

ACUTE CORONARY SYNDROME

Definitions

The term acute coronary syndrome (ACS) covers:

- Myocardial Infarction – ST segment elevation MI (STEMI)
- Myocardial Infarction - non ST segment elevation MI (NSTEMI)
- Unstable Angina

Patient presenting with Acute Chest Pain in Primary Care 5 Point Checklist:

- 1 Perform an ECG in all patients where the possibility of a cardiac cause of chest pain cannot be reasonably excluded.
- 2 If a ST segment abnormality, particularly ST segment elevation, is detected or ECG is inconclusive but suspicion of a cardiac cause remains, refer to hospital immediately and alert the on-call medical physician/cardiologist or emergency department consultant.
- 3 While awaiting transfer:
 - Monitor blood pressure, heart rate and oxygen saturation.
 - Give sublingual glyceryl trinitrate (A) and IV morphine (B) (if required) for pain relief.
 - As per the highlighted references, use these 2 drugs very cautiously due to their synergistic hypotensive effect, especially in elderly and comorbidity patients.
 - Give 300 mg aspirin (C)
 - Give 300 mg clopidogrel (D) **OR** ticagrelor (E) if evidence of ischaemia on ECG or elevated troponin levels.
 - The issue of whether or not to provide an additional antiplatelet medicine, e.g. clopidogrel or ticagrelor, to these patients is more complex and depends on geographical location and clinical context.
 - Neither clopidogrel nor ticagrelor are available on Practitioner's Supply Orders (PSO), therefore it is unlikely that many general practices will have ready access to either of these medicines at short notice.
 - Furthermore, in most urban areas there should not be significant delays in transporting patients by ambulance to hospital and therefore the decision regarding administration of an additional antiplatelet medicine will be left to secondary care. Administering an additional antiplatelet medicine in primary care in this situation is also unlikely to improve the patient's outcome.
 - In New Zealand, the trend among cardiologists now appears to be a preference for ticagrelor in combination with aspirin over clopidogrel in combination with aspirin.
 - Only administer oxygen (F) if the patient has any of the following:

- Breathless
- Oxygen saturation is <93%
- Heart failure
- Cardiogenic shock

4 A blood sample for measuring troponin levels may be considered if time and clinical circumstances permit.

5 If transfer will be delayed for more than two hours and patient has ST segment elevation – fibrinolysis **(G)** is recommended (in the absence of contraindications) with tenecteplase, followed by enoxaparin, if available.

Notes

(A)

Sublingual glyceryl trinitrate

- Sublingual glyceryl trinitrate is often used initially for symptom relief in patients with chest pain due to a cardiac cause.
- It should, however, be used with caution in some patients, e.g. those who are cardiovascularly unstable and those who have recently used a PDE5-inhibitor such as sildenafil (see NZF for a full list of cautions and contraindications).
- Blood pressure should be monitored regularly after glyceryl trinitrate has been used because, depending on the site of the suspected coronary event (e.g. inferior, right ventricular), the reduction in preload can result in the patient becoming rapidly hypotensive and intravenous fluids may be required to maintain adequate cardiac output.
- GTN dosing instructions that are appropriate when the patient is under the supervision of a primary care clinician - include up to three doses of GTN, of one to two sprays, administered to the patient at five-minute intervals. This is consistent with the Scottish Intercollegiate Guidelines Network (SIGN) for acute coronary syndromes (2013), the American Heart Association Guidelines for acute coronary syndromes (2010) and the New Zealand medicine datasheet for GTN.
- Symptom relief with glyceryl trinitrate lasts less than one hour and usually does not provide sufficient pain relief in patients experiencing an active myocardial infarction. An additional analgesic e.g. morphine (see below), may be required.

(B)

Intravenous (IV) morphine

- Intravenous (IV) morphine is effective for severe pain in a patient with an acute coronary syndrome.
- For example, give morphine 5 -10 mg IV at 1–2 mg/minute, repeat if necessary; morphine 2.5 – 5 mg for older or frail patients.

(C)**Aspirin**

- Aspirin 300 mg, should be given to all patients with an acute coronary syndrome, including those already taking aspirin; if enteric coated aspirin is the only formulation available the patient should chew the tablet.
- Treatment with aspirin 75 – 150 mg, daily, is then continued indefinitely in all patients unless there are contraindications.²
- The immediate and continued use of aspirin in the weeks following an acute coronary syndrome, compared with placebo, approximately halves the rate of further cardiovascular events (absolute risk reduction 5.3%) in patients with unstable angina and reduces this risk by almost one-third (absolute risk reduction 3.8%) in patients with acute myocardial infarction

(D)**Clopidogrel**

- Clopidogrel 300 mg (75 mg for patients aged over 75 years) given immediately along with aspirin, 300 mg, is recommended for patients with an acute coronary syndrome who also have evidence of ischaemia on ECG or elevated serum troponin levels.
- Clopidogrel is then continued at a dose of 75 mg, daily (with aspirin), for these patients.

(E)**Ticagrelor**

- A meta-analysis of four trials with over 31 000 patients with non ST segment elevation acute coronary syndrome compared the efficacy of ticagrelor or prasugrel with clopidogrel in preventing major cardiovascular events.
- It was found that ticagrelor or prasugrel, in combination with aspirin, significantly reduced major cardiovascular events in patients with non ST segment elevation acute coronary syndrome, compared with clopidogrel and aspirin.
- However, there was also an increased risk of major bleeding associated with both ticagrelor and prasugrel, compared with clopidogrel for some patients. For every 1000 patients treated with ticagrelor and aspirin there would be 16 fewer major cardiovascular events and six more major bleeds, compared to patients treated with clopidogrel and aspirin.
- The issue of antiplatelet treatment in patients with acute coronary syndromes is therefore further complicated by the risk of bleeding associated with subsequent surgical interventions, e.g. stenting, and primary care clinicians will not always be certain of which interventions the patient will undergo later.

(F)**Oxygen**

- Despite being recommended for many years, there is no

evidence from randomised controlled trials supporting the routine use of oxygen in patients with acute myocardial infarction.

- In patients with a myocardial infarction and an oxygen saturation > 93%, oxygen treatment may actually increase left ventricular afterload due to arterial vasoconstriction.

(G)

Fibrinolysis

- The benefit of fibrinolysis for patients with a ST elevation myocardial infarction declines significantly with time from symptom onset.
- New Zealand guidelines recommend that patients with a ST elevation acute coronary syndrome be considered for pre-hospital fibrinolysis if percutaneous coronary intervention cannot be performed within two hours, in the absence of contraindications.
- Fibrinolytic medicines are not routinely available in general practice; however, tenecteplase (TNK-tissue-type plasminogen activator) may be available in some rural general practices.