



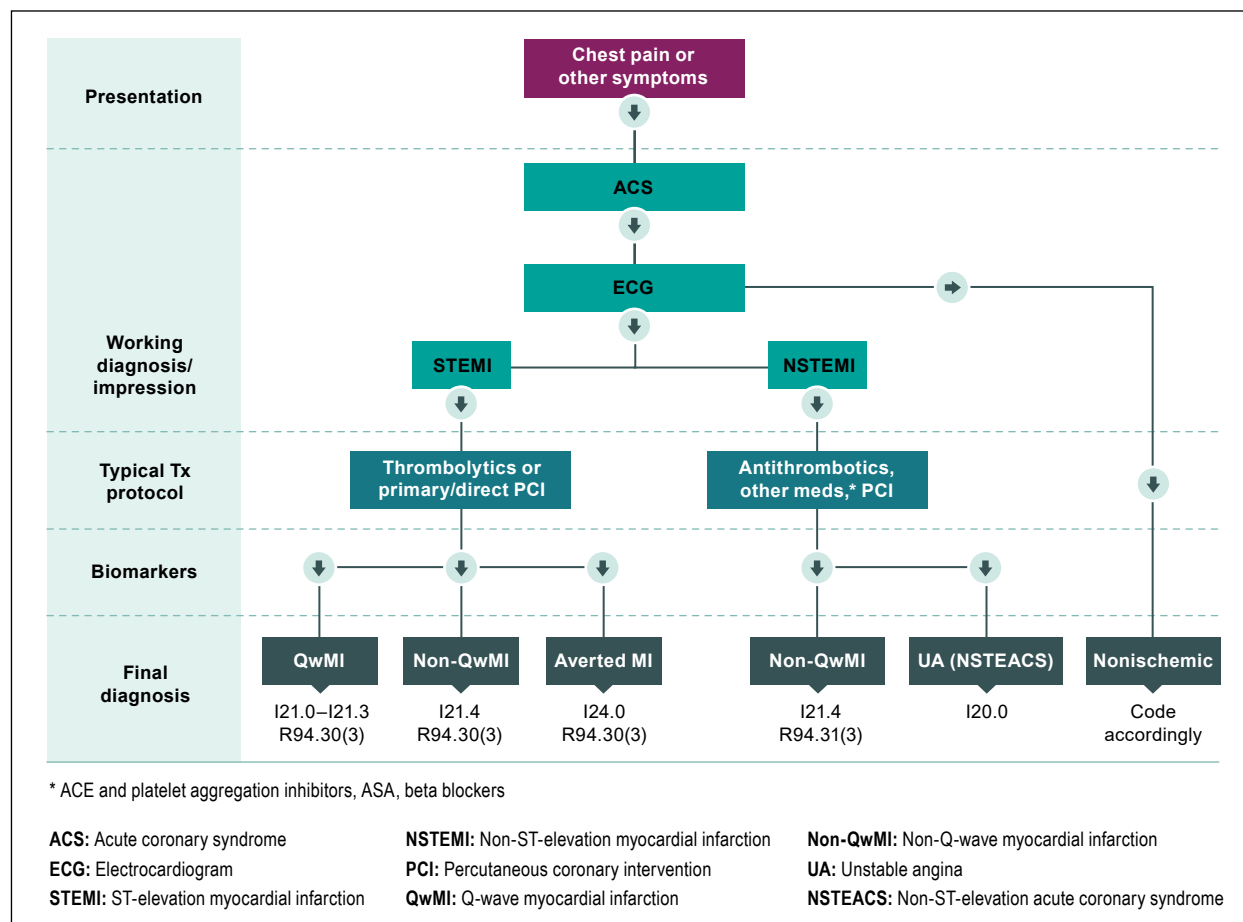
Acute Coronary Syndrome

The purpose of this job aid is to support accurate and consistent code assignment for acute coronary syndrome (ACS). It provides clinical information about and definitions of ST-elevation myocardial infarction (STEMI) and non-ST-elevation myocardial infarction (NSTEMI), as well as a flowchart describing the typical flow of diagnostic and treatment events for patients presenting with symptoms of ACS.

ACS is a spectrum of conditions that includes

- STEMI
- NSTEMI
- Unstable angina

Figure Typical flow of diagnostic and treatment events for patients with symptoms of ACS





This schema is **not intended to provide direction for code assignment in cases where the documentation is lacking**. When documentation is lacking, the coder must seek clarification from the physician or assign a code from the appropriate “unspecified” category. The typical flow of events is a patient presenting with symptoms of ACS leading to a **working** diagnosis of one of the following:

ST-elevation myocardial infarction (STEMI)

When the electrocardiogram (ECG) shows ST elevation, a diagnosis of myocardial infarction (MI) is virtually inevitable. However, prompt treatment (e.g., percutaneous coronary intervention [PCI], thrombolytic therapy) can alter the final outcome or type of MI. A patient presenting with an ECG with documented ST elevation can have one of the following potential outcomes:

- Evolution to Q-wave (transmural) MI
- Evolution to non-Q-wave (subendocardial) MI
- Aborted or averted MI

Non-ST-elevation myocardial infarction (NSTEMI)

When there is no ST elevation on the ECG, while Q-waves can develop, typically the potential outcomes include

- Evolution to a less-damaging non-Q-wave (subendocardial) MI
- A final diagnosis of unstable angina

Sometimes the final diagnosis is referred to as non-ST-elevation acute coronary syndrome (NonSTEACS or NSTEACS). When NonSTEACS or NSTEACS is the final diagnosis, the documentation must be reviewed for further confirmation to determine whether the patient has had an NSTEMI or unstable angina.

In NSTEMI, myocardial infarction is confirmed by the presence of cardiac biomarkers such as troponin or creatine kinase-MB (CK-MB). Cardiac biomarkers are enzymes, proteins or hormones found in the blood which confirm that necrosis to myocardial cells has occurred.

NSTEMI is an MI identified by either elevated cardiac biomarkers or ECG changes **without** ST elevation. The ECG findings may include changes such as ST depression or T-wave inversion, or the ECG may be normal. The high sensitivity of the newer biomarkers enables detection of small areas of myocardial necrosis that may not show up on the ECG.¹

Additional resource

[Canadian Coding Standards:](#)

Acute Coronary Syndrome (ACS)



classifications@cihi.ca



Appendix

Text alternative for figure

Figure: Typical flow of diagnostic and treatment events for patients with symptoms of ACS

When a patient presents with chest pain or other symptoms of acute coronary syndrome, an electrocardiogram (ECG) is performed and the clinician establishes a working diagnosis or impression based on their interpretation of the ECG results.

When the clinician determines that the chest pain or other symptoms are nonischemic in nature, classify the condition accordingly.

When the clinician establishes a working diagnosis of ST-elevation myocardial infarction (STEMI), the typical treatment protocol is administration of thrombolytic therapy and/or a primary or direct percutaneous coronary intervention (PCI).

When the clinician establishes a working diagnosis of non-ST-elevation myocardial infarction (NSTEMI), the typical treatment protocol is administration of antithrombotic therapy; administration of other medications such as an angiotensin-converting enzyme (ACE) inhibitor, platelet aggregation inhibitor, acetylsalicylic acid (ASA) or beta-blocker; and/or PCI.

Cardiac biomarkers such as troponin or creatine kinase-MB (CK-MB) are also used by clinicians to confirm a diagnosis within the acute coronary syndrome spectrum, to assess prognosis and the risk of progression to an acute myocardial infarction, and to establish a treatment plan based on the clinical assessment.

When the clinician establishes a working diagnosis of STEMI, a diagnosis of acute myocardial infarction is virtually inevitable. Prompt treatment based on the working diagnosis can alter the final diagnosis or outcome or the type of acute myocardial infarction that occurs, resulting in 1 of the following 3 possible outcomes:

1. Evolution to a Q-wave (transmural) myocardial infarction, classified to I21.0 *Acute transmural myocardial infarction of anterior wall* or I21.1 *Acute transmural myocardial infarction of inferior wall* or I21.2 *Acute transmural myocardial infarction of other sites* or I21.3 *Acute transmural myocardial infarction of unspecified site* with R94.30 *Electrocardiogram suggestive of ST segment elevation myocardial infarction [STEMI]* as a diagnosis type (3).
2. Evolution to a non-Q-wave (subendocardial) myocardial infarction, classified to I21.4 *Acute subendocardial myocardial infarction* with R94.30 *Electrocardiogram suggestive of ST segment elevation myocardial infarction [STEMI]* as a diagnosis type (3).
3. An aborted or averted myocardial infarction, classified to I24.0 *Coronary thrombosis not resulting in myocardial infarction* with R94.30 *Electrocardiogram suggestive of ST segment elevation myocardial infarction [STEMI]* as a diagnosis type (3).



Job Aid

When the clinician establishes a working diagnosis of NSTEMI, while Q-waves can develop, the final diagnosis may be 1 of the following 2 possible outcomes:

1. Evolution to a less-damaging non-Q-wave (subendocardial) myocardial infarction, classified to I21.4 *Acute subendocardial myocardial infarction* with R94.31 *Abnormal cardiovascular function studies (biomarkers or ECG) suggestive of non ST segment elevation myocardial infarction [NSTEMI]* as a diagnosis type (3).
2. A final diagnosis of unstable angina or non-ST-elevation acute coronary syndrome (NonSTEACS or NSTEACS) classified to I20.0 *Unstable angina*.

Note that when the final diagnosis is NonSTEACS or NSTEACS it must be further confirmed whether the patient had an NSTEMI or unstable angina.

Reference

1. Thygesen KA, Alpert JS. [The definitions of acute coronary syndrome, myocardial infarction, and unstable angina](#). *Current Cardiology Report*. July 2001.

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