

Cardiovascular Systems



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Objectives

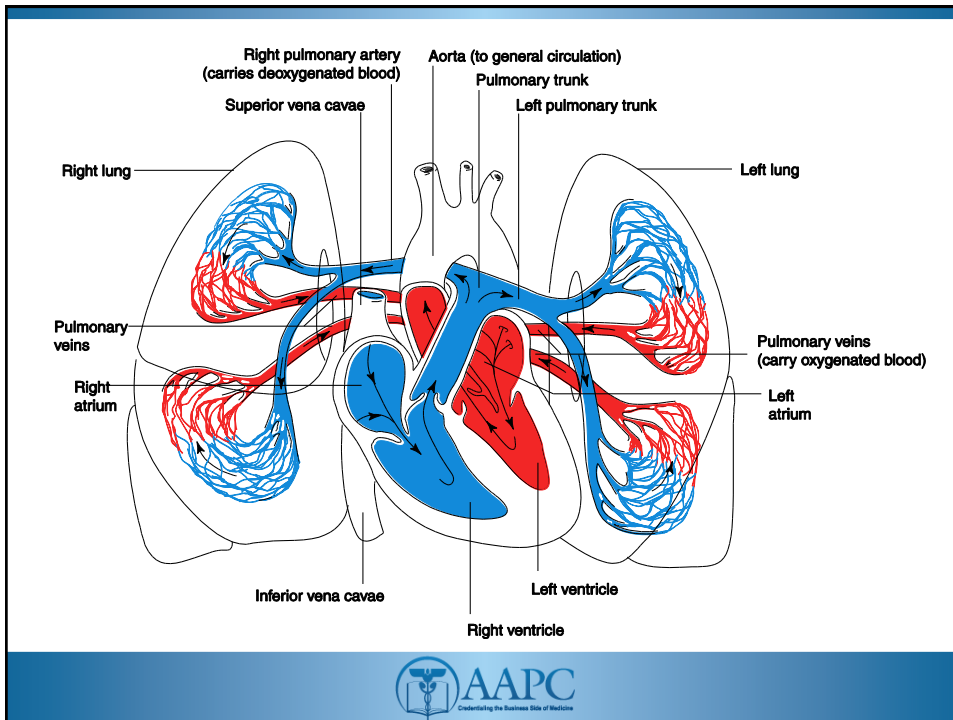
- Master anatomical concepts necessary to understand the cardiovascular system
- Define key terms, and recognize common eponyms and acronyms
- Explain the most common pathologies that effect this system
- Understand cardiovascular procedures and surgeries, and where in CPT® to locate the relevant codes
- Introduce ICD-9-CM and HCPCS Level II codes and coding guidelines as they apply to this system
- Supply examples and review material to improve your application of the above concepts



Circulatory Systems

- Systemic Circulatory System
 - Blood Vessels
 - Arteries
 - Veins
- Pulmonary System
- Coronary System
- Portal System
- Lymphatic System





Anatomy

- Arteries
 - Carry oxygenated blood
 - Take blood away from heart to the body
- Veins
 - Carry deoxygenated blood
 - Bring blood back to the heart from the capillary beds
- Capillaries
 - Connect arteries and veins

Anatomy

- Anatomy of blood vessels
 - Arteries and veins have walls composed of three layers:
 - Tunica intima – inner single layer of epithelial cells
 - Tunica media – smooth muscle layer
 - Tunica adventitia – white fibrous connective tissue
 - Veins have less elastic and smooth muscle tissue and more fibrous connective tissue
 - Veins capable of distention to adapt to changes in blood pressure and blood volume



Anatomy

- Lymphatic System
 - Lymph – fluid collected
 - Lymph nodes – small collections of lymphatic tissue through which lymph fluid is filtered
 - Lymphocytes – cells of the immune system
 - Right lymphatic duct drains into right subclavian vein
 - Thoracic duct drains into left subclavian vein
 - Both subclavian veins empty into the inferior vena cava



Electrical Conduction in the Heart

- Conduction begins in sinoatrial (SA) node of right atrium
 - Nature's pacemaker
 - Firing causes contraction of muscle
- Moves to atrioventricular (AV) node
 - Then to bundle of His along septum
 - Right and left bundle branches go to each ventricle
 - Then to Purkinje fibers along the surface of ventricles



Circulatory Systems

- Pulmonary Circulation
 - Pushes deoxygenated blood into the lungs
 - Carbon dioxide removed and oxygen added
 - Blood flows to the left atrium
- Systemic Circulation
 - Blood flows from left atrium into the left ventricle
 - Pumped to the body to deliver oxygen and remove carbon dioxide
- Coronary Circulation
 - Movement of blood through the tissue of the heart



Circulations

- Portal System
 - Directs blood from the intestines to the liver
 - Liver processes the blood before the blood continues on to the heart



Circulatory Systems

- Coronary Circulation
 - Right coronary artery (RC)
 - Marginal branches
 - Posterior interventricular branch (posterior descending)
 - Left coronary artery
 - Left circumflex artery (LC)
 - Obtuse branches
 - Left anterior descending artery (LD)
 - Diagonal branches



Great Vessels

- Great vessels
 - Aorta
 - Brachiocephalic trunk (innominate)
 - Left common carotid
 - Left subclavian artery
 - Pulmonary trunk which bifurcates to right and left pulmonary artery
 - Pulmonary veins (four)
 - Superior vena cava
 - Inferior vena cava



Heart

- Four (4) Chambers
 - Two atria
 - Two ventricles
- Three (3) layers
 - Endocardium
 - Myocardium
 - Epicardium
 - Pericardial sac
 - Visceral pericardium
 - Parietal layer



Heart

- Pericardium
 - Visceral layer adheres to the heart and the first few centimeters of the outside of the great vessels
 - Parietal layer – outer layer
 - Pericardial fluid
 - Located in space between the visceral pericardium and the parietal layer
 - 10 – 30 ml fluid to lubricated the heart's surface –
 - Fluid can increase up to 300 ml without impeding the heart



Heart

- Cardiac Tamponade
 - Compression of the heart caused by build up of pericardial fluid or blood
 - Can lead to cardiac arrest
- Pericardiocentesis
 - Procedure to drain fluid from pericardial sac



Heart Valves

- **Atrioventricular valves**
 - Tricuspid (3 leaflets) – right side of heart
 - Bicuspid or Mitral (2 leaflets) – left side of heart
 - Chordae tendinea (heart strings) attached to valve leaflets and the papillary muscles of the ventricle
 - Keep valves from everting and provide support during systole
- **Semilunar valves**
 - Pulmonary (Pulmonic)
 - Aortic



ICD-9-CM Coding

- Chapter 01: Infectious and Parasitic Diseases
- Chapter 02: Neoplasms
- Chapter 07: Diseases of the Circulatory System
- Chapter 14: Congenital Anomalies
- Chapter 16: Signs, Symptoms, and Ill-Defined Conditions



Diseases of the Circulatory System

- Acute rheumatic fever (390-392)
 - Symptoms include fever, joint pain, lesions of the heart, blood vessels and joint connective tissue, abdominal pain, skin changes, and chorea
- Chronic rheumatic heart disease (393-398)
 - Persistent inflammation of heart lining due to rheumatic heart disease.



Cardiac Cycle

- Two Phases
 - **Systole**
 - Blood is ejected from the ventricles into the body's circulatory path (highest pressure against the walls of the blood vessels)
 - **Diastole**
 - Ventricles relax and fill with blood from the atria (lowest pressure against the walls of the blood vessels)



Cardiac Cycle

Blood pressure

- Measurement of the pressure of blood exerted within the blood vessels
 - Sphygmomanometer
 - 120/80 mm Hg
 - 120 = Systole
 - 80 = Diastole



ICD-9-CM: Hypertension

- Hypertensive Disease
 - 401 Essential hypertension
 - 402 Hypertensive heart disease
 - 403 Hypertensive chronic kidney disease
 - 404 Hypertensive heart and chronic kidney disease

Guidelines I.C.7.a.1. through 11.

Hypertension Table in alphabetic index ICD-9-CM

Many guidelines found in the Tabular List for these categories



ICD-9-CM: Ischemic Heart Disease

- 410 Acute myocardial infarction
 - 5th digit
 - 0 Episode of care unspecified
 - 1 Initial episode of care
 - Regardless of the number of transfers during initial care
 - 2 Subsequent episode of care

STEMI (ST elevation)

NSTEMI (non-ST elevation)



ICD-9-CM: Ischemic Heart Disease

- 411 Other acute and subacute forms of ischemic heart disease
- 412 Old myocardial infarction
- 413 Angina pectoris
- 414 Other forms of chronic ischemic heart disease

Use 414.01 CAD/arteriosclerosis when there is no history of coronary artery bypass surgery.



ICD-9-CM: Ischemic Heart Disease

- 418.8 Other specified forms of chronic ischemic heart disease
 - Chronic coronary insufficiency
 - Ischemia, myocardial (chronic)
 - Any condition classifiable to 410 specified as chronic, or presenting with symptoms after 8 weeks from date of infarction

Use 411.89 for acute coronary insufficiency



ICD-9-CM: Ischemic Heart Disease

Example:

A cardiac catheterization is scheduled for a patient who had an inferoposterior wall infarction 12 weeks ago. She is still having chest pain, which radiates to the left arm related to mild exertion.

Look in the Index for Diseases/heart/ischemic 414.9. Check the Tabular List for 414.8.



Occlusion of Arteries

- Occlusion of arteries
 - 414.2x Chronic total occlusion of coronary artery, when coronary artery 100 percent occluded for several months.
 - 440.4x Chronic total occlusion of artery of the extremities, when there has been total artery occlusion of the arm or leg.
 - 411.81 Acute coronary artery occlusion without myocardial infarction. Use 411.81 for occlusion caused by debris

NOTE: 414.2x and 440.4x and can only be secondary codes



ICD-9-CM: Aneurysm

- 414.1 Aneurysm and dissection of heart
 - 414.10 Aneurysm of heart (wall)
 - 414.11 Aneurysm of coronary vessels
 - 414.12 Dissection of coronary artery
 - 414.19 Other aneurysm of heart



ICD-9-CM: Heart Disease

- 415 – 417 Diseases of pulmonary circulation
- 420 Acute pericarditis
- 421 Acute and subacute endocarditis
- 422 Acute myocarditis
- 423 Other diseases of pericardium
- 424 Other diseases of endocardium
- 425 Cardiomyopathy
- 426 Conduction disorders
- 427 Cardiac dysrhythmias
- 428 Heart Failure
- 429 Ill-defined descriptions and complications of heart disease



Congestive Heart Failure

- Congestive heart failure
 - Not an inherent component of systolic or diastolic heart failure.
 - When CHF is list with the above, assign two codes
 - Systolic, diastolic, or combined systolic/diastolic heart failure
 - CHF, unspecified – 482.0

AHA Coding Clinic 2004, Fourth Quarter



ICD-9-CM: Congenital Anomalies

- 745 Bulbus cordis anomalies and anomalies of cardiac septal closure
- 746 Other congenital anomalies of heart
- 747 Other congenital anomalies of circulatory system



Signs & Symptoms

- 785 Symptoms involving cardiovascular system
 - 785.0 Tachycardia, unspecified
 - 785.1 Palpitations
 - 785.2 Undiagnosed cardiac murmurs
 - 785.3 Other abnormal heart sounds
 - 785.4 Gangrene
 - 785.5X Shock without mention of trauma
 - 785.6 Enlargement of lymph nodes
 - 785.9 Other symptoms involving cardiovascular system
- 786.5X Chest pain
 - 786.50 Chest pain, unspecified
 - 786.51 Precordial pain
 - 786.59 Other



Terms

- Apex—bottom point of the heart
- Retrograde—against the current
- Antegrade—with the current
- Cardioversion—shock treatment to the heart
- CPR—Cardiopulmonary resuscitation
- Tachycardia—rapid beating of the heart
- Pacing—refers to electrical activity of the heart



CPT Coding

- Surgical Section - Cardiovascular System — 33010-37799
 - Heart and Pericardium – 33010-33999
- Radiology Section
 - Heart – 75557-75574
 - Vascular Procedures – 75600-75989
 - Diagnostic Ultrasound (various CPTs)
 - Radiologic Guidance – 77001-77032
 - Nuclear Medicine Diagnostic, Cardiovascular System – 78414-78499
- Medicine Section
 - Cardiovascular – 92950-93799
 - Noninvasive Vascular Diagnostic Studies – 93880-93998



Pericardium

- Pericardiocentesis (33010-33011)
 - Diagnostic test
 - Cardiac tamponade
 - Radiological supervision and interpretation (76930)
- Pericardotomy for removal of clot/FB (33020)
 - Add 32658 by thoracoscopy
- Pericardial window (33025)
 - *(For thoracoscopy [VATS] pericardial window, use 32659)*



Pacemakers/Defibrillators (33202- 33249)

- Pacemaker System
 - Generator
 - Electrodes (leads)
 - Note
 - Temporary or permanent?
 - Single or dual chamber?
 - What is being addressed – electrodes, pulse generator, or both?

–NOTE: Temporary pacemakers are noted as “separate procedures”



Pacemaker or Pacing Cardioverter-Defibrillator

- Permanent Pacemaker system includes:
 - a pulse generator (containing electronics and a battery), and one or more electrodes (leads)
 - Generator is placed in a subcutaneous pocket created either in a subclavicular site, or underneath the abdominal muscles, just below the rib cage
 - Electrodes are inserted through a vein (transvenous), or they may be placed on the surface of the heart (epicardial) by thoracoscopy or thoracotomy.



Pacemaker or Pacing Cardioverter-Defibrillator

- Guidelines
 - Replacement of a pacemaker pulse generator:
 - Single codes exist for removal and replacement of a single lead system (33227), a dual lead system (33228) or multiple lead system (33229)
 - Replacement of a pacing cardioverter-defibrillator pulse generator
 - Single lead system (33262), dual lead system (33263) or multiple lead system (33264)

Radiological supervision and interpretation related to pacemaker or cardioverter-defibrillator procedure is included in 33206-33249.



Pacemaker or Pacing Cardioverter-Defibrillator

- Biventricular Pacing

- An additional electrode may be required for pacing of left ventricle. The electrode is placed in the cardiac vein over the left ventricle.

33224 Insertion of pacing electrode, cardiac venous system, for left ventricular pacing, with attachment to previously placed pacemaker or pacing cardioverter-defibrillator generator (including revision of pocket, removal, insertion, and /or replacement of existing generator)

+33225 Insertion of pacing electrode, cardiac venous system, for left ventricular pacing, at time of insertion of pacing cardioverter-defibrillator or pacemaker pulse generator (including upgrade to dual chamber system and pocket revision)

(When epicardial electrode placement is performed, report 33224 in conjunction with 33202, 33203)



Pacemaker or Pacing Cardioverter-Defibrillator

Patient underwent removal of a complete dual pacemaker system. A dual cardioverter-defibrillator system was placed with two transvenous electrodes, along with a biventricular electrode with use of fluoroscopy.

33249 Insertion of pacing cardioverter-defibrillator leads/generator

33235-51 Removal dual lead system electrodes

33225 Biventricular pacing electrode

33233-51 Removal dual system pacemaker generator



Electrophysiologic Operative Procedures

- Incision (33250-33261)
 - Operative tissue ablation codes 33254-33256 are only to be reported when there is no concurrently performed procedure that requires median sternotomy or cardiopulmonary bypass
 - Use add-on codes 33257-33259 for operative tissue ablation performed at the time of other cardiac procedures.
- Endoscopy (33265 – 33266)



Wounds of the Heart and Great Vessels

- 33300-33335 – repair of great vessels
- Great vessels:
 - Superior vena cava
 - Inferior vena cava
 - Pulmonary artery
 - Four pulmonary veins
 - Aorta



Cardiac Valve Procedures

- Aortic Valve (33400-33417)
- Mitral Valve (33420-33430)
- Tricuspid Valve (33460-33468)
- Pulmonary Valve (33470-33478)



CABG

- Coronary Artery Bypass Graft
 - Venous (33510-33516)
 - Arterial-Venous (33517-33523)
 - Arterial (33533-33536)
 - Reoperation (+33530)



CABG

- Coronary Artery Bypass using Venous Grafting only (33510-33516)
 - Used to report coronary artery bypass procedures using venous grafts only
 - Not used for combined arteriovenous grafts
 - Procurement of the saphenous vein is included in the relative value units for these codes and not separately reportable

Report procurement of other veins separately

- Upper extremity vein (35500)
- Femoropopliteal vein (35572)



CABG

Arterial Grafting for Coronary Artery Bypass
(33533-33536)

- Arterial includes the use of the following arteries:
 - The internal mammary artery
 - The gastroepiploic artery
 - The epigastric artery
 - The radial artery and/or
 - Arteries procured from other sites

Artery graft from upper extremity is reported separately (35600)



CABG

Combined Arterial-Venous Grafting for Coronary Artery Bypass (33517-33530) (33533-33536)

- To report combined arterial-venous grafts, you must report two codes;
 - The arterial-venous graft code (33517-33523)
 - The arterial graft code (33533-33536)



CABG

Coronary artery bypass with left internal mammary artery to the left anterior descending, and arterial graft from the left radial artery to the first diagonal of the LAD. Saphenous vein graft to the ramus intermedius. Harvesting of the saphenous vein was endoscopic.

33534	2 coronary arterial grafts
33517	1 venous graft
35600	harvest of upper extremity artery
33508	Harvest by endoscopy



Cardiac Anomalies (33600-33853)

- Single Ventricle and Other Complex Cardiac Anomalies (33600-33622)
- Septal Defect (33641-33697)
- Sinus of Valsalva (33702-33722)
- Venous Anomalies (33724-33732)
- Shunting Procedures (33735-33768)
- Transposition of the Great Vessels (33770-33783)
- Truncus Arteriosus (33786-33788)
- Aortic Anomalies (33800-33853)



Heart/Lung Transplantation

- 33930-33945
- Distinct Components of Physician Work
 - Cadaver donor cardiectomy with or without pneumonectomy
 - Backbench work
 - Recipient heart with or without lung allotransplantation



Aneurysms

- Abdominal Aorta
- Axillary artery
- Basilar Artery
- Brachial Artery
- Carotid Artery
- Celiac Artery
- Femoral Artery
- Hepatic Artery
- Iliac Artery
- Innominate Artery
- Intracranial Artery
- Mesenteric Artery
- Popliteal Artery
- Radial Artery
- Renal Artery
- Splenic Artery
- Subclavian Artery
- Thoracoabdominal Aortal
- Ulnar Artery
- Vertebral Artery



Aneurysms

Endovascular Repair of Abdominal Aortic Aneurysm (34800-34834)

- Codes describe open femoral or iliac artery exposure, device manipulation and deployment, and closure of the arteriostomy sites.
- Read guidelines for bundled and additional procedures

Endovascular Repair of Iliac Aneurysm (34900)

- Codes describe open femoral or iliac artery exposure, device manipulation and deployment, and closure of the arteriostomy sites.
- Read guidelines for bundled and additional procedures



Aneurysms

Direct Repair of Aneurysm or Excision (Partial or Total) and Graft Insertion for Aneurysm, Pseudoaneurysm, Ruptured Aneurysm, and Associated Occlusive Disease (35001-35152)

- Separate codes for aneurysm repair and ruptured aneurysm repair



Thromboendarterectomy (35301-35390)

Removal of thrombus and inner lining of vessel

- Includes patch graft if performed
- Reported by site
 - +35390, reoperation, carotid, thromboendarterectomy, more than 1 month after original operation.
 - Use 35390 in conjunction with 35301



Transluminal Angioplasty (35450-35476)

- Open
 - Renal or other visceral artery
 - Aortic
 - Brachiocephalic trunk or branches, each vessel
 - venous
- Percutaneous
 - Renal or other visceral artery
 - Aortic
 - Brachiocephalic trunk or branches, each vessel
 - Venous

Code also for catheter placement and radiologic S&I



Transluminal Angioplasty (35450-35476)

- From a right femoral artery access the catheter was advanced into the aorta. Transluminal aortic angioplasty was performed.

36200 Placement of catheter into aorta

35472 Angioplasty aorta

75966-26 Radiological supervision and interpretation

Look in the CPT® index for Transluminal/Arterial/Radiological

Supervision 75962-75968

Catheter placement and S&I will be covered later.



Bypass Grafts

- Non-coronary vessels
 - Vein (35500-35572)
 - In-situ vein (35583-33587)
 - Vein is left in native location
 - Other than vein (35600-35671)
 - Composite Grafts (35681-35683)
- Code by type/location



Vascular Injection Procedures (36000-36680)

- Vascular Injections include the following:
 - Local anesthesia
 - Introduction of the needle or intracatheter
 - Injection of contrast material
 - All pre- and post-injection patient care
 - Closure of vascular access



Vascular Injection Procedures

- Intravenous
 - Nonselective – venography, superior or inferior vena cava
 - Selective
 - First order
 - Second order
- Intra-Arterial - Intra-Aortic Procedures
 - Nonselective
 - Selective



Vascular Injection Procedures

Five Vascular Families:

- Systemic Arterial
- Systemic Venous
- Pulmonary
- Portal
- Lymphatic



Vascular Injection Procedures

- Non-Selective catheterization
 - Catheter is placed directly into an arterial or venous vessel and not moved or manipulated further (36100, 36120, 36140)
 - Or the catheter is moved only into the aorta from any approach (36160, 36200)



Vascular Injection Procedures

- Selective Catheterization
 - Catheter is moved, manipulated or guided into a part of the arterial/venous system other than the aorta or the vessel punctured.
 - The exact code used depends on how many branches the catheter must be guided through before it reaches the ultimate injection site.

See CPT® Appendix L Vascular Families for first, second, third order, and beyond third order branches based on a starting point in the aorta.



Selective Catheterization

Vascular Families

- Primary (first turn off the main highway [aorta])
 - First-order vessels (e.g., innominate/brachiocephalic artery, left common carotid, left subclavian)
- Secondary (second turn off the main highway [aorta])
 - Second-order vessels, (e.g., right common carotid artery, left external carotid, left vertebral [aorta])
- Tertiary (third turn off the main highway [aorta])
 - Third-order vessels, (e.g., right external carotid artery, right vertebral)



Selective Catheterization

Vascular Access Rules

- From a single access catheter puncture site, selective catheterization takes precedence in coding over the nonselective catheterization. Only report highest order of one family. If other 2nd or 3rd levels catheterized in same family, use add-on code
- Code for each vascular family accessed
- Code for each vascular access
 - Above diaphragm (36215-36218)
 - Below diaphragm (36245-36248)
- Pulmonary angiography involves the right and left pulmonary arteries representing two vascular families



Selective Catheterization

- From a right femoral access, code the selective catheterization of the right renal artery. **36245**
- From a right femoral access, code selective catheterization of the left external carotid, and the left vertebral arteries. **36216, 36216-59**
- From a right femoral access, code the selective catheterization of the right vertebral artery, and the right internal carotid artery. **36217, 36218**



Central Venous Access (36555-36598)

- Placed for frequent access to bloodstream
- Tip of catheter must terminate in the:
 - Subclavian
 - Brachiocephalic
 - Iliac
 - Inferior or superior vena cava
- Code by
 - Procedure (insertion, repair, replacement, removal, etc.)
 - Tunneled or not
 - With pump or port
 - Patient age

See CVAP table in CPT®



CPT®

- Hemodialysis (36800-36870)
 - See 36147 for diagnostic studies of AV shunts for dialysis
- Portal Decompression (37140-37183)
 - Treat hypertension/occlusion of portal vein
 - TIPS (37182, 37183) diverts blood from the portal vein to the hepatic vein
 - TIPS = transvenous intrahepatic portosystemic shunt
- Transcatheter Procedures
 - Removal of clot (thrombectomy)
 - Arterial Thrombectomy (37184-37186)
 - Venous Thrombectomy (37187-37188)
 - Other Procedures (37191-37216)
 - Foreign body retrieval, placement vena cava filter, transcatheter embolization, stent placement, etc.



Endovascular Revascularization (37220-37235)

- Treat occlusive disease in lower extremities
- Three territories
 - Iliac
 - Femoral/Popliteal
 - Tibial/Peroneal
- Codes arranged in a hierarchy for each territory
 - stent placement with atherectomy (highest)
 - stent placement
 - atherectomy
 - angioplasty (lowest)
 -



Bundled to Endovascular Revascularization (37220-37235)

- conscious sedation
- vascular access
- catheter placement
- traversing the lesion
- imaging related to the intervention (previously billed as the supervision and interpretation code for the specific intervention)
- use of an embolic protection device (EPD)
- imaging for closure device placement
- closure of the access site



Endovascular Revascularization (37220-37235)

- Iliac vascular territory codes do not include atherectomy
 - Use Category III codes 0234T-0238T for atherectomy in the supra-inguinal vessels (iliacs, visceral, aorta, renal, brachiocephalic)
 - Codes include radiological supervision and interpretation
 - Codes to not include:
 - Selective catheterization of vessel
 - Transversing lesion
 - Embolic protection, is used
 - Other intervention used to treat the same or other vessels
 - Closure of arteriotomy by any method



Endovascular Revascularization (37220-37235)

From a left femoral access, a stent was placed and atherectomy was performed in the right common iliac, followed by stent placement.

- 0238T** Transluminal peripheral atherectomy, open or percutaneous, including S&I; iliac artery, each vessel
- 37221** Revascularization, endovascular, open or percutaneous, iliac artery, unilateral, initial vessel, with stent
- 36245-59** First order catheterization of right common iliac

Modifier 59 indicates 36245 is separate from 37221, because selective catheterization is included in 37221; however, it is not included with the atherectomy.



Endovascular Revascularization (37220-37235)

From a right femoral artery access, report stent placement in left superficial femoral artery, and angioplasty of the left popliteal artery.

- 37226** Revascularization, endovascular, open or percutaneous, femoral, popliteal, unilateral; with transluminal stent placement, includes angiography within the same vessel, when performed.

The entire femoral/popliteal territory is considered a single vessel for revascularization procedures.



Endovascular Revascularization (37220-37235)

From a right femoral artery access, report the stenting of the right peroneal trunk, and angioplasty of the dorsalis pedis artery and posterior tibial artery.

- 37230** Revascularization, endovascular , open or percutaneous, tibial, peroneal artery, unilateral, initial vessel; with transluminal stent placement
- 37232 x2** each additional vessel; with transluminal angioplasty



Endovascular Revascularization (37220-37235)

- Guidelines for treatment of one extremity
 - Report initial vessel intervention at the highest level of intervention
 - Hierarchy from highest to lowest: stent placement with atherectomy, stent placement, atherectomy, angioplasty
 - Report initial vessel intervention for each intervention performed within a different territory
 - Interventional of additional vessels within a territory are reported with add-on codes
 - Bridging lesions are considered a single-vessel intervention, even if the bridging lesion extends from one territory into another.
 - Diagnostic imaging is separately billable.
 - Other interventions such as IVUS, thrombolysis, thrombectomy, and embolization are separately billable.



Medicine Section

- Therapeutic services and procedures
- Cardiography
- Cardiovascular monitoring services
- Implantable wearable cardiac device evaluations
- Echocardiography
- Cardiac Catheterizations
- Intracardiac Electrophysiological Procedures/Studies
- Peripheral Arterial Disease Rehabilitation
- Noninvasive physiologic studies and procedures
- Other procedures



CPR

- Cardiopulmonary resuscitation
 - Includes defibrillation
 - Includes treatment to the pulmonary system
 - Not considered a component of critical care services
- Cardioversion
 - Electrical shock delivered to the heart to convert an abnormal heart rhythm back to a normal rhythm (elective)



Cardiovascular Therapeutic Services and Procedures

- Thrombolysis—Dissolving of a blockage by a thrombus (clot) in a vessel
- Coronary stent—wire metal mesh tube placed inside an artery to hold the vessel open
- Angioplasty—dilate and open a blocked artery
- Atherectomy—procedure to remove plaque from arteries



Cardiovascular Therapeutic Services and Procedures

- Coronary artery therapeutic procedure guidelines:
 - Three coronary arteries are recognized
 - Right coronary (RC)
 - Left anterior descending (LD)
 - Left circumflex (LC)
 - Only one procedure reported per coronary vessel
 - Report one initial procedure
 - All other procedures performed in other coronary vessels are additional procedures (use add-on codes)
 - Hierarchy from highest to lowest value for percutaneous interventions:
 - Stent placement
 - Atherectomy
 - Angioplasty



Cardiovascular Therapeutic Services and Procedures

A stent was placed in the right coronary artery, and angioplasty was performed in the posterior descending artery of the right coronary. A stent was also placed in the left circumflex. Atherectomy was performed in the left anterior descending coronary artery. IVUS was used in each vessel.

92980-RC, 92981-LC, 92996-LD, 92978-26, 92979-26 x 2



Monitoring Heart Activity

- **Cardiography (93000 – 93042)**
 - Codes for professional component, technical component, and global
- **Implantable and Wearable Cardiac Device Evaluations (93279-93299)**
 - For the 90-day period, do not report for less than 30 days
 - For the 30-day period, do not report less than 10 days
- **Cardiac Stress Tests**
 - Activity or pharmaceutical
 - Codes for global, technical, and professional components.



Echocardiography (93303-93352)

- Diagnostic ultrasound of the heart
- M-mode recording – used to measure chamber dimensions and to establish the timing of events
- Doppler echocardiography – records the direction and velocity of blood flow
- Color-flow mapping – allows images of the blood to be displayed
 - Transthoracic (TTE) or esophageal (TEE)
 - Note congenital echo
 - Complete or limited study



Cardiac Catheterizations (93451-93581)

- Most common access point – femoral artery
- Right or left heart catheterization?
- Catheter insertion, injection(s), and imaging are combined in one code



Cardiac Catheterizations (93451-93581)

Cardiac Catheterization

- There are two code families for cardiac catheterization:
 - Congenital heart disease
 - All other conditions

Anomalous coronary arteries, patent foramen ovale, mitral valve prolapse, and bicuspid aortic valve are to be reported with 93451-93464, 93566-93568.



Cardiac Catheterizations (93451-93581)

- For cardiac catheterization for congenital anomalies, see 93530-93533. When contrast injection(s) are performed in conjunction with cardiac catheterization for congenital anomalies, see 93563-93568.
- Cardiac catheterization (93451-93461) includes all roadmapping angiography in order to place the catheters, including any injections and imaging supervision, interpretation, and report. It does not include contrast injection(s) and imaging supervision, interpretation and report for imaging that is separately identified by specific procedure code(s).
- For aortography, use 93567.
- For pulmonary angiography, use 93568.
- Cardiac catheterization procedure have a technical and professional component
- Add-on codes for injection procedures are professional services; therefore, no modifier



Cardiac Catheterizations (93451-93581)

From a right femoral access a right and left cardiac catheterization was performed, with coronary angiography, and angiography of bypass vessels, with right and left ventriculography. Injection procedure was performed to view the aortic cuff for possible aneurysm. Report the physician service.

93461-26, 93566, 93567



Cardiac Anomalies

- Septal Defect – hole in the septum of the heart separating the atria and ventricles
- Repair of Septal Defect
 - 93580-93581
 - Transcatheter Closure



Intracardiac Electrophysiological Procedures/Studies

- 93600-93662
- Percutaneous
- Indications - Cardiac arrhythmias causing:
 - Palpitations—irregular heart beats
 - Syncope—loss of consciousness
 - Cardiac arrest



Peripheral Arterial Disease (PAD)

- Rehabilitation is reported per session
- Narrowing or blockage of the arteries in the legs
- Symptoms:
 - Cramping
 - Aching
 - Numbness



Noninvasive Vascular Diagnostic Studies (93875-93990)

- Cerebrovascular Arterial Studies
- Extremity Arterial Studies (Including Digits)
- Extremity Venous Studies (Including Digits)
- Visceral and Penile Vascular Studies
- Extremity Arterial-Venous Studies

Most of the studies in this section are considered bilateral. If a unilateral study is performed, use modifier -52. 93924 describes a complete bilateral study of lower extremity arteries



Modifiers

- 26 – Professional Component
- TC – Technical Component
- LC – Left Circumflex, Coronary Artery
- LD – Left Anterior Descending Coronary Artery
- RC – Right Coronary Artery
- 80 – Assistant Surgeon
- 51 – Multiple Procedures
- 52 – Reduced Services



The End

