

ACUTE CORONARY SYNDROME



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Overview

Acute Coronary Syndrome [ACS] typically describes three major cardiac conditions: Unstable angina [UA], non-ST elevation myocardial infarction [NSTEMI] and ST elevation myocardial infarction [STEMI].^{1,2,3} The classic presentation is retrosternal chest pain, heaviness, diaphoresis and radiating pain into the jaw readily diagnosable by ECG and troponins.^{1,3,5-7} However, up to 50% of ACS patients do not have this classic presentation, causing confusion in health care practitioners and delay in diagnosis.^{1,3,5-7} Following acute care management, high risk patients face > 8% risk of death within 6 months and therefore must be managed diligently by their primary care providers.²

Definitions^{1,3,5-10}

1) Typical presentation [TP]: Chest pain located sub-sternally, right or left-sided, characterized as squeezing, heavy, crushing, a fullness or pressure, radiating into jaws or arms with history of pain aggravated by exercise and relieved with rest or nitroglycerin. Symptoms can also include associated nausea, dyspnea, diaphoresis or syncope.

2) Atypical presentation [AtP]: No chest pain, point tenderness or chest pain characterized as stabbing or sharp. Can also be associated with nausea, dyspnea, diaphoresis, syncope or shoulder pain. Symptoms may not have historical patterns or relief with nitroglycerin.

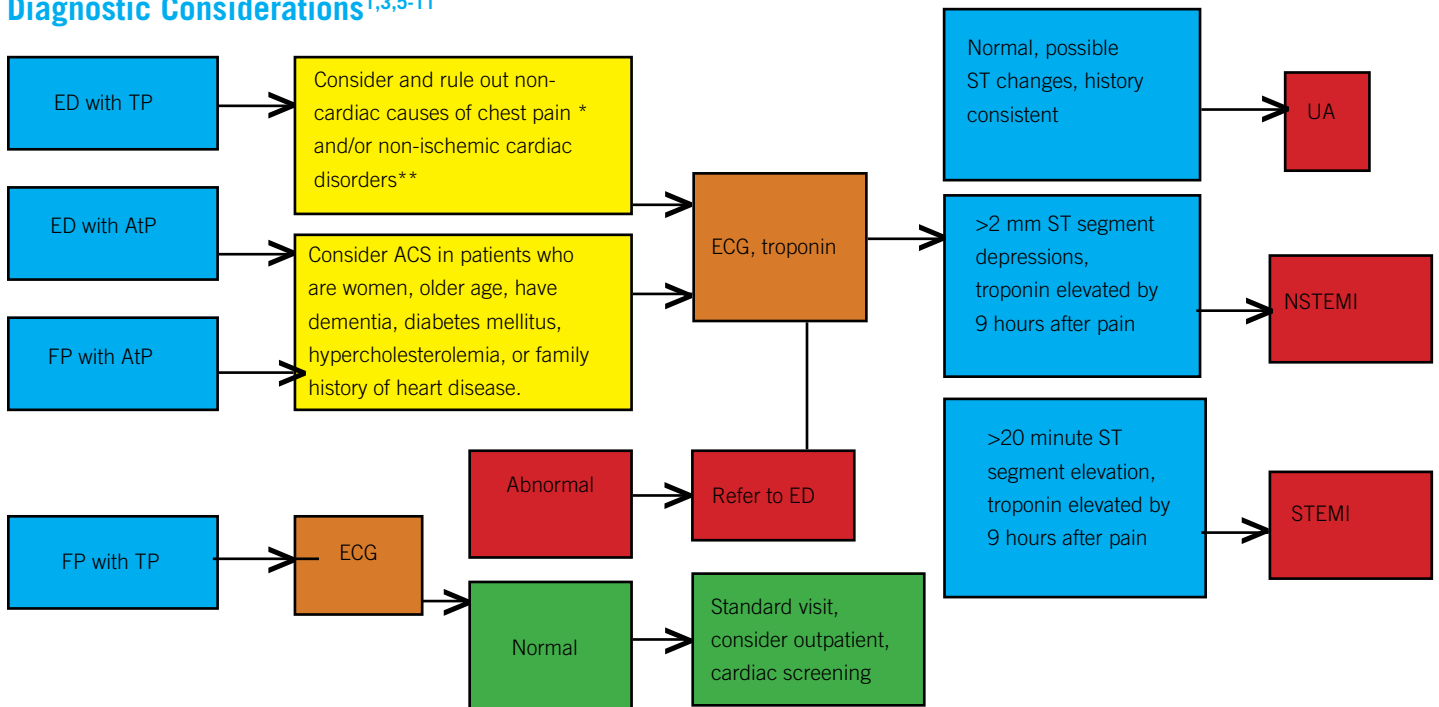
3) UA: Decreased myocardial perfusion without concomitant myocardial necrosis. Subtyped by Canadian Cardiovascular Society:

- Class I: New onset severe or accelerated angina
- Class II: Angina at rest (one or more episodes of angina at rest during the preceding month, not within the preceding 48 hours)
- Class III: Angina at rest (one or more episodes within the preceding 48 hours)

4) NSTEMI: Resulting in a non-Q wave MI, partial myocardial necrosis

5) STEMI: Resulting in a Q-wave MI, transmural myocardial necrosis

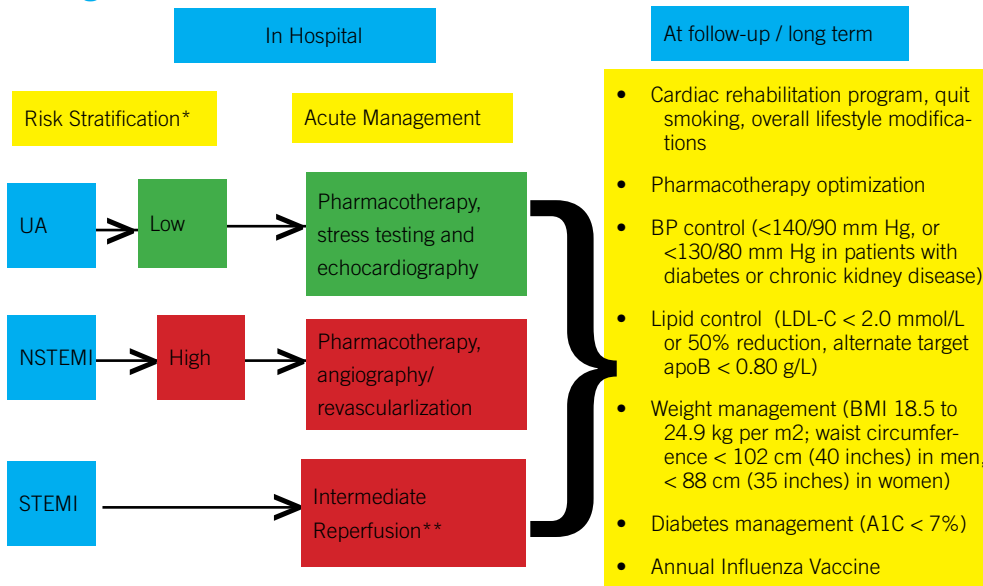
Diagnostic Considerations^{1,3,5-11}



*Such as pulmonary embolism, pneumonia, aortic dissection, pneumothorax, peptic ulcer disease, pancreatitis, cholecystitis, muscular injury/inflammation, rib fracture, herpes zoster, esophagitis, costochondritis, and/or pleural effusion

**Such as pericarditis, myocarditis, trauma, cardiomyopathy and/or valvular heart disease

Management^{3,5-21}



*Risk stratification can be performed using the thrombolysis in myocardial ischemia risk score [TIMI], or the global registry of acute coronary events risk score [GRACE]. Important factors: Recurrent angina or ischemia at rest or with low-level activities, elevated cardiac biomarkers, new or presumably new ST-segment depression, signs or symptoms of heart failure or new or worsening mitral regurgitation, hemodynamic instability, PCI within 6 mo, Prior CABG, reduced left ventricular function

**Unless contraindicated (such as in patients with significant intracranial bleed, PUD etc.)

	Acute Management	Long term Management	Safety Concerns
Anti-platelet and anti-coagulant therapy	Combination of 1) Aspirin [ASA] 150-300mg plain chewed and 2) Clopidogrel 300mg PO, 600mg PO if going for invasive strategy or 2a) Ticagrelor 180mg PO In hospital decision for anticoagulant therapy based on PCI or thrombolysis and 3) Anticoagulant (depending on ACS)	Combination of 1) ASA 75-100mg PO OD and 2) Clopidogrel 75mg PO OD or 2a) Ticagrelor 90mg PO BID and 3) Anticoagulant (depending on ACS)	1,2,3) Bleeding risk, discontinue at least 5 days before elective surgery.
ACEi and ARBs		a) Telmisartan 40-80mg PO OD or b) Valsartan 40-360mg PO OD or c) Perindopril 1-8mg PO OD	Monitor K and Cr on ACEi Do not combine ARB with ACEi as increases risk of future MI
Beta Blocker therapy	IV dose if in LV dysfunction or previously on therapy	Titrate as tolerated by MD to achieve BP targets, most evidence for metoprolol	hypotension, bradycardia, fatigue, decreased exercise tolerance, sexual dysfunction
Calcium channel blockers	May be used in patients who cannot tolerate B-blockade	May be used in patients who cannot tolerate B-blockade	AV block with dihydropyridine calcium channel blockers (i.e. verapamil, diltiazem)
Lipid therapy	a) Atorvastatin 80mg PO or b) Pravastatin 10-40mg PO	a) Atorvastatin 20-80mg PO or b) Pravastatin 10-40mg PO or c) Rosuvastatin 20mg PO	Monitor liver enzymes, CK, observe for signs of rhabdomyolysis CYP 3A4 drug interactions common with statins (exception: rosuvastatin, pravastatin)
Nitrates	Titrate IV dosing in ED until resolution of chest pain as tolerated by BP	Nitroglycerin 0.4mg SL spray PRN for chest pain/symptom relief Nitroglycerin patch indicated in select cases if symptom control required	Hypotension, headache Drug interaction with phosphodiesterase-5-inhibitors (e.g. sildenafil)

Bottom Line

ACS is a common and life threatening condition that can present to a family practice acutely or in follow-up. Over 50% of all patients will present atypically with ACS, do not rule it out based on lack of TP. All patients must be treated with anti-platelet and anticoagulant agents acutely, and managed aggressively both during and after an ACS. Cardiac rehabilitation and life style factors are as important as pharmacologic therapy to optimize lipids, blood pressure and blood sugars.