

## KEY RECOMMENDATIONS FOR THE HOSPITAL MANAGEMENT OF ACUTE CORONARY SYNDROMES (ACS)

(Numbers in parentheses refer to the numbered guideline recommendations contained within full guideline text).

### 1.1 IMMEDIATE AND EARLY HOSPITAL MANAGEMENT

#### **Evaluation**

Clinical history, physical examination, and ECG are required to diagnose ACS and identify high risk factors. **Targeted history, examination and 12 lead ECG should be commenced within 10 minutes of hospital arrival on all patients presenting with suspected ACS.** (3.1.1)

**Predictors at presentation of increased risk of death include:** age >65 years, low (<100 mmHg) systolic blood pressure, clinical signs of congestive heart failure, elevated (>100 bpm) heart rate, anterior site of infarction, and history of previous infarction. (3.1.4)

#### **Immediate treatment**

**Supplemental oxygen (at flow rate 4-6 l/min), intravenous access, continuous ECG monitoring and pain relief.** (3.1.5)

**Aspirin (100 – 300mg) chewed or dissolved.** (3.1.7)

**IV b-blockers** should be considered in patients with large myocardial infarcts, hypertension, tachycardia, and ongoing pain despite opioids, and in patients who are not eligible to receive thrombolysis (see below). (3.1.8.)

*Contra-indications: definite history of asthma, severe COPD (pred FEV<sub>1</sub> <50%), severe PVD with rest pain or ischaemic ulcers, advanced AV conduction disturbance or pre-existing bradycardia. Past history or current clinical features of heart failure are not absolute contra-indications but where heart failure is severe, cautious use and close monitoring are required if b-blockers are commenced.*

#### **Infarction with ST segment elevation or new-onset left bundle branch block**

**Fibrinolytic therapy should be administered within 30 minutes of**

**hospital arrival to all eligible patients.** To minimise door-to-needle time, protocols for the rapid triage of eligible patients and administration of lysis should exist in all hospital emergency departments. (3.1.11.)

**Fibrinolytic therapy should be commenced without delay if:** (3.1.12.)

- onset of symptoms 12 hours or less;
- age less than 75 years;
- ECG indications of >1mm ST elevation in limb leads or >2mm ST elevation in precordial leads
- no contra indications to lysis.

*Contraindications: active internal bleeding; any head trauma or other significant trauma or any surgery at non-compressible site within 4 weeks; major haemorrhagic diathesis; warfarin therapy or coagulopathy associated with INR >2.0; ischaemic stroke within 6 months; neurosurgery within 6 months; previous intracranial bleed unless due to remote trauma or aneurysm that has been clipped; severe uncontrolled hypertension (>200 mmHg systolic or > 110 mmHg diastolic); active peptic ulceration (daily symptoms +/- bleeding) within last 4 weeks unless healing documented by endoscopy or symptoms fully alleviated by medical therapy).*

**Primary coronary angioplasty (PTCA) should be considered the preferred reperfusion strategy in the following circumstances:** (3.1.15)

- a) procedure can be performed promptly (presentation to balloon inflation <60 minutes) by experienced operator <6 hours of symptom onset;
- b) contra-indications exist to thrombolytic therapy; OR
- c) anterior infarction or cardiogenic shock is present.

**Rescue angioplasty** (i.e angioplasty performed following administration of thrombolysis) may benefit patients with

ongoing pain AND/OR moderate to large infarcts whose symptoms and/or ECG changes fail to resolve with thrombolytic therapy, and who can undergo the procedure within 12 hours of symptom onset. (3.1.17).

**Infarction with ST segment depression/T-wave inversion or normal ECG**

**Unfractionated heparin or weight-adjusted low molecular weight heparin** (enoxaparin) for minimum 48 hours. (3.1.18).

**Infusion of glycoprotein IIb/IIIa inhibitors** (tirofiban is preferred agent) over 72 hours in high-risk patients: ongoing pain, elderly, prior severe angina, widespread ECG changes, clinical features of LV dysfunction, hypotension, and elevated troponin levels (3.1.19).

**Early coronary angiography +/- revascularisation** within 2-7 days of presentation for patients with pronounced ECG changes and/or significantly elevated troponin levels. (3.1.20).

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**1.2 SUBSEQUENT INPATIENT MANAGEMENT**

Patients with definite or probable ACS should be admitted to a coronary care unit for purposes of continuous ECG monitoring and provision of rapid therapy such as defibrillation if required. (3.2.1)

**Adjuvant therapy**

Unless contraindicated, the following adjuvant therapies should be prescribed:

**Aspirin** in all patients (3.2.2).

**b-blockers** in all patients, unless small, uncomplicated infarct and low risk of further events. (3.2.3)

**ACE inhibitors** in all patients with myocardial infarction, especially those with

clinical features of heart failure and/or left ventricular ejection fraction <40%. (3.2.4)

**Insulin/dextrose infusion** in diabetic patients with myocardial infarction whose blood sugar values above 12 mmol/l. This should be continued for 72 hours, followed by aggressive glycaemia control, with insulin if necessary. (3.2.4)

**Warfarin** anticoagulation should be administered to patients with chronic atrial fibrillation, documented left ventricular aneurysm or thrombus, or severely dilated poorly functioning left ventricle associated with spontaneous contrast on echocardiography. (3.2.5)

**Complicated infarction**

**Recurrent ischaemia (re-infarction or post-infarct angina or recurrent unstable angina)**

**Early coronary angiography** is recommended. (3.2.8)

**Cardiogenic shock**

**Consider urgent cardiac catheterisation** with a view to revascularisation. (3.2.18)

**Arrhythmias**

*Atrial fibrillation*

**Urgent cardioversion** in patients with rapid ventricular rate and haemodynamic compromise or intractable ischaemia. (3.2.26)

**b-blockers** should be given to slow ventricular rate in patients without overt heart failure or other contraindications to  $\beta$ -blockers. In the setting of severe LV dysfunction, amiodarone is an alternative rate controlling or cardioverting treatments. (3.2.28)

*Ventricular tachycardia/fibrillation*

**Urgent defibrillation** in cases of ventricular fibrillation (VF), or sustained ventricular tachycardia (VT) associated with hypotension, angina or pulmonary oedema. (3.2.30)

**Implantable defibrillators/cardioverters** should be considered in patients with, or at high risk of, recurrent ventricular

arrhythmias which are not related to underlying reversible myocardial ischaemia. (3.2.33)

### 1.3 PRE-DISCHARGE PHASE

#### **Risk stratification**

Prior to discharge, patients should be assessed as to their risk of future coronary events or death as follows:

**Left ventricular function should be assessed by echocardiography** unless already documented by left ventriculography at the time of angiography. (3.3.1)

**Revascularisation** should be considered in patients with significant LV dysfunction and inducible ischaemia. (3.3.1)

Risk stratification (assessment for inducible ischaemia and for poor prognostic features) can be performed using various modalities according to their availability:

- a) **treadmill stress ECG testing**, either submaximal at 3-6 days or symptom-limited at 7-10 days. Contra-indicated if surface ECG uninterpretable, or patient has locomotor impairment.
- b) **dobutamine stress echocardiography**.
- c) **thallium perfusion scan**, either exercise or with dipyridamole stress.

Patients with inducible ischaemia at low/moderate workload or stress and/or failure to mount pressor response with exercise should be considered for early catheterisation. (3.3.5)

#### **Risk factor management**

**Patients with uncomplicated infarction and negative stress tests should be entered into a Phase II cardiac rehabilitation program.** (3.3.8)

**Education and counselling as to smoking cessation and dietary modification.** Patients and caregivers should also be provided with well-understood instructions with respect to

medication type, purpose, dose, frequency, and pertinent side effects of cardiac all medications (3.3.9)

**Hypertension: aim for systolic BP £130, diastolic BP £80.** (3.3.10)

**Dyslipidaemia: aim for LDL cholesterol <2.6 mmol/l; HDL >1.0 mmol/l; TG <1.6 mmol/l.** (3.3.11)

**Hormonal replacement therapy** should **not** be initiated in post-menopausal women as secondary prevention unless indicated to control intolerable menopausal symptoms. (3.3.13)

**Psychological counselling and targeted social support** for patients with current or past anxiety/depression, or at high risk of psychiatric illness (eg, elderly, bereaved or living alone, limited social contact). (3.3.14)

**Long-term anticoagulation** in patients with chronic atrial fibrillation (particularly if associated with left ventricular aneurysm, left ventricular dilatation, enlarged left atrium, or have history of previous thromboembolic stroke). (3.3.15)

The development of these guidelines was undertaken by the following members and co-opted experts of the Clinical Practice Guideline Working Group of the Brisbane Cardiac Consortium.

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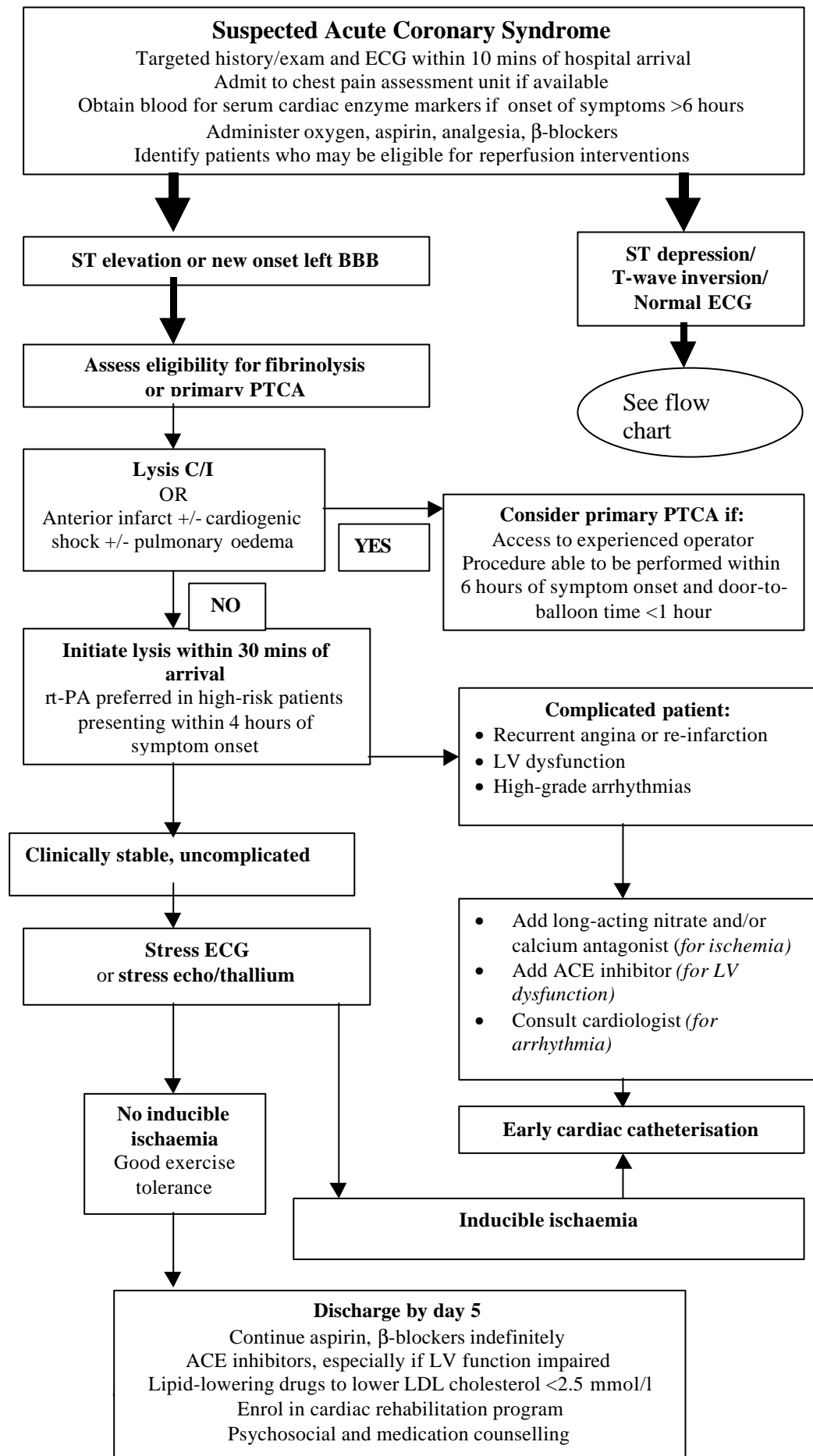
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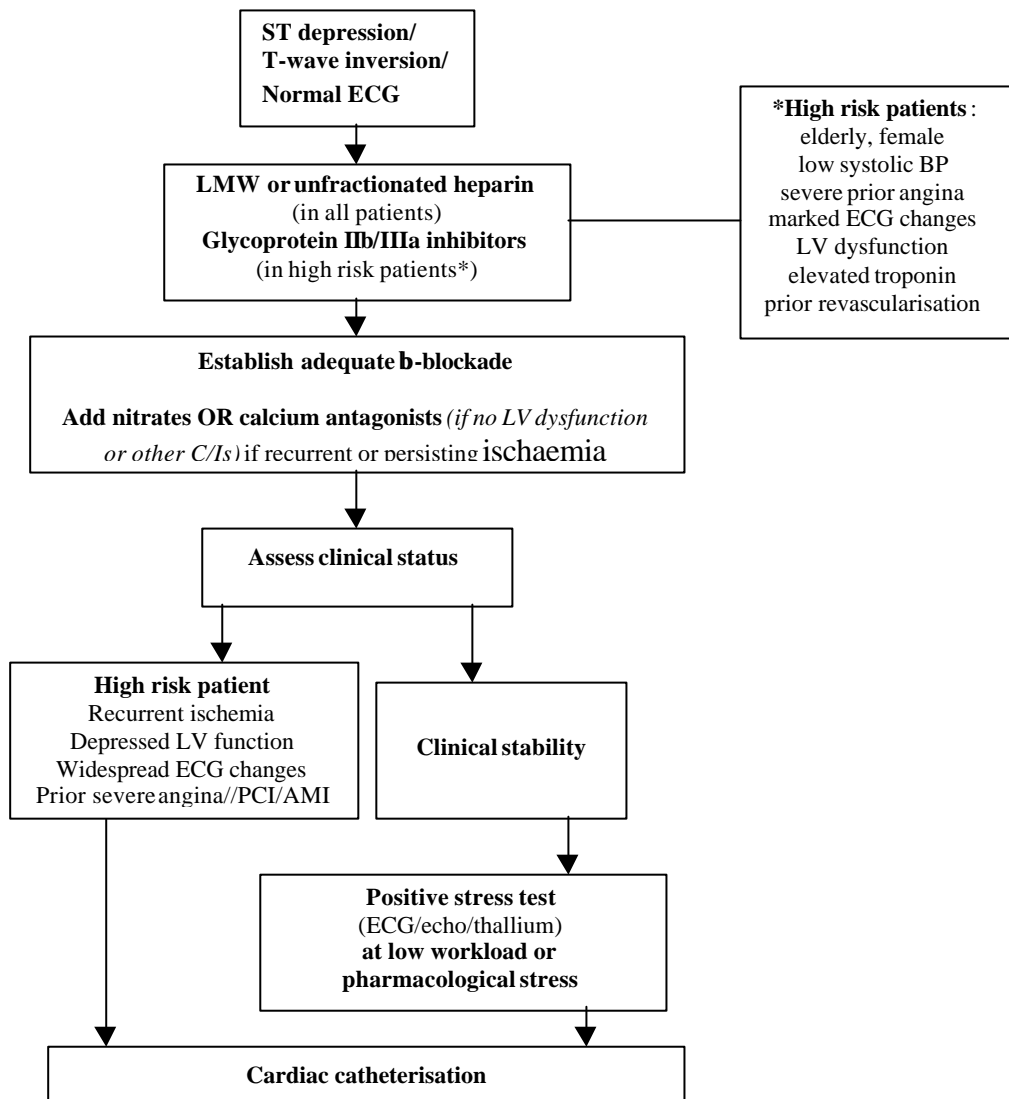
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#### Fibrinolytic dosing

**Reteplase:** double bolus dose of 10 million units given 30 mins apart.

**Alteplase (rt-PA):** 15mg IV as bolus injection, followed by IV infusion 0.75 mg/kg over 30 mins. to maximum of 50mg, then 0.5mg/kg over 60 mins. to maximum of 35mg. Total dose ≤100mg.

**Streptokinase (STK):** 1.5 million units by intravenous infusion over 20 to 30 minutes. If systolic blood pressure falls below 80mmHg the infusion rate should be halved; if systolic blood pressure falls below 70mmHg, stop the infusion and once blood pressure >70mmHg, restart the infusion at half the previous rate.

#### Contraindications and Cautions for Fibrinolytic Use

**Absolute Contraindications:** previous haemorrhagic stroke at any time; other strokes or cerebrovascular events within 1 year; suspected aortic dissection; known intracranial neoplasm; active internal bleeding (excluding menses).

**Cautions/Relative Contraindications:** severe uncontrolled hypertension on presentation (>180/110mmHg); current anticoagulant use (INR ≥2); known bleeding diathesis; recent (within 2-4 weeks) trauma including head trauma; noncompressible vascular punctures; pregnancy; active peptic ulcer disease.