



Management of chronic stable angina (ACS)

(Based on ACC/AHA Guidelines on management of chronic stable angina - 1999)

Prepared by Bandula Wijesriwardena*, Naomali Amarasena** and W S Santharaj*** for the Ceylon College of Physicians Guidelines Committee

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Chronic stable angina

Quick reference guide

Management of patients with chronic stable angina includes diagnosis, risk stratification, drug treatment, identification and treatment factors, risk factor modification and coronary revascularisation.

Diagnosis/Risk Stratification

History, examination, ECG, chest x-ray, echocardiography – to assess the probability of CAD (low, intermediate, high) and the need for risk stratification.

Exercise ECG if the diagnosis is uncertain after initial investigations (in the intermediate probability groups)

Stress imaging (exercise and pharmacological) – echocardiographic and nuclear

- In patients with baseline ECG abnormalities making exercise ECG uninterpretable
- In patients who cannot exercise (pharmacological).
- When the information on diagnosis and prognosis provided by exercise ECG is inadequate

Risk stratification – High, intermediate and low

From the information obtained from
Clinical assessment, ECG/Chest x-ray, Echocardiography, stress imaging

* Consultant Physician, Teaching Hospital, Ragama.

** Consultant Cardiologist, Sri Jayawardenapura General Hospital, Kotte.

*** Consultant Cardiologist, Teaching Hospital, Ragama.

CORONARY ANGIOGRAPHY is appropriate in:

- Patients whose clinical characteristics or non-invasive investigations suggest they have an **adverse prognosis** and may therefore benefit **prognostically** from CABG.
- Patients who have **limiting angina** despite optimal medical therapy and may therefore benefit **symptomatically** from CABG or PTCA.
- Patients in whom non-invasive tests have been **inconclusive or negative**, but who **continue to have chest pain** which is severe, frequent, or resulting in recurrent admission to hospital.

Pharmacotherapy

- Aspirin
- Clopidogrel (or ticlopidine) when aspirin is absolutely contraindicated
- Beta blockers as initial therapy
- Calcium antagonists and/or long-acting nitrates as initial therapy when beta-blockers are contraindicated
- Calcium antagonists and/or long-acting nitrates in combination with beta-blockers when initial therapy with beta-blockers is not successful
- Calcium antagonists and/or long-acting nitrates as a substitute for beta-blockers if the latter lead to unacceptable side effects
- GTN - sublingual or spray - for immediate relief of angina
- Lipid lowering therapy if LDL is >130mg% with a target of <100mg%

Identification and treatment of aggravating factors

- Anaemia
- thyrotoxicosis
- arrhythmias

Risk factor modification

- Treatment of hypertension
- Smoking cessation therapy
- Intensive management of diabetes
- Exercise training program
- Lipid lowering
- Weight reduction in obese patients
- Hormonal replacement therapy in post-menopausal women in the absence of contraindications.

The initial treatment should include all elements in the following mnemonic

- A. Aspirin and anti-anginal therapy
- B. Beta-blocker and Blood pressure
- C. Cigarette smoking and cholesterol
- D. Diet and Diabetes
- E. Education and Exercise

Coronary revascularisation

The projected symptomatic and prognostic gains of coronary revascularisation are relative and must be evaluated against the risks of intervention and the attenuation of the perceived benefits by effect modifiers such as advanced age and co-morbidity.

CABG is appropriate because it has been shown to improve prognosis in patients with:

1. a significant left main stem stenosis of 50% or more
2. triple vessel disease
3. two vessel disease including a significant proximal LAD stenosis.

Particularly if left ventricular function is impaired or the exercise test is strongly positive

A

PTCA is an appropriate alternative to CABG in patients with

1. two vessel disease without a significant proximal left anterior descending (LAD) stenosis
2. single vessel disease

B

In patients who have already undergone bypass surgery, an initial strategy of PTCA (if technically feasible) is preferable to repeat CABG. To maximise benefits, revascularisation should be performed with the minimum of delay

Summary of recommendations

Recommendations for history and physical examination

In patients presenting with chest pain, a detailed symptom history, focused physical examination, and directed risk factor assessment should be performed. With this information, the clinician should estimate the probability of significant CAD, i.e., low, intermediate, high.

Recommendations for initial laboratory tests, ECG, and chest X-ray for diagnosis

1. Hemoglobin.
2. Fasting glucose.
3. Fasting lipid panel, including total cholesterol, HDL cholesterol.
4. Rest electrocardiogram (ECG) in patients without an obvious noncardiac cause of chest pain.
5. Rest ECG during an episode of chest pain.
6. Chest x-ray in patients with signs or symptoms of congestive heart failure, valvular heart disease, pericardial disease, or aortic dissection/aneurysm.

Recommendations for echocardiography or radionuclide angiography (not available in Sri Lanka at present) in patients with suspected chronic stable angina pectoris

1. Echocardiography in patients with a systolic murmur suggestive of aortic stenosis, mitral regurgitation, and/or hypertrophic cardiomyopathy.
2. Echocardiography or radionuclide angiography (RNA) in patients with a history of prior MI, pathological Q waves, symptoms or signs suggestive of heart failure, or complex ventricular arrhythmias to assess LV function.

Echocardiography (or RNA) is not indicated in patients with a normal ECG, no history of MI, and no signs or symptoms suggestive of heart failure, valvular heart disease, or hypertrophic cardiomyopathy.

Stress testing/angiography

Recommendations for exercise ECG testing without an imaging modality

1. For diagnosis of obstructive CAD, in patients with an intermediate pretest probability of CAD (based on age, gender, and symptoms), including those with complete right bundle-branch block or <1mm of rest ST depression.

2. For risk assessment and prognosis in patients undergoing initial evaluation.

Stress testing without an imaging modality is less useful

1. For diagnosis of obstructive CAD in patients with the following baseline ECG abnormalities.
 - a. Preexcitation (Wolff-Parkinson-White) syndrome
 - b. Electronically paced ventricular rhythm.
 - c. More than 1mm of rest ST depression.
 - d. Complete left bundle-branch block (LBBB).

(Exercise ECG testing can be performed for risk assessment and prognosis in such patients, as exercise capacity can still be assessed.)

2. For risk assessment and prognosis in patients with severe comorbidity likely to limit life expectancy or prevent revascularization.

Recommendations for cardiac stress imaging in patients with chronic stable angina who are able to exercise

1. Exercise myocardial perfusion imaging or exercise echocardiography to identify the extent, severity, and location of ischaemia in patients who do not have LBBB or an electronically paced ventricular rhythm and have either an abnormal rest ECG or are using digoxin.
2. Dipyridamole or adenosine myocardial perfusion imaging in patients with LBBB or electronically paced ventricular rhythm.
3. Exercise myocardial perfusion imaging or exercise echocardiography in patients with an intermediate pretest probability of CAD who have preexcitation (Wolff-Parkinson-White) syndrome or >1mm of rest ST depression.
4. Exercise myocardial perfusion imaging or exercise echocardiography in patients with prior revascularization (either PTCA or CABG).

Invasive testing: coronary angiography

Recommendations for coronary angiography

1. Patients with disabling (Canadian Cardiovascular Society [CCS] classes III and IV) chronic stable angina despite medical therapy.
2. Patients with high-risk criteria on clinical assessment or noninvasive testing regardless of anginal severity.

3. Patients with angina who have survived sudden cardiac death or serious ventricular arrhythmia.
4. Patients with angina and symptoms and signs of congestive heart failure.

Treatment

Recommendations for pharmacotherapy to prevent MI and death and reduce symptoms

1. Aspirin in the absence of contraindications. Clopidogrel when aspirin is absolutely contraindicated.
2. Beta-blockers as initial therapy in the absence of contraindications with prior MI.
3. Beta-blockers as initial therapy in the absence of contraindications in patients without prior MI.
4. Calcium antagonists* and/or long-acting nitrates as initial therapy when beta-blockers are contraindicated.
5. Calcium antagonists* and/or long-acting nitrates in combination with beta-blockers when initial treatment with beta-blockers is not successful.
6. Calcium antagonists* and/or long-acting nitrates as a substitute for beta-blockers if initial treatment with beta-blockers leads to unacceptable side effects.
7. Sublingual nitroglycerin or nitroglycerin spray for the immediate relief of angina.
8. Lipid-lowering therapy in patients with documented or suspected CAD and LDL cholesterol >130 mg/dL with a target LDL of <100 mg/dL.

*Short-acting dihydropyridine calcium antagonists should be avoided.

Coronary disease risk factors and evidence that treatment can reduce the risk for coronary disease events

Recommendations for treatment of risk factors

1. Treatment of hypertension
2. Smoking cessation therapy
3. Management of diabetes.
4. Exercise training program
5. Weight reduction in obese patients in the presence of hypertension.
6. Treatment of hyperlipidemia.

Revascularization for chronic stable angina**Recommendations for revascularization with PTCA (or other catheter-based techniques) and CABG in patients with stable angina**

1. CABG for patients with significant left main coronary disease.
2. CABG for patients with 3-vessel disease. The survival benefit is greater in patients with abnormal LV function (ejection fraction <50%)
3. CABG for patients with 2-vessel disease with significant proximal left anterior descending CAD and either abnormal LV function (ejection fraction <50%) or demonstrable ischaemia on noninvasive testing.
4. CABG for patients with 2- or 3-vessel disease with significant proximal left anterior descending CAD, who have anatomy suitable for catheter-based therapy, normal LV function, and who do not have treated diabetes.
5. PTCA or CABG for patients with 1- or 2-vessel CAD without significant proximal left anterior descending CAD but with a large area of viable myocardium and high-risk criteria on noninvasive testing.
6. In patients with prior PTCA, CABG or PTCA for recurrent stenosis associated with a large area of viable myocardium and/or high-risk criteria on noninvasive testing.
7. PTCA or CABG for patients who have not been successfully treated by medical therapy and can undergo revascularization with acceptable risk.
8. PTCA or CABG for patients who have not been successfully treated by medical therapy and can undergo revascularization with acceptable risk.