

Standard Operating Procedure (SOP)

**Diagnosis and Management of Non-ST Elevation Myocardial Infarction
(NSTEMI)**

Special Region (1)

Union of Myanmar

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Approved by: Internal Medicine Unit

1. Purpose

To establish a standardized protocol for diagnosis, risk stratification, and treatment of NSTEMI in SR-1 hospitals where PCI services are not immediately available.

2. Scope

This SOP applies to emergency units, medical units, and intensive care units for adult patients presenting with suspected NSTEMI.

3. Definition

NSTEMI is myocardial infarction caused by myocardial ischemia without persistent ST elevation on ECG, with rise or fall in cardiac troponin and evidence of myocardial ischemia.

4. Diagnostic Criteria

- Ischemic symptoms such as chest pain
- ECG changes including ST depression or T-wave inversion
- Raised cardiac enzyme

Symptom	ECG changes	Cardiac enzyme	Diagnosis
Suspected angina pain	ST depression or T wave inversion	Raised troponin I or T	Non- STEMI
Suspected angina pain	No significant ECG change for myocardial ischemia	Raised troponin I or T	Non- STEMI
Suspected angina pain	No significant ECG change for myocardial ischemia	Not raised troponin I or T	Unstable angina

5. Troponin Testing Protocol (Diagnosis Only)

Troponin testing is used only for confirming NSTEMI diagnosis.

- 0 hour – Baseline troponin
- 3 hours – Repeat troponin
- 6 hours – Third test if diagnosis uncertain

Once NSTEMI diagnosis is confirmed, routine troponin monitoring should be discontinued if not suspicious of re-infarction.

6. GRACE Risk Score

The GRACE score estimates both in-hospital mortality and 6-month post-discharge mortality in patients with acute coronary syndromes.

- Age
- Heart rate

- Systolic blood pressure
- Serum creatinine
- Killip class

Killip Class	Lung Crackles	Clinical Interpretation
Class I	No crackles	No heart failure
Class II	Crackles in <50% of lung fields (usually basal)	Mild heart failure
Class III	Crackles in >50% of lung fields or diffuse rales	Pulmonary oedema
Class IV	Variable (often diffuse)	Cardiogenic shock

- Cardiac arrest at admission
- ST-segment deviation
- Elevated cardiac biomarkers

Parameter	Clinical Range / Finding	Points
Age (years)	<40	0
	40-49	18
	50-59	36
	60-69	55
	70-79	73
	80-89	91
	≥90	100
Heart Rate (bpm)	<50	0
	50-69	3
	70-89	9
	90-109	15
	110-149	24

Parameter	Clinical Range / Finding	Points
	150-199	38
	≥200	46
Systolic Blood Pressure (mmHg)	≥200	0
	180-199	4
	160-179	8
	140-159	13
	120-139	18
	100-119	26
	80-99	36
	<80	58
Serum Creatinine (mg/dL)	0-0.39	1
	0.40-0.79	4
	0.80-1.19	7
	1.20-1.59	10
	1.60-1.99	13
	2.00-3.99	21
	≥4.0	28
Killip Class	I	0
	II	20
	III	39
	IV	59

Parameter	Clinical Range / Finding	Points
Cardiac Arrest at Admission	No	0
	Yes	39
ST-Segment Deviation on ECG	No	0
	Yes	28
Elevated Cardiac Biomarkers	Normal	0
	Elevated (troponin/CK-MB)	14

GRACE score for in-hospital mortality

GRACE Score	Risk Level	Estimated In-Hospital Mortality
<109	Low risk	<1%
109-140	Intermediate risk	1-3%
>140	High risk	>3-5% or higher

Clinical implication

- **Low risk (<109)**
Conservative management often appropriate
- **Intermediate risk (109-140)**
Close monitoring and cardiology consultation
- **High risk (>140)**
Early invasive strategy recommended if available

GRACE score for 6-month mortality

GRACE Score	Risk Level	Estimated 6-Month Mortality
<88	Low risk	<3%
89-118	Intermediate risk	3-8%
>118	High risk	>8%

7. Immediate Medical Treatment

- Aspirin 300 mg loading dose orally
- Clopidogrel 300–600 mg loading dose orally
- Sub lingual Nitroglycerin -0.4 mg or GTN spray -0.4 mg: frequency every 5 minutes maximum 3 times
- Morphine 2–5 mg IV if severe pain
- Oxygen if SpO₂ < 90%

8. Anticoagulant Therapy

Preferred anticoagulant: Enoxaparin

- 1 mg/kg subcutaneous every 12 hours
- Age >75 years: 0.75 mg/kg every 12 hours
- CrCl <30 ml/min: 1 mg/kg once daily

Duration – until stable or discharge the hospital

9. Secondary Prevention

- Atorvastatin 40–80 mg daily
- ACE inhibitor such as Ramipril or enalapril
- Beta blocker long-term therapy such as metoprolol, bisoprolol, carvedilol.
- Dual antiplatelet therapy(aspirin 75 mg and clopidogrel 75 mg) for 12 months

10. Monitoring

- Continuous ECG monitoring
- Blood pressure every 1–2 hours until stable
- Oxygen saturation monitoring
- Urine output hourly if unstable

11. Indications for Transfer to PCI Center

- GRACE score >140
- Cardiogenic shock
- Recurrent ischemia
- Life-threatening arrhythmias
- Acute heart failure

12. References

1. Collet JP et al. ESC Guidelines for acute coronary syndromes. Eur Heart J. 2023.
2. AHA/ACC Guideline for management of acute coronary syndromes. Circulation. 2025.
3. Fox KA et al. Prediction of risk using the GRACE score. BMJ. 2006.
4. Antman EM et al. Enoxaparin vs heparin in NSTEMI. N Engl J Med. 1999.