack	Crack in pigtail requiring interruption of VAD flow for replacement of pigtail
996.09	15.57.58	Cardiopulmonary bypass and Mechanical support	VAD complication, Device complication, Heater/cooler complication	Malfunction of the heater/cooler device
996.09	15.57.58 + Q1.67.40	Cardiopulmonary bypass and Mechanical support	VAD complication, Device complication, Heater/cooler complication, Heat exchanger with blood to water leak	Blood to water leak in heat exchanger
996.09	15.57.58 + Q1.67.41	Cardiopulmonary bypass and Mechanical support	VAD complication, Device complication, Heater/cooler complication, Heat exchanger with water to blood leak	Water to blood leak in heat exchanger

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.09	15.57.59 + Q1.67.85	Cardiopulmonary bypass and Mechanical support	VAD complication, Device complication, Roller pump malfunction	Roller pump malfunction requiring replacement of roller pump
996.09	15.57.63	Cardiopulmonary bypass and Mechanical support	VAD complication, Device complication, Stopcock crack/disconnect	Stopcock crack or disconnect requiring interruption of VAD flow for replacement of stopcock
996.09	15.57.64	Cardiopulmonary bypass and Mechanical support	VAD complication, Device complication, Tubing or connector complication	VAD circuit tubing complication including unplanned tubing disconnection, or tubing connector leakage or rupture
996.09	15.57.64 + Q1.67.50	Cardiopulmonary bypass and Mechanical support	VAD complication, Device complication, Tubing or connector complication, Raceway or tubing rupture	Raceway rupture resulting in need for circuit change
996.09	15.57.59 + Q1.67.90	Cardiopulmonary bypass and Mechanical support	VAD complication, Device complication, Under-occluded VAD pump head	Under occlusion of VAD pump head requiring adjustment during VAD support
996.09	15.57.58 + Q1.67.42	Cardiopulmonary bypass and Mechanical support	VAD complication, Device complication, VAD heat exchanger malfunction	Malfunction of VAD circuit heat exchanger requiring replacement or intervention.
996.09	15.57.62	Cardiopulmonary bypass and Mechanical support	VAD complication, Device complication, VAD machine component malfunction	Pump component malfunction that is resolved with replacement of pump component.
996.6	15.57.72	Cardiopulmonary bypass and Mechanical support	VAD complication, Driveline infection requiring antibiotic therapy	Driveline infection that requires antibiotic therapy for treatment of infection
996.6	15.57.73	Cardiopulmonary bypass and Mechanical support	VAD complication, Driveline infection requiring replacement	Driveline infection that requires replacement of driveline and/or device
996.09	15.57.74	Cardiopulmonary bypass and Mechanical support	VAD complication, Driveline malfunction requiring replacement	Driveline malfunction requiring replacement of driveline
E876.9	15.57.66	Cardiopulmonary bypass and Mechanical support	VAD complication, Excessive hemodilution	Excessive hemodilution due to inappropriate amount of fluid administration resulting in deviations from departmental clinical practice guidelines (for Hgb level)
E876.9	15.57.67	Cardiopulmonary bypass and Mechanical support	VAD complication, Excessive hemolysis	Plasma free hemoglobin levels during VAD support greater than 50 mg/dl
E876.9	15.57.68	Cardiopulmonary bypass and Mechanical support	VAD complication, Excessive rewarming	Hyperthermia with perfusate temperature in excess of 38 degrees Celsius or associated with desaturation or hemolysis due to excessive rewarming
E873.0	15.57.69	Cardiopulmonary bypass and Mechanical support	VAD complication, Excessive volume administration	Excessive volume administration during conduct of VAD, resulting in deviations from departmental clinical practice guidelines (for Hgb level) or grossly skewed fluid balance or gross edema
996.7	15.57.75	Cardiopulmonary bypass and Mechanical support	VAD complication, External battery malfunction requiring replacement	External battery malfunction requiring replacement of external battery

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.7	15.57.76	Cardiopulmonary bypass and Mechanical support	VAD complication, External control system failure with replacement	Failure of external control system of VAD requiring replacement
996.7	15.57.70	Cardiopulmonary bypass and Mechanical support	VAD complication, Hematologic complication	Any hematologic complication manifested after initiation of VAD. This includes any complication involving an anticoagulation, antifibrinolytic, or hemostatic drug.
996.7	15.57.70 + Q1.68.50	Cardiopulmonary bypass and Mechanical support	VAD complication, Hematologic complication, Anticoagulant complication secondary to heparin	Complication secondary to VAD heparin,. Manifestations can include excessive bleeding requiring transfusion, intra-cerebral hemorrhage or within-tissue hemorrhage, or purpura. Also includes heparin induced thrombocytopenia (HIT).
996.7	15.57.70 + Q1.68.52	Cardiopulmonary bypass and Mechanical support	VAD complication, Hematologic complication, Factor VIIa (NovoSeven) complication with thrombus formation	Thrombus formation in VAD circuit and or patient following administration of Factor VIIa (NovoSeven)
996.7	15.57.70 + Q1.68.53	Cardiopulmonary bypass and Mechanical support	VAD complication, Hematologic complication, Heparin resistance	Difficulty obtaining acceptable ACT levels/Heparin assays, necessitating the administration of Thrombate (AT-III) or Fresh Frozen Plasma (FFP)
996.7	15.57.70 + Q1.68.51	Cardiopulmonary bypass and Mechanical support	VAD complication, Hematologic complication, VAD circuit replacement for hematologic concerns	VAD circuit replacement related to excessive plasma free hemoglobin >50–100 mg/dl, hematuria, increasing fibrin degradation products and decreasing fibrinogen.
996.7	15.57.70 + Q1.68.54	Cardiopulmonary bypass and Mechanical support	VAD complication, Hematuria	Hematuria (Blood in the urine) that was unrecognized prior to VAD.
E876.9	15.57.72	Cardiopulmonary bypass and Mechanical support	VAD complication, Inadequate drainage to VAD (inadequate VAD inflow)	Inadequate drainage to VAD, or on other words, inadequate VAD inflow, resulting in decreased VAD flows, and/or the need for repositioning, addition, or changing of drainage cannula
E876.9	15.57.53	Cardiopulmonary bypass and Mechanical support	VAD complication, Inadequate LA or LV drainage	Inadequate LA drainage, typically in context of poor systemic ventricular function, associated with LA or LV distension
E876.9	15.57.54	Cardiopulmonary bypass and Mechanical support	VAD complication, Inadequate LA or LV drainage, Resulting in an intervention designed to achieve LA or LV decompression	Inadequate LA drainage, typically in context of poor systemic ventricular function, associated with LA or LV distension, Resulting in an intervention designed to achieve LA or LV decompression
996	15.57.77	Cardiopulmonary bypass and Mechanical support	VAD complication, Inflow valve malfunction requiring replacement	Inflow valve malfunction requiring replacement of pump
996	15.57.78	Cardiopulmonary bypass and Mechanical support	VAD complication, Internal battery malfunction requiring replacement	Internal battery malfunction requiring replacement of internal battery
996.00	15.57.79	Cardiopulmonary bypass and Mechanical support	VAD complication, Internal controller malfunction requiring replacement	Internal controller malfunction requiring replacement of internal controller
996.00	15.57.80	Cardiopulmonary bypass and Mechanical support	VAD complication, Malfunction of the mechanical component of a centrifugal VAD requiring replacement	Malfunction of the mechanical component of centrifugal VAD requiring replacement of pump
996.00	15.57.81	Cardiopulmonary bypass and Mechanical support	VAD complication, Malfunction of the mechanical component of a pulsatile VAD requiring replacement	Malfunction of the mechanical component of a pulsatile VAD requiring replacement of pump

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.00	15.57.82	Cardiopulmonary bypass and Mechanical support	VAD complication, Malfunction of the mechanical component of an axial flow VAD requiring replacement	Malfunction of the mechanical component of axial flow VAD requiring replacement of pump
E876.8	15.57.83	Cardiopulmonary bypass and Mechanical support	VAD complication, Medication error via VAD circuit	Any medication administered to the VAD circuit in error including inappropriate dosage. This complication includes errors that result in underdose, overdose, clotting, bleeding, hypotension, and hypertension
996.00	15.57.84	Cardiopulmonary bypass and Mechanical support	VAD complication, Need for emergent circuit change for any reason other than circuit thrombus	Need for emergent VAD circuit change, for any reason other than circuit thrombus.
996	15.57.92	Cardiopulmonary bypass and Mechanical support	VAD complication, Outflow valve malfunction requiring replacement	Outflow valve malfunction requiring replacement of pump
E876.9	15.57.85	Cardiopulmonary bypass and Mechanical support	VAD complication, Outpatient VAD complication requiring hospitalization	Complication of the VAD that requires admission to the hospital for intervention or VAD replacement. This would include infections, all VAD malfunctions, and any damage to the VAD.
276.20	15.57.86	Cardiopulmonary bypass and Mechanical support	VAD complication, Persistent metabolic acidosis while on VAD	Persistent metabolic acidosis >8 hours while on VAD indicating failure of mechanical support to adequately perfuse end-organs or tissues. This state is also characterized by a persistently elevated lactate.
276.2	15.57.87	Cardiopulmonary bypass and Mechanical support	VAD complication, Persistent metabolic acidosis while on VAD, Acidosis is refractory to treatment	Persistent metabolic acidosis >8 hours while on VAD indicating failure of mechanical support to adequately perfuse end-organs or tissues. This state is also characterized by a persistently elevated lactate. Refractory to treatment.
996	15.57.55	Cardiopulmonary bypass and Mechanical support	VAD complication, Power failure	Sudden loss of pump function either due to electrical or battery or other power failure
996.0	15.57.55 + Q1.67.75	Cardiopulmonary bypass and Mechanical support	VAD complication, Power failure, Managed with battery back-up	Sudden loss of pump function either due to electrical or battery or other power failure, Managed with battery back-up
996.00	15.57.55 + Q1.67.76	Cardiopulmonary bypass and Mechanical support	VAD complication, Power failure, Managed with both handcrank and battery back-up	Sudden loss of pump function either due to electrical or battery or other power failure, Managed with both handcrank and battery back-up
996.00	15.57.55 + Q1.67.77	Cardiopulmonary bypass and Mechanical support	VAD complication, Power failure, Managed with handcrank	Sudden loss of pump function either due to electrical or battery or other power failure, Managed with handcrank
996.00	15.57.59 + Q1.67.86	Cardiopulmonary bypass and Mechanical support	VAD complication, Pulsatile blood pump housing damage requiring replacement	Damaged pulsatile blood pump housing requiring replacement of pump
996.00	15.57.59 + Q1.67.87	Cardiopulmonary bypass and Mechanical support	VAD complication, Pulsatile blood pump membrane rupture requiring pump replacement	Rupture of pulsatile blood pump membrane requiring replacement of blood pump
996.00	15.57.59 + Q1.67.80	Cardiopulmonary bypass and Mechanical support	VAD complication, Pump set-up complication	Incorrect pump set-up, whether connections, sizes, medications, or other

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.00	15.57.93	Cardiopulmonary bypass and Mechanical support	VAD complication, Remote drive unit failure requiring replacement	Failure of VAD remote drive unit requiring replacement. This includes external (remote) drive units on centrifugal VAD
996.00	15.57.88	Cardiopulmonary bypass and Mechanical support	VAD complication, Therapy complication	Therapy complication resulting from deviation from prescribed medical and/or pharmacological protocols. This complication includes patient noncompliance issues.
996.70	15.57.56	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombo-embolic complication	Any thrombo-embolic complication during VAD support
996.70	15.57.56 + Q1.67.30	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombo-embolic complication, Central thromboembolism	Any thrombo-embolic complication during VAD support involving the head, chest, abdomen, or pelvis
996.70	15.57.56 + Q1.67.31	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombo-embolic complication, Central thromboembolism, Intracranial thromboembolism	Any intracranial thrombo-embolic complication during VAD support
996.70	15.57.56 + Q1.67.32	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombo-embolic complication, Mechanically detected thromboemboli with intervention	Thrombo-embolic events mechanically detected during VAD with subsequent intervention
996.70	15.57.56 + Q1.67.33	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombo-embolic complication, Mechanically detected thrombo-emboli with no subsequent intervention	Thrombo-embolic events mechanically detected during VAD with no subsequent intervention
996.70	15.57.56 + Q1.67.37	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombo-embolic complication, Mechanically detected thromboemboli with replacement of circuit	Thromboembolic events mechanically detected during VAD with subsequent replacement of circuit
996.70	15.57.56 + Q1.67.34	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombo-embolic complication, Visually detected thromboemboli with intervention	Thrombo-embolic events visually detected during VAD with subsequent intervention
996.70	15.57.56 + Q1.67.35	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombo-embolic complication, Visually detected thrombo-emboli with no subsequent intervention	Thrombo-embolic events visually detected during VAD with no subsequent intervention
996.70	15.57.56 + Q1.67.36	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombo-embolic complication, Visually detected thromboemboli with replacement of circuit	Thromboembolic events visually detected during VAD with subsequent replacement of circuit
996.70	15.57.57	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication	Any thrombotic complication during VAD support
996.70	15.57.57 + Q1.68.02	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication, Thrombus in VAD circuit during or after protamine	Thrombus visualized in VAD circuit during or after protamine administration
996.70	15.57.57 + Q1.68.22	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication, Thrombus in VAD circuit during VAD support	Thrombus visualized in VAD circuit during VAD support
996.70	15.57.57 + Q1.68.04	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication, Thrombus in VAD circuit during VAD	Thrombus formation in any portion of circuit, with the need to change the circuit

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
			support, Circuit thrombus necessitating circuit change	
996.70	15.57.57 + Q1.68.05	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication, Thrombus in VAD circuit during VAD support, Circuit thrombus necessitating emergent circuit change	Thrombus formation in any portion of circuit, with the need to emergently change the circuit
996.70	15.57.57 + Q1.68.06	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication, Thrombus in VAD circuit during VAD support, Thrombus formation in VAD circuit "bladder" not requiring component replacement	Thrombus formation in VAD circuit "bladder" without need for component replacement
996.70	15.57.57 + Q1.68.07	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication, Thrombus in VAD circuit during VAD support, Thrombus formation in VAD circuit "bladder" requiring component replacement	Thrombus formation in VAD circuit "bladder" with need for component replacement
996.70	15.57.57 + Q1.68.08	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication, Thrombus in VAD circuit during VAD support, Thrombus formation in VAD circuit "bridge" not requiring component replacement	Thrombus formation in VAD circuit "bridge" without need for component replacement
996.70	15.57.57 + Q1.68.09	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication, Thrombus in VAD circuit during VAD support, Thrombus formation in VAD circuit "bridge" requiring component replacement	Thrombus formation in VAD circuit "bridge" with need for component replacement
996.70	15.57.57 + Q1.68.10	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication, Thrombus in VAD circuit during VAD support, Thrombus formation in VAD circuit "centrifugal pump" not requiring component replacement	Thrombus formation in VAD circuit "centrifugal pump" without need for component replacement
996.70	15.57.57 + Q1.68.11	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication, Thrombus in VAD circuit during VAD support, Thrombus formation in VAD circuit "centrifugal pump" requiring component replacement	Thrombus formation in VAD circuit "centrifugal pump" with need for component replacement
996.70	15.57.57 + Q1.68.12	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication, Thrombus in VAD circuit during VAD support, Thrombus formation in VAD circuit "flow sensor" not requiring component replacement	Thrombus formation in VAD circuit "flow sensor" without need for component replacement
996.70	15.57.57 + Q1.68.13	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication, Thrombus in VAD circuit during VAD support, Thrombus formation in VAD circuit "flow sensor" requiring component replacement	Thrombus formation in VAD circuit "flow sensor" with need for component replacement
996.70	15.57.57 + Q1.68.14	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication, Thrombus in VAD circuit during VAD support, Thrombus formation in VAD circuit "heat exchanger" not requiring component replacement	Thrombus formation in VAD circuit "heat exchanger" without need for component replacement

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.70	15.57.57 + Q1.68.15	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication, Thrombus in VAD circuit during VAD support, Thrombus formation in VAD circuit "heat exchanger" requiring component replacement	Thrombus formation in VAD circuit "heat exchanger" with need for component replacement
996.70	15.57.57 + Q1.68.16	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication, Thrombus in VAD circuit during VAD support, Thrombus formation in VAD circuit "hemoconcentrator" not requiring component replacement	Thrombus formation in VAD circuit "hemoconcentrator" without need for component replacement
996.70	15.57.57 + Q1.68.17	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication, Thrombus in VAD circuit during VAD support, Thrombus formation in VAD circuit "hemoconcentrator" requiring component replacement	Thrombus formation in VAD circuit "hemoconcentrator" with need for component replacement
996.70	15.57.57 + Q1.68.20	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication, Thrombus in VAD circuit during VAD support, Thrombus formation in VAD circuit "shunts" not requiring component replacement	Thrombus formation in VAD circuit "shunts" without need for component replacement
996.70	15.57.57 + Q1.68.21	Cardiopulmonary bypass and Mechanical support	VAD complication, Thrombotic complication, Thrombus in VAD circuit during VAD support, Thrombus formation in VAD circuit "shunts" requiring component replacement	Thrombus formation in VAD circuit "shunts" with need for component replacement
996.00	15.57.94	Cardiopulmonary bypass and Mechanical support	VAD complication, Transcutaneous energy transfer (TET) system malfunction	Transcutaneous energy transfer system malfunction requiring intervention or replacement
996.00	15.57.03,, 15.90.40	Cardiopulmonary bypass and Mechanical support	VAD complication, Transport problem	A complication due to transport of patient while on VAD
996.00	15.57.64	Cardiopulmonary bypass and Mechanical support	VAD complication, Tubing (line) complication	Incorrect size or type of tubing, tubing malfunction, or unplanned tubing disconnection
996.00	15.57.64 + Q1.67.51	Cardiopulmonary bypass and Mechanical support	VAD complication, Tubing (line) complication, Line dislodgment or displacement	Unwanted line dislodgment or displacement
996.00	15.57.64 + Q1.67.58	Cardiopulmonary bypass and Mechanical support	VAD complication, Tubing (line) complication, Line dislodgment or displacement, Inadvertent dislodgment or displacement of VAD inflow line	Unwanted line dislodgment or displacement, Inadvertent disconnection of VAD inflow line
996.00	15.57.64 + Q1.67.59	Cardiopulmonary bypass and Mechanical support	VAD complication, Tubing (line) complication, Line dislodgment or displacement, Inadvertent dislodgment or displacement of VAD outflow line	Unwanted line dislodgment or displacement, Inadvertent disconnection of VAD outflow line

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.00	15.57.64 + Q1.67.55	Cardiopulmonary bypass and Mechanical support	VAD complication, Tubing (line) complication, Raceway tubing fatigue	VAD raceway tubing fatigue requiring interruption of VAD flow for non-emergent raceway replacement
996.00	15.57.64 + Q1.67.50	Cardiopulmonary bypass and Mechanical support	VAD complication, Tubing (line) complication, Raceway tubing rupture	VAD raceway tubing rupture requiring interruption of VAD for emergent replacement
996.00	15.57.64 + Q1.67.60	Cardiopulmonary bypass and Mechanical support	VAD complication, Tubing (line) complication, Reversal of inflow and outflow lines	Unplanned reversal of VAD inflow and outflow lines recognized after initiation of VAD
996.00	15.57.64 + Q1.67.56	Cardiopulmonary bypass and Mechanical support	VAD complication, Tubing (line) complication, Tubing connector crack	Crack in connectors requiring interruption of VAD flow for replacement of connector
996.00	15.57.64 + Q1.67.57	Cardiopulmonary bypass and Mechanical support	VAD complication, Tubing (line) complication, Tubing disconnect	Unplanned tubing disconnect from any VAD circuit component
996.00	15.57.89	Cardiopulmonary bypass and Mechanical support	VAD complication, Uncontrolled aortopulmonary collateral(s) or aortopulmonary shunt(s)	Failure to control aortopulmonary collateral(s) or aortopulmonary shunt(s) resulting in under-perfusion of essential organs and tissues.
996.00	15.57.90	Cardiopulmonary bypass and Mechanical support	VAD complication, Uncontrolled VAD circuit shunts	Presence of VAD circuit shunts resulting in hypoperfusion of essential organs and tissues.
996.00	15.57.59 + Q1.67.90	Cardiopulmonary bypass and Mechanical support	VAD complication, Under occluded arterial pump head	Under occlusion of arterial pump head requiring adjustment during VAD support
996.00	15.57.91	Cardiopulmonary bypass and Mechanical support	VAD complication, Unwanted exsanguination	Unwanted sudden drainage of blood from the patient while on VAD
E876.1	15.57.65	Cardiopulmonary bypass and Mechanical support	VAD complication, Wrong prime	Incorrect prime composition recognized after initiation of VAD
E876.9	15.57.95	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry	A complication associated with a Ventricular Assist Device (VAD) as classified by INTERMACS (The Interagency Registry for Mechanically Assisted Circulatory Support)
996.7	15.57.95, 15.57.56 + Q1.68.56	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Arterial Non-CNS Thromboembolism	An acute systemic arterial perfusion deficit in any non-cerebrovascular organ system due to thromboembolism confirmed by one or more of the following: 1) Standard clinical and laboratory testing, 2) Operative findings, or 3) Autopsy findings. This definition excludes neurological events.
427	15.57.95, 15.60.02	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Cardiac arrhythmias	Any documented arrhythmia that results in clinical compromise (e.g., diminished VAD flow, oliguria, pre-syncope or syncope) that requires hospitalization or occurs during a hospital stay. Cardiac arrhythmias are classified as 1 of 2 types: 1) Sustained ventricular arrhythmia requiring defibrillation or cardioversion, or 2) Sustained supraventricular arrhythmia requiring drug treatment or cardioversion.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427	15.57.95, 11.01.01 + Q1.36.47	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Cardiac arrhythmias, Sustained supraventricular arrhythmia requiring drug treatment or cardioversion	Any documented arrhythmia that results in clinical compromise (e.g., diminished VAD flow, oliguria, pre-syncope or syncope) that requires hospitalization or occurs during a hospital stay. Cardiac arrhythmias are classified as 1 of 2 types: 1) Sustained ventricular arrhythmia requiring defibrillation or cardioversion, or 2) Sustained supraventricular arrhythmia requiring drug treatment or cardioversion.
427	15.57.95, 11.05.00 + Q1.36.47	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Cardiac arrhythmias, Sustained ventricular arrhythmia requiring defibrillation or cardioversion	Any documented arrhythmia that results in clinical compromise (e.g., diminished VAD flow, oliguria, pre-syncope or syncope) that requires hospitalization or occurs during a hospital stay. Cardiac arrhythmias are classified as 1 of 2 types: 1) Sustained ventricular arrhythmia requiring defibrillation or cardioversion, or 2) Sustained supraventricular arrhythmia requiring drug treatment or cardioversion.
996	15.57.95, 15.57.60	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Device malfunction	Device malfunction denotes a failure of one or more of the components of the MCSD system which either directly causes or could potentially induce a state of inadequate circulatory support (low cardiac output state) or death. The manufacturer must confirm device failure. A failure that was iatrogenic or recipient-induced will be classified as an Iatrogenic/Recipient-Induced Failure. Device failure should be classified according to which components fails as follows: 1) Pump failure (blood contacting components of pump and any motor or other pump actuating mechanism that is housed with the blood contacting components). In the special situation of pump thrombosis, thrombus is documented to be present within the device or its conduits that result in or could potentially induce circulatory failure. 2) Non-pump failure (e.g., external pneumatic drive unit, electric power supply unit, batteries, controller, interconnect cable, compliance chamber).
996	15.57.95, 15.57.96	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Device malfunction, Non-pump failure	Device malfunction denotes a failure of one or more of the components of the MCSD system which either directly causes or could potentially induce a state of inadequate circulatory support (low cardiac output state) or death. The manufacturer must confirm device failure. A failure that was iatrogenic or recipient-induced will be classified as an Iatrogenic/Recipient-Induced Failure. Device failure should be classified according to which components fails as follows: 1) Pump failure (blood contacting components of pump and any motor or other pump actuating mechanism that is housed with the blood contacting components). In the special situation of pump thrombosis, thrombus is documented to be present within the device or its conduits that result in or could potentially induce circulatory failure. 2) Non-pump failure (e.g., external pneumatic drive unit, electric power supply unit, batteries, controller, interconnect cable, compliance chamber).

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996	15.57.95, 15.57.59 + Q1.57.43	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Device malfunction, Pump failure	Device malfunction denotes a failure of one or more of the components of the MCSD system which either directly causes or could potentially induce a state of inadequate circulatory support (low cardiac output state) or death. The manufacturer must confirm device failure. A failure that was iatrogenic or recipient-induced will be classified as an Iatrogenic/Recipient-Induced Failure. Device failure should be classified according to which components fails as follows: 1) Pump failure (blood contacting components of pump and any motor or other pump actuating mechanism that is housed with the blood contacting components). In the special situation of pump thrombosis, thrombus is documented to be present within the device or its conduits that result in or could potentially induce circulatory failure. 2) Non-pump failure (e.g., external pneumatic drive unit, electric power supply unit, batteries, controller, interconnect cable, compliance chamber).
996.7	15.57.95, 15.57.67	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Hemolysis	A plasma-free hemoglobin value that is greater than 40 mg/dl, in association with clinical signs associated with hemolysis (e.g., anemia, low hematocrit, hyperbilirubinemia) occurring after the first 72 hours post-implant. Hemolysis related to documented non-device-related causes (e.g. transfusion or drug) is excluded from this definition.
573.9	15.57.95, 15.82.43	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Hepatic dysfunction	An increase in any two of the following hepatic laboratory values (total bilirubin, aspartate aminotransferase/AST and alanine aminotransferase/ALT) to a level greater than three times the upper limit of normal for the hospital, beyond 14 days post-implant (or if hepatic dysfunction is the primary cause of death).
405.99	15.57.95, 10.14.00	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Hypertension	New onset blood pressure elevation greater than or equal to 140 mmHg systolic or 90 mmHg diastolic (pulsatile pump) or 110 mmHg mean pressure (rotary pump). Pediatric patients: For patients under 18 years of age weighing <50 kg, hypertension is defined as systolic, diastolic, or mean blood pressure greater than the 95th percentile for age which requires the addition of iv or oral therapy for management.
996.7	15.57.95, 15.57.71 + Q1.40.05	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Major bleeding	An episode of internal or external bleeding that results in death, the need for re-operation or hospitalization; or necessitates transfusion of red blood cells as follows: Within any 24 hour period: 1) $\geq$4U packed red blood cells (PRBC) within any 24 hour period during the first 7 days post-implant, or 2) $\geq$2U packed red blood cells (PRBC) within any 24 hour period after 7 days following implant. For patients <50 kg: 1) $\geq$20 cc/kg packed red blood cells (PRBC) within any 24 hour period during the first 7 days post-implant, or 2) $\geq$10 cc/kg packed red blood cells (PRBC) within any 24 hour period after 7 days following implant. (NOTE: Hemorrhagic stroke is considered a neurological event and not as a separate bleeding event.)

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.6	15.57.95, 15.90.50 + Q1.40.05	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Major infection	A clinical infection accompanied by pain, fever, drainage and/or leukocytosis that is treated by anti-microbial agents (non-prophylactic). A positive culture from the infected site or organ should be present unless strong clinical evidence indicates the need for treatment despite negative cultures. The general categories of infection are listed below: 1) Localized Non-Device Infection: Infection localized to any organ system or region (e.g. mediastinitis) without evidence of systemic involvement (see sepsis definition), ascertained by standard clinical methods and either associated with evidence of bacterial, viral, fungal or protozoal infection, and/or requiring empirical treatment. 2) Percutaneous Site and/or Pocket Infection: A positive culture from the skin and/or tissue surrounding the drive line or from the tissue surrounding the external housing of a pump implanted within the body, coupled with the need to treat with antimicrobial therapy, when there is clinical evidence of infection such as pain, fever, drainage, or leukocytosis. 3) Internal Pump Component, Inflow or Outflow Tract Infection: Infection of blood-contacting surfaces of the LVAD documented by positive site culture. (There should be a separate data field for paracorporeal pump that describes infection at the percutaneous cannula site, e.g. Thoratec PVAD). 4) Sepsis: Evidence of systemic involvement by infection, manifested by positive blood cultures and/or hypotension.
996.6	15.57.95, 15.57.97	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Major infection, Internal pump component, inflow or outflow tract infection	A clinical infection accompanied by pain, fever, drainage and/or leukocytosis that is treated by anti-microbial agents (non-prophylactic). A positive culture from the infected site or organ should be present unless strong clinical evidence indicates the need for treatment despite negative cultures. The general categories of infection are listed below: 1) Localized Non-Device Infection: Infection localized to any organ system or region (e.g. mediastinitis) without evidence of systemic involvement (see sepsis definition), ascertained by standard clinical methods and either associated with evidence of bacterial, viral, fungal or protozoal infection, and/or requiring empirical treatment. 2) Percutaneous Site and/or Pocket Infection: A positive culture from the skin and/or tissue surrounding the drive line or from the tissue surrounding the external housing of a pump implanted within the body, coupled with the need to treat with antimicrobial therapy, when there is clinical evidence of infection such as pain, fever, drainage, or leukocytosis. 3) Internal Pump Component, Inflow or Outflow Tract Infection: Infection of blood-contacting surfaces of the LVAD documented by positive site culture. (There should be a separate data field for paracorporeal pump that describes infection at the percutaneous cannula site, e.g. Thoratec PVAD). 4) Sepsis: Evidence

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				of systemic involvement by infection, manifested by positive blood cultures and/or hypotension.
996.6	15.57.95, 15.57.98	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Major infection, Localized non-device infection	A clinical infection accompanied by pain, fever, drainage and/or leukocytosis that is treated by anti-microbial agents (non-prophylactic). A positive culture from the infected site or organ should be present unless strong clinical evidence indicates the need for treatment despite negative cultures. The general categories of infection are listed below: 1) Localized Non-Device Infection: Infection localized to any organ system or region (e.g. mediastinitis) without evidence of systemic involvement (see sepsis definition), ascertained by standard clinical methods and either associated with evidence of bacterial, viral, fungal or protozoal infection, and/or requiring empirical treatment. 2) Percutaneous Site and/or Pocket Infection: A positive culture from the skin and/or tissue surrounding the drive line or from the tissue surrounding the external housing of a pump implanted within the body, coupled with the need to treat with antimicrobial therapy, when there is clinical evidence of infection such as pain, fever, drainage, or leukocytosis. 3) Internal Pump Component, Inflow or Outflow Tract Infection: Infection of blood-contacting surfaces of the LVAD documented by positive site culture. (There should be a separate data field for paracorporeal pump that describes infection at the percutaneous cannula site, e.g. Thoratec PVAD). 4) Sepsis: Evidence of systemic involvement by infection, manifested by positive blood cultures and/or hypotension.
996.6	15.57.95, 15.57.99	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Major infection, Percutaneous site and/or pocket infection	A clinical infection accompanied by pain, fever, drainage and/or leukocytosis that is treated by anti-microbial agents (non-prophylactic). A positive culture from the infected site or organ should be present unless strong clinical evidence indicates the need for treatment despite negative cultures. The general categories of infection are listed below: 1) Localized Non-Device Infection: Infection localized to any organ system or region (e.g. mediastinitis) without evidence of systemic involvement (see sepsis definition), ascertained by standard clinical methods and either associated with evidence of bacterial, viral, fungal or protozoal infection, and/or requiring empirical treatment. 2) Percutaneous Site and/or Pocket Infection: A positive culture from the skin and/or tissue surrounding the drive line or from the tissue surrounding the external housing of a pump implanted within the body, coupled with the need to treat with antimicrobial therapy, when there is clinical evidence of infection such as pain, fever, drainage, or leukocytosis. 3) Internal Pump Component, Inflow or Outflow Tract Infection: Infection of blood-contacting surfaces of the LVAD documented by positive site culture. (There should be a separate data field for paracorporeal pump that describes infection at the

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				percutaneous cannula site, e.g. Thoratec PVAD). 4) Sepsis: Evidence of systemic involvement by infection, manifested by positive blood cultures and/or hypotension.
996.6	15.57.95, 15.80.05	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Major infection, Sepsis	A clinical infection accompanied by pain, fever, drainage and/or leukocytosis that is treated by anti-microbial agents (non-prophylactic). A positive culture from the infected site or organ should be present unless strong clinical evidence indicates the need for treatment despite negative cultures. The general categories of infection are listed below: 1) Localized Non-Device Infection: Infection localized to any organ system or region (e.g. mediastinitis) without evidence of systemic involvement (see sepsis definition), ascertained by standard clinical methods and either associated with evidence of bacterial, viral, fungal or protozoal infection, and/or requiring empirical treatment. 2) Percutaneous Site and/or Pocket Infection: A positive culture from the skin and/or tissue surrounding the drive line or from the tissue surrounding the external housing of a pump implanted within the body, coupled with the need to treat with antimicrobial therapy, when there is clinical evidence of infection such as pain, fever, drainage, or leukocytosis. 3) Internal Pump Component, Inflow or Outflow Tract Infection: Infection of blood-contacting surfaces of the LVAD documented by positive site culture. (There should be a separate data field for paracorporeal pump that describes infection at the percutaneous cannula site, e.g. Thoratec PVAD). 4) Sepsis: Evidence of systemic involvement by infection, manifested by positive blood cultures and/or hypotension.
410.9	15.57.95, 15.00.18	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Myocardial infarction	Two categories of myocardial infarction will be identified: 1) Peri-Operative Myocardial Infarction: The clinical suspicion of myocardial infarction together with CK-MB or Troponin >10 times the local hospital upper limits of normal, found within 7 days following VAD implant together with ECG findings consistent with acute myocardial infarction. (This definition uses the higher suggested limit for serum markers due to apical coring at the time of VAD placement, and does not use wall motion changes because the apical sewing ring inherently creates new wall motion abnormalities.) 2) Non-Perioperative Myocardial Infarction: The presence at >7 days post-implant of two of the following three criteria: a) Chest pain which is characteristic of myocardial ischemia, b) ECG with a pattern or changes consistent with a myocardial infarction, and c) Troponin or CK (measured by standard clinical pathology/laboratory medicine methods) greater than the normal range for the local hospital with positive MB fraction ($\geq 3\%$ total CK). This should be accompanied by a new regional LV or RV wall motion abnormality on a myocardial imaging study.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
410.9	15.57.95, 15.00.06	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Myocardial infarction, Non-Perioperative myocardial infarction	Two categories of myocardial infarction will be identified: 1) Peri-Operative Myocardial Infarction: The clinical suspicion of myocardial infarction together with CK-MB or Troponin >10 times the local hospital upper limits of normal, found within 7 days following VAD implant together with ECG findings consistent with acute myocardial infarction. (This definition uses the higher suggested limit for serum markers due to apical coring at the time of VAD placement, and does not use wall motion changes because the apical sewing ring inherently creates new wall motion abnormalities.) 2) Non-Perioperative Myocardial Infarction: The presence at >7 days post-implant of two of the following three criteria: a) Chest pain which is characteristic of myocardial ischemia, b) ECG with a pattern or changes consistent with a myocardial infarction, and c) Troponin or CK (measured by standard clinical pathology/laboratory medicine methods) greater than the normal range for the local hospital with positive MB fraction ($\geq$3% total CK). This should be accompanied by a new regional LV or RV wall motion abnormality on a myocardial imaging study.
410.9	15.57.95, 15.00.05	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Myocardial infarction, Peri-operative myocardial infarction	Two categories of myocardial infarction will be identified: 1) Peri-Operative Myocardial Infarction: The clinical suspicion of myocardial infarction together with CK-MB or Troponin >10 times the local hospital upper limits of normal, found within 7 days following VAD implant together with ECG findings consistent with acute myocardial infarction. (This definition uses the higher suggested limit for serum markers due to apical coring at the time of VAD placement, and does not use wall motion changes because the apical sewing ring inherently creates new wall motion abnormalities.) 2) Non-Perioperative Myocardial Infarction: The presence at >7 days post-implant of two of the following three criteria: a) Chest pain which is characteristic of myocardial ischemia, b) ECG with a pattern or changes consistent with a myocardial infarction, and c) Troponin or CK (measured by standard clinical pathology/laboratory medicine methods) greater than the normal range for the local hospital with positive MB fraction ($\geq$3% total CK). This should be accompanied by a new regional LV or RV wall motion abnormality on a myocardial imaging study.
349.9	15.57.95, 15.82.94	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Neurological dysfunction	Any new, temporary or permanent, focal or global neurological deficit ascertained by a standard neurological examination (administered by a neurologist or other qualified physician and documented with appropriate diagnostic tests and consultation note). The examining physician will distinguish between a transient ischemic attack (TIA), which is fully reversible within 24 hours (and without evidence of infarction), and a stroke, which lasts longer than 24 hours (or less than 24 hours if there is evidence of infarction). The NIH Stroke Scale (for

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				patients >5 years old) must be re-administered at 30 and 60 days following the event to document the presence and severity of neurological deficits. Each neurological event must be subcategorized as: 1) Transient Ischemic Attack (acute event that resolves completely within 24 hours with no evidence of infarction). 2) Ischemic or Hemorrhagic Cardiovascular Accident/CVA (event that persists beyond 24 hours or less than 24 hours associated with infarction on an imaging study. In addition, to above, for patients <6 months of age, any of the following: 3) New abnormality of head ultrasound 4) EEG positive for seizure activity with or without clinical seizure
345.9	15.57.95, 15.82.94	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Neurological dysfunction, EEG positive for seizure activity with or without clinical seizure (for patients < 6 months of age)	Any new, temporary or permanent, focal or global neurological deficit ascertained by a standard neurological examination (administered by a neurologist or other qualified physician and documented with appropriate diagnostic tests and consultation note). The examining physician will distinguish between a transient ischemic attack (TIA), which is fully reversible within 24 hours (and without evidence of infarction), and a stroke, which lasts longer than 24 hours (or less than 24 hours if there is evidence of infarction). The NIH Stroke Scale (for patients >5 years old) must be re-administered at 30 and 60 days following the event to document the presence and severity of neurological deficits. Each neurological event must be subcategorized as: 1) Transient Ischemic Attack (acute event that resolves completely within 24 hours with no evidence of infarction). 2) Ischemic or Hemorrhagic Cardiovascular Accident/CVA (event that persists beyond 24 hours or less than 24 hours associated with infarction on an imaging study. In addition, to above, for patients <6 months of age, any of the following: 3) New abnormality of head ultrasound 4) EEG positive for seizure activity with or without clinical seizure
437.9	15.57.95, 15.82.60	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Neurological dysfunction, Ischemic or hemorrhagic cardiovascular accident (CVA)	Any new, temporary or permanent, focal or global neurological deficit ascertained by a standard neurological examination (administered by a neurologist or other qualified physician and documented with appropriate diagnostic tests and consultation note). The examining physician will distinguish between a transient ischemic attack (TIA), which is fully reversible within 24 hours (and without evidence of infarction), and a stroke, which lasts longer than 24 hours (or less than 24 hours if there is evidence of infarction). The NIH Stroke Scale (for patients >5 years old) must be re-administered at 30 and 60 days following the event to document the presence and severity of neurological deficits. Each neurological event must be subcategorized as: 1) Transient Ischemic Attack (acute event that resolves completely within 24 hours with no evidence of infarction). 2) Ischemic or Hemorrhagic Cardiovascular Accident/CVA (event that persists beyond 24 hours or less than 24 hours associated with infarction on an imaging study. In addition, to above, for patients <6 months of

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				age, any of the following: 3) New abnormality of head ultrasound 4) EEG positive for seizure activity with or without clinical seizure
349.9	15.57.95, 15.83.93	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Neurological dysfunction, New abnormality of head ultrasound (for patients < 6 months of age)	Any new, temporary or permanent, focal or global neurological deficit ascertained by a standard neurological examination (administered by a neurologist or other qualified physician and documented with appropriate diagnostic tests and consultation note). The examining physician will distinguish between a transient ischemic attack (TIA), which is fully reversible within 24 hours (and without evidence of infarction), and a stroke, which lasts longer than 24 hours (or less than 24 hours if there is evidence of infarction). The NIH Stroke Scale (for patients >5 years old) must be re-administered at 30 and 60 days following the event to document the presence and severity of neurological deficits. Each neurological event must be subcategorized as: 1) Transient Ischemic Attack (acute event that resolves completely within 24 hours with no evidence of infarction). 2) Ischemic or Hemorrhagic Cardiovascular Accident/CVA (event that persists beyond 24 hours or less than 24 hours associated with infarction on an imaging study. In addition, to above, for patients <6 months of age, any of the following: 3) New abnormality of head ultrasound 4) EEG positive for seizure activity with or without clinical seizure
435.9	15.57.95, 15.82.85	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Neurological dysfunction, Transient ischemic attack	Any new, temporary or permanent, focal or global neurological deficit ascertained by a standard neurological examination (administered by a neurologist or other qualified physician and documented with appropriate diagnostic tests and consultation note). The examining physician will distinguish between a transient ischemic attack (TIA), which is fully reversible within 24 hours (and without evidence of infarction), and a stroke, which lasts longer than 24 hours (or less than 24 hours if there is evidence of infarction). The NIH Stroke Scale (for patients >5 years old) must be re-administered at 30 and 60 days following the event to document the presence and severity of neurological deficits. Each neurological event must be subcategorized as: 1) Transient Ischemic Attack (acute event that resolves completely within 24 hours with no evidence of infarction). 2) Ischemic or Hemorrhagic Cardiovascular Accident/CVA (event that persists beyond 24 hours or less than 24 hours associated with infarction on an imaging study. In addition, to above, for patients <6 months of age, any of the following: 3) New abnormality of head ultrasound 4) EEG positive for seizure activity with or without clinical seizure
998.9	15.57.95, 15.90.01	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Other	An event that causes clinically relevant changes in the patient's health (e.g. cancer).
423.9	15.57.95, 15.83.10	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Pericardial fluid collection	Accumulation of fluid or clot in the pericardial space that requires surgical intervention or percutaneous catheter drainage. This event will be subdivided into those with clinical signs of tamponade (e.g.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				increased central venous pressure and decreased cardiac/VAD output) and those without signs of tamponade.
298.9	15.57.95, 15.02.97	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Psychiatric Episode	Disturbance in thinking, emotion or behavior that causes substantial impairment in functioning or marked subjective distress requiring intervention. Intervention is the addition of new psychiatric medication, hospitalization, or referral to a mental health professional for treatment. Suicide is included in this definition.
593.9	15.57.95, 15.82.00	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Renal dysfunction	Two categories of renal dysfunction will be identified: 1) Acute Renal Dysfunction: Abnormal kidney function requiring dialysis (including hemofiltration) in patients who did not require this procedure prior to implant, or a rise in serum creatinine of greater than 3 times baseline or greater than 5 mg/dL (in children, creatinine greater than 3 times upper limit of normal for age) sustained for over 48 hours. 2) Chronic Renal Dysfunction: An increase in serum creatinine of 2 mg/dl or greater above baseline, or requirement for hemodialysis sustained for at least 90 days.
593.9	15.57.95, 15.82.01	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Renal dysfunction, Acute renal dysfunction	Two categories of renal dysfunction will be identified: 1) Acute Renal Dysfunction: Abnormal kidney function requiring dialysis (including hemofiltration) in patients who did not require this procedure prior to implant, or a rise in serum creatinine of greater than 3 times baseline or greater than 5 mg/dL (in children, creatinine greater than 3 times upper limit of normal for age) sustained for over 48 hours. 2) Chronic Renal Dysfunction: An increase in serum creatinine of 2 mg/dl or greater above baseline, or requirement for hemodialysis sustained for at least 90 days.
593.9	15.57.95, 15.82.02	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Renal dysfunction, Chronic renal dysfunction:	Two categories of renal dysfunction will be identified: 1) Acute Renal Dysfunction: Abnormal kidney function requiring dialysis (including hemofiltration) in patients who did not require this procedure prior to implant, or a rise in serum creatinine of greater than 3 times baseline or greater than 5 mg/dL (in children, creatinine greater than 3 times upper limit of normal for age) sustained for over 48 hours. 2) Chronic Renal Dysfunction: An increase in serum creatinine of 2 mg/dl or greater above baseline, or requirement for hemodialysis sustained for at least 90 days.
518.81	15.57.95, 16.30.01	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Respiratory failure	Impairment of respiratory function requiring reintubation, tracheotomy or (for patients older than age 5 years) the inability to discontinue ventilatory support within six days (144 hours) post-VAD implant. This excludes intubation for re-operation or temporary intubation for diagnostic or therapeutic procedures.
428	15.57.95, 10.17.19	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Right Heart Failure	Symptoms and signs of persistent right ventricular dysfunction [central venous pressure (CVP) >18 mmHg with a cardiac index <2.0 L/min/m^2 in the absence of elevated left atrial/pulmonary capillary wedge pressure (greater than 18 mmHg), tamponade, ventricular arrhythmias or pneumothorax] requiring either RVAD

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				implantation or inotropic therapy, fourteen days or more after LVAD implantation.
999.2	15.57.95, 15.67.55	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Venous Thromboembolism Event	Evidence of venous thromboembolic event (e.g. deep vein thrombosis, pulmonary embolism) by standard clinical and laboratory testing.
998.3	15.57.95, 15.03.51	Cardiopulmonary bypass and Mechanical support	VAD complication-INTERMACS Registry, Wound Dehiscence	Disruption of the apposed surfaces of a surgical incision, excluding infectious etiology, and requiring surgical repair.
E876.9	15.58.03	Echocardiography	Epicardial echocardiography complication	Includes arrhythmia, hypotension or other hemodynamic disturbance that precludes completion of study
E876.9	15.58.04	Echocardiography	TEE complication	Any complication related to transesophageal echocardiography (TEE).
947.2	15.58.05	Echocardiography	TEE complication, Chemical burn of esophagus or oropharynx	Chemical burn related to transesophageal echocardiography (TEE) secondary to cleaning solution being inadequately rinsed off
873.7	15.58.06	Echocardiography	TEE complication, Dental injury	Injury or damage to dentition related to transesophageal echocardiography (TEE)
530.4	15.58.07	Echocardiography	TEE complication, Esophageal perforation	Esophageal perforation related to transesophageal echocardiography (TEE)
787.2	15.58.08	Echocardiography	TEE complication, Postoperative dysphagia	Postoperative dysphagia related to transesophageal echocardiography (TEE)
933.1	15.58.09	Echocardiography	TEE complication, TEE related airway compromise	Insertion or manipulation of probe leading to either desaturation or excessive inspiratory pressures with airway compromise
933	15.58.10	Echocardiography	TEE complication, TEE related airway compromise not requiring removal of probe	Insertion or manipulation of probe leading to either desaturation or excessive inspiratory pressures with airway compromise of insufficient severity to require probe removal
933.1	15.58.11	Echocardiography	TEE complication, TEE related airway compromise requiring removal of probe	Insertion or manipulation of probe leading to either desaturation or excessive inspiratory pressures with airway compromise of sufficient severity to require probe removal
530.82	15.58.12	Echocardiography	TEE complication, TEE related bleeding from oropharynx or esophagus	Blood present in pharynx or on TEE probe after removal
447.1	15.58.13	Echocardiography	TEE complication, TEE related hemodynamic or vascular compromise	Insertion or manipulation of probe leading to chamber or vascular compression (LA, LPA or Aorta)
447.1	15.58.14	Echocardiography	TEE complication, TEE related hemodynamic or vascular compromise not requiring removal of probe	Insertion or manipulation of probe leading to chamber or vascular compression (LA, LPA or Aorta) of insufficient severity to require probe removal
447.1	15.58.15	Echocardiography	TEE complication, TEE related hemodynamic or vascular compromise requiring removal of probe	Insertion or manipulation of probe leading to chamber or vascular compression (LA, LPA or Aorta) of sufficient severity to require probe removal
E876.9	15.58.16	Echocardiography	TEE complication, TEE related unintended extubation during manipulation or removal of probe	Unintended removal of endotracheal tube during manipulation or removal of TEE probe
427.9	15.60.02	Arrhythmia	Arrhythmia	"Arrhythmia" ROOT Definition = Any cardiac rhythm other than Normal Sinus Rhythm (non-NSR). If pacemaker is required, also code "Arrhythmia necessitating pacemaker". (Although some arrhythmias will require treatment and some arrhythmias will not require treatment, this

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				list will define all arrhythmias. Many databases will choose to track as complications only those arrhythmias that require treatment.) The definition of arrhythmia from The World Health Organization and The International Society of Cardiology Task Force is as follows: An arrhythmia is defined as "any cardiac rhythm other than the normal sinus rhythm. Such a rhythm may be either of sinus or ectopic origin, and either regular or irregular. An arrhythmia may be due to a disturbance in impulse formation or conduction, or both".
427.9	11.00.19	Arrhythmia	Arrhythmia necessitating treatment	Arrhythmia (ROOT Definition) + An arrhythmia not requiring medical or surgical treatment.
427.9	11.00.18	Arrhythmia	Arrhythmia not necessitating treatment	Arrhythmia (ROOT Definition) + An arrhythmia requiring medical or surgical treatment.
427.9	11.00.30	Arrhythmia	Arrhythmia requiring drug therapy	Arrhythmia (ROOT Definition) + An arrhythmia requiring drug therapy
427.9	11.00.31	Arrhythmia	Arrhythmia requiring electrical cardioversion or defibrillation	Arrhythmia (ROOT Definition) + An arrhythmia requiring electrical cardioversion or defibrillation
427.9	11.00.20	Arrhythmia – Arrhythmia necessitating pacemaker	Arrhythmia necessitating pacemaker	Arrhythmia (ROOT Definition) + Arrhythmia necessitating pacemaker. The pacemaker may be permanent or temporary and may be required for treatment of heart block or an arrhythmia other than heart block. Please specify these variables in the child choices of this term.
427.9	11.00.33	Arrhythmia – Arrhythmia necessitating pacemaker	Arrhythmia necessitating pacemaker, Permanent pacemaker	Implantation and utilization of a permanent pacemaker for treatment of any arrhythmia including heart block (atrioventricular [AV] heart block).
427.9	15.60.06	Arrhythmia – Arrhythmia necessitating pacemaker	Arrhythmia necessitating pacemaker, Permanent pacemaker, For arrhythmia other than heart block	Permanent pacemaker for any cause other than heart block. For example, a permanent pacemaker placed to treat sick sinus syndrome.
426.9	11.06.33	Arrhythmia – Arrhythmia necessitating pacemaker	Arrhythmia necessitating pacemaker, Permanent pacemaker, For Heart block	Permanent pacemaker for treatment of heart block. In other words, implantation of a permanent pacemaker for treatment of atrioventricular (AV) heart block.
427.9	11.00.32	Arrhythmia – Arrhythmia necessitating pacemaker	Arrhythmia necessitating pacemaker, Temporary pacemaker	Implantation and utilization of a temporary pacemaker for treatment of any arrhythmia including heart block (atrioventricular [AV] heart block).
427.9	15.60.05	Arrhythmia – Arrhythmia necessitating pacemaker	Arrhythmia necessitating pacemaker, Temporary pacemaker, For arrhythmia other than heart block	Temporary pacemaker for any cause other than heart block. For example, a temporary pacemaker placed to treat sick sinus syndrome, sinus bradycardia, or a nodal rhythm.
426.1	11.06.32	Arrhythmia – Arrhythmia necessitating pacemaker	Arrhythmia necessitating pacemaker, Temporary pacemaker, For heart block	Temporary pacemaker for treatment of heart block. In other words, implantation and utilization of a temporary pacemaker for treatment of atrioventricular (AV) heart block.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.9	11.03.09	Arrhythmia – Atrial	Arrhythmia, Atrial	"Arrhythmia, Atrial" ROOT Definition = Non-sinus atrial rhythm with or without atrioventricular conduction.
427.31	11.03.08	Arrhythmia – Atrial	Arrhythmia, Atrial, Atrial fibrillation	Atrial fibrillation is an arrhythmia characterized by uncoordinated atrial activation with consequent deterioration of atrial mechanical function. On ECG, atrial fibrillation is characterized by the replacement of consistent P waves by rapid oscillations or fibrillatory waves that vary in amplitude, shape, and timing, associated with an irregular, frequently rapid ventricular response when atrioventricular conduction is intact.
427.3	11.03.08, 11.03.07	Arrhythmia – Atrial	Arrhythmia, Atrial, Atrial fibrillation and atrial flutter	Atrial flutter may degenerate into atrial fibrillation and atrial fibrillation may convert to atrial flutter. The ECG pattern may fluctuate between atrial flutter and atrial fibrillation, reflecting changing activation of the atriums. Atrial fibrillation is an arrhythmia characterized by uncoordinated atrial activation with consequent deterioration of atrial mechanical function. On ECG, atrial fibrillation is characterized by the replacement of consistent P waves by rapid oscillations or fibrillatory waves that vary in amplitude, shape, and timing, associated with an irregular, frequently rapid ventricular response when atrioventricular conduction is intact. Atrial flutter is an organized atrial rhythm with a rate typically between 250 and 350 bpm, including tachycardias using a variety of reentry circuits that often occupy large areas of the atrium ("macro-reentrant").
427.32	11.03.07	Arrhythmia – Atrial	Arrhythmia, Atrial, Atrial flutter	Atrial flutter is an organized atrial rhythm with a rate typically between 250 and 350 bpm, including tachycardias using a variety of reentry circuits that often occupy large areas of the atrium ("macro-reentrant").
427.6	11.03.21	Arrhythmia – Atrial	Arrhythmia, Atrial, Atrial premature beats (complexes) (contractions) (PAC[s])	"Arrhythmia, Atrial, Atrial premature beats (complexes) (contractions) (PAC[s])" ROOT Definition = Non-sinus, isolated atrial contractions.
427.61	11.03.23	Arrhythmia – Atrial	Arrhythmia, Atrial, Atrial premature beats (complexes) (contractions) (PAC[s]), PAC[s] with aberrant ventricular conduction	Arrhythmia, Atrial, Atrial premature beats (complexes) (contractions) (PAC[s]) (ROOT Definition) + Non-sinus, isolated atrial contractions with aberrant ventricular conduction.
427.61	11.03.25	Arrhythmia – Atrial	Arrhythmia, Atrial, Atrial premature beats (complexes) (contractions) (PAC[s]), PAC[s] with atrial bigeminy	Arrhythmia, Atrial, Atrial premature beats (complexes) (contractions) (PAC[s]) (ROOT Definition) + Atrial ectopy alternating with sinus heart beat
427.61	11.03.26	Arrhythmia – Atrial	Arrhythmia, Atrial, Atrial premature beats (complexes) (contractions) (PAC[s]), PAC[s] with atrial trigeminy	Arrhythmia, Atrial, Atrial premature beats (complexes) (contractions) (PAC[s]) (ROOT Definition) + Atrial ectopy in trigeminal pattern, usually with 2 sinus beats and 1 premature atrial contraction.
427.61	11.03.24	Arrhythmia – Atrial	Arrhythmia, Atrial, Atrial premature beats (complexes) (contractions) (PAC[s]), PAC[s] with blocked conduction	Arrhythmia, Atrial, Atrial premature beats (complexes) (contractions) (PAC[s]) (ROOT Definition) + Premature atrial contraction without atrioventricular conduction, resulting in pauses.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.61	11.03.30	Arrhythmia – Atrial	Arrhythmia, Atrial, Atrial premature beats (complexes) (contractions) (PAC[s]), PAC[s] with interpolation	Arrhythmia, Atrial, Atrial premature beats (complexes) (contractions) (PAC[s]) (ROOT Definition) + Premature atrial contraction occurring within two normally timed sinus beats.
427.61	11.03.22	Arrhythmia – Atrial	Arrhythmia, Atrial, Atrial premature beats (complexes) (contractions) (PAC[s]), PAC[s] with normal conduction	Arrhythmia, Atrial, Atrial premature beats (complexes) (contractions) (PAC[s]) (ROOT Definition) + Premature atrial contraction with intact atrioventricular conduction.
427.81	11.02.11	Arrhythmia – Atrial	Arrhythmia, Atrial, Brady/tachy syndrome	Sinus pauses and/or bradycardia alternating with sinus or atrial tachycardia.
427.81	11.00.17	Arrhythmia – Atrial	Arrhythmia, Atrial, Bradycardia	"Arrhythmia, Atrial, Bradycardia" ROOT Definition = An atrial rhythm with the rate slower than normal for age. Bradycardia is a heart rate <60 in patients >30 days of age, <80 in neonates. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
427.81	11.02.15	Arrhythmia – Atrial	Arrhythmia, Atrial, Bradycardia, Bradycardia of prematurity	Arrhythmia, Atrial, Bradycardia (ROOT Definition) + Prematurity
427.9	11.03.11	Arrhythmia – Atrial	Arrhythmia, Atrial, Postprocedural atrial rhythm disturbance	An atrial arrhythmia after a procedure. A postprocedural complication is any complication that occurs during the time interval between Operating Room Exit Date and Time and the end of the period of operative and procedural data collection, and thus includes both intraprocedural and postprocedural complications.
427.81	11.02.37	Arrhythmia – Atrial	Arrhythmia, Atrial, Sick sinus syndrome (SSS)	"Sick sinus syndrome (SSS)" ROOT Definition = Inappropriate sinus rates (Either resting bradycardia or chronotropic incompetence) which may be associated with episodes of atrial tachycardia. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
427.81	11.02.39	Arrhythmia – Atrial	Arrhythmia, Atrial, Sick sinus syndrome (SSS), Acquired	Sick sinus syndrome (SSS) (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) sick sinus syndrome. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
427.81	11.02.39 + Q1.92.20	Arrhythmia – Atrial	Arrhythmia, Atrial, Sick sinus syndrome (SSS), Acquired, Not postoperative and not S/P Cardiac catheterization	Sick sinus syndrome (SSS) (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) sick sinus syndrome. Not postoperative and not S/P Cardiac catheterization. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
427.81	11.02.39 + Q1.90.56	Arrhythmia – Atrial	Arrhythmia, Atrial, Sick sinus syndrome (SSS), Acquired, Postoperative S/P Cardiothoracic surgery	Sick sinus syndrome (SSS) (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) sick sinus syndrome. Postoperative S/P Cardiothoracic surgery. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
427.81	11.02.39 + Q1.90.64	Arrhythmia – Atrial	Arrhythmia, Atrial, Sick sinus syndrome (SSS), Acquired, Postprocedural	Sick sinus syndrome (SSS) (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) sick sinus syndrome. Postprocedural. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
427.81	11.02.39 + Q1.90.68	Arrhythmia – Atrial	Arrhythmia, Atrial, Sick sinus syndrome (SSS), Acquired, Postprocedural, S/P Cardiac catheterization	Sick sinus syndrome (SSS) (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) sick sinus syndrome. Postprocedural, S/P Cardiac catheterization. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.81	11.02.38	Arrhythmia – Atrial	Arrhythmia, Atrial, Sick sinus syndrome (SSS), Primary	Sick sinus syndrome (SSS) (ROOT Definition) + Occurring in the absence of an intervention; may be genetic in origin. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
427.81	11.02.16	Arrhythmia – Atrial	Arrhythmia, Atrial, Sick sinus syndrome (SSS)-modifier, Drug induced	Sick sinus syndrome (SSS) (ROOT Definition) + Drug induced
427.81	11.02.14	Arrhythmia – Atrial	Arrhythmia, Atrial, Sick sinus syndrome (SSS)-modifier, Familial	Sick sinus syndrome (SSS) (ROOT Definition) + Familial
427.81	Q1.52.71	Arrhythmia – Atrial	Arrhythmia, Atrial, Sick sinus syndrome (SSS)-modifier, Genetic	Sick sinus syndrome (SSS) (ROOT Definition) + Identified genetic mutation as an etiology of the arrhythmia
427.81	11.02.10	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinoatrial rhythm disturbance	Arrhythmias arising from disturbance of conduction of sinoatrial node impulses.
427.81	11.02.04	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus bradycardia	"Arrhythmia, Atrial, Sinus bradycardia" ROOT Definition = A normal cardiac rhythm and a heart rate <60 in patients >30 days of age, <80 in neonates. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
427.81	11.02.04 + Q1.00.37	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus bradycardia, Drug induced	Arrhythmia, Atrial, Sinus bradycardia (ROOT Definition) + Drug induced
427.81	11.02.04 + Q1.90.64	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus bradycardia, Postprocedural	Arrhythmia, Atrial, Sinus bradycardia (ROOT Definition) + After a procedure
337.9	11.02.18	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus bradycardia, Vagal	Arrhythmia, Atrial, Sinus bradycardia (ROOT Definition) + Felt to be associated with vagal stimulation
427.2	11.02.12	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus nodal reentry tachycardia	Sinus node reentry tachycardia, with rates rarely higher than 180 bpm have the following diagnostic criteria: 1) tachycardia and associated symptoms are paroxysmal, 2) P-wave morphology is identical to sinus rhythm (vector directed from superior to inferior and from right to left), 3) endocardial atrial activation sequence is similar to that of sinus rhythm (high-to-low and right-to-left pattern), 4) induction and/or termination occurs with premature atrial stimuli, 5) termination occurs with vagal maneuvers or adenosine, and 6) induction is independent of atrial or AV-nodal conduction time.
427.81	11.02.03	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction	"Arrhythmia, Atrial, Sinus node dysfunction" ROOT Definition = Inappropriately slow sinus rates, either at rest or with activity.
427.81	11.02.21	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Acquired	Arrhythmia, Atrial, Sinus node dysfunction, Acquired" ROOT Definition = Inappropriately slow sinus rates, either at rest or with activity. Not congenital in etiology.
427.81	11.02.21 + Q1.92.20	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Acquired, Not postoperative and not S/P Cardiac catheterization	Arrhythmia, Atrial, Sinus node dysfunction, Acquired (ROOT Definition) + Not postoperative and not S/P Cardiac catheterization
427.81	11.02.21 + Q1.90.56	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Acquired, Postoperative S/P Cardiothoracic surgery	Arrhythmia, Atrial, Sinus node dysfunction, Acquired (ROOT Definition) + Postoperative S/P Cardiothoracic surgery.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.81	11.02.06	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Acquired, Postprocedural sinoatrial dysfunction	Arrhythmia, Atrial, Sinus node dysfunction, Acquired (ROOT Definition) + Postprocedural sinoatrial dysfunction.
427.81	11.02.06 + Q1.90.68	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Acquired, Postprocedural sinoatrial dysfunction, S/P Cardiac catheterization	Arrhythmia, Atrial, Sinus node dysfunction, Acquired (ROOT Definition) + Postprocedural sinoatrial dysfunction, S/P Cardiac catheterization
426.6	11.02.21, 11.02.13	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Acquired, Sinoatrial exit block	Arrhythmia, Atrial, Sinus node dysfunction, Acquired (ROOT Definition) + Sinus pause with the pause an integral multiple of the PP interval.
427.81	11.02.21, 11.02.36	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Acquired, Sinus arrest	Arrhythmia, Atrial, Sinus node dysfunction, Acquired (ROOT Definition) + Absence of sinus activity.
427.81	11.02.21, 11.02.05	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Acquired, Sinus arrest/pause	Arrhythmia, Atrial, Sinus node dysfunction, Acquired (ROOT Definition) + Pause without a P wave, >2.0 s during sinus rhythm; PP interval of pause not a multiple of basic PP interval.
427.81	11.02.21, 11.02.32	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Acquired, Sinus arrest/pause, With atrial escape rhythm	Arrhythmia, Atrial, Sinus node dysfunction, Acquired (ROOT Definition) + Pause without a P wave, >2.0 s during sinus rhythm; PP interval of pause not a multiple of basic PP interval. With atrial escape rhythm.
427.81	11.02.21, 11.02.33	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Acquired, Sinus arrest/pause, With junctional escape rhythm	Arrhythmia, Atrial, Sinus node dysfunction, Acquired (ROOT Definition) + Pause without a P wave, >2.0 s during sinus rhythm; PP interval of pause not a multiple of basic PP interval. With junctional escape rhythm.
427.81	11.02.21, 11.02.34	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Acquired, Sinus arrest/pause, With ventricular escape rhythm	Arrhythmia, Atrial, Sinus node dysfunction, Acquired (ROOT Definition) + Pause without a P wave, >2.0 s during sinus rhythm; PP interval of pause not a multiple of basic PP interval. With ventricular escape rhythm.
427.81	11.02.21, 11.02.31	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Acquired, Sinus arrest/pause, Without escape rhythm	Arrhythmia, Atrial, Sinus node dysfunction, Acquired (ROOT Definition) + Pause without a P wave, >2.0 s during sinus rhythm; PP interval of pause not a multiple of basic PP interval. Without escape rhythm.
427.81	11.02.22	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Primary	"Arrhythmia, Atrial, Sinus node dysfunction, Primary" Root Definition = Inappropriately slow sinus rates, either at rest or with activity. Occurring in the absence of an intervention or other "acquired" etiology; may be genetic in origin.
426.6	11.02.22, 11.02.13	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Primary, Sinoatrial exit block	Arrhythmia, Atrial, Sinus node dysfunction, Primary" (Root Definition) + Sinus pause with the pause an integral multiple of the PP interval.
427.81	11.02.22, 11.02.36	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Primary, Sinus arrest	Arrhythmia, Atrial, Sinus node dysfunction, Primary" (Root Definition) + Absence of sinus activity.
427.81	11.02.22, 11.02.05	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Primary, Sinus arrest/pause	Arrhythmia, Atrial, Sinus node dysfunction, Primary" (Root Definition) + Pause without a P wave, >2.0 s during sinus rhythm; PP interval of pause not a multiple of basic PP interval.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.81	11.02.22, 11.02.32	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Primary, Sinus arrest/pause, With atrial escape rhythm	Arrhythmia, Atrial, Sinus node dysfunction, Primary" (Root Definition) + Pause without a P wave, >2.0 s during sinus rhythm; PP interval of pause not a multiple of basic PP interval. With atrial escape rhythm.
427.81	11.02.22, 11.02.33	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Primary, Sinus arrest/pause, With junctional escape rhythm	Arrhythmia, Atrial, Sinus node dysfunction, Primary" (Root Definition) + Pause without a P wave, >2.0 s during sinus rhythm; PP interval of pause not a multiple of basic PP interval. With junctional escape rhythm.
427.81	11.02.22, 11.02.34	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Primary, Sinus arrest/pause, With ventricular escape rhythm	Arrhythmia, Atrial, Sinus node dysfunction, Primary" (Root Definition) + Pause without a P wave, >2.0 s during sinus rhythm; PP interval of pause not a multiple of basic PP interval. With ventricular escape rhythm.
427.81	11.02.22, 11.02.31	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Primary, Sinus arrest/pause, Without escape rhythm	Arrhythmia, Atrial, Sinus node dysfunction, Primary" (Root Definition) + Pause without a P wave, >2.0 s during sinus rhythm; PP interval of pause not a multiple of basic PP interval. Without escape rhythm.
426.6	11.02.03, 11.02.13	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Sinoatrial exit block	Arrhythmia, Atrial, Sinus node dysfunction (ROOT Definition) + Sinus pause with the pause an integral multiple of the PP interval.
427.81	11.02.03, 11.02.36	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Sinus arrest	Arrhythmia, Atrial, Sinus node dysfunction (ROOT Definition) + Absence of sinus activity.
427.81	11.02.03, 11.02.05	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Sinus arrest/pause	Arrhythmia, Atrial, Sinus node dysfunction (ROOT Definition) + Pause without a P wave, >2.0 s during sinus rhythm; PP interval of pause not a multiple of basic PP interval.
427.81	11.02.03, 11.02.32	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Sinus arrest/pause, With atrial escape rhythm	Arrhythmia, Atrial, Sinus node dysfunction (ROOT Definition) + Pause without a P wave, >2.0 s during sinus rhythm; PP interval of pause not a multiple of basic PP interval. With atrial escape rhythm.
427.81	11.02.03, 11.02.33	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Sinus arrest/pause, With junctional escape rhythm	Arrhythmia, Atrial, Sinus node dysfunction (ROOT Definition) + Pause without a P wave, >2.0 s during sinus rhythm; PP interval of pause not a multiple of basic PP interval. With junctional escape rhythm.
427.81	11.02.03, 11.02.34	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Sinus arrest/pause, With ventricular escape rhythm	Arrhythmia, Atrial, Sinus node dysfunction (ROOT Definition) + Pause without a P wave, >2.0 s during sinus rhythm; PP interval of pause not a multiple of basic PP interval. With ventricular escape rhythm.
427.81	11.02.03, 11.02.31	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction, Sinus arrest/pause, Without escape rhythm	Arrhythmia, Atrial, Sinus node dysfunction (ROOT Definition) + Pause without a P wave, >2.0 s during sinus rhythm; PP interval of pause not a multiple of basic PP interval. Without escape rhythm.
427.81	11.02.16	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction-modifier, Drug induced	Arrhythmia, Atrial, Sinus node dysfunction (ROOT Definition) + Drug induced
427.81	Q1.52.70	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction-modifier, Endocrine	Arrhythmia, Atrial, Sinus node dysfunction (ROOT Definition) + Identified endocrine disturbance as an etiology of the arrhythmia, such as hypothyroidism

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.81	11.02.14	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction-modifier, Familial	Arrhythmia, Atrial, Sinus node dysfunction (ROOT Definition) + Familial
427.81	Q1.52.71	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction-modifier, Genetic	Arrhythmia, Atrial, Sinus node dysfunction (ROOT Definition) + Identified genetic mutation as an etiology of the arrhythmia
337.9	11.02.02	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus node dysfunction-modifier, Hypervagotonic	Arrhythmia, Atrial, Sinus node dysfunction (ROOT Definition) + Felt to be associated with vagal stimulation
427.2	11.02.07	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus tachycardia	A normal cardiac rhythm and a heart rate >100 in adult (> or = 18 years), >140 in the child (> or = 1 yr of age and < = 18), >160 in the infant (<1 yr age group, and >30 days), and >180 in neonates (< or = 30 days).
427.2	11.00.14	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus tachycardia, Appropriate sinus tachycardia	A normal cardiac rhythm and a heart rate >100 in adult (> or = 18 years), >140 in the child (> or = 1 yr of age and < = 18), >160 in the infant (< 1 yr age group, and >30 days), and >180 in neonates (< or = 30 days). The increase in resting heart rate or sinus rate is related to, and in proportion with, the level of physical, emotional, pathological, or pharmacologic stress.
427.2	11.03.61	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus tachycardia, Inappropriate sinus tachycardia	A normal cardiac rhythm and a heart rate >100 in adult (> or = 18 years), >140 in the child (> or = 1 yr of age and < = 18), >160 in the infant (<1 yr age group, and >30 days), and >180 in neonates (< or = 30 days). The increase in resting heart rate or sinus rate is NOT related to, and in proportion with, the level of physical, emotional, pathological, or pharmacologic stress. This persistent increase in resting heart rate or sinus rate is unrelated to, or out of proportion with, the level of physical, emotional, pathological, or pharmacologic stress. Diagnostic criteria include: 1) lack of nocturnal normalization of rate confirmed by 24-hour Holter recording, 2) the tachycardia is nonparoxysmal, 3) the P-wave morphology and endocardial activation are identical to sinus rhythm, and 4) there has been exclusion of a secondary systemic cause (such as hyperthyroidism, pheochromocytoma, physical deconditioning).
427.2	Q1.00.37	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus tachycardia-modifier, Drug induced	Arrhythmia, Atrial, Sinus tachycardia (ROOT Definition) + Drug induced
427.2	Q1.52.70	Arrhythmia – Atrial	Arrhythmia, Atrial, Sinus tachycardia-modifier, Endocrine	Arrhythmia, Atrial, Sinus node dysfunction (ROOT Definition) + Identified endocrine disturbance as an etiology of the arrhythmia, such as hyperthyroidism
427.2	11.02.17	Arrhythmia – Atrial	Arrhythmia, Atrial, Wandering atrial pacemaker	Atrial rhythm with at least 3 distinct P-wave morphologies at rates between 50 and 100 bpm (cycle length between 1,200 and 600 ms).
427.9	Q1.90.78	Arrhythmia – Atrial	Arrhythmia, Atrial-modifier for etiology, Etiology unknown	Arrhythmia, Atrial (ROOT Definition) + Etiology unknown
427.9	11.03.50	Arrhythmia – Atrial	Arrhythmia, Atrial-modifier for etiology, Following interruption of normal blood supply	Arrhythmia, Atrial (ROOT Definition) + Following interruption of normal blood supply

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.9	Q1.52.72	Arrhythmia – Atrial	Arrhythmia, Atrial-modifier for etiology, Incisional	Arrhythmia, Atrial (ROOT Definition) + Incisional
427.9	11.03.51	Arrhythmia – Atrial	Arrhythmia, Atrial-modifier for etiology, Secondary to increased atrial wall stress	Arrhythmia, Atrial (ROOT Definition) + Secondary to increased atrial wall stress
427.9	Q1.90.64	Arrhythmia – Atrial	Arrhythmia, Atrial-modifier, Postprocedural	Arrhythmia, Atrial (ROOT Definition) + A postprocedural complication is any complication that occurs during the time interval between Operating Room Exit Date and Time and the end of the period of operative and procedural data collection, and thus includes both intraprocedural and postprocedural complications.
427.9	Q1.91.20	Arrhythmia – Atrial	Arrhythmia, Atrial-modifier, Postprocedural-Postcatheterization	Arrhythmia, Atrial (ROOT Definition) + A postprocedural complication is any complication that occurs during the time interval between Operating Room Exit Date and Time and the end of the period of operative and procedural data collection, and thus includes both intraprocedural and postprocedural complications. Use this code if the patient has undergone cardiac catheterization.
427.9	Q1.91.20 + Q1.90.67	Arrhythmia – Atrial	Arrhythmia, Atrial-modifier, Postprocedural-Postcatheterization and Postoperative	Arrhythmia, Atrial (ROOT Definition) + A postprocedural complication is any complication that occurs during the time interval between Operating Room Exit Date and Time and the end of the period of operative and procedural data collection, and thus includes both intraprocedural and postprocedural complications. Use this code if the patient has undergone cardiac catheterization and cardiothoracic surgery.
427.9	Q1.90.67	Arrhythmia – Atrial	Arrhythmia, Atrial-modifier, Postprocedural-Postoperative	Arrhythmia, Atrial (ROOT Definition) + A postoperative complication is any complication that occurs or is recognized during the time interval between Operating Room Exit Date and Time and the end of the period of operative and procedural data collection.
427.9	11.04.00	Arrhythmia – Junctional	Arrhythmia, Junctional	Arrhythmias arising from the atrioventricular junction; may be bradycardia, tachycardia, premature beats, or escape rhythm.
427.9	11.04.40	Arrhythmia – Junctional	Arrhythmia, Junctional, Accelerated junctional rhythm	Nonparoxysmal junctional tachycardia characterized by a narrow complex tachycardia with rates of 70 to 120 bpm. Shows a "warm-up" and "cool-down" pattern and cannot be terminated by pacing maneuvers. Often a marker for underlying conditions such as digitalis toxicity, postcardiac surgery, hypokalemia, myocardial ischemia, chronic obstructive lung disease with hypoxia, and inflammatory myocarditis.
427.9	11.04.43	Arrhythmia – Junctional	Arrhythmia, Junctional, AV junctional (nodal) arrest	Absence of junctional escape rhythm, typically in the setting of sinus bradycardia; implies ventricular escape rhythm or asystole.
427.9	11.04.03	Arrhythmia – Junctional	Arrhythmia, Junctional, Bradycardia (Slow junctional rhythm)	Junctional rhythm with rate less than expected sinus rate for age. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
427.9	11.04.44	Arrhythmia – Junctional	Arrhythmia, Junctional, Junctional escape rhythm	Junctional rhythm occurring in the presence of sinus/atrial bradycardia.
427.9	11.04.21	Arrhythmia – Junctional	Arrhythmia, Junctional, Junctional premature beats (complexes) (contractions)	Premature beats arising from the AV nodal region, typically narrow QRS, but without preceding P wave.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.0	11.04.07	Arrhythmia – Junctional	Arrhythmia, Junctional, Tachycardia	A junctional rate faster than normal sinus rates; it overrides sinus and/or atrial rhythm.
427.0	11.04.42	Arrhythmia – Junctional	Arrhythmia, Junctional, Tachycardia, Junctional ectopic tachycardia (JET) (His Bundle Tachycardia)	"Arrhythmia, Junctional, Tachycardia, Junctional ectopic tachycardia (JET) (His Bundle Tachycardia)" Root Definition = Junctional rhythm with rate usually >180/min ventricular rate. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
427.0	11.04.13	Arrhythmia – Junctional	Arrhythmia, Junctional, Tachycardia, Junctional ectopic tachycardia (JET) (His Bundle Tachycardia), Congenital	Arrhythmia, Junctional, Tachycardia, Junctional ectopic tachycardia (JET) (His Bundle Tachycardia) (Root Definition) + Congenital (not acquired)
427.0	11.04.12	Arrhythmia – Junctional	Arrhythmia, Junctional, Tachycardia, Junctional ectopic tachycardia (JET) (His Bundle Tachycardia), Postoperative	Arrhythmia, Junctional, Tachycardia, Junctional ectopic tachycardia (JET) (His Bundle Tachycardia) (Root Definition) + A postoperative complication is any complication that occurs or is recognized during the time interval between Operating Room Exit Date and Time and the end of the period of operative and procedural data collection.
427.6	11.01.04	Arrhythmia – Supraventricular	Arrhythmia, Supraventricular premature beats (complexes) (contractions)	Non-sinus premature beats arising either in the atrium or the AV nodal region. This arrhythmia is caused by a depolarization of the atrium or AV nodal region which occurs with a coupling interval shorter than that resulting from the intrinsic heart rhythm.
427.6	11.03.21	Arrhythmia – Supraventricular	Arrhythmia, Supraventricular premature beats (complexes) (contractions), Atrial (PAC[s])	Non-sinus premature beats arising in the atrium. This arrhythmia is caused by a depolarization of the atrium which occurs with a coupling interval shorter than that resulting from the intrinsic heart rhythm.
427.61	11.04.21	Arrhythmia – Supraventricular	Arrhythmia, Supraventricular premature beats (complexes) (contractions), Junctional (Premature junctional)	Non-sinus premature beats arising in the AV nodal region. This arrhythmia is caused by a depolarization of the AV nodal region which occurs with a coupling interval shorter than that resulting from the intrinsic heart rhythm.
427.0	11.01.00	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT)	"Arrhythmia, Atrial, Supraventricular tachycardia (SVT)" ROOT Definition = Tachycardia originating at or above the atrioventricular (AV) node, usually with a narrow QRS or QRS complex similar to the baseline ECG. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
427	11.01.02	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia)	"Primary atrial tachycardia" ROOT Definition = This form of SVT originates in the atrium; conduction to the ventricles is not necessary for the tachycardia to continue. Includes atrial flutter and fibrillation.
427.31	11.03.08	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Atrial fibrillation	Primary atrial tachycardia (ROOT Definition) + Atrial fibrillation is characterized by uncoordinated atrial activation with consequent deterioration of atrial mechanical function. On ECG, atrial fibrillation is characterized by the replacement of consistent P waves by rapid oscillations or fibrillatory waves that vary in amplitude, shape, and timing, associated with an irregular, frequently rapid ventricular response when atrioventricular conduction is intact.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.3	11.03.19	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Atrial fibrillation, First episode	Primary atrial tachycardia (ROOT Definition) + Atrial fibrillation is characterized by uncoordinated atrial activation with consequent deterioration of atrial mechanical function. On ECG, atrial fibrillation is characterized by the replacement of consistent P waves by rapid oscillations or fibrillatory waves that vary in amplitude, shape, and timing, associated with an irregular, frequently rapid ventricular response when atrioventricular conduction is intact + First detected new onset atrial fibrillation.
427.31	11.03.08+Q1.36.32	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Atrial fibrillation, Paroxysmal	Primary atrial tachycardia (ROOT Definition) + Atrial fibrillation is characterized by uncoordinated atrial activation with consequent deterioration of atrial mechanical function. On ECG, atrial fibrillation is characterized by the replacement of consistent P waves by rapid oscillations or fibrillatory waves that vary in amplitude, shape, and timing, associated with an irregular, frequently rapid ventricular response when atrioventricular conduction is intact + Abrupt episode(s) of sudden onset
427.31	11.03.18	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Atrial fibrillation, Permanent	Primary atrial tachycardia (ROOT Definition) + Atrial fibrillation is characterized by uncoordinated atrial activation with consequent deterioration of atrial mechanical function. On ECG, atrial fibrillation is characterized by the replacement of consistent P waves by rapid oscillations or fibrillatory waves that vary in amplitude, shape, and timing, associated with an irregular, frequently rapid ventricular response when atrioventricular conduction is intact + Atrial fibrillation in which cardioversion failed or was not attempted.
427.31	11.03.16	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Atrial fibrillation, Recurrent and less than 7 days duration	Primary atrial tachycardia (ROOT Definition) + Atrial fibrillation is characterized by uncoordinated atrial activation with consequent deterioration of atrial mechanical function. On ECG, atrial fibrillation is characterized by the replacement of consistent P waves by rapid oscillations or fibrillatory waves that vary in amplitude, shape, and timing, associated with an irregular, frequently rapid ventricular response when atrioventricular conduction is intact + Recurrent atrial fibrillation of less than 7 days duration.
427.31	11.03.17	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Atrial fibrillation, Recurrent and persistent greater than 7 days duration	Primary atrial tachycardia (ROOT Definition) + Atrial fibrillation is characterized by uncoordinated atrial activation with consequent deterioration of atrial mechanical function. On ECG, atrial fibrillation is characterized by the replacement of consistent P waves by rapid oscillations or fibrillatory waves that vary in amplitude, shape, and timing, associated with an irregular, frequently rapid ventricular response when atrioventricular conduction is intact + Recurrent atrial fibrillation of greater than 7 days duration.
427.0	11.03.60	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Focal (Including automatic atrial	"Focal atrial tachycardia" ROOT Definition = This form of SVT originates in the atrium; conduction to the ventricles is not necessary for the tachycardia to continue. This irregular heart-rate is

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
			tachycardia = ectopic atrial tachycardia [EAT])	manifest by atrial rates between 100 and 250 bpm and rarely at 300 bpm, and may arise from right or left atrial sites due to conduction of non-sinus P wave. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
427	11.03.15	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Focal (Including automatic atrial tachycardia = ectopic atrial tachycardia [EAT]), Multifocal atrial tachycardia (Chaotic atrial tachycardia)	Focal atrial tachycardia (ROOT Definition) + Irregular heart-rate characterized by three or more different P-wave morphologies at different rates. The rhythm is always irregular and frequently confused with atrial fibrillation, but the rate is not excessively rapid. Most commonly associated with underlying pulmonary disease, but may result from metabolic or electrolyte derangements. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
427	11.03.60, 11.00.01	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Focal (Including automatic atrial tachycardia = ectopic atrial tachycardia [EAT]), Sinus	Focal atrial tachycardia (ROOT Definition) + A normal cardiac rhythm and a heart rate >100 in adult (> or = 18 years), >140 in the child (> or = 1 yr of age and < = 18), >160 in the infant (<1 yr age group, and >30 days), and >180 in neonates (< or = 30 days).
427.0	11.02.12	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Focal (Including automatic atrial tachycardia = ectopic atrial tachycardia [EAT]), Sinus node reentry tachycardia	Focal atrial tachycardia (ROOT Definition) + Sinus node reentry tachycardia, with rates rarely higher than 180 bpm have the following diagnostic criteria: 1) tachycardia and associated symptoms are paroxysmal, 2) P-wave morphology is identical to sinus rhythm (vector directed from superior to inferior and from right to left), 3) endocardial atrial activation sequence is similar to that of sinus rhythm (high-to-low and right-to-left pattern), 4) induction and/or termination occurs with premature atrial stimuli, 5) termination occurs with vagal maneuvers or adenosine, and 6) induction is independent of atrial or AV-nodal conduction time.
427.0	11.00.14	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Focal (Including automatic atrial tachycardia = ectopic atrial tachycardia [EAT]), Sinus, Appropriate sinus tachycardia	Focal atrial tachycardia (ROOT Definition) + A normal cardiac rhythm and a heart rate >100 in adult (> or = 18 years), >140 in the child (> or = 1 yr of age and < = 18), >160 in the infant (<1 yr age group, and >30 days), and >180 in neonates (< or = 30 days). The increase in resting heart rate or sinus rate is related to, and in proportion with, the level of physical, emotional, pathological, or pharmacologic stress.
427.0	11.03.61	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Focal (Including automatic atrial tachycardia = ectopic atrial tachycardia [EAT]), Sinus, Inappropriate sinus tachycardia	Focal atrial tachycardia (ROOT Definition) + A normal cardiac rhythm and a heart rate >100 in adult (> or = 18 years), >140 in the child (> or = 1 yr of age and < = 18), >160 in the infant (< 1 yr age group, and >30 days), and >180 in neonates (< or = 30 days). The increase in resting heart rate or sinus rate is NOT related to, and in proportion with, the level of physical, emotional, pathological, or pharmacologic stress. This persistent increase in resting heart rate or sinus rate is unrelated to, or out of proportion with, the level of physical, emotional, pathological, or pharmacologic stress. Diagnostic criteria include: 1) lack of nocturnal normalization of rate confirmed by 24-hour Holter

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				recording, 2) the tachycardia is nonparoxysmal, 3) the P-wave morphology and endocardial activation are identical to sinus rhythm, and 4) there has been exclusion of a secondary systemic cause (such as hyperthyroidism, pheochromocytoma, physical deconditioning).
427.0	11.03.60 + Q1.35.72	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Focal (Including automatic atrial tachycardia = ectopic atrial tachycardia [EAT])-modifier for location, Left atrial	Focal atrial tachycardia (ROOT Definition) + Modifier for location, Left atrial
427.0	11.03.60 + Q1.35.71	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Focal (Including automatic atrial tachycardia = ectopic atrial tachycardia [EAT])-modifier for location, Right atrial	Focal atrial tachycardia (ROOT Definition) + Modifier for location, Right atrial
427.0	11.03.60 + Q1.35.77	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Focal (Including automatic atrial tachycardia = ectopic atrial tachycardia [EAT])-modifier for location, Septal	Focal atrial tachycardia (ROOT Definition) + Modifier for location, Septal
427.0	Q1.36.35	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Focal (Including automatic atrial tachycardia = ectopic atrial tachycardia [EAT])-modifier for mechanism = Automatic atrial = ectopic atrial tachycardia (EAT)	Focal atrial tachycardia (ROOT Definition) + Tachycardia originating in the atrium in a discrete confined area of tissue, thus focal in origin. The most common form is due to an automatic focus, which by definition cannot be initiated or terminated with pacing.
427.0	Q1.36.40	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Focal (Including automatic atrial tachycardia = ectopic atrial tachycardia [EAT])-modifier for mechanism = Micro-reentrant	Focal atrial tachycardia (ROOT Definition) + A focal origin of tachycardia may be either automatic (most common) or micro-reentrant in origin; reentrant rhythms can be initiated and terminated with pacing in contrast to automatic rhythms.
427.0	Q1.36.33	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Focal (Including automatic atrial tachycardia = ectopic atrial tachycardia [EAT])-modifier for mechanism = Triggered	Focal atrial tachycardia (ROOT Definition) + A focal origin of tachycardia which is neither automatic or micro-reentrant in origin; usually is related to early or delayed after-depolarizations and thus it is very difficult to assign this mechanism to a clinical arrhythmia.
427.0	11.03.13	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Macro-reentrant (Including atrial flutter)	"Macro-reentrant atrial tachycardia" ROOT Definition = "This form of SVT originates in the atrium; conduction to the ventricles is not necessary for the tachycardia to continue. An organized atrial rhythm with a rate typically between 250 and 350 bpm, including tachycardias using a variety of reentry circuits that often occupy large areas of the atrium ("macro-reentrant").

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.3	11.03.07	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Macro-reentrant (Including atrial flutter), Atrial flutter	Macro-reentrant atrial tachycardia (ROOT Definition) + Atrial flutter is an organized atrial rhythm with a rate typically between 250 and 350 bpm, including tachycardias using a variety of reentry circuits that often occupy large areas of the atrium ("macro-reentrant").
427.0	11.03.66	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Macro-reentrant (Including atrial flutter), Cavotricuspid isthmus dependent	Macro-reentrant atrial tachycardia (ROOT Definition) + An organized atrial rhythm with a rate typically between 250 and 350 bpm, in which the arrhythmia involves the cavotricuspid isthmus.
427.32	11.03.44	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Macro-reentrant (Including atrial flutter), Cavotricuspid isthmus dependent, Atypical (reverse) "atrial flutter"	Macro-reentrant atrial tachycardia (ROOT Definition) + An organized atrial rhythm with a rate typically between 250 and 350 bpm, in which the arrhythmia involves the cavotricuspid isthmus. A less common pattern involves a tachycardia showing a clockwise rotation (that is, reverse typical flutter) around the tricuspid valve.
427.3	11.03.43	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Macro-reentrant (Including atrial flutter), Cavotricuspid isthmus dependent, Typical "atrial flutter"	Macro-reentrant atrial tachycardia (ROOT Definition) + An organized atrial rhythm with a rate typically between 250 and 350 bpm, in which the arrhythmia involves the cavotricuspid isthmus. There is a macro-reentrant right atrial circuit around the tricuspid annulus (usually counterclockwise rotation).
427.00	11.03.67	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Macro-reentrant (Including atrial flutter), Non-cavotricuspid isthmus dependent	Macro-reentrant atrial tachycardia (ROOT Definition) + An organized atrial rhythm with a rate typically between 250 and 350 bpm, in which the arrhythmia does not involve the cavotricuspid isthmus. Most are related to an atrial scar that creates conduction block and a central obstacle for reentry (incisional or lesion-related macro-reentrant atrial tachycardia).
427.00	11.03.45	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Macro-reentrant (Including atrial flutter), Non-cavotricuspid isthmus dependent-modifier for mechanism, Incisional	Macro-reentrant atrial tachycardia (ROOT Definition) + An organized atrial rhythm with a rate typically between 250 and 350 bpm, in which the arrhythmia does not involve the cavotricuspid isthmus. Most are related to an atrial scar that creates conduction block and a central obstacle for reentry (incisional or lesion-related macro-reentrant atrial tachycardia). Mechanism of arrhythmia = incisional
427.0	11.03.67 + Q1.35.72	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Macro-reentrant (Including atrial flutter)-modifier for location, Left atrial	Macro-reentrant atrial tachycardia (ROOT Definition) + A reentrant rhythm can be initiated or terminated with pacing; the macro-reentrant circuit usually revolves around a larger area of tissue with unidirectional block and conduction delay. In the left atrium this may revolve around the pulmonary veins or in the isthmus above the mitral valve.
427.0	11.03.67 + Q1.35.71	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia), Macro-reentrant (Including atrial flutter)-modifier for location, Right atrial	Macro-reentrant atrial tachycardia (ROOT Definition) + A reentrant rhythm can be initiated or terminated with pacing; the macro-reentrant circuit usually revolves around a larger area of tissue with unidirectional block and conduction delay. In this manifestation the reentrant rhythm is right atrial in location.
427.0	11.03.67 + Q1.35.77	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrial (Primary atrial tachycardia),	Macro-reentrant atrial tachycardia (ROOT Definition) + A reentrant rhythm can be initiated or terminated with pacing; the macro-reentrant circuit usually revolves around a larger area of tissue with

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
			Macro-reentrant (Including atrial flutter)-modifier for location, Septal	unidirectional block and conduction delay. In this manifestation the reentrant rhythm is septal in location.
427.0	11.04.07	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular junctional (AV Nodal Tachycardia)	Abnormal rapid discharges from the junctional region (AV node or His bundle) with heart rates of 110 to 250 bpm and a narrow complex or typical BBB conduction pattern. AV dissociation is often present although one-to-one retrograde conduction may be transiently observed. On occasion the junctional rhythm is quite erratic, suggesting atrial fibrillation. Finally, isolated concealed junctional extrasystoles that fail to conduct to the ventricles may produce episodic AV block by rendering the AV node intermittently refractory.
427.0	11.04.41	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular junctional (AV Nodal Tachycardia), AV junctional (Automatic junctional)	Enhanced automaticity of AV nodal tissue.
427.0	11.04.40	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular junctional (AV Nodal Tachycardia), AV junctional (Automatic junctional), Accelerated	Nonparoxysmal junctional tachycardia characterized by a narrow complex tachycardia with rates of 70 to 120 bpm. Shows a "warm-up" and "cool-down" pattern and cannot be terminated by pacing maneuvers. Often a marker for underlying conditions such as digitalis toxicity, postcardiac surgery, hypokalemia, myocardial ischemia, chronic obstructive lung disease with hypoxia, and inflammatory myocarditis.
427.0	11.04.13	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular junctional (AV Nodal Tachycardia), AV junctional (Automatic junctional), Junctional ectopic tachycardia (JET) (His Bundle Tachycardia)	"Arrhythmia, Junctional, Junctional ectopic tachycardia (JET) (His Bundle Tachycardia)" (Root Definition) = Junctional rhythm with rate >180/min ventricular rate. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
427.0	11.04.12	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular junctional (AV Nodal Tachycardia), AV junctional (Automatic junctional), Junctional ectopic tachycardia (JET) (His Bundle Tachycardia), Congenital	Arrhythmia, Junctional, Junctional ectopic tachycardia (JET) (His Bundle Tachycardia) (Root Definition) + Congenital (not acquired)
427.0	11.04.11	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular junctional (AV Nodal Tachycardia), AV junctional (Automatic junctional), Junctional ectopic tachycardia (JET) (His Bundle Tachycardia), Postoperative	Arrhythmia, Junctional, Junctional ectopic tachycardia (JET) (His Bundle Tachycardia) (Root Definition) + Arrhythmia, Atrial (ROOT Definition) + A postoperative complication is any complication that occurs or is recognized during the time interval between Operating Room Exit Date and Time and the end of the period of operative and procedural data collection.
427.0	11.04.11	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular junctional (AV Nodal Tachycardia), AV reentry (AV nodal reentry tachycardia) (AVNRT)	"AVNRT" ROOT Definition = AVNRT involves reciprocation between two functionally and anatomically distinct pathways. In most cases, the fast pathway appears to be located near the apex of Koch's triangle. The slow pathway extends inferoposterior to the compact AV-node tissue and stretches along the septal margin of the tricuspid annulus at the level of, or slightly superior to, the coronary sinus.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.0	11.07.40	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular junctional (AV Nodal Tachycardia), AV reentry (AV nodal reentry tachycardia) (AVNRT), Atypical ("slow-slow")	AVNRT (ROOT Definition) + AVNRT involves reciprocation between two functionally and anatomically distinct pathways. Infrequently, both limbs of the tachycardia circuit are composed of slowly conducting tissue (that is, slow-slow AV node reentry), and the P wave is inscribed after the QRS (that is, RP interval more than or equal to 70 ms).
427.0	11.07.18	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular junctional (AV Nodal Tachycardia), AV reentry (AV nodal reentry tachycardia) (AVNRT), Atypical ("fast-slow")	AVNRT (ROOT Definition) + AVNRT involves reciprocation between two functionally and anatomically distinct pathways. In most cases, the fast pathway appears to be located near the apex of Koch's triangle. The slow pathway extends inferoposterior to the compact AV-node tissue and stretches along the septal margin of the tricuspid annulus at the level of, or slightly superior to, the coronary sinus. In atypical AVNRT (approximately 5% to 10%), the tachycardia circuit is reversed such that conduction proceeds anterogradely over the fast pathway and retrogradely over the slow pathway (i.e., fast-slow AV node reentry, or atypical AVNRT) producing a long R-P tachycardia but other circuits may also be involved. The P wave, negative in leads III and aVF, is inscribed prior to the QRS.
427.0	11.04.45	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular junctional (AV Nodal Tachycardia), AV reentry (AV nodal reentry tachycardia) (AVNRT), Complex (including twin AV nodes [2 AV nodes])	AVNRT (ROOT Definition) + A reentrant rhythm involving AV nodal tissue, usually due to dual AV nodal physiology. The most common form is due to functional separation of fast and slow AV nodal conduction, with antegrade conduction over slow AV nodal tissue and retrograde conduction via fast AV nodal tissue. In very complex atrial anatomy such as heterotaxy syndrome, two AV nodes may be present (twin AV nodes); this is extremely rare.
427.0	11.07.19	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular junctional (AV Nodal Tachycardia), AV reentry (AV nodal reentry tachycardia) (AVNRT), Multiple nodal physiology	AVNRT (ROOT Definition) + A reentrant rhythm involving AV nodal tissue which is a variant of dual AV nodal physiology, with variable conduction characteristics.
427.0	11.07.17	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular junctional (AV Nodal Tachycardia), AV reentry (AV nodal reentry tachycardia) (AVNRT), Typical ("slow-fast")	AVNRT (ROOT Definition) + AVNRT involves reciprocation between two functionally and anatomically distinct pathways. In most cases, the fast pathway appears to be located near the apex of Koch's triangle. The slow pathway extends inferoposterior to the compact AV-node tissue and stretches along the septal margin of the tricuspid annulus at the level of, or slightly superior to, the coronary sinus. During typical AVNRT, the fast pathway serves as the retrograde limb of the circuit, whereas the slow pathway is the anterograde limb (i.e., slow-fast AV node reentry). After conduction through the slow pathway to the His bundle and ventricle, brisk conduction back to the atrium over the fast pathway results in inscription of the shorter duration (40 ms) P wave during or close to the QRS complex (less than or equal to 70 ms) often with a pseudo-r' in V1.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.0	11.07.29	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia)	"Accessory connection-mediated tachycardia" ROOT Definition = Tachycardia secondary to accessory connection(s) (pathway[s]). Typical accessory pathways are extra nodal pathways that connect the myocardium of the atrium and the ventricle across the AV groove and are classified by location, type of conduction (decremental versus nondecremental), and whether they are capable of anterograde (manifest, demonstrating pre-excitation on standard ECG) or retrograde (concealed) conduction, or both.
427.0	11.07.32	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Concealed accessory connection (Typically narrow QRS SVT)	Accessory connection-mediated tachycardia (ROOT Definition) + Tachycardia secondary to accessory extra nodal connections (pathways) that connect the myocardium of the atrium and the ventricle across the AV groove and conduct retrogradely (concealed). May be additionally classified by location and type of conduction.
427.0	11.07.32 + Q1.35.87	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Concealed accessory connection (Typically narrow QRS SVT), Left free wall	Accessory connection-mediated tachycardia (ROOT Definition) + Tachycardia secondary to accessory extra nodal connections (pathways) that connect the myocardium of the atrium and the ventricle across the AV groove and conduct retrogradely (concealed). May be additionally classified by location and type of conduction + Tachycardia arising in the left free wall.
427.0	11.07.32 + Q1.35.93	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Concealed accessory connection (Typically narrow QRS SVT), Left free wall, Anterior	Accessory connection-mediated tachycardia (ROOT Definition) + Tachycardia secondary to accessory extra nodal connections (pathways) that connect the myocardium of the atrium and the ventricle across the AV groove and conduct retrogradely (concealed). May be additionally classified by location and type of conduction + Tachycardia arising in the anterior left free wall.
427.0	11.07.32 + Q1.35.94	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Concealed accessory connection (Typically narrow QRS SVT), Left free wall, Lateral	Accessory connection-mediated tachycardia (ROOT Definition) + Tachycardia secondary to accessory extra nodal connections (pathways) that connect the myocardium of the atrium and the ventricle across the AV groove and conduct retrogradely (concealed). May be additionally classified by location and type of conduction + Tachycardia arising in the lateral left free wall.
427.0	11.07.32 + Q1.35.95	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Concealed accessory connection (Typically narrow QRS SVT), Left free wall, Posterior	Accessory connection-mediated tachycardia (ROOT Definition) + Tachycardia secondary to accessory extra nodal connections (pathways) that connect the myocardium of the atrium and the ventricle across the AV groove and conduct retrogradely (concealed). May be additionally classified by location and type of conduction + Tachycardia arising in the posterior left free wall.
427.0	11.07.32,Q1.35.86	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Concealed accessory connection (Typically narrow QRS SVT), Right free wall	Accessory connection-mediated tachycardia (ROOT Definition) + Tachycardia secondary to accessory extra nodal connections (pathways) that connect the myocardium of the atrium and the ventricle across the AV groove and conduct retrogradely (concealed). May be additionally classified by location and type of conduction + Tachycardia arising in the right free wall.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.0	11.07.32 + Q1.35.90	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Concealed accessory connection (Typically narrow QRS SVT), Right free wall, Anterior	Accessory connection-mediated tachycardia (ROOT Definition) + Tachycardia secondary to accessory extra nodal connections (pathways) that connect the myocardium of the atrium and the ventricle across the AV groove and conduct retrogradely (concealed). May be additionally classified by location and type of conduction + Tachycardia arising in the anterior right free wall.
427.0	11.07.32 + Q1.35.91	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Concealed accessory connection (Typically narrow QRS SVT), Right free wall, Lateral	Accessory connection-mediated tachycardia (ROOT Definition) + Tachycardia secondary to accessory extra nodal connections (pathways) that connect the myocardium of the atrium and the ventricle across the AV groove and conduct retrogradely (concealed). May be additionally classified by location and type of conduction + Tachycardia arising in the lateral right free wall.
427.0	11.07.32 + Q1.35.92	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Concealed accessory connection (Typically narrow QRS SVT), Right free wall, Posterior	Accessory connection-mediated tachycardia (ROOT Definition) + Tachycardia secondary to accessory extra nodal connections (pathways) that connect the myocardium of the atrium and the ventricle across the AV groove and conduct retrogradely (concealed). May be additionally classified by location and type of conduction + Tachycardia arising in the posterior right free wall.
427.0	11.07.32 + Q1.36.66	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Concealed accessory connection (Typically narrow QRS SVT), Septal	Accessory connection-mediated tachycardia (ROOT Definition) + Tachycardia secondary to accessory extra nodal connections (pathways) that connect the myocardium of the atrium and the ventricle across the AV groove and conduct retrogradely (concealed). May be additionally classified by location and type of conduction + Tachycardia arising in the septum.
427.0	11.07.32 + Q1.35.61	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Concealed accessory connection (Typically narrow QRS SVT), Septal, Anterior (Anteroseptal)	Accessory connection-mediated tachycardia (ROOT Definition) + Tachycardia secondary to accessory extra nodal connections (pathways) that connect the myocardium of the atrium and the ventricle across the AV groove and conduct retrogradely (concealed). May be additionally classified by location and type of conduction + Tachycardia arising in the anterior septum.
427.0	11.07.32 + Q1.35.98	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Concealed accessory connection (Typically narrow QRS SVT), Septal, Midseptal	Accessory connection-mediated tachycardia (ROOT Definition) + Tachycardia secondary to accessory extra nodal connections (pathways) that connect the myocardium of the atrium and the ventricle across the AV groove and conduct retrogradely (concealed). May be additionally classified by location and type of conduction + Tachycardia arising in the mid-septum.
427.0	11.07.32 + Q1.35.62	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Concealed accessory connection (Typically narrow QRS SVT), Septal, Posterior (Posteroseptal) (Inferior)	Accessory connection-mediated tachycardia (ROOT Definition) + Tachycardia secondary to accessory extra nodal connections (pathways) that connect the myocardium of the atrium and the ventricle across the AV groove and conduct retrogradely (concealed). May be additionally classified by location and type of conduction + Tachycardia arising in the posterior septum.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.0	11.07.22	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Concealed accessory connection (Typically narrow QRS SVT)-modifier, Orthodromic reciprocating	Accessory connection-mediated tachycardia (ROOT Definition) + Tachycardia secondary to accessory extra nodal connections (pathways) that connect the myocardium of the atrium and the ventricle across the AV groove and conduct retrogradely (concealed). May be additionally classified by location and type of conduction + During orthodromic tachycardia, the re-entrant impulse conducts over the AV node and the specialized conduction system from the atrium to the ventricle and utilizes the concealed accessory connection (pathway) for conduction from the ventricle to the atrium.
427.0	11.07.14	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Concealed accessory connection (Typically narrow QRS SVT)-modifier, Permanent form of junctional reciprocating	Accessory connection-mediated tachycardia (ROOT Definition) + Tachycardia secondary to accessory extra nodal connections (pathways) that connect the myocardium of the atrium and the ventricle across the AV groove and conduct retrogradely (concealed). May be additionally classified by location and type of conduction + A rare clinical syndrome involving a slowly conducting, concealed, usually posteroseptal (inferoseptal) accessory connection (pathway). Syndrome is characterized by an incessant SVT, usually with negative P waves in leads II, III, and aVF and a long RP interval (RP more than PR).
427.0	11.07.01	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Manifest accessory connection (WPW)	Accessory connection-mediated tachycardia (ROOT Definition) + The Wolff-Parkinson-White Syndrome (WPW syndrome) diagnosis is reserved for patients who have both pre-excitation on ECG (manifest conduction) and tachyarrhythmias.
427.0	11.07.01 + Q1.35.87	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Manifest accessory connection (WPW), Left free wall	Accessory connection-mediated tachycardia (ROOT Definition) + The Wolff-Parkinson-White Syndrome (WPW syndrome) diagnosis is reserved for patients who have both pre-excitation on ECG (manifest conduction) and tachyarrhythmias + WPW with origin in left atrial free wall.
427.0	11.07.01 + Q1.35.93	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Manifest accessory connection (WPW), Left free wall, Anterior	Accessory connection-mediated tachycardia (ROOT Definition) + The Wolff-Parkinson-White Syndrome (WPW syndrome) diagnosis is reserved for patients who have both pre-excitation on ECG (manifest conduction) and tachyarrhythmias + WPW with origin in anterior left atrial free wall.
427.0	11.07.01 + Q1.35.94	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Manifest accessory connection (WPW), Left free wall, Lateral	Accessory connection-mediated tachycardia (ROOT Definition) + The Wolff-Parkinson-White Syndrome (WPW syndrome) diagnosis is reserved for patients who have both pre-excitation on ECG (manifest conduction) and tachyarrhythmias + WPW with origin in lateral left atrial free wall.
427.0	11.07.01 + Q1.35.95	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Manifest accessory connection (WPW), Left free wall, Posterior	Accessory connection-mediated tachycardia (ROOT Definition) + The Wolff-Parkinson-White Syndrome (WPW syndrome) diagnosis is reserved for patients who have both pre-excitation on ECG (manifest conduction) and tachyarrhythmias + WPW with origin in posterior left atrial free wall.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.0	11.07.01 + Q1.35.86	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Manifest accessory connection (WPW), Right free wall	Accessory connection-mediated tachycardia (ROOT Definition) + The Wolff-Parkinson-White Syndrome (WPW syndrome) diagnosis is reserved for patients who have both pre-excitation on ECG (manifest conduction) and tachyarrhythmias + WPW with origin in right atrial free wall.
427.0	11.07.01 + Q1.35.90	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Manifest accessory connection (WPW), Right free wall, Anterior	Accessory connection-mediated tachycardia (ROOT Definition) + The Wolff-Parkinson-White Syndrome (WPW syndrome) diagnosis is reserved for patients who have both pre-excitation on ECG (manifest conduction) and tachyarrhythmias + WPW with origin in anterior right atrial free wall.
427.0	11.07.01 + Q1.35.91	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Manifest accessory connection (WPW), Right free wall, Lateral	Accessory connection-mediated tachycardia (ROOT Definition) + The Wolff-Parkinson-White Syndrome (WPW syndrome) diagnosis is reserved for patients who have both pre-excitation on ECG (manifest conduction) and tachyarrhythmias + WPW with origin in lateral right atrial free wall.
427.0	11.07.01 + Q1.35.92	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Manifest accessory connection (WPW), Right free wall, Posterior	Accessory connection-mediated tachycardia (ROOT Definition) + The Wolff-Parkinson-White Syndrome (WPW syndrome) diagnosis is reserved for patients who have both pre-excitation on ECG (manifest conduction) and tachyarrhythmias + WPW with origin in posterior right atrial free wall.
427.0	11.07.01 + Q1.36.66	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Manifest accessory connection (WPW), Septal	Accessory connection-mediated tachycardia (ROOT Definition) + The Wolff-Parkinson-White Syndrome (WPW syndrome) diagnosis is reserved for patients who have both pre-excitation on ECG (manifest conduction) and tachyarrhythmias + WPW with origin in atrial septal area.
427.0	11.07.01 + Q1.35.61	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Manifest accessory connection (WPW), Septal, Anterior (Anteroseptal)	Accessory connection-mediated tachycardia (ROOT Definition) + The Wolff-Parkinson-White Syndrome (WPW syndrome) diagnosis is reserved for patients who have both pre-excitation on ECG (manifest conduction) and tachyarrhythmias + WPW with origin in anterior atrial septal area.
427.0	11.07.01 + Q1.35.98	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Manifest accessory connection (WPW), Septal, Midseptal	Accessory connection-mediated tachycardia (ROOT Definition) + The Wolff-Parkinson-White Syndrome (WPW syndrome) diagnosis is reserved for patients who have both pre-excitation on ECG (manifest conduction) and tachyarrhythmias + WPW with origin in mid-atrial septal area.
427.0	11.07.01 + Q1.35.62	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Manifest accessory connection (WPW), Septal, Posterior (Posteroseptal) (Inferior)	Accessory connection-mediated tachycardia (ROOT Definition) + The Wolff-Parkinson-White Syndrome (WPW syndrome) diagnosis is reserved for patients who have both pre-excitation on ECG (manifest conduction) and tachyarrhythmias + WPW with origin in posterior atrial septal area.
427.0	11.07.23	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia),	Accessory connection-mediated tachycardia (ROOT Definition) + The Wolff-Parkinson-White Syndrome (WPW syndrome) diagnosis is reserved for patients who have both

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
			Manifest accessory connection (WPW)-modifier, Antidromic reciprocating (Pre-excited tachycardia or wide QRS SVT)	pre-excitation on ECG (manifest conduction) and tachyarrhythmias + During antidromic tachycardia (5% to 10% of WPW patients), the re-entrant impulse travels in the reverse direction from usual, with anterograde conduction from the atrium to the ventricle occurring via the accessory connection (pathway), and retrograde conduction over the AV node or a second accessory connection (pathway).
427.0	11.07.22	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia), Manifest accessory connection (WPW)-modifier, Orthodromic reciprocating (Typically narrow QRS SVT)	Accessory connection-mediated tachycardia (ROOT Definition) + The Wolff-Parkinson-White Syndrome (WPW syndrome) diagnosis is reserved for patients who have both pre-excitation on ECG (manifest conduction) and tachyarrhythmias + During orthodromic tachycardia, the re-entrant impulse conducts over the AV node and the specialized conduction system from the atrium to the ventricle and utilizes the accessory connection (pathway) for conduction from the ventricle to the atrium.
427.0	Q1.35.61	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia)-modifier for location, Anteroseptal	Accessory connection-mediated tachycardia (ROOT Definition) + Modifier for location, Anteroseptal
427.0	Q1.35.98	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia)-modifier for location, Midseptal	Accessory connection-mediated tachycardia (ROOT Definition) + Modifier for location, Midseptal
427.0	Q1.35.62	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia)-modifier for location, Posteroseptal	Accessory connection-mediated tachycardia (ROOT Definition) + Modifier for location, Posteroseptal
427.0	Q1.35.66	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia)-modifier for location, Posteroseptal, Coronary sinus diverticulum	Accessory connection-mediated tachycardia (ROOT Definition) + Modifier for location, Posteroseptal, Coronary sinus diverticulum
427.0	Q1.35.99	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia)-modifier for location, Posteroseptal, In mouth of coronary sinus	Accessory connection-mediated tachycardia (ROOT Definition)+Modifier for location, Posteroseptal, In mouth of coronary sinus
427.0	Q1.35.65	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia)-modifier for location, Posteroseptal, Middle cardiac vein	Accessory connection-mediated tachycardia (ROOT Definition) + Modifier for location, Posteroseptal, Middle cardiac vein

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.0	11.01.00 + Q1.36.32	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT), Paroxysmal	Arrhythmia, Atrial, Supraventricular tachycardia (SVT) (ROOT Definition) + Abrupt episode(s) of sudden onset that are self-terminating within 7 days of recognized onset.
427.0	Title	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT)-modifier for substrate, Accessory connection (pathway) substrates for rhythm disturbance	Arrhythmia, Atrial, Supraventricular tachycardia (SVT) (ROOT Definition) + Modifier for substrate, Accessory connection (pathway) substrates for rhythm disturbance
427.0	Q1.35.81	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT)-modifier for substrate, Accessory connection (pathway) substrates for rhythm disturbance, Accessory connection (pathway)	Arrhythmia, Atrial, Supraventricular tachycardia (SVT) (ROOT Definition) + Modifier for substrate, Accessory connection (pathway) substrates for rhythm disturbance, Accessory connection (pathway)
427.0	11.07.27	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT)-modifier for substrate, Accessory connection (pathway) substrates for rhythm disturbance, Accessory connection (pathway): Antegrade & retrograde conduction	Arrhythmia, Atrial, Supraventricular tachycardia (SVT) (ROOT Definition) + Modifier for substrate, Accessory connection (pathway) substrates for rhythm disturbance, Accessory connection (pathway): antegrade & retrograde conduction
427.0	11.07.21	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT)-modifier for substrate, Accessory connection (pathway) substrates for rhythm disturbance, Accessory connection (pathway): Antegrade conduction only (WPW sinus rhythm)	Arrhythmia, Atrial, Supraventricular tachycardia (SVT) (ROOT Definition) + Modifier for substrate, Accessory connection (pathway) substrates for rhythm disturbance, Accessory connection (pathway): antegrade conduction only (WPW sinus rhythm)
427.0	11.07.12	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT)-modifier for substrate, Accessory connection (pathway) substrates for rhythm disturbance, Accessory connection (pathway): Atriofascicular (Mahaim)	Arrhythmia, Atrial, Supraventricular tachycardia (SVT) (ROOT Definition) + Modifier for substrate, Accessory connection (pathway) substrates for rhythm disturbance, Accessory connection (pathway): atriofascicular (Mahaim)
427.0	11.07.20	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT)-modifier for substrate, Accessory connection (pathway) substrates for rhythm disturbance, Accessory connection (pathway): Coronary sinus orifice – decremental conduction (PJRT)	Arrhythmia, Atrial, Supraventricular tachycardia (SVT) (ROOT Definition) + Modifier for substrate, Accessory connection (pathway) substrates for rhythm disturbance, Accessory connection (pathway): coronary sinus orifice – decremental conduction (PJRT)
427.0	11.07.06	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT)-modifier for substrate, Accessory connection (pathway) substrates for rhythm disturbance, Accessory connection (pathway): Retrograde conduction only (concealed)	Arrhythmia, Atrial, Supraventricular tachycardia (SVT) (ROOT Definition) + Modifier for substrate, Accessory connection (pathway) substrates for rhythm disturbance, Accessory connection (pathway): retrograde conduction only (concealed)
427.0	11.07.26	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT)-modifier for substrate, Accessory connection (pathway) substrates for rhythm disturbance, Multiple accessory connections (pathways)	Arrhythmia, Atrial, Supraventricular tachycardia (SVT) (ROOT Definition) + Modifier for substrate, Accessory connection (pathway) substrates for rhythm disturbance, Multiple accessory connections (pathways)
427.0	11.07.01	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT)-modifier for substrate, Accessory connection (pathway) substrates for rhythm disturbance, Wolff Parkinson White syndrome (WPW)	Arrhythmia, Atrial, Supraventricular tachycardia (SVT) (ROOT Definition) + Modifier for substrate, Accessory connection (pathway) substrates for rhythm disturbance, Wolff Parkinson White syndrome (WPW)

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.0	11.07.18	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT)-modifier for substrate, Dual AV nodal physiology (AVNRT): Atypical: Fast-slow pathway	Arrhythmia, Atrial, Supraventricular tachycardia (SVT) (ROOT Definition) + Modifier for substrate, Dual AV nodal physiology (AVNRT): Atypical: Fast-slow pathway
427.0	11.07.17	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT)-modifier for substrate, Dual AV nodal physiology (AVNRT): Typical: Slow-fast pathway	Arrhythmia, Atrial, Supraventricular tachycardia (SVT) (ROOT Definition) + Modifier for substrate, Dual AV nodal physiology (AVNRT): Typical: Slow-fast pathway
427.0	11.07.19	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Supraventricular tachycardia (SVT)-modifier for substrate, Multiple nodal physiology	Arrhythmia, Atrial, Supraventricular tachycardia (SVT) (ROOT Definition) + Modifier for substrate, Multiple nodal physiology
427.9	11.05.00	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular	"Arrhythmia, Ventricular" ROOT Definition = Abnormal rhythm originating from the ventricles.
427.4	11.05.10	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Fibrillation	Ventricular fibrillation is a rapid grossly irregular ventricular rhythm, usually more than 300 bpm/200 ms (cycle length 180 ms or less), with marked variability in QRS cycle length, morphology, and amplitude, associated with loss of output, and is usually sustained, requiring intervention to terminate. Torsades de pointes is a rapid, irregular ventricular rhythm occurring in the setting of a prolonged QT interval, and may be non-sustained or sustained.
427.9	11.05.19	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Idioventricular	Wide QRS complexes (>120 ms) with QRS complex rate of 30–40 bpm, but may be as low as 15 bpm; if atrial activity is present, there is no relation between atrial and ventricular activity. In accelerated idioventricular rhythm, the ventricular rhythm is no more than 20% faster than the sinus rate.
426.82	11.12.01	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Prolonged QT (Long QT interval)	Ventricular arrhythmia occurring in the setting of prolonged QT interval; usually on an acquired basis, as distinguished from a genetic channelopathy.
427.1	11.05.39	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia, Bidirectional	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + With a beat-to-beat alternans in the QRS frontal plane axis, often associated with digitalis toxicity
427.1	11.05.38	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia, Ectopic ventricular tachycardia	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + An ectopic ventricular contraction is a depolarization that arises in either ventricle before the next expected sinus beat, that is, prematurely; when three or more ectopic ventricular contractions are present in a row, ventricular tachycardia is present.
427.1	11.05.43	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia, Left posterior fascicular ventricular tachycardia	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia due to reentry within the left bundle branch (LBB); appearance may be RBBB pattern with left axis, right axis, or normal axis deviation.
427.1	11.05.50	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia, Non-sustained ventricular tachycardia	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia which is non-sustained, that is, three or more beats in duration, and terminating spontaneously in less than 30 seconds.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.1	11.05.42	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia, Polymorphic	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia with a changing or multiform QRS morphology.
427.1	11.05.06 + Q1.36.42	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia, Repetitive	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Occurring in sequential salvos
427.1	11.05.51	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia, Sustained ventricular tachycardia	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Lasting greater than 30 seconds or requiring intervention to terminate due to hemodynamic compromise.
427.1	11.05.14 + Q1.52.73	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia, Torsades de pointes, Channelopathy (Ion channelopathy) and/or Gene disorders	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia associated with a long QT or QTc, and electrocardiographically characterized by twisting of the peaks of the QRS complexes around the isoelectric line during the arrhythmia + (Ventricular tachycardia due to genetic ion-channel defect, also known as a "Channelopathy" or "Ion channelopathy", which prolongs the QT interval.)
427.1	11.05.14 + Q1.36.31	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia, Torsades de pointes, Sustained	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia associated with a long QT or QTc, and electrocardiographically characterized by twisting of the peaks of the QRS complexes around the isoelectric line during the arrhythmia + Lasting greater than 30 seconds or requiring intervention to terminate due to hemodynamic compromise.
427.41	11.05.55	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia, Ventricular fibrillation, Idiopathic	Ventricular fibrillation (ROOT Definition) + Occurring without an identifiable predisposing cause. May be due to an as yet undefined ion channelopathy.
427.41	11.05.10 + Q1.36.32	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia, Ventricular fibrillation, Non-sustained	Ventricular fibrillation (ROOT Definition) + Lasting less than 30 seconds. Nonsustained ventricular fibrillation is exceedingly rare except during device testing. Ventricular fibrillation usually requires intervention to terminate.
427.42	11.05.09	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia, Ventricular flutter	"Ventricular flutter" ROOT Definition = An extremely rapid, but regular, ventricular tachycardia (approximately 300 bpm) with a monomorphic appearance. No isoelectric interval between successive QRS complexes.
427.42	11.05.09 + Q1.36.31	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia, Ventricular flutter, Sustained	Ventricular flutter (ROOT Definition) + Lasting greater than 30 seconds or requiring intervention to terminate due to hemodynamic instability.
427.1	11.05.49, 07.01.10	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Cardiomyopathy, Arrhythmogenic Right Ventricular Dysplasia (ARVD) (Arrhythmogenic Right Ventricular Cardiomyopathy) (ARVC)	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + In the setting of Arrhythmogenic Right Ventricular Dysplasia (ARVD), also known as Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC). ARVD is a cardiomyopathy, which may or may not be limited to the right ventricle, and may have a genetic basis. Uhl's anomaly may be difficult to distinguish from ARVD.
427.1	11.05.17	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Catecholaminergic polymorphic ventricular tachycardia	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Catecholamine-sensitive ventricular tachycardia which is due to a form

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				of ion channelopathy; may be related to ryanodine receptors or calsequestrin.
427.1	11.05.54	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Catecholaminergic polymorphic ventricular tachycardia, Autosomal recessive (CASQ2)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Polymorphic ventricular tachycardia which is due to a form of ion channelopathy; Related to calsequestrin (autosomal recessive CASQ2).
426.82	11.12.01	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Prolonged Q-T interval	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Ventricular tachycardia occurring in the setting of prolonged Q-T interval, usually on an acquired basis, as distinguished from a genetic channelopathy.
426.82	14.01.23	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Prolonged Q-T interval, With genetic marker	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Ventricular tachycardia occurring in the setting of prolonged Q-T interval, With genetic marker (not specified).
426.82	11.12.28	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Prolonged Q-T interval, With genetic marker, Jervell and Lange-Nielsen syndrome, JLN1 (KvLQT1 gene [homozygote] – potassium channel)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Ventricular tachycardia occurring in the setting of prolonged Q-T interval, With potassium-channelopathy isolated to JLN1 (KvLQ-T1 homozygote) gene for Jervell and Lange-Nielsen syndrome.
426.82	14.01.23	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Prolonged Q-T interval, With genetic marker, Long QT syndrome with genetic marker	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Ventricular tachycardia occurring in the setting of prolonged Q-T interval, With genetic marker for Long QT syndrome.
426.82	11.12.22	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Prolonged Q-T interval, With genetic marker, Long QT syndrome with genetic marker, Type 2 (HERG gene – potassium channel)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Ventricular tachycardia occurring in the setting of prolonged Q-T interval, With potassium-channelopathy isolated to Type 2 genetic marker (HERG gene).
426.82	11.12.24	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Prolonged Q-T interval, With genetic marker, Long QT syndrome with genetic marker, Type 5 (MinK/KCNE1 gene (heterozygote) – coassembler LQT1)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Ventricular tachycardia occurring in the setting of prolonged Q-T interval, With Type 5 genetic marker (MinK/KCNE1 gene (heterozygote) – coassembler LQT1).
426.82	11.12.26	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Prolonged Q-T interval, With genetic marker, Long QT syndrome with genetic marker, Type 7 (Andersen syndrome): KCNJ2 gene (potassium channel)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Ventricular tachycardia occurring in the setting of prolonged Q-T interval, With potassium-channelopathy isolated to Type 7 (Andersen syndrome) genetic marker (KCNJ2 gene).
426.82	11.12.31	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Prolonged Q-T interval, With genetic marker, Long QT syndrome with genetic marker, Type unknown	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Ventricular tachycardia occurring in the setting of prolonged Q-T interval, With genetic marker unknown.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.1	11.12.05	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Short QT syndrome	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Ventricular tachycardia occurring in the setting of short Q-T interval.
427.1	11.05.75	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Fascicular (bundle branch)	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia mapped to one of the bundle branches, usually the left bundle branch (LBB), the typical appearance is right bundle branch block (RBBB) with right or left axis deviation.
427.1	11.05.63	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Fascicular (bundle branch), Left posterior (Belhassen's)	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia mapped to one of the bundle branches, usually the left bundle branch (LBB), the typical appearance is right bundle branch block (RBBB) with right or left axis deviation + Right bundle branch block (RBBB) pattern and left axis deviation (common form)
427.1	11.05.56	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Focal	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia characterized by discrete site of origin.
427.1	11.05.80	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Mechanical	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia secondary to either trauma or physical irritation from devices such as, but not limited to, chest tubes, central lines, etc.
427.1	11.05.48	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Myocarditis	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia in the setting of myocarditis (inflammation of the myocardium).
427.1	11.05.47 + Q1.85.08	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Oncogenic (tumor), Left ventricle	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia occurring usually in the first year of life due to histiocytosis. Origin in the left ventricle.
427.1	11.05.47 + Q1.85.07	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Oncogenic (tumor), Right ventricle	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia occurring usually in the first year of life due to histiocytosis. Origin in the right ventricle.
427.1	11.05.67	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Sarcoidosis	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia in the setting of sarcoidosis.
427.1	11.05.65	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Scar, Post-infarction	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia with injury-related etiology, specifically post-infarction.
427.1	11.05.65 + Q1.85.07	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Scar, Post-infarction, Right ventricular infarction	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia with injury-related etiology, specifically post-infarction of left ventricle
427.1	11.05.66 + Q1.92.26	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Scar, Surgical (Post-operative), After left ventriculotomy	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia with injury-related etiology, specifically post-left ventriculotomy.
427.1	Q1.36.56	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Location of tachycardia, Left ventricular	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia, mapped to the left ventricle.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.1	Q1.35.36	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Location of tachycardia, Left ventricular, Left ventricular outflow tract (LVOT)	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia, mapped to the left ventricular outflow tract.
427.1	Q1.35.33	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Location of tachycardia, Right ventricular, Right ventricular apex	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia, mapped to the right ventricular apex.
427.1	Q1.36.43	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Location of tachycardia, Septal	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia, mapped to the interventricular septum.
427.1	11.05.15	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-modifier for etiology, Drug induced	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + modifier for etiology, Drug induced
427.1	11.05.12	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-modifier for etiology, Exercise induced	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + modifier for etiology, Exercise induced
427.1	11.05.48	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-modifier for etiology, Inflammatory (inflammation mediated) (myocarditis)	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + modifier for etiology, Inflammatory (inflammation mediated) (myocarditis)
427.1	11.05.72	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-modifier for etiology, Mechanical	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + modifier for etiology, Mechanical = Provoked by manipulation or physical irritation of the heart (for example, catheter or chest tube, or touching the heart during cardiac dissection).
427.1	11.05.05	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-modifier, Accelerated idioventricular rhythm	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + modifier, Accelerated idioventricular rhythm
427.1	11.05.79	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-modifier, Slow VT	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Rate usually <150 bpm
427.1	11.05.52	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Tachycardia-Type of tachycardia, Channelopathy, Brugada syndrome, SCN5A gene (sodium channel)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + In typical form sinus rhythm shows anterior raised ST segment in V1 and V2 due to sodium-channel defect isolated to SCN5A gene.
427.69	11.05.21	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s])	"Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s])" ROOT Definition = Early premature beat(s) arising from the ventricle.
427.69	11.05.25	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]), PVC[s] from left ventricle (RBBB pattern)	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]) (ROOT Definition) + Premature beats arising from the left ventricle are characterized by a right bundle branch block morphology.
427.69	11.05.27	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]), PVC[s] with bigeminy	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]) (ROOT Definition) + Ventricular ectopy (premature beat) alternating with sinus beat.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.69	11.05.29	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]), PVC[s] with fixed coupling interval	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]) (ROOT Definition) + A constant interval between the previous normal beat and the PVC (the coupling interval)
427.69	11.05.31	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]), PVC[s] with parasystole	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]) (ROOT Definition) + Non-fixed coupled PVC's occur at a common inter-ectopic interval. Fusion beats, which occur when the sinus impulse entering the ventricles find the ventricles already partially depolarized by the parasystolic focus, often occur.
427.69	11.05.30	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]), PVC[s] with variable coupling interval	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]) (ROOT Definition) + Variable coupling interval which may be result of PVCs arising from different areas within the ventricles, or if the PVCs are arising from a single focus, ventricular conduction may vary. Such PVCs can be referred to as multifocal or multiformed.
427	Q1.90.64	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular-modifier, Postprocedural	Arrhythmia, Ventricular (ROOT Definition) + A postprocedural complication is any complication that occurs during the time interval between Operating Room Exit Date and Time and the end of the period of operative and procedural data collection, and thus includes both intraprocedural and postprocedural complications.
427	Q1.91.20 + Q1.90.67	Arrhythmia – Supraventricular tachycardia (SVT)	Arrhythmia, Ventricular-modifier, Postprocedural-Postcatheterization and Postoperative	Arrhythmia, Ventricular (ROOT Definition) + A postprocedural complication is any complication that occurs during the time interval between Operating Room Exit Date and Time and the end of the period of operative and procedural data collection, and thus includes both intraprocedural and postprocedural complications. Use this code if the patient has undergone cardiac catheterization and cardiothoracic surgery.
427.9	11.05.05	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Accelerated ventricular rhythm	Ventricular rhythm, usually 100–150 bpm, or 10–20% faster than normal sinus rates. Accelerated ventricular rhythm is less than rate of VT.
427.4	11.05.10, 11.05.06	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Fibrillation and Tachycardia	A patient may exhibit both ventricular tachycardia and ventricular fibrillation. Ventricular tachycardia is a cardiac arrhythmia of three or more consecutive complexes in duration emanating from the ventricles at a rate of greater than 120 bpm in adolescents or adults and a rate greater than 150 bpm in child. Ventricular tachycardia may occur with or without loss of cardiac output. Ventricular fibrillation is a rapid grossly irregular ventricular rhythm, usually more than 300 bpm/200 ms (cycle length 180 ms or less), with marked variability in QRS cycle length, morphology, and amplitude, associated with loss of output, and is usually sustained, requiring intervention to terminate. Torsades de pointes is a rapid, irregular ventricular rhythm occurring in the setting of a prolonged QT interval, and may be non-sustained or sustained.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.9	11.05.13	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Postprocedural ventricular rhythm disturbance	A ventricular arrhythmia after a procedure. A postprocedural complication is any complication that occurs during the time interval between Operating Room Exit Date and Time and the end of the period of operative and procedural data collection, and thus includes both intraprocedural and postprocedural complications.
427.1	11.05.06	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia	"Arrhythmia, Ventricular, Tachycardia" ROOT Definition = Ventricular tachycardia is a cardiac arrhythmia of three or more consecutive complexes in duration emanating from the ventricles at a rate of greater than 120 bpm in adolescents or adults and a rate greater than 150 bpm in child. Ventricular tachycardia may occur with or without loss of cardiac output.
427.1	11.05.36	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia, Bundle branch block re-entrant ventricular tachycardia	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Due to re-entry involving the His-Purkinje system, usually with Left bundle branch block (LBBB) morphology; this usually occurs in the setting of cardiomyopathy
427.1	11.05.08	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia, Incessant	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Incessant VT may be defined as repetitive ventricular tachycardia interrupted by sinus beats or occasional normal rhythm.
427.1	11.05.41	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia, Monomorphic	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia with a single QRS morphology.
427.1	11.05.07	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia, Paroxysmal	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Paroxysmal = Abrupt episode(s) of sudden onset
427.1	11.05.16	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia, Primary (Idiopathic)	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + No known etiology
427.1	11.05.37	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia, Right ventricular outflow tract ventricular tachycardia	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + originating from the Right Ventricular Outflow Tract (RVOT)
427.1	11.05.14	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia, Torsades de pointes	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia associated with a long QT or QTc, and electrocardiographically characterized by twisting of the peaks of the QRS complexes around the isoelectric line during the arrhythmia.
427.1	11.05.14 + Q1.36.32	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia, Torsades de pointes, Non-sustained	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia associated with a long QT or QTc, and electrocardiographically characterized by twisting of the peaks of the QRS complexes around the isoelectric line during the arrhythmia + Three or more beats in duration, and terminating spontaneously in less than 30 seconds.
427.41	11.05.10	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia, Ventricular fibrillation	"Ventricular fibrillation" ROOT Definition = Ventricular fibrillation is a rapid grossly irregular ventricular rhythm, usually more than 300 bpm/200 ms (cycle length 180 ms or less), with marked variability in QRS cycle length, morphology, and amplitude, associated with loss of output, and is usually sustained, requiring

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				intervention to terminate. Torsades de pointes is a rapid, irregular ventricular rhythm occurring in the setting of a prolonged QT interval, and may be non-sustained or sustained.
427.41	11.05.10 + Q1.36.46	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia, Ventricular fibrillation, Induced (defibrillator testing)	Ventricular fibrillation (ROOT Definition) + Deliberately induced for purposes of device testing; usually terminated by programmed automatic device discharge.
427.41	11.05.10 + Q1.36.31	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia, Ventricular fibrillation, Sustained	Ventricular fibrillation (ROOT Definition) + Lasting greater than 30 seconds
427.42	11.05.09 + Q1.36.32	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia, Ventricular flutter, Non-sustained	Ventricular flutter (ROOT Definition) + Lasting less than 30 seconds.
427.1	11.05.49	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Cardiomyopathy	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + In the setting of decreased ejection fraction.
427.1	11.12.00	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy	"Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy" ROOT Definition = Ventricular tachycardia due to a genetic ion-channel defect, also known as a "Channelopathy" or "Ion channelopathy". This diagnosis is most commonly Long QT syndrome, but also includes Brugada syndrome, Jervell and Lange-Nielsen syndrome, Romano-Ward syndrome, Andersen syndrome, etc.
427.1	11.05.53	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Catecholaminergic polymorphic ventricular tachycardia, Autosomal dominant (RyR2)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Polymorphic ventricular tachycardia which is due to a form of ion channelopathy; Related to ryanodine receptors (autosomal dominant RyR2).
427.41	11.05.55	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Idiopathic ventricular fibrillation	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Occurring without an identifiable predisposing cause. May be due to be an as yet undefined ion channelopathy.
426.82	11.12.02	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Prolonged Q-T interval, Acquired Prolonged Q-T interval	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Acquired ventricular tachycardia occurring in the setting of prolonged Q-T interval (NOT a genetic channelopathy).
426.82	14.02.14	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Prolonged Q-T interval, With genetic marker, Jervell and Lange-Nielsen syndrome	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Ventricular tachycardia occurring in the setting of prolonged Q-T interval, With genetic marker (not specified) for Jervell and Lange-Nielsen syndrome.
426.82	11.12.30	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Prolonged Q-T interval, With genetic marker, Jervell and Lange-Nielsen syndrome, JLN2 (MinK/KCNE1 gene [homozygote] – coassembler LQT1)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Ventricular tachycardia occurring in the setting of prolonged Q-T interval, with potassium-channelopathy isolated to JLN2 (MinK/KCNE1 homozygote – coassembler LQ-T1) gene for Jervell and Lange-Nielsen syndrome.
426.82	11.12.21	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Prolonged Q-T interval, With genetic marker, Long QT	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Ventricular tachycardia occurring in the setting of prolonged Q-T interval, With potassium-

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
			syndrome with genetic marker, Type 1 (KvLQT1 gene (heterozygote) – potassium channel)	channelopathy isolated to Type 1 genetic marker (KvLQT1 gene (heterozygote).
426.82	11.12.23	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Prolonged Q-T interval, With genetic marker, Long QT syndrome with genetic marker, Type 3 (SCN5A gene – sodium channel)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Ventricular tachycardia occurring in the setting of prolonged Q-T interval, With sodium-channelopathy isolated to Type 3 genetic marker (SCN5A gene).
426.82	11.12.25	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Prolonged Q-T interval, With genetic marker, Long QT syndrome with genetic marker, Type 6 (MiRP1 gene – coassembler LQT2)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Ventricular tachycardia occurring in the setting of prolonged Q-T interval, With Type 6 genetic marker (MiRP1 gene – coassembler LQT2).
426.82	11.12.27	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Prolonged Q-T interval, With genetic marker, Long QT syndrome with genetic marker, Type 8 (syndactyly + small teeth): CACNA1C gene (calcium channel)	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Ventricular tachycardia occurring in the setting of prolonged Q-T interval, With calcium-channelopathy isolated to Type 8 (syndactyly, small teeth) genetic marker (CACNA1C gene).
426.82	14.02.23	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Prolonged Q-T interval, With genetic marker, Romano-Ward syndrome	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Ventricular tachycardia occurring in the setting of prolonged Q-T interval, With genetic marker for Romano-Ward syndrome.
427.1	11.12.00, 11.05.14	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy, Torsades de pointes	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + Ventricular tachycardia associated with a long QT or QTc, and electrocardiographically characterized by twisting of the peaks of the QRS complexes around the isoelectric line during the arrhythmia.
427.1	11.05.76	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Fascicular (bundle branch), Left anterior	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia mapped to one of the bundle branches, usually the left bundle branch (LBB), the typical appearance is right bundle branch block (RBBB) with right or left axis deviation + Right bundle branch block (RBBB) pattern and right axis deviation (uncommon form)
427.1	11.05.77	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Fascicular (bundle branch), Left upper septal	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia mapped to one of the bundle branches, usually the left bundle branch (LBB), the typical appearance is right bundle branch block (RBBB) with right or left axis deviation + Narrow QRS and normal axis deviation (rare form)
427.1	11.05.46	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Ischemic	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia secondary to abnormal coronary artery perfusion.
427.1	11.05.59	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Metabolic (electrolyte)	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia secondary to systemic disease or electrolyte abnormality.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.1	11.05.47	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Oncogenic (tumor)	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia occurring usually in the first year of life due to histiocytosis.
427.1	11.05.69	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Oncogenic (tumor), Multifocal	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia occurring usually in the first year of life due to histiocytosis. Multiple tumors.
427.1	11.05.68	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Oncogenic (tumor), Unifocal	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia occurring usually in the first year of life due to histiocytosis. Single tumor
427.1	11.05.45	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Scar	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia with injury-related etiology.
427.1	11.05.65 + Q1.85.08	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Scar, Post-infarction, Left ventricular infarction	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia with injury-related etiology, specifically post-infarction of right ventricle.
427.1	11.05.66	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Scar, Surgical (Post-operative)	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia with injury-related etiology, specifically post-cardiac surgery.
427.1	11.05.66 + Q1.92.25	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Scar, Surgical (Post-operative), After right ventriculotomy	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia with injury-related etiology, specifically post-right ventriculotomy.
427.1	Q1.35.40	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Location of tachycardia, Left ventricular, Left ventricular apex	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia, mapped to the left ventricular apex.
427.1	Q1.36.55	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Location of tachycardia, Right ventricular	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia, mapped to the right ventricle.
427.1	Q1.35.80	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Location of tachycardia, Right ventricular, Right ventricular outflow tract (RVOT)	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Ventricular tachycardia, mapped to the right ventricular outflow tract.
427.1	11.05.58	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-modifier for etiology, Bradycardia induced	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + modifier for etiology, Bradycardia induced
427.1	11.05.59	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-modifier for etiology, Electrolyte induced	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + modifier for etiology, Electrolyte induced
427.1	11.05.16	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-modifier for etiology, Idiopathic	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + modifier for etiology, Idiopathic
427.1	11.05.46	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-modifier for etiology, Ischemic	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + modifier for etiology, Ischemic
427.1	11.05.71	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-modifier for etiology, Traumatic	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + modifier for etiology, Traumatic = Secondary to blunt or penetrating trauma
427.1	11.05.78	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-modifier, Fast VT	Arrhythmia, Ventricular, Tachycardia (ROOT) Definition + Rate usually >180 bpm
427.1	11.05.44	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Tachycardia-Type of tachycardia, Channelopathy, Brugada syndrome	Arrhythmia, Ventricular, Tachycardia-Etiology of tachycardia, Channelopathy (ROOT Definition) + In typical form sinus rhythm shows anterior raised ST segment in V1 and V2 due to genetic ion-channel defect.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.5	11.05.03	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Ventricular arrest	Absence of any ventricular electrical activity = asystole.
427.69	11.05.26	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]), Multiform PVC[s]	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]) (ROOT Definition) + Premature ventricular beats of differing morphologies.
427.69	11.05.24	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]), PVC[s] from right ventricle (LBBB pattern)	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]) (ROOT Definition) + Premature beats arising from the right ventricle are characterized by a left bundle branch block morphology.
427.69	11.05.35	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]), PVC[s] with couplets	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]) (ROOT Definition) + Ventricular premature beats occurring in pairs, that is, two in a row.
427.69	11.05.32	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]), PVC[s] with interpolation	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]) (ROOT Definition) + Ventricular premature beats occurring between two sinus beats, without interrupting the normal sinus intervals.
427.69	11.05.28	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]), PVC[s] with trigeminy	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]) (ROOT Definition) + A recurring pattern of three beats; may be either two ventricular premature beats and a sinus beat, or two sinus beats and a ventricular premature beat.
427.69	11.05.34	Arrhythmia – Ventricular	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]), Uniform PVC[s]	Arrhythmia, Ventricular, Ventricular premature beats (complexes) (contractions) (PVC[s]) (ROOT Definition) + Premature ventricular beats of identical or very similar morphology.
427	Q1.91.20	Arrhythmia – Ventricular	Arrhythmia, Ventricular-modifier, Postprocedural-Postcatheterization	Arrhythmia, Ventricular (ROOT Definition) + A postprocedural complication is any complication that occurs during the time interval between Operating Room Exit Date and Time and the end of the period of operative and procedural data collection, and thus includes both intraprocedural and postprocedural complications. Use this code if the patient has undergone cardiac catheterization.
427	Q1.90.67	Arrhythmia – Ventricular	Arrhythmia, Ventricular-modifier, Postprocedural-Postoperative	Arrhythmia, Ventricular (ROOT Definition) + A postoperative complication is any complication that occurs or is recognized during the time interval between Operating Room Exit Date and Time and the end of the period of operative and procedural data collection.
427.5	11.00.21 + Q1.00.31	Arrhythmia – Other	Arrhythmia, Asystole	Absence of any ventricular electrical activity.
427	Q1.36.41	Arrhythmia – Other	Arrhythmia, Dual AV nodal physiology	Antegrade conduction over functionally distinct AV nodal tissue, characterized by two or more distinct P-R intervals (fast and slow AV nodal conduction).
427	No code	Arrhythmia – Other	Arrhythmia, Lown-Ganong-Levine syndrome (This term is no longer acceptable. Please use the code "Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia)").	This term is no longer acceptable. Please use the code "Arrhythmia, Supraventricular tachycardia (SVT), Atrioventricular reciprocating (Accessory connection-mediated tachycardia)".

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427.9	11.00.00	Arrhythmia – Other	Arrhythmia, Other	Please code this term more specifically if possible. This term can be used when a medical record documents that an arrhythmia occurred that can not be located in this list.
427.8	11.00.00 + Q1.92.21	Arrhythmia – Other	Arrhythmia, Other, Specified	Please code this term more specifically if possible. This term can be used when a medical record documents that a specific type of arrhythmia occurred that can not be located in this list.
427.9	11.00.00 + Q1.90.94	Arrhythmia – Other	Arrhythmia, Other, Unspecified	Please code this term more specifically if possible. This term can be used when a medical record documents that an arrhythmia occurred but no further information is known.
427.6	11.00.15	Arrhythmia – Other	Arrhythmia, Premature beats	Premature beats not distinctly categorized as to site of origin (that is, atrial, junctional, or ventricular). This term can be used when a medical record documents that this arrhythmia occurred but no further information is documented or known.
427.6	11.00.15 + Q1.92.21	Arrhythmia – Other	Arrhythmia, Premature beats, Other	Premature beats not distinctly categorized as to site of origin (that is, atrial, junctional, or ventricular). This term can be used when a medical record documents that this arrhythmia occurred but no further information is known.
427.6	11.00.15 + Q1.90.94	Arrhythmia – Other	Arrhythmia, Premature beats, Unspecified	Premature beats not distinctly categorized as to site of origin (that is, atrial, junctional, or ventricular). This term can be used when a medical record documents that this arrhythmia occurred but no further information is documented.
427.2	11.00.16	Arrhythmia – Other	Arrhythmia, Tachycardia, Paroxysmal, Unspecified	Abrupt episodes of tachycardia, site of origin not specified.
426.7	Title	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s])	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s])
426.7	Q1.35.81	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway	Arrhythmia (ROOT) Definition+modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway
426.7	Q1.35.87	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway in left free wall	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway in left free wall
426.7	Q1.35.93	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway in left free wall: Anterior	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway in left free wall: Anterior
426.7	Q1.35.94	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway in left free wall: Lateral	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway in left free wall: Lateral
426.7	Q1.35.95	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway in left free wall: Posterior	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway in left free wall: Posterior

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
426.7	Q1.35.86	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway in right free wall	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway in right free wall
426.7	Q1.35.90	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway in right free wall: Anterior	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway in right free wall: Anterior
426.7	Q1.35.91	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway in right free wall: Lateral	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway in right free wall: Lateral
426.7	Q1.35.92	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway in right free wall: Posterior	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway in right free wall: Posterior
426.7	Q1.35.61	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway: Anteroseptal (supraventricular crest)	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway: Anteroseptal (supraventricular crest)
426.7	Q1.35.98	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway: Midseptal	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway: Midseptal
426.7	Q1.35.62	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway: Posteroseptal	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway: Posteroseptal
426.7	Q1.35.66	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway: Posteroseptal, Accessory pathway in coronary sinus diverticulum	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway: Posteroseptal, Accessory pathway in coronary sinus diverticulum
426.7	Q1.35.99	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway: Posteroseptal, Accessory pathway in mouth of coronary sinus	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway: Posteroseptal, Accessory pathway in mouth of coronary sinus
426.7	Q1.35.64	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway: Posteroseptal, Left posteroseptal	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway: Posteroseptal, Left posteroseptal

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
426.7	Q1.35.65	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway: Posteroseptal, Middle cardiac vein	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway: Posteroseptal, Middle cardiac vein
426.7	Q1.35.96	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway: Posteroseptal, Right posteroseptal	Arrhythmia (ROOT) Definition+modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathway: Posteroseptal, Right posteroseptal
426.7	11.07.26	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathways = Multiple accessory pathways	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Accessory pathways = Multiple accessory pathways
426.7	Q1.36.01	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic foci = Multiple arrhythmogenic foci	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic foci = Multiple arrhythmogenic foci
426.7	Title	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus
426.7	Q1.36.10	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus = Atrial arrhythmogenic focus	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus = Atrial arrhythmogenic focus
426.7	Q1.35.79	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus = Ventricular arrhythmogenic focus	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus = Ventricular arrhythmogenic focus
426.7	Q1.35.80	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus = Ventricular arrhythmogenic focus, Right ventricular outflow tract arrhythmogenic focus	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus = Ventricular arrhythmogenic focus, Right ventricular outflow tract arrhythmogenic focus
426.7	Q1.35.00	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus at atrial isthmus	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus at atrial isthmus

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
426.7	Q1.35.85	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus at inferior caval vein/ atrial junction	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus at inferior caval vein/atrial junction
426.7	Q1.35.88	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus at margins of oval fossa	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus at margins of oval fossa
426.7	Q1.35.10	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus at site of previous ablation gap	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus at site of previous ablation gap
426.7	Q1.35.84	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus at superior caval vein/atrial junction	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus at superior caval vein/ atrial junction
426.7	Q1.35.74	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in AV node/His junction	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in AV node/His junction
426.7	Q1.35.89	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in coronary sinus diverticulum	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in coronary sinus diverticulum
426.7	Q1.35.78	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in floor of coronary sinus (posteroseptal)	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in floor of coronary sinus (posteroseptal)
426.7	Q1.35.82	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in left atrial appendage	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in left atrial appendage
426.7	Q1.35.76	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in left atrial free wall	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in left atrial free wall
426.7	Q1.35.72	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in left atrium	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in left atrium

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
426.7	Q1.35.83	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in pulmonary vein	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in pulmonary vein
426.7	Q1.35.73	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in right atrial appendage	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in right atrial appendage
426.7	Q1.35.75	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in right atrial free wall	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in right atrial free wall
426.7	Q1.35.71	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in right atrium	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in right atrium
426.7	Q1.35.77	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in supraventricular crest (anteroseptal)	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in supraventricular crest (anteroseptal)
426.7	Q1.35.07	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in terminal crest (crista terminalis)	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Arrhythmogenic focus in terminal crest (crista terminalis)
426.7	Q1.36.61	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit
426.7	Q1.36.62	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around anastomosis	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around anastomosis
426.7	Q1.36.63	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around anatomical obstacle	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around anatomical obstacle
426.7	Q1.35.46	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around area of functional block	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around area of functional block
426.7	Q1.35.03	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around atrial septal defect patch	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around atrial septal defect patch

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
426.7	Q1.35.04	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around atriotomy site	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around atriotomy site
426.7	Q1.36.65	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around IVC	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around IVC
426.7	Q1.35.02	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around mitral annulus	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around mitral annulus
426.7	Q1.35.44	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around right ventricular outflow tract patch	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around right ventricular outflow tract patch
426.7	Q1.36.64	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around SVC	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around SVC
426.7	Q1.35.01	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around tricuspid valve annulus	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around tricuspid valve annulus
426.7	Q1.35.43	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around ventricular septal defect patch	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around ventricular septal defect patch
426.7	Q1.35.45	Arrhythmia – Other	Arrhythmia-modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around ventriculotomy site	Arrhythmia (ROOT) Definition + modifier for anatomical location of arrhythmogenic focus, reentry circuit, or accessory connection(s) (pathway[s]), Reentry circuit, Around ventriculotomy site
427	Title	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia
427	Q1.90.62	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Acquired	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Acquired
427	Q1.52.57	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Arrhythmia induced	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Arrhythmia induced
427	Q1.52.50	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Autosomal dominant	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Autosomal dominant
427	Q1.52.51	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Autosomal recessive	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Autosomal recessive
427	Q1.90.60	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Congenital	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Congenital

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427	Q1.00.37	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Drug induced	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Drug induced
427	Q1.52.58	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Due to electrolyte imbalance	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Due to electrolyte imbalance
427	11.00.10	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Due to endocarditic vegetations	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Due to endocarditic vegetations
427	Q1.00.81	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Due to myocarditis	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Due to myocarditis
427	Q1.52.53	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Familial	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Familial
427	Q1.52.67	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Gene carrier	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Gene carrier
427	Q1.52.55	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Gene carrier, Inducible gene carrier	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Gene carrier, Inducible gene carrier
427	Q1.52.54	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Gene carrier, Subclinical gene carrier	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Gene carrier, Subclinical gene carrier
427	Q1.52.56	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Gene carrier, Symptomatic gene carrier	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Gene carrier, Symptomatic gene carrier
427	Q1.96.04	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Idiopathic	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Idiopathic
427	Q1.91.72	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Postoperative	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Postoperative
427	Q1.90.64	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Postprocedural	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Postprocedural
427	Q1.90.68	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Postprocedural, S/P Cardiac catheterization	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Postprocedural, S/P Cardiac catheterization
427	Q1.52.60	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, Sporadic	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, Sporadic
427	Q1.52.52	Arrhythmia – Other	Arrhythmia-modifier for cause and genetics of arrhythmia, X-linked recessive	Arrhythmia (ROOT) Definition + modifier for cause and genetics of arrhythmia, X-linked recessive
427	Q1.36.34	Arrhythmia – Other	Arrhythmia-modifier for mechanism of arrhythmia, Automatic	Arrhythmia (ROOT) Definition + modifier for mechanism of arrhythmia, Automatic
427	Q1.36.35	Arrhythmia – Other	Arrhythmia-modifier for mechanism of arrhythmia, Automatic, Atrial	Arrhythmia (ROOT) Definition + modifier for mechanism of arrhythmia, Automatic, Atrial
427	Q1.36.37	Arrhythmia – Other	Arrhythmia-modifier for mechanism of arrhythmia, Automatic, Idioventricular	Arrhythmia (ROOT) Definition + modifier for mechanism of arrhythmia, Automatic, Idioventricular
427	Q1.36.36	Arrhythmia – Other	Arrhythmia-modifier for mechanism of arrhythmia, Automatic, Junctional	Arrhythmia (ROOT) Definition + modifier for mechanism of arrhythmia, Automatic, Junctional
427	Q1.36.38	Arrhythmia – Other	Arrhythmia-modifier for mechanism of arrhythmia, Reentrant	Arrhythmia (ROOT) Definition + modifier for mechanism of arrhythmia, Reentrant
427	Q1.36.39	Arrhythmia – Other	Arrhythmia-modifier for mechanism of arrhythmia, Reentrant, Macro-reentrant	Arrhythmia (ROOT) Definition + modifier for mechanism of arrhythmia, Reentrant, Macro-reentrant

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
427	Q1.36.40	Arrhythmia – Other	Arrhythmia-modifier for mechanism of arrhythmia, Reentrant, Micro-reentrant	Arrhythmia (ROOT) Definition + modifier for mechanism of arrhythmia, Reentrant, Micro-reentrant
427	Q1.36.33	Arrhythmia – Other	Arrhythmia-modifier for mechanism of arrhythmia, Triggered	Arrhythmia (ROOT) Definition + modifier for mechanism of arrhythmia, Triggered
427	14.10.06	Arrhythmia – Other	Arrhythmia-modifier, Fetal	Arrhythmia (ROOT) Definition + modifier, Fetal
427	Q5.81.29	Arrhythmia – Other	Arrhythmia-modifier, Neonatal	Arrhythmia (ROOT) Definition + modifier, Neonatal = less than 29 days old
427	Q1.36.32	Arrhythmia – Other	Arrhythmia-modifier, Paroxysmal	Arrhythmia (ROOT) Definition + modifier, Paroxysmal = Abrupt episode(s) of sudden onset
427	Q1.90.64	Arrhythmia – Other	Arrhythmia-modifier, Postprocedural	Arrhythmia (ROOT Definition) + A postprocedural complication is any complication that occurs during the time interval between Operating Room Exit Date and Time and the end of the period of operative and procedural data collec- tion, and thus includes both intraprocedural and postprocedural complications.
427	Q1.91.20	Arrhythmia – Other	Arrhythmia-modifier, Postprocedural-Postcatheterization	Arrhythmia (ROOT Definition) + A postprocedural complication is any complication that occurs during the time interval between Operating Room Exit Date and Time and the end of the period of operative and procedural data collection, and thus includes both intraprocedural and postprocedural complications. Use this code if the patient has undergone cardiac catheterization.
427	Q1.91.20 + Q1.90.67	Arrhythmia – Other	Arrhythmia-modifier, Postprocedural-Postcatheterization and Postoperative	Arrhythmia (ROOT Definition) + A postprocedural complication is any complication that occurs during the time interval between Operating Room Exit Date and Time and the end of the period of operative and procedural data collection, and thus includes both intraprocedural and postprocedural complications. Use this code if the patient has undergone cardiac catheterization and cardiothoracic surgery.
427	Q1.90.67	Arrhythmia – Other	Arrhythmia-modifier, Postprocedural-Postoperative	Arrhythmia (ROOT Definition) + A postoperative complication is any complication that occurs or is recognized during the time interval between Operating Room Exit Date and Time and the end of the period of operative and procedural data collection.
426	11.06.00	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder	Disorder of atrioventricular conduction.
426.7	11.07.01	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Anomalous atrioventricular excitation (Manifest accessory connection) (WPW)	WPW syndrome ROOT Definition = The Wolff-Parkinson-White Syndrome (WPW syndrome) diagnosis is reserved for patients who have both pre-excitation on ECG (manifest conduction) and tachyarrhythmias.
426.9	11.06.38	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block	Disorder of atrioventricular conduction with other than 1:1 atrioventricular relationship or abnormality of P-R interval.
426.11	11.06.02	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree	"Arrhythmia-Atrioventricular conduction disorder, AV block, First degree" ROOT Definition = First degree AV block is defined as a PR interval greater than the 95th percentile for age. In adults, first

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				degree heart block is defined as a PR interval >200 ms. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
426.11	11.06.47	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree, Acquired	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth)
426.11	11.06.47 + Q1.52.68	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree, Acquired, Associated with maternal autoimmune disease	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Associated with maternal autoimmune disease
426.11	11.06.47 + Q1.52.69	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree, Acquired, Associated with maternal autoimmune disease, Maternal Lupus	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Associated with maternal Lupus
426.11	11.06.47 + Q1.52.74	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree, Acquired, Genetic propensity	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Secondary to certain gene defects (such as NKX-2.5) or structural defects (such as congenitally corrected TGA) that are associated with progressive/acquired AV block. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
426.11	11.06.47 + Q1.00.37	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree, Acquired, Medications	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Secondary to medications
426.11	11.06.47 + Q1.00.81	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree, Acquired, Myocarditis	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Secondary to myocarditis
426.11	11.06.47 + Q1.91.79	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree, Acquired, Operative during or after cardiac surgery	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + An operative complication is any complication that occurs during the time interval between Operating Room Entry Date and Time and the end of the period of operative and procedural data collection, and thus includes both intraoperative and postoperative complications.
426.11	11.06.47 + Q1.90.68	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree, Acquired, Procedural during or after a transcatheter procedure	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + A procedural complication is any complication that occurs during the time interval between OR Entry Date and Time and the end of the period of data collection, and thus includes both intraprocedural and postprocedural complications.
426.11	11.06.47 + Q1.92.22	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree, Acquired, Procedural during or after a transcatheter procedure, Status post transcatheter ablation	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + A procedural complication is any complication that occurs during the time interval between OR Entry Date and Time and the end of the period of data collection,

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				and thus includes both intraprocedural and postprocedural complications + Status post transcatheter ablation procedure.
426.11	11.06.47 + Q1.92.24	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree, Acquired, Procedural during or after a transcatheter procedure, Status post transcatheter ablation, Status post transcatheter RFA	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + A procedural complication is any complication that occurs during the time interval between OR Entry Date and Time and the end of the period of data collection, and thus includes both intraprocedural and postprocedural complications + Status post radiofrequency transcatheter ablation procedure.
426.11	11.06.46	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree, Congenital	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree (ROOT Definition) + Congenital in origin (NOT acquired), That is present since birth (but may be detected later).
426.11	11.06.46 + Q1.52.68	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree, Congenital, Associated with maternal autoimmune disease	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree (ROOT Definition) + Congenital in origin (NOT acquired), That is present since birth (but may be detected later) + Associated with maternal autoimmune disease
426.11	11.06.46 + Q1.52.69	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree, Congenital, Associated with maternal autoimmune disease, Maternal Lupus	Arrhythmia-Atrioventricular conduction disorder, AV block, First degree (ROOT Definition) + Congenital in origin (NOT acquired), That is present since birth (but may be detected later) + Associated with maternal Lupus
426.13	11.06.03	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree	"Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree" ROOT Definition = Second-degree AV block is present when 2 or more atrial impulses are required to stimulate the ventricular (QRS) response. Second-degree AV block is composed of 2 types: Mobitz I, which is also named Wenckebach block (and Wenckebach phenomenon), and Mobitz II. The Mobitz I second-degree AV block (Wenckebach) is characterized by a progressive prolongation of the PR interval, which results in a progressive shortening of the R-R interval. Ultimately, the atrial impulse fails to conduct. The PR interval is the shortest in the first beat in the cycle, while the R-R interval is the longest in the first beat in the cycle. The Mobitz II second-degree AV block is characterized by an unexpected non-conducted atrial impulse. Thus, the PR and R-R intervals between conducted beats are constant. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
426.13	11.06.04	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1	"Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1" ROOT Definition = Second-degree AV block is present when 2 or more atrial impulses are required to stimulate the ventricular (QRS) response. Second-degree AV block is composed of 2 types: Mobitz I, which is also named Wenckebach block (and Wenckebach phenomenon), and Mobitz II. The Mobitz I second-degree AV block (Wenckebach) is characterized by a progressive prolongation of

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				the PR interval, which results in a progressive shortening of the R-R interval. Ultimately, the atrial impulse fails to conduct. The PR interval is the shortest in the first beat in the cycle, while the R-R interval is the longest in the first beat in the cycle. The Mobitz II second-degree AV block is characterized by an unexpected non-conducted atrial impulse. Thus, the PR and R-R intervals between conducted beats are constant. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
426.13	11.06.49	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1, Acquired	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth)
426.13	11.06.49 + Q1.52.68	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1, Acquired, Associated with maternal autoimmune disease	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Associated with maternal autoimmune disease
426.13	11.06.49 + Q1.52.69	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1, Acquired, Associated with maternal autoimmune disease, Maternal Lupus	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Associated with maternal Lupus
426.13	11.06.49 + Q1.52.74	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1, Acquired, Genetic propensity	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Secondary to certain gene defects (such as NKX-2.5) or structural defects (such as congenitally corrected TGA) that are associated with progressive/acquired AV block. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
426.13	11.06.49 + Q1.00.37	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1, Acquired, Medications	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Secondary to medications
426.13	11.06.49 + Q1.00.81	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1, Acquired, Myocarditis	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Secondary to myocarditis
426.13	11.06.49 + Q1.91.79	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1, Acquired, Operative during or after cardiac surgery	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + An operative complication is any complication that occurs during the time interval between Operating Room Entry Date and Time and the end of the period of operative and procedural data collection, and thus includes both intraoperative and postoperative complications.
426.13	11.06.49 + Q1.90.68	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1, Acquired, Procedural during or after a transcatheter procedure	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + A procedural complication is any complication that occurs during the time

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				interval between OR Entry Date and Time and the end of the period of data collection, and thus includes both intraprocedural and postprocedural complications.
426.13	11.06.49 + Q1.92.22	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1, Acquired, Procedural during or after a transcatheter procedure, Status post transcatheter ablation	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + A procedural complication is any complication that occurs during the time interval between OR Entry Date and Time and the end of the period of data collection, and thus includes both intraprocedural and postprocedural complications. + Status post transcatheter ablation procedure.
426.13	11.06.49 + Q1.92.24	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1, Acquired, Procedural during or after a transcatheter procedure, Status post transcatheter ablation, Status post transcatheter RFA	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + A procedural complication is any complication that occurs during the time interval between OR Entry Date and Time and the end of the period of data collection, and thus includes both intraprocedural and postprocedural complications + Status post radiofrequency transcatheter ablation procedure.
426.13	11.06.48	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1, Congenital	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1 (ROOT Definition) + Congenital in origin (NOT acquired), That is present since birth (but may be detected later).
426.13	11.06.48 + Q1.52.68	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1, Congenital, Associated with maternal autoimmune disease	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1 (ROOT Definition) + Congenital in origin (NOT acquired), That is present since birth (but may be detected later) + Associated with maternal autoimmune disease
426.13	11.06.48 + Q1.52.69	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1, Congenital, Associated with maternal autoimmune disease, Maternal Lupus	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 1 (ROOT Definition) + Congenital in origin (NOT acquired), That is present since birth (but may be detected later) + Associated with maternal Lupus
426.12	11.06.05	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2	"Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2" ROOT Definition = Second-degree AV block is present when 2 or more atrial impulses are required to stimulate the ventricular (QRS) response. Second-degree AV block is composed of 2 types: Mobitz I, which is also named Wenckebach block (and Wenckebach phenomenon), and Mobitz II. The Mobitz I second-degree AV block (Wenckebach) is characterized by a progressive prolongation of the PR interval, which results in a progressive shortening of the R-R interval. Ultimately, the atrial impulse fails to conduct. The PR interval is the shortest in the first beat in the cycle, while the R-R interval is the longest in the first beat in the cycle. The Mobitz II second-degree AV block is characterized by an unexpected non-conducted atrial impulse. Thus, the PR and R-R intervals between conducted beats are constant. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
426.12	11.06.51	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2, Acquired	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth)
426.12	11.06.51 + Q1.52.68	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2, Acquired, Associated with maternal autoimmune disease	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Associated with maternal autoimmune disease
426.12	11.06.51 + Q1.52.69	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2, Acquired, Associated with maternal autoimmune disease, Maternal Lupus	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Associated with maternal Lupus
426.12	11.06.51 + Q1.52.74	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2, Acquired, Genetic propensity	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Secondary to certain gene defects (such as NKX-2.5) or structural defects (such as congenitally corrected TGA) that are associated with progressive/acquired AV block. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
426.12	11.06.51 + Q1.00.37	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2, Acquired, Medications	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Secondary to medications
426.12	11.06.51 + Q1.00.81	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2, Acquired, Myocarditis	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Secondary to myocarditis
426.12	11.06.51 + Q1.91.79	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2, Acquired, Operative during or after cardiac surgery	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + An operative complication is any complication that occurs during the time interval between Operating Room Entry Date and Time and the end of the period of operative and procedural data collection, and thus includes both intraoperative and postoperative complications.
426.12	11.06.51 + Q1.90.68	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2, Acquired, Procedural during or after a transcatheter procedure	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + A procedural complication is any complication that occurs during the time interval between OR Entry Date and Time and the end of the period of data collection, and thus includes both intraprocedural and postprocedural complications.
426.12	11.06.51 + Q1.92.22	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2, Acquired, Procedural during or after a transcatheter procedure, Status post transcatheter ablation	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + A procedural complication is any complication that occurs during the time interval between OR Entry Date and Time and the end of the period of data collection, and thus includes both intraprocedural and

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				postprocedural complications + Status post transcatheter ablation procedure.
426.12	11.06.51 + Q1.92.24	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2, Acquired, Procedural during or after a transcatheter procedure, Status post transcatheter ablation, Status post transcatheter RFA	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2 (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + A procedural complication is any complication that occurs during the time interval between OR Entry Date and Time and the end of the period of data collection, and thus includes both intraprocedural and postprocedural complications. + Status post radiofrequency transcatheter ablation procedure.
426.12	11.06.50	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2, Congenital	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2 (ROOT Definition) + Congenital in origin (NOT acquired), That is present since birth (but may be detected later).
426.12	11.06.50 + Q1.52.68	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2, Congenital, Associated with maternal autoimmune disease	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2 (ROOT Definition) + Congenital in origin (NOT acquired), That is present since birth (but may be detected later) + Associated with maternal autoimmune disease
426.12	11.06.50 + Q1.52.69	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2, Congenital, Associated with maternal autoimmune disease, Maternal Lupus	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree Mobitz 2 (ROOT Definition) + Congenital in origin (NOT acquired), That is present since birth (but may be detected later) + Associated with maternal Lupus
426.13	11.06.53	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree, Acquired	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth)
426.13	11.06.53 + Q1.52.68	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree, Acquired, Associated with maternal autoimmune disease	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Associated with maternal autoimmune disease
426.13	11.06.53 + Q1.52.69	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree, Acquired, Associated with maternal autoimmune disease, Maternal Lupus	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Associated with maternal Lupus
426.13	11.06.53 + Q1.52.74	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree, Acquired, Genetic propensity	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Secondary to certain gene defects (such as NKX-2.5) or structural defects (such as congenitally corrected TGA) that are associated with progressive/acquired AV block. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
426.13	11.06.53 + Q1.00.37	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree, Acquired, Medications	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Secondary to medications
426.13	11.06.53 + Q1.00.81	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree, Acquired, Myocarditis	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Secondary to myocarditis

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
426.13	11.06.53 + Q1.91.79	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree, Acquired, Operative during or after cardiac surgery	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + An operative complication is any complication that occurs during the time interval between Operating Room Entry Date and Time and the end of the period of operative and procedural data collection, and thus includes both intraoperative and postoperative complications.
426.13	11.06.53 + Q1.90.68	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree, Acquired, Procedural during or after a transcatheter procedure	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + A procedural complication is any complication that occurs during the time interval between OR Entry Date and Time and the end of the period of data collection, and thus includes both intraprocedural and postprocedural complications.
426.13	11.06.53 + Q1.92.22	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree, Acquired, Procedural during or after a transcatheter procedure, Status post transcatheter ablation	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + A procedural complication is any complication that occurs during the time interval between OR Entry Date and Time and the end of the period of data collection, and thus includes both intraprocedural and postprocedural complications + Status post transcatheter ablation procedure.
426.13	11.06.53 + Q1.92.24	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree, Acquired, Procedural during or after a transcatheter procedure, Status post transcatheter ablation, Status post transcatheter RFA	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + A procedural complication is any complication that occurs during the time interval between OR Entry Date and Time and the end of the period of data collection, and thus includes both intraprocedural and postprocedural complications + Status post radiofrequency transcatheter ablation procedure.
426.13	11.06.52	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree, Congenital	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree (ROOT Definition) + Congenital in origin (NOT acquired), That is present since birth (but may be detected later).
426.13	11.06.52 + Q1.52.68	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree, Congenital, Associated with maternal autoimmune disease	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree (ROOT Definition) + Congenital in origin (NOT acquired), That is present since birth (but may be detected later) + Associated with maternal autoimmune disease
426.13	11.06.52 + Q1.52.69	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree, Congenital, Associated with maternal autoimmune disease, Maternal Lupus	Arrhythmia-Atrioventricular conduction disorder, AV block, Second degree (ROOT Definition)+Congenital in origin (NOT acquired), That is present since birth (but may be detected later) + Associated with maternal Lupus
426	11.06.07	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree	"Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree" ROOT Definition = Third degree AV block is defined as a the absence of AV node conduction. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
426	11.06.10	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree, Acquired	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth)
426.0	11.06.10 + Q1.52.68	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree, Acquired, Associated with maternal autoimmune disease	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Associated with maternal autoimmune disease
426.0	11.06.10 + Q1.52.69	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree, Acquired, Associated with maternal autoimmune disease, Maternal Lupus	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Associated with maternal Lupus
426.0	11.06.10 + Q1.52.74	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree, Acquired, Genetic propensity	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Secondary to certain gene defects (such as NKX-2.5) or structural defects (such as congenitally corrected TGA) that are associated with progressive/acquired AV block. If pacemaker is required, also code "Arrhythmia necessitating pacemaker".
426.0	11.06.10 + Q1.00.37	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree, Acquired, Medications	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Secondary to medications
426.0	11.06.10 + Q1.00.81	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree, Acquired, Myocarditis	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + Secondary to myocarditis
426.0	11.06.10 + Q1.91.79	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree, Acquired, Operative during or after cardiac surgery	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + An operative complication is any complication that occurs during the time interval between Operating Room Entry Date and Time and the end of the period of operative and procedural data collection, and thus includes both intraoperative and postoperative complications.
426.0	11.06.10 + Q1.90.68	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree, Acquired, Procedural during or after a transcatheter procedure	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + A procedural complication is any complication that occurs during the time interval between OR Entry Date and Time and the end of the period of data collection, and thus includes both intraprocedural and postprocedural complications.
426.0	11.06.10 + Q1.92.22	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree, Acquired, Procedural during or after a transcatheter procedure, Status post transcatheter ablation	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + A procedural complication is any complication that occurs during the time interval between OR Entry Date and Time and the end of the period of data collection, and thus includes both intraprocedural and postprocedural complications + Status post transcatheter ablation procedure.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
426.0	11.06.10 + Q1.92.24	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree, Acquired, Procedural during or after a transcatheter procedure, Status post transcatheter ablation, Status post transcatheter RFA	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree (ROOT Definition) + Acquired (non-congenital in origin, that is, NOT present since birth) + A procedural complication is any complication that occurs during the time interval between OR Entry Date and Time and the end of the period of data collection, and thus includes both intraprocedural and postprocedural complications. + Status post radiofrequency transcatheter ablation procedure.
426.0	11.06.16	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree, Congenital	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree (ROOT Definition) + Congenital in origin (NOT acquired), That is present since birth (but may be detected later).
426.0	11.06.16 + Q1.52.68	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree, Congenital, Associated with maternal autoimmune disease	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree (ROOT Definition) + Congenital in origin (NOT acquired), That is present since birth (but may be detected later) + Associated with maternal autoimmune disease
426.0	11.06.16 + Q1.52.69	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree, Congenital, Associated with maternal autoimmune disease, Maternal Lupus	Arrhythmia-Atrioventricular conduction disorder, AV block, Third degree (ROOT Definition) + Congenital in origin (NOT acquired), That is present since birth (but may be detected later) + Associated with maternal Lupus
426.5	11.06.29	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block	"Arrhythmia-Atrioventricular conduction disorder, Bundle branch block" ROOT Definition = Left bundle branch block (LBBB) is defined as a QRS duration greater than the 95th percentile for age and wide slurred R in leads I and V6. Right bundle branch block (RBBB) is defined as a QRS duration greater than the 95th percentile for age, wide slurred S in leads I and V6 and slurred R' in leads III, aVR and V1.
426.5	11.06.45	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block, Bifascicular block	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block (ROOT Definition) + Bundle branch block occurring in two of the divisions of the bundle branches; for example, [RBBB with left anterior fascicular hemiblock], or [RBBB with left posterior fascicular hemiblock], or [Left anterior fascicular block and left posterior fascicular block].
426.53	11.06.23, 11.06.27	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block, Bifascicular block, Bilateral, Right with left anterior fascicular	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block (ROOT Definition) + Right bundle branch block (RBBB) and left anterior fascicular block. A block of the anterior division of the left bundle branch and the right bundle branch. Left bundle branch block (LBBB) is defined as a QRS duration greater than the 95th percentile for age and wide slurred R in leads I and V6. Right bundle branch block (RBBB) is defined as a QRS duration greater than the 95th percentile for age, wide slurred S in leads I and V6 and slurred R' in leads III, aVR and V1.
426.53	11.06.23, 11.06.28	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block, Bifascicular block, Bilateral, Right with left posterior fascicular	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block (ROOT Definition) + Right bundle branch block (RBBB) and left posterior fascicular block. A block of the posterior division of the left bundle branch and the right bundle branch. Left bundle

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				branch block (LBBB) is defined as a QRS duration greater than the 95th percentile for age and wide slurred R in leads I and V6. Right bundle branch block (RBBB) is defined as a QRS duration greater than the 95th percentile for age, wide slurred S in leads I and V6 and slurred R' in leads III, aVR and V1.
426.3	11.06.45	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block, Bifascicular block, Left anterior fascicular block and left posterior fascicular block	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block (ROOT Definition) + Left bundle branch block (LBBB) with Left anterior hemiblock and left posterior hemiblock. A block of the anterior and posterior divisions of the left bundle branch. Left bundle branch block (LBBB) is defined as a QRS duration greater than the 95th percentile for age and wide slurred R in leads I and V6.
426.53	11.06.24, 11.06.23	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block, Bilateral	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block (ROOT Definition) + Both left and right bundle branch block exist. Left bundle branch block (LBBB) is defined as a QRS duration greater than the 95th percentile for age and wide slurred R in leads I and V6. Right bundle branch block (RBBB) is defined as a QRS duration greater than the 95th percentile for age, wide slurred S in leads I and V6 and slurred R' in leads III, aVR and V1.
426.5	11.06.39	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block, Indeterminate	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block (ROOT Definition) + Indeterminate or unknown subtype
426.3	11.06.24	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block, Left (LBBB)	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block (ROOT Definition) + Left bundle branch block (LBBB) is defined as a QRS duration greater than the 95th percentile for age and wide slurred R in leads I and V6.
426.2	11.06.27	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block, Left, Left anterior fascicular block	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block (ROOT Definition) + Left bundle branch block (LBBB) with Left anterior hemiblock. A block of the anterior division of the left bundle branch. Left bundle branch block (LBBB) is defined as a QRS duration greater than the 95th percentile for age and wide slurred R in leads I and V6.
426.3	11.06.28	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block, Left, Left posterior fascicular block	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block (ROOT Definition) + Left bundle branch block (LBBB) with left posterior hemiblock. A block of the posterior division of the left bundle branch. Left bundle branch block (LBBB) is defined as a QRS duration greater than the 95th percentile for age and wide slurred R in leads I and V6.
426.4	11.06.23	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block, Right (RBBB)	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block (ROOT Definition) + Right bundle branch block (RBBB) is defined as a QRS duration greater than the 95th percentile for age, wide slurred S in leads I and V6 and slurred R' in leads III, aVR and V1.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
426.54	11.06.40	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block, Trifascicular block	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block (ROOT Definition) + Right bundle branch block (RBBB) and left anterior fascicular block and left posterior fascicular block. A block of the anterior and posterior divisions of the left bundle branch and the right bundle branch. Right bundle branch block (RBBB) is defined as a QRS duration greater than the 95th percentile for age, wide slurred S in leads I and V6 and slurred R' in leads III, aVR and V1.
426.5	11.06.54	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block, Unifascicular block	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block (ROOT Definition) + Bundle branch block occurring in one of the divisions of the bundle branches; for example, left anterior fascicular block or left posterior fascicular block or right bundle branch block (RBBB).
426.2	11.06.27	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block, Unifascicular block, Left anterior fascicular block	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block (ROOT Definition) + Bundle branch block occurring in one of the divisions of the bundle branches, Left anterior fascicular block.
426.2	11.06.28	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block, Unifascicular block, Left posterior fascicular block	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block (ROOT Definition) + Bundle branch block occurring in one of the divisions of the bundle branches, Left posterior fascicular block.
426.9	11.06.23	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block, Unifascicular block, Right (RBBB)	Arrhythmia-Atrioventricular conduction disorder, Bundle branch block (ROOT Definition) + Bundle branch block occurring in one of the divisions of the bundle branches, Right bundle branch block (RBBB)
426.9	11.06.41	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Intraventricular conduction delay	Slowing of conduction below the level of the AV node; intramyocardial delay.
426.9	11.06.44	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Intraventricular conduction delay, Indeterminate	Prolongation of the QRS interval for age with a pattern not consistent with either right or left ventricular conduction.
426.9	11.06.42	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Intraventricular conduction delay, Left	Prolongation of the QRS interval for age with a pattern consistent with prolongation of the R wave in the left precordial leads.
426.9	11.06.43	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Intraventricular conduction delay, Right	Prolongation of the QRS interval for age with a pattern consistent with prolongation of the R wave in the right precordial leads.
426.9	11.06.00	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Other	Please code this term more specifically if possible. This term can be used when a medical record documents that an atrioventricular conduction disorder occurred that can not be located in this list.
426.8	11.06.00 + Q1.92.21	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Other, Specified	Please code this term more specifically if possible. This term can be used when a medical record documents that a specific type of atrioventricular conduction disorder occurred that can not be located in this list.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
426.9	11.06.00 + Q1.90.94	Arrhythmia-Atrioventricular conduction disorder	Arrhythmia-Atrioventricular conduction disorder, Other, Unspecified	Please code this term more specifically if possible. This term can be used when a medical record documents that an atrioventricular conduction disorder occurred but no further information is known.
426	11.12.90	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device	Complication from device to treat arrhythmias: (AICD, event recorder, pacemaker, or other arrhythmia device). Source of problem is the device or its generator, coil, or lead, or both the device generator and lead.
426	11.11.60	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD	Complication from device to treat arrhythmias: From implanted AICD. Source may be generator, coil, lead, or both generator and lead.
996.04	11.11.74	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem	Complication from device to treat arrhythmias: From implanted AICD generator.
996.04	11.11.28	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, Early battery depletion	Complication from device to treat arrhythmias: From implanted AICD generator; generator malfunction due to early battery depletion.
996.04	11.11.13	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, Generator component failure	Complication from device to treat arrhythmias: From implanted AICD generator; generator malfunction due to component failure.
996.04	11.11.83	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, Generator dislodgement	Complication from device to treat arrhythmias: From implanted AICD generator dislodgement; dislodgement may be due to trauma or migration of generator. May or may not result in malfunction.
996.04	11.11.84	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, Generator erosion	Complication from device to treat arrhythmias: From implanted AICD generator; erosion by generator.
996.04	11.11.56	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, Generator erosion, With cardiac erosion	Complication from device to treat arrhythmias: From implanted AICD generator; cardiac erosion by generator.
996.04	11.11.57	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, Generator erosion, With cardiac perforation	Complication from device to treat arrhythmias: From implanted AICD generator; cardiac erosion by generator with cardiac perforation.
996.04	11.11.53	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, Generator erosion, With skin erosion	Complication from device to treat arrhythmias: From implanted AICD generator; skin erosion by generator.
996.04	11.11.53 + Q1.94.05	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, Generator erosion, With skin erosion, Skin no longer intact	Complication from device to treat arrhythmias: From implanted AICD generator; skin erosion by generator, with skin no longer intact.
996.04	11.11.53 + Q1.94.06	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, Generator erosion, With skin erosion, Skin thinned but intact	Complication from device to treat arrhythmias: From implanted AICD generator; skin erosion by generator, with skin thinned but intact.
996.04	11.11.66	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, Generator malfunction	Complication from device to treat arrhythmias: From implanted AICD generator; generator malfunction.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.04	11.11.86	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, Generator migration	Movement of AICD generator from original site with or without malfunction.
996.04	11.11.87	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, Generator misplacement	Unintended misplacement of AICD generator, with or without malfunction.
996.04	11.11.27	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, Generator recall by manufacturer	Complication from device to treat arrhythmias: From implanted AICD generator; generator recall by manufacturer.
996.72	11.11.52	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, Generator site hematoma	Complication from device to treat arrhythmias: From implanted AICD; generator site/pocket hematoma.
996.72	11.11.51	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, Generator site infection	Complication from device to treat arrhythmias: From implanted AICD; generator site infection.
996.72	11.11.59	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, Generator site local complication	Complication from device to treat arrhythmias: From implanted AICD; generator site local complication.
996.72	11.11.53	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, Generator site skin erosion	Complication from device to treat arrhythmias: From implanted AICD generator; skin erosion by generator.
996.72	11.11.89	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, With compromised venous return	Movement of AICD generator from original site with or without device malfunction, with compromised venous return.
996.72	11.11.58	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, With nerve compression	Movement of AICD generator from original site with or without malfunction, with nerve compression.
996.72	11.11.54	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, With nerve compression, With brachial plexus compression	Movement of AICD generator from original site with or without malfunction, with brachial plexus nerve compression.
996.72	11.11.85	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, With pain at generator site	Complication from device to treat arrhythmias: From implanted AICD generator; pain at generator site.
996.72	11.11.88	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Generator problem, With venous compression	Complication from device to treat arrhythmias: From implanted AICD generator; venous compression by AICD generator, with or without compromised venous return.
996.04	11.11.40	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem	Complication from device to treat arrhythmias: From implanted AICD lead.
996.04	11.11.08	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, AICD lead connector fault	Complication from device to treat arrhythmias: From implanted AICD lead; lead malfunction due to connector fault.
996.04	11.11.06	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, AICD lead insulation failure	Complication from device to treat arrhythmias: From implanted AICD lead; lead malfunction due to insulation failure.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.04	11.11.42	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead dislodgement	Complication from device to treat arrhythmias: From implanted AICD lead dislodgement; dislodgement may be due to trauma or lead migration.
996.04	11.11.96	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead erosion	Complication from device to treat arrhythmias: From implanted AICD lead; erosion by lead.
996.04	11.11.97	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead erosion, With cardiac erosion	Complication from device to treat arrhythmias: From implanted AICD lead; cardiac erosion by lead.
996.72	11.11.43	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead erosion, With cardiac perforation	Complication from device to treat arrhythmias: From implanted AICD lead; cardiac erosion by lead, with cardiac perforation.
996.72	11.11.98	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead erosion, With skin erosion	Complication from device to treat arrhythmias: From implanted AICD lead; skin erosion by lead.
996.72	11.11.99 + Q1.94.05	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead erosion, With skin erosion, Skin no longer intact	Complication from device to treat arrhythmias: From implanted AICD lead; skin erosion by lead, with skin no longer intact.
996.72	11.11.99 + Q1.94.06	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead erosion, With skin erosion, Skin thinned but intact	Complication from device to treat arrhythmias: From implanted AICD lead; skin erosion by lead, with skin thinned but intact.
996.04	11.11.05	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead fracture	Complication from device to treat arrhythmias: From implanted AICD lead; lead fracture.
996.04	11.11.42	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead fracture, AICD lead displacement	Complication from device to treat arrhythmias: From implanted AICD lead; lead fracture with lead displacement.
996.04	11.11.12	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead fracture, AICD lead exit block (inapparent displacement and perforation)	Complication from device to treat arrhythmias: From implanted AICD lead; lead fracture with exit block (inapparent displacement and perforation).
996.04	11.11.11	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead fracture, AICD lead oversensing	Complication from device to treat arrhythmias: From implanted AICD lead; lead fracture with oversensing.
996.04	11.11.09	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead fracture, AICD lead undersensing	Complication from device to treat arrhythmias: From implanted AICD lead; lead fracture with undersensing.
996.04	11.11.41	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead fracture, Intermittent AICD lead fracture	Complication from device to treat arrhythmias: From implanted AICD lead; lead fracture with intermittent sensing.
996.72	11.11.99	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead infection	Complication from device to treat arrhythmias: From implanted AICD lead; lead infection.
996.04	11.12.40	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead malfunction	Complication from device to treat arrhythmias: From implanted AICD lead; lead malfunction.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.04	11.11.14	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead malposition	Unanticipated position of AICD lead(s) with or without malfunction
996.04	11.11.94	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead migration	Movement of AICD lead from original site, usually associated with malfunction.
996.04	11.12.41	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead recall by manufacturer	Complication from device to treat arrhythmias: From implanted AICD lead; lead recall by manufacturer.
996.04	11.11.47	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead with elevated threshold	Abnormally high voltage requirement for AICD lead(s).
996.04	11.12.42	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead with failure to capture	Complication from device to treat arrhythmias: From implanted AICD lead; lead malfunction resulting in failure to capture.
996.04	11.12.43	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Lead with inadvertent position in artery	Unanticipated position in artery of AICD lead(s) with or without malfunction
996.04	11.11.44	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, Short circuit of AICD lead	Complication from device to treat arrhythmias: From implanted AICD lead; lead short circuit.
996.72	11.12.44	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, With compromised venous return	Complication from device to treat arrhythmias: From implanted AICD lead; venous return compromised by lead.
996.72	11.12.45	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, With nerve compression	Complication from device to treat arrhythmias: From implanted AICD lead; nerve compression by lead.
996.72	11.12.46	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, With nerve compression, With brachial plexus compression	Complication from device to treat arrhythmias: From implanted AICD lead; brachial plexus nerve compression by lead.
996.72	11.12.47	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD Lead problem, With total occlusion of vein containing lead	Complication from device to treat arrhythmias: From implanted AICD lead; total occlusion of vein containing lead.
996.04	11.11.60	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem	Complication from device to treat arrhythmias: From implanted AICD; source may be generator, lead, or both generator and lead.
996.04	11.11.15	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, AICD failure due to elevated threshold	Complication from device to treat arrhythmias: AICD failure due to elevated threshold
996.04	11.11.20	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, AICD failure due to sticky magnetic reed switch	Complication from device to treat arrhythmias: AICD failure due to sticky magnetic reed switch
996.04	11.11.39	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, AICD inhibition by oversensing skeletal myopotentials	Complication from device to treat arrhythmias: AICD inhibition by oversensing skeletal myopotentials

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.04	11.11.16	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, AICD mediated (endless loop) tachycardia	Complication from device to treat arrhythmias: AICD mediated (endless loop) tachycardia
996.04	11.11.34	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, AICD mediated tachycardia (Runaway AICD)	Complication from device to treat arrhythmias: AICD mediated tachycardia (Runaway AICD)
996.04	11.11.21	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, AICD syndrome	Complication from device to treat arrhythmias: AICD syndrome
996.04	11.11.31	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, AICD syndrome, Absence of rate response to physiologic need	Complication from device to treat arrhythmias: AICD syndrome, with absence of rate response to physiologic need
996.04	11.11.29	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, AICD syndrome, Loss of atrioventricular synchrony	Complication from device to treat arrhythmias: AICD syndrome, with loss of atrioventricular synchrony
996.04	11.11.30	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, AICD syndrome, Retrograde conduction from ventricle(s) to atrium(s)	Complication from device to treat arrhythmias: AICD syndrome, with retrograde conduction from ventricle(s) to atrium(s)
996.04	11.11.23	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Cross talk (self inhibition) in dual chamber AICD	Complication from device to treat arrhythmias: AICD, with cross talk (self inhibition) in dual chamber AICD
996.04	11.11.18	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Drug induced AICD failure	Complication from device to treat arrhythmias: AICD, with drug induced AICD failure
996.04	11.12.48	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Electrical storm	Complication from device to treat arrhythmias: AICD, with electrical storm
996.04	11.11.22	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Electromagnetic interference to AICD function	Complication from device to treat arrhythmias: AICD, electromagnetic interference to AICD function
996.04	11.11.25	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Generator manipulation by patient (Twiddlers syndrome)	Complication from device to treat arrhythmias: AICD, with generator manipulation by patient (Twiddlers syndrome)
996.04	11.11.63	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, High defibrillation threshold of AICD	Abnormally high voltage requirement for AICD defibrillator coil.
996.04	11.11.19	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Inappropriate programming of output parameters	Complication from device to treat arrhythmias: AICD, with inappropriate programming of output parameters
996.04	11.11.62	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Inappropriate shocks by AICD	Complication from device to treat arrhythmias: AICD, with inappropriate shocks by AICD
996.04	11.11.62 + Q1.36.84	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Inappropriate shocks by AICD, Associated with device failure	Complication from device to treat arrhythmias: AICD, with inappropriate shocks by AICD associated with device failure

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.04	11.11.62 + Q1.36.83	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Inappropriate shocks by AICD, Associated with inappropriate sensing	Complication from device to treat arrhythmias: AICD, with inappropriate shocks by AICD associated with inappropriate sensing
996.04	11.11.62 + Q1.36.85	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Inappropriate shocks by AICD, Associated with lead fracture	Complication from device to treat arrhythmias: AICD, with inappropriate shocks by AICD associated with lead fracture
996.04	11.11.62 + Q1.36.86	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Inappropriate shocks by AICD, Associated with programming error	Complication from device to treat arrhythmias: AICD, with inappropriate shocks by AICD associated with programming error
996.04	11.11.62 + Q1.36.81	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Inappropriate shocks by AICD, Shocking for sinus tachycardia	Complication from device to treat arrhythmias: AICD, with inappropriate shocks by AICD, shocking for sinus tachycardia
996.04	11.11.62 + Q1.36.82	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Inappropriate shocks by AICD, Shocking for supraventricular tachycardia (SVT)	Complication from device to treat arrhythmias: AICD, with inappropriate shocks by AICD, shocking for supraventricular tachycardia (SVT)
996.04	11.11.17	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Loss of capture	Complication from device to treat arrhythmias: AICD, with loss of capture
996.04	Q1.37.01	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Necessitating AICD replacement	Complication from device to treat arrhythmias: AICD problem, necessitating AICD replacement
996.04	Q1.37.03	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Necessitating AICD replacement, Necessitating replacement of generator	Complication from device to treat arrhythmias: AICD problem, necessitating AICD generator replacement
996.04	Q1.37.01	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Necessitating AICD replacement, Necessitating replacement of generator and lead(s)	Complication from device to treat arrhythmias: AICD problem, necessitating replacement of AICD generator and lead(s)
996.04	Q1.37.06	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Necessitating AICD replacement, Necessitating replacement of lead(s)	Complication from device to treat arrhythmias: AICD problem, necessitating replacement of AICD lead(s)
996.04	11.11.61	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Patch crumpling at AICD implantation site	Complication from device to treat arrhythmias: AICD problem, patch crumpling at AICD implantation site
996.04	11.11.64	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD problem, Psychological sequelae of AICD	Complication from device to treat arrhythmias: AICD, psychological sequelae of AICD
996.04	11.12.62	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Elective removal indication	Elective removal of AICD.
996.04	11.12.63	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Elective replacement indication	Elective replacement of AICD; usually due to end of generator life.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.04	11.11.03	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, End of life (EOL)	End of generator life; usually necessitating replacement of generator.
996.04	11.12.49	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Inappropriate AICD implantation	Inappropriate implantation of AICD.
996.04	11.11.32	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Inappropriate AICD stimulation, Skeletal muscle stimulation	Inappropriate stimulation of skeletal muscle by AICD.
996.04	11.12.50	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Inappropriate AICD stimulation, Skeletal muscle stimulation, Chest wall muscle stimulation	Inappropriate stimulation of chest wall muscle by AICD.
996.04	11.12.51	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Inappropriate AICD stimulation, Skeletal muscle stimulation, Diaphragm stimulation	Inappropriate stimulation of diaphragm by AICD.
996.04	11.11.45	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Inappropriate AICD stimulation, Skeletal muscle stimulation, Diaphragm stimulation, Bilateral hemidiaphragms	Inappropriate stimulation of bilateral hemidiaphragms by AICD.
996.04	11.11.46	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Inappropriate AICD stimulation, Skeletal muscle stimulation, Diaphragm stimulation, Left hemidiaphragm	Inappropriate stimulation of left hemidiaphragm by AICD.
996.04	11.12.52	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Inappropriate AICD stimulation, Skeletal muscle stimulation, Diaphragm stimulation, Right hemidiaphragm	Inappropriate stimulation of right hemidiaphragm by AICD.
996.61	11.11.65	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Infection	Infection in AICD lead(s) or pocket
996.61	11.11.51, 11.11.99	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Infection, AICD lead and pocket infection	Infection in AICD lead(s) and pocket
996.61	11.11.99	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Infection, AICD lead infection	Infection in AICD lead(s)
996.61	11.11.51	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Infection, AICD pocket infection	Infection in AICD pocket
996.61	11.11.65 + Q1.37.01	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Infection, Infection requiring generator and lead replacement	Infection requiring AICD generator and lead replacement.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.61	11.11.65 + Q1.37.03	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Infection, Infection requiring generator replacement	Infection requiring AICD generator replacement.
996.61	11.11.65 + Q1.37.06	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Infection, Infection requiring lead replacement	Infection requiring AICD lead replacement.
996.04	11.11.66	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Malfunction (dysfunction)	Complication from device to treat arrhythmias: From implanted AICD; source may be generator, lead, or both generator and lead.
996.04	11.11.37	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Near end of life (Senile AICD) (Elective replacement indication = ERI)	Elective replacement of AICD due to near end of generator life (senile AICD).
996.72	11.11.52	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Pocket hematoma	Complication from device to treat arrhythmias: From implanted AICD; generator site/pocket hematoma.
996.72	11.11.59	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Pocket problem	AICD generator site/pocket problem.
996.61	11.12.53	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Pocket seroma	AICD generator site/pocket seroma.
996.61	11.12.54	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted AICD, Pocket with fluid collection	AICD generator site/pocket with fluid collection.
996.09	11.11.80	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted implantable patient activated cardiac event recorder (loop recorder) problem	Implanted patient activated cardiac event recorder (loop recorder) problem
996.09	11.12.56	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted implantable patient activated cardiac event recorder (loop recorder) problem, Dislodgement	Dislodgement of implanted patient activated cardiac event recorder (loop recorder)
996.09	11.12.57	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted implantable patient activated cardiac event recorder (loop recorder) problem, Elective removal indication (Time for elective removal)	Elective removal indication for implanted patient activated cardiac event recorder (loop recorder)
996.09	11.12.58	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted implantable patient activated cardiac event recorder (loop recorder) problem, Elective replacement indication	Elective replacement indication for implanted patient activated cardiac event recorder (loop recorder)
996.09	11.12.55	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted implantable patient activated cardiac event recorder (loop recorder) problem, Erosion	Erosion of implanted patient activated cardiac event recorder (loop recorder)
996.09	11.11.82	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted implantable patient activated cardiac event recorder (loop recorder) problem, Infection	Infection of implanted patient activated cardiac event recorder (loop recorder)

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.09	11.11.81	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted implantable patient activated cardiac event recorder (loop recorder) problem, Malfunction	Malfunction of implanted patient activated cardiac event recorder (loop recorder)
996.01	11.11.01	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker	Complication from device to treat arrhythmias: From implanted pacemaker; source may be generator, lead, or both generator and lead.
996.01	11.11.74	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem	Complication from device to treat arrhythmias: From implanted pacemaker generator.
996.01	11.11.28	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, Early battery depletion	Early battery depletion of pacemaker generator.
996.01	11.11.13	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, Generator component failure	Generator component failure.
996.01	11.11.83	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, Generator dislodgement	Complication from device to treat arrhythmias: From implanted pacemaker generator dislodgement; dislodgement may be due to trauma or migration of generator. May or may not result in malfunction.
996.01	11.11.84	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, Generator erosion	Complication from device to treat arrhythmias: From implanted pacemaker generator; erosion by generator.
996.01	11.11.56	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, Generator erosion, With cardiac erosion	Complication from device to treat arrhythmias: From implanted pacemaker generator; cardiac erosion by generator.
996.01	11.11.57	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, Generator erosion, With cardiac perforation	Complication from device to treat arrhythmias: From implanted pacemaker generator; cardiac erosion by generator with cardiac perforation.
996.01	11.11.53	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, Generator erosion, With skin erosion	Complication from device to treat arrhythmias: From implanted pacemaker generator; skin erosion by generator.
996.01	11.11.53 + Q1.94.05	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, Generator erosion, With skin erosion, Skin no longer intact	Complication from device to treat arrhythmias: From implanted pacemaker generator; skin erosion by generator, with skin no longer intact.
996.01	11.11.53 + Q1.94.06	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, Generator erosion, With skin erosion, Skin thinned but intact	Complication from device to treat arrhythmias: From implanted pacemaker generator; skin erosion by generator, with skin thinned but intact.
996.01	11.11.66	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, Generator malfunction	Malfunction of implanted pacemaker generator.
996.01	11.11.86	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, Generator migration	Migration of implanted pacemaker generator.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.01	11.11.87	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, Generator misplacement	Unintended misplacement of pacemaker generator.
996.01	11.11.27	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, Generator recall by manufacturer	Complication from device to treat arrhythmias: From implanted pacemaker generator; generator recall by manufacturer.
996.72	11.11.52	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, Generator site hematoma	Complication from device to treat arrhythmias: From implanted pacemaker; generator site/pocket hematoma.
996.61	11.11.51	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, Generator site infection	Infection at pacemaker generator site.
996.01	11.11.59	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, Generator site local complication	Local complication at pacemaker generator site.
996.01	11.11.53	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, Generator site skin erosion	Complication from device to treat arrhythmias: From implanted pacemaker generator; skin erosion by generator.
996.01	11.11.89	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, With compromised venous return	Complication from device to treat arrhythmias: From implanted pacemaker generator; venous return compromised by generator.
996.01	11.11.58	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, With nerve compression	Complication from device to treat arrhythmias: From implanted pacemaker generator; nerve compression by generator.
996.01	11.11.54	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, With nerve compression, With brachial plexus compression	Complication from device to treat arrhythmias: From implanted pacemaker generator; brachial plexus nerve compression by generator.
996.01	11.11.85	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, With pain at generator site	Complication from device to treat arrhythmias: From implanted pacemaker generator; pain at generator site.
996.01	11.11.88	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Generator problem, With venous compression	Complication from device to treat arrhythmias: From implanted pacemaker generator; venous compression by generator.
996.01	11.11.40	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem	Complication from device to treat arrhythmias: From implanted pacemaker lead.
996.01	11.11.08	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead dislodgement	Complication from device to treat arrhythmias: From implanted pacemaker lead; lead dislodgement. May be by trauma or migration.
996.01	11.11.06	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead erosion	Complication from device to treat arrhythmias: From implanted pacemaker lead; erosion by lead.
996.72	11.11.42	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead erosion, With cardiac erosion	Complication from device to treat arrhythmias: From implanted pacemaker lead; cardiac erosion by lead.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.72	11.11.96	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead erosion, With cardiac perforation	Complication from device to treat arrhythmias: From implanted pacemaker lead; cardiac erosion by lead, with cardiac perforation.
996.72	11.11.97	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead erosion, With skin erosion	Complication from device to treat arrhythmias: From implanted pacemaker lead; skin erosion by lead.
996.72	11.11.43	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead erosion, With skin erosion, Skin no longer intact	Complication from device to treat arrhythmias: From implanted pacemaker lead; skin erosion by lead, with skin no longer intact.
996.72	11.11.98	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead erosion, With skin erosion, Skin thinned but intact	Complication from device to treat arrhythmias: From implanted pacemaker lead; skin erosion by lead, with skin thinned but intact.
996.01	11.11.99 + Q1.94.05	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead fracture	Complication from device to treat arrhythmias: From implanted pacemaker lead; lead fracture.
996.01	11.11.99 + Q1.94.06	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead fracture, Intermittent pacemaker lead fracture	Complication from device to treat arrhythmias: From implanted pacemaker lead; lead fracture with intermittent sensing.
996.01	11.11.05	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead fracture, Pacemaker lead displacement	Complication from device to treat arrhythmias: From implanted pacemaker lead; lead fracture with lead displacement.
996.01	11.11.42	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead fracture, Pacemaker lead exit block (inapparent displacement and perforation)	Complication from device to treat arrhythmias: From implanted pacemaker lead; lead fracture with exit block (inapparent displacement and perforation).
996.01	11.11.12	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead fracture, Pacemaker lead oversensing	Complication from device to treat arrhythmias: From implanted pacemaker lead; lead fracture with oversensing.
996.01	11.11.11	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead fracture, Pacemaker lead undersensing	Complication from device to treat arrhythmias: From implanted pacemaker lead; lead fracture with undersensing.
996.61	11.11.09	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead infection	Infection in pacemaker lead(s).
996.01	11.11.41	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead malfunction	Complication from device to treat arrhythmias: From implanted pacemaker lead; lead malfunction.
996.01	11.11.99	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead malposition	Unanticipated position of pacemaker lead(s) with or without malfunction
996.01	11.12.40	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead migration	Migration of implanted pacemaker lead.
996.01	11.11.14	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead recall by manufacturer	Lead recall by manufacturer.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.01	11.11.94	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead with elevated threshold	Abnormally high voltage requirement for pacemaker lead(s).
996.01	11.12.41	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead with failure to capture	Lead failure to capture.
996.01	11.11.47	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Lead with inadvertent position in artery	Unintended position of lead in artery; usually secondary to lead malposition or lead migration.
996.01	11.12.42	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Pacemaker lead connector fault	Connector fault in pacemaker lead.
996.01	11.12.43	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Pacemaker lead insulation failure	Insulation failure in pacemaker lead.
996.01	11.11.44	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, Short circuit of pacemaker lead	Short circuit of pacemaker lead.
996.72	11.12.44	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, With compromised venous return	Compromised venous return secondary to pacemaker lead.
996.72	11.12.45	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, With nerve compression	Nerve compression; usually secondary to lead malposition or lead migration.
996.72	11.12.46	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, With nerve compression, With brachial plexus compression	Brachial plexus nerve compression; usually secondary to lead malposition or lead migration.
996.72	11.12.47	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker Lead problem, With total occlusion of vein containing lead	Total occlusion of vein containing pacemaker lead.
996.01	11.11.01	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem	Complication from device to treat arrhythmias: From implanted pacemaker; source may be generator, lead, or both generator and lead.
996.01	11.11.23	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Cross talk (self inhibition) in dual chamber pacemaker	Cross-talk (self-inhibition) in dual-chamber pacemaker.
996.01	11.11.18	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Drug induced pacemaker failure	Drug-induced pacemaker failure.
996.01	11.11.22	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Electromagnetic interference to pacemaker function	Electromagnetic interference of pacemaker function.
996.01	11.11.25	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Generator manipulation by patient (Twiddlers syndrome)	Generator manipulation by patient (Twiddlers syndrome).

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.01	11.11.19	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Inappropriate programming of output parameters	Inappropriate programming of output parameters.
996.01	11.11.17	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Loss of capture	Lead failure to capture.
996.01	Q1.37.01	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Necessitating pacemaker replacement	Complication from device to treat arrhythmias: Pacemaker problem, necessitating pacemaker replacement
996.01	Q1.37.03	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Necessitating pacemaker replacement, Necessitating replacement of generator	Complication from device to treat arrhythmias: Pacemaker problem, necessitating pacemaker generator replacement
996.01	Q1.37.01	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Necessitating pacemaker replacement, Necessitating replacement of generator and lead(s)	Complication from device to treat arrhythmias: Pacemaker problem, necessitating replacement of pacemaker generator and lead(s)
996.01	Q1.37.06	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Necessitating pacemaker replacement, Necessitating replacement of lead(s)	Complication from device to treat arrhythmias: Pacemaker problem, necessitating replacement of pacemaker lead(s)
996.01	11.11.15	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Pacemaker failure due to elevated threshold	Pacemaker failure due to elevated threshold.
996.01	11.11.20	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Pacemaker failure due to sticky magnetic reed switch	Pacemaker failure due to stick magnetic reed switch.
996.01	11.11.39	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Pacemaker inhibition by oversensing skeletal myopotentials	Pacemaker inhibition by oversensing skeletal myopotentials.
996.01	11.11.16	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Pacemaker mediated (endless loop) tachycardia	Pacemaker-mediated (endless loop) tachycardia.
996.01	11.11.34	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Pacemaker mediated tachycardia (Runaway pacemaker)	Pacemaker-mediated tachycardia (runaway pacemaker).
996.01	11.11.21	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Pacemaker syndrome	Pacemaker syndrome – no other specifics.
996.01	11.11.31	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Pacemaker syndrome, Absence of rate response to physiologic need	Pacemaker syndrome with absence of rate response to physiologic need.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.01	11.11.29	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Pacemaker syndrome, Loss of atrioventricular synchrony	Pacemaker syndrome with loss of atrioventricular synchrony.
996.01	11.11.30	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Pacemaker syndrome, Retrograde conduction from ventricle(s) to atrium(s)	Pacemaker syndrome with retrograde conduction from ventricle(s) to atrium (atria).
996.01	11.12.59	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker problem, Psychological sequelae of pacemaker	Psychological sequelae of pacemaker implantation.
996.01	11.12.60	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Elective removal indication	Indication for elective removal of pacemaker.
996.01	11.12.61	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Elective replacement indication	Elective replacement of pacemaker; usually due to end of generator life or elective upgrade from single- to dual-chamber pacemaker.
996.01	11.11.03	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, End of life (EOL)	End of generator life; usually necessitating replacement of pacemaker generator.
E876.5	11.12.64	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Inappropriate pacemaker implantation	Inappropriate implantation of pacemaker.
996.01	11.11.32	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Inappropriate pacemaker stimulation, Skeletal muscle stimulation	Inappropriate stimulation of skeletal muscle by pacemaker.
996.01	11.12.50	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Inappropriate pacemaker stimulation, Skeletal muscle stimulation, Chest wall muscle stimulation	Inappropriate stimulation of chest wall muscle by pacemaker.
996.01	11.12.51	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Inappropriate pacemaker stimulation, Skeletal muscle stimulation, Diaphragm stimulation	Inappropriate stimulation of diaphragm by pacemaker.
996.01	11.11.45	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Inappropriate pacemaker stimulation, Skeletal muscle stimulation, Diaphragm stimulation, Bilateral hemidiaphragms	Inappropriate stimulation of bilateral hemidiaphragms by pacemaker.
996.01	11.11.46	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Inappropriate pacemaker stimulation, Skeletal muscle stimulation, Diaphragm stimulation, Left hemidiaphragm	Inappropriate stimulation of left hemidiaphragm by pacemaker.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.01	11.12.52	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Inappropriate pacemaker stimulation, Skeletal muscle stimulation, Diaphragm stimulation, Right hemidiaphragm	Inappropriate stimulation of right hemidiaphragm by pacemaker.
996.61	11.11.65	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Infection	Infection in pacemaker lead(s) or pocket.
996.61	11.11.51, 11.11.99	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Infection, Infection requiring generator and lead replacement	Infection requiring pacemaker generator and lead replacement.
996.61	11.11.99	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Infection, Infection requiring generator replacement	Infection requiring pacemaker generator replacement.
996.61	11.11.51	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Infection, Infection requiring lead replacement	Infection requiring pacemaker lead replacement.
996.61	11.11.65 + Q1.37.01	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Infection, Pacemaker lead and pocket infection	Infection in pacemaker lead(s) and pocket.
996.61	11.11.65 + Q1.37.03	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Infection, Pacemaker lead infection	Infection in pacemaker lead(s).
996.61	11.11.65 + Q1.37.06	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Infection, Pacemaker pocket infection	Infection in pacemaker pocket
996.01	11.11.66	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Malfunction (dysfunction)	Complication from device to treat arrhythmias: From implanted pacemaker; source may be generator, lead, or both generator and lead.
996.01	11.11.37	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Near end of life (Senile pacemaker) (Elective replacement indication = ERI)	Elective replacement of pacemaker due to near end of generator life (senile pacemaker).
996.72	11.11.52	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Pocket hematoma	Complication from device to treat arrhythmias: From implanted pacemaker; generator site/pocket hematoma.
996.72	11.11.59	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Pocket problem	Pacemaker generator site/pocket problem.
996.61	11.12.53	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Pocket seroma	Pacemaker generator site/pocket seroma.
996.61	11.12.54	Arrhythmia-Complication of Device	Arrhythmia-Complication of Device, Implanted Pacemaker, Pocket with fluid collection	Pacemaker generator site/pocket with fluid collection.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
786.03	15.80.43	Pulmonary	Apnea	Apnea is defined as a condition characterized by pauses of 20 seconds or more between respiratory efforts.
518.5	15.80.29	Pulmonary	ARDS (Acute Respiratory Distress Syndrome)	ARDS is Acute Respiratory Distress Syndrome and is defined as "a clinical syndrome with a variety of etiologies characterized by refractory hypoxemia and bilateral diffuse interstitial infiltrates on chest radiography (CXR), as well as stiff lungs with decreased compliance, increased intrapulmonary shunting, and decreased airway dead space. The respiratory failure of ARDS is caused by various acute pulmonary injuries and characterized by noncardiogenic pulmonary edema, respiratory distress, and hypoxemia. The patient will have a $PaO_2/FIO_2 < 200$ (regardless of PEEP), bilateral diffuse pulmonary infiltrates on CXR, and PAWP (Pulmonary artery wedge pressure) $<=$ 18 mmHg (when measured) or no clinical evidence of left atrial hypertension.
997.3	15.82.39	Pulmonary	Aspiration of gastric contents or foreign body into lungs	Clinical or radiographic evidence of aspiration of gastric contents or foreign body into lungs.
518.0	15.80.31	Pulmonary	Atelectasis	Atelectasis is the collapse of part or all of a lung by blockage of the bronchus or bronchioles leading to retraction of the lung and an airless state Chest radiographs and/or CT scans show displacement of fissures, opacification of the collapsed lobe, displacement of the hilum, mediastinal shift toward the side of collapse, loss of volume on ipsilateral hemithorax, elevation of ipsilateral diaphragm, crowding of the ribs, compensatory hyperlucency of the remaining lobes, and silhouetting of the diaphragm or the heart border.
464.1	15.80.68 + Q1.61.00	Pulmonary	Bacterial tracheitis	Positive endotracheal tube culture with evidence of WBCs on gram stain and absence of infiltrate on chest X-ray
510.0	15.80.71	Pulmonary	Bronchopleural fistula (BPF) -acquired bronchopleural fistula	Continued air leak for >48 hours after inception secondary to an abnormal connection between the intra-alveolar air space and the pleural space.
457.8	15.80.55	Pulmonary	Chylothorax	Presence of lymphatic fluid in the pleural space, commonly secondary to leakage from the thoracic duct or one of its main tributaries. Thoracocentesis is the gold standard for diagnosis and generally reveals a predominance of lymphocytes and/or a triglyceride level greater than 110 mg/dL
782.5	10.17.03	Pulmonary	Cyanosis	A dark bluish or purplish discoloration of the skin and mucous membrane due to deficient oxygenation of the blood, evident when reduced (i.e., deoxygenated) hemoglobin in the blood exceeds 5 g/dL.
510	16.01.11	Pulmonary	Empyema	Collection of pus within the pleural space.
E876.3	15.81.10	Pulmonary	Endotracheal tube dislodgment	Unplanned displacement of the endotracheal tube from the trachea with either inadvertent extubation or distal migration with unplanned bronchial intubation. If this complication occurs during the period of anesthetic care including during anesthetic induction or anesthetic procedure, code as an "Anesthesia" complication.
E876.3	15.81.11	Pulmonary	Endotracheal tube dislodgment, Distal migration of endotracheal tube	Unplanned displacement of the endotracheal tube from the trachea with distal migration and unplanned bronchial intubation. If this

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				complication occurs during the period of anesthetic care including during anesthetic induction or anesthetic procedure, code as an "Anesthesia" complication.
E876.3	15.81.12	Pulmonary	Endotracheal tube dislodgment, Unplanned extubation	Unplanned displacement of the endotracheal tube from the trachea with inadvertent extubation. If this complication occurs during the period of anesthetic care including during anesthetic induction or anesthetic procedure, code as an "Anesthesia" complication.
E876.3	15.81.13	Pulmonary	Endotracheal tube size mismatch	The requirement of an unplanned reintubation secondary to an inappropriate air leak or an endotracheal tube with no air-leak present at less than 20 mmHg, when the tube is present less than 24 hours. If this complication occurs during the period of anesthetic care including during anesthetic induction or anesthetic procedure, code as an "Anesthesia" complication.
E876.3	15.81.14	Pulmonary	Endotracheal tube size mismatch, Endotracheal tube too large	An endotracheal tube with no air-leak present at less than 20 mmHg, when the tube is present less than 24 hours. If this complication occurs during the period of anesthetic care including during anesthetic induction or anesthetic procedure, code as an "Anesthesia" complication.
E876.3	15.81.15	Pulmonary	Endotracheal tube size mismatch, Endotracheal tube too small	The requirement of an unplanned reintubation secondary to an inappropriate air leak, when the tube is present less than 24 hours. If this complication occurs during the period of anesthetic care including during anesthetic induction or anesthetic procedure, code as an "Anesthesia" complication.
784.7	10.12.57	Pulmonary	Epistaxis	Bleeding from nasopharynx or nose.
511.8	15.80.56	Pulmonary	Hemothorax	Presence of blood in the pleural space (pleural fluid hematocrit level is greater than or equal to 50% of the peripheral blood hematocrit)
511.8	15.80.56 + Q1.83.01	Pulmonary	Hemothorax, Requiring drainage	Presence of blood in the pleural space (pleural fluid hematocrit level is greater than or equal to 50% of the peripheral blood hematocrit), Requiring drainage, By any technique.
511.8	15.80.56 + Q1.83.13	Pulmonary	Hemothorax, Requiring drainage, Chest tube	Presence of blood in the pleural space (pleural fluid hematocrit level is greater than or equal to 50% of the peripheral blood hematocrit), Requiring drainage, By chest tube (any type of indwelling thoracic tube drainage).
511.8	15.80.56 + Q1.83.14	Pulmonary	Hemothorax, Requiring drainage, Thoracocentesis	Presence of blood in the pleural space (pleural fluid hematocrit level is greater than or equal to 50% of the peripheral blood hematocrit), Requiring drainage, By thoracocentesis.
799.02	10.12.58	Pulmonary	Hypoxemia	Condition in which there is an inadequate content of oxygen in the blood.
799.02	15.00.17	Pulmonary	Hypoxemia, Postoperative/Postprocedural	Condition in which there is an inadequate content of oxygen in the blood. That occurs or is recognized during the time interval between OR Exit Date and Time and the end of the period of data collection.
799.02	15.00.17 + Q1.91.77	Pulmonary	Hypoxemia, Postoperative/Postprocedural, In the first 24 hours after an operation or procedure	Condition in which there is an inadequate content of oxygen in the blood. M1482

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
799.02	15.00.17 + Q1.91.78	Pulmonary	Hypoxemia, Requiring supplemental oxygen at discharge	Condition in which there is an inadequate content of oxygen in the blood. Persistent hypoxemia at the time of discharge secondary to intrapulmonary or intracardiac shunt requiring supplemental oxygen at the time of hospital discharge. (Not used for the treatment of pulmonary hypertension)
799.02	15.00.17 + Q1.91.79	Pulmonary	Hypoxemia, Requiring supplemental oxygen at discharge, By nasal cannula	Condition in which there is an inadequate content of oxygen in the blood. Persistent hypoxemia at the time of discharge secondary to intrapulmonary or intracardiac shunt requiring supplemental oxygen at the time of hospital discharge. (Not used for the treatment of pulmonary hypertension), Treated with nasal cannula at time of discharge.
E876.9	15.81.27	Pulmonary	Inadvertent extubation in ICU	Unplanned extubation or self-extubation
E876.9	15.81.16	Pulmonary	Intubation complication	Injury to teeth, unacceptable air leak, esophageal intubation, main stem bronchus intubation, laryngospasm, failure to intubate, cardiovascular derangements (HR, BP, arrhythmia), desaturation, bleeding, that occurs outside the period of anesthetic care. If this complication occurs during the period of anesthetic care including during anesthetic induction or anesthetic procedure, code as an "Anesthesia" complication.
998.11	15.81.17	Pulmonary	Intubation complication, Bleeding	Oropharyngeal or nasopharyngeal bleeding that occurs during or immediately following intubation, that occurs outside the period of anesthetic care. If this complication occurs during the period of anesthetic care including during anesthetic induction or anesthetic procedure, code as an "Anesthesia" complication.
784.7	15.81.18	Pulmonary	Intubation complication, Bleeding, Epistaxis	Nasal or nasopharyngeal bleeding that occurs during or immediately following intubation, that occurs outside the period of anesthetic care. If this complication occurs during the period of anesthetic care including during anesthetic induction or anesthetic procedure, code as an "Anesthesia" complication.
784.8	15.81.19	Pulmonary	Intubation complication, Bleeding, Oropharyngeal bleeding	Oropharyngeal bleeding that occurs during or immediately following intubation, that occurs outside the period of anesthetic care. If this complication occurs during the period of anesthetic care including during anesthetic induction or anesthetic procedure, code as an "Anesthesia" complication.
E876.3	15.81.20	Pulmonary	Intubation complication, Endotracheal tube misplacement	Problematic endotracheal intubation secondary to esophageal intubation or positioning endotracheal tube too deep including unplanned endobronchial intubation. If this complication occurs during the period of anesthetic care including during anesthetic induction or anesthetic procedure, code as an "Anesthesia" complication.
E876.3	15.81.21	Pulmonary	Intubation complication, Endotracheal tube misplacement, Deep intubation including unplanned endobronchial intubation	Problematic endotracheal intubation secondary to positioning endotracheal tube too deep including unplanned endobronchial intubation. If this complication occurs during the period of anesthetic care including during anesthetic induction or anesthetic procedure, code as an "Anesthesia" complication.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E876.3	15.81.22	Pulmonary	Intubation complication, Endotracheal tube misplacement, Esophageal intubation	Problematic endotracheal intubation secondary to esophageal intubation. If this complication occurs during the period of anesthetic care including during anesthetic induction or anesthetic procedure, code as an "Anesthesia" complication.
873.6	15.81.23	Pulmonary	Intubation complication, Injury during intubation, Dental injury	Chipped or displaced tooth (teeth) after intubation, that occurs outside the period of anesthetic care. If this complication occurs during the period of anesthetic care including during anesthetic induction or anesthetic procedure, code as an "Anesthesia" complication.
873.43	15.81.24	Pulmonary	Intubation complication, Injury during intubation, Injury to lip	Bleeding from lip or bruising on lip after intubation, that occurs outside the period of anesthetic care. If this complication occurs during the period of anesthetic care including during anesthetic induction or anesthetic procedure, code as an "Anesthesia" complication.
E876.9	15.81.25	Pulmonary	Intubation complication, Unanticipated difficult intubation	Unanticipated difficulty with placement of ETT due to either difficulty with laryngoscopy or passing ETT due to sub-glottic obstruction requiring smaller than anticipated ETT (more than 1 mm ID smaller than anticipated), that occurs outside the period of anesthetic care. If this complication occurs during the period of anesthetic care including during anesthetic induction or anesthetic procedure, code as an "Anesthesia" complication.
E876.4	15.81.26	Pulmonary	Intubation failure	Inability to pass an endotracheal tube into the trachea, that occurs outside the period of anesthetic care. If this complication occurs during the period of anesthetic care including during anesthetic induction or anesthetic procedure, code as an "Anesthesia" complication.
519.4	15.84.01	Pulmonary	Paralyzed diaphragm (possible phrenic nerve injury)	Presence of elevated hemi-diaphragm(s) on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy.
519.4	15.84.10	Pulmonary	Paralyzed diaphragm (possible phrenic nerve injury), Bilateral	Presence of elevated bilateral hemi-diaphragms on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy.
519.4	15.84.11	Pulmonary	Paralyzed diaphragm (possible phrenic nerve injury), Bilateral, Not requiring plication of diaphragm	Presence of elevated bilateral hemi-diaphragms on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy, that does not require operative intervention with diaphragm plication.
519.4	15.84.12	Pulmonary	Paralyzed diaphragm (possible phrenic nerve injury), Bilateral, Requiring bilateral plication of diaphragm	Presence of elevated bilateral hemi-diaphragms on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy, that requires bilateral operative intervention with diaphragm plication
519.4	15.84.07	Pulmonary	Paralyzed diaphragm (possible phrenic nerve injury), Left	Presence of elevated left hemi-diaphragm on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy.
519.4	15.84.08	Pulmonary	Paralyzed diaphragm (possible phrenic nerve injury), Left, Not requiring plication of diaphragm	Presence of elevated left hemi-diaphragm on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy, that does not require operative intervention with diaphragm plication.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
519.4	15.84.09	Pulmonary	Paralyzed diaphragm (possible phrenic nerve injury), Left, Requiring plication of diaphragm	Presence of elevated left hemi-diaphragm on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy, that requires operative intervention with diaphragm plication.
519.4	15.84.02	Pulmonary	Paralyzed diaphragm (possible phrenic nerve injury), Not requiring plication of diaphragm	Presence of elevated hemi-diaphragm(s) on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy, that does not require operative intervention with diaphragm plication.
519.4	15.84.03	Pulmonary	Paralyzed diaphragm (possible phrenic nerve injury), Requiring plication of diaphragm	Presence of elevated hemi-diaphragm(s) on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy, that requires operative intervention with diaphragm plication.
519.4	15.84.04	Pulmonary	Paralyzed diaphragm (possible phrenic nerve injury), Right	Presence of elevated right hemi-diaphragm on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy.
519.4	15.84.05	Pulmonary	Paralyzed diaphragm (possible phrenic nerve injury), Right, Not requiring plication of diaphragm	Presence of elevated right hemi-diaphragm on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy, that does not require operative intervention with diaphragm plication
519.4	15.84.06	Pulmonary	Paralyzed diaphragm (possible phrenic nerve injury), Right, Requiring plication of diaphragm	Presence of elevated right hemi-diaphragm on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy, that requires operative intervention with diaphragm plication.
511.9	15.80.50	Pulmonary	Pleural effusion	Abnormal accumulation of fluid in the pleural space.
511.9	15.80.50 + Q1.83.01	Pulmonary	Pleural effusion, Requiring drainage	Abnormal accumulation of fluid in the pleural space, Requiring drainage, By any technique.
511.9	15.80.50 + Q1.83.13	Pulmonary	Pleural effusion, Requiring drainage, Chest tube	Abnormal accumulation of fluid in the pleural space, Requiring drainage, By chest tube (any type of indwelling thoracic tube drainage).
511.9	15.80.50 + Q1.83.14	Pulmonary	Pleural effusion, Requiring drainage, Thoracocentesis	Abnormal accumulation of fluid in the pleural space, Requiring drainage, By thoracocentesis
511.9	15.80.50 + Q1.83.05	Pulmonary	Pleural effusion, Resolved with medical management	Abnormal accumulation of fluid in the pleural space, That resolves with medical management alone and does not require drainage (does not require operative drainage or thoracocentesis or chest tube placement)
511.9	15.80.50 + Q1.90.91	Pulmonary	Pleural effusion, That resolves without medical management or drainage	Abnormal accumulation of fluid in the pleural space, That resolves without medical management and does not require drainage (does not require operative drainage or thoracocentesis or chest tube placement)
486	15.80.21	Pulmonary	Pneumonia	"Pneumonia" ROOT Definition = Pneumonia is defined as a "respiratory disease characterized by inflammation of the lung parenchyma (including alveolar spaces and interstitial tissue), most commonly caused by infection". Pneumonia is diagnosed by appropriate clinical findings (such as fever, leukopenia or

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				leukocytosis, and new onset of purulent sputum) and one or more of the following: positive cultures (of sputum or pulmonary secretions) and/or pulmonary infiltrate on chest X-ray. An endotracheal tube culture may or may not be positive. Patients commonly demonstrate an evolving area of focal lung consolidation accompanied by fever (>38.5). Pneumonia (pneumonitis) may affect an entire lobe (lobar pneumonia), a segment of a lobe (segmental or lobular pneumonia), alveoli contiguous to bronchi (bronchopneumonia), or interstitial tissue (interstitial pneumonia). These distinctions are generally based on X-ray observations.
486	15.80.44	Pulmonary	Pneumonia, Ventilator-associated pneumonia (VAP)	Pneumonia (ROOT Definition) + Ventilator-associated pneumonia (VAP) is defined as a new onset pneumonia that develops in patients who have been on mechanical ventilation for greater than 48 hours.
512.1	15.80.62	Pulmonary	Pneumothorax	A collection of gas in the pleural space resulting in collapse of the lung on the affected side.
512.1	15.80.62 + Q1.83.13	Pulmonary	Pneumothorax, Requiring chest tube	A collection of gas in the pleural space resulting in collapse of the lung on the affected side, Requiring drainage by chest tube (any type of indwelling thoracic tube drainage).
512.1	15.80.62 + Q1.83.14	Pulmonary	Pneumothorax, Requiring Thoracocentesis	A collection of gas in the pleural space resulting in collapse of the lung on the affected side, Requiring drainage by thoracocentesis.
512.1	15.80.62 + Q1.90.91	Pulmonary	Pneumothorax, Resolved spontaneously	A collection of gas in the pleural space resulting in collapse of the lung on the affected side, That resolves without operative drainage or thoracocentesis or chest tube placement or supplemental oxygen therapy.
512.1	15.80.62 + Q1.83.15	Pulmonary	Pneumothorax, Resolved with supplemental oxygen therapy	A collection of gas in the pleural space resulting in collapse of the lung on the affected side, That resolves after therapy with oxygen ("nitrogen washout").
512.1	Q1.83.16	Pulmonary	Pneumothorax-modifier, Expected (anticipated)	A collection of gas in the pleural space resulting in collapse of the lung on the affected side. Expected or anticipated.
512.1	Q1.83.17	Pulmonary	Pneumothorax-modifier, Unexpected (unanticipated)	A collection of gas in the pleural space resulting in collapse of the lung on the affected side. Unexpected or unanticipated.
416.8	15.80.36	Pulmonary	Postoperative/Postprocedural pulmonary hypertension	Clinically significant elevation of pulmonary arterial pressure, requiring intervention. Typically the mean pulmonary arterial pressure is greater than 25 mmHg in the presence of a normal pulmonary arterial occlusion pressure (wedge pressure).
518.5	15.80.45	Pulmonary	Postoperative/Postprocedural respiratory insufficiency requiring mechanical ventilatory support >7 days	Respiratory Insufficiency requiring mechanical ventilatory support from surgery or procedure to greater than 7 days postoperatively/ postprocedurally. In other words, the inability of the patients to exchange oxygen and carbon dioxide in sufficient quantities to avoid unacceptable hypercarbia, hypoxemia, or both, without mechanical support for greater than 7 days during the postoperative or postprocedural period.
518.5	15.80.46	Pulmonary	Postoperative/Postprocedural respiratory insufficiency requiring reintubation	Reintubation required after initial extubation. In other words, the need to reinstitute postoperative or postprocedural mechanical ventilation after a planned extubation and prior to discharge, or

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				after a planned extubation and after discharge but within 30 days of surgery.
518.5	15.80.46 + Q1.77.41	Pulmonary	Postoperative/Postprocedural respiratory insufficiency requiring reintubation ×2	Two reintubations required after initial extubation. In other words, the need to reinstitute postoperative or postprocedural mechanical ventilation twice after the initial planned extubation and prior to discharge, or after the initial planned extubation and after discharge but within 30 days of surgery.
518.5	15.80.46 + Q1.77.42	Pulmonary	Postoperative/Postprocedural respiratory insufficiency requiring reintubation ×3	Three reintubations required after initial extubation. In other words, the need to reinstitute postoperative or postprocedural mechanical ventilation three times after the initial planned extubation and prior to discharge, or after the initial planned extubation and after discharge but within 30 days of surgery.
518.5	15.80.46 + Q1.77.43	Pulmonary	Postoperative/Postprocedural respiratory insufficiency requiring reintubation ×4 or more	Four or more reintubations required after initial extubation. In other words, the need to reinstitute postoperative or postprocedural mechanical ventilation four times after the initial planned extubation and prior to discharge, or after the initial planned extubation and after discharge but within 30 days of surgery.
997.3	15.80.20	Pulmonary	Pulmonary complication	Any complication involving the pulmonary system. An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.
514	10.30.01	Pulmonary	Pulmonary edema	Pulmonary edema is a condition where fluid floods the alveoli. Etiologies of pulmonary edema may be placed in the following 6 categories: (i) Altered capillary permeability (i.e.: ARDS, infection, circulating exogenous toxins, vasoactive substances, DIC, immunologic reactions, uremia, and aspiration); (ii) Increased pulmonary capillary pressure i.e.: pulmonary venous thrombosis, stenosis or veno-occlusive disease and volume overload); (iii) Decreased oncotic pressure (hypoalbuminemia); (iv) Lymphatic insufficiency; (v) Large negative pleural pressure with increased end expiratory volume; (vi) Mixed or unknown mechanisms (neurogenic, pulmonary embolism, postcardioversion, postanesthetic, postextubation, and post–cardiopulmonary bypass).
514	15.80.47	Pulmonary	Pulmonary edema, Postoperative/ Postprocedural	Postoperative/Postprocedural pulmonary edema is pulmonary edema that occurs or is recognized during the time interval between OR Exit Date and Time and the end of the period of data collection. Pulmonary edema is a condition where fluid floods the alveoli. Etiologies of pulmonary edema may be placed in the following 6 categories: (i) Altered capillary permeability (i.e.: ARDS, infection, circulating exogenous toxins, vasoactive substances, DIC, immunologic reactions, uremia, and aspiration); (ii) Increased

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				pulmonary capillary pressure i.e.: pulmonary venous thrombosis, stenosis or veno-occlusive disease and volume overload); (iii) Decreased oncotic pressure (hypoalbuminemia); (iv) Lymphatic insufficiency; (v) Large negative pleural pressure with increased end expiratory volume; (vi) Mixed or unknown mechanisms (neurogenic, pulmonary embolism, postcardioversion, postanesthetic, postextubation, and post–cardiopulmonary bypass).
415.11	15.32.48	Pulmonary	Pulmonary embolism	Embolization of clot or other foreign material to the pulmonary vasculature documented by CT angiogram, nuclear medicine scan or other accepted objective study.
747.49	15.05.26	Pulmonary	Pulmonary vein obstruction	Clinically significant stenosis or obstruction of pulmonary veins. Typically diagnosed by echocardiography or cardiac catheterization, this may present with or without symptoms.
799.02	15.05.28	Pulmonary	Pulmonary venous desaturation	The normal oxygen saturation of blood in the pulmonary veins is 100%. Pulmonary venous desaturation is a condition where the saturation in a pulmonary vein is less than 100%.
799.1	16.29.01	Pulmonary	Respiratory arrest	"Respiratory arrest" ROOT Definition = Respiratory arrest is defined as the loss of spontaneous respiration requiring unanticipated airway support. Respiratory arrest during the period of anesthetic care can be coded more specifically under Anesthesia. Respiratory arrest during transportation can be coded more specifically under Anesthesia – Transport. Primary respiratory arrest is when airway obstruction, decreased respiratory drive, or respiratory muscle weakness results in hemodynamic instability (bradycardia, hypotension) or collapse. Secondary respiratory arrest is when preceding circulatory insufficiency results in cessation of respiratory activity.
799.1	16.29.04	Pulmonary	Respiratory arrest, Not known if primary respiratory arrest or secondary respiratory arrest	Respiratory arrest (ROOT Definition) + Use this code when respiratory arrest occurs during the intraoperative/intraprocedural or postoperative/postprocedural period and it is not known whether it is a primary or secondary respiratory arrest.
799.1	16.29.02	Pulmonary	Respiratory arrest, Primary respiratory arrest	Respiratory arrest (ROOT Definition) + Use this code for primary respiratory arrest during the postoperative/postprocedural period.
799.1	16.29.03	Pulmonary	Respiratory arrest, Secondary respiratory arrest	Respiratory arrest (ROOT Definition) + Use this code when the secondary respiratory arrest occurs in the postoperative/ postprocedural period.
V44,0	16.30.26 + Q1.71.06	Pulmonary	Respiratory failure, Requiring tracheostomy	Failure to wean from mechanical ventilation necessitating the creation of a surgical airway
V44,0	16.30.26 + Q1.71.07	Pulmonary	Respiratory failure, Requiring tracheostomy, Placed postoperatively/postprocedurally	Failure to wean from mechanical ventilation necessitating the creation of a surgical airway, Tracheostomy placed postoperatively/ postprocedurally.
V44,0	16.30.26 + Q1.71.08	Pulmonary	Respiratory failure, Requiring tracheostomy, Placed preoperatively/preprocedurally	Failure to wean from mechanical ventilation necessitating the creation of a surgical airway, Tracheostomy placed preoperatively/ preprocedurally.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
786.09	15.80.48	Pulmonary	Respiratory insufficiency requiring non-invasive ventilatory support	The inability of the patient to exchange oxygen and carbon dioxide in sufficient quantities to avoid unacceptable hypercarbia, hypoxemia, or both, that necessitates the use of CPAP or Bi-PAP.
519.19	16.10.24	Pulmonary	Tracheal stenosis, Acquired	"Tracheal stenosis, Acquired" is tracheal stenosis that is acquired. It is tracheal stenosis that is non-congenital in origin (that is, NOT present since birth). Etiologies may include trauma, malignancy, and prolonged intubation.
E912	15.80.67	Pulmonary	Tracheobronchial compression (new), After cardiac repair	Clinically significant (i.e. prolonged intubation, failure to extubate, tracheomalacia) new tracheobronchial compression, after cardiac repair
E912	15.80.67 + Q1.91.37	Pulmonary	Tracheobronchial compression (new), After cardiac repair, Requiring reintervention	Clinically significant (i.e. prolonged intubation, failure to extubate, tracheomalacia) new tracheobronchial compression, after cardiac repair, requiring reintervention
997.5	15.82.09	Renal	Renal complication	Any complication involving the renal system. An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.
593.9	15.82.19	Renal	Renal dysfunction – acute renal dysfunction	"Renal dysfunction – acute renal dysfunction" ROOT Definition = Acute renal dysfunction is defined as the new onset oliguria with sustained urine output <0.5 cc/kg/hr for 24 hours and/or a rise in creatinine >1.5 times upper limits of normal for age (or twice the most recent preoperative/preprocedural values if these are available), with eventual recovery of renal function without needing dialysis (including peritoneal dialysis and/or hemodialysis) or hemofiltration. Acute renal dysfunction that will be counted as an operative or procedural complication must occur prior to hospital discharge or after hospital discharge but within 30 days of the procedure. (An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.)
593.9	15.82.19 + Q1.83.31	Renal	Renal dysfunction – acute renal dysfunction, Transient azotemia not requiring dialysis or hemofiltration	Renal dysfunction – acute renal dysfunction (ROOT Definition) + With elevated blood urea nitrogen AND creatinine >1.5 times upper limits of normal for age (or twice the most recent preoperative/preprocedural values if these are available), With eventual recovery of renal function without needing dialysis or hemofiltration.
593.9	15.82.19 + Q1.83.32	Renal	Renal dysfunction – acute renal dysfunction, Transient azotemia not requiring dialysis or	Renal dysfunction – acute renal dysfunction (ROOT Definition) + With elevated blood urea nitrogen AND creatinine >1.5 times upper limits of

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
			hemofiltration, Creatinine rising to greater than or equal to 2.0 mg/dl	normal for age (or twice the most recent preoperative/preprocedural values if these are available), With eventual recovery of renal function without needing dialysis or hemofiltration, With Creatinine rising to greater than or equal to 2.0 mg/dl.
593.9	15.82.19 + Q1.83.33	Renal	Renal dysfunction – acute renal dysfunction, Transient oliguria not requiring dialysis or hemofiltration	Renal dysfunction – acute renal dysfunction (ROOT Definition) + With sustained urine output <0.5 cc/kg/hr for 24 hours, With eventual recovery of renal function without needing dialysis.
584.9	15.82.01	Renal	Renal failure – acute renal failure	"Renal failure – acute renal failure" ROOT Definition = Acute renal failure is defined as new onset oliguria with sustained urine output <0.5 cc/kg/hr for 24 hours and/or a rise in creatinine >1.5 times upper limits of normal for age (or twice the most recent preoperative/preprocedural values if these are available), with eventual need for dialysis (including peritoneal dialysis and/or hemodialysis) or hemofiltration. Acute renal failure that will be counted as an operative or procedural complication must occur prior to hospital discharge or after hospital discharge but within 30 days of the procedure. (An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.) The complication is to be coded even if the patient required dialysis, but the treatment was not instituted due to patient or family refusal.
584.9	15.82.01 + Q1.83.39	Renal	Renal failure – acute renal failure, Acute renal failure requiring dialysis at the time of hospital discharge	Renal failure – acute renal failure (ROOT Definition) + With new postoperative/postprocedural requirement for dialysis, including peritoneal dialysis and/or hemodialysis. Code this complication if the patient requires dialysis at the time of hospital discharge or death in the hospital. (This complication should be chosen only if the dialysis was associated with acute renal failure.)
584.9	15.82.01 + Q1.83.35	Renal	Renal failure – acute renal failure, Acute renal failure requiring temporary dialysis with the need for dialysis not present at hospital discharge	Renal failure – acute renal failure (ROOT Definition) + With new postoperative/postprocedural requirement for temporary dialysis, including peritoneal dialysis and/or hemodialysis. Code this complication if the patient does not require dialysis at the time of hospital discharge or death in the hospital. (This complication should be chosen only if the dialysis was associated with acute renal failure.)
584.9	15.82.01 + Q1.83.36	Renal	Renal failure – acute renal failure, Acute renal failure requiring temporary dialysis with the need for dialysis not present at hospital discharge, Hemodialysis	Renal failure – acute renal failure (ROOT Definition) + With new postoperative/postprocedural requirement for temporary dialysis using hemodialysis. Code this complication if the patient does not require dialysis at the time of hospital discharge or death in the hospital. (This complication should be chosen only if the dialysis was associated with acute renal failure.)

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
584.9	15.82.01 + Q1.83.37	Renal	Renal failure – acute renal failure, Acute renal failure requiring temporary dialysis with the need for dialysis not present at hospital discharge, Peritoneal dialysis	Renal failure – acute renal failure (ROOT Definition) + With new postoperative/postprocedural requirement for temporary dialysis using peritoneal dialysis. Code this complication if the patient does not require dialysis at the time of hospital discharge or death in the hospital. (This complication should be chosen only if the dialysis was associated with acute renal failure.)
584.9	15.82.01 + Q1.83.38	Renal	Renal failure – acute renal failure, Acute renal failure requiring temporary hemofiltration with the need for dialysis not present at hospital discharge	Renal failure – acute renal failure (ROOT Definition) + With new postoperative/postprocedural requirement for temporary hemofiltration. Code this complication if the patient does not require dialysis at the time of hospital discharge or death in the hospital. (This complication should be chosen only if the hemofiltration was associated with acute renal failure.)
995	15.03.80	Hematologic	Anaphylactic or anaphylactoid reaction to antifibrinolytic drug	Allergic reaction to the infusion of an antifibrinolytic agent (e.g. aprotinin, tranexamic acid, and aminocaproic acid).
995	15.03.80 + Q1.87.21	Hematologic	Anaphylactic or anaphylactoid reaction to antifibrinolytic drug, Reaction to tranexamic acid	Allergic reaction to the infusion of tranexamic acid.
995.0	15.03.80 + Q1.87.22	Hematologic	Anaphylactic or anaphylactoid reaction to antifibrinolytic drug, Reaction to aminocaproic acid	Allergic reaction to the infusion of aminocaproic acid.
995.0	15.03.80 + Q1.87.23	Hematologic	Anaphylactic or anaphylactoid reaction to antifibrinolytic drug, Reaction to aprotinin	Allergic reaction to the infusion of an aprotinin.
286.5	15.02.71	Hematologic	Anticoagulant complication	An anticoagulant complication is a complication involving any anticoagulant medication (Including any form of heparin (e.g. unfractionated, low molecular weight, or other heparanoid), non-heparanoid anticoagulant (e.g. lepiridin, thrombin-inhibitors such as bivalirudin) or oral anticoagulant (warfarin, aspirin, plavix). Manifestations can include excessive hemorrhage requiring blood-product transfusion, intracerebral hemorrhage or within-tissue hemorrhage, purpura, or warfarin-induced skin-changes. Also includes a prothrombotic immune-mediated reaction to heparanoids, termed heparin-induced thrombocytopenia (HIT).
286.9	15.02.72	Hematologic	Anticoagulant complication, Difficulty in achieving adequate anticoagulation	An anticoagulant complication is a complication involving any anticoagulant medication (Including any form of heparin (e.g. unfractionated, low molecular weight, or other heparanoid), non-heparanoid anticoagulant (e.g. lepiridin, thrombin-inhibitors such as bivalirudin) or oral anticoagulant (warfarin, aspirin, plavix). Manifestations can include excessive hemorrhage requiring blood-product transfusion, intracerebral hemorrhage or within-tissue hemorrhage, purpura, or warfarin-induced skin-changes. Also includes a prothrombotic immune-mediated reaction to heparanoids, termed heparin-induced thrombocytopenia (HIT).
287.9	15.02.02	Hematologic	Anticoagulant complication, Hemorrhagic	An anticoagulant complication associated with excessive bleeding. An anticoagulant complication is a complication involving any

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				anticoagulant medication (Including any form of heparin (e.g. unfractionated, low molecular weight, or other heparanoid), non-heparanoid anticoagulant (e.g. lepiridin, thrombin-inhibitors such as bivalirudin) or oral anticoagulant (warfarin, aspirin, plavix). Manifestations can include excessive hemorrhage requiring blood-product transfusion, intracerebral hemorrhage or within-tissue hemorrhage, purpura, or warfarin-induced skin-changes. Also includes a prothrombotic immune-mediated reaction to heparanoids, termed heparin-induced thrombocytopenia (HIT).
287.4	15.02.75	Hematologic	Anticoagulant complication, Heparin Induced Thrombocytopenia (HIT)	An anticoagulant complication that is a prothrombotic immune-mediated reaction to heparanoids. This is the proper code to describe a prothrombotic immune reaction to any form of intraoperative/intraprocedural heparin (unfractionated, low-molecular weight heparin, or heparanoid), termed heparin-induced thrombocytopenia (HIT) that can include death, limb ischemia leading to amputation, graft occlusion, thrombocytopenia, and other severe thrombotic events. The presence of antiheparin-platelet factor 4 (PF4) antibodies is necessary, but not sufficient for symptomatic clinical HIT. Diagnosis by antibody formation usually occurs within 5 to 10 days postoperatively.
289.82	15.02.73	Hematologic	Anticoagulant complication, Prothrombotic	An anticoagulant complication associated with excessive clotting. An anticoagulant complication is a complication involving any anticoagulant medication (Including any form of heparin (e.g. unfractionated, low molecular weight, or other heparanoid), non-heparanoid anticoagulant (e.g. lepiridin, thrombin-inhibitors such as bivalirudin) or oral anticoagulant (warfarin, aspirin, plavix). Manifestations can include excessive hemorrhage requiring blood-product transfusion, intracerebral hemorrhage or within-tissue hemorrhage, purpura, or warfarin-induced skin-changes. Also includes a prothrombotic immune-mediated reaction to heparanoids, termed heparin-induced thrombocytopenia (HIT).
E934.2	15.02.74	Hematologic	Anticoagulant complication, Secondary to intraoperative/intraprocedural heparin	Complication secondary to intraoperative/intraprocedural heparin. Manifestations can include excessive hemorrhage requiring blood-product transfusion, intracerebral hemorrhage or within-tissue hemorrhage, and/or purpura. Also includes a prothrombotic immune-mediated reaction to heparanoids, termed heparin-induced thrombocytopenia (HIT).
283	15.03.81	Hematologic	Cold agglutinin reaction	Cold agglutinin disease is a form of autoimmune hemolytic anemia due to cold-reacting autoantibodies. Autoantibodies that bind to the erythrocyte membrane leading to premature erythrocyte destruction (hemolysis) characterize autoimmune hemolytic anemia. (Source = http://www.emedicine.com/ped/topic429.htm, accessed August 26, 2007.)

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
289.9	15.02.70	Hematologic	Hematologic complication	Any complication involving the hematologic system. This will include any complication involving an anticoagulant, antifibrinolytic, or hemostatic drug. An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.
E934.5	15.03.82	Hematologic	Protamine reaction	A complement-dependent IgG mediated reaction to protamine sulfate that is presumed based on the following clinical manifestations in the absence of other more likely causative agents: mild urticaria, hemodynamic changes (precipitous drops in blood pressure commonly associated with elevated pulmonary arterial pressure) or non-cardiogenic pulmonary edema, anaphylactic shock and/or death. A protamine reaction is diagnosed by elevated C4a levels, detection of antiprotamine antibody (IgE by ELISA), or a positive skin test.
E934.5	15.03.83	Hematologic	Protamine reaction, Biochemically confirmed	A complement-dependent IgG mediated reaction to protamine sulfate that is presumed based on the following clinical manifestations in the absence of other more likely causative agents: mild urticaria, hemodynamic changes (precipitous drops in blood pressure commonly associated with elevated pulmonary arterial pressure) or non-cardiogenic pulmonary edema, anaphylactic shock and/or death. A protamine reaction is diagnosed by elevated C4a levels, detection of antiprotamine antibody (IgE by ELISA), or a positive skin test.
E934.5	15.03.84	Hematologic	Protamine reaction, Clinically suspected	A complement-dependent IgG mediated reaction to protamine sulfate that is presumed based on the following clinical manifestations in the absence of other more likely causative agents: mild urticaria, hemodynamic changes (precipitous drops in blood pressure commonly associated with elevated pulmonary arterial pressure) or non-cardiogenic pulmonary edema, anaphylactic shock and/or death. A protamine reaction is diagnosed by elevated C4a levels, detection of antiprotamine antibody (IgE by ELISA), or a positive skin test.
E934.4	15.03.85	Hematologic	Prothrombotic and/or hemorrhagic reaction to antifibrinolytic drug	Prothrombotic or hemorrhagic complication that commonly occurs within 5–10 days of administration of an antifibrinolytic agent (e.g. aprotinin, tranexamic acid, and aminocaproic acid). Manifestations can include any thrombotic event including graft occlusion, renal failure, myocardial infarction and/or heart failure, and stroke or encephalopathy.
E934.4	15.03.85 + Q1.87.21	Hematologic	Prothrombotic and/or hemorrhagic reaction to antifibrinolytic drug, Reaction to tranexamic acid	Prothrombotic or hemorrhagic complication that commonly occurs within 5–10 days of administration of tranexamic acid. Manifestations can include any thrombotic event including graft occlusion, renal failure, myocardial infarction and/or heart failure, and stroke or encephalopathy.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E934.4	15.03.85 + Q1.87.22	Hematologic	Prothrombotic and/or hemorrhagic reaction to antifibrinolytic drug, Reaction to aminocaproic acid	Prothrombotic or hemorrhagic complication that commonly occurs within 5–10 days of administration of aminocaproic acid. Manifestations can include any thrombotic event including graft occlusion, renal failure, myocardial infarction and/or heart failure, and stroke or encephalopathy.
E934.4	15.03.85 + Q1.87.23	Hematologic	Prothrombotic and/or hemorrhagic reaction to antifibrinolytic drug, Reaction to aprotinin	Prothrombotic or hemorrhagic complication that commonly occurs within 5–10 days of administration of aprotinin. Manifestations can include any thrombotic event including graft occlusion, renal failure, myocardial infarction and/or heart failure, and stroke or encephalopathy.
E934.7	15.03.86	Hematologic	Reaction to blood products	"Reaction to blood products" ROOT Definition = Any adverse event which occurs because of a blood transfusion. These events can take the form of an allergic reaction, a transfusion-related infection, hemolysis related to an incompatible blood type, or an alteration of the immune system related to the transfusion. Symptoms usually occurring after a small amount of blood has been transfused and almost always before the unit is transfused completely. Additionally, they may occur between 1 and 6 hours. These reactions are associated with the following: fever, chills, flushing, nausea, dyspnea, urticaria. Anaphylactic reactions, associated with rapid development of the following: chills, abdominal cramps, dyspnea, vomiting, tachycardia, tachypnea, in severe cases, hypotension, oozing from the IV site, diffuse bleeding, hemoglobinuria, and shock.
E934.7	15.03.86 + Q1.73.30	Hematologic	Reaction to blood products, Post-transplant graft versus host disease	Reaction to blood products (ROOT Definition) + Transfusion-associated graft versus host disease (TA-GvHD) is a rare complication of blood transfusion, in which the donor T lymphocytes mount an immune response against the recipient's lymphoid tissue. TA-GvHD can develop four to thirty days after the transfusion. Typical symptoms include fever, erythematous maculopapular rash, cough, abdominal pain, vomiting, and profuse diarrhea. Laboratory findings include pancytopenia, abnormal liver enzymes, and electrolyte imbalance. TA-GvHD can be suspected from a biopsy of the affected skin, and established by HLA analysis of the circulating lymphocytes, which have a different HLA type than the tissue cells of the host.
E934.7	15.03.86 + Q1.73.37	Hematologic	Reaction to blood products, Reaction to cryoprecipitate	Reaction to blood products (ROOT Definition) + Thought to be caused by a reaction to cryoprecipitate.
E934.7	15.03.86 + Q1.73.31	Hematologic	Reaction to blood products, Reaction to packed red blood cells	Reaction to blood products (ROOT Definition) + Thought to be caused by a reaction to packed red blood cells.
E934.7	15.03.86 + Q1.73.32	Hematologic	Reaction to blood products, Reaction to plasma	Reaction to blood products (ROOT Definition) + Thought to be caused by a reaction to plasma.
E934.7	15.03.86 + Q1.73.33	Hematologic	Reaction to blood products, Reaction to platelets	Reaction to blood products (ROOT Definition) + Thought to be caused by a reaction to platelets.
E934.7	Title	Hematologic	Reaction to blood products-modifier	Reaction to blood products (ROOT Definition) + modifier

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E934.7	15.03.86 + Q1.73.34	Hematologic	Reaction to blood products-modifier, ABO mismatch transfused	Reaction to blood products (ROOT Definition) + modifier, The transfusion of ABO incompatible blood results in hemolysis of the donor red blood cells by host antibodies. The symptoms are fever and chills, sometimes with back pain and hemoglobinuria resulting in acute renal failure.
E876.1	15.03.86 + Q1.73.35	Hematologic	Reaction to blood products-modifier, Administration of wrong blood product	Reaction to blood products (ROOT Definition) + modifier, Transfusion reaction that occurs due to the wrong blood product being administered to a patient.
E876.0	15.03.86 + Q1.73.36	Hematologic	Reaction to blood products-modifier, Error from improperly identifying patient	Reaction to blood products (ROOT Definition) + modifier, Transfusion reaction that occurs due to a blood product being administered to the wrong patient
E934.7	15.03.88	Hematologic	Reaction to blood products-modifier, Major	Reaction to blood products (ROOT Definition) + modifier, Major transfusion reactions consist of three types: (1) Acute hemolytic reaction (chills/rigors, headaches, back pain, restlessness/anxiety, tachycardia, shock, hematuria, oliguria/anuria, rapid onset of circulatory collapse and/or fever); (2) Anaphylactic reaction (respiratory and cardiovascular collapse, dyspnea, wheezing, tachycardia, hypotension, nausea/vomiting, abdominal pain, and/or itching); (3) Transfusion Related Acute Lung Injury (TRALI) (acute respiratory distress, hypoxia and bilateral pulmonary infiltrates).
E934.7	15.03.87	Hematologic	Reaction to blood products-modifier, Minor	Reaction to blood products (ROOT Definition) + modifier, Minor transfusion reactions consist of two types: (1) Allergic type (skin rashes and bronchospasm) and (2) Febrile type (fever, chills, headache, flushing and/or tachycardia)
282.62	15.02.76	Hematologic	Sickle cell crisis	A vasoocclusive (sickle cell) crisis occurs when the microcirculation is obstructed by sickled RBCs, causing ischemic injury (pain) to the organ(s) supplied. A myriad of organs including: bones, joints and soft tissue, abdominal organs (liver, kidney and spleen), penis (priapism) and lungs (acute chest syndrome) are commonly affected. The central nervous system may also be involved and manifest as cerebral infarction (children), hemorrhage (adults), seizures, transient ischemic attacks, cranial nerve palsies, meningitis, sensory deficits, and acute coma.
136.9	15.90.50	Infectious	Infection	"Infection" ROOT Definition = An infection is defined as the successful invasion and growth of organisms in the tissues of the host. An infectious disease is a state of abnormal health caused by an infection
136.9	15.90.51	Infectious	Infection, Multiple	Infection (ROOT Definition) + Any combination of infections involving more than one site. For example, a urinary tract infection (UTI) combined with pneumonia or bacteremia.
136.9	Title	Infectious	Infection-modifier for causative organism	Infection (ROOT Definition) + modifier for causative organism, Select the children terms of this code to designate the causative organism. This choice may also be selected and accompanied by free text in a "Comments" field if none of the children terms are appropriate.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
41.9	Q1.61.00	Infectious	Infection-modifier for causative organism, Bacterial	Infection (ROOT Definition) + modifier for causative organism, Bacterial
41.9	Q1.61.14	Infectious	Infection-modifier for causative organism, Bacterial, Enterobacter	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Enterobacter
41.0	Q1.61.17	Infectious	Infection-modifier for causative organism, Bacterial, Enterococcus	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Enterococcus
41.04	Q1.61.18	Infectious	Infection-modifier for causative organism, Bacterial, Enterococcus (Vancomycin-resistant enterococci [VRE])	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Enterococcus (Vancomycin-resistant enterococci [VRE])
41.90	Q1.61.22	Infectious	Infection-modifier for causative organism, Bacterial, Etiology unknown	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Etiology unknown
41.9	Q1.61.23	Infectious	Infection-modifier for causative organism, Bacterial, Etiology unspecified	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Etiology unspecified
98.0	Q1.61.11	Infectious	Infection-modifier for causative organism, Bacterial, Gonococcal	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Gonococcal
41.5	Q1.61.04	Infectious	Infection-modifier for causative organism, Bacterial, Haemophilus	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Haemophilus
41	Q1.61.16	Infectious	Infection-modifier for causative organism, Bacterial, Klebsiella	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Klebsiella
36	Q1.61.05	Infectious	Infection-modifier for causative organism, Bacterial, Meningococcal	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Meningococcal
41.2	Q1.61.03	Infectious	Infection-modifier for causative organism, Bacterial, Pneumococcal	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Pneumococcal
41.7	Q1.61.15	Infectious	Infection-modifier for causative organism, Bacterial, Pseudomonas	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Pseudomonas
41.7	Q1.61.19	Infectious	Infection-modifier for causative organism, Bacterial, Pseudomonas aeruginosa	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Pseudomonas aeruginosa
104.9	Q1.61.07	Infectious	Infection-modifier for causative organism, Bacterial, Spirochetal	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Spirochetal
41.1	Q1.61.01	Infectious	Infection-modifier for causative organism, Bacterial, Staphylococcal	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Staphylococcal
41.11	Q1.61.20	Infectious	Infection-modifier for causative organism, Bacterial, Staphylococcal, Staphylococcus aureus	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Staphylococcal, Staphylococcus aureus
41.11	Q1.61.12	Infectious	Infection-modifier for causative organism, Bacterial, Staphylococcal, Staphylococcus aureus, Methicillin-resistant Staphylococcus aureus (MRSA) negative	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Staphylococcal, Staphylococcus aureus, Methicillin-resistant Staphylococcus aureus (MRSA) negative
41.11	Q1.61.13	Infectious	Infection-modifier for causative organism, Bacterial, Staphylococcal, Staphylococcus aureus, Methicillin-resistant Staphylococcus aureus (MRSA) positive	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Staphylococcal, Staphylococcus aureus, Methicillin-resistant Staphylococcus aureus (MRSA) positive
41.19	Q1.61.21	Infectious	Infection-modifier for causative organism, Bacterial, Staphylococcal, Staphylococcus epidermidis	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Staphylococcal, Staphylococcus epidermidis

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
41	Q1.61.02	Infectious	Infection-modifier for causative organism, Bacterial, Streptococcal	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Streptococcal
97.90	Q1.61.08	Infectious	Infection-modifier for causative organism, Bacterial, Syphilitic	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Syphilitic
10.90	Q1.61.06	Infectious	Infection-modifier for causative organism, Bacterial, Tuberculous	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Tuberculous
2.0	Q1.61.10	Infectious	Infection-modifier for causative organism, Bacterial, Typhoid	Infection (ROOT Definition) + modifier for causative organism, Bacterial, Typhoid
79.98	Q1.61.47	Infectious	Infection-modifier for causative organism, Chlamydial	Infection (ROOT Definition) + modifier for causative organism, Chlamydial
137	Q1.90.95	Infectious	Infection-modifier for causative organism, Etiology unknown	Infection (ROOT Definition) + modifier for causative organism, Etiology unknown
136.9	Q1.90.97	Infectious	Infection-modifier for causative organism, Etiology unspecified	Infection (ROOT Definition) + modifier for causative organism, Etiology unspecified
117.9	Q1.61.40	Infectious	Infection-modifier for causative organism, Fungal	Infection (ROOT Definition) + modifier for causative organism, Fungal
117.3	Q1.61.42	Infectious	Infection-modifier for causative organism, Fungal, Aspergillosis	Infection (ROOT Definition) + modifier for causative organism, Fungal, Aspergillosis
112.9	Q1.61.41	Infectious	Infection-modifier for causative organism, Fungal, Candidal	Infection (ROOT Definition) + modifier for causative organism, Fungal, Candidal
112.9	Q1.61.51	Infectious	Infection-modifier for causative organism, Fungal, Yeast	Infection (ROOT Definition) + modifier for causative organism, Fungal, Yeast
136.9	Q1.61.52	Infectious	Infection-modifier for causative organism, Non-bacterial infection	Infection (ROOT Definition) + modifier for causative organism, Non-bacterial infection
136.9	Q1.61.45	Infectious	Infection-modifier for causative organism, Parasitic	Infection (ROOT Definition) + modifier for causative organism, Parasitic
136.8	Q1.61.44	Infectious	Infection-modifier for causative organism, Protozoal (not Chagas')	Infection (ROOT Definition) + modifier for causative organism, Protozoal (not Chagas')
83.9	Q1.61.46	Infectious	Infection-modifier for causative organism, Rickettsial	Infection (ROOT Definition) + modifier for causative organism, Rickettsial
130.9	Q1.61.48	Infectious	Infection-modifier for causative organism, Toxoplasmosis	Infection (ROOT Definition) + modifier for causative organism, Toxoplasmosis
86.9	Q1.61.43	Infectious	Infection-modifier for causative organism, Trypanosomal (Chagas' disease)	Infection (ROOT Definition) + modifier for causative organism, Trypanosomal (Chagas' disease)
79.99	Q1.61.31	Infectious	Infection-modifier for causative organism, Viral	Infection (ROOT Definition) + modifier for causative organism, Viral
79	Q1.61.36	Infectious	Infection-modifier for causative organism, Viral, Adenovirus	Infection (ROOT Definition) + modifier for causative organism, Viral, Adenovirus
79.2	Q1.61.33	Infectious	Infection-modifier for causative organism, Viral, Coxsackie virus	Infection (ROOT Definition) + modifier for causative organism, Viral, Coxsackie virus
78.5	Q1.61.38	Infectious	Infection-modifier for causative organism, Viral, Cytomegalovirus (CMV)	Infection (ROOT Definition) + modifier for causative organism, Viral, Cytomegalovirus (CMV)
79.1	Q1.61.35	Infectious	Infection-modifier for causative organism, Viral, Echovirus	Infection (ROOT Definition) + modifier for causative organism, Viral, Echovirus

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
75	Q1.61.39	Infectious	Infection-modifier for causative organism, Viral, Epstein-Barr virus (EBV)	Infection (ROOT Definition) + modifier for causative organism, Viral, Epstein-Barr virus (EBV)
42	Q1.61.32	Infectious	Infection-modifier for causative organism, Viral, HIV	Infection (ROOT Definition) + modifier for causative organism, Viral, HIV
487	Q1.61.34	Infectious	Infection-modifier for causative organism, Viral, Influenza virus	Infection (ROOT Definition) + modifier for causative organism, Viral, Influenza virus
72	Q1.61.50	Infectious	Infection-modifier for causative organism, Viral, Mumps virus	Infection (ROOT Definition) + modifier for causative organism, Viral, Mumps virus
56	Q1.61.37	Infectious	Infection-modifier for causative organism, Viral, Rubella	Infection (ROOT Definition) + modifier for causative organism, Viral, Rubella
136.9	15.90.52	Infectious	Infectious complication	Any complication involving the infectious system. An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.
995.91	15.80.05	Infectious	Sepsis	"Sepsis" ROOT Definition = Sepsis is defined as "evidence of serious infection accompanied by a deleterious systemic response". In the time period of the first 48 postoperative or postprocedural hours, the diagnosis of sepsis requires the presence of a Systemic Inflammatory Response Syndrome (SIRS) resulting from a proven infection (such as bacteremia, fungemia or urinary tract infection). In the time period after the first 48 postoperative or postprocedural hours, sepsis may be diagnosed by the presence of a SIRS resulting from suspected or proven infection. During the first 48 hours, a SIRS may result from the stress associated with surgery and/or cardiopulmonary bypass. Thus, the clinical criteria for sepsis during this time period should be more stringent. A systemic inflammatory response syndrome (SIRS) is present when at least two of the following criteria are present: hypo- or hyperthermia (>38.5 or <36.0), tachycardia or bradycardia, tachypnea, leukocytosis or leukopenia, and thrombocytopenia.
995.92	15.80.05, 15.80.16	Infectious	Sepsis, Multi-system Organ Failure	Sepsis (ROOT Definition) + Multi-system Organ Failure (MSOF) is defined as a condition where more than one organ system has failed (for example, respiratory failure requiring mechanical ventilation combined with renal failure requiring dialysis). The diagnosis "Sepsis, Multi-system Organ Failure" should be used when MSOF is combined with sepsis.
785.52	15.90.56	Infectious	Sepsis, Septic shock	Sepsis (ROOT Definition) + Shock is a state of inadequate tissue perfusion. Septic shock is a state of inadequate tissue perfusion associated with sepsis. In this condition, the presence of pathogenic microorganisms or their toxins in tissue or blood leads to hypotension or hemodynamic instability.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
995.91	15.80.05, 15.82.04	Infectious	Sepsis, Urosepsis	Sepsis (ROOT Definition) + The presence of a Urinary tract infection (UTI). A urinary tract infection is an infection of the urinary tract, as defined by positive urine culture or white blood cells (WBCs) present on urinalysis. A urinary tract infection that will be counted as an operative or procedural complication must occur prior to hospital discharge or after hospital discharge but within 30 days of the procedure. (An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.)
995.91	15.90.53	Infectious	Sepsis, With documented bacteremia	Sepsis (ROOT Definition) + Positive blood cultures for bacteria associated with sepsis.
995.91	15.90.53 + Q1.61.14	Infectious	Sepsis, With documented bacteremia, With Enterobacter in blood	Sepsis (ROOT Definition) + Positive blood cultures for bacteria associated with sepsis, with Enterobacter in blood.
995.91	15.90.53 + Q1.61.15	Infectious	Sepsis, With documented bacteremia, With Pseudomonas in blood	Sepsis (ROOT Definition) + Positive blood cultures for bacteria associated with sepsis, with Pseudomonas in blood.
995.91	15.90.53 + Q1.61.12	Infectious	Sepsis, With documented bacteremia, With Staphylococcus aureus – MRSA (Methicillin Resistant Staphylococcus Aureus) in blood	Sepsis (ROOT Definition) + Positive blood cultures for bacteria associated with sepsis, with Staphylococcus aureus – MRSA (Methicillin Resistant Staphylococcus Aureus) in blood.
995.91	15.90.53 + Q1.61.13	Infectious	Sepsis, With documented bacteremia, With Staphylococcus aureus – non-MRSA (non-Methicillin Resistant Staphylococcus Aureus) in blood	Sepsis (ROOT Definition) + Positive blood cultures for bacteria associated with sepsis, with Staphylococcus aureus – non-MRSA (non-Methicillin Resistant Staphylococcus Aureus) in blood.
995.91	15.90.53 + Q1.61.20	Infectious	Sepsis, With documented bacteremia, With Staphylococcus aureus in blood	Sepsis (ROOT Definition) + Positive blood cultures for bacteria associated with sepsis, with Staphylococcus aureus in blood.
995.91	15.90.53 + Q1.61.21	Infectious	Sepsis, With documented bacteremia, With Staphylococcus epidermidis in blood	Sepsis (ROOT Definition) + Positive blood cultures for bacteria associated with sepsis, with Staphylococcus epidermidis in blood.
995.91	15.90.54	Infectious	Sepsis, With documented fungemia	Sepsis (ROOT Definition) + Positive blood cultures for fungus associated with sepsis.
995.91	15.90.54	Infectious	Sepsis, With documented fungemia, With yeast in blood	Sepsis (ROOT Definition) + Positive blood cultures for fungus associated with sepsis, with yeast in blood.
995.91	15.90.55	Infectious	Sepsis, With documented viremia	Sepsis (ROOT Definition) + Positive blood cultures for virus associated with sepsis.
995.91	15.80.05 + Q1.68.80	Infectious	Sepsis, With primary blood stream infection (BSI) = hospital acquired blood stream infection (BSI)	Sepsis (ROOT Definition) + The presence of a primary blood stream infection (BSI), also known as a "hospital acquired blood stream infection (BSI)" that is defined as an infection that began 48 hours or more after hospital admission and was due to pathogenic microorganisms in the blood that were not present or incubating before hospital admission.
995.91	15.80.05 + Q1.68.81	Infectious	Sepsis, With primary blood stream infection (BSI) = hospital acquired blood stream	Sepsis (ROOT Definition) + The presence of a primary blood stream infection (BSI), also known as a "hospital acquired blood stream

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
			infection (BSI), In a patient with a central venous catheter	infection (BSI)" that is defined as an infection that began 48 hours or more after hospital admission and was due to pathogenic microorganisms in the blood that were not present or incubating before hospital admission, In a patient with a central venous catheter in place.
995.91	15.80.05 + Q1.68.82	Infectious	Sepsis, With primary blood stream infection (BSI) = hospital acquired blood stream infection (BSI), In a patient with an arterial catheter	Sepsis (ROOT Definition) + The presence of a primary blood stream infection (BSI), also known as a "hospital acquired blood stream infection (BSI)" that is defined as an infection that began 48 hours or more after hospital admission and was due to pathogenic microorganisms in the blood that were not present or incubating before hospital admission, In a patient with an arterial catheter in place.
599	15.82.04	Infectious	Urinary tract infection (UTI)	"Urinary tract infection (UTI)" ROOT Definition = A urinary tract infection is an infection of the urinary tract, as defined by positive urine culture or white blood cells (WBCs) present on urinalysis. A urinary tract infection that will be counted as an operative or procedural complication must occur prior to hospital discharge or after hospital discharge but within 30 days of the procedure. (An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.)
599	15.82.04 + Q1.61.00	Infectious	Urinary tract infection (UTI), Bacterial	Urinary tract infection (UTI) (ROOT Definition) + A bacterial infection of the urinary tract, as defined by positive urine culture.
599.0	15.82.04 + Q1.61.15	Infectious	Urinary tract infection (UTI), Bacterial, Pseudomonas	Urinary tract infection (UTI) (ROOT Definition) + A bacterial infection of the urinary tract, with Pseudomonas in urine, as defined by positive urine culture.
599.0	15.82.04 + Q1.61.51	Infectious	Urinary tract infection (UTI), Yeast	Urinary tract infection (UTI) (ROOT Definition) + A yeast infection of the urinary tract, as defined by positive urine culture.
997.0	15.82.72	Neurologic	Anoxic encephalopathy	Clinically evident suboptimal brain function attributable to inadequate cerebral oxygen delivery.
997.0	15.82.72, 15.82.83	Neurologic	Anoxic encephalopathy, Neurological deficit not present at discharge	Clinically evident suboptimal brain function attributable to inadequate cerebral oxygen delivery, With no persisting neurologic deficit present at hospital discharge.
997.01	15.82.72, 15.82.68	Neurologic	Anoxic encephalopathy, Neurological deficit persisting at discharge	Clinically evident suboptimal brain function attributable to inadequate cerebral oxygen delivery, With a persisting neurologic deficit present at hospital discharge.
953.4	15.80.95	Neurologic	Brachial plexus injury	"Brachial plexus injury" ROOT Definition = Newly acquired or newly recognized deficit of unilateral or bilateral brachial plexus function indicated by physical exam findings, imaging studies, or both.
953.4	15.80.95, 15.82.83	Neurologic	Brachial plexus injury, Neurological deficit not present at discharge	Brachial plexus injury (ROOT Definition) + With no persisting neurologic deficit present at hospital discharge.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
953.4	15.80.95, 15.82.68	Neurologic	Brachial plexus injury, Neurological deficit persisting at discharge	Brachial plexus injury (ROOT Definition) + With a persisting neurologic deficit present at hospital discharge.
333.5	15.83.40	Neurologic	Choreoathetosis	Choreoathetosis is a movement of intermediate speed, between the quick, flitting movements of chorea and the slower, writhing movements of athetosis. Chorea is an irregular, rapid, uncontrolled, involuntary, excessive movement that seems to flow randomly from one part of the body to another. Athetosis is a slower writhing and twisting movement. This complication can be coded as a generic all encompassing term for chorea, athetosis, and choreoathetosis.
333.5	15.83.41	Neurologic	Choreoathetosis, New onset postoperatively/ postprocedurally	Choreoathetosis is a movement of intermediate speed, between the quick, flitting movements of chorea and the slower, writhing movements of athetosis. Chorea is an irregular, rapid, uncontrolled, involuntary, excessive movement that seems to flow randomly from one part of the body to another. Athetosis is a slower writhing and twisting movement. This complication can be coded as a generic all encompassing term for chorea, athetosis, and choreoathetosis. This complication should be selected if these movements were not present preoperatively/preprocedurally and developed after the surgery or intervention. In other words, this complication indicates the clinical recognition of new involuntary irregular non-epileptiform movements of the face, trunk, and/or extremities characterized by slow writhing and/or quicker flitting motion.
333.5	15.83.40, 15.82.82	Neurologic	Choreoathetosis, Present preoperatively/ preprocedurally and postoperatively/ postprocedurally	Choreoathetosis is a movement of intermediate speed, between the quick, flitting movements of chorea and the slower, writhing movements of athetosis. Chorea is an irregular, rapid, uncontrolled, involuntary, excessive movement that seems to flow randomly from one part of the body to another. Athetosis is a slower writhing and twisting movement. This complication can be coded as a generic all encompassing term for chorea, athetosis, and choreoathetosis. This complication should be selected if these movements were present preoperatively/preprocedurally and also after the surgery or intervention. In other words, this complication indicates preoperative/preprocedural and postoperative/ postprocedural clinical recognition of involuntary irregular non-epileptiform movements of the face, trunk, and/or extremities characterized by slow writhing and/or quicker flitting motion.
780.01	15.83.42	Neurologic	Coma	"Coma" ROOT Definition = Coma is a state of sustained, pathologic, unarousable unresponsiveness with no discernable sleep wake cycles. The patient is in a state of profound unconsciousness and is incapable of sensing or responding to external stimuli. Coma is part of a continuum from Coma > Stupor > Obtundation > Lethargy. What differentiates one from another is the degree to which one is arousable. {Plum & Posner, Diagnosis of Stupor and Coma, 3rd Ed.]
780.01	15.83.43	Neurologic	Continuous coma > or = 24 hours	Coma (ROOT Definition) + With the condition lasting for > or = 24 hours.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
780.01	15.83.43, 15.82.83	Neurologic	Continuous coma > or = 24 hours, Neurological deficit not present at discharge	Coma (ROOT Definition) + With the condition lasting for > or = 24 hours, With no persisting neurologic deficit present at hospital discharge.
780.01	15.83.43, 15.82.68	Neurologic	Continuous coma > or = 24 hours, Neurological deficit persisting at discharge	Coma (ROOT Definition) + With the condition lasting for > or = 24 hours, With a persisting neurologic deficit present at hospital discharge.
293	15.83.44	Neurologic	Delirium	"Delirium" ROOT Definition = Delirium is a state of confusion with impaired attention, memory, and concentration that tends to wax and wane.
293	15.83.44, 15.82.83	Neurologic	Delirium, Neurological deficit not present at discharge	Delirium (ROOT Definition) + With no persisting neurologic deficit present at hospital discharge.
293.0	15.83.44, 15.82.68	Neurologic	Delirium, Neurological deficit persisting at discharge	Delirium (ROOT Definition) + With a persisting neurologic deficit present at hospital discharge.
997.01	15.82.98	Neurologic	Hypoxic ischemic encephalopathy	Altered mental status resulting from cardiorespiratory insufficiency or collapse. Diagnosis is supported by existence of a neurologic imaging study indicating a new or previously unsuspected global central nervous system injury of a presumed hypoxic, ischemic, or combined etiology.
519.4	15.80.90	Neurologic	Intraoperative/Intraprocedural injury to phrenic nerve injury (paralyzed diaphragm)	Use this code when a known injury occurs during an operation and/or procedure.
519.4	15.80.98	Neurologic	Intraoperative/Intraprocedural injury to phrenic nerve injury (paralyzed diaphragm), Bilateral	Use this code when a known injury occurs during an operation and/or procedure.
519.4	15.80.92	Neurologic	Intraoperative/Intraprocedural injury to phrenic nerve injury (paralyzed diaphragm), Left	Use this code when a known injury occurs during an operation and/or procedure.
519.4	15.80.91	Neurologic	Intraoperative/Intraprocedural injury to phrenic nerve injury (paralyzed diaphragm), Right	Use this code when a known injury occurs during an operation and/or procedure.
951.8	15.80.93	Neurologic	Intraoperative/Intraprocedural injury to recurrent laryngeal nerve	Use this code when a known injury occurs during an operation and/or procedure.
951.8	15.81.82	Neurologic	Intraoperative/Intraprocedural injury to recurrent laryngeal nerve, Bilateral	Use this code when a known injury occurs during an operation and/or procedure.
951.8	15.81.81	Neurologic	Intraoperative/Intraprocedural injury to recurrent laryngeal nerve, Left	Use this code when a known injury occurs during an operation and/or procedure.
951.8	15.81.80	Neurologic	Intraoperative/Intraprocedural injury to recurrent laryngeal nerve, Right	Use this code when a known injury occurs during an operation and/or procedure.
772.1	15.82.99	Neurologic	IVH (Intraventricular hemorrhage)	Existence of a neurologic imaging study indicating a new or previously unsuspected collection of intraventricular hemorrhage that may extend to include an intraparenchymal component.
772.1	15.83.99, 15.82.83	Neurologic	IVH (Intraventricular hemorrhage), Neurological deficit not present at discharge	Existence of a neurologic imaging study indicating a new or previously unsuspected collection of intraventricular hemorrhage that may extend to include an intraparenchymal component, With no persisting neurologic deficit present at hospital discharge.
772.1	15.83.99, 15.82.68	Neurologic	IVH (Intraventricular hemorrhage), Neurological deficit persisting at discharge	Existence of a neurologic imaging study indicating a new or previously unsuspected collection of intraventricular hemorrhage that may extend to include an intraparenchymal component, With a persisting neurologic deficit present at hospital discharge.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
772.11	15.82.99 + Q1.83.71	Neurologic	IVH (Intraventricular hemorrhage)-modifier, Grade 1 IVH	Existence of a neurologic imaging study indicating a new or previously unsuspected collection of intraventricular hemorrhage with a limited germinal matrix involvement.
772.12	15.82.99 + Q1.83.72	Neurologic	IVH (Intraventricular hemorrhage)-modifier, Grade 2 IVH	Existence of a neurologic imaging study indicating a new or previously unsuspected collection of intraventricular hemorrhage that involves an area of up to, but not more than 50% of the ventricular cross-sectional area in sagittal view.
772.13	15.82.99 + Q1.83.73	Neurologic	IVH (Intraventricular hemorrhage)-modifier, Grade 3 IVH	Existence of a neurologic imaging study indicating a new or previously unsuspected collection of intraventricular hemorrhage that involves at least 50% of the ventricular cross-sectional area in sagittal view but not an intraparenchymal component.
772.14	15.82.99 + Q1.83.74	Neurologic	IVH (Intraventricular hemorrhage)-modifier, Grade 4 IVH	Existence of a neurologic imaging study indicating a new or previously unsuspected collection of intraventricular hemorrhage that includes an intraparenchymal component extending beyond the germinal matrix.
997	15.82.50	Neurologic	Neurological complication	Any complication involving the neurologic system. An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.
997	15.82.94	Neurologic	Neurological deficit	Newly recognized and/or newly acquired deficit of neurologic function leading to inpatient referral, therapy, or intervention not otherwise practiced for a similarly unaffected inpatient.
369.00	15.82.95	Neurologic	Neurological deficit, Blindness of new onset	Newly recognized and/or newly acquired absence or severe limitation of visual perception.
389.90	15.82.96	Neurologic	Neurological deficit, Deafness of new onset	Newly recognized and/or newly acquired absence or severe limitation of auditory perception.
783.40	15.82.97	Neurologic	Neurological deficit, Developmental delay	Failure of or delayed achievement of developmental milestones.
783.4	15.82.97, 15.82.83	Neurologic	Neurological deficit, Developmental delay, Neurological deficit not present at discharge	Failure of or delayed achievement of developmental milestones, With no persisting neurologic deficit present at hospital discharge.
783.40	15.82.97, 15.82.68	Neurologic	Neurological deficit, Developmental delay, Neurological deficit persisting at discharge	Failure of or delayed achievement of developmental milestones, With a persisting neurologic deficit present at hospital discharge.
997.09	15.82.68	Neurologic	Neurological deficit, Neurological deficit persisting at discharge	Newly recognized and/or newly acquired deficit of neurologic function leading to inpatient referral, therapy, or intervention not otherwise practiced for a similarly unaffected inpatient, With a persisting neurologic deficit present at hospital discharge. In other words, new (onset intraoperatively or postoperatively – or intraprocedurally or postprocedurally) neurological deficit persisting and present at discharge from hospital.
997.09	15.82.82	Neurologic	Neurological deficit, Present preoperatively/ preprocedurally and postoperatively/ postprocedurally	A deficit of neurologic function present prior to and after surgery

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
997.09	15.82.83	Neurologic	Neurological deficit, Transient neurological deficit not present at discharge	Newly recognized and/or newly acquired deficit of neurologic function leading to inpatient referral, therapy, or intervention not otherwise practiced for a similarly unaffected inpatient, With no persisting neurologic deficit present at hospital discharge. In other words, new (onset intraoperatively or postoperatively – or intraprocedurally or postprocedurally) neurological deficit completely resolving prior to discharge from hospital.
344.9	15.83.81	Neurologic	Paralysis	"Paralysis" ROOT Definition = Complete loss of nervous function to a part of the body
342.9	15.83.82	Neurologic	Paralysis, Hemiplegia	Paralysis (ROOT Definition) + Paralysis involving 2 limbs
342.9	15.83.82, 15.82.83	Neurologic	Paralysis, Hemiplegia, Neurological deficit not present at discharge	Paralysis (ROOT Definition) + Paralysis involving 2 limbs + With no persisting neurologic deficit present at hospital discharge.
342.9	15.83.82, 15.82.68	Neurologic	Paralysis, Hemiplegia, Neurological deficit persisting at discharge	Paralysis (ROOT Definition) + Paralysis involving 2 limbs + With a persisting neurologic deficit present at hospital discharge.
344.9	15.83.81, 15.82.83	Neurologic	Paralysis, Neurological deficit not present at discharge	Paralysis (ROOT Definition) + With no persisting neurologic deficit present at hospital discharge.
344.9	15.83.81, 15.82.68	Neurologic	Paralysis, Neurological deficit persisting at discharge	Paralysis (ROOT Definition) + With a persisting neurologic deficit present at hospital discharge.
344	15.83.83	Neurologic	Paralysis, Quadriplegia	Paralysis (ROOT Definition) + Paralysis involving all 4 limbs
344	15.83.83, 15.82.83	Neurologic	Paralysis, Quadriplegia, Neurological deficit not present at discharge	Paralysis (ROOT Definition) + Paralysis involving all 4 limbs + With no persisting neurologic deficit present at hospital discharge.
344.00	15.83.83, 15.82.68	Neurologic	Paralysis, Quadriplegia, Neurological deficit persisting at discharge	Paralysis (ROOT Definition) + Paralysis involving all 4 limbs + With a persisting neurologic deficit present at hospital discharge.
519.40	15.84.01	Neurologic	Paralyzed diaphragm (possible phrenic nerve injury)	Presence of elevated hemi-diaphragm(s) on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy.
519.40	15.84.10	Neurologic	Paralyzed diaphragm (possible phrenic nerve injury), Bilateral	Presence of elevated bilateral hemi-diaphragms on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy.
519.4	15.84.11	Neurologic	Paralyzed diaphragm (possible phrenic nerve injury), Bilateral, Not requiring plication of diaphragm	Presence of elevated bilateral hemi-diaphragms on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy, that does not require operative intervention with diaphragm plication.
519.4	15.84.12	Neurologic	Paralyzed diaphragm (possible phrenic nerve injury), Bilateral, Requiring bilateral plication of diaphragm	Presence of elevated bilateral hemi-diaphragms on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy, that requires bilateral operative intervention with diaphragm plication
519.4	15.84.07	Neurologic	Paralyzed diaphragm (possible phrenic nerve injury), Left	Presence of elevated left hemi-diaphragm on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy.
519.4	15.84.08	Neurologic	Paralyzed diaphragm (possible phrenic nerve injury), Left, Not requiring plication of diaphragm	Presence of elevated left hemi-diaphragm on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy, that does not require operative intervention with diaphragm plication.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
519.4	15.84.09	Neurologic	Paralyzed diaphragm (possible phrenic nerve injury), Left, Requiring plication of diaphragm	Presence of elevated left hemi-diaphragm on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy, that requires operative intervention with diaphragm plication.
519.4	15.84.02	Neurologic	Paralyzed diaphragm (possible phrenic nerve injury), Not requiring plication of diaphragm	Presence of elevated hemi-diaphragm(s) on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy, that does not require operative intervention with diaphragm plication.
519.4	15.84.03	Neurologic	Paralyzed diaphragm (possible phrenic nerve injury), Requiring plication of diaphragm	Presence of elevated hemi-diaphragm(s) on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy, that requires operative intervention with diaphragm plication.
519.4	15.84.04	Neurologic	Paralyzed diaphragm (possible phrenic nerve injury), Right	Presence of elevated right hemi-diaphragm on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy.
519.4	15.84.05	Neurologic	Paralyzed diaphragm (possible phrenic nerve injury), Right, Not requiring plication of diaphragm	Presence of elevated right hemi-diaphragm on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy, that does not require operative intervention with diaphragm plication
519.4	15.84.06	Neurologic	Paralyzed diaphragm (possible phrenic nerve injury), Right, Requiring plication of diaphragm	Presence of elevated right hemi-diaphragm on chest radiograph in conjunction with evidence of weak, immobile, or paradoxical movement assessed by ultrasound or fluoroscopy, that requires operative intervention with diaphragm plication.
342.9	15.83.86	Neurologic	Paresis	"Paresis" ROOT Definition = Partial loss of nervous function to a part of the body (IN other words, "partial paralysis".
342.9	15.83.87	Neurologic	Paresis, Hemiplegia	Paresis (ROOT Definition) + Paresis involving 2 limbs
342.9	15.83.87, 15.82.83	Neurologic	Paresis, Hemiplegia, Neurological deficit not present at discharge	Paresis (ROOT Definition) + Paresis involving 2 limbs + With no persisting neurologic deficit present at hospital discharge.
342.9	15.83.87, 15.82.68	Neurologic	Paresis, Hemiplegia, Neurological deficit persisting at discharge	Paresis (ROOT Definition) + Paresis involving 2 limbs + With a persisting neurologic deficit present at hospital discharge.
94.1	15.83.86, 15.82.83	Neurologic	Paresis, Neurological deficit not present at discharge	Paresis (ROOT Definition) + With no persisting neurologic deficit present at hospital discharge.
94.1	15.83.86, 15.82.68	Neurologic	Paresis, Neurological deficit persisting at discharge	Paresis (ROOT Definition) + With a persisting neurologic deficit present at hospital discharge.
344	15.83.88	Neurologic	Paresis, Quadriplegia	Paresis (ROOT Definition) + Paresis involving all 4 limbs
344	15.83.88, 15.82.83	Neurologic	Paresis, Quadriplegia, Neurological deficit not present at discharge	Paresis (ROOT Definition) + Paresis involving all 4 limbs + With no persisting neurologic deficit present at hospital discharge.
344.00	15.83.88, 15.82.68	Neurologic	Paresis, Quadriplegia, Neurological deficit persisting at discharge	Paresis (ROOT Definition) + Paresis involving all 4 limbs + With a persisting neurologic deficit present at hospital discharge.
957.90	15.80.96	Neurologic	Peripheral nerve injury	"Peripheral nerve injury" ROOT Definition = Newly acquired or newly recognized deficit of unilateral or bilateral peripheral nerve function indicated by physical exam findings, imaging studies, or both.
957.90	15.80.96, 15.82.83	Neurologic	Peripheral nerve injury, Neurological deficit not present at discharge	Peripheral nerve injury (ROOT Definition) + With no persisting neurologic deficit present at hospital discharge.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
957.9	15.80.96, 15.82.68	Neurologic	Peripheral nerve injury, Neurological deficit persisting at discharge	Peripheral nerve injury (ROOT Definition) + With a persisting neurologic deficit present at hospital discharge.
344.9	15.83.84	Neurologic	Peripheral nerve palsy	Documented dysfunction of a peripheral nerve
344.9	15.83.84, 15.82.83	Neurologic	Peripheral nerve palsy, Neurological deficit not present at discharge	Documented dysfunction of a peripheral nerve + With no persisting neurologic deficit present at hospital discharge.
344.9	15.83.84, 15.82.68	Neurologic	Peripheral nerve palsy, Neurological deficit persisting at discharge	Documented dysfunction of a peripheral nerve + With a persisting neurologic deficit present at hospital discharge.
779.7	15.83.45	Neurologic	PVL (Periventricular leukomalacia)	"PVL (Periventricular Leukomalacia)" ROOT Definition = Existence of a neurologic imaging study indicating new or previously unsuspected ischemic white matter changes adjacent to the lateral ventricles. The ischemia occurs in the border zone at the end of arterial vascular distributions in the white matter adjacent to the lateral ventricles. The diagnostic hallmarks of PVL are periventricular echodensities or cysts detected by cranial imaging.
779.7	15.83.45, 15.82.83	Neurologic	PVL (Periventricular leukomalacia), Neurological deficit not present at discharge	PVL (Periventricular Leukomalacia) (ROOT Definition) + Neurological deficit not present at discharge
779.7	15.83.45, 15.82.68	Neurologic	PVL (Periventricular leukomalacia), Neurological deficit persisting at discharge	PVL (Periventricular Leukomalacia) (ROOT Definition) + Neurological deficit persisting at discharge
997.09	15.82.92	Neurologic	RIND (Reversible ischemic neurologic deficit)	"RIND (Reversible ischemic neurologic deficit)" ROOT Definition = A reversible ischemic neurologic deficit is defined as the loss of neurological function with symptoms at least 24 hours after onset but with complete return of function within 72 hours. In other words, a transient disturbance of perfusion to a localized part of the brain which produces a temporary, focal lesion with defined deficiency of neurologic function lasting from 24 to 72 hours, but not resulting in sustained symptoms or injury. Because a stroke is defined as "any confirmed neurological deficit of abrupt onset caused by a disturbance in blood flow to the brain, when the neurologic deficit does not resolve within 24 hours", a RIND is a subtype of a stroke where the loss of neurological function and symptoms completely resolve within 72 hours.
997.09	15.82.92, 15.82.83	Neurologic	RIND (Reversible ischemic neurologic deficit), Neurological deficit not present at discharge	RIND (Reversible ischemic neurologic deficit) (ROOT Definition) + With no persisting neurologic deficit present at hospital discharge.
997.09	15.82.92, 15.82.68	Neurologic	RIND (Reversible ischemic neurologic deficit), Neurological deficit persisting at discharge	RIND (Reversible ischemic neurologic deficit) (ROOT Definition) +- With a persisting neurologic deficit present at hospital discharge.
780.39	15.82.93	Neurologic	Seizure	"Seizure" ROOT Definition = A seizure is defined as the clinical and/or electroencephalographic recognition of epileptiform activity.
780.39	15.83.90	Neurologic	Seizure, Clinically silent with electroencephalography (EEG) confirmation	Seizure (ROOT Definition) + A seizure without clinical manifestations, but with electroencephalography (EEG) documentation. In other words, a seizure documented on EEG without symptoms.
780.39	15.83.91	Neurologic	Seizure, Clinically suspected with electroencephalography (EEG) confirmation	Seizure (ROOT Definition) + A seizure with clinical manifestations and electroencephalography (EEG) documentation.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
780.39	15.83.92	Neurologic	Seizure, Clinically suspected without electroencephalography (EEG) confirmation:	Seizure (ROOT Definition) + Clinical suspicion of epileptiform activity without documentation by electroencephalography (EEG).
780.39	15.82.67	Neurologic	Seizure, New onset postoperatively/ postprocedurally	Seizure (ROOT Definition) + Occurring postoperatively and/or postprocedurally (prior to hospital discharge or after hospital discharge but less than 30 days after surgery and/or intervention), In a patient without preoperative and/or preprocedural clinical and/or EEG evidence of epileptiform activity.
780.39	15.82.89	Neurologic	Seizure, Present preoperatively/preprocedurally and postoperatively/postprocedurally	Seizure (ROOT Definition) + Occurring postoperatively and/or postprocedurally (prior to hospital discharge or after hospital discharge but less than 30 days after surgery and/or intervention), In a patient with preoperative and/or preprocedural clinical and/or EEG evidence of epileptiform activity.
952	15.83.80	Neurologic	Spinal cord injury	"Spinal cord injury" ROOT Definition = Newly acquired or newly recognized deficit of spinal cord function indicated by physical exam findings, imaging studies, or both.
952	15.83.80, 15.82.83	Neurologic	Spinal cord injury, Neurological deficit not present at discharge	Spinal cord injury (ROOT Definition) + With no persisting neurologic deficit present at hospital discharge.
952	15.83.80, 15.82.68	Neurologic	Spinal cord injury, Neurological deficit persisting at discharge	Spinal cord injury (ROOT Definition) + With a persisting neurologic deficit present at hospital discharge.
997.02	15.82.60	Neurologic	Stroke	"Stroke" ROOT Definition = A stroke is any confirmed neurological deficit of abrupt onset caused by a disturbance in blood flow to the brain, when the neurologic deficit does not resolve within 24 hours.
997.02	15.82.90	Neurologic	Stroke-Brain stem stroke	"Stroke-Brain stem stroke" ROOT Definition = Any confirmed neurological deficit of abrupt onset caused by a disturbance in blood flow to the brain stem, when the neurologic deficit does not resolve within 24 hours.
997.02	15.82.91	Neurologic	Stroke-Cerebellar stroke	"Stroke-Cerebellar stroke" ROOT Definition = Any confirmed neurological deficit of abrupt onset caused by a disturbance in blood flow to the cerebellum, when the neurologic deficit does not resolve within 24 hours.
997.02	15.83.85	Neurologic	Stroke–Clinically silent	A radiographically identified injury to the brain, caused by a disturbance in blood flow to the brain, without clinical manifestations. This lesion is usually identified with magnetic resonance imaging (MRI) or computerized axial tomographic scan (CAT Scan).
997.02	15.82.60	Neurologic	Stroke-CVA (Cerebrovascular accident)	"Stroke-CVA (Cerebrovascular accident)" ROOT Definition = Any confirmed neurological deficit of abrupt onset caused by a disturbance in cerebral blood supply, when the neurologic deficit does not resolve within 24 hours.
997.02	15.82.86	Neurologic	Stroke-CVA (Cerebrovascular accident), Cerebrovascular hemorrhage	Stroke-CVA (Cerebrovascular accident) (ROOT Definition) + With existence of a neurologic imaging study indicating a new or previously unsuspected focus of discrete central nervous system injury with an appearance consistent with hemorrhage.
997.02	15.82.87	Neurologic	Stroke-CVA (Cerebrovascular accident), Cerebrovascular hemorrhage and Infarct	Stroke-CVA (Cerebrovascular accident) (ROOT Definition) + With existence of a neurologic imaging study indicating a new or previously

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				unsuspected focus of discrete central nervous system injury in a pattern with both hemorrhagic components and changes consistent with occlusion of blood flow in a cerebral artery.
997.02	15.82.87, 15.82.83	Neurologic	Stroke-CVA (Cerebrovascular accident), Cerebrovascular hemorrhage and Infarct, Neurological deficit not present at discharge	Stroke-CVA (Cerebrovascular accident) (ROOT Definition) + With existence of a neurologic imaging study indicating a new or previously unsuspected focus of discrete central nervous system injury in a pattern with both hemorrhagic components and changes consistent with occlusion of blood flow in a cerebral artery, With no neurologic deficit present at hospital discharge.
997.02	15.82.87, 15.82.68	Neurologic	Stroke-CVA (Cerebrovascular accident), Cerebrovascular hemorrhage and Infarct, Neurological deficit persisting at discharge	Stroke-CVA (Cerebrovascular accident) (ROOT Definition) + With existence of a neurologic imaging study indicating a new or previously unsuspected focus of discrete central nervous system injury in a pattern with both hemorrhagic components and changes consistent with occlusion of blood flow in a cerebral artery, With a persisting neurologic deficit present at hospital discharge.
997.02	15.82.86, 15.82.83	Neurologic	Stroke-CVA (Cerebrovascular accident), Cerebrovascular hemorrhage, Neurological deficit not present at discharge	Stroke-CVA (Cerebrovascular accident) (ROOT Definition) + With existence of a neurologic imaging study indicating a new or previously unsuspected focus of discrete central nervous system injury with an appearance consistent with hemorrhage, With no persisting neurologic deficit present at hospital discharge.
997.02	15.82.86, 15.82.68	Neurologic	Stroke-CVA (Cerebrovascular accident), Cerebrovascular hemorrhage, Neurological deficit persisting at discharge	Stroke-CVA (Cerebrovascular accident) (ROOT Definition) + With existence of a neurologic imaging study indicating a new or previously unsuspected focus of discrete central nervous system injury with an appearance consistent with hemorrhage, With a persisting neurologic deficit present at hospital discharge.
997.02	15.82.88	Neurologic	Stroke-CVA (Cerebrovascular accident), Cerebrovascular infarct	Stroke-CVA (Cerebrovascular accident) (ROOT Definition) + With existence of a neurologic imaging study indicating a new or previously unsuspected focus of discrete central nervous system injury with an appearance consistent with occlusion of blood flow in a cerebral artery.
997.02	15.82.88, 15.82.83	Neurologic	Stroke-CVA (Cerebrovascular accident), Cerebrovascular infarct, Neurological deficit not present at discharge	Stroke-CVA (Cerebrovascular accident) (ROOT Definition) + With existence of a neurologic imaging study indicating a new or previously unsuspected focus of discrete central nervous system injury with an appearance consistent with occlusion of blood flow in a cerebral artery, With no persisting neurologic deficit present at hospital discharge.
997.02	15.82.88, 15.82.68	Neurologic	Stroke-CVA (Cerebrovascular accident), Cerebrovascular infarct, Neurological deficit persisting at discharge	Stroke-CVA (Cerebrovascular accident) (ROOT Definition) + With existence of a neurologic imaging study indicating a new or previously unsuspected focus of discrete central nervous system injury with an appearance consistent with occlusion of blood flow in a cerebral artery, With a persisting neurologic deficit present at hospital discharge.
997.02	15.82.60, 15.82.83	Neurologic	Stroke-CVA (Cerebrovascular accident), Neurological deficit not present at discharge	Stroke-CVA (Cerebrovascular accident) (ROOT Definition) + With no persisting neurologic deficit present at hospital discharge.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
997.02	15.82.60, 15.82.68	Neurologic	Stroke-CVA (Cerebrovascular accident), Neurological deficit persisting at discharge	Stroke-CVA (Cerebrovascular accident) (ROOT Definition) + With a persisting neurologic deficit present at hospital discharge.
435.9	15.82.85	Neurologic	TIA (Transient ischemic attack)	"TIA (Transient ischemic attack)" ROOT Definition = A transient ischemic attack is the temporary loss of neurological function resulting from temporary occlusion of blood flow in a cerebral artery, but without resulting in permanent brain injury. Most symptoms last less than 5 minutes but may last hours – up to 24 hours.
435.9	15.82.85, 15.82.83	Neurologic	TIA (Transient ischemic attack), Neurological deficit not present at discharge	TIA (Transient ischemic attack) (ROOT Definition) + With no persisting neurologic deficit present at hospital discharge.
435.9	15.82.85, 15.82.68	Neurologic	TIA (Transient ischemic attack), Neurological deficit persisting at discharge	TIA (Transient ischemic attack) (ROOT Definition) + With a persisting neurologic deficit present at hospital discharge.
478.3	15.81.70	Neurologic	Vocal cord dysfunction (possible recurrent laryngeal nerve injury)	Presence of poor or no vocal cord movement assessed by endoscopy. Patient may or may not have stridor, hoarse voice or poor cry, in conjunction with endoscopic findings.
478.34	15.81.71	Neurologic	Vocal cord dysfunction (possible recurrent laryngeal nerve injury), Bilateral	Presence of poor or no vocal cord movement assessed by endoscopy. Patient may or may not have stridor, hoarse voice or poor cry in conjunction with endoscopic findings.
478.32	15.81.72	Neurologic	Vocal cord dysfunction (possible recurrent laryngeal nerve injury), Left	Presence of poor or no vocal cord movement assessed by endoscopy. Patient may or may not have stridor, hoarse voice or poor cry in conjunction with endoscopic findings.
478.32	15.81.73	Neurologic	Vocal cord dysfunction (possible recurrent laryngeal nerve injury), Right	Presence of poor or no vocal cord movement assessed by endoscopy. Patient may or may not have stridor, hoarse voice or poor cry in conjunction with endoscopic findings.
789.5	15.82.36	Gastrointestinal	Ascites	"Ascites" ROOT Definition = Accumulation of fluid in the peritoneal cavity
789.5	15.82.36 + Q1.83.01	Gastrointestinal	Ascites requiring drainage	Ascites (ROOT Definition) + Requiring paracentesis or placement of peritoneal drain
789.5	15.82.36 + Q1.83.18	Gastrointestinal	Ascites requiring drainage, With paracentesis	Ascites (ROOT Definition) + Requiring paracentesis without placement of peritoneal drain
789.5	15.82.36 + Q1.83.19	Gastrointestinal	Ascites requiring drainage, With paracentesis and placement of peritoneal drain	Ascites (ROOT Definition) + Requiring paracentesis and placement of peritoneal drain
789.5	15.82.37	Gastrointestinal	Ascites-modifier for type of ascites, Chylous	Accumulation of chylous fluid in the peritoneal cavity
789.5	15.83.73	Gastrointestinal	Ascites-modifier for type of ascites, Serous	Accumulation of serous fluid in the peritoneal cavity
575.1	15.82.46	Gastrointestinal	Cholecystitis	Inflammation of the gallbladder
558.9	15.83.59	Gastrointestinal	Colitis	Inflammation of the large intestine (colon) typically associated with abdominal pain, mucous or blood in the stool, fever, ileus and possibly peritoneal signs. If the patient has NEC, code NEC and not colitis.
V55.9	15.83.52	Gastrointestinal	Complication requiring laparotomy	Exploratory abdominal laparotomy for pathology felt to be anywhere in the peritoneal cavity and abdomen including the GI tract extending anywhere from the intra-abdominal esophagus (and stomach) to the rectum.
787.2	15.82.64	Gastrointestinal	Dysphagia and/or inability to eat	"Dysphagia and/or inability to eat" ROOT Definition = "Dysphagia and/or inability to eat" is defined as difficulty in swallowing or the

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				inability to eat that may result in the need for parenteral nutrition, tube feedings, or gastrostomy or enterostomy feedings.
787.2	15.83.61	Gastrointestinal	Dysphagia and/or inability to eat, Resolves without the need for feeding via gastrostomy or enterostomy or hospital discharge with tube feedings	Dysphagia and/or inability to eat (ROOT Definition) + That resolves without the need for feeding via gastrostomy or enterostomy or hospital discharge with tube feedings
V55.1	15.83.60	Gastrointestinal	Dysphagia and/or inability to eat, Resulting in feeding via gastrostomy or enterostomy	Dysphagia and/or inability to eat (ROOT Definition) + That ultimately results in feeding via gastrostomy or enterostomy
787.2	15.82.65	Gastrointestinal	Dysphagia and/or inability to eat, Resulting in hospital discharge with tube feedings	Dysphagia and/or inability to eat (ROOT Definition) + That results in the need for feeding tube at hospital discharge without gastrostomy or enterostomy (therefore, either typically a nasogastric tube, or much less likely, an orogastric feeding tube at hospital discharge)
558.9	15.83.55	Gastrointestinal	Enteritis	Inflammation of the small bowel with abdominal pain with fever, ileus and possibly peritoneal signs
530.10	15.83.62	Gastrointestinal	Esophagitis	Inflammation of the esophagus that results in impaired enteral intake and possibly the need for parenteral nutrition or gastrostomy or enterostomy feedings
533.2	15.82.22	Gastrointestinal	Gastric perforation	Perforation of the stomach as defined radiographically, endoscopically, or through exploratory laparotomy or laparoscopy.
535.5	15.83.54	Gastrointestinal	Gastritis	Inflammation of the stomach resulting in impaired gastric function and possibly the need for parenteral nutrition
530.81	15.83.66	Gastrointestinal	Gastroesophageal reflux disease (GERD)	Symptomatic reflux of gastric contents into the esophagus
530.81	15.83.67	Gastrointestinal	Gastroesophageal reflux disease (GERD), Medically managed	Symptomatic reflux of gastric contents into the esophagus that requires medical therapy.
530.81	15.83.68	Gastrointestinal	Gastroesophageal reflux disease (GERD), Surgically managed	Symptomatic reflux of gastric contents into the esophagus that exceeds requiring surgical therapy including gastrostomy tube, gastrojejunostomy tube, or fundoplication.
578.9	15.83.53	Gastrointestinal	Gastrointestinal bleeding requiring transfusion	"Gastrointestinal bleeding requiring transfusion" ROOT Definition = Bleeding form the gastrointestinal tract; code this complication if the bleeding necessitates blood transfusion. Gastrointestinal bleeding may be from an upper gastrointestinal source (proximal to the ligament of Treitz – oropharynx, esophagus, stomach, or duodenum) or a lower gastrointestinal source (distal to the ligament of Treitz – jejunum, ileum, small intestine, large intestine, rectum, or anus).
578.9	15.83.53 + Q1.83.25	Gastrointestinal	Gastrointestinal bleeding requiring transfusion, Bright red blood per rectum	Gastrointestinal bleeding requiring transfusion (ROOT Definition) + Code this complication for bright red blood per rectum which is generally caused by bleeding from a lower gastrointestinal source but can be caused by bleeding from an upper gastrointestinal source in the setting of rapid bleeding and increased gastrointestinal motility.
578.9	15.83.53 + Q1.83.21	Gastrointestinal	Gastrointestinal bleeding requiring transfusion, Hematemesis	Gastrointestinal bleeding requiring transfusion (ROOT Definition) + Code this complication for hematemesis which is

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				defined as the vomiting of blood that is either fresh and unaltered or digested by gastric secretion. The etiology of hematemesis is an upper gastrointestinal bleed. Hematemesis may be accompanied by melena.
578.9	15.83.53 + Q1.83.23	Gastrointestinal	Gastrointestinal bleeding requiring transfusion, Lower gastrointestinal bleeding	Gastrointestinal bleeding requiring transfusion (ROOT Definition) + Code this complication for lower gastrointestinal bleeding.
578.9	15.83.53 + Q1.83.24	Gastrointestinal	Gastrointestinal bleeding requiring transfusion, Melena	Gastrointestinal bleeding requiring transfusion (ROOT Definition) + Code this complication for melena which is defined as the passage of black tarry stool that tests positive for heme (guaiac positive). The etiology of melena may be an upper gastrointestinal bleed or a lower gastrointestinal bleed, or less commonly hemoptysis with swallowing of the blood.
578.9	15.83.53 + Q1.83.22	Gastrointestinal	Gastrointestinal bleeding requiring transfusion, Upper gastrointestinal bleeding	Gastrointestinal bleeding requiring transfusion (ROOT Definition) + Code this complication for upper gastrointestinal bleeding.
997.4	15.82.20	Gastrointestinal	Gastrointestinal complication	Any complication involving the gastrointestinal system. Gastrointestinal complications refer to complications associated with the organs that compose the gastrointestinal tract and those organs supplied by the celiac, superior mesenteric and inferior mesenteric arteries. These organs include the espohagus, stomach, small intestine, large intestine or colon, liver, gallbladder, spleen, and pancreas. An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.
560.1	15.82.27	Gastrointestinal	Ileus	"Ileus" ROOT Definition = Altered gastrointestinal function with feeding intolerance, vomiting, and/or abdominal distention that requires the need for bowel rest and/or parenteral nutrition.
560.1	15.83.57	Gastrointestinal	Ileus, Requires bowel rest and total parenteral nutrition (TPN)	Ileus (ROOT Definition) + That requires bowel rest and total parenteral nutrition (TPN).
560.1	15.83.58	Gastrointestinal	Ileus, Resolves with bowel rest without total parenteral nutrition (TPN)	Ileus (ROOT Definition) + That requires the need for bowel rest and resolves with bowel rest without total parenteral nutrition (TPN).
863	15.83.69	Gastrointestinal	Intrabdominal procedural injury	Liver or splenic injury, or bowel perforation as a result of a procedure such as chest tube insertion, peritoneal drain placement, or temporary pacing wire(s) placement.
557.9	15.83.56	Gastrointestinal	Ischemic bowel	Ischemic bowel is defined as a reduction in the supply of oxygenated blood to the small intestine or large intestine, typically resulting in acidosis, abdominal distention, and feeding intolerance.
570	15.82.43	Gastrointestinal	Liver dysfunction	Dysfunction of the liver that results in hypoalbuminemia (<2 grams/dL), coagulopathy (PT > 1.5 × upper limits of normal), and hyperbilirubinemia (>3.0 × upper limits of normal). Select this complication if the patient develops 2 out of these 3 laboratory abnormalities.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
570	15.82.48	Gastrointestinal	Liver failure	Dysfunction of the liver that results in hypoalbuminemia (<2 grams/dL), coagulopathy (PT > 1.5 × upper limits of normal), and hyperbilirubinemia (>3.0 × upper limits of normal). Select this complication if the patient develops all 3 of these laboratory abnormalities, or if the patient develops 2 out of these 3 laboratory abnormalities and at least one of the following complications: ascites, cirrhosis, encephalopathy, esophageal varices, and gastrointestinal bleeding.
777.5	15.82.30	Gastrointestinal	Necrotizing enterocolitis (NEC)	"Necrotizing enterocolitis (NEC)" ROOT Definition = Necrotizing enterocolitis is defined as an acute reduction in the supply of oxygenated blood to the small intestine or large intestine, typically resulting in acidosis, abdominal distention, pneumatosis, and/or intestinal perforation, that prompts initiation of antibiotics or exploratory laparotomy.
777.5	15.83.50	Gastrointestinal	Necrotizing enterocolitis (NEC), With intestinal perforation	Necrotizing enterocolitis (NEC) (ROOT Definition) + With perforation of the small intestine or large intestine as defined radiographically, endoscopically, or through exploratory laparotomy or laparoscopy.
777.6	15.83.71	Gastrointestinal	Necrotizing enterocolitis (NEC), With intestinal perforation of large intestine	Necrotizing enterocolitis (NEC) (ROOT Definition) + With perforation of the large intestine as defined radiographically, endoscopically, or through exploratory laparotomy or laparoscopy.
777.6	15.83.70	Gastrointestinal	Necrotizing enterocolitis (NEC), With intestinal perforation of small intestine	Necrotizing enterocolitis (NEC) (ROOT Definition) + With perforation of the small intestine as defined radiographically, endoscopically, or through exploratory laparotomy or laparoscopy.
777.5	15.83.51	Gastrointestinal	Necrotizing enterocolitis (NEC), Without intestinal perforation	Necrotizing enterocolitis (NEC) (ROOT Definition) + Without perforation of the small intestine or large intestine as defined radiographically, endoscopically, or through exploratory laparotomy or laparoscopy.
577.0	15.82.47	Gastrointestinal	Pancreatitis	Inflammation of the pancreas resulting in abdominal pain and feeding intolerance that is diagnosed radiographically or with laboratory studies including amylase and lipase that are both >1.5 upper limits of normal.
558.9	15.83.72	Gastrointestinal	Typhyllitis	Inflammation of the cecum of the large intestine
255.4	15.84.22	Endocrine	Adrenal complication – Absolute adrenal insufficiency (AAI)	The appropriate basal level of cortisol in critically ill patients is controversial, with proposed cutoff values for normal basal cortisol ranging from 6–34 μg/dL. The markedly discrepant definitions of adrenal insufficiency have yielded highly variable estimates of the incidence of adrenal dysfunction in the critically ill. Although pediatric data are limited, existing evidence suggests that a basal cortisol level of 16 μg/dL or more reflects an appropriate stress response in critically ill pediatric patients. The ACTH (cosyntropin) stimulation test is used to assess adrenal reserve, with a response (Δ cortisol) of less than 9 μg/dL associated with worse outcomes. Using these reference values, the "expected" adrenal response to critical illness is typically a basal cortisol ≥16 μg/dL and a Δ cortisol

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				≥9 μg/dL. Absolute adrenal insufficiency (AAI) is defined as an inadequate basal cortisol (<16 μg/dL) and an inadequate response to cosyntropin stimulation (Δ Cortisol <9 μg/dL). There is uniform agreement that these patients require glucocorticoid ± mineralocorticoid supplementation.
255.9	15.84.23	Endocrine	Adrenal complication – Activated adrenal response (AAR)	The appropriate basal level of cortisol in critically ill patients is controversial, with proposed cutoff values for normal basal cortisol ranging from 6–34 μg/dL. The markedly discrepant definitions of adrenal insufficiency have yielded highly variable estimates of the incidence of adrenal dysfunction in the critically ill. Although pediatric data are limited, existing evidence suggests that a basal cortisol level of 16 μg/dL or more reflects an appropriate stress response in critically ill pediatric patients. The ACTH (cosyntropin) stimulation test is used to assess adrenal reserve, with a response (Δ cortisol) of less than 9 μg/dL associated with worse outcomes. Using these reference values, the "expected" adrenal response to critical illness is typically a basal cortisol ≥16 μg/dL and a Δ cortisol ≥9 μg/dL. For the present review, this state has been termed activated adrenal response (AAR), defined as an adequate basal cortisol (≥16 μg/dL) and an adequate response to cosyntropin stimulation (Δ Cortisol ≥9 μg/dL).
255.4	15.84.24	Endocrine	Adrenal complication – Insufficient basal cortisol (IBC)	The appropriate basal level of cortisol in critically ill patients is controversial, with proposed cutoff values for normal basal cortisol ranging from 6–34 μg/dL. The markedly discrepant definitions of adrenal insufficiency have yielded highly variable estimates of the incidence of adrenal dysfunction in the critically ill. Although pediatric data are limited, existing evidence suggests that a basal cortisol level of 16 μg/dL or more reflects an appropriate stress response in critically ill pediatric patients. The ACTH (cosyntropin) stimulation test is used to assess adrenal reserve, with a response (Δ cortisol) of less than 9 μg/dL associated with worse outcomes. Using these reference values, the "expected" adrenal response to critical illness is typically a basal cortisol ≥16 μg/dL and a Δ cortisol ≥9 μg/dL. For the present review, the term insufficient basal cortisol (IBC) has been used to refer to a patient with low basal cortisol (<16 μg/dL) and an adequate response to cosyntropin stimulation (Δ Cortisol ≥9 μg/dL). Retrospective data suggest that low basal cortisol is often observed in patients with low cardiac output syndrome, although it is not known whether this is causative or simply associated. Although further investigation is needed, existing data support steroid treatment in patients with IBC.
255.4	15.84.25	Endocrine	Adrenal complication – Relative adrenal insufficiency (RAI)	The appropriate basal level of cortisol in critically ill patients is controversial, with proposed cutoff values for normal basal cortisol ranging from 6–34 μg/dL. The markedly discrepant definitions of

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				adrenal insufficiency have yielded highly variable estimates of the incidence of adrenal dysfunction in the critically ill. Although pediatric data are limited, existing evidence suggests that a basal cortisol level of 16 μg/dL or more reflects an appropriate stress response in critically ill pediatric patients. The ACTH (cosyntropin) stimulation test is used to assess adrenal reserve, with a response (Δ cortisol) of less than 9 μg/dL associated with worse outcomes. Using these reference values, the "expected" adrenal response to critical illness is typically a basal cortisol ≥16 μg/dL and a Δ cortisol ≥9 μg/dL. Relative adrenal insufficiency (RAI) is defined as an adequate basal cortisol (≥16 μg/dL) and an inadequate response to cosyntropin stimulation (Δ Cortisol <9 μg/dL). Previous studies in adult patients with sepsis support steroid treatment in those with RAI.
275.41	15.80.01 + Q1.81.09	Endocrine	Calcium complication – Hypocalcemia	Hypocalcemia is defined as ionized calcium levels <0.8 mmol/liter. Ionized calcium levels should be measured, as this is the active fraction and not affected by alterations in protein concentrations. Critical illness can induce a state of relative hypoparathyroidism, which is exacerbated by hypomagnesemia. Renal insufficiency can lead to calcitriol deficiency. Decreased calcium levels can lead to reversible myocardial dysfunction causing hypotension, increased length of stay and morbidity, and increased mortality in critically ill patients. This effect must be viewed against the risk of increasing destructive intracellular processes with increased levels of intracellular calcium that can occur more readily with associated ischemia or sepsis. Limited data exist in reference whether replacement truly is detrimental or beneficial in patients with critical cardiac disease.
790.29	15.80.01 + Q1.81.14	Endocrine	Glucose complication – Hyperglycemia	Hyperglycemia (glucose > 150 milligrams/deciliter) can occur after CPB as a result of decreased insulin (and/or insulin resistance), decreased glucose utilization with hypothermia, decreased renal elimination, increased levels of epinephrine and cortisol, and secondary to cytokines and counter-regulatory hormones. Although still controversial, data from critically ill adults suggest that hyperglycemia is associated with increased morbidity and mortality, which is improved with tight glucose control. The role of tight glycaemic control in critical care remains controversial, especially in pediatric and neonatal intensive care where the risk of hypoglycemia is particularly important. No controlled trials exist in pediatrics evaluating the effect of glucose control with insulin. No current consensus exists in the literature about the treatment of intraoperative or postoperative hyperglycemia in pediatric cardiac patients, and it is evident that the adult data cannot be directly translated to pediatric practice.
251.2	15.80.01 + Q1.81.13	Endocrine	Glucose complication – Hypoglycemia	Hypoglycemia (glucose <80 milligrams/deciliter) can be seen in pediatric patients with critical illness secondary to inadequate

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				glycogen stores, adrenal insufficiency, and liver failure. It should be avoided as there is data that hypoglycemia is associated with neurologic abnormalities.
253.5	15.84.26	Endocrine	Relative vasopressin deficiency	Relative vasopressin deficiency refers to an insufficient level of serum arginine vasopressin (AVP) for the patient's clinical state. Low serum arginine-vasopressin levels can potentiate hypotension and shock, due to insufficient vascular tone for the clinical situation. Continuous infusion of vasopressin can be used as an adjunct to other vasopressors in critically ill pediatric patients. Vasopressin can improve blood pressure and decreased the need for cathecholamines and other inotropes. AVP has been used for postoperative hypotension in pediatric cardiac patients. It has been shown to increase blood pressure and decrease inotrope requirements, without causing tachycardia or arrhythmias.
253.6	15.84.27	Endocrine	Syndrome of inappropriate antidiuretic hormone secretion	The syndrome of inappropriate antidiuretic hormone secretion (SIADH) is caused by an excess of arginine vasopressin, released from the hypothalamus. Increased levels of arginine vasopressin result in hypervolemia with a low serum osmolarity (<280 mOsms/liter), dilutional hyponatremia (sodium <130 milliequivalents/liter), and an increased urine specific gravity. Akin to SIADH, AVP levels are often elevated in patients with chronic congestive heart failure, especially those with hyponatremia. This elevation has been associated with increased mortality, and trials are ongoing to evaluate the therapeutic option of AVP receptor antagonists to aid in diuresis.
790.94	15.84.29	Endocrine	Thyroid complication – Euthyroid sick syndrome (or Non-thyroidal illness syndrome [NTIS])	Common in critical illness, euthyroid sick syndrome presents with low triiodothyronine levels (Total T3 < 90 nanograms/deciliter, free T3 < 2.3 picograms/milliliter) along with a normal or low thyroxine levels (Total T4 < 15 micrograms/deciliter, free T4 < 2.5 nanograms/deciliter), high reverse triiodothyronine (reverse T3), and normal or high TSH. Euthyroid sick syndrome is associated with abnormal findings on thyroid function tests in the setting of a non-thyroidal illness, without pre-existing hypothalamic-pituitary and thyroid gland dysfunction. After recovery from this non-thyroidal illness, these abnormalities of the thyroid function tests should be completely reversible. Euthyroid sick syndrome is quite common in cardiac critical care. Diagnosis requires measurement of free triiodothyronine and thyroxine levels, which are commonly influenced by serum protein levels. Decreased thyroxine levels have been correlated with increased mortality and the combination of low triiodothyronine and thyroxine may carry an even worse prognosis. Some data suggest that triiodothyronine (T3, Triostat) replacement may ameliorate complications associated with hypothyroidism, improve cardiac output, decrease the need for inotropes, and promote a more rapid return to a negative fluid balance.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
244.9	15.84.28	Endocrine	Thyroid complication – Hypothyroidism	Hypothyroidism refers to decreased levels of triiodothyronine (T3) and thyroxine (T4), and reverse triiodothyronine (reverse T3), with high levels of thyroid-stimulating hormone (TSH). Symptoms of hypothyroidism include bradycardia, pericardial effusions, hypertension and a narrowed pulse pressure and myxedema. Studies have also shown decreases in cardiac output and cardiac contractility, decreased diastolic relaxation and diastolic filling. In those with congestive heart failure (CHF), decreased levels of T3 have been shown to be proportional to New York Heart Association class, poor outcomes, mortality, poor hemodynamics, and hyponatremia.
949	15.67.21	Integument	Burn	"Burn" ROOT Definition = A burn is defined as an injury to the integument caused by fire, heat, radiation, electricity, extreme cold, or caustic agent. The integument is defined as the epidermis, dermis and subcutaneous tissue (superficial fascia) along with its associated structures such as nails, hair follicles, sebaceous glands, sweat glands, blood vessels and nerve endings. Burns can be classified as first, second or third degree according to the depth of the injury. Burns can also involve the deep fascia, muscle and bone, though these structures are not traditionally considered to be a part of the integumentary system.
941	15.67.21 + Q1.79.01	Integument	Burn, Face	Burn (ROOT Definition) + Location = Face
941	15.67.21 + Q1.79.02	Integument	Burn, Head (Excluding face)	Burn (ROOT Definition) + Location = Head excluding face
945	15.67.21 + Q1.79.46	Integument	Burn, Left lower extremity	Burn (ROOT Definition) + Location = Left lower extremity (Including the ankle but excluding the foot)
945	15.67.21 + Q1.79.47	Integument	Burn, Left lower extremity, Left foot	Burn (ROOT Definition) + Location = Left foot
943	15.67.21 + Q1.79.35	Integument	Burn, Left upper extremity	Burn (ROOT Definition) + Location = Left upper extremity (Including the wrist but excluding the hand)
943	15.67.21 + Q1.79.36	Integument	Burn, Left upper extremity, Left hand	Burn (ROOT Definition) + Location = Left hand
941	15.67.21 + Q1.79.04	Integument	Burn, Neck	Burn (ROOT Definition) + Location = Neck
945	15.67.21 + Q1.79.42	Integument	Burn, Right lower extremity	Burn (ROOT Definition) + Location = Right lower extremity (Including the ankle but excluding the foot)
945	15.67.21 + Q1.79.43	Integument	Burn, Right lower extremity, Right foot	Burn (ROOT Definition) + Location = Right foot
943	15.67.21 + Q1.79.31	Integument	Burn, Right upper extremity	Burn (ROOT Definition) + Location = Right upper extremity (Including the wrist but excluding the hand)
943	15.67.21 + Q1.79.32	Integument	Burn, Right upper extremity, Right hand	Burn (ROOT Definition) + Location = Right hand
942	15.67.21 + Q1.79.07	Integument	Burn, Trunk (Torso)	Burn (ROOT Definition) + Location = Trunk (Includes chest, back, abdomen, groins, perineum, genitalia, and buttocks)
949.1	15.67.22	Integument	Burn-modifier for degree of burn, 1st Degree = First degree burn	Burn (ROOT Definition)-modifier for degree of burn, A burn involving only the epidermis (epithelium).
949.2	15.67.23	Integument	Burn-modifier for degree of burn, 2nd Degree = Second degree burn	Burn (ROOT Definition)-modifier for degree of burn, A burn involving the epidermis and partial thickness of the dermis.
949.3	15.67.24	Integument	Burn-modifier for degree of burn, 3rd Degree = Third degree burn	Burn (ROOT Definition)-modifier for degree of burn, A burn involving the epidermis and full thickness of the dermis.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
949.5	15.67.25	Integument	Burn-modifier for degree of burn, 4th Degree = Fourth degree burn	Burn (ROOT Definition)-modifier for degree of burn, A burn involving the epidermis, full thickness of the dermis, and muscle, tendon, or bone.
E924.1	Q1.66.01	Integument	Burn-modifier for etiology, Etiological agent = Chemical burn	Burn (ROOT Definition) + modifier for etiology, A burn caused by chemical(s).
E925.9	Q1.66.02	Integument	Burn-modifier for etiology, Etiological agent = Diathermy	Burn (ROOT Definition) + modifier for etiology, A burn caused by diathermy.
E925.9	Q1.66.03	Integument	Burn-modifier for etiology, Etiological agent = Electricity	Burn (ROOT Definition) + modifier for etiology, A burn caused by electricity.
E923.9	Q1.66.04	Integument	Burn-modifier for etiology, Etiological agent = Explosion	Burn (ROOT Definition) + modifier for etiology, A burn caused by an explosion
E901.1	Q1.66.05	Integument	Burn-modifier for etiology, Etiological agent = Extreme cold	Burn (ROOT Definition) + modifier for etiology, A burn caused by extreme cold.
E899	Q1.66.06	Integument	Burn-modifier for etiology, Etiological agent = Fire = Flame	Burn (ROOT Definition) + modifier for etiology, A burn caused by fire.
709.4	Q1.66.07	Integument	Burn-modifier for etiology, Etiological agent = Infiltrate from intravascular catheter	Burn (ROOT Definition) + modifier for etiology, A burn caused by an infiltrate from intravascular catheter.
709.4	Q1.66.08	Integument	Burn-modifier for etiology, Etiological agent = Infiltrate from intravascular catheter, Infiltrate from intra-arterial catheter	Burn (ROOT Definition) + modifier for etiology, A burn caused by an infiltrate from intravascular intra-arterial catheter.
709.4	Q1.66.09	Integument	Burn-modifier for etiology, Etiological agent = Infiltrate from intravascular catheter, Infiltrate from intravenous catheter	Burn (ROOT Definition) + modifier for etiology, A burn caused by an infiltrate from intravascular intra-arterial catheter.
E926.9	Q1.34.85	Integument	Burn-modifier for etiology, Etiological agent = Radiation	Burn (ROOT Definition) + modifier for etiology, A burn caused by radiation.
692.3	Q1.66.10	Integument	Burn-modifier for etiology, Etiological agent = Skin prep solutions	Burn (ROOT Definition) + modifier for etiology, A burn caused by skin prep solutions.
919.8	15.67.26	Integument	Excoriation (abrasion)	"Excoriation" ROOT Definition = A focal loss of the epidermis of the skin caused by mechanical trauma. The area of excoriation is frequently covered with blood or a serous crust.
910.8	15.67.26 + Q1.79.01	Integument	Excoriation (abrasion), Face	Excoriation (ROOT Definition) + Location = Face
910.8	15.67.26 + Q1.79.02	Integument	Excoriation (abrasion), Head (Excluding face)	Excoriation (ROOT Definition) + Location = Head excluding face
916.8	15.67.26 + Q1.79.46	Integument	Excoriation (abrasion), Left lower extremity	Excoriation (ROOT Definition) + Location = Left lower extremity (Including the ankle but excluding the foot)
917.8	15.67.26 + Q1.79.47	Integument	Excoriation (abrasion), Left lower extremity, Left foot	Excoriation (ROOT Definition) + Location = Left foot
912.8	15.67.26 + Q1.79.35	Integument	Excoriation (abrasion), Left upper extremity	Excoriation (ROOT Definition) + Location = Left upper extremity (Including the wrist but excluding the hand)
914.8	15.67.26 + Q1.79.36	Integument	Excoriation (abrasion), Left upper extremity, Left hand	Excoriation (ROOT Definition) + Location = Left hand
910.8	15.67.26 + Q1.79.04	Integument	Excoriation (abrasion), Neck	Excoriation (ROOT Definition) + Location = Neck
916.8	15.67.26 + Q1.79.42	Integument	Excoriation (abrasion), Right lower extremity	Excoriation (ROOT Definition) + Location = Right lower extremity (Including the ankle but excluding the foot)

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
917.8	15.67.26 + Q1.79.43	Integument	Excoriation (abrasion), Right lower extremity, Right foot	Excoriation (ROOT Definition) + Location = Right foot
912.8	15.67.26 + Q1.79.31	Integument	Excoriation (abrasion), Right upper extremity	Excoriation (ROOT Definition) + Location = Right upper extremity (Including the wrist but excluding the hand)
914.8	15.67.26 + Q1.79.32	Integument	Excoriation (abrasion), Right upper extremity, Right hand	Excoriation (ROOT Definition) + Location = Right hand
911.8	15.67.26 + Q1.79.07	Integument	Excoriation (abrasion), Trunk (Torso)	Excoriation (ROOT Definition) + Location = Trunk (chest, back, abdomen, groins, perineum, genitalia, and buttocks)
709.4	15.67.27	Integument	Infiltrate, Arterial line	"Infiltrate, Arterial line" ROOT Definition = The process whereby any substance (drugs, electrolytes, infusates of any kind), intentionally or unintentionally, passing through an arterial line, permeates or interpenetrates the surrounding integument causing any discernable abnormality. The integument is defined as the epidermis, dermis and subcutaneous tissue (superficial fascia) along with its associated structures such as nails, hair follicles, sebaceous glands, sweat glands, blood vessels and nerve endings. Infiltrations can also involve the deep fascia, muscle and bone, though these structures are not traditionally considered to be a part of the integumentary system.
709.4	15.67.27 + Q1.79.01	Integument	Infiltrate, Arterial line, Face	Infiltrate, Arterial line (ROOT) Definition, Location = Face
709.4	15.67.27 + Q1.79.02	Integument	Infiltrate, Arterial line, Head (Excluding face)	Infiltrate, Arterial line (ROOT) Definition, Location = Head excluding face
709.4	15.67.27 + Q1.79.46	Integument	Infiltrate, Arterial line, Left lower extremity	Infiltrate, Arterial line (ROOT) Definition, Location = Left lower extremity (Including the ankle but excluding the foot)
709.4	15.67.27 + Q1.79.47	Integument	Infiltrate, Arterial line, Left lower extremity, Left foot	Infiltrate, Arterial line (ROOT) Definition, Location = Left foot
709.4	15.67.27 + Q1.79.35	Integument	Infiltrate, Arterial line, Left upper extremity	Infiltrate, Arterial line (ROOT) Definition, Location = Left upper extremity (Including the wrist but excluding the hand)
709.4	15.67.27 + Q1.79.36	Integument	Infiltrate, Arterial line, Left upper extremity, Left hand	Infiltrate, Arterial line (ROOT) Definition, Location = Left hand
709.4	15.67.27 + Q1.79.04	Integument	Infiltrate, Arterial line, Neck	Infiltrate, Arterial line (ROOT) Definition, Location = Neck
709.4	15.67.27 + Q1.79.42	Integument	Infiltrate, Arterial line, Right lower extremity	Infiltrate, Arterial line (ROOT) Definition, Location = Right lower extremity (Including the ankle but excluding the foot)
709.4	15.67.27 + Q1.79.43	Integument	Infiltrate, Arterial line, Right lower extremity, Right foot	Infiltrate, Arterial line (ROOT) Definition, Location = Right foot
709.4	15.67.27 + Q1.79.31	Integument	Infiltrate, Arterial line, Right upper extremity	Infiltrate, Arterial line (ROOT) Definition, Location = Right upper extremity (Including the wrist but excluding the hand)
709.4	15.67.27 + Q1.79.32	Integument	Infiltrate, Arterial line, Right upper extremity, Right hand	Infiltrate, Arterial line (ROOT) Definition, Location = Right hand
709.4	15.67.27 + Q1.79.07	Integument	Infiltrate, Arterial line, Trunk (Torso)	Infiltrate, Arterial line (ROOT) Definition, Location = Trunk (chest, back, abdomen, groins, perineum, genitalia, and buttocks)
709.4	Q1.87.24	Integument	Infiltrate, Arterial line-modifier for etiology, Etiological agent = Calcium	Infiltrate, Arterial line (ROOT Definition) + modifier for etiology, Arterial line infiltrate caused by a calcium infusion.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
709.4	Q1.87.25	Integument	Infiltrate, Arterial line-modifier for etiology, Etiological agent = Inotropic agents	Infiltrate, Arterial line (ROOT Definition) + modifier for etiology, Arterial line infiltrate caused by an infusion of an inotropic agent.
709.4	Q1.66.11	Integument	Infiltrate, Arterial line-modifier for etiology, Etiological agent = Medications	Infiltrate, Arterial line (ROOT Definition) + modifier for etiology, Arterial line infiltrate caused by an infusion of any medication.
709.4	Q1.87.26	Integument	Infiltrate, Arterial line-modifier for etiology, Etiological agent = Parenteral nutrition	Infiltrate, Arterial line (ROOT Definition) + modifier for etiology, Arterial line infiltrate caused by a parenteral nutrition infusion.
709.4	Q1.87.27	Integument	Infiltrate, Arterial line-modifier for etiology, Etiological agent = Potassium	Infiltrate, Arterial line (ROOT Definition) + modifier for etiology, Arterial line infiltrate caused by a potassium infusion.
709.4	15.67.28	Integument	Infiltrate, Intravenous line (IV)	"Infiltrate, Intravenous line (IV)" ROOT Definition = The process whereby any substance (drugs, electrolytes, infusates of any kind), intentionally or unintentionally, passing through an intravenous line of any kind, permeates or interpenetrates the surrounding integument causing any discernable abnormality. The integument is defined as the epidermis, dermis and subcutaneous tissue (superficial fascia) along with its associated structures such as nails, hair follicles, sebaceous glands, sweat glands, blood vessels and nerve endings. Infiltrations can also involve the deep fascia, muscle and bone, though these structures are not traditionally considered to be a part of the integumentary system.
709.4	15.67.28 + Q1.79.01	Integument	Infiltrate, Intravenous line (IV), Face	Infiltrate, Intravenous line (IV) (ROOT Definition) + Location = Face
709.4	15.67.28 + Q1.79.02	Integument	Infiltrate, Intravenous line (IV), Head (Excluding face)	Infiltrate, Intravenous line (IV) (ROOT Definition) + Location = Head excluding face
709.4	15.67.28 + Q1.79.46	Integument	Infiltrate, Intravenous line (IV), Left lower extremity	Infiltrate, Intravenous line (IV) (ROOT Definition) + Location=Left lower extremity (Including the ankle but excluding the foot)
709.4	15.67.28 + Q1.79.47	Integument	Infiltrate, Intravenous line (IV), Left lower extremity, Left foot	Infiltrate, Intravenous line (IV) (ROOT Definition) + Location = Left foot
709.4	15.67.28 + Q1.79.35	Integument	Infiltrate, Intravenous line (IV), Left upper extremity	Infiltrate, Intravenous line (IV) (ROOT Definition) + Location = Left upper extremity (Including the wrist but excluding the hand)
709.4	15.67.28 + Q1.79.36	Integument	Infiltrate, Intravenous line (IV), Left upper extremity, Left hand	Infiltrate, Intravenous line (IV) (ROOT Definition) + Location = Left hand
709.4	15.67.28 + Q1.79.04	Integument	Infiltrate, Intravenous line (IV), Neck	Infiltrate, Intravenous line (IV) (ROOT Definition) + Location = Neck
709.4	15.67.28 + Q1.79.42	Integument	Infiltrate, Intravenous line (IV), Right lower extremity	Infiltrate, Intravenous line (IV) (ROOT Definition) + Location = Right lower extremity (Including the ankle but excluding the foot)
709.4	15.67.28 + Q1.79.43	Integument	Infiltrate, Intravenous line (IV), Right lower extremity, Right foot	Infiltrate, Intravenous line (IV) (ROOT Definition) + Location = Right foot
709.4	15.67.28 + Q1.79.31	Integument	Infiltrate, Intravenous line (IV), Right upper extremity	Infiltrate, Intravenous line (IV) (ROOT Definition) + Location = Right upper extremity (Including the wrist but excluding the hand)
709.4	15.67.28 + Q1.79.32	Integument	Infiltrate, Intravenous line (IV), Right upper extremity, Right hand	Infiltrate, Intravenous line (IV) (ROOT Definition) + Location = Right hand

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
709.4	15.67.28 + Q1.79.07	Integument	Infiltrate, Intravenous line (IV), Trunk (Torso)	Infiltrate, Intravenous line (IV) (ROOT Definition) + Location = Trunk (chest, back, abdomen, groins, perineum, genitalia, and buttocks)
709.4	Q1.87.24	Integument	Infiltrate, Intravenous line (IV)-modifier for etiology, Etiological agent = Calcium	Infiltrate, Intravenous line (IV) (ROOT Definition) + modifier for etiology, Intravenous line infiltrate caused by a calcium infusion.
709.4	Q1.87.25	Integument	Infiltrate, Intravenous line (IV)-modifier for etiology, Etiological agent = Inotropic agents	Infiltrate, Intravenous line (IV) (ROOT Definition) + modifier for etiology, Intravenous line infiltrate caused by an infusion of an inotropic agent.
709.4	Q1.66.11	Integument	Infiltrate, Intravenous line (IV)-modifier for etiology, Etiological agent = Medications	Infiltrate, Intravenous line (IV) (ROOT Definition) + modifier for etiology, Intravenous line infiltrate caused by an infusion of any medication.
709.4	Q1.87.26	Integument	Infiltrate, Intravenous line (IV)-modifier for etiology, Etiological agent = Parenteral nutrition	Infiltrate, Intravenous line (IV) (ROOT Definition) + modifier for etiology, Intravenous line infiltrate caused by a parenteral nutrition infusion.
709.4	Q1.87.27	Integument	Infiltrate, Intravenous line (IV)-modifier for etiology, Etiological agent = Potassium	Infiltrate, Intravenous line (IV) (ROOT Definition) + modifier for etiology, Intravenous line infiltrate caused by a potassium infusion.
709.9	15.67.20	Integument	Integument complication	Any complication involving the integument system. An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.
870-897	15.67.29	Integument	Laceration	"Laceration" ROOT Definition = A cut or break in the skin.
873.4	15.67.29 + Q1.79.01	Integument	Laceration, Face	Laceration (ROOT Definition) + Location = Face
873.8	15.67.29 + Q1.79.02	Integument	Laceration, Head (Excluding face)	Laceration (ROOT Definition) + Location = Head excluding face
891.00	15.67.29 + Q1.79.46	Integument	Laceration, Left lower extremity	Laceration (ROOT Definition) + Location = Left lower extremity (Including the ankle but excluding the foot)
892	15.67.29 + Q1.79.47	Integument	Laceration, Left lower extremity, Left foot	Laceration (ROOT Definition) + Location = Left foot
884.0	15.67.29 + Q1.79.35	Integument	Laceration, Left upper extremity	Laceration (ROOT Definition) + Location = Left upper extremity (Including the wrist but excluding the hand)
882.0	15.67.29 + Q1.79.36	Integument	Laceration, Left upper extremity, Left hand	Laceration (ROOT Definition) + Location = Left hand
874.8	15.67.29 + Q1.79.04	Integument	Laceration, Neck	Laceration (ROOT Definition) + Location = Neck
891.0	15.67.29 + Q1.79.42	Integument	Laceration, Right lower extremity	Laceration (ROOT Definition) + Location = Right lower extremity (Including the ankle but excluding the foot)
892	15.67.29 + Q1.79.43	Integument	Laceration, Right lower extremity, Right foot	Laceration (ROOT Definition) + Location = Right foot
884.0	15.67.29 + Q1.79.31	Integument	Laceration, Right upper extremity	Laceration (ROOT Definition) + Location = Right upper extremity (Including the wrist but excluding the hand)
882.0	15.67.29 + Q1.79.32	Integument	Laceration, Right upper extremity, Right hand	Laceration (ROOT Definition) + Location = Right hand
879.6	15.67.29 + Q1.79.07	Integument	Laceration, Trunk (Torso)	Laceration (ROOT Definition) + Location = Trunk (chest, back, abdomen, groins, perineum, genitalia, and buttocks)
704.0	15.80.13	Integument	Postprocedural alopecia	"Postprocedural alopecia" ROOT Definition = Loss of hair during or after a procedure.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
704.0	15.80.13 + Q1.79.01	Integument	Postprocedural alopecia, Face	Postprocedural alopecia (ROOT Definition) + Location = Face
704.00	15.80.13 + Q1.79.02	Integument	Postprocedural alopecia, Head (Excluding face)	Postprocedural alopecia (ROOT Definition) + Location = Head excluding face
704.00	15.80.13 + Q1.79.46	Integument	Postprocedural alopecia, Left lower extremity	Postprocedural alopecia (ROOT Definition) + Location = Left lower extremity (Including the ankle but excluding the foot)
704.00	15.80.13 + Q1.79.47	Integument	Postprocedural alopecia, Left lower extremity, Left foot	Postprocedural alopecia (ROOT Definition) + Location = Left foot
704.00	15.80.13 + Q1.79.35	Integument	Postprocedural alopecia, Left upper extremity	Postprocedural alopecia (ROOT Definition) + Location = Left upper extremity (Including the wrist but excluding the hand)
704.00	15.80.13 + Q1.79.36	Integument	Postprocedural alopecia, Left upper extremity, Left hand	Postprocedural alopecia (ROOT Definition) + Location = Left hand
704.00	15.80.13 + Q1.79.04	Integument	Postprocedural alopecia, Neck	Postprocedural alopecia (ROOT Definition) + Location = Neck
704.00	15.80.13 + Q1.79.42	Integument	Postprocedural alopecia, Right lower extremity	Postprocedural alopecia (ROOT Definition) + Location = Right lower extremity (Including the ankle but excluding the foot)
704.00	15.80.13 + Q1.79.43	Integument	Postprocedural alopecia, Right lower extremity, Right foot	Postprocedural alopecia (ROOT Definition) + Location = Right foot
704.00	15.80.13 + Q1.79.31	Integument	Postprocedural alopecia, Right upper extremity	Postprocedural alopecia (ROOT Definition) + Location = Right upper extremity (Including the wrist but excluding the hand)
704.00	15.80.13+Q1.79.32	Integument	Postprocedural alopecia, Right upper extremity, Right hand	Postprocedural alopecia (ROOT Definition) + Location = Right hand
704.00	15.80.13+Q1.79.07	Integument	Postprocedural alopecia, Trunk (Torso)	Postprocedural alopecia (ROOT Definition) + Location = Trunk (chest, back, abdomen, groins, perineum, genitalia, and buttocks)
704.00	Q1.66.07	Integument	Postprocedural alopecia-modifier for etiology, Infiltrate from intravascular catheter	Postprocedural alopecia (ROOT Definition) + modifier for etiology, Postprocedural alopecia caused by an infiltrate from an intravascular catheter.
704.00	Q1.66.08	Integument	Postprocedural alopecia-modifier for etiology, Infiltrate from intravascular catheter, Infiltrate from intra-arterial catheter	Postprocedural alopecia (ROOT Definition) + modifier for etiology, Postprocedural alopecia caused by an infiltrate from an intravascular intra-arterial catheter.
704.00	Q1.66.09	Integument	Postprocedural alopecia-modifier for etiology, Infiltrate from intravascular catheter, Infiltrate from intravenous catheter	Postprocedural alopecia (ROOT Definition) + modifier for etiology, Postprocedural alopecia caused by an infiltrate from an intravascular intravenous catheter.
707.90	15.67.30	Integument	Pressure sore(s)	"Pressure sore(s)" ROOT Definition = A pressure sore is defined as a wound that occurs from tissue breakdown as a result of unrelieved pressure with the pressure usually occurring over an underlying bony prominence. Pressure sores may be caused by a mechanical device or other factors.
707.90	15.67.30 + Q1.79.01	Integument	Pressure sore(s), Face	Pressure sore(s) (ROOT Definition) + Location = Face
707.9	15.67.30 + Q1.66.32	Integument	Pressure sore(s), Face-modifier for etiology, Etiologic agent = BiPAP	Pressure sore(s) (ROOT Definition) + Location = Face-modifier for etiology, A pressure sore associated with a BiPAP mask.
707.9	15.67.30 + Q1.66.33	Integument	Pressure sore(s), Face-modifier for etiology, Etiologic agent = Endotracheal tube	Pressure sore(s) (ROOT Definition) + Location = Face-modifier for etiology, A pressure sore associated with an endotracheal tube. This pressure sore is often near or involving the nose.
707.9	15.67.30 + Q1.66.34	Integument	Pressure sore(s), Face-modifier for etiology, Etiologic agent = Endotracheal tube, Nasal endotracheal tube	Pressure sore(s) (ROOT Definition) + Location = Face-modifier for etiology, A pressure sore associated with an endotracheal tube. This pressure sore is often near or involving the nose. Use this code if the lesion was associated with a nasal endotracheal tube.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
707.9	15.67.30 + Q1.66.35	Integument	Pressure sore(s), Face-modifier for etiology, Etiologic agent = Endotracheal tube, Oral endotracheal tube	Pressure sore(s) (ROOT Definition) + Location = Face-modifier for etiology, A pressure sore associated with an endotracheal tube. This pressure sore is often near or involving the nose. Use this code if the lesion was associated with an oral endotracheal tube.
707.9	15.67.30 + Q1.66.36	Integument	Pressure sore(s), Face-modifier for etiology, Etiologic agent = Nasogastric tube	Pressure sore(s) (ROOT Definition) + Location = Face-modifier for etiology, A pressure sore associated with a nasogastric tube.
707.9	15.67.30 + Q1.66.37	Integument	Pressure sore(s), Face-modifier for etiology, Etiologic agent = Orogastric tube	Pressure sore(s) (ROOT Definition) + Location = Face-modifier for etiology, A pressure sore associated with an orogastric tube.
707.09	15.67.30 + Q1.79.02	Integument	Pressure sore(s), Head (Excluding face)	Pressure sore(s) (ROOT Definition) + Location = Head excluding face
707.1	15.67.30 + Q1.79.46	Integument	Pressure sore(s), Left lower extremity	Pressure sore(s) (ROOT Definition) + Location = Left lower extremity (Including the ankle but excluding the foot)
707.07	15.67.30 + Q1.79.47	Integument	Pressure sore(s), Left lower extremity, Left foot	Pressure sore(s) (ROOT Definition) + Location = Left foot
707.01	15.67.30 + Q1.79.35	Integument	Pressure sore(s), Left upper extremity	Pressure sore(s) (ROOT Definition) + Location = Left upper extremity (Including the wrist but excluding the hand)
707,00	15.67.30 + Q1.79.36	Integument	Pressure sore(s), Left upper extremity, Left hand	Pressure sore(s) (ROOT Definition) + Location = Left hand
707.09	15.67.30 + Q1.79.04	Integument	Pressure sore(s), Neck	Pressure sore(s) (ROOT Definition) + Location = Neck
707.1	15.67.30 + Q1.79.42	Integument	Pressure sore(s), Right lower extremity	Pressure sore(s) (ROOT Definition) + Location = Right lower extremity (Including the ankle but excluding the foot)
707.07	15.67.30 + Q1.79.43	Integument	Pressure sore(s), Right lower extremity, Right foot	Pressure sore(s) (ROOT Definition) + Location = Right foot
707.01	15.67.30 + Q1.79.31	Integument	Pressure sore(s), Right upper extremity	Pressure sore(s) (ROOT Definition) + Location = Right upper extremity (Including the wrist but excluding the hand)
707,00	15.67.30 + Q1.79.32	Integument	Pressure sore(s), Right upper extremity, Right hand	Pressure sore(s) (ROOT Definition) + Location = Right hand
707.02	15.67.30 + Q1.79.07	Integument	Pressure sore(s), Trunk (Torso)	Pressure sore(s) (ROOT Definition) + Location = Trunk (chest, back, abdomen, groins, perineum, genitalia, and buttocks)
707.02	15.67.30 + Q1.79.08	Integument	Pressure sore(s), Trunk (Torso), Involving back	Pressure sore(s) (ROOT Definition) + Location = Trunk (chest, back, abdomen, groins, perineum, genitalia, and buttocks). Use this code if the back is involved.
707.03	15.67.30 + Q1.79.09	Integument	Pressure sore(s), Trunk (Torso), Involving back and buttocks	Pressure sore(s) (ROOT Definition) + Location = Trunk (chest, back, abdomen, groins, perineum, genitalia, and buttocks). Use this code if the back and buttocks are involved.
707.05	15.67.30 + Q1.79.10	Integument	Pressure sore(s), Trunk (Torso), Involving buttocks	Pressure sore(s) (ROOT Definition) + Location = Trunk (chest, back, abdomen, groins, perineum, genitalia, and buttocks). Use this code if the buttocks is involved.
707	Q1.66.30	Integument	Pressure sore(s)-modifier for etiology, Patient immobility (bedridden or immobile patient with bedsores)	Pressure sore(s) (ROOT Definition) + modifier for etiology, A pressure sore caused by patient immobility. This lesion is seen in bedridden or immobile patients with bedsores.
707	Q1.66.31	Integument	Pressure sore(s)-modifier for etiology, Unrelieved pressure caused by a medical device	Pressure sore(s) (ROOT Definition) + modifier for etiology, A pressure sore unrelieved pressure caused by a medical device.
707.0	Q1.66.20	Integument	Pressure sore(s)-modifier for severity, Grade 1 (Discoloration of intact skin not affected by	Pressure sore(s) (ROOT Definition)-modifier for severity, A Grade I pressure sore is associated with observable pressure related alteration

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
			light finger pressure [non blanching erythema])	of intact skin whose indicators, as compared with the adjacent or opposite area on the body, may include changes in one or more of the following: skin temperature (warmth or coolness), tissue consistency (firm or boggy feel), and/or sensation (pain, itching). The ulcer appears as a defined area of persistent redness in lightly pigmented skin, whereas in darker skin tones, the ulcer may appear with persistent red, blue or purple hues. (A Grade 1 pressure sore is associated with discoloration of intact skin not affected by light finger pressure [non blanching erythema].)
707.0	Q1.66.21	Integument	Pressure sore(s)-modifier for severity, Grade 2 (Partial-thickness skin loss or damage involving epidermis and/or dermis)	Pressure sore(s) (ROOT Definition)-modifier for severity, A Grade II pressure sore is associated with partial thickness loss of skin layers involving the epidermis and possibly penetrating into, but not through, the dermis. It may present as blistering with erythema and/or induration and with a moist and pink wound base that is painful and free of necrotic tissue. (A Grade 2 pressure sore is associated with partial-thickness skin loss or damage involving epidermis and/or dermis. The pressure ulcer is superficial and presents clinically as an abrasion, blister or shallow crater.)
707.0	Q1.66.22	Integument	Pressure sore(s)-modifier for severity, Grade 3 (Full thickness skin loss involving damage of subcutaneous tissue but not extending to the underlying fascia)	Pressure sore(s) (ROOT Definition)-modifier for severity, A Grade III pressure sore is associated with full-thickness tissue loss extending through the dermis to involve the subcutaneous tissue. It presents as a shallow crater unless covered by eschar. This lesion may include necrotic tissue, undermining, sinus tracts formation, exudate, and/or infection. The wound base is usually not painful. (A Grade 3 pressure sore is associated with full thickness skin loss involving damage of subcutaneous tissue but not extending to the underlying fascia.)
707.0	Q1.66.23	Integument	Pressure sore(s)-modifier for severity, Grade 4 (Full thickness skin loss with extensive destruction and necrosis extending to underlying tissue)	Pressure sore(s) (ROOT Definition)-modifier for severity, A Grade IV pressure sore is associated with deep tissue destruction extending through the subcutaneous tissue to the fascia and may involve muscle layers, joint and/or bone. It may present as a deep crater and include necrotic tissue, undermining, sinus tracts formation, exudate, and/or infection. The wound base is usually not painful. (A Grade 4 pressure sore is associated with full thickness skin loss with extensive destruction and necrosis extending to underlying tissue.)
704.0	15.67.31	Integument	Traumatic hair loss	"Traumatic hair loss" ROOT Definition = Loss of hair associated with a traumatic event, including iatrogenic trauma.
704.0	15.67.31 + Q1.79.01	Integument	Traumatic hair loss, Face	Traumatic hair loss (ROOT Definition) + Location = Face
704.00	15.67.31 + Q1.79.02	Integument	Traumatic hair loss, Head (Excluding face)	Traumatic hair loss (ROOT Definition) + Location = Head excluding face
704.00	15.67.31 + Q1.79.46	Integument	Traumatic hair loss, Left lower extremity	Traumatic hair loss (ROOT Definition) + Location = Left lower extremity (Including the ankle but excluding the foot)
704.00	15.67.31 + Q1.79.47	Integument	Traumatic hair loss, Left lower extremity, Left foot	Traumatic hair loss (ROOT Definition) + Location = Left foot

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
704.00	15.67.31 + Q1.79.35	Integument	Traumatic hair loss, Left upper extremity	Traumatic hair loss (ROOT Definition) + Location = Left upper extremity (Including the wrist but excluding the hand)
704.00	15.67.31 + Q1.79.36	Integument	Traumatic hair loss, Left upper extremity, Left hand	Traumatic hair loss (ROOT Definition) + Location = Left hand
704.00	15.67.31 + Q1.79.04	Integument	Traumatic hair loss, Neck	Traumatic hair loss (ROOT Definition) + Location = Neck
704.00	15.67.31 + Q1.79.42	Integument	Traumatic hair loss, Right lower extremity	Traumatic hair loss (ROOT Definition) + Location = Right lower extremity (Including the ankle but excluding the foot)
704.00	15.67.31 + Q1.79.43	Integument	Traumatic hair loss, Right lower extremity, Right foot	Traumatic hair loss (ROOT Definition) + Location = Right foot
704.00	15.67.31 + Q1.79.31	Integument	Traumatic hair loss, Right upper extremity	Traumatic hair loss (ROOT Definition) + Location = Right upper extremity (Including the wrist but excluding the hand)
704.00	15.67.31 + Q1.79.32	Integument	Traumatic hair loss, Right upper extremity, Right hand	Traumatic hair loss (ROOT Definition) + Location = Right hand
704.00	15.67.31 + Q1.79.07	Integument	Traumatic hair loss, Trunk (Torso)	Traumatic hair loss (ROOT Definition) + Location = Trunk (chest, back, abdomen, groins, perineum, genitalia, and buttocks)
442.20	15.67.51	Vascular	Acute limb ischemia	"Acute limb ischemia" ROOT Definition = Acute limb ischemia is defined as an acute reduction in the supply of oxygenated blood to an extremity that is usually caused by vasoconstriction, thrombosis, embolism or dissection of the arterial vessels supplying the affected extremity. Physical signs can include diminished or absent pulses, coolness, pallor, paresis, paralysis, mottling, ulceration and gangrene. Limb ischemia caused by compartment syndrome is included in this complication. Limb ischemia caused by arterial and venous line complications is captured both in this "Acute limb ischemia" section and under "Vascular-Line(s)".
444.22	15.67.51 + Q1.79.46	Vascular	Acute limb ischemia, Left lower extremity	Acute limb ischemia (ROOT Definition) + Location = Left lower extremity (Including the ankle but excluding the foot)
444.22	15.67.51 + Q1.79.47	Vascular	Acute limb ischemia, Left lower extremity, Left foot	Acute limb ischemia (ROOT Definition) + Location = Left foot
444.21	15.67.51 + Q1.79.35	Vascular	Acute limb ischemia, Left upper extremity	Acute limb ischemia (ROOT Definition) + Location = Left upper extremity (Including the wrist but excluding the hand)
444.21	15.67.51 + Q1.79.36	Vascular	Acute limb ischemia, Left upper extremity, Left hand	Acute limb ischemia (ROOT Definition) + Location = Left hand
444.22	15.67.51 + Q1.79.42	Vascular	Acute limb ischemia, Right lower extremity	Acute limb ischemia (ROOT Definition) + Location = Right lower extremity (Including the ankle but excluding the foot)
444.22	15.67.51 + Q1.79.43	Vascular	Acute limb ischemia, Right lower extremity, Right foot	Acute limb ischemia (ROOT Definition) + Location = Right foot
444.21	15.67.51 + Q1.79.31	Vascular	Acute limb ischemia, Right upper extremity	Acute limb ischemia (ROOT Definition)+Location = Right upper extremity (Including the wrist but excluding the hand)
444.21	15.67.51 + Q1.79.32	Vascular	Acute limb ischemia, Right upper extremity, Right hand	Acute limb ischemia (ROOT Definition) + Location = Right hand
441	Q1.66.50	Vascular	Acute limb ischemia-modifier for etiology, Etiologic agent = Dissection	Acute limb ischemia (ROOT Definition) + modifier for etiology, Acute limb ischemia associated with vascular dissection.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
444.2	Q1.66.51	Vascular	Acute limb ischemia-modifier for etiology, Etiologic agent = Embolism	Acute limb ischemia (ROOT Definition) + modifier for etiology, Acute limb ischemia associated with embolism.
443.9	Q1.90.95	Vascular	Acute limb ischemia-modifier for etiology, Etiologic agent = Etiology unknown	Acute limb ischemia (ROOT Definition) + modifier for etiology, Acute limb ischemia of which the etiology is not known with a reasonable degree of certainty.
443.9	Q1.66.62	Vascular	Acute limb ischemia-modifier for etiology, Etiologic agent = Multifactorial	Acute limb ischemia (ROOT Definition) + modifier for etiology, Acute limb ischemia of which the etiology is associated with multiple factors.
444.2	Q1.66.52	Vascular	Acute limb ischemia-modifier for etiology, Etiologic agent = Thrombosis	Acute limb ischemia (ROOT Definition) + modifier for etiology, Acute limb ischemia associated with thrombosis.
443.9	Q1.66.53	Vascular	Acute limb ischemia-modifier for etiology, Etiologic agent = Vasoconstriction	Acute limb ischemia (ROOT Definition) + modifier for etiology, Acute limb ischemia associated with vasoconstriction.
444.2	Q1.66.55	Vascular	Acute limb ischemia-modifier for etiology, Etiological agent = After a systemic-to-pulmonary shunt	Acute limb ischemia (ROOT Definition) + modifier for etiology, Acute limb ischemia caused by ischemia in the extremity distal to a systemic-to-pulmonary shunt such as, for example, a classical Blalock-Taussig shunt.
444.2	Q1.66.56	Vascular	Acute limb ischemia-modifier for etiology, Etiological agent = After repair of aortic coarctation	Acute limb ischemia (ROOT Definition) + modifier for etiology, Acute limb ischemia caused by ischemia after repair of aortic coarctation.
444.2	Q1.66.57	Vascular	Acute limb ischemia-modifier for etiology, Etiological agent = After repair of aortic coarctation with subclavian flap aortoplasty	Acute limb ischemia (ROOT Definition) + modifier for etiology, Acute limb ischemia caused by ischemia after repair of aortic coarctation with subclavian flap aortoplasty.
444.2	Q1.66.54	Vascular	Acute limb ischemia-modifier for etiology, Etiological agent = Compartment syndrome	Acute limb ischemia (ROOT Definition) + modifier for etiology, Acute limb ischemia associated with compartment syndrome.
785.4	15.67.51 + Q1.66.70	Vascular	Acute limb ischemia-modifier for outcome, Results in gangrene	Acute limb ischemia (ROOT Definition)-modifier for outcome, Acute limb ischemia that results in the development of gangrene.
443.9	15.67.51 + Q1.66.71	Vascular	Acute limb ischemia-modifier for outcome, Results in no surgical intervention	Acute limb ischemia (ROOT Definition) + modifier for etiology, Acute limb ischemia that results in surgical intervention
444.2	15.67.51 + Q1.66.72	Vascular	Acute limb ischemia-modifier for outcome, Results in surgical intervention	Acute limb ischemia (ROOT Definition) + modifier for etiology, Acute limb ischemia that does not result in surgical intervention.
444.2	Q1.66.58	Vascular	Acute limb ischemia-modifier, Associated with prior surgical intervention to ischemic limb	Acute limb ischemia (ROOT Definition) + modifier, Acute limb ischemia that is associated with prior surgical intervention to ischemic limb.
444.2	Q1.66.59	Vascular	Acute limb ischemia-modifier, Associated with prior transcatheter intervention to ischemic limb	Acute limb ischemia (ROOT Definition) + modifier, Acute limb ischemia that is associated with prior transcatheter intervention to ischemic limb.
444.2	Q1.66.60	Vascular	Acute limb ischemia-modifier, Not associated with prior surgical intervention to ischemic limb	Acute limb ischemia (ROOT Definition) + modifier, Acute limb ischemia that is not associated with prior surgical intervention to ischemic limb.
444.2	Q1.66.61	Vascular	Acute limb ischemia-modifier, Not associated with prior transcatheter intervention to ischemic limb	Acute limb ischemia (ROOT Definition) + modifier, Acute limb ischemia that is not associated with prior transcatheter intervention to ischemic limb.
441,0	15.36.23	Vascular	Dissection-Aortic dissection	"Dissection-Aortic dissection" ROOT Definition = An aortic dissection can occur anywhere in the thoracic or abdominal aorta

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				and is a tear in its intimal layer, followed by formation and propagation of a subintimal hematoma. The dissecting hematoma commonly occupies about half and occasionally the entire circumference of the aorta. This produces a false lumen or double-barreled aorta, which can reduce blood flow to the major arteries arising from the aorta. Aneurysmal dilation can also occur. If the dissection involves the pericardial space, cardiac tamponade may result.
441.02	15.36.28	Vascular	Dissection-Aortic dissection, Abdominal aorta	Dissection-Aortic dissection (ROOT Definition) + Location = Abdominal aorta
441.02	15.36.28 + Q1.40.47	Vascular	Dissection-Aortic dissection, Abdominal aorta, Acute	Dissection-Aortic dissection (ROOT Definition) + Location = Abdominal aorta. Use this code if the dissection is of sudden onset. Clinically, dissections seen within the first 2 weeks following onset of symptoms are considered acute.
441.02	15.36.28 + Q1.40.48	Vascular	Dissection-Aortic dissection, Abdominal aorta, Chronic	Dissection-Aortic dissection (ROOT Definition) + Location = Abdominal aorta. Use this code if the dissection is a chronic (long standing) condition. Clinically, dissections beyond the first 2 weeks following onset of symptoms are considered chronic.
441.01	15.36.24	Vascular	Dissection-Aortic dissection, Aortic root	Dissection-Aortic dissection (ROOT Definition) + Location = Aortic root
441.01	15.36.24 + Q1.40.47	Vascular	Dissection-Aortic dissection, Aortic root, Acute	Dissection-Aortic dissection (ROOT Definition) + Location = Aortic root. Use this code if the dissection is of sudden onset. Clinically, dissections seen within the first 2 weeks following onset of symptoms are considered acute.
441.01	15.36.24 + Q1.40.48	Vascular	Dissection-Aortic dissection, Aortic root, Chronic	Dissection-Aortic dissection (ROOT Definition) + Location = Aortic root. Use this code if the dissection is a chronic (long standing) condition. Clinically, dissections beyond the first 2 weeks following onset of symptoms are considered chronic.
441.01	15.36.08	Vascular	Dissection-Aortic dissection, Ascending aorta	Dissection-Aortic dissection (ROOT Definition) + Location = Ascending aorta
441.01	15.36.08 + Q1.40.47	Vascular	Dissection-Aortic dissection, Ascending aorta, Acute	Dissection-Aortic dissection (ROOT Definition) + Location = Ascending aorta. Use this code if the dissection is of sudden onset. Clinically, dissections seen within the first 2 weeks following onset of symptoms are considered acute.
441.01	15.36.08 + Q1.40.48	Vascular	Dissection-Aortic dissection, Ascending aorta, Chronic	Dissection-Aortic dissection (ROOT Definition) + Location = Ascending aorta. Use this code if the dissection is a chronic (long standing) condition. Clinically, dissections beyond the first 2 weeks following onset of symptoms are considered chronic.
441.01	15.36.26	Vascular	Dissection-Aortic dissection, Descending thoracic aorta	Dissection-Aortic dissection (ROOT Definition) + Location = Descending thoracic aorta
441.01	15.36.26 + Q1.40.47	Vascular	Dissection-Aortic dissection, Descending thoracic aorta, Acute	Dissection-Aortic dissection (ROOT Definition) + Location = Descending thoracic aorta. Use this code if

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				the dissection is of sudden onset. Clinically, dissections seen within the first 2 weeks following onset of symptoms are considered acute.
441.01	15.36.26 + Q1.40.48	Vascular	Dissection-Aortic dissection, Descending thoracic aorta, Chronic	Dissection-Aortic dissection (ROOT Definition) + Location = Descending thoracic aorta. Use this code if the dissection is a chronic (long standing) condition. Clinically, dissections beyond the first 2 weeks following onset of symptoms are considered chronic.
441.03	15.36.27	Vascular	Dissection-Aortic dissection, Thoracoabdominal aorta	Dissection-Aortic dissection (ROOT Definition) + Location = Thoracoabdominal aorta
441.03	15.36.27 + Q1.40.47	Vascular	Dissection-Aortic dissection, Thoracoabdominal aorta, Acute	Dissection-Aortic dissection (ROOT Definition) + Location = Thoracoabdominal aorta. Use this code if the dissection is of sudden onset. Clinically, dissections seen within the first 2 weeks following onset of symptoms are considered acute.
441.03	15.36.27 + Q1.40.48	Vascular	Dissection-Aortic dissection, Thoracoabdominal aorta, Chronic	Dissection-Aortic dissection (ROOT Definition) + Location = Thoracoabdominal aorta. Use this code if the dissection is a chronic (long standing) condition. Clinically, dissections beyond the first 2 weeks following onset of symptoms are considered chronic.
441.01	15.36.25	Vascular	Dissection-Aortic dissection, Transverse arch	Dissection-Aortic dissection (ROOT Definition) + Location = Transverse arch
441.01	15.36.25 + Q1.40.47	Vascular	Dissection-Aortic dissection, Transverse arch, Acute	Dissection-Aortic dissection (ROOT Definition) + Location = Transverse arch. Use this code if the dissection is of sudden onset. Clinically, dissections seen within the first 2 weeks following onset of symptoms are considered acute.
441.01	15.36.25 + Q1.40.48	Vascular	Dissection-Aortic dissection, Transverse arch, Chronic	Dissection-Aortic dissection (ROOT Definition) + Location = Transverse arch. Use this code if the dissection is a chronic (long standing) condition. Clinically, dissections beyond the first 2 weeks following onset of symptoms are considered chronic.
441	Q1.40.47	Vascular	Dissection-Aortic dissection-modifier for characteristics, Acute	Dissection-Aortic dissection (ROOT Definition) + modifier, The dissection of sudden onset. Clinically, dissections seen within the first 2 weeks following onset of symptoms are considered acute.
441	Q1.40.48	Vascular	Dissection-Aortic dissection-modifier for characteristics, Chronic	Dissection-Aortic dissection (ROOT Definition) + modifier, The dissection is a long standing. Clinically, dissections beyond the first 2 weeks following onset of symptoms are considered chronic.
441	Q1.40.45	Vascular	Dissection-Aortic dissection-modifier for characteristics, Non-ruptured	Dissection-Aortic dissection (ROOT Definition) + modifier, The dissection is a not ruptured so that blood does not escape from the vascular system.
441	Q1.40.46	Vascular	Dissection-Aortic dissection-modifier for characteristics, Ruptured	Dissection-Aortic dissection (ROOT Definition) + modifier, The dissection is a ruptured so that blood escapes from the vascular system.
441	Q1.40.57	Vascular	Dissection-Aortic dissection-modifier for characteristics, With calcification	Dissection-Aortic dissection (ROOT Definition) + modifier, The dissection is calcified.
441	Q1.40.58	Vascular	Dissection-Aortic dissection-modifier for characteristics, With thrombosis	Dissection-Aortic dissection (ROOT Definition) + modifier, The dissection is with clot or thrombosis.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
441	10.14.52	Vascular	Dissection-Aortic dissection-modifier for classification, DeBakey type 1 (Starts in the ascending aorta and involves the entire length of the aorta).	Dissection-Aortic dissection (ROOT Definition) + modifier, A DeBakey type 1 dissection starts in the ascending aorta and involves the entire length of the aorta.
441	10.14.53	Vascular	Dissection-Aortic dissection-modifier for classification, DeBakey type 2 (Limited to the ascending aorta)	Dissection-Aortic dissection (ROOT Definition) + modifier, A DeBakey type 2 dissection is limited to the ascending aorta.
441	10.14.54	Vascular	Dissection-Aortic dissection-modifier for classification, DeBakey type 3 (Distal dissection) (Involves aorta distal to left subclavian artery)	Dissection-Aortic dissection (ROOT Definition) + modifier, A DeBakey type 3 dissection is a distal dissection that involves aorta distal to left subclavian artery and spares the ascending aorta and the aortic arch.
441	10.14.53	Vascular	Dissection-Aortic dissection-modifier for classification, Stanford type A (Proximal dissection) (Involves ascending aorta)	Dissection-Aortic dissection (ROOT Definition) + modifier, A Stanford type A dissection is a proximal dissection that involves the ascending aorta.
441	10.14.54	Vascular	Dissection-Aortic dissection-modifier for classification, Stanford type B (Distal dissection) (Involves aorta distal to left subclavian artery)	Dissection-Aortic dissection (ROOT Definition) + modifier, A Stanford type B dissection is a distal dissection that involves aorta distal to left subclavian artery and does not involve the ascending aorta.
441	Q1.40.76	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into aortic arch branch(es)	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into the aortic arch branch(es)
441	Q1.40.70	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into aortic arch branch(es), Extension into brachiocephalic (innominate) artery	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into the aortic arch branch(es), With extension into the brachiocephalic (innominate) artery
441	Q1.40.53	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into aortic arch branch(es), Extension into carotid artery(ies)	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into the aortic arch branch(es), With extension into the carotid artery(ies)
441	Q1.40.82	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into aortic arch branch(es), Extension into carotid artery(ies), Both carotid arteries	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into the aortic arch branch(es), With extension into the carotid artery(ies), Both carotid arteries
441	Q1.40.81	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into aortic arch branch(es), Extension into carotid artery(ies), Left carotid artery	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into the aortic arch branch(es), With extension into the carotid artery(ies), Left carotid artery
441	Q1.40.80	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into aortic arch branch(es), Extension into carotid artery(ies), Right carotid artery	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into the aortic arch branch(es), With extension into the carotid artery(ies), Right carotid artery
441	Q1.40.83	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into aortic arch branch(es), Extension into subclavian artery(ies)	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into the aortic arch branch(es), With extension into the subclavian artery(ies)

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
441	Q1.40.84	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into aortic arch branch(es), Extension into subclavian artery(ies), Both subclavian arteries	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into the aortic arch branch(es), With extension into the subclavian artery(ies), Both subclavian arteries
441	Q1.40.72	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into aortic arch branch(es), Extension into subclavian artery(ies), Left subclavian artery	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into the aortic arch branch(es), With extension into the subclavian artery(ies), Left subclavian artery
441	Q1.40.71	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into aortic arch branch(es), Extension into subclavian artery(ies), Right subclavian artery	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into the aortic arch branch(es), With extension into the subclavian artery(ies), Right subclavian artery
441	Q1.40.52	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into coronary artery(ies)	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into coronary artery(ies)
441	Q1.40.52 + Q1.45.53	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into coronary artery(ies), Circumflex coronary artery	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into coronary artery(ies), Circumflex coronary artery
441	Q1.40.52 + Q1.45.52	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into coronary artery(ies), Left anterior descending (LAD) coronary artery	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into coronary artery(ies), Left anterior descending (LAD) coronary artery
441	Q1.40.52 + Q5.23.62	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into coronary artery(ies), Left main coronary artery	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into coronary artery(ies), Left main coronary artery
441	Q1.40.52 + Q1.45.92	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into coronary artery(ies), Multiple coronary arteries	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into coronary artery(ies), Multiple coronary arteries
441	Q1.40.52 + Q1.45.54	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into coronary artery(ies), Right main coronary artery	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into coronary artery(ies), Right main coronary artery
441	Q1.40.56	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into iliac artery(ies)	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into iliac artery(ies)
441	Q1.40.87	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into iliac artery(ies), Both iliac arteries	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into iliac artery(ies), Both iliac arteries
441	Q1.40.86	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into iliac artery(ies), Left iliac artery	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into iliac artery(ies), Left iliac artery
441	Q1.40.85	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into iliac artery(ies), Right iliac artery	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into iliac artery(ies), Right iliac artery
441	Q1.40.55	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into mesenteric artery(ies)	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into mesenteric artery(ies)

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
441	Q1.40.73	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into mesenteric artery(ies), Celiac artery	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into mesenteric artery(ies), Celiac artery
441	Q1.40.74	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into mesenteric artery(ies), Inferior mesenteric artery	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into mesenteric artery(ies), Inferior mesenteric artery
441	Q1.40.88	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into mesenteric artery(ies), Multiple mesenteric arteries	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into mesenteric artery(ies), Multiple mesenteric arteries
441	Q1.40.75	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into mesenteric artery(ies), Superior mesenteric artery	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into mesenteric artery(ies), Superior mesenteric artery
441	Q1.40.54	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into renal artery(ies)	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into renal artery(ies)
441	Q1.40.36	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into renal artery(ies), Both renal arteries	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into renal artery(ies), Both renal arteries
441	Q1.40.37	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into renal artery(ies), Left renal artery	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into renal artery(ies), Left renal artery
441	Q1.40.38	Vascular	Dissection-Aortic dissection-modifier for extension, Extension into renal artery(ies), Right renal artery	Dissection-Aortic dissection (ROOT Definition)-modifier for extension, With extension into renal artery(ies), Right renal artery
441	Q1.40.40	Vascular	Dissection-Aortic dissection-modifier for size (largest external diameter of aorta at site of dissection), <43 millimeter diameter	Dissection-Aortic dissection (ROOT Definition)-modifier for size (largest external diameter of aorta at site of dissection), The largest external diameter of the aorta at the site of dissection is <43 millimeter diameter
441	Q1.40.42	Vascular	Dissection-Aortic dissection-modifier for size (largest external diameter of aorta at site of dissection), >55 millimeter diameter	Dissection-Aortic dissection (ROOT Definition)-modifier for size (largest external diameter of aorta at site of dissection), The largest external diameter of the aorta at the site of dissection is >55 millimeter diameter
441	Q1.40.39	Vascular	Dissection-Aortic dissection-modifier for size (largest external diameter of aorta at site of dissection), >60 millimeter diameter	Dissection-Aortic dissection (ROOT Definition)-modifier for size (largest external diameter of aorta at site of dissection), The largest external diameter of the aorta at the site of dissection is >60 millimeter diameter
441	Q1.40.79	Vascular	Dissection-Aortic dissection-modifier for size (largest external diameter of aorta at site of dissection), >80 millimeter diameter	Dissection-Aortic dissection (ROOT Definition)-modifier for size (largest external diameter of aorta at site of dissection), The largest external diameter of the aorta at the site of dissection is >80 millimeter diameter
441	Q1.40.41	Vascular	Dissection-Aortic dissection-modifier for size (largest external diameter of aorta at site of dissection), 43–49 millimeter diameter	Dissection-Aortic dissection (ROOT Definition)-modifier for size (largest external diameter of aorta at site of dissection), The largest external diameter of the aorta at the site of dissection is 43–49 millimeter diameter

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
441	Q1.40.77	Vascular	Dissection-Aortic dissection-modifier for size (largest external diameter of aorta at site of dissection), 50–59 millimeter diameter	Dissection-Aortic dissection (ROOT Definition)-modifier for size (largest external diameter of aorta at site of dissection), The largest external diameter of the aorta at the site of dissection is 50–59 millimeter diameter
441	Q1.40.78	Vascular	Dissection-Aortic dissection-modifier for size (largest external diameter of aorta at site of dissection), 60–79 millimeter diameter	Dissection-Aortic dissection (ROOT Definition)-modifier for size (largest external diameter of aorta at site of dissection), The largest external diameter of the aorta at the site of dissection is 60–79 millimeter diameter
441	Q1.27.63	Vascular	Dissection-Aortic dissection-modifier for size (largest external diameter of aorta at site of dissection), Large	Dissection-Aortic dissection (ROOT Definition)-modifier for size (largest external diameter of aorta at site of dissection), The largest external diameter of the aorta at the site of dissection is Large
441	Q1.40.03	Vascular	Dissection-Aortic dissection-modifier for size (largest external diameter of aorta at site of dissection), Moderate	Dissection-Aortic dissection (ROOT Definition)-modifier for size (largest external diameter of aorta at site of dissection), The largest external diameter of the aorta at the site of dissection is Moderate
441	Q1.27.61	Vascular	Dissection-Aortic dissection-modifier for size (largest external diameter of aorta at site of dissection), Small	Dissection-Aortic dissection (ROOT Definition)-modifier for size (largest external diameter of aorta at site of dissection), The largest external diameter of the aorta at the site of dissection is Small
443.22	15.24.32	Vascular	Dissection-Iliac and/or Femoral	"Dissection-Iliac and/or Femoral" ROOT Definition = An iliac or femoral artery dissection is a tear in its intimal layer, followed by formation and propagation of a subintimal hematoma. The dissecting hematoma commonly occupies about half and occasionally the entire circumference of the affected artery. This produces a false lumen which can reduce blood flow to branches arising from the affected artery. Aneurysmal dilation can also occur. If the dissection produces acute lower extremity ischemia consider using any of the following complications as well: "Acute limb ischemia, Left lower extremity" or "Acute limb ischemia, Left lower extremity, Left foot" or "Acute limb ischemia, Right lower extremity" or "Acute limb ischemia, Right lower extremity, Right foot".
443.22	15.24.34	Vascular	Dissection-Iliac and/or Femoral, Left	Dissection-Iliac and/or Femoral (ROOT Definition) + Use this code to describe a left iliac or femoral artery dissection.
443.22	15.24.33	Vascular	Dissection-Iliac and/or Femoral, Right	Dissection-Iliac and/or Femoral (ROOT Definition) + Use this code to describe a right iliac or femoral artery dissection.
453.2	10.31.04	Vascular	Superior Vena Cava (SVC) Syndrome	"Superior Vena Cava (SVC) Syndrome" ROOT Definition = A syndrome where partial internal occlusion or external compression of the superior vena cava produces a constellation of symptoms consisting of shortness of breath, dyspnea, coughing, and edema of the face, neck, upper body, and arms. Rarely, affected individuals may experience hoarseness, chest pain, dysphagia and hemoptysis.
444	15.67.52	Vascular	Thromboembolism-Arterial thromboembolism	"Thromboembolism-Arterial thromboembolism" ROOT Definition = Arterial thromboembolism is defined as ischemic changes caused by occlusion of an arterial blood vessel by a particle (clot, cholesterol crystals, atheroma, other) that breaks away from its

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				site of origin/formation. This diagnosis can include 'trash foot" when debris or cholesterol crystals embolize down the leg. This diagnosis can include "blue toe syndrome" which is characterized by tissue ischemia secondary to cholesterol crystal or atherothrombotic embolization leading to the occlusion of small vessels.
433.1	15.67.52 + Q1.79.01	Vascular	Thromboembolism-Arterial thromboembolism, Face	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Face
433.1	15.67.52 + Q1.79.02	Vascular	Thromboembolism-Arterial thromboembolism, Head (Excluding face)	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Head excluding face
557	15.67.52 + Q1.79.12	Vascular	Thromboembolism-Arterial thromboembolism, Intestine	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Intestine documented radiographically
593.81	15.67.52 + Q1.79.15	Vascular	Thromboembolism-Arterial thromboembolism, Left kidney	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Left kidney documented radiographically
444.2	15.67.52 + Q1.79.46	Vascular	Thromboembolism-Arterial thromboembolism, Left lower extremity	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Left lower extremity (Including the ankle but excluding the foot)
444.22	15.67.52 + Q1.79.47	Vascular	Thromboembolism-Arterial thromboembolism, Left lower extremity, Left foot	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Left foot
444.22	15.67.52 + Q1.79.48	Vascular	Thromboembolism-Arterial thromboembolism, Left lower extremity, Left toe(s)	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Left toe(s)
444.21	15.67.52 + Q1.79.35	Vascular	Thromboembolism-Arterial thromboembolism, Left upper extremity	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Left upper extremity (Including the wrist but excluding the hand)
444.21	15.67.52 + Q1.79.37	Vascular	Thromboembolism-Arterial thromboembolism, Left upper extremity, Left finger(s)	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Left finger(s)
444.21	15.67.52 + Q1.79.36	Vascular	Thromboembolism-Arterial thromboembolism, Left upper extremity, Left hand	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Left hand
557	15.67.52 + Q1.79.13	Vascular	Thromboembolism-Arterial thromboembolism, Liver	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Liver documented radiographically
433.2	15.67.52 + Q1.79.04	Vascular	Thromboembolism-Arterial thromboembolism, Neck	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Neck
593.8	15.67.52 + Q1.79.14	Vascular	Thromboembolism-Arterial thromboembolism, Right kidney	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Right kidney documented radiographically
444.22	15.67.52 + Q1.79.42	Vascular	Thromboembolism-Arterial thromboembolism, Right lower extremity	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Right lower extremity (Including the ankle but excluding the foot)
444.22	15.67.52 + Q1.79.43	Vascular	Thromboembolism-Arterial thrombo-embolism, Right lower extremity, Right foot	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Right foot

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
444.22	15.67.52 + Q1.79.44	Vascular	Thromboembolism-Arterial thromboembolism, Right lower extremity, Right toe(s)	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Right toe(s)
444.21	15.67.52 + Q1.79.31	Vascular	Thromboembolism-Arterial thromboembolism, Right upper extremity	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Right upper extremity (Including the wrist but excluding the hand)
444.21	15.67.52 + Q1.79.33	Vascular	Thromboembolism-Arterial thromboembolism, Right upper extremity, Right finger(s)	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Right finger(s)
444.21	15.67.52 + Q1.79.32	Vascular	Thromboembolism-Arterial thromboembolism, Right upper extremity, Right hand	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Right hand
557	15.67.52 + Q1.79.16	Vascular	Thromboembolism-Arterial thromboembolism, Spleen	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Spleen documented radiographically
444.21	15.67.52 + Q1.79.52	Vascular	Thromboembolism-Arterial thromboembolism, Thromboembolism involving finger(s)	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Finger(s)
444.2	15.67.52 + Q1.79.40	Vascular	Thromboembolism-Arterial thromboembolism, Thromboembolism involving finger(s), Both hands	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Finger(s), Both hands
444.21	15.67.52 + Q1.79.38	Vascular	Thromboembolism-Arterial thromboembolism, Thromboembolism involving finger(s), Left hand only	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Finger(s), Left hand only
444.21	15.67.52 + Q1.79.34	Vascular	Thromboembolism-Arterial thromboembolism, Thromboembolism involving finger(s), Right hand only	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Finger(s), Right hand only
444.22	15.67.52 + Q1.79.53	Vascular	Thromboembolism-Arterial thromboembolism, Thromboembolism involving toe(s)	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Toe(s)
444.22	15.67.52 + Q1.79.51	Vascular	Thromboembolism-Arterial thromboembolism, Thromboembolism involving toe(s), Both feet	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Toe(s), Both feet
444.22	15.67.52 + Q1.79.49	Vascular	Thromboembolism-Arterial thromboembolism, Thromboembolism involving toe(s), Left foot only	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Toe(s), Left foot only
444.22	15.67.52 + Q1.79.45	Vascular	Thromboembolism-Arterial thromboembolism, Thromboembolism involving toe(s), Right foot only	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Toe(s), Right foot only
444.9	15.67.52 + Q1.79.07	Vascular	Thromboembolism-Arterial thromboembolism, Trunk (Torso)	Thromboembolism-Arterial thromboembolism (ROOT Definition) + Location = Trunk (Torso)
444	15.67.53	Vascular	Thrombosis	Acute or chronic occlusion of a blood vessel by thrombus, embolus, tumors, external compression, trauma, hypercoagulable states, or other cause.
444	15.67.54,	Vascular	Thrombosis-Arterial thrombosis	"Thrombosis-Arterial thrombosis" ROOT Definition = Arterial thrombosis is defined as occlusion of an arterial blood vessel by clot,

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				atheroma, tumors, external compression, trauma, hypercoagulable states, or other cause.
433.1	15.67.54 + Q1.79.01	Vascular	Thrombosis-Arterial thrombosis, Face	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Face
444.22	15.67.54 + Q1.88.34	Vascular	Thrombosis-Arterial thrombosis, Femoral artery	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Femoral artery
444.22	15.67.54 + Q1.88.36	Vascular	Thrombosis-Arterial thrombosis, Femoral artery, Left	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Left femoral artery
444.22	15.67.54 + Q1.88.35	Vascular	Thrombosis-Arterial thrombosis, Femoral artery, Right	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Right femoral artery
433.1	15.67.54 + Q1.79.02	Vascular	Thrombosis-Arterial thrombosis, Head (Excluding face)	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Head excluding face
444.22	15.67.54 + Q1.79.46	Vascular	Thrombosis-Arterial thrombosis, Left lower extremity	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Left lower extremity (Including the ankle but excluding the foot)
444.22	15.67.54 + Q1.79.47	Vascular	Thrombosis-Arterial thrombosis, Left lower extremity, Left foot	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Left foot
444.22	15.67.54 + Q1.79.48	Vascular	Thrombosis-Arterial thrombosis, Left lower extremity, Left toe(s)	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Left toe(s)
444.21	15.67.54 + Q1.79.35	Vascular	Thrombosis-Arterial thrombosis, Left upper extremity	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Left upper extremity (Including the wrist but excluding the hand)
444.21	15.67.54 + Q1.79.37	Vascular	Thrombosis-Arterial thrombosis, Left upper extremity, Left finger(s)	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Left finger(s)
444.21	15.67.54 + Q1.79.36	Vascular	Thrombosis-Arterial thrombosis, Left upper extremity, Left hand	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Left hand
433.2	15.67.54 + Q1.79.04	Vascular	Thrombosis-Arterial thrombosis, Neck	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Neck
444.22	15.67.54 + Q1.79.42	Vascular	Thrombosis-Arterial thrombosis, Right lower extremity	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Right lower extremity (Including the ankle but excluding the foot)
444.22	15.67.54 + Q1.79.43	Vascular	Thrombosis-Arterial thrombosis, Right lower extremity, Right foot	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Right foot
444.22	15.67.54 + Q1.79.44	Vascular	Thrombosis-Arterial thrombosis, Right lower extremity, Right toe(s)	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Right toe(s)
444.21	15.67.54 + Q1.79.31	Vascular	Thrombosis-Arterial thrombosis, Right upper extremity	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Right upper extremity (Including the wrist but excluding the hand)
444.21	15.67.54 + Q1.79.33	Vascular	Thrombosis-Arterial thrombosis, Right upper extremity, Right finger(s)	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Right finger(s)
444.21	15.67.54 + Q1.79.32	Vascular	Thrombosis-Arterial thrombosis, Right upper extremity, Right hand	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Right hand
444.89	15.67.54 + Q1.79.07	Vascular	Thrombosis-Arterial thrombosis, Trunk (Torso)	Thrombosis-Arterial thrombosis (ROOT Definition) + Location = Trunk (Torso)

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
453.9	15.67.55	Vascular	Thrombosis-Venous thrombosis	"Thrombosis-Venous thrombosis" ROOT Definition = Venous thrombosis is defined as a condition in which a blood clot (thrombus) forms in a vein. Tumors, external compression, trauma, hypercoagulable states or other etiologies can also be causal agents. This process can limit blood flow through the vein, causing swelling, venous congestion and pain. In its extreme form it can result in arterial insufficiency leading to tissue ischemia and necrosis.
453.8	15.67.55 + Q1.79.01	Vascular	Thrombosis-Venous thrombosis, Face	Thrombosis-Venous thrombosis (ROOT Definition) + Location = Face
325	15.67.55 + Q1.79.02	Vascular	Thrombosis-Venous thrombosis, Head (Excluding face)	Thrombosis-Venous thrombosis (ROOT Definition) + Location = Head excluding face
453.2	15.67.55 + Q1.85.01	Vascular	Thrombosis-Venous thrombosis, Inferior Vena Cava (IVC)	Thrombosis-Venous thrombosis (ROOT Definition) + Location = Inferior Vena Cava (IVC). Acute or chronic occlusion of the inferior vena cava by clot, embolus, tumors, external compression, trauma, hypercoagulable states or iatrogenic causes. This lesion may be asymptomatic due to the presence of adequate collateral venous flow or it may be associated with the presence of one or more of the following complications: lower extremity edema, engorgement of superficial abdominal veins, renal failure, ascites, chyloperitoneum, hepatic engorgement or pulmonary emboli.
451.2	15.67.55 + Q1.79.46	Vascular	Thrombosis-Venous thrombosis, Left lower extremity	Thrombosis-Venous thrombosis (ROOT Definition) + Location = Left lower extremity (Including the ankle but excluding the foot)
451.2	15.67.55 + Q1.79.47	Vascular	Thrombosis-Venous thrombosis, Left lower extremity, Left foot	Thrombosis-Venous thrombosis (ROOT Definition) + Location = Left foot
451.2	15.67.55 + Q1.79.48	Vascular	Thrombosis-Venous thrombosis, Left lower extremity, Left toe(s)	Thrombosis-Venous thrombosis (ROOT Definition) + Location = Left toe(s)
451.84	15.67.55 + Q1.79.35	Vascular	Thrombosis-Venous thrombosis, Left upper extremity	Thrombosis-Venous thrombosis (ROOT Definition) + Location = Left upper extremity (Including the wrist but excluding the hand)
451.84	15.67.55 + Q1.79.37	Vascular	Thrombosis-Venous thrombosis, Left upper extremity, Left finger(s)	Thrombosis-Venous thrombosis (ROOT Definition) + Location = Left finger(s)
451.84	15.67.55 + Q1.79.36	Vascular	Thrombosis-Venous thrombosis, Left upper extremity, Left hand	Thrombosis-Venous thrombosis (ROOT Definition) + Location = Left hand
453.8	15.67.55 + Q1.79.04	Vascular	Thrombosis-Venous thrombosis, Neck	Thrombosis-Venous thrombosis (ROOT Definition) + Location = Neck
453.3	15.67.55 + Q1.86.83	Vascular	Thrombosis-Venous thrombosis, Renal vein	"Thrombosis-Venous thrombosis, Renal vein" ROOT Definition = Renal vein thrombosis is a condition in which a blood clot (thrombus) forms in one or both renal veins. Tumors, external compression, trauma, hypercoagulable states, or other etiologies causes can also be causal agents. This process can limit blood flow through the vein. Renal vein thrombosis involves acute or chronic occlusion of a renal vein by clot, emboli,

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				dehydration, tumors, external compression, trauma, hypercoagulable states, systemic diseases (such as systemic lupus erythematosis) or other causes. Acute renal vein thrombosis is characterized by abrupt onset of flank pain, nausea, vomiting, and gross or microscopic hematuria. Physical findings may include a palpable kidney and hypertension. On occasion, acute renal vein thrombosis may be bilateral, resulting in oliguric acute renal failure and flank pain. The chronic presentation of renal vein thrombosis is observed more frequently than the acute form. In general, it is asymptomatic, although progressive nephrotic syndrome can be associated.
453.3	15.67.55 + Q1.86.86	Vascular	Thrombosis-Venous thrombosis, Renal vein, Bilateral	Thrombosis-Venous thrombosis, Renal vein (ROOT Definition) + Location = Bilateral renal veins
453.3	15.67.55 + Q1.86.85	Vascular	Thrombosis-Venous thrombosis, Renal vein, Left	Thrombosis-Venous thrombosis, Renal vein (ROOT Definition) + Location = Left renal vein
453.3	15.67.55 + Q1.86.84	Vascular	Thrombosis-Venous thrombosis, Renal vein, Right	Thrombosis-Venous thrombosis, Renal vein (ROOT Definition) + Location = Right renal vein
451.2	15.67.55 + Q1.79.42	Vascular	Thrombosis-Venous thrombosis, Right lower extremity	Thrombosis-Venous thrombosis (ROOT Definition) + Location = Right lower extremity (Including the ankle but excluding the foot)
451.2	15.67.55 + Q1.79.43	Vascular	Thrombosis-Venous thrombosis, Right lower extremity, Right foot	Thrombosis-Venous thrombosis (ROOT Definition) + Location = Right foot
451.2	15.67.55 + Q1.79.44	Vascular	Thrombosis-Venous thrombosis, Right lower extremity, Right toe(s)	Thrombosis-Venous thrombosis (ROOT Definition) + Location = Right toe(s)
451.84	15.67.55 + Q1.79.31	Vascular	Thrombosis-Venous thrombosis, Right upper extremity	Thrombosis-Venous thrombosis (ROOT Definition) + Location = Right upper extremity (Including the wrist but excluding the hand)
451.84	15.67.55 + Q1.79.33	Vascular	Thrombosis-Venous thrombosis, Right upper extremity, Right finger(s)	Thrombosis-Venous thrombosis (ROOT Definition) + Location = Right finger(s)
451.84	15.67.55 + Q1.79.32	Vascular	Thrombosis-Venous thrombosis, Right upper extremity, Right hand	Thrombosis-Venous thrombosis (ROOT Definition) + Location = Right hand
453.2	15.67.55 + Q1.85.02	Vascular	Thrombosis-Venous thrombosis, Superior Vena Cava (SVC)	Thrombosis-Venous thrombosis (ROOT Definition) + Location = Superior Vena Cava (SVC)
451.9	15.67.55 + Q1.79.07	Vascular	Thrombosis-Venous thrombosis, Trunk (Torso)	Thrombosis-Venous thrombosis (ROOT Definition) + Location = Trunk (Torso)
453.9	15.67.56	Vascular	Thrombosis-Venous thrombosis-modifier, Phlegmasia alba dolens (Milk leg)	Thrombosis-Venous thrombosis (ROOT Definition) + Phlegmasia cerulea dolens is a severe form of ileofemoral venous thrombosis resulting in massive swelling, pain, tenderness, and cyanosis of the entire involved extremity. Phlegmasia alba dolens (Milk leg) is a condition that occurs when the arterial supply is compromised secondary to this massive swelling; the leg therefore becomes white in color.
453.9	15.67.57	Vascular	Thrombosis-Venous thrombosis-modifier, Phlegmasia cerulea dolens	Thrombosis-Venous thrombosis (ROOT Definition) + Phlegmasia cerulea dolens is a severe form of ileofemoral venous thrombosis resulting in

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				massive swelling, pain, tenderness, and cyanosis of the entire involved extremity. Phlegmasia alba dolens (Milk leg) is a condition that occurs when the arterial supply is compromised secondary to this massive swelling; the leg therefore becomes white in color.
997.2	15.67.50	Vascular	Vascular complication	Any complication involving the vascular system. An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/ intraprocedural complications and postoperative/postprocedural complications in this time interval.
E876.9	15.88.13	Vascular-Line(s)	Arterial line complication	"Arterial line complication" ROOT Definition = An arterial line complication is any complication involving an arterial line at any site. These complications can include, but are not limited to documented or clinically suspected infection, insertion complications, and arterial thrombosis with or without signs of distal limb ischemia. Failure of insertion should be coded separately using the appropriate code. Line infections are divided into "Documented line infection" and "Clinically suspected line infection" and they also should be coded separately under these specific complications. Documented arterial line infection is defined as bacteremia/fungemia in a patient with an arterial line with at least one positive blood culture obtained from a peripheral vein, clinical manifestations of infection (fever, chills and/or hypotension etc.), and no apparent source for the infection except the arterial line catheter. One of the following should be present: a positive semiquantitative (greater than 15 colony forming units per catheter segment) culture whereby the same organism (species and antibiogram) is isolated from the arterial line catheter segment and peripheral blood; simultaneous quantitative blood cultures with a greater than 5:1 ratio of arterial line catheter versus peripheral blood growth; or differential period of arterial line drawn blood culture versus peripheral blood drawn blood culture positivity of greater than two hours. Clinically suspected arterial line infection is defined as clinical evidence of infection, without apparent alternative sources, with positive blood culture and/or arterial line culture and/ or arterial line tip culture that improves with antibiotic treatment and possibly arterial line removal. Arterial line – related complications that produce infiltration are documented under "integument". Acute limb ischemic complications that involve an arterial line as the etiologic agent are documented both in this "Arterial line complication" section and also in the "Acute limb ischemia" section. Acute limb ischemic complications that do not

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				involve a line as the etiologic agent are documented under "Acute limb ischemia".
E876.9	15.88.13 + Q1.88.18	Vascular-Line(s)	Arterial line complication, Brachial artery, Left	Arterial line complication (ROOT Definition) + Location = Brachial artery, Left
E876.9	15.88.13 + Q1.88.17	Vascular-Line(s)	Arterial line complication, Brachial artery, Right	Arterial line complication (ROOT Definition) + Location = Brachial artery, Right
E876.9	15.88.13+Q1.88.09	Vascular-Line(s)	Arterial line complication, Carotid artery, Left	Arterial line complication (ROOT Definition) + Location = Carotid artery, Left
E876.9	15.88.13 + Q1.88.08	Vascular-Line(s)	Arterial line complication, Carotid artery, Right	Arterial line complication (ROOT Definition) + Location = Carotid artery, Right
E876.9	15.88.13 + Q1.88.39	Vascular-Line(s)	Arterial line complication, Dorsalis pedis artery, Left	Arterial line complication (ROOT Definition) + Location = Dorsalis pedis artery, Left
E876.9	15.88.13 + Q1.88.38	Vascular-Line(s)	Arterial line complication, Dorsalis pedis artery, Right	Arterial line complication (ROOT Definition) + Location = Dorsalis pedis artery, Right
E876.9	15.88.13 + Q1.88.36	Vascular-Line(s)	Arterial line complication, Femoral artery, Left	Arterial line complication (ROOT Definition) + Location = Femoral artery, Left
E876.9	15.88.13 + Q1.88.35	Vascular-Line(s)	Arterial line complication, Femoral artery, Right	Arterial line complication (ROOT Definition) + Location = Femoral artery, Right
E876.9	15.88.13 + Q1.88.42	Vascular-Line(s)	Arterial line complication, Posterior tibial artery, Left	Arterial line complication (ROOT Definition) + Location = Posterior tibial artery, Left
E876.9	15.88.13 + Q1.88.41	Vascular-Line(s)	Arterial line complication, Posterior tibial artery, Right	Arterial line complication (ROOT Definition) + Location = Posterior tibial artery, Right
E876.9	15.88.13 + Q1.88.21	Vascular-Line(s)	Arterial line complication, Radial artery, Left	Arterial line complication (ROOT Definition) + Location = Radial artery, Left
E876.9	15.88.13 + Q1.88.20	Vascular-Line(s)	Arterial line complication, Radial artery, Right	Arterial line complication (ROOT Definition) + Location = Radial artery, Right
E876.9	15.88.13 + Q1.88.12	Vascular-Line(s)	Arterial line complication, Subclavian artery, Left	Arterial line complication (ROOT Definition) + Location = Subclavian artery, Left
E876.9	15.88.13 + Q1.88.11	Vascular-Line(s)	Arterial line complication, Subclavian artery, Right	Arterial line complication (ROOT Definition) + Location = Subclavian artery, Right
E876.9	15.88.16	Vascular-Line(s)	Arterial line complication, Transthoracic aortic	Arterial line complication (ROOT Definition) + Location = Transthoracic aortic line
E876.9	15.88.17	Vascular-Line(s)	Arterial line complication, Transthoracic pulmonary artery/right ventricular	Arterial line complication (ROOT Definition) + Location = Transthoracic pulmonary artery/right ventricular line
E876.9	15.88.18	Vascular-Line(s)	Arterial line complication, Transvascular pulmonary artery/right ventricular (Swann-Ganz Catheter)	Arterial line complication (ROOT Definition) + Location = Transvascular pulmonary artery/right ventricular (Swann-Ganz Catheter)
E876.9	15.88.13 + Q1.88.58	Vascular-Line(s)	Arterial line complication, Ulnar artery, Left	Arterial line complication (ROOT Definition) + Location = Ulnar artery, Left
E876.9	15.88.13 + Q1.88.57	Vascular-Line(s)	Arterial line complication, Ulnar artery, Right	Arterial line complication (ROOT Definition) + Location = Ulnar artery, Right
E876.9	15.88.13 + Q1.88.51	Vascular-Line(s)	Arterial line complication, Umbilical artery	Arterial line complication (ROOT Definition) + Location = Umbilical artery

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.62	15.88.14	Vascular-Line(s)	Arterial line complication-clinically suspected line infection	"Arterial line complication-clinically suspected line infection" ROOT Definition = Clinically suspected arterial line infection is defined as clinical evidence of infection, without apparent alternative sources, with positive blood culture and/or arterial line culture and/or arterial line tip culture that improves with antibiotic treatment and possibly arterial line removal.
996.62	15.88.14 + Q1.88.18	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Brachial artery, Left	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Brachial artery, Left
996.62	15.88.14 + Q1.88.17	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Brachial artery, Right	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Brachial artery, Right
996.62	15.88.14 + Q1.88.09	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Carotid artery, Left	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Carotid artery, Left
996.62	15.88.14 + Q1.88.08	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Carotid artery, Right	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Carotid artery, Right
996.62	15.88.14 + Q1.88.39	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Dorsalis pedis artery, Left	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Dorsalis pedis artery, Left
996.62	15.88.14 + Q1.88.38	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Dorsalis pedis artery, Right	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Dorsalis pedis artery, Right
996.62	15.88.14 + Q1.88.36	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Femoral artery, Left	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Femoral artery, Left
996.62	15.88.14 + Q1.88.35	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Femoral artery, Right	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Femoral artery, Right
996.62	15.88.14 + Q1.88.42	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Posterior tibial artery, Left	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Posterior tibial artery, Left
996.62	15.88.14 + Q1.88.41	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Posterior tibial artery, Right	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Posterior tibial artery, Right
996.62	15.88.14 + Q1.88.21	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Radial artery, Left	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Radial artery, Left
996.62	15.88.14 + Q1.88.20	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Radial artery, Right	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Radial artery, Right
996.62	15.88.14 + Q1.88.12	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Subclavian artery, Left	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Subclavian artery, Left
996.62	15.88.14 + Q1.88.11	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Subclavian artery, Right	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Subclavian artery, Right
996.62	15.88.16 + Q1.06.57	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Transthoracic aortic	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Transthoracic aortic line
996.62	15.88.17 + Q1.06.57	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Transthoracic pulmonary artery/ right ventricular	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Transthoracic pulmonary artery/right ventricular line
996.62	15.88.18 + Q1.06.57	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Transvascular pulmonary artery/ right ventricular (Swann-Ganz catheter)	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Transvascular pulmonary artery/right ventricular (Swann-Ganz catheter)
996.62	15.88.14 + Q1.88.58	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Ulnar artery, Left	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Ulnar artery, Left

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.62	15.88.14 + Q1.88.57	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Ulnar artery, Right	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Ulnar artery, Right
996.62	15.88.14 + Q1.88.51	Vascular-Line(s)	Arterial line complication-clinically suspected line infection, Umbilical artery	Arterial line complication-clinically suspected line infection (ROOT Definition) + Location = Umbilical artery
996.62	15.88.15	Vascular-Line(s)	Arterial line complication-documented line infection	"Arterial line complication-documented line infection" ROOT Definition = Documented arterial line infection is defined as bacteremia/fungemia in a patient with an arterial line with at least one positive blood culture obtained from a peripheral vein, clinical manifestations of infection (fever, chills and/or hypotension etc.), and no apparent source for the infection except the arterial line catheter. One of the following should be present: a positive semiquantitative (greater than 15 colony forming units per catheter segment) culture whereby the same organism (species and antibiogram) is isolated from the arterial line catheter segment and peripheral blood; simultaneous quantitative blood cultures with a greater than 5:1 ratio of arterial line catheter versus peripheral blood growth; or differential period of arterial line drawn blood culture versus peripheral blood drawn blood culture positivity of greater than two hours.
996.62	15.88.15 + Q1.88.18	Vascular-Line(s)	Arterial line complication-documented line infection, Brachial artery, Left	Arterial line complication-documented line infection (ROOT Definition) + Location = Brachial artery, Left
996.62	15.88.15 + Q1.88.17	Vascular-Line(s)	Arterial line complication-documented line infection, Brachial artery, Right	Arterial line complication-documented line infection (ROOT Definition) + Location = Brachial artery, Right
996.62	15.88.15 + Q1.88.09	Vascular-Line(s)	Arterial line complication-documented line infection, Carotid artery, Left	Arterial line complication-documented line infection (ROOT Definition) + Location = Carotid artery, Left
996.62	15.88.15 + Q1.88.08	Vascular-Line(s)	Arterial line complication-documented line infection, Carotid artery, Right	Arterial line complication-documented line infection (ROOT Definition) + Location = Carotid artery, Right
996.62	15.88.15 + Q1.88.39	Vascular-Line(s)	Arterial line complication-documented line infection, Dorsalis pedis artery, Left	Arterial line complication-documented line infection (ROOT Definition) + Location = Dorsalis pedis artery, Left
996.62	15.88.15+Q1.88.38	Vascular-Line(s)	Arterial line complication-documented line infection, Dorsalis pedis artery, Right	Arterial line complication-documented line infection (ROOT Definition) + Location = Dorsalis pedis artery, Right
996.62	15.88.15 + Q1.88.36	Vascular-Line(s)	Arterial line complication-documented line infection, Femoral artery, Left	Arterial line complication-documented line infection (ROOT Definition) + Location = Femoral artery, Left
996.62	15.88.15 + Q1.88.35	Vascular-Line(s)	Arterial line complication-documented line infection, Femoral artery, Right	Arterial line complication-documented line infection (ROOT Definition) + Location = Femoral artery, Right
996.62	15.88.15+Q1.88.42	Vascular-Line(s)	Arterial line complication-documented line infection, Posterior tibial artery, Left	Arterial line complication-documented line infection (ROOT Definition) + Location = Posterior tibial artery, Left
996.62	15.88.15 + Q1.88.41	Vascular-Line(s)	Arterial line complication-documented line infection, Posterior tibial artery, Right	Arterial line complication-documented line infection (ROOT Definition) + Location = Posterior tibial artery, Right
996.62	15.88.15 + Q1.88.21	Vascular-Line(s)	Arterial line complication-documented line infection, Radial artery, Left	Arterial line complication-documented line infection (ROOT Definition) + Location = Radial artery, Left
996.62	15.88.15 + Q1.88.20	Vascular-Line(s)	Arterial line complication-documented line infection, Radial artery, Right	Arterial line complication-documented line infection (ROOT Definition) + Location = Radial artery, Right
996.62	15.88.15 + Q1.88.12	Vascular-Line(s)	Arterial line complication-documented line infection, Subclavian artery, Left	Arterial line complication-documented line infection (ROOT Definition) + Location = Subclavian artery, Left

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.62	15.88.15 + Q1.88.11	Vascular-Line(s)	Arterial line complication-documented line infection, Subclavian artery, Right	Arterial line complication-documented line infection (ROOT Definition) + Location = Subclavian artery, Right
996.62	15.88.16 + Q1.06.58	Vascular-Line(s)	Arterial line complication-documented line infection, Transthoracic aortic	Arterial line complication-documented line infection (ROOT Definition) + Location = Transthoracic aortic line
996.62	15.88.17 + Q1.06.58	Vascular-Line(s)	Arterial line complication-documented line infection, Transthoracic pulmonary artery/ right ventricular	Arterial line complication-documented line infection (ROOT Definition) + Location = Transthoracic pulmonary artery/right ventricular line
996.62	15.88.18 + Q1.06.58	Vascular-Line(s)	Arterial line complication-documented line infection, Transvascular pulmonary artery/ right ventricular (Swann-Ganz catheter)	Arterial line complication-documented line infection (ROOT Definition) + Location = Transvascular pulmonary artery/right ventricular (Swann-Ganz catheter)
996.62	15.88.15 + Q1.88.58	Vascular-Line(s)	Arterial line complication-documented line infection, Ulnar artery, Left	Arterial line complication-documented line infection (ROOT Definition) + Location = Ulnar artery, Left
996.62	15.88.15 + Q1.88.57	Vascular-Line(s)	Arterial line complication-documented line infection, Ulnar artery, Right	Arterial line complication-documented line infection (ROOT Definition) + Location = Ulnar artery, Right
996.62	15.88.15 + Q1.88.51	Vascular-Line(s)	Arterial line complication-documented line infection, Umbilical artery	Arterial line complication-documented line infection (ROOT Definition) + Location = Umbilical artery
E876.4	15.88.19	Vascular-Line(s)	Arterial line failure of insertion	"Arterial line failure of insertion" ROOT Definition = Failure of an attempted insertion of an arterial line.
E876.4	15.88.19 + Q1.88.18	Vascular-Line(s)	Arterial line failure of insertion, Brachial artery, Left	Arterial line failure of insertion (ROOT Definition) + Location = Brachial artery, Left
E876.4	15.88.19 + Q1.88.17	Vascular-Line(s)	Arterial line failure of insertion, Brachial artery, Right	Arterial line failure of insertion (ROOT Definition) + Location = Brachial artery, Right
E876.4	15.88.19 + Q1.88.09	Vascular-Line(s)	Arterial line failure of insertion, Carotid artery, Left	Arterial line failure of insertion (ROOT Definition) + Location = Carotid artery, Left
E876.4	15.88.19 + Q1.88.08	Vascular-Line(s)	Arterial line failure of insertion, Carotid artery, Right	Arterial line failure of insertion (ROOT Definition) + Location = Carotid artery, Right
E876.4	15.88.19 + Q1.88.39	Vascular-Line(s)	Arterial line failure of insertion, Dorsalis pedis artery, Left	Arterial line failure of insertion (ROOT Definition) + Location = Dorsalis pedis artery, Left
E876.4	15.88.19 + Q1.88.38	Vascular-Line(s)	Arterial line failure of insertion, Dorsalis pedis artery, Right	Arterial line failure of insertion (ROOT Definition) + Location = Dorsalis pedis artery, Right
E876.4	15.88.19 + Q1.88.36	Vascular-Line(s)	Arterial line failure of insertion, Femoral artery, Left	Arterial line failure of insertion (ROOT Definition) + Location = Femoral artery, Left
E876.4	15.88.19 + Q1.88.35	Vascular-Line(s)	Arterial line failure of insertion, Femoral artery, Right	Arterial line failure of insertion (ROOT Definition) + Location = Femoral artery, Right
E876.4	15.88.19 + Q1.88.42	Vascular-Line(s)	Arterial line failure of insertion, Posterior tibial artery, Left	Arterial line failure of insertion (ROOT Definition) + Location = Posterior tibial artery, Left
E876.4	15.88.19 + Q1.88.41	Vascular-Line(s)	Arterial line failure of insertion, Posterior tibial artery, Right	Arterial line failure of insertion (ROOT Definition) + Location = Posterior tibial artery, Right
E876.4	15.88.19 + Q1.88.21	Vascular-Line(s)	Arterial line failure of insertion, Radial artery, Left	Arterial line failure of insertion (ROOT Definition) + Location = Radial artery, Left
E876.4	15.88.19 + Q1.88.20	Vascular-Line(s)	Arterial line failure of insertion, Radial artery, Right	Arterial line failure of insertion (ROOT Definition) + Location = Radial artery, Right
E876.4	15.89.15 + Q1.88.12	Vascular-Line(s)	Arterial line failure of insertion, Subclavian artery, Left	Arterial line failure of insertion (ROOT Definition) + Location = Subclavian artery, Left

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E876.4	15.88.19 + Q1.88.11	Vascular-Line(s)	Arterial line failure of insertion, Subclavian artery, Right	Arterial line failure of insertion (ROOT Definition) + Location = Subclavian artery, Right
E876.4	15.88.16 + Q1.06.59	Vascular-Line(s)	Arterial line failure of insertion, Transthoracic aortic	Arterial line failure of insertion (ROOT Definition) + Location = Transthoracic aortic line
E876.4	15.88.17 + Q1.06.59	Vascular-Line(s)	Arterial line failure of insertion, Transthoracic pulmonary artery/right ventricular	Arterial line failure of insertion (ROOT Definition) + Location = Transthoracic pulmonary artery/right ventricular line
E876.4	15.88.18 + Q1.06.59	Vascular-Line(s)	Arterial line failure of insertion, Transvascular pulmonary artery/right ventricular (Swann-Ganz catheter)	Arterial line failure of insertion (ROOT Definition) + Location = Transvascular pulmonary artery/right ventricular (Swann-Ganz catheter)
E876.4	15.88.19 + Q1.88.58	Vascular-Line(s)	Arterial line failure of insertion, Ulnar artery, Left	Arterial line failure of insertion (ROOT Definition) + Location = Ulnar artery, Left
E876.4	15.88.19 + Q1.88.57	Vascular-Line(s)	Arterial line failure of insertion, Ulnar artery, Right	Arterial line failure of insertion (ROOT Definition) + Location = Ulnar artery, Right
E876.4	15.88.19 + Q1.88.51	Vascular-Line(s)	Arterial line failure of insertion, Umbilical artery	Arterial line failure of insertion (ROOT Definition) + Location = Umbilical artery
E876.4	Q1.06.60	Vascular-Line(s)	Arterial line failure of insertion-modifier, Failure to achieve access after 1 hour of attempts	Failure of an attempted insertion of an arterial line after 1 hour of attempts
E876.4	Q1.06.61	Vascular-Line(s)	Arterial line failure of insertion-modifier, Failure to achieve access at all	Failure of an attempted insertion of an arterial line with failure to achieve arterial access at all
E876.9	15.88.30	Vascular-Line(s)	Central venous access complication	"Central venous access complication" ROOT Definition = A central venous access complication is any complication involving a central venous line at any site. These complications can include, but are not limited to infection, insertion complications, insertion failures and venous thrombosis (with or without signs of venous congestion). Failure of insertion should be coded separately using the appropriate code. Line infections are divided into "Documented line infection" and "Clinically suspected line infection" and they also should be coded separately under these specific complications. Documented central venous line infection is defined as bacteremia/fungemia in a patient with a central venous line with at least one positive blood culture obtained from a peripheral vein, clinical manifestations of infection (fever, chills and/or hypotension etc.), and no apparent source for the infection except the central venous catheter. One of the following should be present: a positive semiquantitative (greater than 15 colony forming units per catheter segment) culture whereby the same organism (species and antibiogram) is isolated from the central venous catheter segment and peripheral blood; simultaneous quantitative blood cultures with a greater than 5:1 ratio of central venous catheter versus peripheral blood growth; or differential period of central venous catheter drawn blood culture versus peripheral blood drawn blood culture positivity of greater than two hours. Clinically suspected central venous line infection is defined as clinical evidence of infection, without apparent alternative sources, with

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				positive blood culture and/or central venous line culture and/or central venous line tip culture that improves with antibiotic treatment and possibly central venous line removal. Central venous line – related complications that produce infiltration are documented under "integument". Acute limb ischemic complications that involve a central venous line as the primary etiologic agent are documented both in this "Central venous access complication" section and also in the "Acute limb ischemia" section. Acute limb ischemic complications that do not involve a line as the primary agent are documented under "Acute limb ischemia". PICC lines (Peripherally Inserted Central Catheters), whose tips are central (internal jugular vein, subclavian vein, superior or inferior vena cava, femoral vein, atrium), are considered central venous lines for the purpose of recording their complications. PIC (Peripherally Inserted Catheters) lines, whose tips are not located in a central venous position (internal jugular vein, subclavian vein, superior or inferior vena cava, femoral vein, atrium), are considered peripheral venous lines.
E876.9	15.88.30 + Q1.86.48	Vascular-Line(s)	Central venous access complication, Femoral vein, Left	Central venous access complication (ROOT Definition) + Location = Femoral vein, Left
E876.9	15.88.30 + Q1.86.47	Vascular-Line(s)	Central venous access complication, Femoral vein, Right	Central venous access complication (ROOT Definition) + Location = Femoral vein, Right
E876.9	15.88.30 + Q1.86.45	Vascular-Line(s)	Central venous access complication, Internal jugular vein, Left	Central venous access complication (ROOT Definition) + Location = Internal jugular vein, Left
E876.9	15.88.30 + Q1.86.42	Vascular-Line(s)	Central venous access complication, Internal jugular vein, Right	Central venous access complication (ROOT Definition) + Location = Internal jugular vein, Right
E876.9	15.88.33	Vascular-Line(s)	Central venous access complication, Peripherally inserted catheter (PIC)	Central venous access complication (ROOT Definition) + Location = Peripherally inserted catheter (PIC)
E876.9	15.88.30 + Q1.86.38	Vascular-Line(s)	Central venous access complication, Subclavian vein, Left	Central venous access complication (ROOT Definition) + Location = Subclavian vein, Left
E876.9	15.88.30 + Q1.86.37	Vascular-Line(s)	Central venous access complication, Subclavian vein, Right	Central venous access complication (ROOT Definition) + Location = Subclavian vein, Right
E876.9	15.88.34	Vascular-Line(s)	Central venous access complication, Transhepatic line	Central venous access complication (ROOT Definition) + Location = Transhepatic line
E876.9	15.88.35	Vascular-Line(s)	Central venous access complication, Transthoracic line, Left atrial transthoracic	Central venous access complication (ROOT Definition) + Location = Transthoracic line, Left atrial transthoracic
E876.9	15.88.36	Vascular-Line(s)	Central venous access complication, Transthoracic line, Right atrial transthoracic line	Central venous access complication (ROOT Definition) + Location = Transthoracic line, Right atrial transthoracic line
E876.9	15.88.30 + Q1.86.77	Vascular-Line(s)	Central venous access complication, Umbilical vein	Central venous access complication (ROOT Definition) + Location = Umbilical vein
E870.3	15.88.38	Vascular-Line(s)	Central venous access complication-Arterial stick during attempted central venous line placement	"Central venous access complication-Arterial stick during attempted central venous line placement" ROOT Definition = Unintended arterial stick into adjacent paired artery during intended central venous line placement.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E870.3	15.88.40	Vascular-Line(s)	Central venous access complication-Arterial stick during attempted central venous line placement, Carotid stick during attempted internal jugular vein access	Central venous access complication-Arterial stick during attempted central venous line placement (ROOT Definition) + Location = Carotid stick during attempted internal jugular vein access
E870.3	15.88.42	Vascular-Line(s)	Central venous access complication-Arterial stick during attempted central venous line placement, Femoral artery stick during attempted femoral vein access	Central venous access complication-Arterial stick during attempted central venous line placement (ROOT Definition) + Location = Femoral artery stick during attempted femoral vein access
E870.3	15.88.44	Vascular-Line(s)	Central venous access complication-Arterial stick during attempted central venous line placement, Subclavian artery stick during attempted subclavian vein access	Central venous access complication-Arterial stick during attempted central venous line placement (ROOT Definition) + Location = Subclavian artery stick during attempted subclavian vein access
E870.3	15.88.39	Vascular-Line(s)	Central venous access complication-Arterial stick during attempted central venous line placement-With placement of catheter into artery	"Central venous access complication-Arterial stick during attempted central venous line placement-With placement of catheter into artery" ROOT Definition = Unintended arterial stick with placement of catheter into adjacent paired artery during intended central venous line placement.
E870.3	15.88.41	Vascular-Line(s)	Central venous access complication-Arterial stick during attempted central venous line placement-With placement of catheter into artery, During attempted femoral vein access	Central venous access complication-Arterial stick during attempted central venous line placement-With placement of catheter into artery (ROOT Definition) + Location = During attempted internal jugular vein access
E870.3	15.88.43	Vascular-Line(s)	Central venous access complication-Arterial stick during attempted central venous line placement-With placement of catheter into artery, During attempted internal jugular vein access	Central venous access complication-Arterial stick during attempted central venous line placement-With placement of catheter into artery (ROOT Definition) + Location = During attempted femoral vein access
E870.3	15.88.45	Vascular-Line(s)	Central venous access complication-Arterial stick during attempted central venous line placement-With placement of catheter into artery, During attempted subclavian vein access	Central venous access complication-Arterial stick during attempted central venous line placement-With placement of catheter into artery (ROOT Definition) + Location = During attempted subclavian vein access
996.62	15.88.31	Vascular-Line(s)	Central venous access complication-clinically suspected line infection	"Central venous access complication-clinically suspected line infection" ROOT Definition = Clinically suspected central venous line infection is defined as clinical evidence of infection, without apparent alternative sources, with positive blood culture and/or central venous line culture and/or central venous line tip culture that improves with antibiotic treatment and possibly central venous line removal.
996.62	15.88.31 + Q1.86.48	Vascular-Line(s)	Central venous access complication-clinically suspected line infection, Femoral vein, Left	Central venous access complication-clinically suspected line infection (ROOT Definition) + Location = Femoral vein, Left
996.62	15.88.31 + Q1.86.47	Vascular-Line(s)	Central venous access complication-clinically suspected line infection, Femoral vein, Right	Central venous access complication-clinically suspected line infection (ROOT Definition) + Location = Femoral vein, Right
996.62	15.88.31 + Q1.86.45	Vascular-Line(s)	Central venous access complication-clinically suspected line infection, Internal jugular vein, Left	Central venous access complication-clinically suspected line infection (ROOT Definition) + Location = Internal jugular vein, Left

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.62	15.88.31 + Q1.86.42	Vascular-Line(s)	Central venous access complication-clinically suspected line infection, Internal jugular vein, Right	Central venous access complication-clinically suspected line infection (ROOT Definition) + Location = Internal jugular vein, Right
996.62	15.88.33 + Q1.06.57	Vascular-Line(s)	Central venous access complication-clinically suspected line infection, Peripherally inserted catheter (PIC)	Central venous access complication-clinically suspected line infection (ROOT Definition) + Location = Peripherally inserted catheter (PIC)
996.62	15.88.31 + Q1.86.38	Vascular-Line(s)	Central venous access complication-clinically suspected line infection, Subclavian vein, Left	Central venous access complication-clinically suspected line infection (ROOT Definition) + Location = Subclavian vein, Left
996.62	15.88.31 + Q1.86.37	Vascular-Line(s)	Central venous access complication-clinically suspected line infection, Subclavian vein, Right	Central venous access complication-clinically suspected line infection (ROOT Definition) + Location = Subclavian vein, Right
996.62	15.88.34 + Q1.06.57	Vascular-Line(s)	Central venous access complication-clinically suspected line infection, Transhepatic line	Central venous access complication-clinically suspected line infection (ROOT Definition) + Location = Transhepatic line
996.62	15.88.35 + Q1.06.57	Vascular-Line(s)	Central venous access complication-clinically suspected line infection, Transthoracic line, Left atrial transthoracic	Central venous access complication-clinically suspected line infection (ROOT Definition) + Location = Transthoracic line, Left atrial transthoracic
996.62	15.88.36 + Q1.06.57	Vascular-Line(s)	Central venous access complication-clinically suspected line infection, Transthoracic line, Right atrial transthoracic line	Central venous access complication-clinically suspected line infection (ROOT Definition) + Location = Transthoracic line, Right atrial transthoracic line
996.62	15.88.31 + Q1.86.77	Vascular-Line(s)	Central venous access complication-clinically suspected line infection, Umbilical vein	Central venous access complication-clinically suspected line infection (ROOT Definition) + Location = Umbilical vein
996.62	15.88.32	Vascular-Line(s)	Central venous access complication-documented line infection	"Central venous access complication-documented line infection" ROOT Definition = Documented central venous line infection is defined as bacteremia/fungemia in a patient with a central venous line with at least one positive blood culture obtained from a peripheral vein, clinical manifestations of infection (fever, chills and/or hypotension etc.), and no apparent source for the infection except the central venous catheter. One of the following should be present: a positive semiquantitative (greater than 15 colony forming units per catheter segment) culture whereby the same organism (species and antibiogram) is isolated from the central venous catheter segment and peripheral blood; simultaneous quantitative blood cultures with a greater than 5:1 ratio of central venous catheter versus peripheral blood growth; or differential period of central venous catheter drawn blood culture versus peripheral blood drawn blood culture positivity of greater than two hours.
996.62	15.88.32 + Q1.86.48	Vascular-Line(s)	Central venous access complication-documented line infection, Femoral vein, Left	Central venous access complication-documented line infection (ROOT Definition) + Location = Femoral vein, Left
996.62	15.88.32 + Q1.86.47	Vascular-Line(s)	Central venous access complication-documented line infection, Femoral vein, Right	Central venous access complication-documented line infection (ROOT Definition) + Location = Femoral vein, Right
996.62	15.88.32 + Q1.86.45	Vascular-Line(s)	Central venous access complication-documented line infection, Internal jugular vein, Left	Central venous access complication-documented line infection (ROOT Definition) + Location = Internal jugular vein, Left

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.62	15.88.32 + Q1.86.42	Vascular-Line(s)	Central venous access complication-documented line infection, Internal jugular vein, Right	Central venous access complication-documented line infection (ROOT Definition) + Location = Internal jugular vein, Right
996.62	15.88.33 + Q1.06.58	Vascular-Line(s)	Central venous access complication-documented line infection, Peripherally inserted catheter (PIC)	Central venous access complication-documented line infection (ROOT Definition) + Location = Peripherally inserted catheter (PIC)
996.62	15.88.32 + Q1.86.38	Vascular-Line(s)	Central venous access complication-documented line infection, Subclavian vein, Left	Central venous access complication-documented line infection (ROOT Definition) + Location = Subclavian vein, Left
996.62	15.88.32 + Q1.86.37	Vascular-Line(s)	Central venous access complication-documented line infection, Subclavian vein, Right	Central venous access complication-documented line infection (ROOT Definition) + Location = Subclavian vein, Right
996.62	15.88.34 + Q1.06.58	Vascular-Line(s)	Central venous access complication-documented line infection, Transhepatic line	Central venous access complication-documented line infection (ROOT Definition) + Location = Transhepatic line
996.62	15.88.35 + Q1.06.58	Vascular-Line(s)	Central venous access complication-documented line infection, Transthoracic line, Left atrial transthoracic	Central venous access complication-documented line infection (ROOT Definition) + Location = Transthoracic line, Left atrial transthoracic
996.62	15.88.36 + Q1.06.58	Vascular-Line(s)	Central venous access complication-documented line infection, Transthoracic line, Right atrial transthoracic line	Central venous access complication-documented line infection (ROOT Definition) + Location = Transthoracic line, Right atrial transthoracic line
996.62	15.88.32 + Q1.86.77	Vascular-Line(s)	Central venous access complication-documented line infection, Umbilical vein	Central venous access complication-documented line infection (ROOT Definition) + Location = Umbilical vein
E876.4	15.88.37	Vascular-Line(s)	Central venous access failure of insertion	"Central venous access failure of insertion" ROOT Definition = Failure of an attempted insertion of a central venous line.
E876.4	15.88.37 + Q1.86.48	Vascular-Line(s)	Central venous access failure of insertion, Femoral vein, Left	Central venous access failure of insertion (ROOT Definition) + Location = Femoral vein, Left
E876.4	15.88.37 + Q1.86.47	Vascular-Line(s)	Central venous access failure of insertion, Femoral vein, Right	Central venous access failure of insertion (ROOT Definition) + Location = Femoral vein, Right
E876.4	15.88.37 + Q1.86.45	Vascular-Line(s)	Central venous access failure of insertion, Internal jugular vein, Left	Central venous access failure of insertion (ROOT Definition) + Location = Internal jugular vein, Left
E876.4	15.88.37 + Q1.86.42	Vascular-Line(s)	Central venous access failure of insertion, Internal jugular vein, Right	Central venous access failure of insertion (ROOT Definition) + Location = Internal jugular vein, Right
E876.4	15.88.33 + Q1.06.59	Vascular-Line(s)	Central venous access failure of insertion, Peripherally inserted catheter (PIC)	Central venous access failure of insertion (ROOT Definition) + Location = Peripherally inserted catheter (PIC)
E876.4	15.88.37 + Q1.86.38	Vascular-Line(s)	Central venous access failure of insertion, Subclavian vein, Left	Central venous access failure of insertion (ROOT Definition) + Location = Subclavian vein, Left
E876.4	15.88.37 + Q1.86.37	Vascular-Line(s)	Central venous access failure of insertion, Subclavian vein, Right	Central venous access failure of insertion (ROOT Definition) + Location = Subclavian vein, Right
E876.4	15.88.34 + Q1.06.59	Vascular-Line(s)	Central venous access failure of insertion, Transhepatic line	Central venous access failure of insertion (ROOT Definition) + Location = Transhepatic line
E876.4	15.88.35+Q1.06.59	Vascular-Line(s)	Central venous access failure of insertion, Transthoracic line, Left atrial transthoracic	Central venous access failure of insertion (ROOT Definition) + Location = Transthoracic line, Left atrial transthoracic
E876.4	15.88.36 + Q1.06.59	Vascular-Line(s)	Central venous access failure of insertion, Transthoracic line, Right atrial transthoracic	Central venous access failure of insertion (ROOT Definition) + Location = Transthoracic line, Right atrial transthoracic

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E876.4	15.88.37 + Q1.86.77	Vascular-Line(s)	Central venous access failure of insertion, Umbilical vein	Central venous access failure of insertion (ROOT Definition) + Location = Umbilical vein
E876.4	Q1.06.60	Vascular-Line(s)	Central venous access failure of insertion-modifier, Failure to achieve access after 1 hour of attempts	Failure of an attempted insertion of a central venous line after 1 hour of attempts
E876.4	Q1.06.61	Vascular-Line(s)	Central venous access failure of insertion-modifier, Failure to achieve access at all	Failure of an attempted insertion of a central venous line with failure to achieve central venous access at all
E876.9	15.88.19	Vascular-Line(s)	Interosseous access complication	"Interosseous access complication" ROOT Definition = An interosseous access complication is any complication involving an interosseous line. These complications can include, but are not limited to infection, insertion complications, and thrombosis. Failure of insertion should be coded separately using the appropriate code.
E876.9	15.88.19 + Q1.79.46	Vascular-Line(s)	Interosseous access complication, Left lower extremity	Interosseous access complication (ROOT Definition) + Location = Left lower extremity
E876.9	15.88.19 + Q1.79.35	Vascular-Line(s)	Interosseous access complication, Left upper extremity	Interosseous access complication (ROOT Definition) + Location = Left upper extremity
E876.9	15.88.19 + Q1.79.42	Vascular-Line(s)	Interosseous access complication, Right lower extremity	Interosseous access complication (ROOT Definition) + Location = Right lower extremity
E876.9	15.88.19 + Q1.79.31	Vascular-Line(s)	Interosseous access complication, Right upper extremity	Interosseous access complication (ROOT Definition) + Location = Right upper extremity
E876.4	15.88.20	Vascular-Line(s)	Interosseous access failure of insertion	"Interosseous access failure of insertion" ROOT Definition = Failure of an attempted insertion of an interosseous line.
E876.4	15.88.20 + Q1.79.46	Vascular-Line(s)	Interosseous access failure of insertion, Left lower extremity	Interosseous access failure of insertion (ROOT Definition) + Location = Left lower extremity
E876.4	15.88.20 + Q1.79.35	Vascular-Line(s)	Interosseous access failure of insertion, Left upper extremity	Interosseous access failure of insertion (ROOT Definition) + Location = Left upper extremity
E876.4	15.88.20 + Q1.79.42	Vascular-Line(s)	Interosseous access failure of insertion, Right lower extremity	Interosseous access failure of insertion (ROOT Definition) + Location = Right lower extremity
E876.4	15.88.20 + Q1.79.31	Vascular-Line(s)	Interosseous access failure of insertion, Right upper extremity	Interosseous access failure of insertion (ROOT Definition) + Location = Right upper extremity
E876.4	Q1.06.60	Vascular-Line(s)	Interosseous access failure of insertion-modifier, Failure to achieve access after 1 hour of attempts	Failure of an attempted insertion of an interosseous line after 1 hour of attempts
E876.4	Q1.06.61	Vascular-Line(s)	Interosseous access failure of insertion-modifier, Failure to achieve access at all	Failure of an attempted insertion of an interosseous line with failure to achieve central venous access at all
E876.9	15.88.46	Vascular-Line(s)	Peripheral venous access complication	"Peripheral venous access complication" ROOT Definition = A peripheral venous access complication is any complication involving a peripheral venous line. These complications can include, but are not limited to infection, insertion complications, and venous thrombosis (with or without signs of venous congestion). Failure of insertion should be coded separately using the appropriate code. Line infections are divided into "Documented line infection" and "Clinically suspected line infection" and they also should be coded separately under these specific complications. Documented peripheral venous line infection is defined as bacteremia/

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				fungemia in a patient with a peripheral venous line with at least one positive blood culture obtained from a peripheral vein at a different site, clinical manifestations of infection (fever, chills and/or hypotension etc.), and no apparent source for the infection except the peripheral venous catheter. One of the following should be present: a positive semiquantitative (greater than 15 colony forming units per catheter segment) culture whereby the same organism (species and antibiogram) is isolated from the peripheral venous catheter segment and peripheral blood from a different site; simultaneous quantitative blood cultures with a greater than 5:1 ratio of peripheral venous catheter versus peripheral blood growth from a different site; or differential period of peripheral venous catheter drawn blood culture versus peripheral blood drawn blood culture positivity (from a different site) of greater than two hours. Clinically suspected peripheral venous line infection is defined as clinical evidence of infection, without apparent alternative sources, with positive blood culture from a different site and/or peripheral venous line culture and/or peripheral venous line tip culture that improves with antibiotic treatment and possibly peripheral venous line removal. Peripheral venous line – related complications that produce infiltration are documented under "integument". Acute limb ischemic complications that involve a peripheral venous line as the primary etiologic agent are documented both in this "Peripheral venous access complication" section and also in the "Acute limb ischemia" section. Acute limb ischemic complications that do not involve a line as the primary agent are documented under "Acute limb ischemia". PIC (Peripherally Inserted Catheters) lines, whose tips are not located in a central venous position (internal jugular vein, subclavian vein, superior or inferior vena cava, femoral vein, atrium), are considered peripheral venous lines. PICC lines (Peripherally Inserted Central Catheters), whose tips are central (internal jugular vein, subclavian vein, superior or inferior vena cava, femoral vein, atrium), are considered central venous lines for the purpose of recording their complications.
E876.9	15.88.46 + Q1.79.46	Vascular-Line(s)	Peripheral venous access complication, Left lower extremity	Peripheral venous access complication (ROOT Definition) + Location = Left lower extremity
E876.9	15.88.46 + Q1.79.06	Vascular-Line(s)	Peripheral venous access complication, Left neck	Peripheral venous access complication (ROOT Definition) + Location = Left neck
E876.9	15.88.46 + Q1.79.35	Vascular-Line(s)	Peripheral venous access complication, Left upper extremity	Peripheral venous access complication (ROOT Definition) + Location = Left upper extremity
E876.9	15.88.46 + Q1.79.42	Vascular-Line(s)	Peripheral venous access complication, Right lower extremity	Peripheral venous access complication (ROOT Definition) + Location = Right lower extremity
E876.9	15.88.46 + Q1.79.05	Vascular-Line(s)	Peripheral venous access complication, Right neck	Peripheral venous access complication (ROOT Definition) + Location = Right neck
E876.9	15.88.46 + Q1.79.31	Vascular-Line(s)	Peripheral venous access complication, Right upper extremity	Peripheral venous access complication (ROOT Definition) + Location = Right upper extremity

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E876.9	15.88.46 + Q1.79.03	Vascular-Line(s)	Peripheral venous access complication, Scalp	Peripheral venous access complication (ROOT Definition) + Location = Scalp
996.62	15.88.47	Vascular-Line(s)	Peripheral venous access complication-clinically suspected line infection	"Peripheral venous access complication-clinically suspected line infection" ROOT Definition = Clinically suspected peripheral venous line infection is defined as clinical evidence of infection, without apparent alternative sources, with positive blood culture from a different site and/or peripheral venous line culture and/or peripheral venous line tip culture that improves with antibiotic treatment and possibly peripheral venous line removal. Clinically suspected infection of any peripheral intravenous line (IV).
996.62	15.88.47 + Q1.79.46	Vascular-Line(s)	Peripheral venous access complication-clinically suspected line infection, Left lower extremity	Peripheral venous access complication-clinically suspected line infection (ROOT Definition) + Location = Left lower extremity
996.62	15.88.47 + Q1.79.06	Vascular-Line(s)	Peripheral venous access complication-clinically suspected line infection, Left neck	Peripheral venous access complication-clinically suspected line infection (ROOT Definition) + Location = Left neck
996.62	15.88.47+Q1.79.35	Vascular-Line(s)	Peripheral venous access complication-clinically suspected line infection, Left upper extremity	Peripheral venous access complication-clinically suspected line infection (ROOT Definition) + Location = Left upper extremity
996.62	15.88.47 + Q1.79.42	Vascular-Line(s)	Peripheral venous access complication-clinically suspected line infection, Right lower extremity	Peripheral venous access complication-clinically suspected line infection (ROOT Definition) + Location = Right lower extremity
996.62	15.88.47 + Q1.79.05	Vascular-Line(s)	Peripheral venous access complication-clinically suspected line infection, Right neck	Peripheral venous access complication-clinically suspected line infection (ROOT Definition) + Location = Right neck
996.62	15.88.47 + Q1.79.31	Vascular-Line(s)	Peripheral venous access complication-clinically suspected line infection, Right upper extremity	Peripheral venous access complication-clinically suspected line infection (ROOT Definition) + Location = Right upper extremity
996.62	15.88.47 + Q1.79.03	Vascular-Line(s)	Peripheral venous access complication-clinically suspected line infection, Scalp	Peripheral venous access complication-clinically suspected line infection (ROOT Definition) + Location = Scalp
996.62	15.88.48	Vascular-Line(s)	Peripheral venous access complication-documented line infection	"Peripheral venous access complication-documented line infection" ROOT Definition = Documented peripheral venous line infection is defined as bacteremia/fungemia in a patient with a peripheral venous line with at least one positive blood culture obtained from a peripheral vein at a different site, clinical manifestations of infection (fever, chills and/or hypotension etc.), and no apparent source for the infection except the peripheral venous catheter. One of the following should be present: a positive semiquantitative (greater than 15 colony forming units per catheter segment) culture whereby the same organism (species and antibiogram) is isolated from the peripheral venous catheter segment and peripheral blood from a different site; simultaneous quantitative blood cultures with a greater than 5:1 ratio of peripheral venous catheter versus peripheral blood growth from a different site; or differential period of peripheral venous catheter drawn blood culture versus peripheral blood drawn blood culture positivity (from a different site) of greater than two hours. Documented infection of any peripheral intravenous line (IV).

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.62	15.88.48 + Q1.79.46	Vascular-Line(s)	Peripheral venous access complication-documented line infection, Left lower extremity	Peripheral venous access complication-documented line infection (ROOT Definition), Location = Left lower extremity
996.62	15.88.48 + Q1.79.06	Vascular-Line(s)	Peripheral venous access complication-documented line infection, Left neck	Peripheral venous access complication-documented line infection (ROOT Definition), Location = Left neck
996.62	15.88.48 + Q1.79.35	Vascular-Line(s)	Peripheral venous access complication-documented line infection, Left upper extremity	Peripheral venous access complication-documented line infection (ROOT Definition), Location = Left upper extremity
996.62	15.88.48 + Q1.79.42	Vascular-Line(s)	Peripheral venous access complication-documented line infection, Right lower extremity	Peripheral venous access complication-documented line infection (ROOT Definition), Location = Right lower extremity
996.62	15.88.48 + Q1.79.05	Vascular-Line(s)	Peripheral venous access complication-documented line infection, Right neck	Peripheral venous access complication-documented line infection (ROOT Definition), Location = Right neck
996.62	15.88.48+Q1.79.31	Vascular-Line(s)	Peripheral venous access complication-documented line infection, Right upper extremity	Peripheral venous access complication-documented line infection (ROOT Definition), Location = Right upper extremity
996.62	15.88.48 + Q1.79.03	Vascular-Line(s)	Peripheral venous access complication-documented line infection, Scalp	Peripheral venous access complication-documented line infection (ROOT Definition), Location = Scalp
E876.4	15.88.49	Vascular-Line(s)	Peripheral venous access failure of insertion	"Peripheral venous access failure of insertion" ROOT Definition = Failure of an attempted insertion of any peripheral intravenous line (IV).
E876.4	15.88.49 + Q1.79.46	Vascular-Line(s)	Peripheral venous access failure of insertion, Left lower extremity	Peripheral venous access failure of insertion (ROOT Definition) + Location = Left lower extremity
E876.4	15.88.49 + Q1.79.06	Vascular-Line(s)	Peripheral venous access failure of insertion, Left neck	Peripheral venous access failure of insertion (ROOT Definition) + Location = Left neck
E876.4	15.88.49 + Q1.79.35	Vascular-Line(s)	Peripheral venous access failure of insertion, Left upper extremity	Peripheral venous access failure of insertion (ROOT Definition) + Location = Left upper extremity
E876.4	15.88.49 + Q1.79.42	Vascular-Line(s)	Peripheral venous access failure of insertion, Right lower extremity	Peripheral venous access failure of insertion (ROOT Definition) + Location = Right lower extremity
E876.4	15.88.49 + Q1.79.05	Vascular-Line(s)	Peripheral venous access failure of insertion, Right neck	Peripheral venous access failure of insertion (ROOT Definition) + Location = Right neck
E876.4	15.88.49 + Q1.79.31	Vascular-Line(s)	Peripheral venous access failure of insertion, Right upper extremity	Peripheral venous access failure of insertion (ROOT Definition) + Location = Right upper extremity
E876.4	15.88.49 + Q1.79.03	Vascular-Line(s)	Peripheral venous access failure of insertion, Scalp	Peripheral venous access failure of insertion (ROOT Definition) + Location = Scalp
E876.4	Q1.06.60	Vascular-Line(s)	Peripheral venous access failure of insertion-modifier, Failure to achieve access after 1 hour of attempts	Failure of an attempted insertion of a peripheral venous line after 1 hour of attempts
E876.4	Q1.06.61	Vascular-Line(s)	Peripheral venous access failure of insertion-modifier, Failure to achieve access at all	Failure of an attempted insertion of a peripheral venous line with failure to achieve peripheral venous access at all
E876.9	15.88.00	Vascular-Line(s)	Vascular-Line complication	Any complication involving the "vascular-line(s) system". An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.
996,40	15.67.40	Wound	Sternal instability (sterile)	"Sternal instability (sterile)" ROOT Definition = "Sternal instability (sterile)" is defined as non-union of the sternal edges, after median sternotomy. The superficial and deep layers of the incision remain intact. (If sterile separation of the superficial or deep layers of the incision coexists with the sternal non-union, then the term, "Wound dehiscence (sterile)" should be used to describe the complication.) This complication can be caused by ischemia, nutritional deficiencies, use of corticosteroids, vitamin C deficiency, trauma and others. Sternal instability secondary to mediastinitis is documented under "Wound infection, mediastinitis".
996,40	15.67.40 + Q1.66.71	Wound	Sternal instability (sterile), No operative intervention required	Sternal instability (sterile) (ROOT Definition) + Minor non-union of the sternal edges that does not require operative intervention.
996,40	15.67.40 + Q1.66.72	Wound	Sternal instability (sterile), Requires operative intervention	Sternal instability (sterile) (ROOT Definition) + Major non-union of the sternal edges that requires operative intervention.
998.89	15.67.38	Wound	Wound complication	Any complication involving the "wound system", that is any complication involving a wound. An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.
998.3	15.67.39	Wound	Wound complication, Omental herniation	Herniation of the omentum through a surgical incision or through a tube or catheter tract.
998.3	15.67.34	Wound	Wound dehiscence (sterile)	"Wound dehiscence (sterile)" ROOT Definition = "Wound dehiscence (sterile)" is defined as separation of the layers of a surgical wound. This separation can either be superficial or deep and can include the sternum in the case of a median sternotomy incision. When the sterile separation includes the skin and sternum, in the case of a median sternotomy incision, use this code ("Wound dehiscence (sterile)"). The code "Sternal instability (sterile)" should be used to record the complication when the superficial and deep layers of the incision remain intact but non-union of the sternal edges is present. Causes of wound dehiscence can include tissue ischemia, nutritional deficiencies, use of corticosteroids, vitamin C deficiency, and others. Wound dehiscence due to wound infection should be recorded as a wound infection.
998.3	15.67.34 + Q1.79.11	Wound	Wound dehiscence (sterile), Abdominal	Wound dehiscence (sterile) (ROOT Definition) + Location = Abdominal

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
998.3	15.67.34 + Q1.79.60	Wound	Wound dehiscence (sterile), Infraclavicular	Wound dehiscence (sterile) (ROOT Definition) + Location = Infraclavicular
998.3	15.67.34 + Q1.79.62	Wound	Wound dehiscence (sterile), Infraclavicular, Left	Wound dehiscence (sterile) (ROOT Definition) + Location = Infraclavicular, Left
998.3	15.67.34 + Q1.79.61	Wound	Wound dehiscence (sterile), Infraclavicular, Right	Wound dehiscence (sterile) (ROOT Definition) + Location = Infraclavicular, Right
998.3	15.67.34 + Q1.79.41	Wound	Wound dehiscence (sterile), Lower extremity	Wound dehiscence (sterile) (ROOT Definition) + Location = Lower extremity
998.3	15.67.34 + Q1.79.46	Wound	Wound dehiscence (sterile), Lower extremity, Left	Wound dehiscence (sterile) (ROOT Definition) + Location = Lower extremity, Left
998.3	15.67.34 + Q1.79.42	Wound	Wound dehiscence (sterile), Lower extremity, Right	Wound dehiscence (sterile) (ROOT Definition) + Location = Lower extremity, Right
998.3	15.67.34 + Q5.35.80	Wound	Wound dehiscence (sterile), Median sternotomy	Wound dehiscence (sterile) (ROOT Definition) + Location = Median sternotomy
998.3	15.67.34 + Q1.79.04	Wound	Wound dehiscence (sterile), Neck	Wound dehiscence (sterile) (ROOT Definition) + Location = Neck
998.3	15.67.34 + Q1.79.06	Wound	Wound dehiscence (sterile), Neck, Left	Wound dehiscence (sterile) (ROOT Definition) + Location = Neck, Left
998.3	15.67.34 + Q1.79.05	Wound	Wound dehiscence (sterile), Neck, Right	Wound dehiscence (sterile) (ROOT Definition) + Location = Neck, Right
998.3	15.67.34 + Q1.79.66	Wound	Wound dehiscence (sterile), Subcostal	Wound dehiscence (sterile) (ROOT Definition) + Location = Subcostal
998.3	15.67.34 + Q1.79.68	Wound	Wound dehiscence (sterile), Subcostal, Left	Wound dehiscence (sterile) (ROOT Definition) + Location = Subcostal, Left
998.3	15.67.34 + Q1.79.67	Wound	Wound dehiscence (sterile), Subcostal, Right	Wound dehiscence (sterile) (ROOT Definition) + Location = Subcostal, Right
998.3	15.67.34 + Q5.35.81	Wound	Wound dehiscence (sterile), Thoracotomy	Wound dehiscence (sterile) (ROOT Definition) + Location = Thoracotomy
998.3	15.67.34 + Q5.35.83	Wound	Wound dehiscence (sterile), Thoracotomy, Left	Wound dehiscence (sterile) (ROOT Definition) + Location = Thoracotomy, Left
998.3	15.67.34 + Q5.35.82	Wound	Wound dehiscence (sterile), Thoracotomy, Right	Wound dehiscence (sterile) (ROOT Definition) + Location = Thoracotomy, Right
998.3	15.67.34 + Q1.79.30	Wound	Wound dehiscence (sterile), Upper extremity	Wound dehiscence (sterile) (ROOT Definition) + Location = Upper extremity
998.3	15.67.34 + Q1.79.35	Wound	Wound dehiscence (sterile), Upper extremity, Left	Wound dehiscence (sterile) (ROOT Definition) + Location = Upper extremity, Left
998.3	15.67.34 + Q1.79.31	Wound	Wound dehiscence (sterile), Upper extremity, Right	Wound dehiscence (sterile) (ROOT Definition) + Location = Upper extremity, Right
998.4	15.67.36	Wound	Wound foreign body	"Wound foreign body" ROOT Definition = Wound foreign body complications can include, but are not limited to, the following complications: 1) pain caused by prominent sternal wires necessitating sternal wire removal and 2) sinus tracts caused by foreign bodies such as sutures and sternal wires necessitating minor sinus tract excision with foreign body removal. Foreign bodies, such as pulse generators and permanent and retained temporary pacing wires can also be the source of more major infections and necessitate

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				more major surgical interventions for their removal. Foreign body complications that result in a mediastinal infection should be documented under "Wound infection, Mediastinitis".
998.4	15.67.36 + Q1.79.11	Wound	Wound foreign body, Abdominal	Wound foreign body (ROOT Definition) + Location = Abdominal
998.4	15.67.36 + Q1.79.60	Wound	Wound foreign body, Infraclavicular	Wound foreign body (ROOT Definition) + Location = Infraclavicular
998.4	15.67.36 + Q1.79.62	Wound	Wound foreign body, Infraclavicular, Left	Wound foreign body (ROOT Definition) + Location = Infraclavicular, Left
998.4	15.67.36 + Q1.79.61	Wound	Wound foreign body, Infraclavicular, Right	Wound foreign body (ROOT Definition) + Location = Infraclavicular, Right
998.4	15.67.36 + Q1.79.41	Wound	Wound foreign body, Lower extremity	Wound foreign body (ROOT Definition) + Location = Lower extremity
998.4	15.67.36 + Q1.79.46	Wound	Wound foreign body, Lower extremity, Left	Wound foreign body (ROOT Definition) + Location = Lower extremity, Left
998.4	15.67.36 + Q1.79.42	Wound	Wound foreign body, Lower extremity, Right	Wound foreign body (ROOT Definition) + Location = Lower extremity, Right
998.4	15.67.36 + Q5.35.80	Wound	Wound foreign body, Median sternotomy	Wound foreign body (ROOT Definition) + Location = Median sternotomy
998.4	15.67.36 + Q1.79.04	Wound	Wound foreign body, Neck	Wound foreign body (ROOT Definition) + Location = Neck
998.4	15.67.36 + Q1.79.06	Wound	Wound foreign body, Neck, Left	Wound foreign body (ROOT Definition) + Location = Neck, Left
998.4	15.67.36 + Q1.79.05	Wound	Wound foreign body, Neck, Right	Wound foreign body (ROOT Definition) + Location = Neck, Right
998.4	15.67.36 + Q1.79.66	Wound	Wound foreign body, Subcostal	Wound foreign body (ROOT Definition) + Location = Subcostal
998.4	15.67.36 + Q1.79.68	Wound	Wound foreign body, Subcostal, Left	Wound foreign body (ROOT Definition) + Location = Subcostal, Left
998.4	15.67.36 + Q1.79.67	Wound	Wound foreign body, Subcostal, Right	Wound foreign body (ROOT Definition) + Location = Subcostal, Right
998.4	15.67.36 + Q5.35.81	Wound	Wound foreign body, Thoracotomy	Wound foreign body (ROOT Definition) + Location = Thoracotomy
998.4	15.67.36 + Q5.35.83	Wound	Wound foreign body, Thoracotomy, Left	Wound foreign body (ROOT Definition) + Location = Thoracotomy, Left
998.4	15.67.36 + Q5.35.82	Wound	Wound foreign body, Thoracotomy, Right	Wound foreign body (ROOT Definition) + Location = Thoracotomy, Right
998.4	15.67.36 + Q1.79.30	Wound	Wound foreign body, Upper extremity	Wound foreign body (ROOT Definition) + Location = Upper extremity
998.4	15.67.36 + Q1.79.35	Wound	Wound foreign body, Upper extremity, Left	Wound foreign body (ROOT Definition) + Location = Upper extremity, Left
998.4	15.67.36 + Q1.79.31	Wound	Wound foreign body, Upper extremity, Right	Wound foreign body (ROOT Definition) + Location = Upper extremity, Right
998.12	15.67.35	Wound	Wound hematoma	"Wound hematoma" ROOT Definition = A wound hematoma is a localized collection of sterile extravasated blood that is confined within a space or a potential space within or adjacent to a surgical wound. Infected collections of blood located within a space or a potential space within or adjacent to a surgical wound should be listed as "Wound infection".
998.12	15.67.35 + Q1.79.11	Wound	Wound hematoma, Abdominal	Wound hematoma (ROOT Definition) + Location = Abdominal
998.12	15.67.35 + Q1.79.60	Wound	Wound hematoma, Infraclavicular	Wound hematoma (ROOT Definition) + Location = Infraclavicular

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
998.12	15.67.35 + Q1.79.62	Wound	Wound hematoma, Infraclavicular, Left	Wound hematoma (ROOT Definition) + Location = Infraclavicular, Left
998.12	15.67.35 + Q1.79.61	Wound	Wound hematoma, Infraclavicular, Right	Wound hematoma (ROOT Definition) + Location = Infraclavicular, Right
998.12	15.67.35 + Q1.79.41	Wound	Wound hematoma, Lower extremity	Wound hematoma (ROOT Definition) + Location = Lower extremity
998.12	15.67.35 + Q1.79.46	Wound	Wound hematoma, Lower extremity, Left	Wound hematoma (ROOT Definition) + Location = Lower extremity, Left
998.12	15.67.35 + Q5.35.80	Wound	Wound hematoma, Lower extremity, Right	Wound hematoma (ROOT Definition) + Location = Lower extremity, Right
998.12	15.67.35 + Q5.35.80	Wound	Wound hematoma, Median sternotomy	Wound hematoma (ROOT Definition) + Location = Median sternotomy
998.12	15.67.35 + Q1.79.04	Wound	Wound hematoma, Neck	Wound hematoma (ROOT Definition) + Location = Neck
998.12	15.67.35 + Q1.79.06	Wound	Wound hematoma, Neck, Left	Wound hematoma (ROOT Definition) + Location = Neck, Left
998.12	15.67.35 + Q1.79.05	Wound	Wound hematoma, Neck, Right	Wound hematoma (ROOT Definition) + Location = Neck, Right
998.12	15.67.35 + Q1.79.66	Wound	Wound hematoma, Subcostal	Wound hematoma (ROOT Definition) + Location = Subcostal
998.12	15.67.35 + Q1.79.68	Wound	Wound hematoma, Subcostal, Left	Wound hematoma (ROOT Definition) + Location = Subcostal, Left
998.12	15.67.35 + Q1.79.67	Wound	Wound hematoma, Subcostal, Right	Wound hematoma (ROOT Definition) + Location = Subcostal, Right
998.12	15.67.35 + Q5.35.81	Wound	Wound hematoma, Thoracotomy	Wound hematoma (ROOT Definition) + Location = Thoracotomy
998.12	15.67.35 + Q5.35.83	Wound	Wound hematoma, Thoracotomy, Left	Wound hematoma (ROOT Definition) + Location = Thoracotomy, Left
998.12	15.67.35 + Q5.35.82	Wound	Wound hematoma, Thoracotomy, Right	Wound hematoma (ROOT Definition) + Location = Thoracotomy, Right
998.12	15.67.35 + Q1.79.30	Wound	Wound hematoma, Upper extremity	Wound hematoma (ROOT Definition)+Location = Upper extremity
998.12	15.67.35 + Q1.79.35	Wound	Wound hematoma, Upper extremity, Left	Wound hematoma (ROOT Definition) + Location = Upper extremity, Left
998.12	15.67.35 + Q1.79.31	Wound	Wound hematoma, Upper extremity, Right	Wound hematoma (ROOT Definition) + Location = Upper extremity, Right
998.59	15.03.50	Wound	Wound infection	"Wound infection" ROOT Definition = Erythema, possible induration and possible fluctuance of a surgical wound (surgical site) with possible drainage and possible tissue separation. Though wound cultures may be positive, this is not an absolute requirement for establishing this clinical diagnosis.
998.59	15.67.33	Wound	Wound infection-Deep wound infection	"Wound infection-Deep wound infection" ROOT Definition = A deep wound infection involves the deep soft tissues (e.g., fascial and muscle layers) of the incision AND the patient has at least ONE of the following numbered features: 1) Purulent drainage from the deep portion of the incision (but not from the organ/space component of the surgical site and no evidence of sternal osteomyelitis), 2) The deep incision spontaneously dehisces or is deliberately opened by a surgeon when the patient has ONE of the following lettered signs or symptoms (unless the incision is culture negative): A) fever, B) localized pain, or C) tenderness, 3)

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				An abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination, or 4) A diagnosis of a deep wound infection by a surgeon or by an attending physician.
998.59	15.67.33 + Q1.79.11	Wound	Wound infection-Deep wound infection, Abdominal	Wound infection-Deep wound infection (ROOT Definition) + Location = Abdominal
998.59	15.67.33 + Q1.79.70	Wound	Wound infection-Deep wound infection, IABP (Intra-aortic balloon pump) site	Wound infection-Deep wound infection (ROOT Definition) + Location = IABP (Intra-aortic balloon pump) site
998.59	15.67.33 + Q1.79.60	Wound	Wound infection-Deep wound infection, Infraclavicular	Wound infection-Deep wound infection (ROOT Definition) + Location = Infraclavicular
998.59	15.67.33 + Q1.79.62	Wound	Wound infection-Deep wound infection, Infraclavicular, Left	Wound infection-Deep wound infection (ROOT Definition) + Location = Infraclavicular, Left
998.59	15.67.33 + Q1.79.61	Wound	Wound infection-Deep wound infection, Infraclavicular, Right	Wound infection-Deep wound infection (ROOT Definition) + Location = Infraclavicular, Right
998.59	15.67.33 + Q1.79.41	Wound	Wound infection-Deep wound infection, Lower extremity	Wound infection-Deep wound infection (ROOT Definition) + Location = Lower extremity
998.59	15.67.33 + Q1.79.46	Wound	Wound infection-Deep wound infection, Lower extremity, Left	Wound infection-Deep wound infection (ROOT Definition) + Location = Lower extremity, Left
998.59	15.67.33 + Q1.79.42	Wound	Wound infection-Deep wound infection, Lower extremity, Right	Wound infection-Deep wound infection (ROOT Definition) + Location = Lower extremity, Right
998.59	15.67.33 + Q5.35.80	Wound	Wound infection-Deep wound infection, Median sternotomy	Wound infection-Deep wound infection (ROOT Definition) + Location = Median sternotomy
998.59	15.67.33 + Q1.79.04	Wound	Wound infection-Deep wound infection, Neck	Wound infection-Deep wound infection (ROOT Definition) + Location = Neck
998.59	15.67.33 + Q1.79.06	Wound	Wound infection-Deep wound infection, Neck, Left	Wound infection-Deep wound infection (ROOT Definition) + Location = Neck, Left
998.59	15.67.33 + Q1.79.05	Wound	Wound infection-Deep wound infection, Neck, Right	Wound infection-Deep wound infection (ROOT Definition) + Location = Neck, Right
998.59	15.67.33 + Q1.79.64	Wound	Wound infection-Deep wound infection, Port site	Wound infection-Deep wound infection (ROOT Definition) + Location = Port site
998.59	15.67.33 + Q1.79.66	Wound	Wound infection-Deep wound infection, Subcostal	Wound infection-Deep wound infection (ROOT Definition) + Location = Subcostal
998.59	15.67.33 + Q1.79.68	Wound	Wound infection-Deep wound infection, Subcostal, Left	Wound infection-Deep wound infection (ROOT Definition) + Location = Subcostal, Left
998.59	15.67.33 + Q1.79.67	Wound	Wound infection-Deep wound infection, Subcostal, Right	Wound infection-Deep wound infection (ROOT Definition) + Location = Subcostal, Right
998.59	15.67.33 + Q5.35.81	Wound	Wound infection-Deep wound infection, Thoracotomy	Wound infection-Deep wound infection (ROOT Definition) + Location = Thoracotomy
998.59	15.67.33 + Q5.35.83	Wound	Wound infection-Deep wound infection, Thoracotomy, Left	Wound infection-Deep wound infection (ROOT Definition) + Location = Thoracotomy, Left
998.59	15.67.33 + Q5.35.82	Wound	Wound infection-Deep wound infection, Thoracotomy, Right	Wound infection-Deep wound infection (ROOT Definition) + Location = Thoracotomy, Right
998.59	15.67.33 + Q1.79.30	Wound	Wound infection-Deep wound infection, Upper extremity	Wound infection-Deep wound infection (ROOT Definition) + Location = Upper extremity

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
998.59	15.67.33 + Q1.79.35	Wound	Wound infection-Deep wound infection, Upper extremity, Left	Wound infection-Deep wound infection (ROOT Definition) + Location = Upper extremity, Left
998.59	15.67.33 + Q1.79.31	Wound	Wound infection-Deep wound infection, Upper extremity, Right	Wound infection-Deep wound infection (ROOT Definition) + Location = Upper extremity, Right
998.59	Q1.79.63	Wound	Wound infection-Deep wound infection-modifier, Infection involving AICD pocket	Wound infection-Deep wound infection (ROOT Definition) + modifier, Location = Infection involving AICD pocket
998.59	Q1.79.65	Wound	Wound infection-Deep wound infection-modifier, Infection involving chest tube site	Wound infection-Deep wound infection (ROOT Definition) + modifier, Location = Infection involving chest tube site
998.59	Q1.79.69	Wound	Wound infection-Deep wound infection-modifier, Infection involving foreign body	Wound infection-Deep wound infection (ROOT Definition) + modifier, Location = Infection involving foreign body
998.59	Q1.79.63	Wound	Wound infection-Deep wound infection-modifier, Infection involving pacemaker pocket	Wound infection-Deep wound infection (ROOT Definition) + modifier, Location = Infection involving pacemaker pocket
998.59	15.03.52	Wound	Wound infection-Mediastinitis	The diagnosis of mediastinitis must meet one of the following criteria: Criterion 1: Patient has organisms cultured from mediastinal tissue or fluid that is obtained during a surgical operation or by needle aspiration. Criterion 2: Patient has evidence of mediastinitis by histopathologic examination or visual evidence of mediastinitis seen during a surgical operation. Criterion 3: Patient has at least ONE of the following numbered signs or symptoms with no other recognized cause: 1) fever, 2) chest pain, or 3) sternal instability AND at least one of the following numbered features: 1) purulent mediastinal drainage, 2) organisms cultured from mediastinal blood, drainage or tissue, or 3) widening of the cardio-mediastinal silhouette. Criterion 4: Patient $\leq$1 year of age has at least one of the following numbered signs or symptoms with no other recognized cause: 1) fever, 2) hypothermia, 3) apnea, 4) bradycardia, or 5) sternal instability AND at least one of the following numbered features: 1) purulent mediastinal discharge, 2) organisms cultured from mediastinal blood, drainage or tissue, or 3) widening of the cardio-mediastinal silhouette. Infections of the sternum (sternal osteomyelitis) should be classified as mediastinitis. Sternal instability that is not associated with a wound infection or mediastinitis is documented as "Sternal instability".
998.59	Q1.79.63	Wound	Wound infection-modifier, Infection involving AICD pocket	Wound infection (ROOT Definition) + modifier, Location = Infection involving AICD pocket
998.59	Q1.79.65	Wound	Wound infection-modifier, Infection involving chest tube site	Wound infection (ROOT Definition) + modifier, Location = Infection involving chest tube site
998.59	Q1.79.69	Wound	Wound infection-modifier, Infection involving foreign body	Wound infection (ROOT Definition) + modifier, Location = Infection involving foreign body
998.59	Q1.79.63	Wound	Wound infection-modifier, Infection involving pacemaker pocket	Wound infection (ROOT Definition) + modifier, Location = Infection involving pacemaker pocket

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
998.59	15.67.32	Wound	Wound infection-Superficial wound infection	"Wound infection-Superficial wound infection" ROOT Definition = A superficial wound infection must meet the following numbered criteria: 1) The infection involves only the skin and the subcutaneous tissue of the incision and 2) The patient has at least ONE of the following lettered features: A) purulent drainage from the superficial portion of the incision, B) organisms isolated from an aseptically obtained culture of fluid or tissue from the superficial portion of the incision, C) at least ONE of the following numbered signs or symptoms: [1] pain or tenderness, [2] localized swelling, redness, or heat, and [3] the superficial portion of the incision is deliberately opened by a surgeon, unless the incision is culture negative, or D) a diagnosis of superficial wound infection by the surgeon or by the attending physician.
998.59	15.67.32 + Q1.79.11	Wound	Wound infection-Superficial wound infection, Abdominal	Wound infection-Superficial wound infection (ROOT Definition) + Location = Abdominal
998.59	15.67.32 + Q1.79.70	Wound	Wound infection-Superficial wound infection, IABP (Intra-aortic balloon pump) site	Wound infection-Superficial wound infection (ROOT Definition) + Location = IABP (Intra-aortic balloon pump) site
998.59	15.67.32 + Q1.79.60	Wound	Wound infection-Superficial wound infection, Infraclavicular	Wound infection-Superficial wound infection (ROOT Definition) + Location = Infraclavicular
998.59	15.67.32 + Q1.79.62	Wound	Wound infection-Superficial wound infection, Infraclavicular, Left	Wound infection-Superficial wound infection (ROOT Definition) + Location = Infraclavicular, Left
998.59	15.67.32 + Q1.79.61	Wound	Wound infection-Superficial wound infection, Infraclavicular, Right	Wound infection-Superficial wound infection (ROOT Definition) + Location = Infraclavicular, Right
998.59	15.67.32 + Q1.79.41	Wound	Wound infection-Superficial wound infection, Lower extremity	Wound infection-Superficial wound infection (ROOT Definition) + Location = Lower extremity
998.59	15.67.32 + Q1.79.46	Wound	Wound infection-Superficial wound infection, Lower extremity, Left	Wound infection-Superficial wound infection (ROOT Definition) + Location = Lower extremity, Left
998.59	15.67.32 + Q1.79.42	Wound	Wound infection-Superficial wound infection, Lower extremity, Right	Wound infection-Superficial wound infection (ROOT Definition) + Location = Lower extremity, Right
998.59	15.67.32 + Q5.35.80	Wound	Wound infection-Superficial wound infection, Median sternotomy	Wound infection-Superficial wound infection (ROOT Definition) + Location = Median sternotomy
998.59	15.67.32 + Q1.79.04	Wound	Wound infection-Superficial wound infection, Neck	Wound infection-Superficial wound infection (ROOT Definition) + Location = Neck
998.59	15.67.32 + Q1.79.06	Wound	Wound infection-Superficial wound infection, Neck, Left	Wound infection-Superficial wound infection (ROOT Definition) + Location = Neck, Left
998.59	15.67.32 + Q1.79.05	Wound	Wound infection-Superficial wound infection, Neck, Right	Wound infection-Superficial wound infection (ROOT Definition) + Location = Neck, Right
998.59	15.67.32 + Q1.79.64	Wound	Wound infection-Superficial wound infection, Port site	Wound infection-Superficial wound infection (ROOT Definition) + Location = Port site
998.59	15.67.32 + Q1.79.66	Wound	Wound infection-Superficial wound infection, Subcostal	Wound infection-Superficial wound infection (ROOT Definition) + Location = Subcostal
998.59	15.67.32 + Q1.79.68	Wound	Wound infection-Superficial wound infection, Subcostal, Left	Wound infection-Superficial wound infection (ROOT Definition) + Location = Subcostal, Left

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
998.59	15.67.32 + Q1.79.67	Wound	Wound infection-Superficial wound infection, Subcostal, Right	Wound infection-Superficial wound infection (ROOT Definition) + Location = Subcostal, Right
998.59	15.67.32 + Q5.35.81	Wound	Wound infection-Superficial wound infection, Thoracotomy	Wound infection-Superficial wound infection (ROOT Definition) + Location = Thoracotomy
998.59	15.67.32 + Q5.35.83	Wound	Wound infection-Superficial wound infection, Thoracotomy, Left	Wound infection-Superficial wound infection (ROOT Definition) + Location = Thoracotomy, Left
998.59	15.67.32 + Q5.35.82	Wound	Wound infection-Superficial wound infection, Thoracotomy, Right	Wound infection-Superficial wound infection (ROOT Definition) + Location = Thoracotomy, Right
998.59	15.67.32 + Q1.79.30	Wound	Wound infection-Superficial wound infection, Upper extremity	Wound infection-Superficial wound infection (ROOT Definition) + Location = Upper extremity
998.59	15.67.32 + Q1.79.35	Wound	Wound infection-Superficial wound infection, Upper extremity, Left	Wound infection-Superficial wound infection (ROOT Definition) + Location = Upper extremity, Left
998.59	15.67.32 + Q1.79.31	Wound	Wound infection-Superficial wound infection, Upper extremity, Right	Wound infection-Superficial wound infection (ROOT Definition) + Location = Upper extremity, Right
998.59	Q1.79.63	Wound	Wound infection-Superficial wound infection-modifier, Infection involving AICD pocket	Wound infection-Superficial wound infection (ROOT Definition) + modifier, Location = Infection involving AICD pocket
998.59	Q1.79.65	Wound	Wound infection-Superficial wound infection-modifier, Infection involving chest tube site	Wound infection-Superficial wound infection (ROOT Definition) + modifier, Location = Infection involving chest tube site
998.59	Q1.79.69	Wound	Wound infection-Superficial wound infection-modifier, Infection involving foreign body	Wound infection-Superficial wound infection (ROOT Definition) + modifier, Location = Infection involving foreign body
998.59	Q1.79.63	Wound	Wound infection-Superficial wound infection-modifier, Infection involving pacemaker pocket	Wound infection-Superficial wound infection (ROOT Definition) + modifier, Location = Infection involving pacemaker pocket
998.13	15.67.37	Wound	Wound seroma	"Wound seroma" ROOT Definition = A wound seroma is a localized collection of serum that is confined within a space or a potential space within or adjacent to a surgical wound. A seroma is distinguished from a hematoma by containing relatively few cellular elements, especially red blood cells. Infected collections of serum located within a space or a potential space within or adjacent to a surgical wound should be listed as "Wound infection".
998.13	15.67.37 + Q1.79.11	Wound	Wound seroma, Abdominal	Wound seroma (ROOT Definition) + Location = Abdominal
998.13	15.67.37 + Q1.79.60	Wound	Wound seroma, Infraclavicular	Wound seroma (ROOT Definition) + Location = Infraclavicular
998.13	15.67.37 + Q1.79.62	Wound	Wound seroma, Infraclavicular, Left	Wound seroma (ROOT Definition) + Location = Infraclavicular, Left
998.13	15.67.37 + Q1.79.61	Wound	Wound seroma, Infraclavicular, Right	Wound seroma (ROOT Definition) + Location = Infraclavicular, Right
998.13	15.67.37 + Q1.79.41	Wound	Wound seroma, Lower extremity	Wound seroma (ROOT Definition) + Location = Lower extremity
998.13	15.67.37 + Q1.79.46	Wound	Wound seroma, Lower extremity, Left	Wound seroma (ROOT Definition) + Location = Lower extremity, Left
998.13	15.67.37 + Q1.79.42	Wound	Wound seroma, Lower extremity, Right	Wound seroma (ROOT Definition) + Location = Lower extremity, Right
998.13	15.67.37 + Q5.35.80	Wound	Wound seroma, Median sternotomy	Wound seroma (ROOT Definition) + Location = Median sternotomy
998.13	15.67.37 + Q1.79.04	Wound	Wound seroma, Neck	Wound seroma (ROOT Definition) + Location = Neck
998.13	15.67.37 + Q1.79.06	Wound	Wound seroma, Neck, Left	Wound seroma (ROOT Definition) + Location = Neck, Left
998.13	15.67.37 + Q1.79.05	Wound	Wound seroma, Neck, Right	Wound seroma (ROOT Definition) + Location = Neck, Right

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
998.13	15.67.37 + Q1.79.66	Wound	Wound seroma, Subcostal	Wound seroma (ROOT Definition) + Location = Subcostal
998.13	15.67.37 + Q1.79.68	Wound	Wound seroma, Subcostal, Left	Wound seroma (ROOT Definition) + Location = Subcostal, Left
998.13	15.67.37+Q1.79.67	Wound	Wound seroma, Subcostal, Right	Wound seroma (ROOT Definition) + Location = Subcostal, Right
998.13	15.67.37+Q5.35.81	Wound	Wound seroma, Thoracotomy	Wound seroma (ROOT Definition) + Location = Thoracotomy
998.13	15.67.37 + Q5.35.83	Wound	Wound seroma, Thoracotomy, Left	Wound seroma (ROOT Definition) + Location = Thoracotomy, Left
998.13	15.67.37 + Q5.35.82	Wound	Wound seroma, Thoracotomy, Right	Wound seroma (ROOT Definition) + Location = Thoracotomy, Right
998.13	15.67.37 + Q1.79.30	Wound	Wound seroma, Upper extremity	Wound seroma (ROOT Definition) + Location = Upper extremity
998.13	15.67.37 + Q1.79.35	Wound	Wound seroma, Upper extremity, Left	Wound seroma (ROOT Definition) + Location = Upper extremity, Left
998.13	15.67.37 + Q1.79.31	Wound	Wound seroma, Upper extremity, Right	Wound seroma (ROOT Definition) + Location = Upper extremity, Right
998.13	Q1.79.63	Wound	Wound seroma-modifier, Seroma involving AICD pocket	Wound seroma (ROOT Definition) + modifier, Location = Seroma involving AICD pocket
998.13	Q1.79.65	Wound	Wound seroma-modifier, Seroma involving chest tube site	Wound seroma (ROOT Definition) + modifier, Location = Seroma involving chest tube site
998.13	Q1.79.69	Wound	Wound seroma-modifier, Seroma involving foreign body	Wound seroma (ROOT Definition) + modifier, Location = Seroma involving foreign body
998.13	Q1.79.63	Wound	Wound seroma-modifier, Seroma involving pacemaker pocket	Wound seroma (ROOT Definition) + modifier, Location = Seroma involving pacemaker pocket
996.8	15.95.00	Transplant	Transplant complication	"Transplant complication" ROOT Definition = Any complication involving the transplantation "system", that is any complication involving transplantation. An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.
996.8	Q1.91.81	Transplant	Transplant complication, Status post heart and lung transplant	Transplant complication (ROOT Definition) + A complication occurring in a patient who has undergone heart and lung transplantation.
996.83	Q1.91.80	Transplant	Transplant complication, Status post heart transplant	Transplant complication (ROOT Definition) + A complication occurring in a patient who has undergone heart transplantation.
996.84	Q1.91.82	Transplant	Transplant complication, Status post lung transplant	Transplant complication (ROOT Definition) + A complication occurring in a patient who has undergone lung transplantation.
996.84	15.95.71	Transplant	Transplant complication, Status post lung transplant, Persistent air leak	A persistent communication between a bronchus and the pleural cavity usually documented by an air leak in a chest tube drainage system following lung transplantation, or a persistent communication from a bronchus to the mediastinum, or a persistent communication from a bronchus to the skin.
996.8	15.95.14	Transplant	Transplant complication, Transplant anastomotic complication	A dehiscence, stricture, pseudoaneurysm formation, or stenosis that develops at the site of anastomosis following heart, heart and lung(s) and lung(s) transplantation. The dehiscence, stricture or stenosis can develop at a bronchial, tracheal, arterial, or venous anastomosis following transplantation.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
997.01	15.95.15	Transplant	Transplant complication, Transplant associated seizures and/or encephalopathy	Clinical and/or electroencephalographic recognition of epileptiform activity, or diminished level of consciousness, occurring post-transplant (prior to hospital discharge or after hospital discharge but less than 30 days after surgery and/or intervention), In a patient without pretransplant clinical and/or EEG evidence of epileptiform activity. Please also code the specific type of seizure or neurological complication separately under the neurologic organ system.
997.79	15.41.13	Transplant	Transplant complication, Vascular disease – Cardiac allograft vasculopathy (CAV)	Cardiac allograft vasculopathy (CAV) is characterized by the proliferation of vascular smooth muscle cells in the allograft and concentric intimal thickening. The etiology of CAV is both immune and non-immune and may be related to ischemia at the time of transplant, humoral rejection, multiple episodes of cellular rejection, and cardiovascular risk factors. CAV leads to significant morbidity and mortality after transplant leading to the possibility of arrhythmogenic sudden death. CAV is diagnosed by the presence of coronary angiographic findings, intravascular ultrasound (though limited in younger donors), and the presence of wall motion abnormalities during dobutamine stress echocardiogram.
414.06	15.95.27	Transplant	Transplant complication, Vascular disease – Coronary atherosclerosis in the transplanted heart of a patient who has undergone cardiac transplantation	Diagnosed by the presence of coronary angiography and intravascular ultrasound findings of atherosclerosis. Atherosclerosis usually occurs in the large epicardial vessels. Patient specific factors, including hyperlipidemia, diabetes, and age, have been implicated in the etiology of these lesions. The atherosclerotic injury appears to result from the response of the endothelium to injury, similar to naturally occurring atherosclerosis.
996.8	15.95.10	Transplant	Transplant graft failure	For thoracic organ transplantation (heart, lung, or heart and lung transplantation), transplant graft failure will be defined as the need for mechanical circulatory support or mechanical cardiopulmonary support and/or relisting for transplant.
996.83	15.95.28	Transplant	Transplant graft failure, Heart	Need for mechanical circulatory support and/or relisting for transplant after heart transplantation.
996.83 & 996.84	15.95.12	Transplant	Transplant graft failure, Heart and lung(s)	Need for mechanical circulatory support or mechanical cardiopulmonary support and/or relisting for transplant.
996.84	15.95.62	Transplant	Transplant graft failure, Lung(s)	Need for mechanical cardiopulmonary support and/or relisting for transplant after lung transplantation.
996.8	Q1.40.47	Transplant	Transplant graft failure-timing, Acute	For thoracic organ transplantation (heart, lung, or heart and lung transplantation), transplant graft failure will be defined as the need for mechanical circulatory support and/or relisting for transplant. This modifier should be applied to cases of transplant graft failure that occur prior to hospital discharge after transplantation, or after hospital discharge but prior to 30 days after transplantation.
996.8	Q1.40.48	Transplant	Transplant graft failure-timing, Chronic	For thoracic organ transplantation (heart, lung, or heart and lung transplantation), transplant graft failure will be defined as the need for mechanical circulatory support and/or relisting for transplant.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				This modifier should be applied to cases of transplant graft failure that occur after hospital discharge after transplantation, and 30 days or more after transplantation.
136.90	15.95.31	Transplant	Transplant infection	Documented infection associated with transplantation.
136.90	15.95.40	Transplant	Transplant infection, Opportunistic infection	Documented infection associated with transplantation, the infection involves an opportunistic pathogen.
203	15.95.03	Transplant	Transplant lymphoproliferative disorder	Documented lymphoproliferative disorder associated with transplantation.
199.1	15.95.06	Transplant	Transplant neoplasm	Documented neoplasm associated with transplantation.
996.8	15.95.11	Transplant	Transplant rejection	Transplant rejection is defined as evidence of rejection after transplantation. Heart transplant rejection is defined as intensification of immunosuppression associated with an abnormal biopsy (equal to or greater than grade 2R by the International Society of Heart and Lung Transplantation [ISHLT]) and/or new-onset hemodynamic abnormalities confirmed by echocardiography. Rejection in a heart-lung transplant recipient is defined as intensification of immunosuppression associated with an abnormal biopsy (equal to or greater than grade 2R by the International Society of Heart and Lung Transplantation [ISHLT]) and/or new-onset hemodynamic abnormalities confirmed by echocardiography. Lung transplant rejection is defined as intensification of immunosuppression associated with clinical characteristics of rejection and/or an abnormal biopsy with histologic classification of Grade A by the International Society of Heart and Lung Transplantation [ISHLT] in the acute setting, and by the development of bronchiolitis obliterans in the chronic setting.
996.83	15.95.29	Transplant	Transplant rejection, Heart	Transplant rejection is defined as evidence of rejection after transplantation. Heart transplant rejection is defined as intensification of immunosuppression associated with an abnormal biopsy (equal to or greater than grade 2R by the International Society of Heart and Lung Transplantation [ISHLT]) and/or new-onset hemodynamic abnormalities confirmed by echocardiography.
996.83 & 996.84	15.95.13	Transplant	Transplant rejection, Heart and lung(s)	Transplant rejection is defined as evidence of rejection after transplantation. Rejection in a heart-lung transplant recipient is defined as intensification of immunosuppression associated with an abnormal biopsy (equal to or greater than grade 2R by the International Society of Heart and Lung Transplantation [ISHLT]) and/or new-onset hemodynamic abnormalities confirmed by echocardiography.
996.84	15.95.66	Transplant	Transplant rejection, Lung(s)	Transplant rejection is defined as evidence of rejection after transplantation. Lung transplant rejection is defined as intensification of immunosuppression associated with clinical characteristics of rejection and/or an abnormal biopsy with histologic classification of Grade A by the International Society of Heart and Lung Transplantation [ISHLT] in the acute setting, and by the development of bronchiolitis obliterans in the chronic setting.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
996.8	Q1.96.09	Transplant	Transplant rejection-mechanism, Antibody-mediated rejection	Antibody-mediated rejection (AMR) is defined as rejection where donor specific antibodies are involved in the rejection process. AMR can happen early post-transplant from pre-formed antibodies, or from the persistence of these antibodies later on after transplant, or from the de novo development of donor specific antibodies. AMR results in the pathohistological findings of C4d deposition, endothelial cell activation, and interstitial edema with cell injury. Antibody induces rejection acutely through the fixation of complement, resulting in tissue injury and coagulation. In addition, complement activation recruits macrophages and neutrophils, causing additional endothelial injury. Antibody and complement also induce gene expression by endothelial cells, which is thought to remodel arteries and basement membranes, leading to fixed and irreversible anatomical lesions that permanently compromise graft function.
996.8	Q1.96.10	Transplant	Transplant rejection-mechanism, Cellular rejection	Cellular rejection is defined as rejection where graft antigens are recognized by T cells which mediate this rejection. This recognition of antigen by T cells results in activation of these cells. Activated T cells cause the graft cells to lyse or produce cytokines that recruit other inflammatory cells, eventually causing necrosis of allograft tissue.
996.80	Q1.96.06	Transplant	Transplant rejection-type, Acute rejection	In acute rejection, graft antigens are recognized by T cells; the resulting cytokine release eventually leads to tissue distortion, vascular insufficiency, and cell destruction. Histologically, leukocytes are present, dominated by equivalent numbers of macrophages and T cells within the interstitium. These processes can occur within 24 hours of transplantation and occur over a period of days to weeks. ([http://www.emedicine.com/ped/topic2841.htm], accessed July 20, 2006). Acute rejection usually begins after the first week of transplantation, and most likely occurs to some degree in all transplants (except between identical twins). It is caused by mismatched HLA antigens that are present on all cells. HLA antigens are polymorphic; therefore, the chance of a perfect match is extremely rare. The reason that acute rejection occurs a week after transplantation is because the T-cells involved in rejection must differentiate and the antibodies in response to the allograft must be produced before rejection is initiated. These T-cells cause the graft cells to lyse or produce cytokines that recruit other inflammatory cells, eventually causing necrosis of allograft tissue. Endothelial cells in vascularized grafts are some of the earliest victims of acute rejection. The risk of acute rejection is highest in the first 3 months after transplantation, and is lowered by immunosuppressive agents in maintenance therapy. However, acute rejection can occur at any time after transplantation. The onset of acute rejection is combated

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				by intensification of immunosuppression with episodic treatment. ([http://biomed.brown.edu/Courses/BI108/BI108_2004_Groups/Group04/Rejection_overview.htm], accessed July, 20, 2006). Acute cardiac rejection is diagnosed in the situation of new cardiac failure symptoms with associated hemodynamic compromise, or new echocardiographic findings of cardiac dysfunction, with or without histologic evidence of rejection. Acute rejection requires rescue therapy with pulse dose steroids, anti-thymocyte globulin, and antibody directed therapy including plasmapheresis. Acute lung rejection is defined by the International Society of Heart and Lung Transplantation (ISHLT) as Grade A rejection according to a revised clinical update of the 1996 lung allograft rejection working formula. This formulation utilized Grades A through D to define rejection, with grade A being the "gold standard" for the assessment of acute allograft rejection, though it must be interpreted in the setting of the clinical findings. In the 2007 update to the above working formulation, Grade A rejection is stated as being "robust and reproducible", though the other grades have fallen short of this measure and their clinical correlations have been minimal.
996.80	Q1.96.08	Transplant	Transplant rejection-type, Chronic rejection	Chronic rejection occurs months to years after transplantation. In chronic rejection, pathologic tissue remodeling results from peritransplant and posttransplant trauma. ([http://www.emedicine.com/ped/topic2841.htm], accessed July 20, 2006). It is characterized by graft arterial occlusions, which results from the proliferation of smooth muscle cells and production of collagen by fibroblasts. This process, termed accelerated or graft arteriosclerosis, results in fibrosis that can cause ischemia and cell death. ([http://biomed.brown.edu/Courses/BI108/BI108_2004_Groups/Group04/Rejection_overview.htm], accessed July, 20, 2006). This process of chronic rejection is not an acute postoperative entity. Chronic rejection is dominated by the response of the transplanted organ tissue itself. Chronic rejection typically occurs after hospital discharge from the transplantation. Therapy for chronic rejection involves intensification of baseline immunosuppressive regimen, followed by the addition of steroids, anti-thymocyte globulin and total lymphocyte irradiation in refractory cases. Chronic cardiac transplant rejection is the presence of graft dysfunction and/or cardiac allograft vasculopathy and may occur months to years after transplantation. For cardiac transplantation, this disease is often manifest as coronary artery disease (CAD) and is known as "transplant graft vasculopathy" or "cardiac allograft vasculopathy (CAV)" ([http://www.clinicaltrials.gov/ct/show/NCT00042614], accessed July 20, 2006). Chronic rejection after cardiac transplantation involves new electrocardiographic (ECG), lab, or

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				other clinical findings consistent with myocardial infarction and/or coronary arterial changes on catheterization lab angiography, CT angiography, or intravascular ultrasound, in addition to persistent findings of histologic rejection on biopsy. Chronic rejection of the lung allograft is defined as a fibrosing process affecting the lung, which primarily affects the conducting airways and the pulmonary vasculature. The process affecting the conducting airways has been labeled bronchiolitis obliterans, while that affecting the pulmonary arteries and veins has been named graft atherosclerosis/graft phlebosclerosis. ([http://path.upmc.edu/divisions/pulmpath/bron02.htm], accessed July 22, 2006). Chronic rejection after lung transplantation is defined as an acute drop in FEV1 of 20% from baseline pulmonary function tests recorded in the first 6 months after transplant. In addition chronic rejection after lung transplantation is characterized by the development of bronchiolitis obliterans.
996.80	Q1.96.07	Transplant	Transplant rejection-type, Hyperacute rejection	Hyperacute rejection occurs usually within the first 24 hours after transplantation and is caused by pre-existing host antibodies to the transplanted organ. Recipients are more prone to have pre-formed reactive antibodies to the Human Leukocyte Antigens (HLA) of other individuals after previous blood transfusions, pregnancies, transplantations, or even exposure to allograft material such as cryopreserved aortic and pulmonary homografts. These preformed anti-graft antibodies bind to antigens present in the graft endothelium. Antigen recognition activates the complement system and is associated with an influx of neutrophils. Endothelial cells and platelets are also induced to shed lipid particles from their membrane that promote coagulation. The resulting inflammation prevents vascularization of the graft. The graft then suffers irreversible damage from ischemia. ([http://biomed.brown.edu/Courses/BI108/BI108_2004_Groups/Group04/Rejection_overview.htm], accessed July, 20, 2006) Hyperacute rejection is usually immediate, and complete graft failure is usually recognized at or near the time of organ reperfusion. For cardiac transplantation, this process occurs at or near the time of initial aortic cross clamp removal and is followed by 1) initiation of mechanical circulatory support and relisting for transplant and/or 2) death."
996.81	15.82.19 + Q1.91.83	Transplant	Transplant renal dysfunction	Renal dysfunction – acute renal dysfunction (ROOT Definition) + Documented renal dysfunction in a patient who has undergone transplantation. Please also code the specific type of renal dysfunction separately under the renal organ system.
996.81	15.82.11 + Q1.91.83	Transplant	Transplant renal failure	Renal failure – acute renal failure (ROOT Definition) + Documented renal failure in a patient who has undergone transplantation, requiring need for dialysis or hemofiltration. Please also code the specific type of renal failure separately under the renal organ system.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
997.3	15.82.39 + Q1.91.75	Anesthesia	Aspiration of gastric contents or foreign body into lungs during period of anesthetic care including during induction of anesthesia	Clinical or radiographic evidence of aspiration of gastric contents or foreign body into lungs during period of anesthetic care including during induction of anesthesia.
427.5	15.90.21	Anesthesia	Cardiac arrest during period of anesthetic care	Cessation of effective cardiac mechanical function during the period of anesthetic care. Cardiac arrest during transport can be coded more specifically under Anesthesia – Transport.
427.5	15.90.22	Anesthesia	Cardiac arrest during period of anesthetic care, Cardiac arrest on induction	Cessation of effective cardiac mechanical function during the period of anesthetic care. Cardiac arrest during anesthetic induction, prior to the initiation of the intervention or surgical procedure. Cardiac arrest during transport can be coded more specifically under Anesthesia – Transport.
918.1	15.02.08 + Q1.91.75	Anesthesia	Corneal abrasion during period of anesthetic care	Damage to one or both corneas requiring consultation or treatment by ophthalmology. Use this code when the complication occurs during the period of anesthetic care.
E876.3	15.81.10 + Q1.91.75	Anesthesia	Endotracheal tube dislodgment during period of anesthetic care	Unplanned displacement of the endotracheal tube from the trachea with either inadvertent extubation or distal migration with unplanned bronchial intubation, that occurs during the period of anesthetic care. If this complication occurs outside the period of anesthetic care, code as a "Pulmonary" complication.
E876.3	15.81.11 + Q1.91.75	Anesthesia	Endotracheal tube dislodgment during period of anesthetic care, Distal migration of endotracheal tube	Unplanned displacement of the endotracheal tube from the trachea with distal migration and unplanned bronchial intubation, that occurs during the period of anesthetic care. If this complication occurs outside the period of anesthetic care, code as a "Pulmonary" complication.
E876.3	15.81.12 + Q1.91.75	Anesthesia	Endotracheal tube dislodgment during period of anesthetic care, Unplanned extubation	Unplanned displacement of the endotracheal tube from the trachea with inadvertent extubation, that occurs during the period of anesthetic care. If this complication occurs outside the period of anesthetic care, code as a "Pulmonary" complication.
E876.3	15.81.13 + Q1.91.75	Anesthesia	Endotracheal tube size mismatch during period of anesthetic care	The requirement of an unplanned reintubation secondary to an inappropriate air leak, or an endotracheal tube with no air-leak present at less than 20 mmHg, when the tube is present less than 24 hours, that occurs during the period of anesthetic care. If this complication occurs outside the period of anesthetic care, code as a "Pulmonary" complication.
E876.3	15.81.14 + Q1.91.75	Anesthesia	Endotracheal tube size mismatch during period of anesthetic care, Endotracheal tube too large	The requirement of an unplanned reintubation secondary to an endotracheal tube with no air-leak present at less than 20 mmHg, when the tube is present less than 24 hours, that occurs during the period of anesthetic care. If this complication occurs outside the period of anesthetic care, code as a "Pulmonary" complication.
E876.3	15.81.15 + Q1.91.75	Anesthesia	Endotracheal tube size mismatch during period of anesthetic care, Endotracheal tube too small	The requirement of an unplanned reintubation secondary to an inappropriate air leak, when the tube is present less than 24 hours, that occurs during the period of anesthetic care. If this complication occurs outside the period of anesthetic care, code as a "Pulmonary" complication.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E876.9	15.81.16 + Q1.91.75	Anesthesia	Intubation complication during period of anesthetic care	Injury to teeth, unacceptable air leak, esophageal intubation, main stem bronchus intubation, laryngospasm, failure to intubate, cardiovascular derangements (HR, BP, arrhythmia), desaturation, bleeding, that occurs during the period of anesthetic care. If this complication occurs outside the period of anesthetic care, code as a "Pulmonary" complication.
904.9	15.81.17 + Q1.91.75	Anesthesia	Intubation complication during period of anesthetic care, Bleeding	Oropharyngeal or nasopharyngeal bleeding that occurs during or immediately following intubation, that occurs during the period of anesthetic care. If this complication occurs outside the period of anesthetic care, code as a "Pulmonary" complication.
784.7	15.81.18 + Q1.91.75	Anesthesia	Intubation complication during period of anesthetic care, Bleeding, Epistaxis	Nasal or nasopharyngeal bleeding that occurs during or immediately following intubation, that occurs during the period of anesthetic care. If this complication occurs outside the period of anesthetic care, code as a "Pulmonary" complication.
784.8	15.81.19 + Q1.91.75	Anesthesia	Intubation complication during period of anesthetic care, Bleeding, Oropharyngeal bleeding	Oropharyngeal bleeding that occurs during or immediately following intubation, that occurs during the period of anesthetic care. If this complication occurs outside the period of anesthetic care, code as a "Pulmonary" complication.
E876.3	15.81.20 + Q1.91.75	Anesthesia	Intubation complication during period of anesthetic care, Endotracheal tube misplacement	Problematic endotracheal intubation secondary to esophageal intubation or positioning endotracheal tube too deep including unplanned endobronchial intubation. If this complication occurs outside the period of anesthetic care, code as a "Pulmonary" complication.
E876.3	15.81.21 + Q1.91.75	Anesthesia	Intubation complication during period of anesthetic care, Endotracheal tube misplacement, Deep intubation including unplanned endobronchial intubation	Problematic endotracheal intubation secondary to positioning endotracheal tube too deep including unplanned endobronchial intubation. If this complication occurs outside the period of anesthetic care, code as a "Pulmonary" complication.
E876.3	15.81.22 + Q1.91.75	Anesthesia	Intubation complication during period of anesthetic care, Endotracheal tube misplacement, Esophageal intubation	Problematic endotracheal intubation secondary to esophageal intubation. If this complication occurs outside the period of anesthetic care, code as a "Pulmonary" complication.
873.79	15.81.23 + Q1.91.75	Anesthesia	Intubation complication during period of anesthetic care, Injury during induction and intubation, Dental injury	Chipped or displaced tooth (teeth) after intubation, that occurs during the period of anesthetic care. If this complication occurs outside the period of anesthetic care, code as a "Pulmonary" complication.
873.53	15.81.24 + Q1.91.75	Anesthesia	Intubation complication during period of anesthetic care, Injury during induction and intubation, Injury to lip	Bleeding from lip or bruising on lip after intubation, that occurs during the period of anesthetic care. If this complication occurs outside the period of anesthetic care, code as a "Pulmonary" complication.
E876.9	15.81.25 + Q1.91.75	Anesthesia	Intubation complication during period of anesthetic care, Unanticipated difficult intubation	Unanticipated difficulty with placement of ETT due to either difficulty with laryngoscopy or passing ETT due to sub-glottic obstruction requiring smaller than anticipated ETT (more than 1 mm ID smaller than anticipated), that occurs during the period of anesthetic care. If this complication occurs outside the period of anesthetic care, code as a "Pulmonary" complication.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E876.4	15.81.26 + Q1.91.75	Anesthesia	Intubation failure during period of anesthetic care	Inability to pass an endotracheal tube into the trachea, that occurs during the period of anesthetic care. If this complication occurs outside the period of anesthetic care, code as a "Pulmonary" complication.
E874.1	15.88.01 + Q1.91.75	Anesthesia	Line complication during period of anesthetic care	Use this code for all line complications during the period of anesthetic care. The actual complication can be coded in the "Vascular-Lines" System; however, this code should be used to modify all line complications that occur during the period of anesthetic care. Failure of insertion should be coded separately using the appropriate code. Line complications during transport can be coded more specifically by using one of the codes listed under "Anesthesia – Transport"
E876.4	15.88.02 + Q1.91.75	Anesthesia	Line failure of insertion during period of anesthetic care	Use this code for all line failure of insertions during the period of anesthetic care. The actual failure of insertion can be coded in the "Vascular-Lines" System; however, this code should be used to modify all line failure of insertions that occur during the period of anesthetic care. Line complications during transport can be coded more specifically by using one of the codes listed under "Anesthesia – Transport"
E876.4	15.88.03 + Q1.91.75	Anesthesia	Line failure of insertion during period of anesthetic care-modifier, Failure to achieve access after 1 hour of attempt	Use this code for all line failure of insertions during the period of anesthetic care. The actual failure of insertion can be coded in the "Vascular-Lines" System; however, this code should be used to modify all line failure of insertions that occur during the period of anesthetic care. Line complications during transport can be coded more specifically by using one of the codes listed under "Anesthesia – Transport"
E876.4	15.88.04 + Q1.91.75	Anesthesia	Line failure of insertion during period of anesthetic care-modifier, Failure to achieve access at all	Use this code for all line failure of insertions during the period of anesthetic care. The actual failure of insertion can be coded in the "Vascular-Lines" System; however, this code should be used to modify all line failure of insertions that occur during the period of anesthetic care. Line complications during transport can be coded more specifically by using one of the codes listed under "Anesthesia – Transport"
995.86	15.80.09	Anesthesia	Malignant Hyperthermia	Malignant hyperthermia is a rare skeletal muscle disease whose victims, usually children or young adults, are prone to developing life threatening hyperpyrexia under anesthesia. The syndrome is characterized by a hypermetabolic hyperthemic state precipitated by anesthesia as well as physical or emotional stress. Malignant hypothermia should be coded as a complication when it requires therapeutic treatment with Dantrolene. Patients suspected or known to have malignant hyperthermia trait who receive Dantrolene prophylaxis should not be coded as having malignant hyperthermia as a complication unless the condition develops despite prophylaxis.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E876.9	15.02.81 + Q1.91.75	Anesthesia	Patient movement complication during period of anesthetic care	Any complication that occurs secondary to patient movement during the period of anesthetic care.
E876.9	15.02.82 + Q1.91.75	Anesthesia	Patient movement complication during period of anesthetic care, Patient falling out of bed	Any time a patient falls out of bed under anesthesia during the period of anesthetic care.
E876.9	15.02.82 + Q191.61 - + Q1.91.75	Anesthesia	Patient movement complication during period of anesthetic care, Patient falling out of bed, During procedure	Any time a patient falls out of bed under anesthesia during the period of anesthetic care, during a procedure
E876.9	15.02.82 + Q1.91.23 - + Q1.91.75	Anesthesia	Patient movement complication during period of anesthetic care, Patient falling out of bed, During transfer from operating room bed	Any time a patient falls out of bed under anesthesia during the period of anesthetic care, during a transfer from the operating room bed.
E876.9	15.02.82 + Q1.91.22 - + Q1.91.75	Anesthesia	Patient movement complication during period of anesthetic care, Patient falling out of bed, During transfer to operating room bed	Any time a patient falls out of bed under anesthesia during the period of anesthetic care, during a transfer to the operating room bed.
E876.9	15.02.82 + Q1.91.21 - + Q1.91.75	Anesthesia	Patient movement complication during period of anesthetic care, Patient falling out of bed, During transport	Any time a patient falls out of bed under anesthesia during the period of anesthetic care, during preprocedural or postprocedural transport.
799.1	16.29.01 + Q1.91.75	Anesthesia	Respiratory arrest during period of anesthetic care	"Respiratory arrest during period of anesthetic care" ROOT Definition = Loss of spontaneous respiration requiring unanticipated airway support (for example sedation patient requiring airway intervention other than jaw thrust or nasal cannulae; includes placement of ETT, LMA or other invasive airway device) during period of anesthetic care (NOT arresting before arrival in procedure location). Respiratory arrest during transportation can be coded more specifically under Anesthesia – Transport. Primary respiratory arrest is when airway obstruction, decreased respiratory drive, or respiratory muscle weakness results in cessation of respiratory activity. Secondary respiratory arrest is when preceding circulatory insufficiency results in cessation of respiratory activity.
799.1	16.29.04 + Q1.91.75	Anesthesia	Respiratory arrest during period of anesthetic care, Not known if primary respiratory arrest or secondary respiratory arrest	Respiratory arrest during period of anesthetic care (ROOT Definition) + Use this code when respiratory arrest occurs during the during period of anesthetic care and it is not known whether it is a primary or secondary respiratory arrest. (Primary respiratory arrest is when airway obstruction, decreased respiratory drive, or respiratory muscle weakness results in cessation of respiratory activity. Secondary respiratory arrest is when preceding circulatory insufficiency results in cessation of respiratory activity.)
799.1	16.29.02 + Q1.91.75	Anesthesia	Respiratory arrest during period of anesthetic care, Primary respiratory arrest	Respiratory arrest during period of anesthetic care (ROOT Definition) + Use this code when respiratory arrest occurs during the during period of anesthetic care and it is a primary respiratory arrest. (Primary respiratory arrest is when airway obstruction, decreased respiratory drive, or respiratory muscle weakness results in cessation of respiratory activity. Secondary respiratory arrest is when preceding circulatory insufficiency results in cessation of respiratory activity.)

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
799.1	16.29.01 + Q1.91.76	Anesthesia	Respiratory arrest during period of anesthetic care, Respiratory arrest on induction	"Respiratory arrest during period of anesthetic care, Respiratory arrest on induction" ROOT Definition = Loss of spontaneous respiration requiring unanticipated airway support (for example sedation patient requiring airway intervention other than jaw thrust or nasal cannulae; includes placement of ETT, LMA or other invasive airway device) during period of anesthetic care (NOT arresting before arrival in procedure location). Respiratory arrest during transportation can be coded more specifically under Anesthesia – Transport. This code should be used for respiratory arrest during anesthetic induction. Primary respiratory arrest is when airway obstruction, decreased respiratory drive, or respiratory muscle weakness results in cessation of respiratory activity. Secondary respiratory arrest is when preceding circulatory insufficiency results in cessation of respiratory activity.
799.1	16.29.04 + Q1.91.76	Anesthesia	Respiratory arrest during period of anesthetic care, Respiratory arrest on induction, Not known if primary respiratory arrest or secondary respiratory arrest	Respiratory arrest during period of anesthetic care, Respiratory arrest on induction (ROOT Definition) + Use this code when respiratory arrest occurs during anesthetic induction and it is not known whether it is a primary or secondary respiratory arrest. (Primary respiratory arrest is when airway obstruction, decreased respiratory drive, or respiratory muscle weakness results in cessation of respiratory activity. Secondary respiratory arrest is when preceding circulatory insufficiency results in cessation of respiratory activity.)
799.1	16.29.02 + Q1.91.76	Anesthesia	Respiratory arrest during period of anesthetic care, Respiratory arrest on induction, Primary respiratory arrest	Respiratory arrest during period of anesthetic care, Respiratory arrest on induction (ROOT Definition) + Use this code when respiratory arrest occurs during anesthetic induction and it is a primary respiratory arrest. (Primary respiratory arrest is when airway obstruction, decreased respiratory drive, or respiratory muscle weakness results in cessation of respiratory activity. Secondary respiratory arrest is when preceding circulatory insufficiency results in cessation of respiratory activity.)
799.1	16.29.03 + Q1.91.76	Anesthesia	Respiratory arrest during period of anesthetic care, Respiratory arrest on induction, Secondary respiratory arrest	Respiratory arrest during period of anesthetic care, Respiratory arrest on induction (ROOT Definition) + Use this code when respiratory arrest occurs during anesthetic induction and it is a secondary respiratory arrest. (Primary respiratory arrest is when airway obstruction, decreased respiratory drive, or respiratory muscle weakness results in cessation of respiratory activity. Secondary respiratory arrest is when preceding circulatory insufficiency results in cessation of respiratory activity.)
799.1	16.29.03 + Q1.91.75	Anesthesia	Respiratory arrest during period of anesthetic care, Secondary respiratory arrest	Respiratory arrest during period of anesthetic care (ROOT Definition) + Use this code when respiratory arrest occurs during the during period of anesthetic care and it is a secondary respiratory arrest. (Primary respiratory arrest is when airway obstruction, decreased respiratory drive, or respiratory muscle weakness results in cessation of respiratory activity. Secondary respiratory arrest is when

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				preceding circulatory insufficiency results in cessation of respiratory activity.)
998.1	15.90.24	Anesthesia-regional	Regional Anesthesia Complication – Hematologic	A hematologic complication related to regional anesthesia, including epidural hematoma, bleeding at insertion
999.3	15.90.25	Anesthesia-regional	Regional Anesthesia Complication – Infectious	An infectious complication related to regional anesthesia, including localized infection or epidural abscess requiring antibiotics or surgical drainage or early removal of regional anesthetic catheter
997,00	15.90.26	Anesthesia-regional	Regional Anesthesia Complication – Neurologic	A neurologic complication related to regional anesthesia, including paralysis, weakness, spinal cord injury or nerve root injury
995.22	15.90.27	Anesthesia-regional	Regional Anesthesia Complication – Type of regional = Caudal	A complication relating to the placement of a caudal regional anesthetic including hematoma, inadvertent wet-tap or total spinal, local anesthetic toxicity including seizures or arrhythmia or cardiac arrest; epidural hematoma/paraplegia/spinal cord injury.
995.22	15.90.28	Anesthesia-regional	Regional Anesthesia Complication – Type of regional = Lumbar	A complication relating to the placement of a lumbar regional anesthetic including hematoma, inadvertent wet-tap or total spinal, local anesthetic toxicity including seizures or arrhythmia or cardiac arrest; epidural hematoma/paraplegia/spinal cord injury.
995.22	15.90.29	Anesthesia-regional	Regional Anesthesia Complication – Type of regional = Thoracic	A complication relating to the placement of a thoracic regional anesthetic including hematoma, inadvertent wet-tap or total spinal, local anesthetic toxicity including seizures or arrhythmia or cardiac arrest; epidural hematoma/paraplegia/spinal cord injury.
427.5	15.90.41	Anesthesia-transport	Cardiac arrest during transport	Cessation of effective cardiac mechanical function during period of anesthetic care. Cardiac arrest during preprocedural or postprocedural transport.
799.02	15.90.42	Anesthesia-transport	Hypoxia during transport	Desaturation of greater than 20% from expected saturation during preprocedural or postprocedural transport.
459	15.90.43	Anesthesia-transport	Major hemorrhage during transport	Significant bleeding from any source during transport
799.1	16.29.01 + Q1.91.21	Anesthesia-transport	Respiratory arrest during transport	"Respiratory arrest during transport" ROOT Definition = Loss of spontaneous respiration requiring unanticipated airway support (for example sedation patient requiring airway intervention other than jaw thrust or nasal cannulae; includes placement of ETT, LMA or other invasive airway device) during patient transport. (Use this code for loss of ventilation requiring either bag/mask ventilation, intubation with either ETT or LMA, or re-intubation if airway displaced during preprocedural or postprocedural transport.) Primary respiratory arrest is when airway obstruction, decreased respiratory drive, or respiratory muscle weakness results in cessation of respiratory activity. Secondary respiratory arrest is when preceding circulatory insufficiency results in cessation of respiratory activity.
799.1	16.29.04 + Q1.91.21	Anesthesia-transport	Respiratory arrest during transport, Not known if primary respiratory arrest or secondary respiratory arrest	Respiratory arrest during transport (ROOT Definition) + Use this code when respiratory arrest occurs during transport and it is not known whether it is a primary or secondary respiratory arrest. (Primary respiratory arrest is when airway obstruction, decreased respiratory drive, or respiratory muscle weakness results in cessation

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
				of respiratory activity. Secondary respiratory arrest is when preceding circulatory insufficiency results in cessation of respiratory activity.)
799.1	16.29.02 + Q1.91.21	Anesthesia-transport	Respiratory arrest during transport, Primary respiratory arrest	Respiratory arrest during transport (ROOT Definition) + Use this code when respiratory arrest occurs during transport and it is a primary respiratory arrest. (Primary respiratory arrest is when airway obstruction, decreased respiratory drive, or respiratory muscle weakness results in cessation of respiratory activity. Secondary respiratory arrest is when preceding circulatory insufficiency results in cessation of respiratory activity.)
799.1	16.29.03 + Q1.91.21	Anesthesia-transport	Respiratory arrest during transport, Secondary respiratory arrest	Respiratory arrest during transport (ROOT Definition) + Use this code when respiratory arrest occurs during transport and it is a secondary respiratory arrest. (Primary respiratory arrest is when airway obstruction, decreased respiratory drive, or respiratory muscle weakness results in cessation of respiratory activity. Secondary respiratory arrest is when preceding circulatory insufficiency results in cessation of respiratory activity.)
423.9	15.90.44	Anesthesia-transport	Tamponade during transport	Cardiac tamponade during preoperative/preprocedural or postoperative/postprocedural transport. Tamponade is defined as the accumulation of fluid (typically bloody or serous) around the heart causing impairment in filling and resulting in decreased or loss of perfusion. This diagnosis may be made clinically or by echocardiography.
E876.4	15.88.05 + Q1.89.01 - + Q1.91.21	Anesthesia-transport	Transport complication, Line displacement during transport with subsequent need for line repositioning	Line displacement during transport with subsequent need for line repositioning
E876.4	15.88.06 + Q1.89.01 - + Q1.91.21	Anesthesia-transport	Transport complication, Line displacement during transport with subsequent need for line repositioning, Arterial line displacement during transport	Line displacement during transport with subsequent need for line repositioning, Involving arterial line
E876.4	15.88.07 + Q1.89.01 - + Q1.91.21	Anesthesia-transport	Transport complication, Line displacement during transport with subsequent need for line repositioning, Central venous line displacement during transport	Line displacement during transport with subsequent need for line repositioning, Involving central venous line
E876.4	15.88.08 + Q1.89.01 - + Q1.91.21	Anesthesia-transport	Transport complication, Line displacement during transport with subsequent need for line repositioning, Peripheral venous line displacement during transport	Line displacement during transport with subsequent need for line repositioning, Involving peripheral venous line
E876.4	15.88.09 + Q1.91.21	Anesthesia-transport	Transport complication, Line displacement with line coming out during transport	Line displacement with line coming out during transport
E876.4	15.88.10 + Q1.91.21	Anesthesia-transport	Transport complication, Line displacement with line coming out during transport, Arterial line displacement during transport	Line displacement with line coming out during transport, Involving arterial line

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
E876.4	15.88.11 + Q1.91.21	Anesthesia-transport	Transport complication, Line displacement with line coming out during transport, Central venous line displacement during transport	Line displacement with line coming out during transport, Involving central venous line
E876.4	15.88.12 + Q1.91.21	Anesthesia-transport	Transport complication, Line displacement with line coming out during transport, Peripheral venous line displacement during transport	Line displacement with line coming out during transport, Involving peripheral venous line
E876.9	15.02.83	Communication	Communication problem	Any complication resulting from poor communication between health care providers
E876.9	15.02.84	Communication	Communication problem, Delayed blood products	Blood products not available at the time they are needed during a procedure
E876.9	15.02.85	Communication	Communication problem, During hand-over	A complication due to a communication error that occurs during hand-over of a patient from one clinical entity to another
E876.9	15.02.86	Communication	Communication problem, Set-up for wrong case	Poor communication between health care providers leading to the wrong set up being prepared for a procedure
E876.9	15.02.87	Equipment	Correct equipment not available	Any time the correct surgical instruments or prosthetic material are not available for use
E872,0	15.02.88	Equipment	Unsterile instruments	Any time the necessary surgical instruments are not sterile
E876.9	15.02.89	Equipment	Wrong instruments	Any time the wrong surgical instruments prepared for a procedure
995.3	15.59.09	Medication	Anaphylactic/Anaphylactoid reaction	Hypotension, rash, or bronchospasm related to drug administration (Including "Red Man" after Vancomycin)
286.9	15.59.11	Medication	Heparin resistance	Difficulty obtaining acceptable ACT level necessitating the administration of FFP or AT3
E876.9	15.90.30	Medication	Intraoperative/Intraprocedural Recall	Inappropriate recollection of intraoperative and/or intraprocedural events.
E873.6	15.59.01	Medication	Medication error	Any medication mistake including giving the wrong medication, wrong medication dose, or wrong medication route of administration. Ideally, this code is not used and codes that are more specific are used instead.
E874.1	15.59.02	Medication	Medication error, Malfunctioning infusion pump	Correct medication given at wrong dose secondary to malfunctioning infusion pump
E876.9	15.59.03	Medication	Medication error, Medication given via wrong pathway	Correct medication given in wrong location or via wrong route (for example, IV instead of PO or IM)
E876.9	15.59.04	Medication	Medication error, Medication given via wrong pathway, Intra-arterial instead of intravenous	Inadvertent intra-arterial injection instead of planned intravenous administration.
E873.9	15.59.05	Medication	Medication error, Wrong dose of drug	Correct drug given at incorrect dose
E873.9	15.59.06	Medication	Medication error, Wrong dose of infusion	Correct drug given at incorrect infusion rate
E876.9	15.59.07	Medication	Medication error, Wrong drug	Incorrect drug administered
E876.1	15.59.08	Medication	Medication error, Wrong infusion	Incorrect drug infusion administered
995.27	15.59.10	Medication	Protamine reaction	Adverse reaction to the administration of Protamine such as systemic hypotension often (but not always) accompanied by pulmonary hypertension.

Table 2. *Continued*

ICD-9 Code	IPCCC Code	Organ System	Complication Long List Term	Definition
998.9	15.90.01	Other	Other complication	Any complication not otherwise specified in this list. An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.
998.9	15.90.14	Other	Other operative/procedural complication	Any complication not otherwise specified in this list that occurs prior to discharge, or after discharge but within 30 days of surgery or intervention. (An operative or procedural complication is any complication, regardless of cause, occurring (1) within 30 days after surgery or intervention in or out of the hospital, or (2) after 30 days during the same hospitalization subsequent to the operation or intervention. Operative and procedural complications include both intraoperative/intraprocedural complications and postoperative/postprocedural complications in this time interval.)