



Guidelines for Management of Unstable Angina and NSTEMI

Procedure Number

CHC-PC-0033

Version Nos:

1

1. Purpose

Unstable coronary lesions have a complex morphology because of ruptured plaque and superimposed thrombus. The use of antiplatelet agents and anticoagulants is aimed at stabilising these lesions.

2. Application

These Guidelines is to be followed by all WCDHB clinical staff members.

3. Definitions

Unstable Angina

- Change in pattern of angina
- New onset angina
- Pain at rest

NSTEMI

- Elevated cardiac biomarkers

(There may be other causes for this. Indicators that ischemia is the cause include typical history, ECG changes of ischaemia and regional wall abnormalities on ECHO)

4. Responsibilities

- All WCDHB clinical staff must ensure that these Guidelines are followed correctly.

5. Clinical Guidelines

1.00 Risk Stratification

- All patients should be risk stratified.
- ECGs obtained during pain are particularly helpful.
- ST depression is more ominous than T wave changes
- Not only the presence of an elevated troponin, but also the magnitude of the troponin rise is an important prognostic indicator.

Commonly used risk stratification tools are detailed on the following page.



Short-Term Risk Of Death Or Nonfatal MI In Patients With Unstable Angina

Feature	High Risk (At least 1 of the following features must be present)	Intermediate Risk (No high-risk features but must have 1 of the following features)
History	Accelerating tempo of Ischaemic symptoms in preceding 48h	Prior MI, peripheral or cerebrovascular disease, or CABG; prior aspirin use
Character of pain	Prolonged ongoing (>20 min) rest pain PCI last 6 months Prolonged (>20 min) rest angina, now resolved, with moderate or high likelihood of CAD.	Rest angina (<20 min or relieved with rest or sublingual nitro glycerine)
Clinical findings	Pulmonary oedema, most likely related to ischaemia. New or worsening mitral regurgitation murmur S3 or new/worsening rates. Hypotension, bradycardia, tachycardia Age >75yrs Diabetes Associated syncope Associated haemodynamic instability (Systolic BP <90mmHg, cool peripheries, diaphoresis) Known poor LV function (EF <40%)	Age >65-75yrs
ECG findings	Angina at rest with transient ST-segment changes >0.05mV Bundle-branch block, new or presumed new Sustained ventricular tachycardia Deep T wave inversion (≥ 3 min in ≥ 3 leads)	T-wave inversions ≥ 0.2 mV in 3 leads Pathological Q waves
Cardiac markers	Elevated troponins (e.g., TnT $\geq 0.03\mu\text{g/L}$)	

2.00 TIMI Risk Score

Factor	Points
Age >65 years	1
>3 Risk Factors for IHD	1
Prior coronary stenosis >50%	1
>0.5mm ST deviation on ECG	1
>2 anginal events in prior 7 days	1
Aspirin use in prior 7 days	1
Elevated cardiac markers	1



3.00 Management

Management should be undertaken in consultation with DPH cardiologists.
Patient should initially have continuous cardiac monitoring.

Oxygen

The role for routine O₂ is much less clear than it was. O₂ is a vasoconstrictor and as such may have detrimental effects

Supplemental oxygen is indicated for patients who are hypoxic or at risk of hypoxia.
For other patients a short period of O₂ supplementation is reasonable during stabilisation.

Aspirin

Patients not on aspirin should receive 300mg of non enteric coated aspirin chewed.
Continue indefinitely at 75-150 mg daily.

(Patients post stenting probably should receive 300mg for the first 1/12)

Morphine

One study has suggested an increased mortality associated with morphine use in NSTEMI patients. There were significant problems with this trial and further study needed; in the meantime the use of morphine has been downgraded from a class 1 to a class 2a recommendation. ie. may be useful

The use of IV morphine is reasonable for ongoing pain uncontrolled by anti-anginal medication.

Nitrates

- Routinely used to control Pain, CHF and Hypertension.
- Initially sublingually and then topically, orally or intravenously if needed.
- IV nitrates should be started at 10 mcg / min (= 6ml/hr of 25mg GTN in 250ml dextrose) and titrated every 5 minutes according to symptoms and BP. Using ceiling dose is 600mcg/min (=120ml per hour).
- SBP should not be allowed to fall rapidly or below 100mmHg
- Change to an interrupted regime (oral/ topical) within 24 to 48 hrs if possible, in order to avoid tachyphylaxis.
- GTN should not be administered to patients who had received a phosphodiesterase inhibitor for erectile dysfunction within 24 hrs of Sildenafil or 48 hrs of Tadalafil use. The suitable time for the administration of nitrates after Vardenafil has not been determined.

Beta Blockers

Aggressive beta blockade is now less favoured than it was in the management of UA/NSTEMI patients. CHF/Poor LV fn is probably now a stronger indication for the use of beta blockers. It may be harmful to administer IV beta blockers to UA/NSTEMI patients who have contraindications to beta blockade, signs of HF or low-output state, or other risk factors for cardiogenic shock

- Usually started on admission if there are no contraindications (asthma, systolic BP <110 mmHg, heart rate <50 min or AV block.)
- The usual starting dose is short acting Metoprolol 25 mg tds, though 12.5mg tds may be more appropriate if there are concerns about tolerance.



- Aim for Metoprolol CR 95 mg daily by discharge but titrate slowly if there are concerns about haemodynamic stability or poor LV fn.
- IV Metoprolol may be reasonable for initially persistent pain that fails to settle with nitrates.

Calcium Channel Blockers

- These are not usual first line therapy.
- They should be considered in patients who cannot tolerate beta blockers or in whom a combination of nitrates and beta blockers does not control symptoms.
- Diltiazem is the preferred agent. Initially 30mg tds then slow release preparations.
- Amlodipine or Felodipine may be considered especially if the patient has poor LV function. They are safer if used in combination with beta blockers (less likely to induce a tachycardia).

Clopidogrel

- Clopidogrel should be considered for all patients who end up being admitted with UA or NSTEMI.
- All patients should be loaded with 300mg and continued on 75mg daily for 3 months
- A special authority application is needed.

Heparin

LMWH and in particular Enoxaparin is the preferred agent.

Enoxaparin

Unlike Clopidogrel the benefits of Enoxaparin are almost solely confined to patients who have or go on to have a positive troponin.

- Enoxaparin should be considered for all patients who have high risk features. These include ongoing pain, ECG changes and troponin leak.
- Standard dose is 1mg/kg SC every 12 hours.
- Some authorities suggest a loading dose of 30mg IV and this could be considered.
- Renal impairment: If the creat clearance is < 30ml/min the dosing interval should be increased to once every 24 hours.
- Current UA/NSTEMI guidelines do not call for a reduction in dose for the elderly. However local anecdotal evidence suggests there is a higher rate of bleeding complications in these patients and for the frail elderly it may be appropriate to reduce the dose to 0.75mg/kg.
- Enoxaparin should be continued for up to 8 days or the point of discharge, whichever occurs earlier.
- It is necessary to reverse the anticoagulant effect of Enoxaparin because of bleeding complication this may be partially achieved by the use of Protamine. (1mg of Protamine as a slow IV injection will neutralise 1mg of Enoxaparin). The response to Protamine cannot be assessed by APTT.

Unfractionated Heparin

- The use of UFH may occasionally be preferred, usually in patients who have very severe renal impairment or who are at higher risk of bleeding and an agent that wears off quickly and can be fully reversed is preferred.
- Initial bolus of 60/U/kg (max 4000U) followed by infusion of 12U/kg/hr (max 1000U/hr).
- An APTT should be performed at 6hrs and then again once daily or 6hrs after any change in dose.
- Aim for an APTT of 60-80 sec.
- Continue the infusion for between 2 and 5 days.
- Hb and platelets should be monitored.



Tirofiban

Tirofiban is an intravenous platelet blocking agent (glycoprotein IIB/IIIa inhibitor) that is indicated in patient with high risk UA/NSTEMI.

- The drug should be used only on the advice of a Cardiologist.
- Tirofiban is usually reserved for high risk patients who have prolonged and recurrent symptoms despite being on all other appropriate agents, as they await angiography.
- As well as ongoing symptoms, features that should suggest the patient is at high risk and Tirofiban should be considered would include:
 - Elevated troponin
 - Large territory involved (eg wide spread ST/Twave changes across ant leads suggesting prox LAD lesion)
 - ST depression, particularly fluctuating ST depression
 - ST depression with hypotension and or pulmonary oedema
 - Diabetics

ACE Inhibitors (or ARB)

- All patients with UA/NSTEMI who have CHF, impaired LV function, hypertension or DM should be started on an ACE Inhibitor.

Statins

- All patients with UA/NSTEMI should receive a Statin (Simvastatin 40mg) regardless of lipid levels.
- Target lipid levels for patients with known IHD are tot chol < 4 mmol/L and LDL < 2.0 mmol/L. Patients post CABG tot chol < 3.0 mmol/L and LDL < 2.0mmol/L.

Hypertension

- Target BPs for UA/NSTEMI patients are 140/90 or 130/80 for those with diabetes or renal impairment.
- ACE Inhibitors, Beta Blockers and Thiazides are the most appropriate agents.

NSAIDs

- NSAIDs should be stopped
- If it is essential to use an NSAID longer term then a non-selective agent (e.g. Naproxen) should be used.

HRT

- HRT should be avoided.

Warfarin

- In patients who are already on Warfarin for a pre existing condition (eg AF, mechanical valve, mural thrombus) the role of triple therapy with Aspirin, Clopidogrel and Warfarin is unclear. Judgement is required on a case by case basis. If the decision is made to use triple therapy the minimum doses for the minimum time should be used to reduce the risks of bleeding complications.



Glycaemic Control / Diabetics

- The optimal treatment of elevated BSLs is uncertain. Unlike patients with STEMI clear guidelines do not exist. It may be appropriate to maintain BSLs less than 9 mmol/L for the first 3 days. Diabetics will gain greater benefits from the aggressive management (including revascularisation and Tirofiban) of UA/NSTEMI than non diabetics.

4.00 Invasive (PTCA) vs Conservative (medical management only) Strategies

- This decision should be made with the cardiologist on call.
- Most high risk patients (ECG changes, positive troponin, ongoing pain, diabetics) should be considered for transfer and PTCA.
- However there may be instances (including resource constraints) where it is reasonable to initially treat these patients conservatively.
- Patients with multiple co morbidities (e.g. advanced malignancy, intra cranial pathology, CAD know from previous angiography not to be amenable to revascularisation) should be considered for a conservative approach, particularly if they settle with medical management.
- A conservative strategy is appropriate for patients without any high risk features.

Patients for whom a conservative approach is planned

- Patients who fail to settle should be considered for transfer and PTCA.
- Patients who settle should have an early ETT. This should be done prior to discharge (or failing this, within 3 to 7 days)
- Patients must be stable for 24 hrs before undertaking the ETT.
- Patients treated conservatively should be considered for an ECHO to assess LV function.

Return to normal activities

- Appropriate advice will vary from patient to patient.
- Revascularised patients can return to activities sooner.
- Work – normally 2 weeks
- Sexual activity – normally 7-10/7
- Air Travel – normally 2 weeks
- Driving - normally 2 weeks post uncomplicated MI

Lifestyle Modification / Discharge considerations

- Encourage smoking cessation.
- Aim for regular daily exercise of 30-60 min
- Yearly influenza vaccination
- Screen and treat for depression
- Referral to cardiac CNS for cardiac rehabilitation

6. References

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7. Related Documents

There are no other documents related to these Guidelines

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