Chapter 9
Diseases of Circulatory System
I00-I99

Presented by

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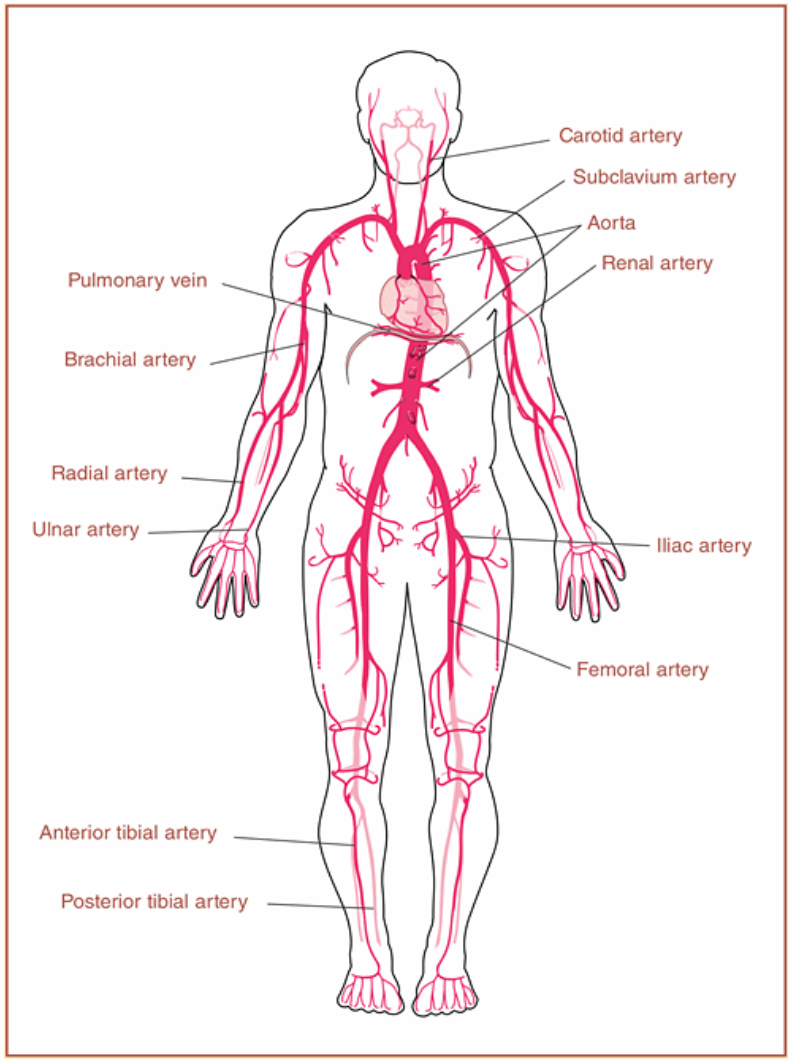
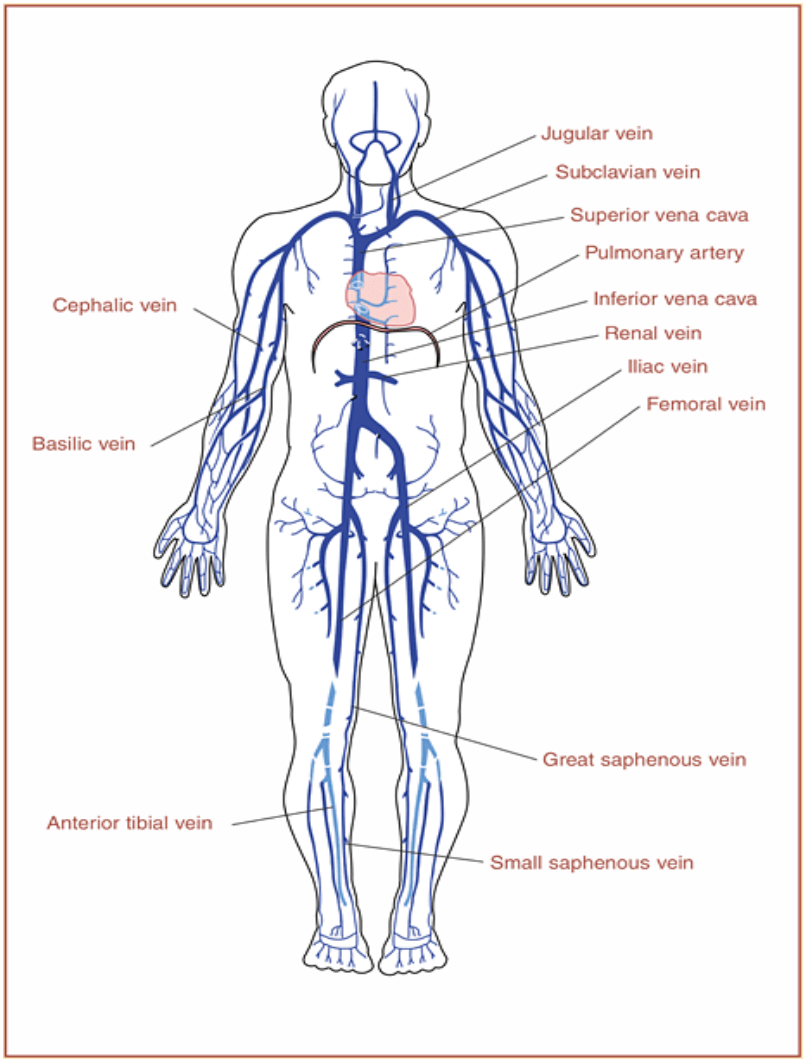
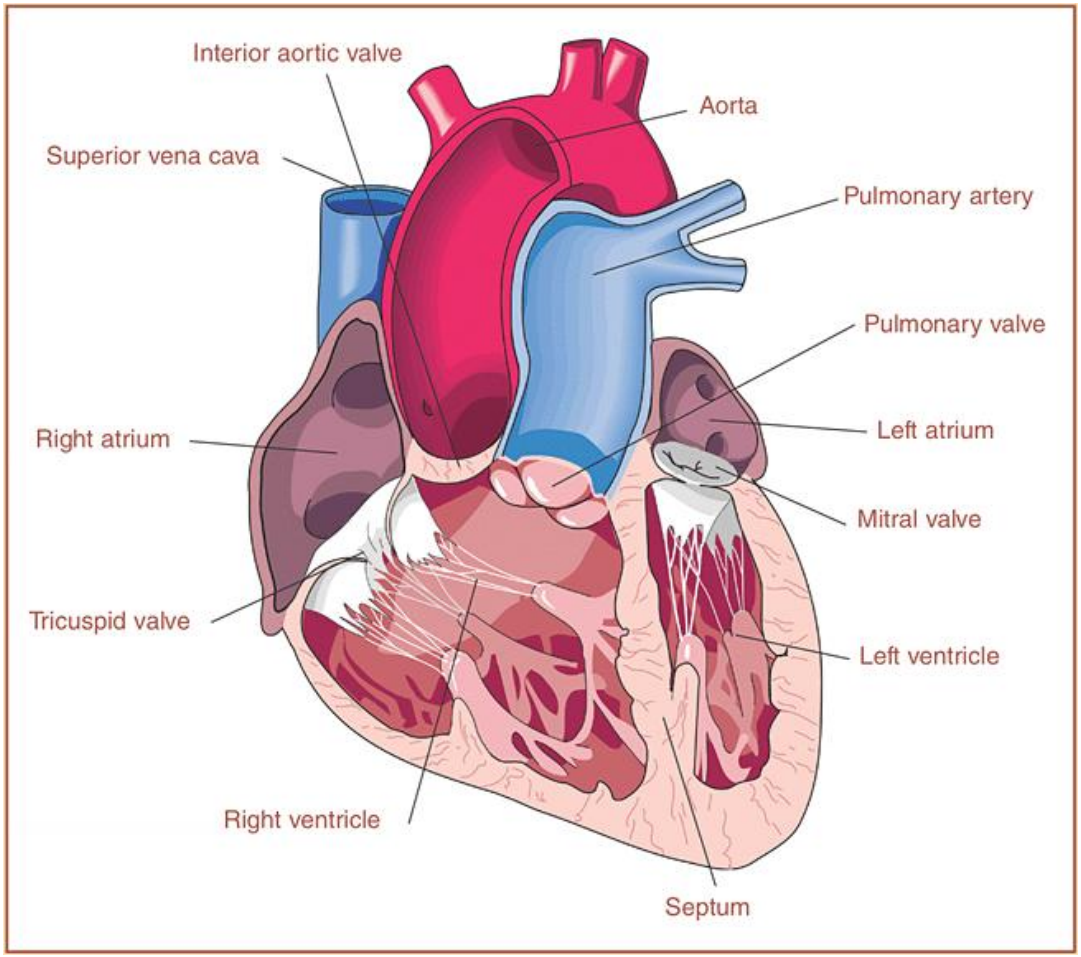
Major Vessels of the Arterial and Venous System





Interior of the Heart



Chapter Outline

I00-I02 – Acute Rheumatic Fever
I05-I09 – Chronic Rheumatic Heart Diseases
I10-I15 – Hypertensive Diseases
I20-I25 – Ischemic Heart Diseases
I26-I28 – Pulmonary Heart Diseases & Diseases of Pulmonary Circulation
I30-I52 – Other forms of Heart Disease
I60-I69 – Cerebrovascular Diseases
I70-I79 – Diseases of Arteries, Arterioles and Capillaries
I80-I89 – Diseases of Veins, Lymphatic Vessels & Lymph Nodes, NEC
I95-I99 – Other and Unspecified Disorders of the Circulatory System

Rheumatic Heart Disease I00-I09

- Rheumatic heart disease occurs as the result of an infection with group A hemolytic *Streptococcus.*

  - The first axis distinguishes whether the fever is acute (**I00-I02**) or chronic (**I05-I09**)
  - The second axis determines whether there is heart involvement.

- Chronic rheumatic heart disease is a result of a previously active rheumatic infection. The heart valves are most often involved. ICD-10-CM presumes that certain mitral valve disorders are rheumatic in origin. When the diagnostic statement includes more than one condition affecting the mitral valves, one of which is presumed to be rheumatic, all are classified as rheumatic.

  For example:

  - **I05.0** Mitral valve stenosis

    The mitral valve stenosis is presumed to be of rheumatic origin
  - **I34.0** Mitral valve insufficiency

    The mitral valve insufficiency is not
  - **I05.2** Mitral valve stenosis & insufficiency

    The combination code presumes both to be rheumatic because the stenosis is presumed to be rheumatic

- A disorder affecting both the mitral and aortic valves is presumed rheumatic in origin.

  - **I08.0** Mitral valve insufficiency/stenosis with aortic valve insufficiency/stenosis (Rheumatic)

- Otherwise, the aortic valve condition is classified as rheumatic only when specifically stated as such.

  - **I35.1** Aortic valve insufficiency (Non-rheumatic)
  - **I35.0** Aortic valve stenosis (Non-rheumatic)
  - **I06.0 Rheumatic** aortic stenosis

Nonrheumatic Valve Disorders I34.- I38

Category	4th Character
I34.- Nonrheumatic mitral valve disorder	**0** Insufficiency **1** Prolapse **2** Stenosis **8** Other **9** Unspecified
I35.- Nonrheumatic aortic valve disorder	**0** Stenosis **1** Insufficiency **2** Stenosis and insufficiency **8** Other **9** Unspecified
I36.- Nonrheumatic tricuspid valve disorder	
I37.- Nonrheumatic pulmonary valve disorder	
I38 Endocarditis, valve unspecified disorder	

Rheumatic Heart Failure I09.81

- Heart failure in a patient who has rheumatic heart disease is classified as **I09.81** unless the physician specifies a different cause.

- An additional code from category **I50**, Heart failure, is assigned to identify the type of heart failure. Do not make an assumption that congestive heart failure is rheumatic.

  For example:

  - **I09.81 + I50.9 + I42.0 + I05.1** End-stage congestive heart failure due to rheumatic heart disease and dilated cardiomyopathy with mitral valve insufficiency

  - **I50.9 + I34.0 + I07.1 + Z95.2** Congestive heart failure, severe mitral valve regurgitation, tricuspid valve regurgitation, and a history of aortic valve stenosis status post valve replacement

Ischemic Heart Disease

- Ischemic heart disease is the general term for a number of disorders affecting the myocardium caused by a decrease in the blood supply to the heart due to coronary insufficiency.
- The insufficiency is usually caused by deposits of material in the coronary artery that progressively obstruct its branches so that the lumen of the arteries become either partially or completely occluded.
- Other common terms for ischemic heart disease are arteriosclerotic heart disease (ASHD), coronary ischemia, coronary artery disease (CAD), and coronary arteriosclerosis (atherosclerosis).

Ischemic Heart Disease is classified in categories:

I20.- Angina Pectoris
I21.- Acute Myocardial Infarction
I22.- Subsequent Myocardial Infarction
I23.- Current Complications following Myocardial Infarction
I24.- Other Acute Ischemic Heart Disease
I25.- Chronic Ischemic Heart Disease

Angina Pectoris I20.-

- Angina pectoris is an early manifestation of ischemic heart disease, although in rare instances it occurs as a result of congenital abnormalities of the coronary arteries or such conditions as aortic stenosis, valvular insufficiency, aortic syphilis, and Raynaud's phenomenon.

- It is characterized by chest pain, usually perceived by the patient as a sensation of tightness, squeezing, pressing, choking, burning; of heartburn or gas; or of an ill-defined discomfort.

- This type of angina can be produced by any activity or situation that increases the oxygen requirements of the myocardium, such as exercise, walking into the wind, cold weather, consumption of a large meal, emotional stress, and elevation of blood pressure.

- This type of pain is similar to that of unstable angina, but it is less severe; more easily controlled; and usually relieved in a predictable manner by either rest or administration of nitroglycerin.

Unstable Angina I20.0

- Unstable angina, includes conditions described as accelerated , crescendo, intermediate coronary syndrome, preinfarction or worsening effort angina. This occurs after less exertion than in angina pectoris; the pain is more severe and is less easily relieved by nitroglycerin. Without treatment, unstable angina often progresses to acute MI.

- Unstable angina is designated as the principal diagnosis **only** when the underlying condition is not identified and there is no surgical intervention.

- Patients with severe coronary arteriosclerosis and unstable angina may be admitted for cardiac bypass surgery or a percutaneous transluminal coronary angioplasty (PTCA) to prevent further progression to infarction. In such cases, the combination code for coronary arteriosclerosis with unstable angina (I25.110) is assigned as the principal diagnosis.

  Examples of appropriate coding follow:

  - Pt was admitted with unstable angina and had right and left heart catheterization showing coronary arteriosclerosis. A coronary bypass was recommended, but the patient felt he needed some time to think it over . Coronary arteriosclerosis with unstable angina (I**25.110**) is the principal diagnosis.

  - Pt was admitted with unstable angina and a history of MI five years ago. She was treated with IV nitroglycerin. The angina subsided by the end of the first hospital day. No other complications were noted, and no additional diagnostic studies done. Unstable angina (**I20.0**) is the principal diagnosis. Code **I25.2** secondary to describe the old MI.

- A diagnosis of acute ischemic heart disease or acute myocardial ischemia does not always indicate an infarction. It is often possible to prevent infarction by means of surgery and/or the use of thrombolytic agents if the patient is treated promptly.

- If there is occlusion or thrombosis of the artery without infarction, **I24.0** Acute coronary thrombosis not resulting in MI, is assigned. **I24.8** Other forms of acute ischemic heart disease**,** includes coronary insufficiency and subendocardial ischemia.

Exercise 9.1

1. Mitral and Aortic Valve Stenosis

2. Chronic Diastolic CHF and Rheumatic Heart Disease

3. Angina Pectoris

Exercise 9.1

1. Mitral and Aortic Valve Stenosis

   I08.0

2. Chronic Diastolic CHF and Rheumatic Heart Disease

   I09.81 + I50.32

3. Angina Pectoris

   I20.9

Acute Myocardial Infarction I21.-

- Acute myocardial infarction is an acute ischemic condition that ordinarily appears following prolonged myocardial ischemia. It is usually precipitated by an occlusive coronary thrombosis at the site of an existing arteriosclerotic stenosis. Although ischemic heart disease is a progressive disorder, it is often silent for long periods with no clinical manifestations, and then it can appear suddenly in an acute form without any intervening symptoms having been experienced.

- A myocardial infarction (MI) described as acute or with a duration of four weeks or less is classified in category **I21**, ST elevation (STEMI) and non-ST elevation (NSTEMI) myocardial infarction.

- Code **I21.3** ST elevation (STEMI) myocardial infarction of unspecified site, should not be assigned unless no further information regarding the site is documented in the medical record. This information can almost always be found in the EKG report.

- Myocardial infarctions can also be classified according to whether there is **ST-segment elevation** (**I21.0-** through **I21.3**) or **non-ST-segment elevation** (**I21.4**). If there is no information regarding whether there is ST elevation or non-ST elevation, or information regarding the site of the myocardial infarction, coders should assign code **I21.3**.

- If a myocardial infarction is documented as nontransmural or subendocardial, but the site is provided, it is still coded as a subendocardial MI (**I21.4- NSTEMI**).

- If a non-ST-elevation myocardial infarction (NSTEMI) evolves to ST-elevation myocardial infarction (STEMI), assign the code for the STEMI.

- If STEMI converts to NSTEMI due to thrombolytic therapy, assign the code for STEMI.

STEMI and NSTEMI I21.-

Category and 4th Character	5th Character
I21.0- ST elevation (STEMI) MI of anterior wall	**1** Left main coronary artery **2** Left anterior descending coronary artery **9** Other coronary artery of anterior wall
I21.1- ST elevation (STEMI) MI of inferior wall	**1** Right coronary artery **9** Other coronary artery of inferior wall
I21.2- ST elevation (STEMI) MI of other sites	**1** Left circumflex coronary artery **9** Other sites
I21.3 ST elevation (STEMI) MI of unspecified site	
I21.4 Non-ST elevation (NSTEMI) MI	

AMI Acute vs. Subsequent

- When the patient requires continued care for the MI, codes from category **I21** may continue to be reported for four weeks (28 days) or less from onset, regardless of the health care setting. This includes patients who are transferred from the acute care setting to the post-acute care setting within the four week time frame.

- For encounters after the four week time frame in which the patient requires continued care related to the MI assign the appropriate aftercare code (**I22.-**) rather than a code from category **I21**.

- Assign **I25.2** for old or healed MI not requiring further care.

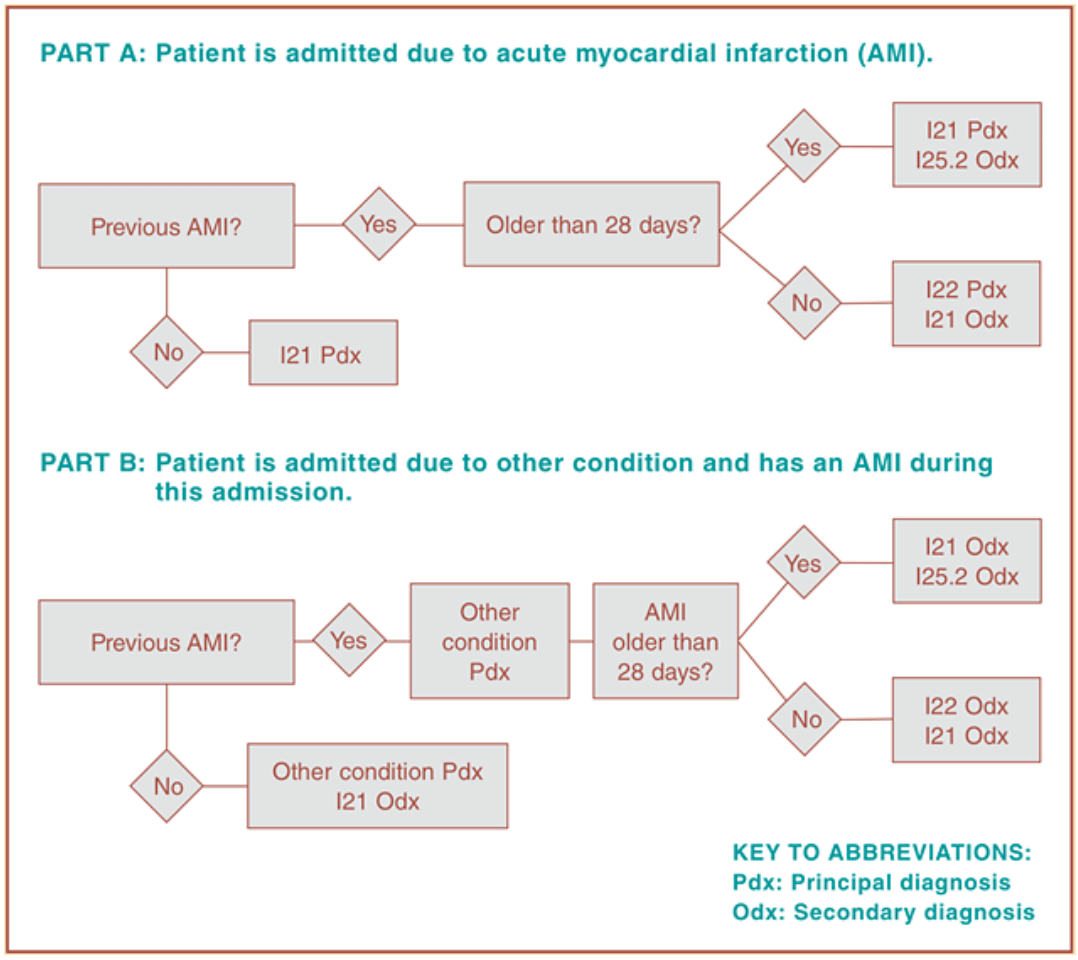
- When a patient suffers a new MI within four weeks of an acute MI, a code from category **I22**, Subsequent ST elevation (STEMI) and non-ST elevation (NSTEMI) MI, should be used in conjunction with a code from category **I21**. The sequencing of the **I22** and **I21** codes depends on the circumstances of admission.

  - A patient is admitted to the hospital due to an AMI and has a subsequent AMI within four weeks while still in the hospital. Code **I21** is sequenced first as the reason for the admission, with code **I22** sequenced as a secondary code.

  - A patient suffers a subsequent AMI after discharge for care of an initial AMI. The **I22** code should be sequenced first, followed by the **I21** code. An **I21** code must accompany an **I22** code to identify the site of the initial AMI and to indicate that the patient is still within the four-week time frame of healing from the initial AMI.

  - The guidelines for assigning the correct code from category **I22** are the same as for the initial MI.

MI Decision Tree



I21.- STEMI and NSTEMI MI
I22.- Subsequent STEMI and NSTEMI MI
I25.2 Old MI

Complications following Acute MI I23.-

- Category **I23** to identifies current complications following acute myocardial infarctions when they occur within the 28-day period, as follows:

  - **I23.0** Hemopericardium
  - **I23.1** Atrial septal defect
  - **I23.2** Ventricular septal defect
  - **I23.3** Rupture of cardiac wall without hemopericardium
  - **I23.4** Rupture of chordate tendineae
  - **I23.5** Rupture of papillary muscle
  - **I23.6** Thrombosis of atrium, auricular appendage, and ventricle
  - **I23.7** Postinfarction angina
  - **I23.8** Other complications

- A code from category **I23** must be used in conjunction with a code from category **I21** or category **I22**. Sequencing of the code from category **I23** will depend on the circumstances of admission, as follows:

  - If the complication of the MI is the reason for the encounter, the **I23** code should be sequenced first.
  - If the complication of the MI occurs during the encounter for the MI, the **I23** code should be sequenced after the **I21** or **I22** code.

Post MI Syndrome I24.-

- Patients with acute MI sometimes experience postmyocardial infarction syndrome (**I24.1**) or angina described as postinfarction angina (**I23.7**).

- Postmyocardial infarction, also called Dressler's syndrome, is a pericarditis characterized by fever, leukocytosis, pleurisy, pleural effusion, joint pains, and occasionally pneumonia.

- Except for these two conditions, no code from categories **I20** (angina pectoris) or **I24** (other acute ischemic heart disease) should be assigned with a code from category **I21** (STEMI & NSTEMI MI) or **I22** (Subsequent STEMI & NSTEMI MI).

Chronic Ischemic Heart Disease I25.-

- Category **I25**, Chronic ischemic heart disease, includes such conditions as coronary atherosclerosis, old myocardial infarction, coronary artery dissection, chronic coronary insufficiency, myocardial ischemia, and aneurysm of heart.

- Diagnoses of ‘coronary artery disease’ or ‘coronary heart disease’ without any further qualification are too vague to be coded accurately; the physician should be asked to provide a more specific diagnosis.

- ICD-10-CM has combination codes for atherosclerotic heart disease with angina pectoris so it is not necessary to use an additional code for angina . A causal relationship can be assumed in a patient with both atherosclerosis and angina , unless documentation indicates that the angina is due to a condition other than atherosclerosis.

- Physicians rarely include information regarding the type of graft in the diagnostic statement, but it is almost always available in the medical record.

- If the medical record makes it clear that there has been no previous bypass surgery, code **I25.1-** Atherosclerotic heart disease of native coronary artery. If there is a history of previous bypass, code **I25.70-** through **I25.73-**, **I25.79-**, or **I25.810** should be assigned when information indicating the material used in the bypass is available.

- Note that arteriosclerosis of a bypass vessel is not classified as a postoperative complication.

Chronic Ischemic Heart Disease I25.-

Category and 4th Character	5th Character
I25.1- ASHD of native coronary artery	**0** Without angina ✓**1** With angina
I25.2 Old MI	
I25.3 Aneurysm of heart	
I25.4- Coronary artery aneurysm & dissection	**1** Aneurysm **2** Dissection
I25.5 Ischemic cardiomyopathy	
I25.6 Silent myocardial ischemia	
I25.7- Atherosclerosis of CABG and coronary artery of transplanted heart with Angina Pectoris	✓ **0** Bypass graft(s) ✓ **1** Autologous vein ✓ **2** Autologous artery ✓ **3** Nonautologous biological ✓ **5** Native coronary artery of transplanted heart ✓ **6** Bypass coronary artery of transplanted heart ✓ **9** Other
I25.8- Atherosclerosis of other forms of Chronic Ischemic Heart Disease	**1** Other coronary vessels w/o angina pectoris **2** Chronic total occlusion of coronary artery **3** Coronary atherosclerosis d/t lipid rich plaque **4** Coronary atherosclerosis d/t calcified coronary lesion **9** Other
I25.9 Chronic Ischemic Heart Disease, Unspecified	

✓6 Character

0 With Unstable Angina Pectoris
1 With Documented Spasm
8 Other forms of Angina Pectoris
9 Unspecified Angina Pectoris

Exercise 9.2

1. Patient admitted with an NSTEMI that evolved to an anterior STEMI

2. Chronic Ischemic Heart Disease

3. Patient admitted for Post-infarction Angina from an anterior STEMI

Exercise 9.2

1. Patient admitted with an NSTEMI that evolved to an anterior STEMI

   I21.09

2. Chronic Ischemic Heart Disease

   I25.9

3. Patient admitted for Post-infarction Angina from an anterior STEMI

   I23.7 + I21.09

Heart Failure I50.-

- Heart failure occurs when an abnormality of cardiac function results in the inability of the heart to pump blood at a rate commensurate with the body's needs or the ability to do so only from an abnormal filling pressure. This decrease in blood supply to body tissue results in unmet needs for oxygen as well as in a failure to meet other metabolic requirements. This in turn results in pulmonary and/or systemic circulatory congestion and reduced cardiac output.

- Precipitating causes of heart failure include cardiac arrhythmias, pulmonary embolism, infections, anemia, thyrotoxicosis, myocarditis, endocarditis, hypertension, and myocardial infarction.

- There are two main categories of heart failure: Systolic and Diastolic.
  - Systolic heart failure (**I50.2-**) occurs when the ability of the heart to contract decreases.
  - Diastolic heart failure (**I50.3-**) occurs when the heart has a problem relaxing between contractions (diastole) to allow enough blood to enter the ventricles.

- Fifth characters further specify whether the heart failure is unspecified (**0**), acute (**1**), chronic (**2**), or acute on chronic (**3**).

- When the diagnostic statement lists congestive heart failure along with either systolic or diastolic heart failure, only the code for the type of heart failure is assigned: diastolic and/or systolic. Congestive heart failure is included in the codes for systolic and diastolic heart failure. If congestive heart failure is documented without further specification, it is classified to **I50.9** Heart failure, unspecified.

- The term "congestive heart failure" is often mistakenly used interchangeably with "heart failure." Congestion--pulmonary or systemic fluid buildup--is one feature of heart failure, but it does not occur in all patients. All codes for heart failure include any associated pulmonary edema. No additional code is assigned.

  - A diagnosis of acute pulmonary edema in the absence of underlying heart disease is classified with conditions affecting the respiratory system. (See chapter 19).

Heart Failure I50.-

- Heart dysfunction without mention of heart failure is indexed to **I51.89** Other ill-defined heart diseases. It is **not appropriate** for the coder to assume that a patient is in heart failure when only "diastolic dysfunction" or "systolic dysfunction" is documented.

- Heart failure is differentiated clinically by whether the right or left ventricle is primarily affected.

- Left-sided heart failure (left ventricular failure) is due to the accumulation of excess fluid behind the left ventricle. Code **I50.1** Left ventricular failure, includes associated conditions such as dyspnea, orthopnea, bronchospasm, cardiac asthma, edema of lung with heart disease, edema of lung with heart failure, left heart failure, pulmonary edema with heart disease and with heart failure; therefore, no additional codes are assigned.

- Right-sided failure ordinarily follows left-sided failure and is coded **I50.9** Heart failure, unspecified. This code includes any left-sided failure that is present; therefore, codes **I50.1** and **I50.9** are not assigned for the same episode of care and code **I50.9** takes precedence.

- Heart failure, unspecified, is coded to **I50.9**. This is a vague code, however, an effort should be made to determine whether a code from the series **I50.1** (left ventricular) through **I50.4-** (combined) is more appropriate.

Compensated, Decompensated, and Exacerbated Heart Failure

- When heart failure occurs, the heart muscle commonly develops compensatory mechanisms such as cardiac hypertrophy, raised arterial pressure, ventricular dilation, or increased force of contraction.

- When this occurs, the heart failure may be described as *compensated*, permitting near-normal function.

- When these compensatory mechanisms can no longer meet the increased workload, decompensation of the heart function results; this situation is often described as decompensated heart failure.

- Code assignment is not affected by the use of these terms; the code for the type of heart failure is assigned.

- An exacerbation is defined as an increase in the severity of a disease or any of its symptoms.

- The terms "exacerbated" and "decompensated" indicate that there has been a flare-up (acute phase) of a chronic condition. For example:

  - A patient with a known history of congestive heart failure is admitted with an exacerbation of diastolic congestive heart failure. Code **I50.33** Acute on chronic diastolic (congestive) heart failure is assigned.
  - An acute exacerbation of a chronic condition (heart failure) is coded as acute on chronic.

Cardiomyopathy I42.-

- Cardiomyopathy presents a clinical picture of a dilated heart, flabby heart muscles, and normal coronary arteries.

- Hypertrophic cardiomyopathy (HCM) is a condition, usually inherited, in which the heart muscle becomes thickened without any obvious cause. It is a known cause of sudden cardiac death in younger athletes, and young people are more likely to develop a more severe form of hypertrophic cardiomyopathy than older adults. HCM can be either obstructive (**I42.1**) or nonobstructive (**I42.2**) and is frequently asymptomatic until sudden cardiac death.

- Other common types of cardiomyopathy are the following:

  - **I42.0** Dilated cardiomyopathy, which includes congestive cardiomyopathy
  - **I42.1** Obstructive hypertrophic cardiomyopathy, including hypertrophic subaortic stenosis
  - **I42.2** Other hypertrophic cardiomyopathy, including nonobstructive hypertrophic cardiomyopathy
  - **I42.3** Endomyocardial (eosinophilic) disease, including endomyocardial (tropical) fibrosis and Löffler's endocarditis
  - **I42.4** Endocardial fibroelastosis, including congenital cardiomyopathy and elastomyofibrosis
  - **I42.5** Other restrictive cardiomyopathy, including constrictive cardiomyopathy not otherwise specified
  - **I42.6** Alcoholic cardiomyopathy due to alcohol consumption; a code for alcoholism (F10.-) is also assigned if present
  - **I42.7** Cardiomyopathy due to drug and external agent; the code for the cause (T36-T65) is assigned first
  - **I42.8** Other cardiomyopathies
  - **I42.9** Unspecified

Cardiomyopathy I42.-

- The symptoms of congestive cardiomyopathy (**I42.0**) are essentially the same as those of congestive heart failure, and the condition is often associated with congestive heart failure. Treatment ordinarily revolves around management of the congestive heart failure, and so the heart failure (**I50.-**) is designated as the principal diagnosis, with an additional code assigned for the cardiomyopathy.

- Two codes may be required for cardiomyopathy due to other underlying conditions.

  For example:

  Cardiomyopathy due to amyloidosis

  - **E85.9** Amyloidosis , unspecified + **I43** Cardiomyopathy in diseases classified elsewhere.

  (The underlying disease, amyloidosis, is sequenced first).

- Hypertensive cardiomyopathy should be coded to category **I11**, Hypertensive heart disease, with an additional code of **I43**.

- The term "ischemic cardiomyopathy" is sometimes used to designate a condition in which ischemic heart disease causes diffuse fibrosis or multiple infarction, leading to heart failure with left ventricular dilation. This is not a true cardiomyopathy and is coded to **I25.5** Ischemic cardiomyopathy, when no further clarification is provided by the attending physician.

- A diagnostic statement of ischemic alcoholic cardiomyopathy is assigned to codes **I25.5** and **I42.6** Alcoholic cardiomyopathy**,** because these conditions are not related.

Aneurysm I71.-

- An aneurysm is a localized abnormal dilation of blood vessels.

- A dissecting aneurysm is one in which blood enters the wall of the artery and separates the layers of the vessel wall. As the aneurysm progresses, tension increases and the aneurysm is likely to rupture, which usually results in death.

- Aneurysms are diagnosed primarily according to their location, such as the following:

  - **I25.41** Coronary artery aneurysm
  - **I71.02** Dissecting aneurysm of abdominal aorta
  - **I71.3** Aneurysm of abdominal aorta with rupture
  - **I71.2** Aneurysm of thoracic artery
  - **I71.1** Ruptured aneurysm of thoracic artery
  - **I71.6** Thoracoabdominal aneurysm

- Occasionally, a term describing the aneurysm's appearance is used, such as;
  "berry aneurysm" **I67.1**
  "syphilitic aneurysm of aorta" **A52.01**
  "traumatic aneurysm" **S25.00-, S25.20-**

Exercise 9.3

1. Acute on Chronic Systolic and Diastolic Congestive Heart Failure

2. Congestive Cardiomyopathy with Systolic CHF

3. Coronary Artery Aneurysm

Exercise 9.3

1. Acute on Chronic Systolic and Diastolic Congestive Heart Failure

   I50.43

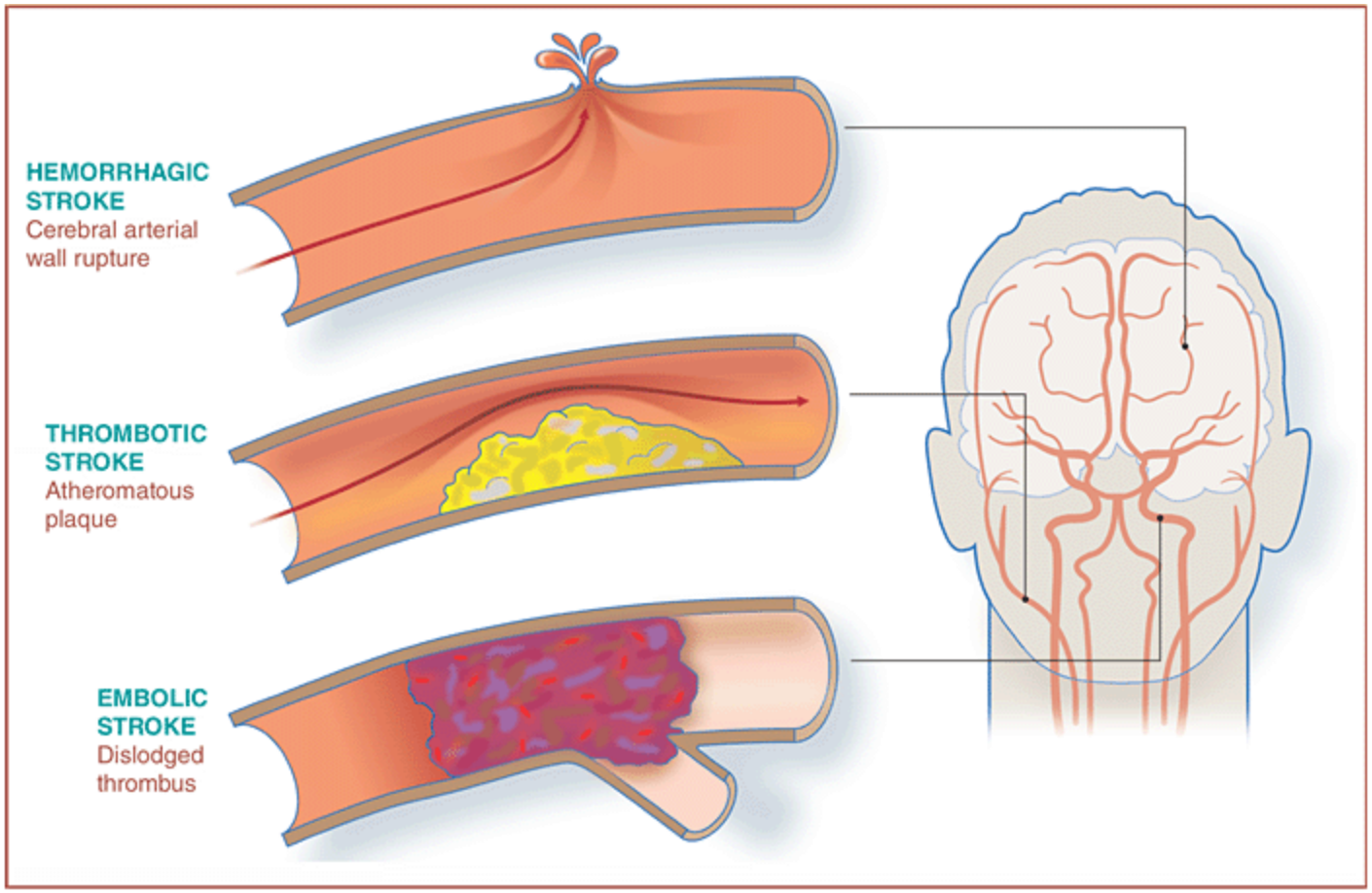
2. Congestive Cardiomyopathy with Systolic CHF

   I50.20 + I42.0

3. Coronary Artery Aneurysm

   I25.41

Types of Cerebral Infarction



Cerebrovascular Disorders

- Acute organic (nontraumatic) conditions affecting the cerebral arteries include hemorrhage, occlusion, and thrombosis and are coded in the **I60-I68** series.

- Category **I63**, Cerebral infarction, is used to describe occlusion and stenosis of cerebral and precerebral arteries resulting in cerebral infarction.

- Category **I63** is subdivided on the basis of whether the cerebral infarction is due to, thrombosis, embolism, occlusion or stenosis of the precerebral or cerebral arteries.

- These codes should not be assigned unless cerebral infarction is clearly documented in the medical record and the physician has indicated a relationship between the cerebral artery thrombosis, embolism, occlusion, or stenosis and the infarction.

- The coder should never assume that infarction has occurred.

- These codes apply to the current episode of care only; they do not indicate that the patient has had a cerebral infarction in the past.

Cerebral Infarction I63.-

Category and 4th Character	5th Character	6th Character
I63.0- Thrombosis of precerebral arteries **I63.1-** Embolism of precerebral arteries **I63.2-** Unspecified occlusion or stenosis of precerebral arteries	**0-** Unspecified **1-** Vertebral **2-** Basilar **3-** Carotid **9-** Other	**1** Right **2** Left **9** Unspecified
I63.3- Thrombosis of cerebral arteries **I63.4-** Embolism of cerebral arteries **I63.5-** Unspecified occlusion or stenosis of cerebral arteries	**0-** Unspecified **1-** Middle **2-** Anterior **3-** Posterior **4-** Cerebellar **9-** Other	**1** Right **2** Left **9** Unspecified
I63.6 Cerebral infarction due to venous thrombosis, nonpyogenic		
I63.8 Other		
I63.9 Unspecified		

Sequelae of Cerebrovascular Disease I69.-

- Codes from category **I69**, Sequelae of cerebrovascular disease, allow for greater specificity in reporting the residual effects of cerebrovascular diseases. These "late effects" include neurologic deficits that persist after initial onset of cerebrovascular conditions. The neurologic deficits caused by cerebrovascular disease may be present from the onset or may arise at any time after the onset of the condition.

- Codes for other paralytic syndrome following cerebrovascular disease (**I69.06, I69.16-, I69.26-, I69.36-, I69.86-, and I69.96-**) provide an instructional note to assign additional codes to indicate the type of paralytic syndrome, such as locked in state (**G83.5**) or quadriplegia (**G82.5-**).

- An additional code should also be added to codes **I69.091, I69.191, I69.291, I69.391, I69.891, and I69.991** to identify the type of dysphagia, if known.

- For "other sequelae of cerebrovascular disease" (**I69.098, I69.198, I69.298, I69.398, I69.898, and I69.998**), assign additional codes to identify the specific sequelae.

Sequelae of Cerebrovascular Disease

Category and 4th Character	5th Character	6th Character
I69.0- Nontraumatic subarachnoid hemorrhage **I69.1-** Nontraumatic intracerebral hemorrhage **I69.2-** Other nontraumatic intracranial hemorrhage **I69.3-** Cerebral infarction **I69.8-** Other cerebrovascular diseases **I69.9-** Unspecified cerebrovascular disease	**0** Unspecified sequelae **1** Cognitive deficits **2** Speech and language deficits **3** Monoplegia of upper limb **4** Monoplegia of lower limb **5** Hemiplegia/hemiparesis **6** Other paralytic syndrome **9** Other sequelae (includes apraxia, dysphagia, facial weakness, ataxias, and other sequelae)	**1** Right dominant **2** Left dominant **3** Right non-dominant **4** Left non-dominant **9** Unspecified side

Sequelae of Cerebrovascular Disease I69.-

- Codes from category **I69** are assigned for any remaining deficits when the patient is admitted at a later date.

- Like other late effect codes, category **I69** is assigned only when it is significant for the current episode of care. Code **Z86.73** Personal history of transient ischemic attack (TIA), and cerebral infarction without residual deficits, should be assigned rather than a code from category I69 when the patient has a history of a cerebrovascular infarction or CVA with no residual conditions, a history of TIA, a history of prolonged reversible ischemic neurological deficit (PRIND), or a history of reversible ischemic neurological deficit (RIND).

- Codes from category **I69** differ from other late effect codes in two ways:

  - These codes can be assigned as the principal diagnosis when the purpose of the admission is to deal with the late effect.
  - These codes can be assigned as additional codes when a new CVA is present and deficits from an earlier episode remain. This distinction permits the identification of those deficits due to the current CVA and those remaining from an earlier episode.

- Unlike other late effects, neurological deficits such as hemiplegia and aphasia due to cerebrovascular accidents are often present from the onset of the disease rather than arising after the original condition itself has cleared.

- Report any neurological deficits caused by a CVA even if they have resolved at the time of discharge from the hospital.

- For example, a patient is admitted because of subarachnoid hemorrhage with associated aphasia and hemiplegia that has cleared by the time of discharge. Even though these deficits have cleared at discharge, the following codes are assigned:

  - **I60.9** Nontraumatic subarachnoid hemorrhage, unspecified
  - **R47.01** Aphasia
  - **G81.90** Hemiplegia

Intraoperative, Postoperative and other Circulatory Complications

- ICD-10-CM provides codes to report a postoperative stroke. However, medical record documentation should clearly specify the cause-and-effect relationship between the medical intervention and the cerebrovascular accident in order to assign a code for intraoperative or postprocedural CVA.

- Proper code assignment depends on whether it was an infarction or a hemorrhage and whether it occurred intraoperatively or postoperatively. If it was a cerebral hemorrhage, code assignment depends on the type of procedure performed.

  For example:

  - **G97.31** Intraoperative hemorrhage and hematoma of a nervous system organ or structure complicating a nervous system procedure
  - **G97.32** Intraoperative hemorrhage and hematoma of a nervous system organ or structure complicating other procedure
  - **I97.810** Intraoperative cerebrovascular infarction during cardiac surgery
  - **I97.811** Intraoperative cerebrovascular infarction during other surgery
  - **I97.820** Postprocedural cerebrovascular infarction during cardiac surgery
  - **I97.821** Postprocedural cerebrovascular infarction during other surgery

- For codes from subcategory **I97.8**, assign an additional code to identify the specific type of stroke/cerebrovascular accident. The general coding rule for postoperative complications is that when the complication code does not specifically identify the condition, an additional code should be assigned to more fully explain it.

- Conditions classifiable in categories **I00** through **I99** are reclassified in subcategory **O99.4**, Diseases of the circulatory system complicating pregnancy, childbirth and the puerperium, when they occur during pregnancy, childbirth, or the puerperium. Because code **O99.4-** does not indicate the nature of the circulatory system condition, it is appropriate to assign an additional code from chapter 9 of ICD-10-CM for greater specificity.

Exercise 9.4

1. Cerebral Infarction due to Thrombosis of the right Posterior cerebral artery

2. Right side dominant Hemiplegia following a Cerebral Infarction

3. Postpocedural Cerebral Infarction due to an Embolism of the right Precerebral Vertebral Artery

Exercise 9.4

1. Cerebral Infarction due to Thrombosis of the right Posterior cerebral artery

   I63.331

2. Right side dominant Hemiplegia following a Cerebral Infarction

   I69.351

3. Postpocedural Cerebral Infarction due to an Embolism of the right Precerebral Vertebral Artery

   I97.821 + I63.111

Hypertension I10

- ICD-10-CM classifies hypertension by type as essential or primary (code **I10**) and secondary (category **I15**).

- Categories **I10** through **I13** classifies primary hypertension according to a hierarchy of the disease from its vascular origin:

  - **I10** Essential (primary) Hypertension
  - **I11.-** Hypertensive Heart Disease
  - **I12.-** Hypertensive Chronic Kidney Disease
  - **I13.-** Hypertensive Heart and Chronic Kidney Disease

- Essential hypertension also includes high blood pressure, hypertensive vascular disease, arterial, benign, malignant and systemic hypertension.

Primary, Transient and Secondary Hypertension

- Malignant hypertension is a sudden and rapid development of extremely high blood pressure. Without effective treatment, malignant hypertension can lead to congestive heart failure, hypertensive encephalopathy, intracerebral hemorrhage, uremia, and even death.

- The term "benign hypertension" refers to a relatively mild degree of hypertension of prolonged or chronic duration.

- When the hypertension is described as transient, assign code **R03.0** Elevated blood pressure reading without diagnosis of hypertension**,** unless the patient has an established diagnosis of hypertension.

- Hypertension described as "controlled" or with "history of" usually refers to an existing hypertension that is under control by means of continuing therapy. The coder should review the medical record to determine whether the hypertension is still under treatment; if so, the appropriate code from categories **I10** through **I15** should be assigned.

Hypertensive Heart Disease I11.-

- Certain heart conditions are assigned to category **I11**, Hypertensive heart disease, when a causal relationship is stated (due to hypertension) or implied (hypertensive).

- Hypertensive heart disease includes heart failure, myocarditis, cardiomegaly, cardiovascular disease, and degeneration of the myocardium.

- Category **I11** includes a fifth-character subclassification that indicates whether heart failure is present. However, an additional code from category **I50** is still required to specify the type of heart failure, if known.

- A cause-and-effect relationship between hypertension and heart disease **cannot be assumed** and careful attention must be given to the exact wording of the diagnostic statement.

- When the diagnostic statement mentions both conditions but does not indicate a causal relationship between them, separate codes are assigned, with sequencing being dependent on the circumstances of the admission/encounter.

    - **I11.0 + I50.9** Congestive heart failure due to hypertension
    - **I11.0 + I50.9** Hypertensive heart disease with congestive heart failure
    - **I50.9 + I10** Congestive heart failure with hypertension

- A causal relationship is presumed to exist for a cardiac condition when it is associated with another condition classified as hypertensive heart disease.

    - **I11.0 + I50.9** Hypertensive myocarditis with congestive heart failure
    - **I11.0 + I50.9** Hypertensive cardiovascular disease with congestive heart failure

- The coder should review the medical record for any reference to the presence of conditions such as coronary arteriosclerosis or chronic coronary insufficiency that could merit additional code assignments.

Hypertension and Chronic Kidney Disease I12.-

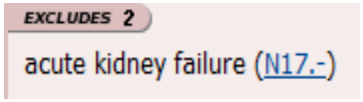
- When the diagnostic statement includes both hypertension and chronic kidney disease or renal sclerosis (in contrast to hypertension and heart disease), ICD-10-CM usually assumes that there is a cause-and-effect relationship and a code from category **I12**, Hypertensive chronic kidney disease, is assigned.
- A causal relationship does not need to be indicated in the diagnostic statement.
- A fourth character is used with category **I12** to indicate the stage of the chronic kidney disease.
- The appropriate code from category **N18** should be used as a secondary code to identify the stage of chronic kidney disease.

I12.9 Hypertensive chronic kidney disease with stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease

Hypertensive chronic kidney disease NOS
Hypertensive renal disease NOS

Use additional code to identify the stage of chronic kidney disease (N18.1-N18.4, N18.9)

- Note that category **I12** does not include acute kidney failure, which is an entirely different condition from chronic kidney disease and is not caused by hypertension.



Hypertensive Heart and Chronic Kidney Disease I13.-

- The codes in category **I13**, Hypertensive heart and chronic kidney disease, are combination codes that include hypertension, heart disease, and chronic kidney disease.
- The inclusion note at category **I13** "any condition in **I11-** with any condition in **I12-**" specifies that the conditions classified to categories **I11** and **I12** are included together in **I13**.
- Therefore, if a patient has hypertension, heart disease, and chronic kidney disease, then a code from **I13** should be used rather than individual codes for hypertension, heart disease, and chronic kidney disease (I11 or I12).
- Fourth and fifth characters indicate with or without heart failure, as well as the stage of the chronic kidney disease.
- Assume a relationship between the hypertension and the chronic kidney disease, whether or not the condition is so designated.
- If heart failure is present, assign an additional code from category **I50** to identify the type of heart failure.
- The appropriate code from category **N18**, Chronic kidney disease, should be used as a secondary code, with a code from category **I13** to identify the stage of chronic kidney disease.

I13.0 **Hypertensive heart and chronic kidney disease with heart failure and stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease**

Use additional code to identify type of heart failure (I50.-)

Use additional code to identify stage of chronic kidney disease (N18.1-N18.4, N18.9)

- For patients with both acute renal failure and chronic kidney disease an additional code for acute renal failure is required.
- When the diagnostic statement indicates hypertension and diabetes mellitus are both responsible for chronic kidney disease, assign the appropriate code from category **I12** (hypertensive chronic kidney disease) along with a code from categories **E08** (diabetes due to underlying condition) through **E13** (other specified diabetes mellitus), with fifth character of **2** (chronic kidney disease), from the subcategory for diabetes with kidney complications. Sequencing is optional. An additional code is assigned for the stage of chronic kidney disease (**N18.-**), if known

Hypertension with other conditions

- Although hypertension is often associated with other conditions and may accelerate their development, ICD-10-CM does not provide combination codes.

- Codes for each condition must be assigned to fully describe the condition.

- For example:

  - **I70.0 + I10** Atherosclerosis of aorta with essential hypertension
  - **I25.10 + I10** Coronary atherosclerosis and systemic hypertension
  - **I25.10 + I10** Arteriosclerotic heart disease with essential hypertension

Exercise 9.5

1. Malignant Hypertension

2. Hypertensive Chronic Kidney Disease, stage 5 with Acute Kidney Failure

3. Hypertensive stage 4 Chronic Kidney Disease with Chronic Diastolic Hypertensive Heart Failure

Exercise 9.5

1. Malignant Hypertension

   I10

2. Hypertensive Chronic Kidney Disease, stage 5 with Acute Kidney Failure

   I12.0 + N18.5 + N17.9

3. Hypertensive stage 4 Chronic Kidney Disease with Chronic Diastolic Hypertensive Heart Failure

   I13.0 + N18.4 + I50.32

Atherosclerosis of Native Arteries of Extremities I70-

Category, 4th & 5th Character	6th Character
I70.20- Unspecified **I70.21-** Intermittent Claudication **I70.22-** With Rest Pain **I70.26-** With Gangrene **I70.29-** Other	**1**- Right **2**- Left **3**- Bilateral **8**- Other **9**- Unspecified
✓**I70.23-** With Right Leg Ulceration ✓**I70.24-** With Left Leg Ulceration	**1**- Thigh **2**- Calf **3**- Ankle **4**- Heel & Midfoot **5**- Other part of foot **8**- Other part of lower leg **9**- Unspecified site
✓**I70.25** Other extremities with Ulceration	

✓ **Use additional Code to identify severity of Ulcer (L97.-)**

❖A chronic total occlusion of an artery of the extremities (**I70.92**) develops when hard, calcified plaque accumulates in an artery over an extended period of time, resulting in a clinically significant decrease in blood flow.

❖Code **I70.92** should be used as an additional code assignment with subcategories **I70.2-** through **I70.7-** when a chronic total occlusion is present with atherosclerosis of the extremities.

❖An acute occlusion of arteries of the extremity is assigned to code series **I70.2-**, **I70.3-**, and **I70.4-**.

Atherosclerosis of Bypass Graft I70.-

4th Character	5th Character	6th Character
.3- Unspecified type of bypass graft **.4-** Autologous vein bypass graft **.5-** Nonautologous biological bypass graft **.6-** Nonbiological bypass graft **.7-** Other type of bypass graft	**1-** Intermittent Claudication **2-** With Rest Pain **6-** With Gangrene **9-** Other	**1**- Right **2**- Left **3**- Bilateral **8**- Other **9**- Unspecified
	✓**3-** Right Leg with Ulceration ✓**4-** Left Leg with Ulceration	**1**- Thigh **2**- Calf **3**- Ankle **4**- Heel & Midfoot **5**- Other part of foot **8**- Other part of lower leg **9**- Unspecified site
	✓**5** Other Extremity with Ulceration	

✓ **Use additional Code to identify severity of Ulcer (L97.-)**

Pulmonary Embolism I26.- & I27.-

- An embolus is a blood clot that usually occurs in the veins of the legs (deep vein thrombosis, or DVT).
- Emboli can dislodge and travel to other organs in the body.
- A pulmonary embolism is a clot that lodges in the lungs, blocking the pulmonary arteries and reducing blood flow to the lungs and heart. Pulmonary embolic disease may be acute or chronic (long-standing, having occurred over many weeks, months, or years).
- In the majority of cases, acute pulmonary emboli do not cause chronic disease because the body's mechanisms will generally break down the blood clot.
- An acute embolus is usually treated with anticoagulants (e.g., intravenous heparin and warfarin or oral Coumadin) to dissolve the clot and prevent new ones. For acute pulmonary embolism, anticoagulant therapy may be carried out for three to six months. Therapy is discontinued when the embolus dissolves. A filter to interrupt the vena cava is another treatment option. The device filters the blood returning to the heart and lungs until the pulmonary embolism dissolves.

I26.0- PE w Acute Cor Pulmonale	**1** - Septic **2** - Saddle **9** - Other
I26.9- PE w/o Acute Cor Pulmonale	**0** - Septic **2** - Saddle **9** - Other
I27.82 Chronic PE	
Z86.711 Personal HX of PE	

Thrombosis & Thrombophlebitis of Veins of Extremities I74-I82

- Deep vein thrombosis and thrombophlebitis are two distinct processes that can coexist.

- A patient can develop a thrombus with or without inflammation.

  - A diagnosis of thrombosis of a vein indicates that a clot has formed
  - A diagnosis of thrombophlebitis indicates that the clot has become inflamed

- When both thrombosis and thrombophlebitis of the lower extremities are documented, assign only the code from subcategories
  - **I82.4-** Acute embolism and thrombosis of deep veins of lower extremity
  - **I82.5-** Chronic embolism and thrombosis of deep veins of lower extremity
  - **I82.81-** Embolism and thrombosis of superficial veins of lower extremities
- Thrombophlebitis of the extremities is classified according to the veins involved, as follows:

I80.0- Superficial vessels of lower extremities
I80.1- Femoral vein
I80.20- Unspecified deep vessels of lower extremities
I80.21- Iliac vein
I80.22- Popliteal vein
I80.23- Tibial vein
I80.29- Other deep vessels of lower extremities
I80.3- Lower extremities, unspecified
I80.8 Other
I80.9 Unspecified site

Deep Vein Thrombosis (DVT) I82.-

- Deep vein thrombosis, also referred to as venous thromboembolism, is a blood clot in a major vein.
- DVT generally involves the veins of the lower extremity, but it can also occur in the veins of the upper extremity.
- With the use of catheters for venous access and cardiac devices, there is increased risk of developing DVT in the upper extremities, such as the axillary, subclavian, or brachiocephalic veins.
- DVT can occur following orthopedic surgery, pelvic/abdominal surgery, or prolonged inactivity (e.g., long-distance travel, bed rest due to injury or illness, paralysis). Some individuals have a predisposition for developing blood clots due to an abnormality in their blood clotting system (e.g., factor V mutation, protein C or S deficiency, lupus).
- Treatment involves anticoagulants to inhibit further development of blood clots or clot-dissolving drugs. In the hospital, heparin is usually administered intravenously. In some cases, a filter is placed in the vena cava to prevent emboli or clots from traveling to the heart and lungs.
- Following discharge, anticoagulant therapy is recommended for three to six months (or longer). High-risk patients may be maintained on anticoagulant therapy for an indefinite period. Recurrent deep vein thrombosis can be prevented through prophylactic anticoagulant therapy, venous stasis prevention with gradient elastic stockings, and intermittent pneumatic compression of the legs.
- When DVT has completely resolved and the provider documentation indicates past history of DVT, assign code **Z86.718** Personal history of other venous thrombosis and embolism.

Embolism & Thrombosis I82.-

I82.0 Budd-Chiari syndrome		
I82.1 Thrombophlebitis migrans		
	5th Character	**6th Character**
I82.2- Vena cava and other thoracic veins	**1-** Superior Vena Cava **2-** Inferior Vena Cava **9-** Other Thoracic Veins	**0-** Acute **1-** Chronic
I82.3 Renal vein		
I82.4- Acute Deep veins of lower extremity	**0-** Unspecified **1-** Femoral **2-** Iliac **3-** Popliteal **4-** Tibial **9-** Other **Y-** Proximal lower extremity **Z-** Distal lower extremity	**1-** Right **2-** Left **3-** Bilateral **9-** Unspecified
I82.5- Chronic Deep veins of lower extremity	**0-** Unspecified **1-** Femoral **2-** Iliac **3-** Popliteal **4-** Tibial **9-** Other **Y-** Proximal lower extremity **Z-** Distal lower extremity	**1-** Right **2-** Left **3-** Bilateral **9-** Unspecified

Embolism & Thrombosis I82.-

Category and 4th Character	5th Character	6th Character
I82.6- Acute Veins of upper extremity	**0-** Unspecified **1-** Superficial veins **2-** Deep veins	**1-** Right **2-** Left **3-** Bilateral **9-** Unspecified
I82.7- Chronic Veins of upper extremity	**0-** Unspecified **1-** Superficial veins **2-** Deep veins	**1-** Right **2-** Left **3-** Bilateral **9-** Unspecified
I82.A- Axillary vein	**1-** Acute **2-** Chronic	**1-** Right **2-** Left **3-** Bilateral **9-** Unspecified
I82.B- Subclavian vein	**1-** Acute **2-** Chronic	**1-** Right **2-** Left **3-** Bilateral **9-** Unspecified
I82.C- Internal jugular vein	**1-** Acute **2-** Chronic	**1-** Right **2-** Left **3-** Bilateral **9-** Unspecified

Embolism & Thrombosis I82.-

Category, 4th & 5th Character	6th Character
I82.81- Superficial veins of lower extremities	**1-** Right **2-** Left **3-** Bilateral **9-** Unspecified
I82.89- Other specified veins	**0-** Acute **1-** Chronic
Category, 4th Character	**5th Character**
I82.9- Unspecified veins	**0-** Acute **1-** Chronic

Code **Z79.01** Long-term (current) use of anticoagulants is reported along with codes in subcategories I82.5 and I82.7 to describe any associated long-term use of anticoagulant therapy.

Signs & Symptoms

Category	4th Character
R00.- Abnormalities of heart beat	**0** Tachycardia **1** Bradycardia **2** Palpitations **8** Other **9** Unspecified
R01.- Cardiac murmurs and other heart sounds	**0** Benign and innocent murmurs **1** Unspecified **2** Other cardiac sounds
Category and 4th Character	**5th Character**
R07.8- Other chest pain	**1** Pleurodynia **2** Intercostal **9** Other chest pain
R07.9 Chest pain, unspecified	

Circulatory Status Z codes

- **ICD-10-CM provides several Z codes to indicate that the patient has a health status related to the circulatory system, such as the following:**

Z94.1 Heart transplant status
Z95.0 Presence of cardiac pacemaker
Z95.1 Presence of aortocoronary bypass graft
Z95.2 Presence of prosthetic heart valve
Z94.1 Heart transplant status
Z95.4 Presence of other heart-valve replacement
Z95.5 Presence of coronary angioplasty implant and graft
Z95.8 Presence of other cardiac and vascular implants and grafts
Z95.810 Presence of automatic (implantable) cardiac defibrillator
Z95.811 Presence of heart assist device
Z95.812 Presence of fully implantable artificial heart
Z95.818 Presence of other cardiac implants and grafts
Z95.82 Presence of other vascular implants and grafts
Z95.820 Peripheral vascular angioplasty status with implants and grafts
Z95.828 Presence of other vascular implants and grafts

These codes are assigned only as additional codes and are reportable only when the status affects the patient's care for a given episode

Exercise 9.6

1. Coronary Artery Atherosclerosis

2. Chronic Pulmonary Embolism

3. Acute Deep Vein Thrombosis of the Right Calf

Exercise 9.6

1. Coronary Artery Atherosclerosis

   I25.10

2. Chronic Pulmonary Embolism

   I27.82

3. Acute Deep Vein Thrombosis of the Right Calf

   I82.4Z1