**eTable 1.** Mutually exclusive CHD categories by ICD-9-CM codes

|  |  |  |
| --- | --- | --- |
| **CHD Category** | **ICD-9-CM Code** | **Code Description** |
| **SEVERE**  *(if case has a severe code, regardless of presence of shunt, valve, or other codes)* | 745.0  745.1  745.10  745.11  745.12  745.19  745.2  745.3  745.6  745.60  745.61  745.69  746.01  746.1  746.7  747.11  747.41 | Common truncus  Transposition of the great arteries (TGA)  Complete TGA (dextro-TGA), not otherwise specified (NOS) or classical  Double outlet right ventricle, or incomplete TGA  Corrected TGA (levo-TGA)  TGA Other  Tetralogy of Fallot  Single ventricle, or cor triloculare  Endocardial cushion defect  Endocardial cushion defect unspecified  Atrial septal defect (ASD) primum  Endocardial cushion defect, other  Pulmonary valve atresia or absence  Tricuspid atresia, stenosis or absence  Hypoplastic left heart syndrome  Interrupted aortic arch  Total anomalous pulmonary venous return |
| **SHUNT + VALVE**  *(case has shunt AND valve codes)* | Variable | Variable |
| **SHUNT**  *(case has at least one shunt code, no valve or severe codes)* | 745.4  745.5  745.8  745.9  747.0  747.1 / 747.10 | Ventricular septal defect (VSD)  ASD secondum or PFO#  Other specified defect of septal closure  Unspecified defect of septal closure  Patent ductus arteriosus (PDA)  Coarctation of aorta |
| **VALVE**  *(case has at least one valve code, no shunt or severe codes)* | 746.0  746.00  746.02  746.09  746.2  746.3  746.4\*  746.5  746.6\*  747.3\*  747.31  747.39 | Anomalies of pulmonary valve  Pulmonary valve anomaly, unspecified  Pulmonary valve stenosis  Pulmonary valve anomaly, other  Ebstein Anomaly  Aortic valve stenosis  Aortic insufficiency or bicuspid/unicuspid aortic valve\*  Mitral stenosis or mitral valve abnormalities  Mitral insufficiency\*  Anomalies of pulmonary artery\*  Pulmonary artery atresia, coarctation, or hypoplasia  Anomalies of pulmonary artery, other |
| **OTHER ONLY**  *(case only has one or more codes in this category)* | 745.7  746.8  746.81  746.82  746.83  746.84  746.85  746.87  746.89\*  746.9\*  747.2  747.20  747.21  747.22  747.29  747.4  747.40\*  747.42  747.49  747.9\* | Cor biloculare  Other specified anomalies of heart  Subaortic stenosis  Cor triatriatum  Infundibular or subvalvar pulmonary stenosis  Obstructive anomalies of heart  Coronary artery anomaly  Malposition of heart or apex  Other specified anomaly of heart (various types)\*  Unspecified defect of heart\*  Other anomalies of the aorta  Anomalies of aorta, unspecified  Anomaly of aortic arch  Atresia or stenosis of aorta  Other anomalies of aorta, other specified  Anomalies of great veins  Anomalies of great veins, unspecified\*  Partial anomalous venous return  Other anomalies of great veins  Unspecified anomalies of circulatory system\* |

\*Codes considered to be minor. All other listed codes considered to be major.

#745.5 was isolated for analysis.

**eTable 2.** Comorbidities and the corresponding Clinical Classification Software (CCS) categories

|  |  |
| --- | --- |
| **Comorbidity Category** | **CCS Diagnosis Categories \*** |
| Diabetes Mellitus | 49, 50 |
| Hypertension | 98, 99 |
| Hyperlipidemia | 53 |
| Coronary Artery Disease | 100, 101 |
| Stroke, Thrombosis, & Other Cardiovascular | 96, 97, 102, 104, 109, 110, 111, 112, 113, 114, 115, 116, 117 |
| Other Endocrine (Non-Diabetes) | 48, 51 |
| Hematologic | 59, 61, 62, 63, 64 |
| Neoplasms | 11, 12 ,13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 46, 47 |
| Gastrointestinal | 138, 139, 140, 141, 142, 144, 145, 146, 147, 148, 149, 151, 152, 153, 154, 155, 250 |
| Renal | 156, 157, 158, 161 |
| Neurologic/ CNS | 79, 80, 81, 82, 83, 85 |
| Immunologic/Rheumatologic | 54, 57, 202, 210 |
| Respiratory / Pulmonary | 56, 103, 127, 128, 130, 131, 132, 133, 221 |
| Musculoskeletal | 203, 204, 205, 206, 207, 208, 209, 211, 212 |
| Injury / Trauma | 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 240, 244 |
| Infectious Disease | 1, 2 ,3, 4, 5, 6, 7, 8, 9, 76, 77, 78, 122, 123, 124, 125, 126, 135, 197, 201, 246, 247, 248 |
| Mental Health | 650, 651, 652, 653, 655, 656, 657, 658, 659, 660, 661, 662, 663, 670 |
| Birth Defects (Non-CHD) | 214, 215, 216, 217 |
| Venous Disorder/Phlebitis | 118, 119, 121 |
| GU/GYN | 159, 160, 162, 163, 164, 165, 166, 168, 169, 170, 171, 172, 173, 174, 175, 258 |
| Arrhythmias & Conduction Disorders | 105, 106, 107 |
| Heart Failure | 108 |

**\***CCS diagnostic category descriptions can be found at: Healthcare Cost and Utilization Project. Agency for Healthcare Research and Quality. Clinical Classifications Software (CCS) for ICD-9-CM. 2016; <http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp>.

**eTable 3.** Cardiac procedures and surgeries, diagnostic imaging, vascular procedures and the corresponding Clinical Classification Software (CCS) categories.

|  |  |  |
| --- | --- | --- |
| **CDC Procedure Category** | **Procedure Code** | **Code Description** |
| **Diagnostic Imaging** | ICD-9-CM |  |
| 00.24 | Ivus Coronary Vessels (Begin 2004) |
| 88.72 | Dx Ultrasound-Heart |
| 88.92 | MRI Chest & Heart (Begin 1986) |
| 89.41 | Treadmill Stress Test |
| 89.42 | Masters 2-Step Test |
| 89.43 | Bicycle Ergometer Test |
| 89.44 | Cardiac Stress Test Nec |
| 89.45 | Pacemaker Rate Check |
| 89.46 | Pacemaker Wave Form Chck |
| 89.47 | Pacemaker Impedance Chck |
| 89.48 | Pacemaker Volt Threshold |
| 89.49 | Pacemaker Slew Rate Chck (Begin 2004 End 1992) |
| 89.50 | Ambu Cardiac Monitoring (Begin 1991) |
| 89.51 | Rhythm Electrocardiogram |
| 89.52 | Electrocardiogram |
| 89.54 | Electrocardiograph Monit |
| CPT |  |
| 71275 | Computed Tomographic Angiography, Chest, Without Contrast Material(S), Followed By Contrast Material(S) And Further Sections, Including Image |
| 75552 | Cardiac Magnetic Resonance Imaging For Morphology; Without Contrast Material |
| 75553 | Cardiac Magnetic Resonance Imaging For Morphology; With Contrast Material |
| 75554 | Cardiac Magnetic Resonance Imaging For Function, With Or Without Morphology; Complete Study |
| 75555 | Cardiac Magnetic Resonance Imaging For Function, With Or Without Morphology;Limited Study |
| 75556 | Cardiac Magnetic Resonance Imaging For Velocity Flow Mapping |
| 76825 | Echocardiography, Fetal, Cardiovascular System, Real Time With Image Documentation (2D) With Or Without M-Mode Recording; |
| 76826 | Echocardiography, Fetal, Cardiovascular System, Real Time With Image Documentation (2D) With Or Without M-Mode Recording; Follow-Up Or Repeat Study |
| 76827 | Doppler Echocardiography, Fetal, Cardiovascular System, Pulsed Wave And/Or Continuous Wave With Spectral Display; Complete |
| 76828 | Doppler Echocardiography, Fetal, Cardiovascular System, Pulsed Wave And/Or Continuous Wave With Spectral Display; Follow-Up Or Repeat Study |
| 76930 | Ultrasonic Guidance For Pericardiocentesis, Imaging Supervision And Interpretation |
| 76932 | Ultrasonic Guidance For Endomyocardial Biopsy, Imaging Supervision And Interpretation |
| 78445 | Non-Cardiac Vascular Flow Imaging (Ie, Angiography, Venography) |
| 78456 | Acute Venous Thrombosis Imaging, Peptide |
| 78460 | Myocardial Perfusion Imaging; (Planar) Single Study, At Rest Or Stress (Exercise And/Or Pharmacologic), With Or Without Quantification |
| 78464 | Myocardial Perfusion Imaging; Tomographic (Spect), Single Study At Rest Or Stress (Exercise And/Or Pharmacologic), With Or Without Quantification |
| 78465 | Myocardial Perfusion Imaging; Tomographic (Spect), Mult. Studies At Rest And/Or Stress (Exercise And/Or Pharmacologic) And Redistribution And/Or Rest Injection, W/Wo Quant. |
| 78466 | Myocardial Imaging, Infarct Avid, Planar; Qualitative Or Quantitative |
| 78468 | Myocardial Imaging, Infarct Avid, Planar; With Ejection Fraction By First Pass Technique |
| 78469 | Myocardial Imaging, Infarct Avid, Planar; Tomographic Spect With Or Without Quantification |
| 78472 | Cardiac Blood Pool Imaging, Gated Equilibrium; Planar, Single Study At Rest Or Stress (Exercise And/Or Pharmacologic), Wall Motion Study Plus Ejection Fraction, Wwo Additional Quantitative Processing |
| 78473 | Cardiac Blood Pool Imaging, Gated Equilibrium; Multiple Studies, Wall Motion Study Plus Ejection Fraction, At Rest And Stress (Exercise And/Orpharmacologic), W W/O Additional Quantification |
| 78481 | Cardiac Blood Pool Imaging, (Planar), First Pass Technique; Single Study, At Rest Or W/ Stress (Exercise And/Or Pharmacologic), Wall Motion Studyplus Ejection Fraction, W/Woquant. |
| 78483 | Cardiac Blood Pool Imaging, (Planar), First Pass Tech.; Mult. Studies, At Rest & W/ Stress (Exercise And/Or Pharmacologic), Wall Motion Study Pluseject. Fraction, W/Wo Quantification |
| 78494 | Cardiac Blood Pool Imaging, Gated Equilibrium, Spect, At Rest, Wall Motion Study Plus Ejection Fraction, With Or Without Quantitative Processing |
| 78496 | Cardiac Blood Pool Imaging, Gated Equilibrium, Single Study, At Rest, With Right Ventricular Ejection Fraction By First Pass Technique (List Separately In Addition To Code For Primary Procedure) |
| 78499 | Unlisted Cardiovascular Procedure, Diagnostic Nuclear Medicine |
| 92978 | Intravascular Ultrasound (Coronary Vessel/Graft) During Diag Evaluation &/ Therapeutic Intervention Incl Imaging Supervision, Interpret & Report;Initial Vessel (List Sep In Add To Code For Prim Proc) |
| 92979 | Intravascular Ultrasound (Coronary Vessel Or Graft) During Therapeutic Intervention Including Imaging Supervision, Interpretation And Report; Eachadditional Vessel |
| 93000 | Electrocardiogram, Routine Ecg With At Least 12 Leads; With Interpretation And Report |
| 93005 | Electrocardiogram, Routine Ecg With At Least 12 Leads; Tracing Only, Without Interpretation And Report |
| 93010 | Electrocardiogram, Routine Ecg With At Least 12 Leads; Interpretation And Report Only |
| 93012 | Telephonic Transmission Of Post-Symptom Electrocardiogram Rhythm Strip(S), 24-Hour Attended Monitoring, Per 30 Day Period Of Time;Tracing Only |
| 93014 | Telephonic Transmission Of Post-Symptom Electrocardiogram Rhythm Strip(S), 24-Hour Attended Monitoring, Per 30 Day Period Of Time;Physician Reviewwith Interpretation And Report Only |
| 93015 | Cardiovascular Stress Test Using Maximal Or Submaximal Treadmill Or Bicycle Exercise, Continous Electrocardiographic Monitoring, Pharmacologicstress; With Phys Supervision, Interpret And Report |
| 93016 | Cardiovascular Stress Test Using Maximal Or Submaximal Treadmill Or Bicycle Exercise, Continous Electrocardiographic Monitoring, Pharmacologicstress; Phys Supervision Only, W/O Interpret & Report |
| 93017 | Cardiovascular Stress Test Using Maximal Or Submaximal Treadmill Or Bicycle Exercise, Continous Electrocardiographic Monitoring, Pharmacologicstress; Tracing Only, W/O Interpret And Report |
| 93018 | Cardiovascular Stress Test Using Maximal Or Submaximal Treadmill Or Bicycle Exercise, Continous Electrocardiographic Monitoring, Pharmacologicstress; Interpretation And Report Only |
| 93025 | Microvolt T-Wave Alternans For Assessment Of Ventricular Arrhythmias |
| 93040 | Rhythm Ecg, One To Three Leads; With Interpretation And Report |
| 93041 | Rhythm Ecg, One To Three Leads; Tracing Only Without Interpretation And Report |
| 93042 | Rhythm Ecg, One To Three Leads; Interpretation And Report Only |
| 93224 | Electrocardiographic Monitoring For 24 Hours By Continuous Original Ecg Waveform Record & Storage W/ Visual Superimposition Scan; Inc Recording, Scan Analysis W/ Report, Physician Review & Interpret |
| 93225 | Electrocardiographic Monitoring For 24 Hours By Continuous Original Ecg Waveform Record & Storage W/ Visual Superimposition Scan; Recording (Includes Hook-Up, Recording, And Disconnection) |
| 93226 | Electrocardiographic Monitoring For 24 Hours By Continuous Original Ecg Waveform Record & Storage W/ Visual Superimposition Scan; Scanning Analysiswith Report |
| 93227 | Electrocardiographic Monitoring For 24 Hours By Continuous Original Ecg Waveform Record & Storage W/ Visual Superimposition Scan; Physician Reviewand Interpretation |
| 93230 | Electrocardiographic Monitoring For 24 Hours By Continuous Original Ecg Waveform Record & Storage W/O Superimposition Scan Utilizing Device Capableof Full Mini Printout; Record & Report |
| 93231 | Electrocardiographic Monitoring For 24 Hours By Continuous Original Ecg Waveform Record & Storage W/O Superimposition Scan Utilizing Device Capableof Full Mini Printout; Hook-Up Disconnect |
| 93232 | Electrocardiographic Monitoring For 24 Hours By Continuous Original Ecg Waveform Record & Storage W/O Superimposition Scan Utilizing Device Capableof Full Mini Printout; Microprocessor Analysis |
| 93233 | Electrocardiographic Monitoring For 24 Hours By Continuous Original Ecg Waveform Record & Storage W/O Superimposition Scan Utilizing Device Capableof Full Mini Printout; Physician Review & Interpret |
| 93235 | Electrocardiographic Monitoring For 24 Hours By Continuous Computer Monitor & Non-Continuous Record & Real-Time Data Analysis, Full-Sized Tracings,W/ Report, Physician Review & Interpret |
| 93236 | Electrocardiographic Monitoring For 24 Hours By Continuous Computer Monitor & Non-Continuous Record & Real-Time Data Analysis, Full-Sized Tracings,Possibly Patient Activated; Real-Time Analysis |
| 93237 | Electrocardiographic Monitoring For 24 Hours By Continuous Computer Monitor & Non-Continuous Record & Real-Time Data Analysis, Full-Sized Tracings,Possibly Pt Activated; Physician Rev & Interpret |
| 93268 | Patient Demand Single Or Multiple Event Recording With Presymptom Memory Loop, 24-Hour Attended Monitoring, Per 30 Day Period Of Time; Includestransmission, Physician Review And Interpretation |
| 93270 | Patient Demand Single Or Multiple Event Recording With Presymptom Memory Loop, 24-Hour Attended Monitoring, Per 30 Day Period Of Time; Recording (Includes Hook-Up, Recording, And Disconnection) |
| 93271 | Patient Demand Single Or Multiple Event Recording With Presymptom Memory Loop, 24-Hour Attended Monitoring, Per 30 Day Period Of Time; Monitoring,Receipt Of Transmissions, And Analysis |
| 93272 | Patient Demand Single Or Multiple Event Recording With Presymptom Memory Loop, 24-Hour Attended Monitoring, Per 30 Day Period Of Time; Physician Review And Interpretation Only |
| 93278 | Signal-Averaged Electrocardiography (Saecg), With Or Without Ecg |
| 93303 | Transthoracic Echocardiography For Congential Cardiac Anomalies; Complete |
| 93304 | Transthoracic Echocardiography For Congential Cardiac Anomalies; Follow-Up Or Limited Study |
| 93307 | Echocardiography, Transthoracic, Real-Time With Image Documentation (2D) With Or Without M-Mode Recording; Complete |
| 93308 | Echocardiography, Real-Time With Image Documentation (2D) With Or Without M-Mode Recording; Follow-Up Or Limited Study |
| 93312 | Echocardiography, Transesophageal, Real Time With Image Documentation (2D) (With Or Without M-Mode Recording); Including Probe Placement, Imageacquisition, Interpretation And Report |
| 93313 | Echocardiography, Real Time With Image Documentation (2D) (With Or Without M-Mode Recording), Transesophageal; Placement Of Transesophageal Probeonly |
| 93314 | Echocardiography, Real Time With Image Documentation (2D) (With Or Without M-Mode Recording), Transesophageal; Image Acquisition, Interpretation Andreport Only |
| 93315 | Transesophageal Echocardiography For Congential Cardiac Anomalies; Including Probe Placement, Image Acquisition, Interpretation And Report |
| 93316 | Transesophageal Echocardiography For Congential Cardiac Anomalies; Placement Of Transesophageal Probe Only |
| 93317 | Transesophageal Echocardiography For Congential Cardiac Anomalies; Image Acquisition, Interpretation And Report Only |
| 93318 | Echocardiography,Transesophageal Monitor Prposes,Incl Probe Plcemnt,Real Time 2 Dimenzional Imge Acquisit & Interpret Leading Ongoing Assess Cardiac Pump Func & Therapeutic Msures Immed Time Ba |
| 93320 | Doppler Echocardiography, Pulsed Wave And/Or Continuous Wave With Spectral Display (List Separately In Addition To Codes For Echocardiographicimaging); Complete |
| 93321 | Doppler Echocardiography, Pulsed Wave &/ Continuous Wave W Spec Disp (List Sep In Add To Codes For Echocardiographic Imag); Follow-Up Or Lim Study(List Sep In Add To Codes For Echocardiograph Imag) |
| 93325 | Doppler Echocardiography Color Flow Velocity Mapping (List Separately In Addition To Codes For Echocardiography) |
| 93350 | Echocardiography, Transthoracic, Real-Time W Image Doc (2D, Wwo M-Mode Rcrdng), During Rest & Cardiovasc Stress Tst Using Trdmill, Bike And/Orpharmacol Induced Stress, W Interp & Rpt |
| 93660 | Evaluation Of Cardiovascular Function With Tilt Table Evaluation, With Continuous Ecg Monitoring And Intermittent Blood Pressure Monitoring, Withor Without Pharmacological Intervention |
| 93662 | Intracardiac Echocardiography During Therapeutic/Diagnostic Intervention, Including Imaging Supervision And Interpretation (List Separately Inaddition To Code For Primary Procedure) |
| 93724 | Electronic Analysis Of Antitachycardia Pacemaker (Inc Electrocardiographic Recording, Programming Of Device, Induction & Termination Of Tachycardiavia Implanted Pacemaker & Interpret Of Recordings) |
| 93727 | Electronic Analysis Of Implantable Loop Recorder (Ilr) System (Includes Retrieval Of Recorded And Stored Ecg Data, Physician Review And Interpretation Of Retrieved Ecg Data And Reprogramming) |
| 93731 | Electronic Analysis Of Dual-Chamber Pacemaker, Recording And Interpretation At Rest And Exercise, Analysis Of Event Markers & Device Response);Without Reprogramming |
| 93732 | Electronic Analysis Of Dual-Chamber Pacemaker, Recording & Interpret At Rest And During Exercise Analysis Of Event Markers And Device Response); With Reprogramming |
| 93733 | Electronic Analysis Of Dual-Chamber Internal Pacemake (May Include Rate, Pulse Amplitude And Duration, Configuration Of Wave Form, And/Or Testingofsensory Function Of Pacemaker) Telephonic Analysis |
| 93734 | Electronic Analysis Of Single Chamber Pacemaker System (Inc Eval Of Programmable Parameters, Record & Interpret At Rest & Exercise, Analysis Ofevent Markers & Device Response); Without Reprogramming |
| 93735 | Electronic Analysis Of Single Chamber Pacemaker System (Inc Eval Of Programmable Parameters, Record & Interpret At Rest & Exercise, Analysis Ofevent Markers & Device Response); With Reprogramming |
| 93741 | Electronic Analysis Of Pacing Cardioverter-Defibrillator (Interrog,Eval Pulse Generator,Prog Parameters At Rest & Dur Act,Electrocard Rec & Interpre Of Rec At Rest & Dur Exer); 1 Chamb, Wo Reprogram |
| 93742 | Electronic Analysis Of Pacing Cardioverter-Defibrillator (Interrog,Eval Pulse Generator,Prog Parameters At Rest & Dur Act,Electrocard Rec & Interpre Of Rec At Rest & Dur Exer); 1 Chamb,With Reprogram |
| 93743 | Electronic Analysis Of Pacing Cardioverter-Defibrillator (Interrog,Eval Pulse Generator,Prog Parameters At Rest & Dur Act,Electrocard Rec & Interpre Of Rec At Rest & Dur Exer); 2 Chamber,Wo Reprogram |
| 93744 | Electronic Analysis Of Pacing Cardioverter-Defibrillator (Interrog,Eval Pulse Generator,Prog Parameters At Rest & Dur Act,Electrocard Rec & Interpre Of Rec At Rest & Dur Exer); 2 Chamber,W Reprogram |
| Q0035 | Cardiokymography |
| S3904 | Masters Two Step |
| S9025 | Omnicardiogram/Cardiointegram |
| **Cardiac Procedure/Surgery** | ICD-9-CM |  |
| 00.50 | Impla Resynchr Pacemaker W/0 Defibri (Begin 2002) |
| 00.51 | Impla Resynchronization Defibrillator (Begin 2002) |
| 00.52 | Impl/Repl Transvenous Lead Lf Ventri (Begin 2002) |
| 00.53 | Impl/Repl Pacemaker; Plse Genratr Only (Begin 2002) |
| 00.54 | Impl/Repl Defibril Generator Only (Begin 2002) |
| 00.56 | Ins/Rep Impl Sensor Lead (Begin 2006) |
| 00.57 | Imp/Rep Subcue Card Dev (Begin 2006) |
| 00.66 | Ptca Or Coronary Ather (Begin 2005) |
| 17.51 | Implant Ccm |
| 17.52 | Implant Ccm Pulse Genrtr (Begin 2009) |
| 17.55 | Translum Cor Atherectomy (Begin 2011) |
| 33.60 | Comb Heart/Lung Transpla (Begin 1990) |
| 35.00 | Closed Valvotomy Nos |
| 35.01 | Closed Aortic Valvotomy |
| 35.02 | Closed Mitral Valvotomy |
| 35.03 | Closed Pulmon Valvotomy |
| 35.04 | Closed Tricusp Valvotomy |
| 35.05 | Endovas Repl Aortc Valve (Begin 2011) |
| 35.06 | Trnsapcl Rep Aortc Valve (Begin 2011) |
| 35.07 | Endovas Repl Pulm Valve (Begin 2011) |
| 35.08 | Trnsapcl Repl Pulm Valve (Begin 2011) |
| 35.09 | Endovas Repl Uns Hrt Vlv (Begin 2011) |
| 35.10 | Open Valvuloplasty Nos |
| 35.11 | Opn Aortic Valvuloplasty |
| 35.12 | Opn Mitral Valvuloplasty |
| 35.13 | Opn Pulmon Valvuloplasty |
| 35.14 | Opn Tricus Valvuloplasty |
| 35.20 | Replace Heart Valve Nos |
| 35.21 | Replace Aort Valv-Tissue |
| 35.22 | Replace Aortic Valve Nec |
| 35.23 | Replace Mitr Valv-Tissue |
| 35.24 | Replace Mitral Valve Nec |
| 35.25 | Replace Pulm Valv-Tissue |
| 35.26 | Replace Pulmon Valve Nec |
| 35.27 | Replace Tric Valv-Tissue |
| 35.28 | Replace Tricusp Valv Nec |
| 35.31 | Papillary Muscle Ops |
| 35.32 | Chordae Tendineae Ops |
| 35.33 | Annuloplasty |
| 35.34 | Infundibulectomy |
| 35.35 | Trabecul Carneae Cord Op |
| 35.39 | Tiss Adj To Valv Ops Nec |
| 35.41 | Enlarge Existing Sep Def |
| 35.42 | Create Septal Defect |
| 35.50 | Prosth Rep Hrt Septa Nos |
| 35.51 | Pros Rep Atrial Def-Opn |
| 35.52 | Pros Repair Atria Def-Cl |
| 35.53 | Prost Repair Ventric Def |
| 35.54 | Pros Rep Endocar Cushion |
| 35.55 | Pros Rep Ventrc Def-Clos (Begin 2006) |
| 35.60 | Grft Repair Hrt Sept Nos |
| 35.61 | Graft Repair Atrial Def |
| 35.62 | Graft Repair Ventric Def |
| 35.63 | Grft Rep Endocar Cushion |
| 35.70 | Heart Septa Repair Nos |
| 35.71 | Atria Septa Def Rep Nec |
| 35.72 | Ventr Septa Def Rep Nec |
| 35.73 | Endocar Cushion Rep Nec |
| 35.81 | Tot Repair Tetral Fallot |
| 35.82 | Total Repair Of Tapvc |
| 35.83 | Tot Rep Truncus Arterios |
| 35.84 | Tot Cor Transpos Grt Ves (Begin 1988) |
| 35.91 | Interat Ven Retrn Transp |
| 35.92 | Conduit Rt Vent-Pul Art |
| 35.93 | Conduit Left Ventr-Aorta |
| 35.94 | Conduit Artium-Pulm Art |
| 35.95 | Heart Repair Revision |
| 35.96 | Perc Heart Valvuloplasty (Begin 1986) |
| 35.97 | Perc Mtrl Vlv Repr W Imp (Begin 2010) |
| 35.98 | Other Heart Septa Ops |
| 35.99 | Other Heart Valve Ops |
| 36.00 | Rem Obstr Nos (Begin 1986 End 1991) |
| 36.01 | Ptca-1 Vessel W/O Agent (Begin 1986 End 2005) |
| 36.02 | Ptca-1 Vessel With Agnt (Begin 1986 End 2005) |
| 36.03 | Open Coronry Angioplasty (Begin 1986) |
| 36.04 | Intrcoronry Thromb Infus (Begin 1986) |
| 36.05 | Ptca-Multiple Vessel (Begin 1986 End 2005) |
| 36.06 | Insert Coron Art Stent (Begin 1995) |
| 36.07 | Insert Drug-Eluting Crnry Artry Stnts (Begin 2002) |
| 36.09 | (Oth)Rem Cor Art Obst(Nec) (Begin 1986) |
| 36.10 | Aortocoronary Bypass Nos |
| 36.11 | Aortocor Bypas-1 Cor Art |
| 36.12 | Aortocor Bypas-2 Cor Art |
| 36.13 | Aortocor Bypas-3 Cor Art |
| 36.14 | Aortcor Bypas-4+ Cor Art |
| 36.15 | 1 Int Mam-Cor Art Bypass |
| 36.16 | 2 Int Mam-Cor Art Bypass |
| 36.17 | Abd-Coron Art Bypass (Begin 1996) |
| 36.19 | Hrt Revas Byps Anas Nec |
| 36.20 | Arterial Implant Revasc |
| 36.30 | Heart Revascularizat Nec (End 1998) |
| 36.31 | Open Chest Transmyo Revasc (Begin 1998) |
| 36.32 | Oth Transmyo Revasc (Begin 1998) |
| 36.33 | Endo Transmyo Revascular (Begin 2006) |
| 36.34 | Perc Transmyo Revascular (Begin 2006) |
| 36.39 | Other Heart Revasc (Begin 1998) |
| 36.91 | Coron Vess Aneurysm Rep |
| 36.99 | Heart Vessel Op Nec |
| 37.00 | Pericardiocentesis |
| 37.10 | Incision Of Heart Nos |
| 37.11 | Cardiotomy |
| 37.12 | Pericardiotomy |
| 37.20 | Noninvas Elect Stimulatn (Begin 2006) |
| 37.21 | Rt Heart Cardiac Cath |
| 37.22 | Left Heart Cardiac Cath |
| 37.23 | Rt/Left Heart Card Cath |
| 37.24 | Pericardial Biopsy |
| 37.25 | Cardiac Biopsy |
| 37.26 | Cardiac Electrophy Stim (Begin 1988) |
| 37.27 | Cardiac Mapping (Begin 1988) |
| 37.28 | Intracardiac Echocardiography (Begin 2001) |
| 37.29 | Hrt/Pericar Dx Proc Nec |
| 37.31 | Pericardiectomy |
| 37.32 | Heart Aneurysm Excision |
| 37.33 | Exc(/Dest) Oth Hrt Lesion (Begin 1988) |
| 37.34 | Cath Ablation Les Heart (Begin 1988) |
| 37.35 | Partial Ventriculectomy (Begin 1997) |
| 37.36 | Exc Left Atrial Appendag (Begin 2008) |
| 37.37 | Exc/Dest Hrt Les Thrspc (Begin 2010) |
| 37.40 | Heart & Pericard Repair |
| 37.41 | Impl Cardiac Support Dev (Begin 2005) |
| 37.49 | Heart/Pericard Repr Nec (Begin 2005) |
| 37.50 | Heart Transplantation (End 2003) |
| 37.51 | Heart Transplantation (Begin 2003) |
| 37.52 | Implantation Of Total Replacement Heart Syst (Begin 2003) |
| 37.53 | Replacement Or Repair Of Thoracic Unit Of To (Begin 2003) |
| 37.54 | Replacement Or Repair Of Other Implantable C (Begin 2003) |
| 37.55 | Rem Int Bivent Hrt Sys (Begin 2008) |
| 37.60 | Imp Bivn Ext Hrt Ast Sys (Begin 2008) |
| 37.61 | Pulsation Balloon Implan |
| 37.62 | Implant Hrt Asst Sys Nec |
| 37.63 | Replace Hrt Assist Syst |
| 37.64 | Remove Heart Assist Sys |
| 37.65 | Impl Extern Heart Assist (Begin 1995) |
| 37.66 | Impl Intern Heart Assist (Begin 1995) |
| 37.67 | Implant Cardiomyostim Sys (Begin 1998) |
| 37.68 | Percutan Hrt Assist Syst (Begin 2004) |
| 37.70 | Int Insert Pacemak Lead (Begin 1987) |
| 37.71 | Int Insert Lead In Vent (Begin 1987) |
| 37.72 | Int Inser Lead Atri-Vent (Begin 1987) |
| 37.73 | Int Inser Lead In Atrium (Begin 1987) |
| 37.74 | Int Or Repl Lead Epicar (Begin 1987) |
| 37.75 | Revision Of Lead (Begin 1987) |
| 37.76 | Repl Tv Atri-Vent Lead (Begin 1987) |
| 37.77 | Removal Of Lead W/O Repl (Begin 1987) |
| 37.78 | Inser Temp Pacemaker Sys (Begin 1987) |
| 37.79 | Revis Or Relocate Pocket (Begin 1987) |
| 37.80 | Int Or Repl Perm Pacemkr (Begin 1987) |
| 37.81 | Int Insert 1-Cham; Non (Begin 1987) |
| 37.82 | Int Insert 1-Cham; Rate (Begin 1987) |
| 37.83 | Int Insert Dual-Cham Dev (Begin 1987) |
| 37.85 | Repl Pacem W 1-Cham; Non (Begin 1987) |
| 37.86 | Repl Pacem 1-Cham; Rate (Begin 1987) |
| 37.87 | Repl Pacem W Dual-Cham (Begin 1987) |
| 37.89 | Revise Or Remove Pacemak (Begin 1987) |
| 37.90 | Ins Left Atr Append Dev (Begin 2004) |
| 37.91 | Opn Chest Cardiac Massag |
| 37.92 | Injection Into Heart |
| 37.93 | Injection Into Pericard |
| 37.94 | Implt/Repl Carddefib Tot (Begin 1986) |
| 37.95 | Implt Cardiodefib Leads (Begin 1986) |
| 37.96 | Implt Cardiodefib Genatr (Begin 1986) |
| 37.97 | Repl Cardiodefib Leads (Begin 1986) |
| 37.98 | Repl Cardiodefib Genratr (Begin 1986) |
| 37.99 | Other Heart/Pericard Ops |
| 39.61 | Extracorporeal Circulat |
| 39.62 | Hypothermia W Open Heart |
| 39.63 | Cardioplegia |
| 39.64 | Intraop Cardiac Pacemak |
| 39.65 | Extracorporeal Memb Oxy (Begin 1988) |
| 39.66 | Per Cardiopulmon Bypass (Begin 1990) |
| 88.52 | Rt Heart Angiocardiogram |
| 88.53 | Lt Heart Angiocardiogram |
| 88.54 | Rt & Lt Heart Angiocard |
| 88.55 | Coronar Arteriogr-1 Cath |
| 88.56 | Coronar Arteriogr-2 Cath |
| 88.57 | Coronary Arteriogram Nec |
| 97.44 | Nonop Removal Heart Assist System (Begin 2001) |
| 99.60 | Cardiopulm Resuscita Nos |
| 99.61 | Atrial Cardioversion |
| 99.62 | Heart Countershock Nec |
| 99.63 | Closed Chest Card Massag |
| 99.64 | Carotid Sinus Stiumlat |
| 99.69 | Cardiac Rhythm Conv Nec |
| CPT |  |
| 32160 | Thoracotomy, Major; With Cardiac Massage |
| 32603 | Thoracoscopy, Diagnostic (Separate Procedure); Pericardial Sac, Without Biopsy |
| 32604 | Thoracoscopy, Diagnostic (Separate Procedure); Pericardial Sac, With Biopsy |
| 32658 | Thoracoscopy, Surgical; With Removal Of Clot Or Foreign Body From Pericardial Sac |
| 32659 | Thoracoscopy, Surgical; With Creation Of Pericardial Window Or Partial Resection Of Pericardial Sac For Drainage |
| 32660 | Thoracoscopy, Surgical; With Total Pericardiectomy |
| 32661 | Thoracoscopy, Surgical; With Excision Of Pericardial Cyst, Tumor, Or Mass |
| 33010 | Pericardiocentesis; Initial |
| 33011 | Pericardiocentesis; Subsequent |
| 33015 | Tube Pericardiostomy |
| 33020 | Pericardiotomy For Removal Of Clot Or Foreign Body (Primary Procedure) |
| 33025 | Creation Of Pericardial Window Or Partial Resection For Drainage |
| 33030 | Pericardiectomy, Subtotal Or Complete; Without Cardiopulmonary Bypass |
| 33031 | Pericardiectomy, Subtotal Or Complete; With Cardiopulmonary Bypass |
| 33050 | Excision Of Pericardial Cyst Or Tumor |
| 33120 | Excision Of Intracardiac Tumor, Resection With Cardiopulmonary Bypass |
| 33130 | Resection Of External Cardiac Tumor |
| 33200 | Insertion Of Permanent Pacemaker With Epicardial Electrode(S); By Thoracotomy |
| 33201 | Insertion Of Permanent Pacemaker With Epicardial Electrode(S); By Xiphoid Approach |
| 33206 | Insertion Or Replacement Of Permanent Pacemaker With Transvenous Electrode(S); Atrial |
| 33207 | Insertion Or Replacement Of Permanent Pacemaker With Transvenous Electrode(S); Ventricular |
| 33208 | Insertion Or Replacement Of Permanent Pacemaker With Transvenous Electrode(S); Atrial And Ventricular |
| 33210 | Insertion Or Replacement Of Temporary Transvenous Single Chamber Cardiac Electrode Or Pacemaker Catheter (Separate Procedure) |
| 33211 | Insertion Or Replacement Of Temporary Transvenous Dual Chamber Pacing Electrodes (Separate Procedure) |
| 33212 | Insertion Or Replacement Of Pacemaker Pulse Generator Only; Single Chamber, Atrial Or Ventricular |
| 33213 | Insertion Or Replacement Of Pacemaker Pulse Generator Only; Dual Chamber |
| 33214 | Upgrade Of Implanted Pacemaker System, Conversion Single Chamber Sys To Dual Sys (Inc Removal Previously Placed Pulse Generator, Test Existinglead, Insert New Lead, Insert New Pulse Generator) |
| 33215 | Repositioning Of Previously Implanted Transvenous Pacemaker Or Pacing Cardioverter-Defibrillator (Right Atrial Or Right Ventricular) Electrode |
| 33216 | Insertion Of A Transvenous Electrode; Single Chamber (One Electrode) Permanent Pacemaker Or Single Chamber Pacing Cardioverter-Defibrillator |
| 33217 | Insertion Of A Transvenous Electrode; Dual Chamber (Two Electrodes) Permanent Pacemaker Or Dual Chamber Pacing Cardioverter-Defibrillator |
| 33218 | Repair Of Single Transvenous Electrode For A Single Chamber, Permanent Pacemaker Or Single Chamber Pacing Cardioverter-Defibrillator |
| 33220 | Repair Of Two Transvenous Electrodes For A Dual Chamber Permanent Pacemaker Or Dual Chamber Pacing Cardioverter-Defibrillator |
| 33222 | Revision Or Relocation Of Skin Pocket For Pacemaker |
| 33223 | Revision Of Skin Pocket For Single Or Dual Chamber Pacing Cardioverter-Defibrillator |
| 33224 | Insrt, Pacing Electrde, Card Ven Syst, Left Ventricular Pacing, W Attach Previously Placed Pacemaker/Pacing Cardivrtr-Defbr Pulse Gen (Incl Revis,Pocket, Rem, Insrt &/ Replcmnt, Gen) |
| 33225 | Insertion Of Pacing Electrode, Cardiac Venous System, For Left Ventricular Pacing, At Time Of Insertion Of Pacing Cardioverter-Defibrillator Orpacemaker Pulse Generator |
| 33226 | Repositioning Of Previously Implanted Cardiac Venous System (Left Ventricular) Electrode (Including Removal, Insertion And/Or Replacement Of Generator) |
| 33233 | Removal Of Permanent Pacemaker Pulse Generator |
| 33234 | Removal Of Transvenous Pacemaker Electrode(S); Single Lead System, Atrial Or Ventricular |
| 33235 | Removal Of Transvenous Pacemaker Electrode(S); Dual Lead System |
| 33236 | Removal Of Permanent Epicardial Pacemaker And Electrodes By Thoracotomy; Single Lead System, Atrial Or Ventricular |
| 33237 | Removal Of Permanent Epicardial Pacemaker And Electrodes By Thoracotomy; Dual Lead System |
| 33238 | Removal Of Permanent Transvenous Electrode(S) By Thoracotomy |
| 33240 | Insertion Of Single Or Dual Chamber Pacing Cardioverter-Defibrillator Pulse Generator |
| 33241 | Subcutaneous Removal Of Single Or Dual Chamber Pacing Cardioverter-Defibrillator Pulse Generator |
| 33243 | Removal Of Single Or Dual Chamber Pacing Cardioverter-Defibrillator Electrode(S); By Thoracotomy |
| 33244 | Removal Of Single Or Dual Chamber Pacing Cardioverter-Defibrillator Electrode(S); By Transvenous Extraction |
| 33245 | Insertion Of Epicardial Single Or Dual Chamber Pacing Cardioverter-Defibrillator Electrodes By Thoracotomy |
| 33246 | Insertion Of Epicardial Single Or Dual Chamber Pacing Cardioverter-Defibrillator Electrodes By Thoracotomy; With Insertion Of Pulse Generator |
| 33249 | Insertion Or Repositioning Of Electrode Lead(S) For Single Or Dual Chamber Pacing Cardioverter-Defibrillator And Insertion Of Pulse Generator |
| 33250 | Operative Ablation Of Supraventricular Arrhythmogenic Focus Or Pathway, Tract(S) And/Or Focus; Without Cardiopulmonary Bypass |
| 33251 | Operative Ablation Of Supraventricular Arrhythmogenic Focus Or Pathway, Tract(S) And/Or Focus (Foci); With Cardiopulmonary Bypass |
| 33253 | Operative Incisions And Reconstruction Of Atria For Treatment Of Atrial Fibrillation Or Atrial Flutter (Eg, Maze Procedure) |
| 33261 | Operative Ablation Of Ventricular Arrhythmogenic Focus With Cardiopulmonary Bypass |
| 33282 | Implantation Of Patient-Activated Cardiac Event Recorder |
| 33284 | Removal Of An Implantable, Patient-Activated Cardiac Event Recorder |
| 33300 | Repair Of Cardiac Wound; Without Bypass |
| 33305 | Repair Of Cardiac Wound; With Cardiopulmonary Bypass |
| 33310 | Cardiotomy, Exploratory (Includes Removal Of Foreign Body); Without Bypass |
| 33315 | Cardiotomy, Exploratory (Includes Removal Of Foreign Body); With Cardiopulmonary Bypass |
| 33330 | Insertion Of Graft, Aorta Or Great Vessels; Without Shunt, Or Cardiopulmonary Bypass |
| 33332 | Insertion Of Graft, Aorta Or Great Vessels; With Shunt Bypass |
| 33335 | Insertion Of Graft, Aorta Or Great Vessels; With Cardiopulmonary Bypass |
| 33400 | Valvuloplasty, Aortic Valve; Open, With Cardiopulmonary Bypass |
| 33401 | Valvuloplasty, Aortic Valve; Open, With Inflow Occlusion |
| 33403 | Valvuloplasty, Aortic Valve; Using Transventricular Dilation, With Cardiopulmonary Bypass |
| 33404 | Construction Of Apical-Aortic Conduit |
| 33405 | Replacement, Aortic Valve, With Cardiopulmonary Bypass; With Prosthetic Valve Other Than Homograft Or Stentless Valve |
| 33406 | Replacement, Aortic Valve, With Cardiopulmonary Bypass; With Allograft Valve |
| 33410 | Replacement, Aortic Valve, With Cardiopulmonary Bypass; With Stentless Tissue Valve |
| 33411 | Replacement, Aortic Valve; With Aortic Annulus Enlargement, Noncoronary Cusp |
| 33412 | Replacement, Aortic Valve; With Transventricular Aortic Annulus Enlargement (Konno Procedure) |
| 33413 | Replacement, Aortic Valve; By Translocation Of Autologous Pulmonary Valve With Allograft Replacement Of Pulmonary Valve |
| 33414 | Repair Of Left Ventricular Outflow Tract Obstruction By Patch Enlargement Of The Outflow Tract |
| 33415 | Resection Or Incision Of Subvalvular Tissue For Discrete Subvalvular Aortic Stenosis |
| 33416 | Ventriculomyotomy (-Myectomy) For Idiopathic Hypertrophic Subaortic Stenosis (Eg, Asymmetric Septal Hypertrophy) |
| 33417 | Aortoplasty (Gusset) For Supravalvular Stenosis |
| 33420 | Valvotomy, Mitral Valve; Closed Heart |
| 33422 | Valvotomy, Mitral Valve; Open Heart, With Cardiopulmonary Bypass |
| 33425 | Valvuloplasty, Mitral Valve, With Cardiopulmonary Bypass; |
| 33426 | Valvuloplasty, Mitral Valve, With Cardiopulmonary Bypass; With Prosthetic Ring |
| 33427 | Valvuloplasty, Mitral Valve, With Cardiopulmonary Bypass; Radical Reconstruction, With Or Without Ring |
| 33430 | Replacement, Mitral Valve, With Cardiopulmonary Bypass |
| 33460 | Valvectomy, Tricuspid Valve, With Cardiopulmonary Bypass |
| 33463 | Valvuloplasty, Tricuspid Valve; Without Ring Insertion |
| 33464 | Valvuloplasty, Tricuspid Valve; With Ring Insertion |
| 33465 | Replacement, Tricuspid Valve, With Cardiopulmonary Bypass |
| 33468 | Tricuspid Valve Repositioning And Plication For Ebstein Anomaly |
| 33470 | Valvotomy, Pulmonary Valve, Closed Heart; Transventricular |
| 33471 | Valvotomy, Pulmonary Valve, Closed Heart; Via Pulmonary Artery |
| 33472 | Valvotomy, Pulmonary Valve, Open Heart; With Inflow Occlusion |
| 33474 | Valvotomy, Pulmonary Valve, Open Heart; With Cardiopulmonary Bypass |
| 33475 | Replacement, Pulmonary Valve |
| 33476 | Right Ventricular Resection For Infundibular Stenosis, With Or Without Commissurotomy |
| 33478 | Outflow Tract Augmentation (Gusset), With Or Without Commissurotomy Or Infundibular Resection |
| 33496 | Repair Of Non-Structural Prosthetic Valve Dysfunction With Cardiopulmonary Bypass (Separate Procedure) |
| 33500 | Repair Of Coronary Arteriovenous Or Arteriocardiac Chamber Fistula; With Cardiopulmonary Bypass |
| 33501 | Repair Of Coronary Arteriovenous Or Arteriocardiac Chamber Fistula; Without Cardiopulmonary Bypass |
| 33502 | Repair Of Anomalous Coronary Artery; By Ligation |
| 33503 | Repair Of Anomalous Coronary Artery; By Graft, Without Cardiopulmonary Bypass |
| 33504 | Repair Of Anomalous Coronary Artery; By Graft, With Cardiopulmonary Bypass |
| 33505 | Repair Of Anomalous Coronary Artery; With Construction Of Intrapulmonary Artery Tunnel (Takeuchi Procedure) |
| 33506 | Repair Of Anomalous Coronary Artery; By Translocation From Pulmonary Artery To Aorta |
| 33542 | Myocardial Resection (Eg, Ventricular Aneurysmectomy) |
| 33545 | Repair Of Postinfarction Ventricular Septal Defect, With Or Without Myocardial Resection |
| 33572 | Coronary Endarterectomy, Open, Any Method, Of Left Anterior Descending, Circumflex, Or Right Coronary Artery Performed With Coronary Artery Bypassgraft Procedure, Each Vessel (List Separately) |
| 33600 | Closure Of Atrioventricular Valve (Mitral Or Tricuspid) By Suture Or Patch |
| 33602 | Closure Of Semilunar Valve (Aortic Or Pulmonary) By Suture Or Patch |
| 33606 | Anastomosis Of Pulmonary Artery To Aorta (Damus-Kaye-Stansel Procedure) |
| 33608 | Repair Of Complex Cardiac Anomaly Other Than Pulmonary Atresia With Ventricular Septal Defect By Construction Or Replacement Of Conduit From Rightor Left Ventricle To Pulmonary Artery |
| 33610 | Repair Of Complex Cardiac Anomalies By Surgical Enlargement Of Ventricular Septal Defect |
| 33611 | Repair Of Double Outlet Right Ventricle With Intraventricular Tunnel Repair; |
| 33612 | Repair Of Double Outlet Right Ventricle With Intraventricular Tunnel Repair; With Repair Of Right Ventricular Outflow Tract Obstruction |
| 33615 | Repair Of Complex Cardiac Anomalies (Eg, Tricuspid Atresia) By Closure Of Atrial Septal Defect And Anastomosis Of Atria Or Vena Cava To Pulmonaryartery (Simple Fontan Procedure) |
| 33617 | Repair Of Complex Cardiac Anomalies (Eg, Single Ventricle) By Modified Fontan Procedure |
| 33619 | Repair Of Single Ventricle With Aortic Outflow Obstruction And Aortic Arch Hypoplasia (Hypoplastic Left Heart Syndrome) (Eg, Norwood Procedure) |
| 33641 | Repair Atrial Septal Defect, Secundum, With Cardiopulmonary Bypass, With Or Without Patch |
| 33645 | Direct Or Patch Closure, Sinus Venosus, With Or Without Anomalous Pulmonary Venous Drainage |
| 33647 | Repair Of Atrial Septal Defect And Ventricular Septal Defect, With Direct Or Patch Closure |
| 33660 | Repair Of Incomplete Or Partial Atrioventricular Canal (Ostium Primum Atrial Septal Defect), With Or Without Atrioventricular Valve Repair |
| 33665 | Repair Of Intermediate Or Transitional Atrioventricular Canal, With Or Without Atrioventricular Valve Repair |
| 33670 | Repair Of Complete Atrioventricular Canal, With Or Without Prosthetic Valve |
| 33681 | Closure Of Ventricular Septal Defect, With Or Without Patch |
| 33684 | Closure Of Ventricular Septal Defect, With Or Without Patch With Pulmonary Valvotomy Or Infundibular Resection (Acyanotic) |
| 33688 | Closure Of Ventricular Septal Defect, With Or Without Patch With Removal Of Pulmonary Artery Band, With Or Without Gusset |
| 33690 | Banding Of Pulmonary Artery |
| 33692 | Complete Repair Tetralogy Of Fallot Without Pulmonary Atresia; |
| 33694 | Complete Repair Tetralogy Of Fallot Without Pulmonary Atresia; With Transannular Patch |
| 33697 | Complete Repair Tetralogy Of Fallot With Pulmonary Atresia Including Construction Of Conduit From Right Ventricle To Pulmonary Artery And Closureof Ventricular Septal Defect; |
| 33702 | Repair Sinus Of Valsalva Fistula, With Cardiopulmonary Bypass; |
| 33710 | Repair Sinus Of Valsalva Fistula, With Cardiopulmonary Bypass; With Repair Of Ventricular Septal Defect |
| 33720 | Repair Sinus Of Valsalva Aneurysm, With Cardiopulmonary Bypass |
| 33722 | Closure Of Aortico-Left Ventricular Tunnel |
| 33730 | Complete Repair Of Anomalous Venous Return (Supracardiac, Intracardiac, Or Infracardiac Types) |
| 33732 | Repair Of Cor Triatriatum Or Supravalvular Mitral Ring By Resection Of Left Atrial Membrane |
| 33735 | Atrial Septectomy Or Septostomy; Closed Heart (Blalock-Hanlon Type Operation) |
| 33736 | Atrial Septectomy Or Septostomy; Open Heart With Cardiopulmonary Bypass |
| 33737 | Atrial Septectomy Or Septostomy; Open Heart, With Inflow Occlusion |
| 33750 | Shunt; Subclavian To Pulmonary Artery (Blalock-Taussig Type Operation) |
| 33755 | Shunt; Ascending Aorta To Pulmonary Artery (Waterston Type Operation) |
| 33762 | Shunt; Descending Aorta To Pulmonary Artery (Potts-Smith Type Operation) |
| 33764 | Shunt; Central, With Prosthetic Graft |
| 33766 | Shunt; Superior Vena Cava To Pulmonary Artery For Flow To One Lung (Classical Glenn Procedure) |
| 33767 | Shunt; Superior Vena Cava To Pulmonary Artery For Flow To Both Lungs (Bidirectional Glenn Procedure) |
| 33770 | Repair Of Transposition Of The Great Arteries With Ventricular Septal Defect And Subpulmonary Stenosis; Without Surgical Enlargement Of Ventricular Septal Defect |
| 33771 | Repair Of Transposition Of The Great Arteries With Ventricular Septal Defect And Subpulmonary Stenosis; With Surgical Enlargement Of Ventricular Septal Defect |
| 33774 | Repair Of Transposition Of The Great Arteries, Atrial Baffle Procedure (Eg, Mustard Or Senning Type) With Cardiopulmonary Bypass; |
| 33775 | Repair Of Transposition Of The Great Arteries, Atrial Baffle Procedure (Eg, Mustard Or Senning Type) With Cardiopulmonary Bypass; With Removalofpulmonary Band |
| 33776 | Repair Of Transposition Of The Great Arteries, Atrial Baffle Procedure (Eg, Mustard Or Senning Type) With Cardiopulmonary Bypass; With Closureofventricular Septal Defect |
| 33777 | Repair Of Transposition Of The Great Arteries, Atrial Baffle Procedure (Eg, Mustard Or Senning Type) With Cardiopulmonary Bypass; With Repair Of Subpulmonic Obstruction |
| 33778 | Repair Of Transposition Of The Great Arteries, Aortic Pulmonary Artery Reconstruction (Eg, Jatene Type) |
| 33779 | Repair Of Transposition Of The Great Arteries, Aortic Pulmonary Artery Reconstruction (Eg, Jatene Type); With Removal Of Pulmonary Band |
| 33780 | Repair Of Transposition Of The Great Arteries, Aortic Pulmonary Artery Reconstruction (Eg, Jatene Type); With Closure Of Ventricular Septal Defect |
| 33781 | Repair Of Transposition Of The Great Arteries, Aortic Pulmonary Artery Reconstruction (Eg, Jatene Type); With Repair Of Subpulmonic Obstruction |
| 33786 | Total Repair, Truncus Arteriosus (Rastelli Type Operation) |
| 33788 | Reimplantation Of An Anomalous Pulmonary Artery |
| 33802 | Division Of Aberrant Vessel (Vascular Ring); |
| 33803 | Division Of Aberrant Vessel (Vascular Ring); With Reanastomosis |
| 33813 | Obliteration Of Aortopulmonary Septal Defect; Without Cardiopulmonary Bypass |
| 33814 | Obliteration Of Aortopulmonary Septal Defect; With Cardiopulmonary Bypass |
| 33820 | Repair Of Patent Ductus Arteriosus; By Ligation |
| 33822 | Repair Of Patent Ductus Arteriosus; By Division, Under 18 Years |
| 33824 | Repair Of Patent Ductus Arteriosus; By Division, 18 Years And Older |
| 33840 | Excision Of Coarctation Of Aorta, With Or Without Associated Patent Ductus Arteriosus; With Direct Anastomosis |
| 33845 | Excision Of Coarctation Of Aorta, With Or Without Associated Patent Ductus Arteriosus; With Graft |
| 33851 | Excision Of Coarctation Of Aorta, With Or Without Associated Patent Ductus Arteriosus; Repair Using Either Left Subclavian Artery Or Prostheticmaterial As Gusset For Enlargement |
| 33852 | Repair Of Hypoplastic Or Interrupted Aortic Arch Using Autogenous Or Prosthetic Material; Without Cardiopulmonary Bypass |
| 33853 | Repair Of Hypoplastic Or Interrupted Aortic Arch Using Autogenous Or Prosthetic Material; With Cardiopulmonary Bypass |
| 33860 | Ascending Aorta Graft, With Cardiopulmonary Bypass, With Or Without Valve Suspension; |
| 33861 | Ascending Aorta Graft, With Cardiopulmonary Bypass, With Or Without Valve Suspension; With Coronary Reconstruction |
| 33863 | Ascending Aorta Graft, With Cardiopulmonary Bypass, With Or Without Valve Suspension; With Aortic Root Replacement Using Composite Prosthesis Andcoronary Reconstruction |
| 33870 | Transverse Arch Graft, With Cardiopulmonary Bypass |
| 33875 | Descending Thoracic Aorta Graft, With Or Without Bypass |
| 33877 | Repair Of Thoracoabdominal Aortic Aneurysm With Graft, With Or Without Cardiopulmonary Bypass |
| 33917 | Repair Of Pulmonary Artery Stenosis By Reconstruction With Patch Or Graft |
| 33918 | Repair Of Pulmonary Atresia With Ventricular Septal Defect, By Unifocalization Of Pulmonary Arteries; Without Cardiopulmonary Bypass |
| 33919 | Repair Of Pulmonary Atresia With Ventricular Septal Defect, By Unifocalization Of Pulmonary Arteries; With Cardiopulmonary Bypass |
| 33920 | Repair Of Pulmonary Atresia With Ventricular Septal Defect, By Construction Or Replacement Of Conduit From Right Or Left Ventricle To Pulmonaryartery |
| 33922 | Transection Of Pulmonary Artery With Cardiopulmonary Bypass |
| 33924 | Ligation And Takedown Of A Systemic-To-Pulmonary Artery Shunt, Performed In Conjunction With A Congenital Heart Procedure (List Separately In Addition To Code For Primary Procedure) |
| 33925 | Repair Of Pulmonary Artery Arborization Anomalies By Unifocalization; Without Cardiopulmonary Bypass. |
| 33926 | Repair Of Pulmonary Artery Arborization Anomalies By Unifocalization; With Cardiopulmonary Bypass. |
| 33930 | Donor Cardiectomy-Pneumonectomy, With Preparation And Maintenance Of Allograft |
| 33935 | Heart-Lung Transplant With Recipient Cardiectomy-Pneumonectomy |
| 33940 | Donor Cardiectomy, With Preparation And Maintenance Of Allograft |
| 33945 | Heart Transplant, With Or Without Recipient Cardiectomy |
| 33960 | Prolonged Extracorporeal Circulation For Cardiopulmonary Insufficiency; Initial 24 Hours |
| 33961 | Prolonged Extracorporeal Circulation For Cardiopulmonary Insufficiency; Each Additional 24 Hours (List Separately In Addition To Code For Primaryprocedure) |
| 33967 | Insertion Of Intra-Aortic Balloon Assist Device, Percutaneous |
| 33968 | Removal Of Intra-Aortic Balloon Assist Device, Percutaneous |
| 33970 | Insertion Of Intra-Aortic Balloon Assist Device Through The Femoral Artery, Open Approach |
| 33971 | Removal Of Intra-Aortic Balloon Assist Device Including Repair Of Femoral Artery, With Or Without Graft |
| 33973 | Insertion Of Intra-Aortic Balloon Assist Device Through The Ascending Aorta |
| 33974 | Removal Of Intra-Aortic Balloon Assist Device From The Ascending Aorta, Including Repair Of The Ascending Aorta, With Or Without Graft |
| 33975 | Insertion Of Ventricular Assist Device; Extracorporeal, Single Ventricle |
| 33976 | Insertion Of Ventricular Assist Device; Extracorporeal, Biventricular |
| 33977 | Removal Of Ventricular Assist Device; Extracorporeal, Single Ventricle |
| 33978 | Removal Of Ventricular Assist Device; Extracorporeal, Biventricular |
| 33979 | Insertion Of Ventricular Assist Device, Implantable Intracorporeal, Single Ventricle |
| 33980 | Removal Of Ventricular Assist Device, Implantable Intracorporeal, Single Ventricle |
| 33999 | Unlisted Procedure, Cardiac Surgery |
| 34830 | Open Repair Of Infrarenal Aortic Aneurysm Or Dissection, Plus Repair Of Associated Arterial Trauma, Following Unsuccessful Endovascular Repair;Tube Prosthesis |
| 34831 | Open Repair Of Infrarenal Aortic Aneurysm Or Dissection, Plus Repair Of Associated Arterial Trauma, Following Unsuccessful Endovascular Repair;Aorto-Bi-Iliac Prosthesis |
| 34832 | Open Repair Of Infrarenal Aortic Aneurysm Or Dissection, Plus Repair Of Associated Arterial Trauma, Following Unsuccessful Endovascular Repair;Aorto-Bifemoral Prosthesis |
| 35081 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Aneurysm, Pseudoaneurysm, And Associated Occlusive Disease, Abdominal Aorta |
| 35082 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Ruptured Aneurysm, Abdominal Aorta |
| 35091 | Direct Repair, Aneurysm, Pseudoaneurysm/Excision&Graft Insertion, With/Without Patch Graft; For Aneurysm, Pseudoaneurysm,&Associated Occlusivedisease, Abdominal Aorta Involving Visceral Vessels |
| 35092 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Ruptured Aneurysm, Abdominal Aortainvolving Visceral Vessels |
| 35102 | Direct Repair, Aneurysm, Pseudoaneurysm, Or Excision&Graft Insertion, With Or Without Patch Graft; For Aneurysm, Pseudoaneurysm,&Associated Occlusive Disease, Abdominal Aorta Involving Iliac Vessels |
| 35103 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Ruptured Aneurysm, Abdominal Aortainvolving Iliac Vessels |
| 35182 | Repair, Congenital Arteriovenous Fistula; Thorax And Abdomen |
| 36013 | Introduction Of Catheter, Right Heart Or Main Pulmonary Artery |
| 36822 | Insertion Of Cannula(S) For Prolonged Extracorporeal Circulation For Cardiopulmonary Insufficiency (Ecmo) (Separate Procedure) |
| 37200 | Transcatheter Biopsy |
| 75756 | Angiography, Internal Mammary, Radiological Supervision And Interpretation |
| 92950 | Cardiopulmonary Resuscitation (Eg, In Cardiac Arrest) |
| 92953 | Temporary Transcutaneous Pacing |
| 92960 | Cardioversion, Elective, Electrical Conversion Of Arrhythmia; External |
| 92961 | Cardioversion, Elective, Electrical Conversion Of Arrhythmia; Internal (Separate Procedure) |
| 92970 | Cardioassist-Method Of Circulatory Assist; Internal |
| 92971 | Cardioassist-Method Of Circulatory Assist; External |
| 92973 | Percutaneous Transluminal Coronary Thrombectomy (List Separately In Addition To Code For Primary Procedure) |
| 92980 | Transcatheter Placement Of An Intracoronary Stent(S), Percutaneous, With Or Without Other Therapeutic Intervention, Any Method; Single Vessel |
| 92981 | Transcatheter Placement Of An Intracoronary Stent(S), Percutaneous, With Or Without Other Therapeutic Intervention, Any Method; Each Additionalvessel (List Separately In Add To Code For Primary) |
| 92982 | Percutaneous Transluminal Coronary Balloon Angioplasty; Single Vessel |
| 92984 | Percutaneous Transluminal Coronary Balloon Angioplasty; Each Additional Vessel (List Separately In Addition To Code For Primary Procedure) |
| 92986 | Percutaneous Balloon Valvuloplasty; Aortic Valve |
| 92987 | Percutaneous Balloon Valvuloplasty; Mitral Valve |
| 92990 | Percutaneous Balloon Valvuloplasty; Pulmonary Valve |
| 92992 | Atrial Septectomy Or Septostomy; Transvenous Method, Balloon (Eg, Rashkind Type) (Includes Cardiac Catheterization) |
| 92993 | Atrial Septectomy Or Septostomy; Blade Method (Park Septostomy) (Includes Cardiac Catheterization) |
| 92995 | Percutaneous Transluminal Coronary Atherectomy, By Mechanical Or Other Method, With Or Without Balloon Angioplasty; Single Vessel |
| 92996 | Percutaneous Transluminal Coronary Atherectomy, By Mechanical Or Other Method, With Or Without Balloon Angioplasty; Each Additional Vessel (List Separately In Addition To Code For Primary Procedure) |
| 93024 | Ergonovine Provocation Test |
| 93501 | Right Heart Catheterization |
| 93505 | Endomyocardial Biopsy |
| 93508 | Catheter Placement In Coronary Artery(S), Arterial Coronary Conduit(S), And/Or Venous Coronary Bypass Graft(S) For Coronary Angiography Withoutconcomitant Left Heart Catheterization |
| 93510 | Left Heart Catheterization, Retrograde, From The Brachial Artery, Axillary Artery Or Femoral Artery; Percutaneous |
| 93511 | Left Heart Catheterization, Retrograde, From The Brachial Artery, Axillary Artery Or Femoral Artery; By Cutdown |
| 93514 | Left Heart Catheterization By Left Ventricular Puncture |
| 93524 | Combined Transseptal And Retrograde Left Heart Catheterization |
| 93526 | Combined Right Heart Catheterization And Retrograde Left Heart Catheterization |
| 93527 | Combined Right Heart Catheterization And Transseptal Left Heart Catheterization Through Intact Septum (With Or Without Retrograde Left Heart Catheterization) |
| 93528 | Combined Right Heart Catheterization With Left Ventricular Puncture (With Or Without Retrograde Left Heart Catheterization) |
| 93529 | Combined Right Heart Catheterization And Left Heart Catheterization Through Existing Septal Opening (With Or Without Retrograde Left Heart Catheterization) |
| 93530 | Right Heart Catheterization, For Congenital Cardiac Anomalies |
| 93531 | Combined Right Heart Catheterization And Retrograde Left Heart Catheterization, For Congenital Cardiac Anomalies |
| 93532 | Combined Right Heart Catheterization And Transseptal Left Heart Catheterization Through Intact Septum With Or Without Retrograde Left Heart Catheterization, For Congenital Cardiac Anomalies |
| 93533 | Combined Right Heart Catheterization And Transseptal Left Heart Catheterization Through Existing Septal Opening, With Or Without Retrograde Left Heart Catheterization, For Congenital Cardiac Anomalie |
| 93539 | Injection Procedure During Cardiac Catheterization; For Selective Opacification Of Arterial Conduits (Eg, Internal Mammary), Whether Native Orusedfor Bypass |
| 93540 | Injection Procedure During Cardiac Catheterization; For Selective Opacification Of Aortocoronary Venous Bypass Grafts, One Or More Coronary Arteries |
| 93541 | Injection Procedure During Cardiac Catheterization; For Pulmonary Angiography |
| 93542 | Injection Procedure During Cardiac Catheterization; For Selective Right Ventricular Or Right Atrial Angiography |
| 93543 | Injection Procedure During Cardiac Catheterization; For Selective Left Ventricular Or Left Atrial Angiography |
| 93544 | Injection Procedure During Cardiac Catheterization; For Aortography |
| 93545 | Injection Procedure During Cardiac Catheterization; For Selective Coronary Angiography (Injection Of Radiopaque Material May Be By Hand) |
| 93555 | Imaging Supervision, Interpretation And Report For Injection Procedure(S) During Cardiac Catheterization; Ventricular And/Or Atrial Angiography |
| 93556 | Imaging Supervision, Interpretation And Report For Injection Procedure(S) During Cardiac Cath; Pulmonary Angiography, Aortography, And/Or Selectivecoronary Angiography Inc Venous Bypass Grafts |
| 93561 | Indicator Dilution Studies Such As Dye Or Thermal Dilution, Including Arterial And/Or Venous Catheterization; With Cardiac Output Measurement (Separate Procedure) |
| 93562 | Indicator Dilution Studies Such As Dye Or Thermal Dilution, Including Arterial And/Or Venous Catheterization; Subsequent Measurement Of Cardiacoutput |
| 93571 | Intravascular Doppler Velocity And/Or Pressure Derived Coronary Flow Reserve Measurement (Coronary Vessel Or Graft) During Coronary Angiographyincl Pharmacologically Induced Stress; Initial Vessel |
| 93572 | Intravascular Doppler Velocity And/Or Pressure Derived Coronary Flow Reserve Measurement (Coronary Vessel Or Graft) During Coronary Angiographyincluding Pharmacologically Induced Stress; Ea Add Vess |
| 93580 | Percutaneous Transcatheter Closure Of Congenital Interatrial Communication (Ie, Fontan Fenestration, Atrial Septal Defect) With Implant |
| 93581 | Percutaneous Transcatheter Closure Of A Congenital Ventricular Septal Defect With Implant |
| 93600 | Bundle Of His Recording |
| 93602 | Intra-Atrial Recording |
| 93603 | Right Ventricular Recording |
| 93609 | Intraventricular &/ Intra-Atrial Mapping, Tachycardia Site(S) With Catheter Manipulation To Record,Multiple Sites To Identify Origin, Tachycardia(List Separately Addition To Code, Primary Procedure) |
| 93610 | Intra-Atrial Pacing |
| 93612 | Intraventricular Pacing |
| 93613 | Intracardiac Electrophysiologic 3-Dimensional Mapping (List Separately In Addition To Code For Primary Procedure) |
| 93615 | Esophageal Recording Of Atrial Electrogram With Or Without Ventricular Electrogram(S); |
| 93616 | Esophageal Recording Of Atrial Electrogram With Or Without Ventricular Electrogram(S); With Pacing |
| 93618 | Induction Of Arrhythmia By Electrical Pacing |
| 93619 | Compr Electrophysiologic Eval W Right Atrial Pacing&Rec, Right Ventricular Pacing&Rec, His Bundle Rec, Incl Insertion&Repstn, Multi Electrode Catheters, Wo Induction/Attempted Induction, Arrhythmia |
| 93620 | Compr Electrophysiologic Eval Incl Insertion&Reposition, Multi Electrode Catheters W Induction/Attempted Induction, Arrhythmia; W Right Atrialpacing&Rec, Right Ventricular Pacing&Rec, His Bundle |
| 93621 | Comprehensive Electrophysiologic Eval Includ Insertion & Repos Of Mult Electrode Cath W Induction / Attempt Induction Of Arrhythmia; W Left Atrialpacing & Recording From Coronary Sinus /Left Atri |
| 93622 | Comprehensive Electrophysiologic Eval Including Insertion & Repositioning Of Multiple Electrode Catheters W Induction / Attempted Induction Ofarrhythmia;W Left Ventricular Pacing & Recording |
| 93623 | Programmed Stimulation And Pacing After Intravenous Drug Infusion (List Separately In Addition To Code For Primary Procedure) |
| 93624 | Electrophysiologic Follow-Up Study With Pacing And Recording To Test Effectiveness Of Therapy, Including Induction Or Attempted Induction Of Arrhythmia |
| 93631 | Intra-Operative Epicardial And Endocardial Pacing And Mapping To Localize The Site Of Tachycardia Or Zone Of Slow Conduction For Surgical Correction |
| 93640 | Electrophysiologic Eval,1/2 Chamb Pac Cardiovert-Defibrill Leads Incl Defibrill Thresh Eval (Induct Of Arrhythmia, Eval Of Sensing & Pacing Forarrhythmia Termination) At Time Of Init Implant/Replace |
| 93641 | Electrophysiologic Eval,1/2 Chamb Pac Cardiovert-Defibrill Leads Incl Defibrill Thresh Eval (Induct Of Arrhythmia,Sens & Pac,Term) Time Of Initimplnt/Replace;Test Of 1/2 Ch Pac Cardiov-Def Pulse Gen |
| 93642 | Electrophysiologic Eval, 1/2 Chamb Pac Cardiovert-Defibrill (Incl Defibrill Thresh Eval, Induct Of Arrhythmia, Eval Of Sens & Pacing For Arrhythmia Term, & Program/Reprog Of Sens/Therap Parameters) |
| 93650 | Intracardiac Catheter Ablation Of Atrioventricular Node Function, Atrioventricular Conduction For Creation Of Complete Heart Block, With Or Without Temporary Pacemaker Placement |
| 93651 | Intracardiac Catheter Ablation Of Arrhythmogenic Focus; For Tx Of Supraventricular Tachycardia By Ablation Of Fast/Slow Atrioventricular Pathways,Accessory Connections Or Other Atrial Foci |
| 93652 | Intracardiac Catheter Ablation Of Arrhythmogenic Focus; For Treatment Of Ventricular Tachycardia |
| 93701 | Bioimpedance, Thoracic, Electrical |
| 93736 | Electronic Analysis Of Single Chamber Internal Pacemaker (Rate, Pulse Amplitude & Duration, Configuration Of Wave Form, And/Or Test Of Sensoryfunction Of Pacemaker), Telephonic Analysis |
| 93770 | Determination Of Venous Pressure |
| 0001T | Endovascular Repair Of Infrarenal Abdominal Aortic Aneurysm Or Dissection; Modular Bifurcated Prosthesis (Two Docking Limbs) |
| 0002T | Endovascular Repair Of Infrarenal Abdominal Aortic Aneurysm Or Dissection; Aorto-Uni-Iliac Or Aorto-Unifemoral Prosthesis |
| 0024T | Non-Surgical Septal Reduction Therapy (Eg, Alcohol Ablation), For Hypertrophic Obstructive Cardiomyopathy; With Coronary Arteriograms,With Or Without Temporary Pacemaker |
| 0033T | Endovascular Repair Of Descending Thoracic Aortic Aneurysm, Pseudoaneurysm Or Dissection; Involving Coverage Of Left Subclavian Artery Origin,Initial Endoprosthesis |
| 0034T | Endovascular Repair Of Descending Thoracic Aortic Aneurysm, Pseudoaneurysm Or Dissection; Not Involving Coverage Of Left Subclavian Artery Origin,Initial Endoprosthesis |
| 0035T | Placement Of Proximal Or Distal Extension Prosthesis For Endovascular Repair Of Descending Thoracic Aortic Aneurysm, Pseudoaneurysm Or Dissection;Initial Extension |
| 0036T | Placement Of Proximal/ Distal Extension Prosthesis For Endovascular Repair Of Descending Thoracic Aortic Aneurysm, Pseudoaneurysm /Dissection;Each Additional Extension |
| G0166 | External Counterpulsation, Per Treatment Session |
| G0290 | Transcatheter Placement Of A Drug Eluting Intracoronary Stent(S), Percutaneous, W/ Wo Other Therapeutic Intervention, Any Method; Single V |
| G0291 | Transcatheter Placement Of A Drug Eluting Intracoronary Stent(S), Percutaneous,W/Wo Other Therapeutic Intervention, Any Method; Each Addit |
| S3902 | Ballistocardiogram |
| **Vascular** | ICD-9-CM |  |
| 00.40 | Procedure-One Vessel (Begin 2005) |
| 00.41 | Procedure-Two Vessels (Begin 2005) |
| 00.42 | Procedure-Three Vessels (Begin 2005) |
| 00.43 | Procedure-Four+ Vessels (Begin 2005) |
| 00.44 | Proc-Vessel Bifurcation (Begin 2006) |
| 00.45 | Insert 1 Vascular Stent (Begin 2005) |
| 00.46 | Insert 2 Vascular Stents (Begin 2005) |
| 00.47 | Insert 3 Vascular Stents (Begin 2005) |
| 00.48 | Insert 4+ Vasculr Stents (Begin 2005) |
| 00.55 | Insert Drug-Eluting Noncrnry Artry Stnt (Begin 2002) |
| 00.60 | Ins D-E Stnt Sup Fem Art (Begin 2010) |
| 17.56 | Ather Oth Non-Cor Vessel (Begin 2011) |
| 17.71 | Non-Coronary Ifva (Begin 2010) |
| 38.00 | Incision Of Vessel Nos |
| 38.01 | Intracran Vessel Incis |
| 38.02 | Head/Neck Ves Incis Nec |
| 38.03 | Upper Limb Vessel Incis |
| 38.04 | Incision Of Aorta |
| 38.05 | Thoracic Vessel Inc Nec |
| 38.06 | Abdomen Artery Incision |
| 38.07 | Abdominal Vein Incision |
| 38.08 | Embolectomy Leg Vessel |
| 38.09 | Lower Limb Vein Incision |
| 38.10 | Endarterectomy Nos |
| 38.11 | Endarter Intracranial |
| 38.12 | Head & Neck Endarter Nec |
| 38.13 | Upper Limb Endarterectom |
| 38.14 | Endarterectomy Of Aorta |
| 38.15 | Thoracic Endarterectomy |
| 38.16 | Abdominal Endarterectomy |
| 38.18 | Endarterectomy Leg Vesl |
| 38.21 | Blood Vessel Biopsy |
| 38.22 | Percutaneous Angioscopy (Begin 1986) |
| 38.23 | Intravasclr Spectroscopy (Begin 2008) |
| 38.24 | Intravas Img Cor Ves Oct (Begin 2009) |
| 38.25 | Intravas Img Non-Cor Oct (Begin 2009) |
| 38.26 | Insrt Prsr Snsr W/O Lead (Begin 2011) |
| 38.29 | Blood Vessel Dx Proc Nec |
| 38.30 | Vessel Resect/Anast Nos |
| 38.31 | Intracran Ves Resec-Anas |
| 38.32 | Head/Neck Ves Resec-Anas |
| 38.33 | Arm Vessel Resect/Anast |
| 38.34 | Aorta Resection & Anast |
| 38.35 | Thor Vessel Resect/Anast |
| 38.36 | Abd Vessel Resect/Anast |
| 38.37 | Abd Vein Resect & Anast |
| 38.38 | Leg Artery Resect/Anast |
| 38.39 | Leg Vein Resect/Anastom |
| 38.40 | Vessel Resect/Replac Nos |
| 38.41 | Intracran Ves Resec-Repl |
| 38.42 | Head/Neck Ves Resec-Repl |
| 38.43 | Arm Ves Resect W Replace |
| 38.44 | Resect Abdm Aorta W Repl (Begin 1986) |
| 38.45 | Resect Thorac Ves W Repl (Begin 1986) |
| 38.46 | Abd Artery Resec W Repla |
| 38.47 | Abd Vein Resect W Replac |
| 38.48 | Leg Artery Resec W Repla |
| 38.49 | Leg Vein Resect W Replac |
| 38.50 | Varicose V Lig-Strip Nos |
| 38.51 | Intcran Var V Lig-Strip |
| 38.52 | Head/Neck Var V Lig-Str |
| 38.53 | Arm Varicose V Lig-Strip |
| 38.55 | Thorac Var V Lig-Strip |
| 38.57 | Abd Varicos V Liga-Strip |
| 38.59 | Leg Varicos V Liga-Strip |
| 38.60 | Excision Of Vessel Nos |
| 38.61 | Intracran Vessel Excis |
| 38.62 | Head/Neck Vessel Excis |
| 38.63 | Arm Vessel Excision |
| 38.64 | Excision Of Aorta |
| 38.65 | Thoracic Vessel Excision |
| 38.66 | Abdominal Artery Excis |
| 38.67 | Abdominal Vein Excision |
| 38.68 | Leg Artery Excision |
| 38.69 | Leg Vein Excision |
| 38.70 | Interruption Vena Cava |
| 38.80 | Surg Vessel Occlus Nec |
| 38.81 | Occlus Intracran Ves Nec |
| 38.82 | Occlus Head/Neck Ves Nec |
| 38.83 | Occlude Arm Vessel Nec |
| 38.84 | Occlude Aorta Nec |
| 38.85 | Occlude Thoracic Ves Nec |
| 38.86 | Occlude Abd Artery Nec |
| 38.87 | Occlude Abd Vein Nec |
| 38.88 | Occlude Leg Artery Nec |
| 38.89 | Occlude Leg Vein Nec |
| 38.91 | Arterial Catheterization |
| 38.92 | Umbilical Vein Cath |
| 38.93 | Other Venous Cath (Nec) (Begin 1989) |
| 38.95 | Ven Cath Renal Dialysis (Begin 1989) |
| 38.97 | Cv Cath Plcmt W Guidance (Begin 2010) |
| 39.00 | Systemic-Pulm Art Shunt |
| 39.10 | Intra-Abd Venous Shunt |
| 39.21 | Caval-Pulmon Art Anastom |
| 39.22 | Aorta-Subclv-Carot Bypas |
| 39.23 | Intrathoracic Shunt Nec |
| 39.24 | Aorta-Renal Bypass |
| 39.25 | Aorta-Iliac-Femor Bypass |
| 39.26 | Intra-Abdomin Shunt Nec |
| 39.27 | Dialysis Arteriovenostom |
| 39.28 | Extracran-Intracr Bypass (Begin 1991) |
| 39.29 | Vasc Shunt & Bypass Nec |
| 39.30 | Suture Of Vessel Nos |
| 39.31 | Suture Of Artery |
| 39.32 | Suture Of Vein |
| 39.41 | Postop Vasc Op Hem Contr |
| 39.42 | Revis Ren Dialysis Shunt |
| 39.43 | Remov Ren Dialysis Shunt |
| 39.49 | Vasc Proc Revision Nec |
| 39.50 | Angioplast/Atherect (Begin 1995) |
| 39.51 | Clipping Of Aneurysm |
| 39.52 | Aneurysm Repair Nec |
| 39.53 | Arterioven Fistula Rep |
| 39.54 | Re-Entry Operation |
| 39.55 | Reimplan Aberr Renal Ves |
| 39.56 | Repair Vess W Tis Patch |
| 39.57 | Rep Vess W Synth Patch |
| 39.58 | Repair Vess W Patch Nos |
| 39.59 | Repair Of Vessel Nec |
| 39.70 | Periarter Sympathectomy |
| 39.71 | Endovascular Implant In Abdm Aorta (Begin 2000) |
| 39.72 | Endovas Repair/Occl Head & Neck Vessels (Begin 2002) |
| 39.73 | Endo Imp Grft Thor Aorta (Begin 2005) |
| 39.74 | Endo Rem Obs Hd/Neck Ves (Begin 2006) |
| 39.75 | Endo Emb Hd/Nk |
| 39.76 | Endo Em Hd/Nk |
| 39.77 | Temp Endovsc Occls Vessl (Begin 2011) |
| 39.78 | Endovas Impln Grft Aorta (Begin 2011) |
| 39.79 | Other Endovascular Repair Of Aneurysm (Begin 2000) |
| 39.80 | Vascular Body Operations (End 2010) |
| 39.81 | Imp Crtd Sinus Stmtotl (Begin 2010) |
| 39.82 | Imp/Rep Crtd Sinus Lead (Begin 2010) |
| 39.83 | Imp/Rep Crtd Sinus Gnrtr (Begin 2010) |
| 39.84 | Rev Crtd Sinus Stm Leads (Begin 2010) |
| 39.85 | Rev Crtd Sinus Pulse Gen (Begin 2010) |
| 39.86 | Rem Crtd Sinus Stm Totl (Begin 2010) |
| 39.87 | Rem Crtd Sinus Stm Lead (Begin 2010) |
| 39.88 | Rem Crtd Sinus Pulse Gen (Begin 2010) |
| 39.89 | Oth Cartd Body/Sinus Op (Begin 2010) |
| 39.90 | Insert Noncor Art Stent (Begin 1996) |
| 39.91 | Freeing Of Vessel |
| 39.92 | Vein Inject-Scleros Agnt |
| 39.93 | Insert Ves-To-Ves Cannul |
| 39.94 | Replac Ves-To-Ves Cannul |
| 39.95 | Hemodialysis |
| 39.96 | Total Body Perfusion |
| 39.97 | Other Perfusion |
| 39.98 | Hemorrhage Control Nos |
| 39.99 | Vessel Operation Nec |
| 88.40 | Contrast Arteriogram Nos |
| 88.42 | Contrast Aortogram |
| 88.43 | Contr Pulmon Arteriogram |
| 88.44 | Contr Thor Arteriogr Nec |
| 88.45 | Contrast Renal Arteriogr |
| 88.46 | Contrast Placentogram |
| 88.47 | Contr Abd Arteriogrm Nec |
| 88.49 | Contrast Arteriogram Nec |
| 88.50 | Angiocardiography Nos |
| 88.51 | Vena Cav Angiocardiogram |
| 88.58 | Negatve-Contr Cardiogram |
| 88.60 | Contrast Phlebogram Nos |
| 88.61 | Contr Phlebogram-Hd/Neck |
| 88.62 | Contr Phlebogram-Pulmon |
| 88.63 | Thorac Contr Phlebog Nec |
| 88.64 | Portal Contr Phlebogram |
| 88.65 | Abd Contr Phlebogram Nec |
| 88.66 | Contrast Phlebogram-Leg |
| 88.67 | Contrast Phlebogram Nec |
| 88.68 | Impedance Phlebogram |
| CPT |  |
| 33320 | Suture Repair Of Aorta Or Great Vessels; Without Shunt Or Cardiopulmonary Bypass |
| 33321 | Suture Repair Of Aorta Or Great Vessels; With Shunt Bypass |
| 33322 | Suture Repair Of Aorta Or Great Vessels; With Cardiopulmonary Bypass |
| 33508 | Endoscopy, Surgical, Including Video-Assisted Harvest Of Vein(S) For Coronary Artery Bypass Procedure (List Separately In Addition To Code Forprimary Procedure) |
| 33800 | Aortic Suspension (Aortopexy) For Tracheal Decompression (Eg, For Tracheomalacia) (Separate Procedure) |
| 33910 | Pulmonary Artery Embolectomy; With Cardiopulmonary Bypass |
| 33915 | Pulmonary Artery Embolectomy; Without Cardiopulmonary Bypass |
| 33916 | Pulmonary Endarterectomy, With Or Without Embolectomy, With Cardiopulmonary Bypass |
| 34051 | Embolectomy Or Thrombectomy, With Or Without Catheter; Innominate, Subclavian Artery, By Thoracic Incision |
| 34101 | Embolectomy Or Thrombectomy, With Or Without Catheter; Axillary, Brachial, Innominate, Subclavian Artery, By Arm Incision |
| 34111 | Embolectomy Or Thrombectomy, With Or Without Catheter; Radial Or Ulnar Artery, By Arm Incision |
| 34151 | Embolectomy Or Thrombectomy, With Or Without Catheter; Renal, Celiac, Mesentery, Aortoiliac Artery, By Abdominal Incision |
| 34401 | Thrombectomy, Direct Or With Catheter; Vena Cava, Iliac Vein, By Abdominal Incision |
| 34490 | Thrombectomy, Direct Or With Catheter; Axillary And Subclavian Vein, By Arm Incision |
| 34501 | Valvuloplasty, Femoral Vein |
| 34502 | Reconstruction Of Vena Cava, Any Method |
| 34510 | Venous Valve Transposition, Any Vein Donor |
| 34530 | Saphenopopliteal Vein Anastomosis |
| 34800 | Endovascular Repair Of Infrarenal Abdominal Aortic Aneurysm Or Dissection; Using Aorto-Aortic Tube Prosthesis |
| 34802 | Endovascular Repair Of Infrarenal Abdominal Aortic Aneurysm Or Dissection; Using Modular Bifurcated Prosthesis (One Docking Limb) |
| 34804 | Endovascular Repair Of Infrarenal Abdominal Aortic Aneurysm Or Dissection; Using Unibody Bifurcated Prosthesis |
| 34808 | Endovascular Placement Of Iliac Artery Occlusion Device (List Separately In Addition To Code For Primary Procedure) |
| 34812 | Open Femoral Artery Exposure For Delivery Of Endovascular Prosthesis, By Groin Incision, Unilateral |
| 34813 | Placement Of Femoral-Femoral Prosthetic Graft During Endovascular Aortic Aneurysm Repair (List Separately In Addition To Code For Primary Procedure) |
| 34820 | Open Iliac Artery Exposure For Delivery Of Endovascular Prosthesis Or Iliac Occlusion During Endovascular Therapy, By Abdominal Or Retroperitonealincision, Unilateral |
| 34825 | Placement Of Proximal Or Distal Extension Prosthesis For Endovascular Repair Of Infrarenal Abdominal Aortic Or Iliac Aneurysm, False Aneurysm,Ordissection; Initial Vessel |
| 34826 | Placement, Proximal/Distal Exten Prosthesis, Endovascular Repair, Infrarenal Abdominal Aortic/Iliac Aneurysm, False Aneurysm,/Dissection; Ea Addition Vessel (List Separately Addition Cd, 1 Procedu |
| 34833 | Open Iliac Artery Exposure With Creation, Conduit For Delivery, Infrarenal Aortic Or Iliac Endovascular Prosthesis, Abdominal Or Retroperitoneal Incision, Unilateral |
| 34834 | Open Brachial Artery Exposure To Assist In The Deployment Of Infrarenal Aortic Or Iliac Endovascular Prosthesis By Arm Incision, Unilateral |
| 34900 | Endovascular Graft Replacement For Repair Of Iliac Artery (Eg, Aneurysm,Pseudoaneurysm, Arteriovenous Malformation, Trauma) |
| 35011 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Aneurysm And Associated Occlusivedisease, Axillary-Brachial Artery, By Arm Incision |
| 35013 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Ruptured Aneurysm, Axillary-Brachialartery, By Arm Incision |
| 35021 | Direct Repair,Aneurysm,Pseudoaneurysm, Or Excision&Graft Insertion, With/Without Patch Graft;Aneurysm, Pseudoaneurysm&Associated Occlusive Disease, Innominate, Subclavian Artery, Thoracic Incision |
| 35022 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Ruptured Aneurysm, Innominate, Subclavian Artery, By Thoracic Incision |
| 35045 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Aneurysm, Pseudoaneurysm, And Associated Occlusive Disease, Radial Or Ulnar Artery |
| 35111 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Aneurysm, Pseudoaneurysm, And Associated Occlusive Disease, Splenic Artery |
| 35112 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Ruptured Aneurysm, Splenic Artery |
| 35121 | Direct Repair, Aneurysm, Pseudoaneurysm/Excision&Graft Insertion, With/Without Patch Graft; For Aneurysm, Pseudoaneurysm&Associated Occlusive Disease, Hepatic, Celiac, Renal/Mesenteric Artery |
| 35122 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Ruptured Aneurysm, Hepatic, Celiac, Renal, Or Mesenteric Artery |
| 35131 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Aneurysm, Pseudoaneurysm, And Associated Occlusive Disease, Iliac Artery |
| 35132 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Ruptured Aneurysm, Iliac Artery |
| 35141 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Aneurysm, Pseudoaneurysm, And Associated Occlusive Disease, Common Femoral Artery |
| 35142 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Ruptured Aneurysm, Common Femoralartery |
| 35151 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Aneurysm, Pseudoaneurysm, And Associated Occlusive Disease, Popliteal Artery |
| 35152 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Ruptured Aneurysm, Popliteal Artery |
| 35161 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Aneurysm, Pseudoaneurysm, And Associated Occlusive Disease, Other Arteries |
| 35162 | Direct Repair Of Aneurysm, Pseudoaneurysm, Or Excision And Graft Insertion, With Or Without Patch Graft; For Ruptured Aneurysm, Other Arteries |
| 35184 | Repair, Congenital Arteriovenous Fistula; Extremities |
| 35189 | Repair, Acquired Or Traumatic Arteriovenous Fistula; Thorax And Abdomen |
| 35190 | Repair, Acquired Or Traumatic Arteriovenous Fistula; Extremities |
| 35201 | Repair Blood Vessel, Direct; Neck |
| 35206 | Repair Blood Vessel, Direct; Upper Extremity |
| 35207 | Repair Blood Vessel, Direct; Hand, Finger |
| 35211 | Repair Blood Vessel, Direct; Intrathoracic, With Bypass |
| 35216 | Repair Blood Vessel, Direct; Intrathoracic, Without Bypass |
| 35221 | Repair Blood Vessel, Direct; Intra-Abdominal |
| 35226 | Repair Blood Vessel, Direct; Lower Extremity |
| 35236 | Repair Blood Vessel With Vein Graft; Upper Extremity |
| 35241 | Repair Blood Vessel With Vein Graft; Intrathoracic, With Bypass |
| 35246 | Repair Blood Vessel With Vein Graft; Intrathoracic, Without Bypass |
| 35251 | Repair Blood Vessel With Vein Graft; Intra-Abdominal |
| 35256 | Repair Blood Vessel With Vein Graft; Lower Extremity |
| 35266 | Repair Blood Vessel With Graft Other Than Vein; Upper Extremity |
| 35271 | Repair Blood Vessel With Graft Other Than Vein; Intrathoracic, With Bypass |
| 35276 | Repair Blood Vessel With Graft Other Than Vein; Intrathoracic, Without Bypass |
| 35281 | Repair Blood Vessel With Graft Other Than Vein; Intra-Abdominal |
| 35286 | Repair Blood Vessel With Graft Other Than Vein; Lower Extremity |
| 35311 | Thromboendarterectomy, With Or Without Patch Graft; Subclavian, Innominate, By Thoracic Incision |
| 35321 | Thromboendarterectomy, With Or Without Patch Graft; Axillary-Brachial |
| 35331 | Thromboendarterectomy, With Or Without Patch Graft; Abdominal Aorta |
| 35341 | Thromboendarterectomy, With Or Without Patch Graft; Mesenteric, Celiac, Or Renal |
| 35351 | Thromboendarterectomy, With Or Without Patch Graft; Iliac |
| 35400 | Angioscopy (Non-Coronary Vessels Or Grafts) During Therapeutic Intervention (List Separately In Addition To Code For Primary Procedure) |
| 35450 | Transluminal Balloon Angioplasty, Open; Renal Or Other Visceral Artery |
| 35452 | Transluminal Balloon Angioplasty, Open; Aortic |
| 35458 | Transluminal Balloon Angioplasty, Open; Brachiocephalic Trunk Or Branches, Each Vessel |
| 35460 | Transluminal Balloon Angioplasty, Open; Venous |
| 35471 | Transluminal Balloon Angioplasty, Percutaneous; Renal Or Visceral Artery |
| 35472 | Transluminal Balloon Angioplasty, Percutaneous; Aortic |
| 35475 | Transluminal Balloon Angioplasty, Percutaneous; Brachiocephalic Trunk Or Branches, Each Vessel |
| 35476 | Transluminal Balloon Angioplasty, Percutaneous; Venous |
| 35480 | Transluminal Peripheral Atherectomy, Open; Renal Or Other Visceral Artery |
| 35481 | Transluminal Peripheral Atherectomy, Open; Aortic |
| 35484 | Transluminal Peripheral Atherectomy, Open; Brachiocephalic Trunk Or Branches, Each Vessel |
| 35490 | Transluminal Peripheral Atherectomy, Percutaneous; Renal Or Other Visceral Artery |
| 35491 | Transluminal Peripheral Atherectomy, Percutaneous; Aortic |
| 35494 | Transluminal Peripheral Atherectomy, Percutaneous; Brachiocephalic Trunk Or Branches, Each Vessel |
| 35500 | Harvest Of Upper Extremity Vein, One Segment, For Lower Extremity Or Coronary Artery Bypass Procedure (List Separately In Addition To Code Forprimary Procedure) |
| 35572 | Harvest Of Femoropopliteal Vein, One Segment, For Vascular Reconstruction Procedure (Eg, Aortic, Vena Caval, Coronary, Peripheral Artery) (Listseparately In Addition To Code For Primary Procedure) |
| 35681 | Bypass Graft; Composite, Prosthetic And Vein (List Separately In Addition To Code For Primary Procedure) |
| 35682 | Bypass Graft; Autogenous Composite, Two Segments Of Veins From Two Locations (List Separately In Addition To Code For Primary Procedure) |
| 35683 | Bypass Graft; Autogenous Composite, Three Or More Segments Of Vein From Two Or More Locations (List Separately In Addition To Code For Primaryprocedure) |
| 35721 | Exploration (Not Followed By Surgical Repair), With Or Without Lysis Of Artery; Femoral Artery |
| 35741 | Exploration (Not Followed By Surgical Repair), With Or Without Lysis Of Artery; Popliteal Artery |
| 35761 | Exploration (Not Followed By Surgical Repair), With Or Without Lysis Of Artery; Other Vessels |
| 35820 | Exploration For Postoperative Hemorrhage, Thrombosis Or Infection; Chest |
| 35840 | Exploration For Postoperative Hemorrhage, Thrombosis Or Infection; Abdomen |
| 35860 | Exploration For Postoperative Hemorrhage, Thrombosis Or Infection; Extremity |
| 35870 | Repair Of Graft-Enteric Fistula |
| 35875 | Thrombectomy Of Arterial Or Venous Graft (Other Than Hemodialysis Graft Or Fistula) |
| 35876 | Thrombectomy Of Arterial Or Venous Graft; With Revision Of Arterial Or Venous Graft |
| 35879 | Revision, Lower Extremity Arterial Bypass, Without Thrombectomy, Open; With Vein Patch Angioplasty |
| 35881 | Revision, Lower Extremity Arterial Bypass, Without Thrombectomy, Open; With Segmental Vein Interposition |
| 35905 | Excision Of Infected Graft; Thorax |
| 35907 | Excision Of Infected Graft; Abdomen |
| 36002 | Injection Procedures (Eg, Thrombin) For Percutaneous Treatment Of Extremity Pseudoaneurysm |
| 36005 | Injection Procedure For Extremity Venography |
| 36260 | Insertion Of Implantable Intra-Arterial Infusion Pump (Eg, For Chemotherapy Of Liver) |
| 36261 | Revision Of Implanted Intra-Arterial Infusion Pump |
| 36262 | Removal Of Implanted Intra-Arterial Infusion Pump |
| 36468 | Single Or Multiple Injections Of Sclerosing Solutions, Spider Veins (Telangiectasia); Limb Or Trunk |
| 36469 | Single Or Multiple Injections Of Sclerosing Solutions, Spider Veins (Telangiectasia); Face |
| 36470 | Injection Of Sclerosing Solution; Single Vein |
| 36471 | Injection Of Sclerosing Solution; Multiple Veins, Same Leg |
| 36831 | Thrombectomy, Open, Arteriovenous Fistula Without Revision, Autogenous Or Nonautogenous Dialysis Graft (Separate Procedure) |
| 36860 | External Cannula Declotting (Separate Procedure); Without Balloon Catheter |
| 36861 | Cannula Declotting (Separate Procedure); With Balloon Catheter |
| 36870 | Thrombectomy, Percutaneous, Arteriovenous Fistula, Autogenous Or Nonautogenous Graft (Includes Mechanical Thrombus Extraction And Intra-Graft Thrombolysis) |
| 37204 | Transcatheter Occlusion Or Embolization (Eg, For Tumor Destruction, To Achieve Hemostasis, To Occlude A Vascular Malformation), Percutaneous, Anymethod, Non-Central Nervous System, Non-Head Or Neck |
| 37205 | Transcatheter Placement Of An Intravascular Stent(S), (Non-Coronary Vessel), Percutaneous; Initial Vessel |
| 37206 | Transcatheter Placement Of An Intravascular Stent(S), (Non-Coronary Vessel), Percutaneous; Each Additional Vessel (List Separately In Additiontocode For Primary Procedure) |
| 37207 | Transcatheter Placement Of An Intravascular Stent(S), (Non-Coronary Vessel), Open; Initial Vessel |
| 37208 | Transcatheter Placement Of An Intravascular Stent(S), (Non-Coronary Vessel), Open; Each Additional Vessel (List Separately In Addition To Codeforprimary Procedure) |
| 37500 | Vascular Endoscopy, Surgical, With Ligation Of Perforator Veins, Subfascial (Seps) |
| 37501 | Unlisted Vascular Endoscopy Procedure |
| 37607 | Ligation Or Banding Of Angioaccess Arteriovenous Fistula |
| 37616 | Ligation, Major Artery (Eg, Post-Traumatic, Rupture); Chest |
| 37617 | Ligation, Major Artery (Eg, Post-Traumatic, Rupture); Abdomen |
| 37618 | Ligation, Major Artery (Eg, Post-Traumatic, Rupture); Extremity |
| 37620 | Interruption, Partial Or Complete, Of Inferior Vena Cava By Suture, Ligation, Plication, Clip, Extravascular, Intravascular (Umbrella Device) |
| 37650 | Ligation Of Femoral Vein |
| 37660 | Ligation Of Common Iliac Vein |
| 37788 | Penile Revascularization, Artery, With Or Without Vein Graft |
| 37790 | Penile Venous Occlusive Procedure |
| 37799 | Unlisted Procedure, Vascular Surgery |
| 50100 | Transection Or Repositioning Of Aberrant Renal Vessels (Separate Procedure) |
| 75605 | Aortography, Thoracic, By Serialography, Radiological Supervision And Interpretation |
| 75625 | Aortography, Abdominal, By Serialography, Radiological Supervision And Interpretation |
| 75630 | Aortography, Abdominal Plus Bilateral Iliofemoral Lower Extremity, Catheter, By Serialography, Radiological Supervision And Interpretation |
| 75635 | Computd Tomograph Angiography,Abdomin Aorta & Bilatrl Iliofemoral Low Extremity Runoff,Radlgicl Suprvsn & Intr Pretatn, Wo Contrast Material,Fllowcontrst Mtrial & Furthr Sect,Incl Imge Post-Process |
| 75741 | Angiography, Pulmonary, Unilateral, Selective, Radiological Supervision And Interpretation |
| 75743 | Angiography, Pulmonary, Bilateral, Selective, Radiological Supervision And Interpretation |
| 75746 | Angiography, Pulmonary, By Nonselective Catheter Or Venous Injection, Radiological Supervision And Interpretation |
| 75825 | Venography, Caval, Inferior, With Serialography, Radiological Supervision And Interpretation |
| 75827 | Venography, Caval, Superior, With Serialography, Radiological Supervision And Interpretation |
| 93922 | Noninvasive Physiologic Studies Of Upper/Lower Extremity Arteries, Single Level, Bilateral (Eg, Ankle/Brachial Indices, Doppler Waveform, Volume Plethysmography, Transcutaneous Oxygen Measurement) |
| 93923 | Noninvasive Physiologic Studies Of Upper/Lower Extremity Arteries, Mult Level Or W/ Provocative Functional Maneuvers, Complete Bilateral Study(Segmental Pressure, Doppler Waveform, Plethysmography) |
| 93924 | Noninvasive Physiologic Studies Of Lower Extremity Arteries, At Rest And Following Treadmill Stress Testing, Complete Bilateral Study |
| G0269 | Placement Of Occlusive Device Into Either A Venous Or Arterial Access Site, Post Surgical Or Interventional Procedure (E.G. Angioseal Plug |
| G0288 | Reconstruction, Computed Tomographic Angiography Of Aorta For Surgical Planning For Vascular Surgery |
| M0301 | Fabric Wrapping Of Abdominal Aneurysm (Mnp) |
| S2130 | Endoluminal Radiofrequency Ablation Of Refluxing Saphenous Vein |

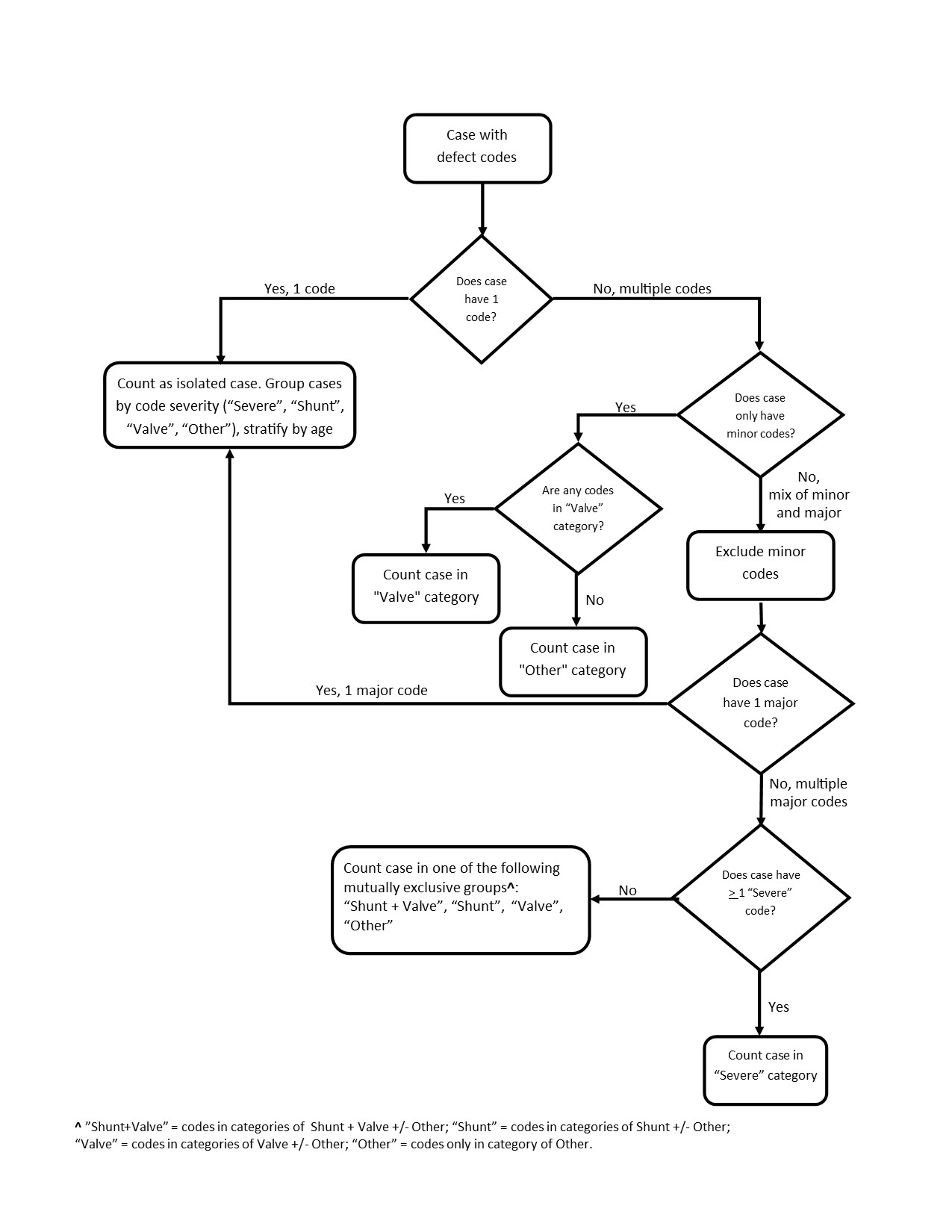
**eTable 4.** Top 5 ICD9-CM diagnosis codes for CHD severity groups

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Severity Group** | **Emory** | | **Massachusetts** | | **New York** | |
| **ICD-9 Dx Code** | **Code Description** | **ICD-9 Dx Code** | **Code Description** | **ICD-9 Dx Code** | **Code Description** |
| **Severe** | 745.2 | Tetralogy of Fallot | 745.2 | Tetralogy of Fallot | 745.2 | Tetralogy of Fallot |
| 746.01 | Pulmonary valve atresia or absence | 746.7 | Hypoplastic left heart syndrome (HLHS) | 745.69 | Endocardial Cushion Defect, other |
| 745.69 | Endocardial Cushion Defect, other | 745.69 | Endocardial Cushion Defect, other | 745.10 | Complete transposition of great arteries |
| 745.10 | Complete transposition of great arteries | 745.3 | Single Ventricle, or cor triculare | 745.11 | Double outlet right ventricle |
| 745.11 | Double outlet right ventricle | 745.60 | Endocardial Cushion Defect, unspecified | 745.3 | Single Ventricle, or cor triculare |
| **Shunt (not including isolated 745.5)** | 745.4 | Ventricular septal defect (VSD) | 745.5 | Ostium secundum atrial septal defect (ASD2) or Patent foramen ovale (PFO) | 745.4 | Ventricular septal defect (VSD) |
| 745.5 | Ostium secundum atrial septal defect (ASD2) or Patent foramen ovale (PFO) | 747.0 | Patent ductus arteriosus (PDA) | 745.5 | Ostium secundum atrial septal defect (ASD2) or Patent foramen ovale (PFO) |
| 747 | Patent ductus arteriosus (PDA) | 745.4 | Ventricular septal defect (VSD) | 747.10 | Coarctation of aorta (preductal) (postductal) |
| 747.1 | Coarctation of aorta | 747.10 | Coarctation of aorta | 747.0 | Patent ductus arteriosus (PDA) |
| 745.8 | Other specified defect of septal closure | 745.9 | Other specified defect of septal closure | 745.8 | Other specified defect of septal closure |
| **Valve** | 746.4 | Aortic insufficiency or bicuspid aortic valve | 746.6 | Mitral Insufficiency | 746.4 | Aortic insufficiency or bicuspid aortic valve |
| 746.02 | Pulmonary valve stenosis | 746.4 | Aortic insufficiency or bicuspid aortic valve | 746.02 | Pulmonary valve stenosis |
| 746.3 | Aortic valve stenosis | 746.02 | Pulmonary valve stenosis | 746.6 | Mitral Insufficiency |
| 747.31 | Pulmonary artery atresia, coarctation, or hypoplasia | 746.3 | Aortic valve stenosis | 746.3 | Aortic valve stenosis |
| 746.6 | Mitral Insufficiency | 747.3 | Anomalies of pulmonary artery | 747.3 | Anomalies of pulmonary artery |
| **Other** | 746.9 | Unspecified defect of heart | 747.21 | Congenital anomalies of aortic arch | 746.89 | Other specified anomaly of heart |
| 746.81 | Subaortic stenosis | 746.9 | Unspecified defect of heart | 746.9 | Unspecified defect of heart |
| 747.29 | Other anomaly of aorta | 747.49 | Other anomalies of great veins | 746.81 | Subaortic stenosis |
| 746.85 | Coronary artery anomaly | 746.89 | Other specified anomaly of heart | 747.29 | Other anomaly of aorta |
| 746.87 | Malposition of heart or apex | 747.29 | Other anomaly of aorta | 746.85 | Coronary artery anomaly |

**eTable 5.** Comorbidities in adolescents with CHDs by CHD severity (excluding isolated 745.5)

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CDC Comorbidity Category** | **Emory** | | | **Massachusetts** | | | **New York** | | | | |
| **Severe (Total=567)** | **Non-severe CHD (Total=1216)** | **P-Value** | **Severe (Total=2400)** | **Non-severe CHD (Total=10438)** | **P-Value** | **Severe (Total=527)** | | **Non-severe CHD (Total=1745)** | | **P-Value** |
| **N (%)** | **N (%)** | **N (%)** | **N (%)** | **N (%)** | | **N (%)** | |
| Cardiac |  |  |  |  |  |  |  | |  | |  |
| Conduction and Rhythm Disorders | 173 (30.5) | 175 (14.4) | <.001 | 1373 (57.2) | 4576 (43.8) | <.001 | 80 (15.2) | | 113 (6.5) | | <.001 |
| Coronary Artery Disease | 5 (0.9) | 7 (0.6) | 0.54\* | 263 (11.0) | 573 (5.5) | <.001 | 11 (2.1) | | 9 (0.5) | | 0.002\* |
| Heart Failure | 31 (5.5) | 20 (1.6) | <.001 | 515 (21.5) | 1362 (13.1) | <.001 | 15 (2.8) | | 18 (1.0) | | 0.002 |
| Hyperlipidemia | 3 (0.5) | 11 (0.9) | 0.57\* | 337 (14.0) | 1044 (10.0) | <.001 | 1 (0.2) | | 8 (0.5) | | 0.69\* |
| Hypertension | 18 (3.2) | 55 (4.5) | 0.18 | 571 (23.8) | 1678 (16.1) | <.001 | 18 (3.4) | | 48 (2.8) | | 0.43 |
| Other Cardiovascular | 418 (73.7) | 558 (45.9) | <.001 | 1822 (75.9) | 7023 (67.3) | <.001 | 206 (39.1) | | 412 (23.6) | | <.001 |
| Venous Disorder/Phlebitis | 6 (1.1) | 8 (0.7) | 0.40\* | 129 (5.4) | 285 (2.7) | <.001 | 6 (1.1) | | 12 (0.7) | | 0.40\* |
| Non-Cardiac |  |  |  |  |  |  |  | |  | |  |
| Birth Defects (Non-CHD) | 99 (17.5) | 113 (9.3) | <.001 | 741 (30.9) | 2215 (21.2) | <.001 | 146 (27.7) | | 178 (10.2) | | <.001 |
| Diabetes Mellitus | 14 (2.5) | 14 (1.2) | 0.037 | 335 (14.0) | 1364 (13.1) | 0.25 | 7 (1.3) | | 22 (1.3) | | 0.90 |
| Gastrointestinal | 76 (13.4) | 106 (8.7) | 0.002 | 826 (34.4) | 2782 (26.7) | <.001 | 86 (16.3) | | 214 (12.3) | | 0.016 |
| GU/GYN | 43 (7.6) | 96 (7.9) | 0.82 | 600 (25.0) | 2448 (23.5) | 0.11 | 32 (6.1) | | 137 (7.9) | | 0.17 |
| Hematologic | 30 (5.3) | 68 (5.6) | 0.80 | 313 (13.0) | 1328 (12.7) | 0.67 | 24 (4.6) | | 51 (2.9) | | 0.066 |
| Immunologic/Rheumatologic | 13 (2.3) | 15 (1.2) | 0.094 | 121 (5.0) | 285 (2.7) | <.001 | 15 (2.8) | | 8 (0.5) | | <.001 |
| Infectious Disease | 111 (19.6) | 191 (15.7) | 0.043 | 614 (25.6) | 2145 (20.6) | <.001 | 138 (26.2) | | 321 (18.4) | | <.001 |
| Injury/Trauma | 49 (8.6) | 110 (9.1) | 0.78 | 484 (20.2) | 1819 (17.4) | 0.002 | 103 (19.5) | | 404 (23.2) | | 0.081 |
| Mental Health | 52 (9.2) | 104 (8.6) | 0.67 | 889 (37.0) | 2971 (28.5) | <.001 | 64 (12.1) | | 187 (10.7) | | 0.36 |
| Musculoskeletal | 58 (10.2) | 117 (9.6) | 0.69 | 862 (35.9) | 3298 (31.6) | <.001 | 53 (10.1) | | 204 (11.7) | | 0.30 |
| Neoplasms | 14 (2.5) | 28 (2.3) | 0.83 | 339 (14.1) | 1332 (12.8) | 0.073 | 6 (1.1) | | 41 (2.3) | | 0.087 |
| Neurologic/CNS | 28 (4.9) | 49 (4.0) | 0.38 | 360 (15.0) | 1300 (12.5) | 0.001 | 22 (4.2) | | 56 (3.2) | | 0.29 |
| Other Endocrine | 6 (1.1) | 18 (1.5) | 0.47 | 273 (11.4) | 991 (9.5) | 0.005 | 21 (4.0) | | 24 (1.4) | | <.001 |
| Renal | 8 (1.4) | 19 (1.6) | 0.81 | 173 (7.2) | 579 (5.6) | 0.002 | 12 (2.3) | | 12 (0.7) | | 0.002 |
| Respiratory/Pulmonary | 156 (27.5) | 232 (19.1) | <.001 | 1008 (42.0) | 3366 (32.3) | <.001 | 115 (21.8) | | 258 (14.8) | | <.001 |
| \*Fisher's exact test was used for cells with small values | | |  |  |  |  |  |  | |  | | |  |  |  |

**eFigure 1.** Case classification algorithm\*



\*Minor codes were only utilized in case classification if they occurred in isolation.