

ICD-10-CM Specialty Code Set Training Cardiology

2014

Module 1



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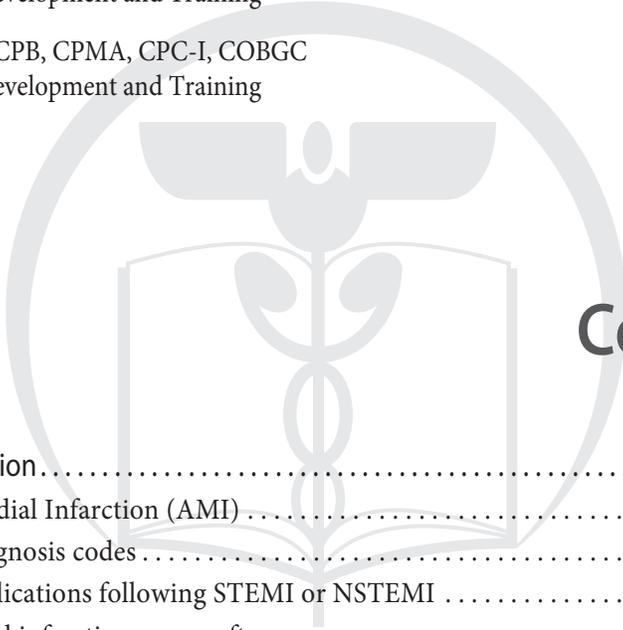
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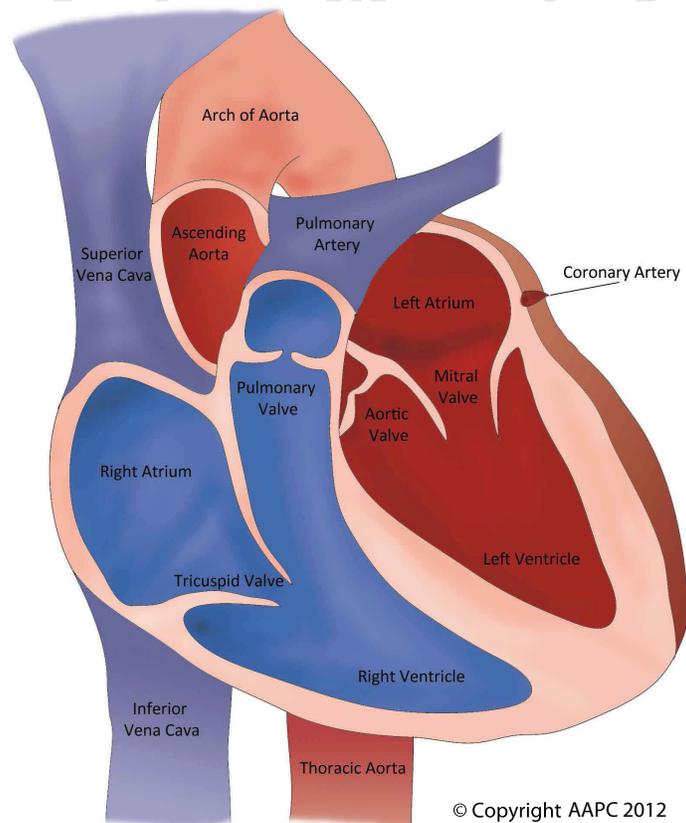
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Myocardial Infarction

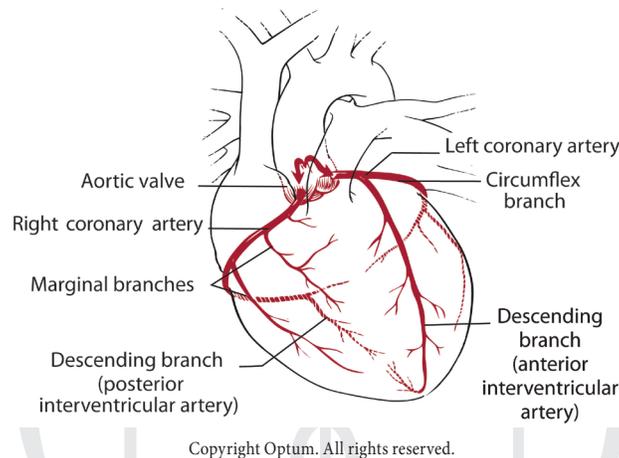
With each heartbeat, blood is sent throughout the body, carrying oxygen and nutrients to all of the cells. The heart beats over 100,000 times per day at an average rate of 80 times a minute, and sends 2,000 gallons of blood through the body. It keeps blood flowing through the 60,000 miles of blood vessels that feed the body's organs and tissues.

The heart has four chambers: the atria (two upper chambers) and the ventricles (two lower chambers). The heart is divided into right and left sides by a septum (a muscular wall). While in utero, there is normally an opening between the atria to allow blood to flow around the lungs. The right and left ventricles are also not separated. If the walls don't completely form by birth, the holes are considered septal defects. Ventricular septal defect is one of the most common congenital heart defects.

The heart also has four valves: *tricuspid*, *mitral*, *pulmonary*, and *aortic*. These valves are fibrous cusps that help the flow of blood throughout the heart by opening to permit blood flow and closing to prevent backflow of blood. The chordae tendineae are tendons made up mostly of collagen that link the papillary muscles to the tricuspid valve in the right ventricle and the mitral valve in the left ventricle. As the papillary muscles contract and relax, the chordae tendineae transmit the resulting increase and decrease in tension to the respective valves, causing them to open and close.



The coronary arteries are a network of arteries that supply blood to different parts of the heart muscle and electrical system. The left main coronary artery and the right coronary artery arise from the aorta. The left main coronary artery bifurcates into the left circumflex and left anterior descending arteries. The right marginal artery of the heart is a branch of the right coronary artery. It branches off at the inferior border of the heart and passes to the left towards the apex. It passes horizontally, branching and tapering along its route. It supplies the right ventricle. **Coronary artery disease** (CAD) is the result of the accumulation of atheromatous plaque within the walls of the coronary arteries. If the blood flow is blocked long enough, a portion of the heart muscle is damaged or dies. This condition is a myocardial infarction (MI), or heart attack.



Acute Myocardial Infarction (AMI)

More than a million people each year in the United States suffer MIs. The site of the MI will reflect the coronary artery experiencing the ischemia. For example, an MI of the anterior wall is caused by ischemia in the left anterior descending coronary artery.

The heart consists of three tissue layers: endocardium, myocardium, and pericardium. The endocardium, the innermost layer, lines the heart's chambers and is bathed in blood. The myocardium is the thick middle layer of the heart. Its cells are unique in that they physically resemble skeletal muscle but have electrical properties similar to smooth muscle. These cells also contain specialized structures that help to rapidly conduct electrical impulses from one muscle cell to another, enabling the heart to contract.

The pericardium is a protective sac surrounding the heart, which consists of two parts: the inner serous pericardium and the outer fibrous pericardium. MIs are initially classified into two categories depending on the depth of necrosis of the tissue layers.

A STEMI myocardial infarction occurs when there is a transmural infarction of the myocardium—which means that the entire thickness of the myocardium (endocardium, myocardium, and pericardium) has undergone necrosis. This results in ST elevation on an ECG. An NSTEMI myocardial infarction occurs when there is a partial dynamic block to coronary arteries. There will be no ST elevation or Q waves on ECG, as transmural infarction is not seen.

Coding of myocardial infarctions is different in ICD-10-CM than in ICD-9-CM. In ICD-9-CM, MIs are coded as acute and chronic, utilizing an 8-week rule as a guide. In ICD-10-CM, MIs are coded as initial and subsequent, utilizing a 4-week rule. The terms initial and subsequent

are used in relation to MIs in ICD-10-CM, but not in the same way. In ICD-9-CM, initial and subsequent are used to indicate the episode of care. This concept is not part of the code categories in ICD-10-CM. In ICD-10-CM, the terms initial and subsequent are used to indicate the timing of the acute MIs in relation to each other.

In ICD-10-CM, myocardial infarctions are broken down by type (STEMI or NSTEMI), site, and time parameter (initial, subsequent, or old).

There are two categories for myocardial infarction in ICD-10-CM. They are:

- I21 ST elevation (STEMI) and non-ST elevation (NSTEMI) myocardial infarction
- I22 Subsequent ST elevation (STEMI) and non-ST elevation (NSTEMI) myocardial infarction

The includes note under I21 states the category includes myocardial infarction specified as acute or with a stated duration of 4 weeks (28 days) or less from onset. This gives the indication for the new “4 week rule.” Notice that it also clarifies the time frame as from onset, not discharge from the hospital, etc.

The includes note under I22 states the category includes acute myocardial infarction occurring within four weeks (28 days) of a previous acute myocardial infarction, regardless of site.

The codes are then broken down by type and specific site of necrosis. There are also inclusion terms for the sites under the codes to assist with correct code selection.

- I21.01 ST elevation (STEMI) myocardial infarction involving **left main coronary artery**
- I21.02 ST elevation (STEMI) myocardial infarction involving **left anterior descending coronary artery**
 - STEMI involving diagonal coronary artery
- I21.09 ST elevation (STEMI) myocardial infarction involving **other coronary artery of anterior wall**
 - Acute transmural MI of anterior wall
 - Anteroapical transmural (Q wave) infarction (acute)
 - Anterolateral transmural (Q wave) infarction (acute)
 - Anteroseptal transmural (Q wave) infarction (acute)
 - Transmural (Q wave) infarction (acute) (of) anterior (wall) NOS
- I21.11 ST elevation (STEMI) myocardial infarction involving **right coronary artery**
- I21.19 ST elevation (STEMI) myocardial infarction involving **other coronary artery of inferior wall**
 - Acute transmural MI of inferior wall
 - Inferior transmural (Q wave) infarction (acute)

Transmural (Q wave) infarction (acute) (of) diaphragmatic wall

Transmural (Q wave) infarction (acute) (of) inferior (wall) NOS

I21.21 ST elevation (STEMI) myocardial infarction involving **left circumflex coronary artery**

I21.29 ST elevation (STEMI) myocardial infarction involving **other sites**

Acute transmural myocardial infarction of other sites

Apical-lateral transmural (Q wave) infarction (acute)

Basal-lateral transmural (Q wave) infarction (acute)

High lateral transmural (Q wave) infarction (acute)

Lateral (wall) NOS transmural (Q wave) infarction (acute)

Posterior (true) transmural (Q wave) infarction (acute)

Posterobasal transmural (Q wave) infarction (acute)

Posterolateral transmural (Q wave) infarction (acute)

Posteroseptal transmural (Q wave) infarction (acute)

Septal transmural (Q wave) infarction (acute) NOS

I21.3 ST elevation (STEMI) myocardial infarction of unspecified site

Acute transmural myocardial infarction of unspecified site

Myocardial infarction (acute) NOS

Transmural (Q wave) myocardial infarction NOS

I21.4 Non-ST elevation (NSTEMI) myocardial infarction

Acute subendocardial myocardial infarction

Non-Q wave myocardial infarction NOS

Nontransmural myocardial infarction NOS

EXAMPLE

Cardiology is called to the ED. A 59-year-old man has presented with a 90-minute history of severe crushing chest pain. His ECG shows 3 mm ST segment elevation, and he is diagnosed with an acute MI.

He is given loading doses of aspirin and clopidogrel. Forty-five minutes after admission, he undergoes successful primary percutaneous coronary intervention (PCI) with the insertion of a drug eluting stent into his critically narrowed left anterior descending coronary artery. By the time he is returned to the coronary care unit 30 minutes after the procedure, he is pain free and there is partial resolution of his ECG changes.

I21.02 ST elevation (STEMI) myocardial infarction involving left anterior descending coronary artery

Following are the subsequent MI codes:

I22.0 Subsequent ST elevation (STEMI) myocardial infarction of **anterior wall**

- Subsequent acute transmural myocardial infarction of anterior wall
- Subsequent transmural (Q wave) infarction (acute) (of) anterior (wall) NOS
- Subsequent anteroapical transmural (Q wave) infarction (acute)
- Subsequent anterolateral transmural (Q wave) infarction (acute)
- Subsequent anteroseptal transmural (Q wave) infarction (acute)

I22.1 Subsequent ST elevation (STEMI) myocardial infarction of **inferior wall**

- Subsequent acute transmural myocardial infarction of inferior wall
- Subsequent transmural (Q wave) infarction (acute) (of) diaphragmatic wall
- Subsequent transmural (Q wave) infarction (acute) (of) inferior (wall) NOS
- Subsequent inferolateral transmural (Q wave) infarction (acute)
- Subsequent inferoposterior transmural (Q wave) infarction

I22.2 Subsequent non-ST elevation (NSTEMI) myocardial infarction

- Subsequent acute subendocardial myocardial infarction
- Subsequent non-Q wave myocardial infarction NOS
- Subsequent nontransmural myocardial infarction NOS

I22.8 Subsequent ST elevation (STEMI) myocardial infarction of **other sites**

- Subsequent acute transmural myocardial infarction of other sites
- Subsequent apical-lateral transmural (Q wave) myocardial infarction (acute)
- Subsequent basal-lateral transmural (Q wave) myocardial infarction (acute)
- Subsequent high lateral transmural (Q wave) myocardial infarction (acute)
- Subsequent transmural (Q wave) myocardial infarction (acute) (of) lateral (wall) NOS
- Subsequent posterior (true) transmural (Q wave) myocardial infarction (acute)
- Subsequent posterobasal transmural (Q wave) myocardial infarction (acute)
- Subsequent posterolateral transmural (Q wave) myocardial infarction (acute)
- Subsequent posteroseptal transmural (Q wave) myocardial infarction (acute)
- Subsequent septal NOS transmural (Q wave) myocardial infarction (acute)

I22.9 Subsequent ST elevation (STEMI) myocardial infarction of unspecified site

Subsequent acute myocardial infarction of unspecified site

Subsequent myocardial infarction (acute) NOS

When a code from category I22 is assigned, there should also be a code from category I21 assigned to designate the initial myocardial infarction site.

EXAMPLE

Martha was admitted to the hospital after suffering an acute STEMI of the left circumflex. Two days after admission, she suffered a second anteroapical STEMI. Cardiology is called back to the hospital to see her for the new MI.

I22.0 Subsequent ST elevation (STEMI) myocardial infarction of anterior wall

I21.21 ST elevation (STEMI) myocardial infarction involving left circumflex coronary artery

Secondary Diagnosis Codes

There are instructional notes under the I21 and I22 categories for myocardial infarctions that state that additional codes should be used to identify:

- Exposure to environmental tobacco smoke (Z77.22)
- History of tobacco use (Z87.891)
- Occupational exposure to environmental tobacco smoke (Z57.31)
- Tobacco dependence (F17.-)
- Tobacco use (Z72.0)

The provider should be informed of the specific terminology as it relates to smoking history to ensure that the proper codes are assigned for these conditions.

There is also another code included in the instructional note that indicates tPA administration. The code is Z92.82 *Status post administration of tPA (rtPA) in a different facility within the last 24 hours prior to admission to a current facility.*

tPA stands for tissue plasminogen activator. It is a fast-acting enzyme that dissolves blood clots. It can be produced naturally by cells in the walls of blood vessels, or prepared through the use of genetic engineering. Tissue plasminogen activator is used in the coronary arteries during heart attacks and in the cranial arteries in certain types of strokes. Administering tPAs during the first few hours following the incident can minimize the damage to the heart muscle and can improve the patient's chances of survival.

Code Z92.82 is assigned as a secondary diagnosis code at the receiving facility when a patient is received in transfer into a facility and the documentation indicates that the patient was administered tPA within the last 24 hours prior to admission to the current facility. The instructional note under code Z92.82 states to code first the condition requiring tPA administration, such as acute cerebral infarction (I63.-) or acute myocardial infarction (I21-),

I22-). This code would be assigned even if the patient is still receiving the tPA at the time they are received into the current facility.

EXAMPLE

Patient presents to a rural hospital with chest pressure on and off, arm and shoulder pain, and rapid heartbeat for the past hour. He is diagnosed with acute MI of the left main coronary artery and is administered tPA. He is stabilized and transferred to another facility that has an advanced coronary unit within 2 hours.

Physician at First Hospital: I21.01 ST elevation (STEMI) myocardial infarction involving left main coronary artery

Physician at Second Hospital: I21.01 ST elevation (STEMI) myocardial infarction involving left main coronary artery

Z92.82 Status post administration of tPA (rtPA) in a different facility within the last 24 hours prior to admission to a current facility

Current Complications Following STEMI or NSTEMI

Heart attack complications are often related to the damage done to your heart during a heart attack. These are located in category I23, *Certain current complications following ST elevation (STEMI) and non-ST elevation (NSTEMI) myocardial infarction (within the 28 day period)*.

The complications listed under category I23 are:

Hemopericardium (I23.0)—This occurs when blood replaces pericardial fluid after an MI. This may lead to cardiac tamponade, which is pressure on the heart that occurs when blood or fluid builds up in the space between the myocardium and the pericardium. As a result, the body does not get enough blood.

Atrial septal defect (I23.1)—An ASD allows blood to be shunted from the left side of the heart (oxygenated blood) to the right side of the heart (deoxygenated blood), overloading the muscles on the right side of the heart. This may cause right heart enlargement, heart failure, arrhythmias, stroke, and pulmonary hypertension, among other things.

Ventricular septal defect (I23.2)—Ventricular septal defect is a rare but serious complication of acute MI. VSD tend to occur 3 to 8 days after the index AMI, but may also occur within the first 24 hours, or as late as 2 weeks post infarction. The defect allows oxygenated and deoxygenated blood to mix between the heart's lower chambers.

Rupture of cardiac wall without hemopericardium (I23.3)—Rarely, the heart muscle ruptures under the pressure of the heart's pumping action because the damaged heart muscle is weak. Rupture usually occurs 1 to 10 days after a heart attack and is more common among women.

Rupture of chordae tendineae (I23.4)—Tearing of the tissue between the heart valves and papillary muscles.

Rupture of papillary muscle (I23.5)—Tearing of the muscle that attaches to heart valves that direct blood flow through the heart.

Thrombosis of atrium, auricular appendage, and ventricle (I23.6)—Erratic blood flow and lack of blood flow in parts of the heart damaged by the MI can cause thrombus to form in the heart's chambers. Thrombus occurs in about 20 percent of people who have had an MI.

Postinfarction angina (I23.7)—Anginal pain that occurs after an MI. This indicates that remaining blood flow to the heart muscle is inadequate. About 20 to 30 percent of MI patients experience postinfarction angina. This condition indicates that the patient is at increased risk for reinfarction.

Other complications (I23.8)

There is a note under the category that states that a code from category I23 must be used in conjunction with a code from category I21 or category I22. The I23 code should be sequenced first, if it is the reason for the encounter, or, it should be sequenced after the I21 or I22 code if the complication of the MI occurs during the encounter for the MI.

EXAMPLE A:

Jack is seen for postinfarction angina. He is feeling better and his angina symptoms are decreasing.

In this example, code I23.7 would be the correct code for the postinfarction angina. The issue is that the myocardial infarction causing the current complication is not indicated. The instructional note under category I23 states that the I23 codes **MUST** be used in conjunction with the codes from category I21 and I22. Without the information documented, under ICD-10-CM, this would need to be held for provider query to obtain the second piece of information needed to fully code the encounter.

Look at the example with the complete information given.

EXAMPLE B:

Jack is seen for postinfarction angina. He suffered a non-Q wave MI 1 week ago. He is feeling better and his angina symptoms are decreasing.

I23.7 Postinfarction angina

I21.4 Non-ST elevation (NSTEMI) myocardial infarction

Old Myocardial Infarction Versus Aftercare

Another difference between ICD-9-CM and ICD-10-CM as it relates to myocardial infarction is the concept of old or chronic. In ICD-10-CM there is still a code for old myocardial infarction, I25.2. There is not, however, a code subcategory for chronic. The guidelines state that the acute code categories I21 and I22 may be reported for the 28 day duration as long as the patient requires continued care. If the patient requires continued care for the myocardial infarction after the 28 day period, then the aftercare codes must be used instead as ICD-10-CM does not contain codes for chronic myocardial infarction.

EXAMPLE

John suffered an acute MI of the right coronary artery 3 weeks ago. He is presenting for his 2 week hospital follow up.

I21.11 ST elevation (STEMI) myocardial infarction involving right coronary artery

EXAMPLE

Barbara suffered an acute MI of the LAD and underwent stent placement. She is presenting 6 weeks postinfarction. She is complaining of continued fatigue.

Z51.89 Encounter for other specified aftercare

Z48.812 Encounter for surgical aftercare following surgery on the circulatory system

EXAMPLE

Robert presents for a check-up. He suffered an MI of the left main coronary artery. He is asymptomatic and requires no continued care for the MI, but is being followed due to his history.

I25.2 Old myocardial infarction

