CHEST PAIN PATHWAY

PRIMARY PCI SITE

ECG & Vital Signs, expert interpretation within 10 minutes

ST ELEVATION or (presumed new) LBBB

Consider Aortic Dissection
(back pain, hypertension, absent pulse, BP difference)

Consider Pulmonary Embolism
(severe dyspnea, respiratory distress, low script O. saturation)

Diagnose
NON ST ELEVATION ACUTE CORONARY SYNDROME (ACS)

Go immediately to STEMI MANAGEMENT (page 3)

HIGH RISK
Any of the following

- ACS symptoms are repetitive or prolonged (> 10 min) & still present.
- Syncope
- History of chronic left ventricular systolic dysfunction (especially if known LVEF < 40%) OR current clinical evidence of LVF.
- Previous PCI/CABG < 6 months
- Diabetes + typical ACS symptoms
- Chronic renal failure + typical ACS symptoms
- Haemodynamic compromise (sustained SBP < 90 mmHg and/or new onset mitral regurgitation)
- Elevated Troponin (consider haemolysis, renal failure)
- Persistent or dynamic ECG changes of:
  - ST depression ≥ 0.5 mm or
  - new T wave inversion ≥ 2 mm
- Transient ST elevation (> 0.5 mm) in more than two contiguous leads
- Sustained VT

INTERMEDIATE RISK
Any of the following and no high risk features

LOW RISK
Any of the following and no high or intermediate risk features

☐ ACS symptoms within 48 hrs that occurred at rest, or were repetitive or prolonged (but currently resolved)
☐ Previous PCI/CABG > 6 months
☐ Known coronary heart disease-Exp if prior AMI or known coronary lesion > 50% stenosis
☐ Two or more risk factors of:
  - Hypertension, family history, active smoking or hyperlipidaemia
  - Chronic renal failure (especially if known GFR < 60 mL/min) +
  - atypical ACS symptoms
  - Diabetes + atypical ACS symptoms
  - Age > 65 years

Presentation with clinical features consistent with ACS without intermediate-risk or high-risk features.

☐ ECG Normal or unchanged from previous pain free ECG

All cases to be discussed with Senior Medical Officer

Recommended Management on page 2

Contraindications and cautions for thrombolysis use in STEMI

Absolute contraindications:

- Risk of bleeding
  - Active bleeding or bleeding diathesis (excluding menses)
  - Significant closed head or facial trauma within 3 months
  - Suspected aortic dissection (including new neurological symptoms)
  - Risk of intracranial haemorrhage
    - Any prior intracranial haemorrhage
    - Ischaemic stroke within 3 months
    - Known structural cerebral vascular lesion (eg, arteriovenous malformation)
    - Known malignant intracranial neoplasm (primary or metastatic)
  - Relative contraindications:
    - Risk of bleeding
      - Current use of anticoagulants: the higher the international normalised ratio (INR), the higher the risk of bleeding
      - Non-compressible vascular punctures
      - Recent major surgery (< 3 weeks)
      - Traumatic or prolonged (> 10 minutes) cardiopulmonary resuscitation
      - Recent (within 4 weeks) internal bleeding (eg, gastrointestinal or urinary tract haemorrhage)
      - Active peptic ulcer

Risk of intracranial haemorrhage

- History of chronic, severe, poorly controlled hypertension
- Severe uncontrolled hypertension on presentation (> 180 mmHg systolic or > 110 mmHg diastolic)
- Ischaemic stroke more than 3 months ago, dementia, or known intracranial abnormality not covered in contraindications
- Pregnancy

Adapted from NHF/CSANZ Guidelines for the management of acute coronary syndromes 2006

Contraindications to Exercise Testing (ACC/AHA Guidelines)

Absolute

- Recurrent chest pain
- Acute myocardial infarction, within 2 days
- High-risk unstable angina
- Uncontrolled cardiac arrhythmias causing symptoms or haemodynamic compromise
- Symptomatic severe aortic stenosis
- Uncontrolled symptomatic heart failure
- Acute pulmonary embolus or pulmonary infarction
- Acute myocarditis or pericarditis
- Acute aortic dissection

Relative

- Critical left main coronary stenosis
- Moderate stenosis vavular heart disease
- Electrolyte abnormalities
- Systolic hypertension > 200 mmHg
- Diastolic hypertension > 100 mmHg
- Tachyarrhythmias or Bradyarrhythmias
- New onset atrial fibrillation
- Hypertrophic cardiomyopathy and other forms of outflow obstruction
- Mental or physical impairment leading to the inability to exercise adequately
- High-degree atrioventricular block
- Resting ECG which will make EST interpretation difficult (eg LBBB, LVH with strain, Ventricular pacing, Ventricular preexcitation)


Abbreviations:

ACS – Acute Coronary Syndrome
CABG – Coronary Artery Bypass Graft
ECG – Electrocardiogram
EST – Exercise Stress Test
FMC – First Medical Contact
GTN – Glyceryl Trinitrate
LBBB – Left Bundle Branch Block
LVF – Left Ventricular Failure
LVH – Left Ventricular Hypertrophy
PCI – Percutaneous Coronary Intervention
SMO – Senior Medical Officer
STEMI – ST Elevation Myocardial Infarction
CHEST PAIN PATHWAY
NON PRIMARY PCI SITE

Date of Presentation: _____ / _____ / _____
Time: _____
Time of Symptom Onset: _____

CHEST PAIN or OTHER SYMPTOMS of MYOCARDIAL ISCHAEMIA

(eg sweating, sudden orthopnea, syncope, dyspnea, epigastric discomfort, jaw pain, arm pain)

Be aware:
HIGH RISK ATYPICAL PRESENTATION
(eg diabetes, renal failure, female, elderly or Aboriginal)

INTERMEDIATE RISK
Any of the following and no high risk features

LOW RISK
Any of the following and no high or intermediate risk features

HIGH RISK
Any of the following

ACS symptoms are repetitive or prolonged (> 10 min) & still present.
- Syncope
- History of chronic left ventricular systolic dysfunction (especially if known LVEF < 40%) or current clinical evidence of LVF.
- Previous PCI/CABG < 6 months
- Diabetes + typical ACS symptoms
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INTERMEDIATE RISK
Any of the following and no high risk features

LOW RISK
Any of the following and no high or intermediate risk features

PRESENTATION
ECG & Vital Signs, expert interpretation within 10 minutes

ST ELEVATION or (presumed new) LBBB

- Consider Aortic Dissection
  (back pain, hypertension, absent pulse, BP difference)
- Consider Pulmonary Embolism
  (severe dyspnoea, respiratory distress, low constit. O2 saturation)

Diagnose NON ST ELEVATION ACUTE CORONARY SYNDROME (ACS)

Go immediately to STEMI MANAGEMENT (page 3)

Consider Pericarditis
(sharp chest pain, respiratory or positional component)

GENERAL MANAGEMENT
- Oxygen
- Aspirin
- IV Access
- Pain Relief
- Pathology incl Troponin
- Chest X-ray

CONTRAINDICATIONS
- Known malignant intracoronary neoplasm (primary or metastatic)
- Relative contraindications:
  - High-risk unstable angina
  - Recurrent chest pain
  - History of chronic, severe, poorly controlled hypertension
  - Active peptic ulcer
  - Risk of intracranial haemorrhage
  - Suspected aortic dissection (including new neurological symptoms)
  - Active bleeding or bleeding diathesis (excluding menses)

ABSOLUTE CONTRAINDICATIONS:
- Known malignant intracranial neoplasm (primary or metastatic)
- Relative contraindications:
  - High-risk unstable angina
  - Recurrent chest pain
  - History of chronic, severe, poorly controlled hypertension
  - Active peptic ulcer
  - Risk of intracranial haemorrhage
  - Suspected aortic dissection (including new neurological symptoms)
  - Active bleeding or bleeding diathesis (excluding menses)

RELATIVE CONTRAINDICATIONS:
- High-risk unstable angina
- Recurrent chest pain
- History of chronic, severe, poorly controlled hypertension
- Active peptic ulcer
- Risk of intracranial haemorrhage
- Suspected aortic dissection (including new neurological symptoms)
- Active bleeding or bleeding diathesis (excluding menses)

ECG Normal or unchanged from previous pain free ECG

Presentation with clinical features consistent with ACS without intermediate risk or high risk features.

All cases to be discussed with Senior Medical Officer

Recommended Management on page 2

This tool is intended as a guideline for clinicians to provide quality patient care. It is not intended nor should it replace, individual clinical judgement. Some patients with co-morbidities or patients not suitable for invasive investigations may be appropriately managed medically.
## CHEST PAIN PATHWAY

### CHEST PAIN PATHWAY

**NON PRIMARY PCI SITE**

**HIGH RISK ADMIT or TRANSFER**

- Continuous cardiac monitoring & frequent vital signs
- Repeat ECG immediately if symptoms recur
- Repeat ECG 8 hrs post onset of symptoms
- Repeat Troponin at 8 hrs if 1st sample negative *
- ECG/Troponin review by medical officer

**INTERMEDIATE RISK RESTRATIFY**

- Continuous cardiac monitoring & frequent vital signs
- Repeat ECG immediately if symptoms recur
- Repeat ECG 8 hrs post onset of symptoms
- Repeat Troponin at 8 hrs if 1st sample negative *
- ECG/Troponin review by medical officer

**LOW RISK DISCHARGE**

- Regular vital signs
- Repeat ECG immediately if symptoms recur
- Repeat ECG 8 hrs post onset of symptoms
- Repeat Troponin at 8 hrs if 1st sample negative *
- ECG/Troponin review by medical officer

Refer for Drug Protocols & Local Therapy Guidelines

**Antiplatelet therapy**

- Yes
- No

**Betalocloker**

- Yes
- No

**Anticoagulant**

- Yes
- No

**Symptomatic treatment of ongoing pain/hypertension**

- IV GTN (titrate against pain & BP)
- IV Morphine
- Refer to nominated cardiologist for further management

If a high sensitivity troponin assay is used, the testing interval may be reduced to 3 hours, provided the second sample is taken at least 6 hours after symptom onset.

Refer to local protocols &/or Therapeutic Guidelines

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**INTERMEDIATE RISK RESTRATIFY**

- Continuous cardiac monitoring & frequent vital signs
- Repeat ECG immediately if symptoms recur
- Repeat ECG 8 hrs post onset of symptoms
- Repeat Troponin at 8 hrs if 1st sample negative *
- ECG/Troponin review by medical officer

Refer for Exercise Stress Test ** if:

- No further chest pain/symptoms
- 2 negative Troponin tests and
- No new ECG changes and
- 2 negative Troponin tests

**Low Risk ACS**

- Discharge
- Follow up GPMO within 3-5 days of D/C
- Consider Specialist follow up
- Consider discharge on Aspirin (discuss with SMO)
- Vital signs prior to discharge

If unlikely cardiac cause

- Consider alternative diagnosis

Exit Pathway

**CHOOSE REPERFUSION METHOD**

- Chest pain > 30 min and < 12 hrs
- Persistent ST segment elevation of ≥ 1 mm in two or more contiguous limb leads or ST segment elevation of ≥ 2 mm in two contiguous chest leads or presumed new LBBB pattern
- Myocardial infarct likely from history

**Confirming thrombolysis unless**

- Absolute or unacceptable relative contraindications (see page 4) or
- Patient does not consent to thrombolysis or
- Documented system for transfer to PRIMARY PCI SITE in place

- Discuss with cardiologist: Time

**THROMBOLYSIS UNLESS**

- Consider alternative diagnosis

**Medical Officer:** Print name & sign ___________________________ Date ___________________________

**Medical Officer Designation**

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**CHEST PAIN PATHWAY**

**NON PRIMARY PCI SITE**

**STEMI MANAGEMENT**

**1. CONFIRM INDICATIONS FOR REPERFUSION**

- Chest pain > 30 min and < 12 hrs
- Persistent ST segment elevation of ≥ 1 mm in two or more contiguous limb leads or ST segment elevation of ≥ 2 mm in two contiguous chest leads or presumed new LBBB pattern
- Myocardial infarct likely from history

**Time of diagnostic ECG**

**2. GENERAL MANAGEMENT**

- Cardiac monitoring
- Routine bloods
- Nitrate-Sublingual or IV
- Oxygen
- CXR
- B BLOCKERS

**3. ADMINISTER ANTITHROMBOTIC THERAPY**

- Aspirin
- Clopidogrel 300 - 600 mg (or prasugrel &/or trombifan)
- Enoxaparin 30 mg IV then bd (or IV heparin or bivalirudin)

**4. CHOOSE REPERFUSION METHOD**

- Tenecteplase / Retepase

**Body Weight _____ kg Dose _____**

**5. THROMBOLYSE**

- Time administered

**OR**

- Transfer to PRIMARY PCI SITE if appropriate

**Maximum Acceptable Delay from First Medical Contact (FMC):**

<table>
<thead>
<tr>
<th>Time since symptom onset</th>
<th>Acceptable delay from FMC to percutaneous intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 hours</td>
<td>60 minutes</td>
</tr>
<tr>
<td>1-3 hours</td>
<td>90 minutes</td>
</tr>
<tr>
<td>3-12 hours</td>
<td>120 minutes</td>
</tr>
<tr>
<td>&gt;12 hours</td>
<td>Not routinely recommended</td>
</tr>
</tbody>
</table>

*References NCCNZ Guidelines for the management of acute coronary syndromes 2009*

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