Myocardial Infarctions: Frequently Asked Questions

by Sue Prophet, RRA, CCS, director of classification and coding

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Myocardial Infarctions

Many coders still have questions regarding the correct coding and sequencing of myocardial infarctions (MI), particularly in relation to the use of the fifth digits, transfers, underlying diagnosis, and performance of procedures. The following information is provided to clarify these issues.

Fifth-digit Subclassification
The following fifth-digit subclassification is used with category 410, Acute myocardial infarction:

0 Episode of care unspecified

This fifth digit is assigned when medical record documentation does not contain sufficient information to determine the episode of care. It should rarely be used. The physician should be queried to obtain the additional information necessary to appropriately classify the episode of care as initial or subsequent.

1 Initial episode of care

This fifth digit is assigned to designate the first episode of care (regardless of facility site) for a newly diagnosed myocardial infarction. A fifth digit of 1 is assigned regardless of the number of times a patient may be transferred during the initial episode of care. This only includes transfers to and from acute care facilities prior to the patient's discharge (since other types of facilities, such as nursing homes, would not administer acute care services for treatment of a myocardial infarction) *and* occurring within the eight-week time frame.

2 Subsequent episode of care

This fifth digit is assigned to designate an episode of care following the initial episode when the patient is admitted for further observation, evaluation, or treatment for a myocardial infarction that has received initial treatment but is still less than eight weeks old.

When a patient is admitted to hospital A with a myocardial infarction and is transferred a few days later to hospital B for diagnostic evaluation and/or definitive treatment, the principal diagnosis for both hospitals A and B is 410.x1. If the patient is transferred back to hospital A from hospital B for continuation of care, the principal diagnosis for the second admission to hospital A is still 410.x1. As long as the patient has not been discharged home (or to a long term care facility) and the myocardial infarction is less than eight weeks old, the fifth digit of 1 will continue to be assigned. This is true regardless of the patient's admission status (inpatient or outpatient) or the number of times the patient is transferred among acute care facilities.

If a cardiac catheterization is performed (at either hospital A or B) and reveals coronary atherosclerosis, the principal diagnosis for hospital A, hospital B, and the transfer back to hospital A is still 410.x1. Once coronary atherosclerosis is diagnosed, code 414.0x would be assigned as a secondary diagnosis.

Once a patient is discharged home (or to a long term care facility) following initial evaluation and/or treatment of an acute myocardial infarction, the fifth digit of 1 can no longer be assigned (unless the patient develops a new myocardial infarction). If the patient is readmitted within eight weeks following the myocardial infarction and receives care (further observation, evaluation, or treatment) for this infarction, the appropriate code from category 410 should be assigned, with a fifth digit of 2 for "subsequent episode of care." If the patient is readmitted more than eight weeks after the onset of the myocardial

infarction, a code from category 410 should not be assigned. If a patient is transferred to another healthcare facility more than eight weeks after the myocardial infarction, a code from category 410 would not be assigned.

Reinfarction at Same Site
If a patient admitted with an acute MI experiences a reinfarction at the same site during the same hospitalization, the code for that site should only be assigned once.

Infarction of Multiple Sites
If a myocardial infarction occurs at more than one site, assign a separate code for each individual site.

Related Cardiac Conditions

Impending Myocardial Infarction
An impending myocardial infarction is an acute increase in anginal symptoms indicating the possibility of imminent development of an infarction. Assign code 411.1, Intermediate coronary syndrome.

Preinfarction Angina
Preinfarction angina occurs at rest and is refractory to treatment. Assign code 411.1.

Unstable Angina
Unstable angina is angina that increases in frequency and duration or is triggered by less stimuli than usual. Assign code 411.1.

If unstable or preinfarction angina evolves into a myocardial infarction, only the MI is coded, as angina is considered an integral part of the MI disease process. This is true if the MI is diagnosed immediately upon hospital admission or develops during hospitalization.

Postinfarctional Angina
Postinfarctional angina is assigned a code from category 411, Other acute and subacute forms of ischemic heart disease, regardless of whether it occurs during the same hospitalization as the treatment for the MI or later. Unlike preinfarctional angina, postinfarctional angina may be coded in conjunction with an acute MI. Postinfarction angina must be documented by the physician in the medical record. Unstable postinfarctional angina is assigned code 411.1.

Coronary Occlusion
Code 411.81, Coronary occlusion without myocardial infarction, is assigned when a coronary occlusion, thrombosis, or embolism is documented but this condition has not progressed to a myocardial infarction. Patients can have occlusions without going on to develop an MI (in many cases, the quick deployment of thrombolytic agents has averted an MI).

Code 411.1 is not assigned with code 411.81. Code 411.1 describes unstable angina *without* a diagnosis of coronary occlusion or myocardial infarction. If an MI has developed, a code from category 410 is assigned instead of code 411.81. If the patient has a coronary occlusion but no MI, code 411.81 is assigned.

Acute Myocardial Ischemia
Myocardial ischemia is a deficiency of the blood supply to the heart muscle due to obstruction or constriction of the coronary arteries. Depending upon the medical record documentation, a diagnosis of acute myocardial ischemia may have different meanings. If an acute MI has occurred, assign a code from category 410. If there is no MI but the patient has a coronary occlusion, assign code 411.81. If there is no MI or coronary occlusion, assign code 411.89, Other acute and subacute forms of ischemic heart disease, Other.

Acute or subacute coronary insufficiency, a brief, severe onset of decreased blood flow in the coronary vessels, is also assigned code 411.89.

Chronic Coronary Insufficiency
Chronic coronary insufficiency is a prolonged, persistent decrease in the flow of blood through the coronary vessels. Coronary insufficiency documented as chronic or lasting more than eight weeks is assigned code 414.8, Other specified forms at chronic ischemic heart disease. Code 414.8 is also assigned for a myocardial infarction with symptoms after eight weeks from the date of infarction and chronic myocardial ischemia (prolonged, persistent deficiency of the blood supply to the heart muscle).

Healed or Old Myocardial Infarction
A healed or old MI currently presenting no symptoms is assigned code 412, Old myocardial infarction.

Postmyocardial Infarction Syndrome
(Dressler's Syndrome)
Postmyocardial infarction syndrome is an autoimmune disorder secondary to damaged myocardium and pericardium. It is characterized by fever, pericarditis with friction rub, pericardial effusion, pleurisy, pleural effusion, leukocytosis, pneumonia, and joint pains. It can develop anywhere from several days to months after an acute MI. This condition may be difficult to distinguish from a new acute MI, except that cardiac enzymes do not rise significantly. Postinfarction syndrome is assigned code 411.0, Postmyocardial infarction syndrome.

Examples

Example 1
A patient was admitted to hospital A with an acute inferior wall myocardial infarction. The patient was stabilized and transferred (four days later) to hospital B for a cardiac catheterization of the left heart. The catheterization revealed severe coronary artery disease. No angioplasty or coronary artery bypass graft was performed, and the following day the patient was transferred back to hospital A for continued treatment. His condition improved and he was discharged home.

Hospital A (#1): Final Diagnosis -- Acute inferior wall MI

410.41 Acute myocardial infarction, Of other inferior wall, Initial episode of care

Hospital B: Final Diagnosis -- Acute inferior wall MI, Coronary artery disease

410.41 Acute myocardial infarction, Of other inferior wall, Initial episode of care

414.0x Coronary atherosclerosis

Procedures: 37.22 Left heart cardiac catheterization

Hospital A (#2): Final Diagnosis -- Recent inferior wall MI, Coronary artery disease

410.41 Acute myocardial infarction, Of other inferior wall, Initial episode of care

414.0x Coronary atherosclerosis

Example 2

Same scenario as Example 1, except single-vessel percutaneous transluminal angioplasty was performed at hospital B.

Hospital A (#1):
410.41 Acute myocardial infarction, Of other inferior wall, Initial episode of care

Hospital B:
410.41 Acute myocardial infarction, Of other inferior wall, Initial episode of care

414.0x Coronary atherosclerosis

Procedures: 36.01 Single-vessel percutaneous transluminal coronary angioplasty or coronary atherectomy without mention of thrombolytic agent

37.22 Left heart cardiac catheterization

Hospital A (#2):
410.41 Acute myocardial infarction, Of other inferior wall, Initial episode of care

414.0x Coronary atherosclerosis

V45.82 Percutaneous transluminal coronary angioplasty status

Example 3

A patient was admitted to hospital A with an acute anterolateral wall myocardial infarction. A combined left and right heart cardiac catheterization was performed at hospital A four days after admission, and it revealed severe coronary artery disease. The patient was transferred to hospital B for a triple aortocoronary bypass graft. The surgery was performed, and two days later the patient was transferred back to hospital A for continued care. His condition improved and he was discharged home.

Hospital A (#1):Final Diagnosis -- Acute anterolateral wall MI, Severe coronary artery disease

410.01Acute myocardial infarction, Of anterolateral wall, Initial episode of care

414.0x Coronary atherosclerosis

Procedures:
37.23 Combined right and left heart cardiac catheterization

Hospital B: Final Diagnosis -- Severe coronary artery disease, Recent anterolateral wall MI

410.01 Acute myocardial infarction, Of anterolateral wall, Initial episode of care

414.0x Coronary atherosclerosis

Procedures:

36.13 Aortocoronary bypass of three coronary arteries

Hospital A (#2): Final Diagnosis -- Recent anterolateral wall MI, s/p coronary artery bypass graft, coronary artery disease

410.01 Acute myocardial infarction, Of anterolateral wall, Initial episode of care

414.0x Coronary atherosclerosis

V45.81 Aortocoronary bypass status

Example 4

A patient was admitted to hospital A with an acute subendocardial myocardial infarction. Due to numerous complications, he remained in hospital A for 10 weeks. His condition finally stabilized, and he was transferred to hospital B for a right heart cardiac catheterization. The catheterization revealed arteriosclerosis, and a double coronary artery bypass graft was performed. Patient was discharged home to be followed by visits from a home health agency.

Hospital A: Final Diagnosis -- Acute subendocardial MI
410.71Acute myocardial infarction, Subendocardial infarction, Initial episode of care

(Note: Secondary diagnosis codes should be assigned for all complications meeting the guidelines for reportable conditions.)
Hospital B: Final Diagnosis -- Arteriosclerotic heart disease, s/p MI

414.0x Coronary atherosclerosis

414.8 Other specified forms of chronic ischemic heart disease

Procedures:
36.12 Aortocoronary bypass of two coronary arteries

37.21 Right heart cardiac catheterization

Example 5

A patient was admitted to hospital A with an acute anterolateral wall myocardial infarction. Following medical treatment, he was discharged home (a few days later). Three weeks after discharge, he was readmitted to hospital A for an elective left heart cardiac catheterization. The catherization revealed severe arteriosclerosis. The patient was transferred to hospital B for a triple aortocoronary bypass graft. The patient was discharged home to be followed by visits from a home health agency.

Hospital A (#1): Final Diagnosis -- Acute anterolateral wall MI

410.01 Acute myocardial infarction, Of anterolateral wall, Initial episode of care

Hospital A (#2):Final Diagnosis -- s/p Acute anterolateral wall MI, Arteriosclerotic heart disease

414.0x Coronary atherosclerosis

410.02Acute myocardial infarction, Of anterolateral wall, Subsequent episode of care

Procedures:
37.23 Combined right and left heart cardiac catheterization

Hospital B: Final Diagnosis -- s/p Acute anterolateral wall MI, Arteriosclerotic heart disease

414.0x Coronary atherosclerosis

410.02Acute myocardial infarction, Of anterolateral wall, Subsequent episode of care

Procedures:
36.13Aortocoronary bypass of three coronary arteries

Example 6

A patient was admitted with an acute anterolateral wall myocardial infarction. A cardiac catheterization was recommended, but the patient refused and stated he wanted to go home and think about it. He was discharged home four days after admission, and the care he had been receiving from a home health agency resumed. The patient agreed to undergo a cardiac catheterization and was readmitted one week later. The left heart cardiac catheterization did not reveal any significant atherosclerosis. The next day he returned home under the care of the home health agency.

First Admission: Final Diagnosis -- Acute anterolateral wall MI

410.01 Acute myocardial infarction, Of anterolateral wall, Initial episode of care

Second Admission: Final Diagnosis -- Recent anterolateral wall MI

410.02 Acute myocardial infarction, Of anterolateral wall, Subsequent episode of care

Procedures:
37.22 Left heart cardiac catheterization

Example 7

Same scenario as Example 6, except the cardiac catheterization revealed severe coronary artery disease. Coronary artery bypass graft was recommended, but the patient refused.

First Admission: Final Diagnosis -- Acute anterolateral wall MI

410.01 Acute myocardial infarction, Of anterolateral wall, Initial episode of care

Second Admission: Final Diagnosis -- Recent anterolateral wall MI, Severe coronary artery disease

414.0x Coronary atherosclerosis

410.02Acute myocardial infarction, Of anterolateral wall,< Subsequent episode of care

Procedures:
37.22 Left heart cardiac catheterization

Example 8

Same scenario as Example 7, except double aortocoronary bypass graft was performed.

First Admission: 410.01 Acute myocardial infarction, Of anterolateral wall, Initial episode of care

Second Admission: 414.0xCoronary atherosclerosis

410.02 Acute myocardial infarction, Of anterolateral wall, Subsequent episode of care

Procedures:
36.12 Aortocoronary bypass of two coronary arteries

37.22 Left heart cardiac catheterization

Example 9

A patient was readmitted with chest pain one week after being hospitalized for an acute anterior wall myocardial infarction. No procedures were performed during either admission.

First Admission: Final Diagnosis -- Acute anterior wall MI

410.11 Acute myocardial infarction, Of other anterior wall, Initial episode of care

Second Admission: Final Diagnosis -- Unstable postinfarction angina, s/p Anterior wall MI

411.1 Intermediate coronary syndrome

410.12 Acute myocardial infarction, Of other anterior wall, Subsequent episode of care

Example 10

A patient was readmitted with chest pain nine weeks after being hospitalized for an acute anterior wall myocardial infarction. No procedures were performed during either admission.

First Admission: Final Diagnosis -- Acute anterior wall MI

410.11 Acute myocardial infarction, Of other anterior wall, Initial episode of care

Second Admission: Final Diagnosis -- Unstable postinfarction angina, s/p Anterior wall MI

411.1 Intermediate coronary syndrome

414.8 Other forms of chronic ischemic heart disease, Other specified forms of chronic ischemic heart disease

Example 11

Same scenario as Example 10, except the physician stated on the second admission that the patient had a new inferolateral myocardial infarction.

First Admission: Final Diagnosis -- Acute anterior wall MI

410.11 Acute myocardial infarction, Of other anterior wall, Initial episode of care

Second Admission: Final Diagnosis -- Acute inferolateral MI, s/p Anterior wall MI

410.21 Acute myocardial infarction, Of inferolateral wall, Initial episode of care

412 Old myocardial infarction

Example 12 A patient was readmitted three weeks after being hospitalized for an acute inferior wall myocardial infarction. He complained of fatigue, shortness of breath after walking short distances, and occasional episodes of chest pain. After cardiac workup, the physician concluded the patient's symptoms were due to his recent MI. The patient was discharged home. No procedures were performed during either admission.

First Admission: Final Diagnosis -- Acute inferior wall MI

410.41 Acute myocardial infarction, Of other inferior wall, Initial episode of care

Second Admission: Final Diagnosis -- s/p Acute inferior wall MI

410.42 Acute myocardial infarction, Of other inferior wall, Subsequent episode of care

Example 13

A patient presented to the emergency room at hospital A with crushing chest pain. An inferior wall myocardial infarction was diagnosed and he was immediately transferred to hospital B for further evaluation and treatment. The patient's condition improved at hospital B and he was discharged home one week later. No procedures were performed.

Hospital A: Final Diagnosis -- Acute inferior wall MI

410.41 Acute myocardial infarction, Of other inferior wall, Initial episode of care

Hospital B: Final Diagnosis -- Acute inferior wall MI

410.41Acute myocardial infarction, Of other inferior wall, Initial episode of care

Example 14

A patient was admitted to hospital A with an acute anterolateral wall myocardial infarction. He was stabilized and transferred (a few days later) to hospital B for a combined right and left heart cardiac catheterization. The catheterization revealed severe coronary artery disease. The patient refused any further treatment. He was discharged to a nursing home the following day for a few weeks of recuperation until he could safely be discharged back to his own home.

Hospital A: Final Diagnosis -- Acute anterolateral wall MI

410.01Acute myocardial infarction, Of anterolateral wall, Initial episode of care

Hospital B: Final Diagnosis -- Acute anterolateral wall MI, Coronary artery disease

410.01 Acute myocardial infarction, Of anterolateral wall, Initial episode of care

414.0x Coronary atherosclerosis

Procedures:
37.23 Combined right and left heart cardiac catheterization

Nursing Home:410.02 Acute myocardial infarction, Of anterolateral wall, Subsequent episode of care

414.0x Coronary atherosclerosis

Example 15

A nursing home patient with advanced Alzheimer's disease was admitted to the hospital with an acute anterolateral wall myocardial infarction. His condition improved, and he was discharged back to the nursing home a few days later for continued care and treatment of his MI. No procedures were performed.

Hospital: Final Diagnosis -- Acute anterolateral wall MI, Alzheimer's disease

410.01 Acute myocardial infarction, Of anterolateral wall, Initial episode of care

331.0 Alzheimer's disease

Nursing Home: 410.02 Acute myocardial infarction, Of anterolateral wall, Subsequent episode of care

331.0 Alzheimer's disease

Example 16

A prison inmate was admitted to hospital A with an acute anterolateral wall myocardial infarction. He was stabilized and transferred (a few days later) to hospital B for a combined right and left heart cardiac catheterization, which revealed significant coronary arteriosclerosis. A multiple-vessel percutaneous transluminal coronary angioplasty was performed. The patient was discharged back to the prison three days later. Continued care, treatment, and follow-up were provided at the prison's healthcare facility.

Hospital A: Final Diagnosis -- Acute anterolateral wall MI

410.01 Acute myocardial infarction, Of anterolateral wall, Initial episode of care

Hospital B: Final Diagnosis -- Acute anterolateral wall MI, Coronary arteriosclerosis

410.01 Acute myocardial infarction, Of anterolateral wall, Initial episode of care

414.0x Coronary atherosclerosis

Procedures:
36.05 Multiple-vessel percutaneous transluminal coronary angioplasty or coronary atherectomy performed during the same operation, with or without mention of thrombolytic agent

37.23Combined right and left heart cardiac catheterization

Prison: 410.02 Acute myocardial infarction, Of anterolateral wall, Subsequent episode of care

414.0x Coronary atherosclerosis

V45.82 Percutaneous transluminal coronary angioplasty status

Example 17

A resident of a facility for the developmentally disabled was admitted to hospital A with an acute inferior wall myocardial infarction. He was stabilized and transferred (a few days later) to hospital B for a right heart cardiac catheterization. The

catheterization revealed severe coronary artery disease. A single-vessel percutaneous transluminal coronary angioplasty was performed. The patient was discharged back to the developmental facility two days later. Continued care and treatment for the MI were provided at this facility.

Hospital A: Final Diagnosis -- Acute inferior wall MI, Severe mental retardation

410.41 Acute myocardial infarction, Of other inferior wall, Initial episode of care

318.1Severe mental retardation

Hospital B: Final Diagnosis -- Acute inferior wall MI, Coronary artery disease, Severe mental retardation

410.41 Acute myocardial infarction, Of other inferior wall, Initial episode of care

414.0x Coronary atherosclerosis

318.1 Severe mental retardation

Procedures:
36.01Single-vessel percutaneous transluminal coronary angioplas ty or coronary atherectomy without mention of thrombolytic agent

37.21 Right heart cardiac catheterization

Developmental Facility:

410.42 Acute myocardial infarction, Of other inferior wall, Subsequent episode of care

414.0x Coronary atherosclerosis

318.1 Severe mental retardation

V45.82Percutaneous transluminal coronary angioplasty status

Example 18

A nursing home patient (who was in a nursing home because of a stroke he had suffered several years ago) was admitted to the hospital with an acute anterolateral wall myocardial infarction. His condition improved, and he was discharged back to the nursing home a few days later for continued care and treatment of his MI. Seven weeks later, he developed pneumonia and was readmitted to the hospital. He was also experiencing periodic episodes of chest pain. His cardiac condition was evaluated while he was in the hospital. His chest pain was believed to be due to his previous MI. His pneumonia cleared, and he returned to the nursing home eight days later to resume care for the residuals of his stroke.

Hospital (#1): Final Diagnosis -- Acute anterolateral wall MI, Old stroke with left hemiplegia

410.01 Acute myocardial infarction, Of anterolateral wall, Initial episode of care

342.90 Hemiplegia, unspecified, Affecting unspecified side

438 Late effects of cerebrovascular disease

Nursing Home (#1):
410.02 Acute myocardial infarction, Of anterolateral wall, Subsequent episode of care

342.90 Hemiplegia, unspecified, Affecting unspecified side

438 Late effects of cerebrovascular disease

Hospital (#2): Final Diagnosis -- Pneumonia due to *Staphylococcus aureus*, s/p Anterolateral wall MI, s/p Stroke with left hemiplegia

482.4 Pneumonia due to Staphylococcus

410.02 Acute myocardial infarction, Of anterolateral wall, Subsequent episode of care

342.90 Hemiplegia, unspecified, Affecting unspecified side

438 Late effects of cerebrovascular disease

Nursing Home (#2):
342.90 Hemiplegia, unspecified, Affecting unspecified side

414.8 Other specified forms of chronic ischemic heart disease

438 Late effects of cerebrovascular disease

Note: When appropriate, a code from category V66, Convalescence, may also be assigned in the examples above to further specify the need for admission to a long term care facility.

Frequently Asked Questions

Q: How do the new guidelines for the application of casts and strapping CPT codes apply to hospital coding?

A: The CPT codes for application of casts and strapping (29000-29799) should be assigned when a cast, splint, or strapping is applied and no other procedure or restorative treatment (such as open or closed reduction) is provided for a fracture, dislocation, or other injury. The cast and strapping codes would not be assigned in conjunction with treatment of fracture and/or dislocation codes. If a cast or strapping is applied and surgical treatment is planned for a later time, the cast or strapping code may be assigned for the initial service.

This differs from coding for physician services, because a physician who applies the initial cast or strapping and assumes all subsequent fracture or dislocation care cannot use the cast and strapping codes. For physicians, the surgical package concept applies to the treatment of fracture and/or dislocation codes. This means if the same physician is responsible for the initial cast application, follow-up evaluation(s), and the management of the fracture or dislocation until it has healed, he or she can only report the treatment of fracture and/or dislocation codes.

If a cast or strapping is applied following restorative surgical treatment of a fracture, dislocation, or other injury, the cast and strapping code should not be assigned. These codes may be assigned for replacement casts or strapping.

Q: Please clarify CPT bone marrow harvesting codes in relation to the cross-reference under code 38241.

A: The cross-reference under code 38241 in the CPT manual has led to confusion regarding the correct code assignment for bone marrow harvesting for transplantation. The cross-reference states "for harvesting of bone marrow specimen, use 85095." However, code 85095 only describes a bone marrow aspiration. The cross-reference is intended to indicate that bone marrow aspirations are not classified to the "Bone Marrow or Stem Cell Transplantation Services" section (38230-38241). All harvesting of bone marrow (autologous or allogeneic) for the purpose of transplantation should be assigned code 38230, Bone marrow harvesting for transplantation.

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