Clinical overview

**Definition**
A myocardial infarction is a condition in which an artery that supplies blood to the heart is blocked, cutting off the supply of oxygen and nutrients to that area of the heart. As a result, the affected heart tissue dies or is permanently damaged.

**Causes**
- Atherosclerosis of the coronary arteries, where fatty plaques that build up inside the coronary arteries block blood flow or cause blood clots
- Blood clots
- Sudden severe stress
- Spasms of the coronary arteries

**Risk factors**
- Age (older than 65)
- Gender (male)
- Diabetes mellitus
- Genetic or hereditary factors
- High blood pressure/hypertension
- Smoking
- High-fat diet
- High cholesterol and triglycerides
- Lack of exercise
- Obesity
- Illicit drug use

**Signs and symptoms**
There may be no signs or symptoms (“silent” myocardial infarction). When they do occur, the most common signs and symptoms include:
- Chest pain (heaviness, pressure, feeling of a tight band around chest, etc.); pain may radiate to jaw, neck, arm or back
- Indigestion
- Abdominal pain
- Anxiety or feeling of impending doom
- Nausea and vomiting
- Shortness of breath
- Rapid or irregular heartbeat
- Fatigue or lightheadedness
- Sweating

**Complications**
- Arrhythmias (irregular or abnormal heart rhythms)
- Heart failure
- Cardiomyopathy
- Heart rupture
- Heart valve problems
- Blood clot to lungs (pulmonary embolism) or brain (stroke)

**Diagnostic tools**
- Medical history and physical exam
- Chest X-ray
- Blood tests
- Electrocardiogram (ECG or EKG)
- Echocardiogram
- Coronary angiography (cardiac catheterization)
- Exercise stress tests
- CT scans and MRI
- Nuclear scans

**Treatment**
- Medications (anticoagulants or thrombolytics, pain relievers, nitroglycerin, beta blockers, angiotensin-converting enzyme inhibitors, cholesterol-reducing agents)
- Oxygen therapy
- Surgical intervention (coronary angioplasty and stenting, coronary artery bypass grafting)
Documentation tips for physicians

**Abbreviations**
- Limit – or avoid altogether – the use of acronyms and abbreviations. While “MI” is a commonly accepted medical abbreviation for myocardial infarction, this abbreviation has other meanings related to cardiac conditions (for example, mitral insufficiency and mitral incompetence). The meaning of an abbreviation often can be determined based on context, but this is not always true. Best practice is to always document myocardial infarction by spelling it out in full.

**Site/location and type**
- Specify the site or location within the heart of myocardial infarction, such as anterolateral wall, inferoposterior wall, lateral wall, subendocardial, etc., and the particular coronary artery(ies) involved.
- Specify the type, for example: ST elevation myocardial infarction (STEMI) or non-ST elevation myocardial infarction (NSTEMI); Type 1, 2, 3, 4a, 4b, 4c or 5; intraoperative, postoperative; subsequent.

**Dates/timelines**
Clearly document specific timelines or dates associated with myocardial infarction, as this influences ICD-10-CM code assignment.
- A myocardial infarction that occurred four weeks ago or less is coded as an acute myocardial infarction (ICD-10-CM category I21, Acute myocardial infarction).
- Encounters after the four-week time frame but with the patient still receiving care related to the myocardial infarction are reported with “aftercare” codes (rather than a code from category I21).
- A myocardial infarction that occurred more than four weeks ago with no current symptoms directly associated with that myocardial infarction and requiring no current care is coded as an “old” or historical myocardial infarction (code I25.2, Old myocardial infarction).
- Avoid use of vague descriptions (such as “recent” myocardial infarction), as these descriptions do not specify whether the myocardial infarction occurred less than or more than four weeks ago. If describing myocardial infarction as “recent,” best practice is to include the specific date, as in “recent myocardial infarction on June 1, 20XX.”

**Subjective**
- In the subjective section of the medical record, document any current complaints that are directly related to current acute myocardial infarction or old/historical myocardial infarction.

**Objective**
- The objective section should document any abnormal cardiovascular exam findings.
- Document results of diagnostic testing, including the absence or presence of ST elevation on ECG/EKG tracing.

**Final assessment/impression**
- Document the diagnosis by spelling it out in full.
- Describe myocardial infarction with the highest level of specificity (site/location, type, presence or absence of ST elevation, dates/timelines).

**Plan**
- Document a current and specific treatment plan for acute or historical myocardial infarction, including orders for diagnostic testing.
- Document to whom/where referrals or consultation requests are made.
- Include the date of the patient’s next appointment.

**Myocardial infarction diagnosed on electrocardiogram or other special investigation**
Many diagnostic tests, including ECG or EKG, are performed using sophisticated computer technology that includes the computer software’s own diagnostic interpretation of the test results. Make sure the office note clearly documents the physician’s own interpretation of test results and not simply a “cut-and-paste” of the computer software’s diagnostic interpretation.

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ICD-10-CM tips and resources for coders

Coding basics
There are many different ways to document and describe a myocardial infarction. ICD-10-CM code assignment is dependent upon the specific description and details documented in the individual medical record. To ensure accurate code assignment, coders must carefully review:

- The complete medical record description of myocardial infarction
- The alphabetic index entries and all subterms
- The code descriptions in the tabular list, including all instructional notes

ST elevation at a glance
ST elevation myocardial infarction (STEMI) is a myocardial infarction that shows a certain change in the ECG or EKG tracing – specifically, a portion of the EKG called the ST segment is elevated above baseline.

STEMI occurs when a blood clot forms suddenly, completely blocking an artery in the heart. This can result in damage that covers a large area of the heart and extends deep into the heart muscle.

Non-ST elevation myocardial infarction (NSTEMI) is a myocardial infarction in which the EKG tracing does NOT show elevation of the ST segment above baseline. With NSTEMI, damage does not extend through the full depth of the heart muscle.

Note: Documentation of ST elevation on EKG by itself with no mention of acute myocardial infarction is not coded as acute myocardial infarction. Medical conditions other than acute MI can cause ST elevation. Also, for some people, ST elevation on an EKG may be a normal variant.

Types 3, 4a, 4b, 4c and 5 → I21.A9, Other myocardial infarction type

- **Type 3**: Myocardial infarction resulting in death when biomarker values are unavailable
- **Type 4a**: Myocardial infarction related to percutaneous coronary intervention (PCI)
- **Type 4b**: Myocardial infarction related to stent thrombosis
- **Type 4c**: Myocardial infarction due to restenosis 50 percent or greater after an initially successful PCI
- **Type 5**: Myocardial infarction related to coronary artery bypass grafting (CABG)
  - The “Code also” and “Code first” notes should be followed related to complications, and for coding of post-procedural myocardial infarctions during or following cardiac surgery.
ICD-10-CM tips and resources for coders

Myocardial infarction

ICD-10-CM

AMI, unspecified

- Code I21.9, Acute myocardial infarction, unspecified, is the default for unspecified acute myocardial infarction or unspecified type.
- If only Type 1 STEMI or transmural MI without the site is documented, assign code I21.3, ST elevation (STEMI) myocardial infarction of unspecified site.
- If an acute myocardial infarction is documented as nontransmural or subendocardial, but the site is provided, it is coded as a subendocardial AMI.

Subsequent AMI

- A code from category I22, Subsequent ST elevation (STEMI) and non-ST elevation (NSTEMI) myocardial infarction, is used when a patient who has suffered a Type 1 or unspecified AMI has a new AMI within the four-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.
- Do not assign code I22 for subsequent myocardial infarctions other than Type 1 or unspecified.
- For subsequent Type 2 AMI, assign only code I21.A1.
- There is no subsequent Type 3 myocardial infarction, as Type 3 refers to myocardial infarction resulting in death when biomarker values are unavailable.
- For subsequent Type 4 or Type 5 AMI, assign only code I21.A9.

Old myocardial infarction

According to the ICD-10-CM manual, code I25.2 is assigned when a medical record specifically describes myocardial infarction as follows:

- Diagnosed on ECG, but presenting no symptoms
- Healed or old
- Past (diagnosed on ECG or other investigation, but currently presenting no symptoms)
- With a stated duration of more than four weeks (and no longer receiving care)
- Older than four weeks (and no longer receiving care)
- Personal history of

Diagnosed on ECG or other special investigation means the physician’s own interpretation of the ECG/EKG or other diagnostic test results (and not simply a “cut-and-paste” of the diagnostic testing machine’s computer software interpretation that has not been reviewed and verified by the physician).

Currently presenting no symptoms means the medical record does not document any current symptoms supported as specifically related to the old myocardial infarction.

References: American Heart Association; American Hospital Association Coding Clinic; American College of Cardiology; ICD-10-CM Official Guidelines for Coding and Reporting; Mayo Clinic; MedlinePlus; National Heart, Lung and Blood Institute; WebMD