

## ICD-10-CM: Myocardial Infarction (MI)

### What is a Myocardial Infarction (MI)?

A myocardial infarction (MI), commonly known as a heart attack, occurs when a portion of the heart is deprived of oxygen due to blockage of a coronary artery. Coronary arteries supply the heart muscle (myocardium) with oxygenated blood. Without oxygen, muscle cells served by the blocked artery begin to die (infarct). Injury to the heart muscle causes chest pain and chest pressure sensation. If blood flow is not restored to the heart muscle within 20 to 40 minutes, irreversible death of the heart muscle will begin to occur. Muscle continues to die for six to eight hours at which time the heart attack usually is "complete." The dead heart muscle is eventually replaced by scar tissue.

### What may cause a Myocardial Infarction (MI)?

Occlusive intracoronary thrombus - a substance called plaque can build up in the walls of your coronary arteries. This plaque is made up of cholesterol and other cells. A heart attack may occur when a tear in the plaque occurs which triggers blood platelets and other substances to form a blood clot at the site that blocks blood from flowing to the heart. This is the most common cause of heart attack. Another cause may be when a slow buildup of plaque may narrow one of the coronary arteries so that it is almost blocked.

Vasospasm - with or without coronary atherosclerosis; possibly associated with platelet aggregation. Note: Prinzmetal or variant angina is believed to be due to vasospasm in coronary arteries without obstructive lesions.

Emboli - from left sided mural thrombosis, vegetative endocarditis, or paradoxical emboli (this is rare) from the right side of heart through a patent foramen ovale.

Finally, the cause of heart attack is not always known.

### Types of Myocardial Infarctions

**ST Elevation Myocardial Infarction (STEMI)** or Transmural Acute MI, is associated with atherosclerosis involving a major coronary artery. It can be subclassified into anterior, posterior, inferior, lateral, or septal. STEMI's extend through the whole thickness of the heart muscle and are usually a result of complete occlusion of the area's blood supply. ST elevation and Q waves are seen on electrocardiogram (ECG).

**Non ST Elevation Myocardial Infarction (NSTEMI)** [May also be called a Subendocardial Acute MI, or a Non Transmural MI, or a Non-Q Wave MI] involves a small area in the subendocardial wall of the left ventricle, ventricular septum, or papillary muscles. NSTEMI's do not extend through the whole thickness of the heart muscle. The subendocardial area is particularly susceptible to ischemia. ST depression is seen on ECG

#### Types of possible treatments for a STEMI:

- Thrombolysis using tissue plasminogen activator (tPA) administered intravenously:
  - Reteplase
  - Alteplase
  - Tenecteplase
- Percutaneous transluminal coronary angioplasty (PTCA) with or without stent placement
- Coronary artery bypass graft (CABG)

#### Types of possible treatments for a NSTEMI:

- Medications to protect the heart and reduce its workload
  - Beta blockers
  - Nitroglycerin
  - Possibly an angiotensin-converting-enzyme (ACE) inhibitor or angiotensin-receptor blocker
- One or more anti-clotting medications (e.g. heparin) to prevent blood clots
- Percutaneous transluminal coronary angioplasty (PTCA) with or without stent placement

### ICD-10-CM Official Guidelines for Coding and Reporting FY 2015

#### Acute myocardial infarction (AMI)

1) ST elevation myocardial infarction (STEMI) and non ST elevation myocardial infarction (NSTEMI)

The ICD-10-CM codes for acute myocardial infarction (AMI) identify the site, such as anterolateral wall or true posterior wall. Subcategories I21.0-I21.2 and code I21.3 are used for ST elevation myocardial infarction (STEMI). Code I21.4, Non-ST elevation (NSTEMI) myocardial infarction, is used for non ST elevation myocardial infarction (NSTEMI) and nontransmural MIs.

If NSTEMI evolves to STEMI, assign the STEMI code. If STEMI converts to NSTEMI due to thrombolytic therapy, it is still coded as STEMI.

For encounters occurring while the myocardial infarction is equal to, or less than, four weeks old, including transfers to another acute setting or a postacute setting, and the patient requires continued care for the myocardial infarction, codes from category I21 may continue to be reported. For encounters after the 4 week time frame and the patient is still receiving care related to the myocardial infarction, the appropriate aftercare code should be assigned, rather than a code from category I21. For old or healed myocardial infarctions not requiring further care, code I25.2, Old myocardial infarction, may be assigned.

2) Acute myocardial infarction, unspecified

Code I21.3, ST elevation (STEMI) myocardial infarction of unspecified site, is the default for unspecified acute myocardial infarction. If only STEMI or transmural MI without the site is documented, assign code I21.3.

3) AMI documented as nontransmural or subendocardial but site provided

If an AMI is documented as nontransmural or subendocardial, but the site is provided, it is still coded as a subendocardial AMI.

4) Subsequent acute myocardial infarction

A code from category I22, Subsequent ST elevation (STEMI) and non ST elevation (NSTEMI) myocardial infarction, is to be used when a patient who has suffered an AMI has a new AMI within the 4 week time frame of the initial AMI. A code from category I22 must be used in conjunction with a code from category I21. The sequencing of the I22 and I21 codes depends on the circumstances of the encounter.

#### What does the coder need to know to code a myocardial infarction?

- Is there documentation of STEMI or NSTEMI
- Is a site given
  - If a site is given, but no information as to STEMI or NSTEMI, code to STEMI by site
    - Please see AHA Coding Clinic for ICD-10-CM and ICD-10-PCS 1st Quarter 2013 pages 25-26
- Is the patient admitted with an initial MI or a subsequent MI
- What is the time frame of onset of the MI and/or subsequent MI

#### Example 1:

Patient presents with a chief complaint of chest pain admitted to Coronary Care Unit due to acute inferior myocardial infarction. **I21.19**

**HISTORY OF PRESENT ILLNESS:** The patient is a 40-year-old white male who presents with a chief complaint of "chest pain".

**REVIEW OF SYSTEMS:** All other systems reviewed & are negative.

#### TREATMENT:

Heparin lock X. 2.  
Nasal cannula oxygen 3 liters/minute.  
Aspirin 5 grains chew & swallow.  
Nitroglycerin drip at 30 micrograms/minute.  
Cardiac monitor.  
TPA 90 minute protocol.  
Heparin IV 5000 unit bolus followed by 1000 units/hour.

**IMPRESSION:** Acute Inferior STEMI

#### ICD-10-CM Index

Infarct, infarction  
- myocardium, myocardial (acute) (with stated duration of 4 weeks or less) I21.3  
- - ST elevation (STEMI) I21.3  
- - - anterior (anteroapical) (anterolateral) (anteroseptal) (Q wave) (wall) I21.09  
- - - - subsequent I22.0  
- - - inferior (diaphragmatic) (inferolateral) (inferoposterior) (wall) NEC **I21.19**  
- - - - subsequent I22.1

#### ICD-10-CM Tabular

**I21 ST elevation (STEMI) and non-ST elevation (NSTEMI) myocardial infarction**  
  
I21.1 ST elevation (STEMI) myocardial infarction of inferior wall  
  
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**  
  
**Excludes2:** ST elevation (STEMI) myocardial infarction involving left circumflex coronary artery (I21.21)

#### Example 2:

The same patient presents with a chief complaint of chest pain and is admitted to Coronary Care Unit due to acute NSTEMI. **I22.2 and I21.19**

**HISTORY OF PRESENT ILLNESS:** The patient is a 40-year-old white male who presents with a chief complaint of "chest pain". The patient was discharged from the hospital last week after treatment for an Acute Inferior STEMI suffered ten (10) days ago.

**REVIEW OF SYSTEMS:** All other systems reviewed & are negative.

#### TREATMENT:

The patient was given nifedipine 10 mg p.o., nasal oxygen at 3 liters by nasal cannula. Morphine sulfate was given, 2 mg I.V.

**IMPRESSION:** Acute STEMI

**Note:** This is a subsequent MI occurring within 4 weeks of an initial MI. Guidelines state, "A code from category I22, Subsequent ST elevation (STEMI) and non ST elevation (NSTEMI) myocardial infarction, is to be used when a patient who has suffered an AMI has a new AMI within the 4 week time frame of the initial AMI. A code from category I22 must be used in conjunction with a code from category I21. The sequencing of the I22 and I21 codes depends on the circumstances of the encounter." Therefore two codes will be needed to fully capture this encounter, a code from I22 for the new, subsequent, MI, and a code from I21 for the initial MI occurring ten days previously.

#### ICD-10-CM Index

Infarct, infarction  
- myocardium, myocardial (acute) (with stated duration of 4 weeks or less) I21.3  
- - non-ST elevation (NSTEMI) I21.4  
- - - subsequent **I22.2**

#### ICD-10-CM Tabular

**I22 Subsequent ST elevation (STEMI) and non-ST elevation (NSTEMI) myocardial infarction**  
  
➔ **I22.2 Subsequent non-ST elevation (NSTEMI) myocardial infarction**

#### Remember to ask yourself:

- Is there documentation of STEMI or NSTEMI?
- Is a site given?
  - If a site is given, but no information as to STEMI or NSTEMI, code to STEMI by site
- Is the patient admitted with an initial MI or a subsequent MI?
- What is the time frame of onset of the MI and/or subsequent MI?
- Be guided by the documentation in the medical record to determine the correct codes and the appropriate sequencing of the codes.