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Department of Health Research
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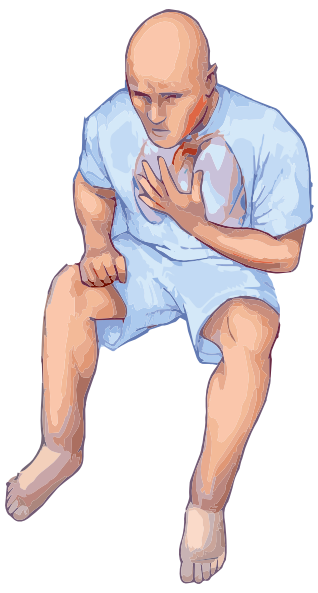
Standard Treatment Workflow (STW) for the Management of
UNSTABLE ANGINA/ NSTEMI
ICD-10-I20.0



CONSIDER ANGINA IF
- Diffuse retrosternal pain, heaviness or constriction. Radiation to arms or neck or back
- Associated with sweating
- Easily reproduced with post-meal exertion
- Consider atypical presentation: Exertional fatigue or breathlessness or profuse sweating or epigastric discomfort

More likelihood if known patient of CAD/ multiple risk factors

ACUTE CORONARY SYNDROME:
1. Angina at rest or lasting more than 20 minutes
2. Recent worsening of stable angina (crescendo) to CCS class III
3. New onset effort angina of less than 1 month in CCS class II/ III
4. Post infarction angina

ECG:
- If ST Elevation: Follow ST Elevation MI (STEMI) STW
- If no ST Elavation: UA/NSTEMI

RED FLAG SIGNS
- Pain lasting for more than 20 minutes
- Recurrent or ongoing pain or rest pain
- Associated breathlessness, profuse sweating or syncope
- Hemodynamic instability

Refer as emergency to nearest Primary PCI/Thrombolysis capable centre

Rest pain beyond 24hrs or without above features may be referred early for further evaluation

LOOK FOR OTHER CAUSES OF PROLONGED CHEST PAIN
- Dissection of aorta (unequal/ absent peripheral pulses)
- Respiratory Evaluation: Pleuritis/ pneumonitis/ embolism/ pneumothorax
- Pericardial rub
- Neuralgia or herpes

ANGINA UNLIKELY IF:

Variable location or characteristic	Long lasting (hours to days) or short lasting (less than a minute)	Restricted to areas above jaw or below epigatrium	Localized to a point	Pricking or piercing or stabbing type of pain	Precipitated by movement of neck or arms or respiration

MANAGEMENT

PHC/ CHC LEVEL
1, ECG, Troponin.
2. Start
   -Aspirin, Clopidogrel
   -Heparin/ LMWH
   -High dose atorvastatin
   -Metoprolol
3. Risk stratify GRACE score or TIMI score
   - Refer High/ Intermediate risk to PCI capable centre
   - Refer Low risk for further evaluation to DH
4. Refer to PCI capable centre if:
   - Acute LVF
   - Hypotension
   - Systolic murmur
   - Arrythmia

DISTRICT HOSPITAL
1. Admit in ICU equipped with ECG monitoring and defibrillator
2. Troponin & bio-chemistry if not done
3. Serial ECG & echocardiography
4. Continue Aspirin, Clopidogrel, Heparin & Metoprolol
5. Add nitrates if needed
6. Management for different risk categories:
   -Very high,High or Intermediate risk or LVEF <40%: Refer for revascularization
   -Low risk patients: Conservative management
   Life style modification
   Risk factor control
   Secondary prevention

TERTIARY CENTRE
1. Admit, reassess clinically and monitor in ICCU
2. Continue aspirin and heparin
3. Load with clopidogrel or prasugrel or ticagralor if not already done
4. Optimal medical therapy to continue (BB, high dose atorvastatin, ACE-inhibitors, intra-venous nitrates if ongoing pain, severe MR or LVF)
5. Detailed echocardiography
6. Low risk patients may undergo non-invasive risk stratification with exercise stress test, CT coronary angiography or stress imaging
7. Very high risk, high risk and intermediate risk patients may be subjected to coronary revascularization

Revascularization:
1. Discuss pros & cons of re-vascularization and prolonged dual anti-platelet therapy
2. Revascularize if anatomy is suitable
3. Prefer CABG over PCI in DM with multivessel disease or left main disease

Revascularization strategy:
1. Very High risk: Urgent re-vacsularization (within few hours) after loading preferably with Ticagrelor or prasugrel if PCI is planned
2. High risk patients: Early revascularization (within 24 hours)
3. Intermeditae risk patients: Revascularization (within 72 hours)
4. Continue Dual anti-platelets in patients undergoing PCI for atleast 12 months

1. GRACE SCORE:

Killip Class	Points	SBP1 mm Hg	Points	Heart rate Beats/ min	Points	Age. y	Points	Creatinine Level, mg/ dL	Points
I	0	<80	58	≤50	0	≤30	0	0-0.39	1
II	20	80-99	53	50-69	3	30-39	8	0.40-0.79	4
III	39	100-119	43	70-89	9	40-49	25	0.80-1.19	7
IV	59	120-139	34	90-109	15	50-59	41	1.20-1.59	10
		140-159	24	110-149	24	60-69	58	1.60-1.99	13
		160-199	10	150-199	38	70-79	75	2.00-3.99	21
		≥200	0	≥200	46	80-89	91	>4.0	28
						≥90	100		

Other risk factors	Points
Cardiac arrest at admission	39
ST-Segment Deviation	28
Elevated Cardiac Enzyme Levels	14

Sum Total= GRACE score of patient

2. TIMI SCORE:

One point for each of following
1. Age >65 yrs
2. More than 3 risk factors
3. Known CAD (>50% lesion)
4. Recurrence of angina in 24 hrs
5. Aspirin use within 7 days
6. ST deviation >0.5 mV
7. Raised cardiac markerss

Sum total = TIMI score of patient

UNSTABLE ANGINA OR NSTEMI DIAGNOSIS

Very high risk	High risk	Intermediate risk	Low risk
Clinical instability	GRACE > 140, TIMI ≥4	GRACE 109-140, TIMI2-3	GRACE <109, TIMI ≤1
Immediate invasive <2 h	Early invasive 2-24 h	Delayed invasive 25-72 h	Medical/ non-invasive strategy

If at non-PCI-capable hospital
Very high risk: Immediate transfer to PCI-capable hospital
High risk: same-day transfer
Intermediate risk: transfer for PCI withing 72 h
Low risk: transfer if pursuing invasive treatment

Clinical instability. rise in cTn, or ECG changes

Invasive evaluation + Non-invasive ischaemic testing

INVESTIGATIONS

ESSENTIAL INVESTIGATIONS
1. Hemogram
2. Creatinine
3. Sugar, HbA1C
4. Fasting lipids
6. ECG
7. Troponin T/ Troponin I
8. Plain X-ray chest

DESIRABLE INVESTIGATIONS
1. Echocardiography
2. Exercise Treadmill Test
3. C reactive protein
4. B-Natriuretic Peptide
5. D dimer
6. Bleeding and coagulation profile
7. Liver function test
8. Coronary Angiography

OPTIONAL INVESTIGATIONS
1. Stress Radionuclide/ echocardiographic imaging
2. CT scan including coronary angiography
3. MRI
4. Coronary Fractional Flow Reserve
5. Intra-vascular Ultrasound
6. VQ scan

UA/NSTEMI: RISK CATEGORIZATION:

Based on clinical features, GRACE score & TIMI score
A). Very high risk:
-Acute LVF
-Hypotension
-Uncontrolled Ventricular arrhythmia
-Severe MR
B. High Risk:
-GRACE score > 140 or TIMI score >4
C. Intermediate Risk:
-GRACE score 109-140 or TIMI score 2-3
D. Low Risk:
-Grace score <108 or TIMI score 0-1

UA/NSTEMI: RISK CATEGORY MANAGEMENT:

A)Low risk:
1. Conservative management: Aspirin, clopidogrel, BB and statin
2. TMT if ambulatory patient within a week to risk stratify
3. Refer low risk for re-vascularization if
-Recurrent pain
-Hemodynamic deterioration
-New ECG change

B. Intermediate/ Very High/ High risk:
Re-vascularization

DRUGS & DOSAGE

Anti-platelets
1. Aspirin: Loading dose 325 mg followed by 75 mg OD
2. Clopidogrel: Loading dose 300 mg followed 75 mg OD
3. Prasugrel: Loading dose 60 mg followed by 10 mg OD
4. Ticagralor: Loading dose 180 mg followed by 90 mg BD

Anti thrombotics:
1. Enoxaparin: 1 mg/Kg SC 12 hrly
2. Unfractionated heparin: Bolus of 60 U/Kg (maximum 5000 U) followed by 12 U/Kg hourly infusion to maintain APTT at 50-70 sec

Anti-ischemic:
1. Metoprolol:
   Short acting 25-100 mg BD
   Long acting 25 -100 mg OD
2. Nitrates:
   Isosorbide mono-nitare 20 to 60 mg in 2 devided dose
   Nitroglycerine sustained release 2.6 to 6.5 mg BD
   Nitroglycerine IV 5-25 mcg/ min infusion

Statins:
High dose Atorvastatin 80 mg OD

Ace-inhibitor
Ramipril 2.5 -10 mg OD
Enalapril 2.5-10 mg BD

KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURE

This STW has been prepared by national experts of India with feasibility considerations for various levels of healthcare system in the country. These broad guidelines are advisory, and are based on expert opinions and available scientific evidence. There may be variations in the management of an individual patient based on his/her specific condition, as decided by the treating physician. There will be no indemnity for direct or indirect consequences. Kindly visit our web portal (**stw.icmr.org.in**) for more information.