STANDARD TREATMENT WORKFLOW (STW)

ST Elevation Myocardial Infarction (STEMI)

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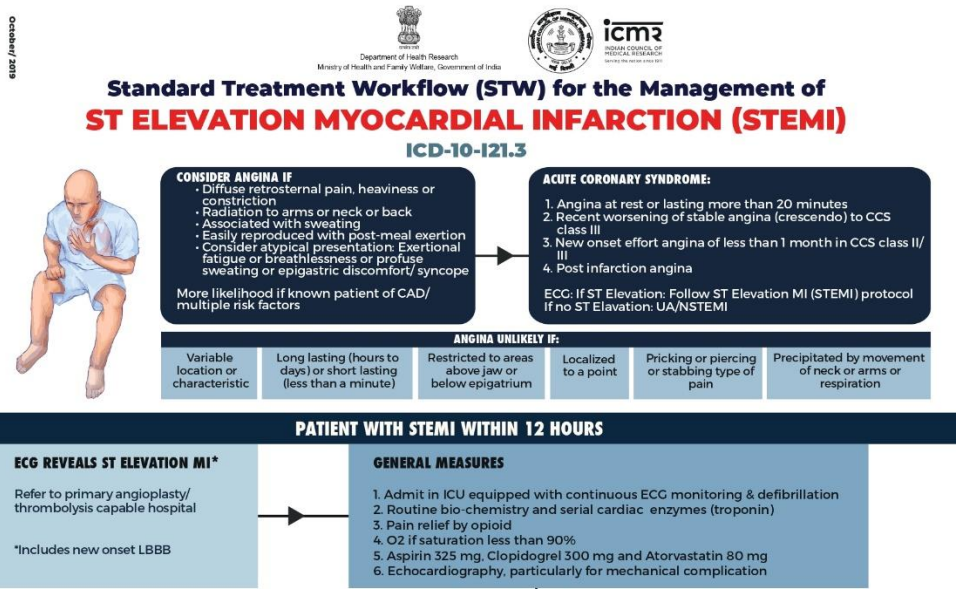

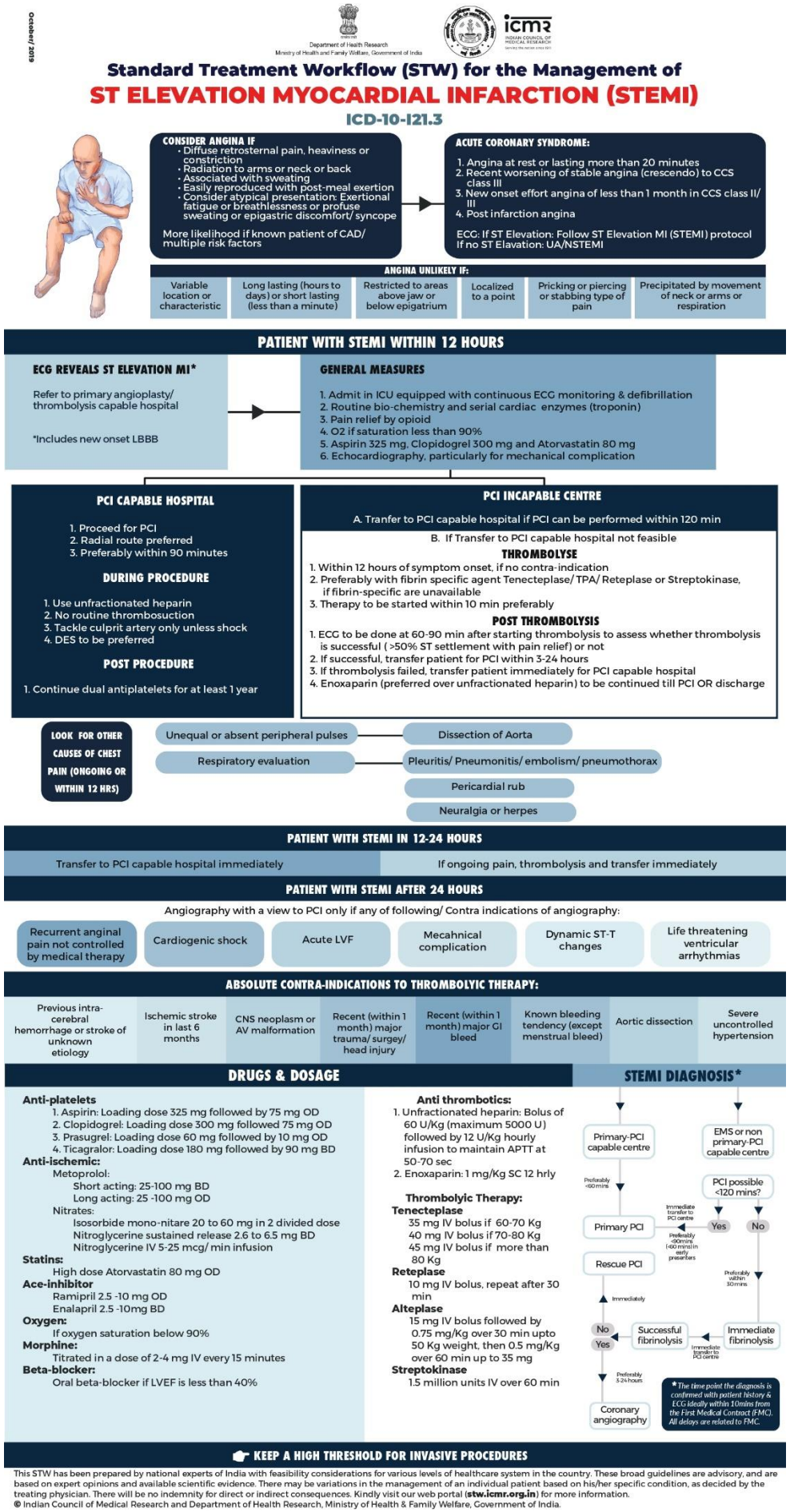
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Standard Treatment Workflow (STW) for the Management of
ST ELEVATION MYOCARDIAL INFARCTION (STEMI)
ICD-10-I21.3
CONSIDER ANGINA IF
• Diffuse retrosternal pain, heaviness or constriction
• Radiation to arms or neck or back
• Associated with sweating
• Easily reproduced with post-meal exertion
• Consider atypical presentation: Exertional fatigue or breathlessness or profuse sweating or epigastric discomfort/ syncope
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) protocol
If no ST Elavation: UA/NSTEMI
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
PATIENT WITH STEMI WITHIN 12 HOURS
ECG REVEALS ST ELEVATION MI*
Refer to primary angioplasty/ thrombolysis capable hospital
*Includes new onset LBBB
GENERAL MEASURES
1. Admit in ICU equipped with continuous ECG monitoring & defibrillation
2. Routine bio-chemistry and serial cardiac enzymes (troponin)
3. Pain relief by opioid
4. O2 if saturation less than 90%
5. Aspirin 325 mg, Clopidogrel 300 mg and Atorvastatin 80 mg
6. Echocardiography, particularly for mechanical complication
PCI CAPABLE HOSPITAL
1. Proceed for PCI
2. Radial route preferred
3. Preferably within 90 minutes
DURING PROCEDURE
1. Use unfractionated heparin
2. No routine thrombosuction
3. Tackle culprit artery only unless shock
4. DES to be preferred
POST PROCEDURE
1. Continue dual antiplatelets for at least 1 year
PCI INCAPABLE CENTRE
A. Tranfer to PCI capable hospital if PCI can be performed within 120 min
B. If Transfer to PCI capable hospital not feasible
THROMBOLYSE
1. Within 12 hours of symptom onset, if no contra-indication
2. Preferably with fibrin specific agent Tenecteplase/ TPA/ Reteplase or Streptokinase, if fibrin-specific are unavailable
3. Therapy to be started within 10 min preferably
POST THROMBOLYSIS
1. ECG to be done at 60-90 min after starting thrombolysis to assess whether thrombolysis is successful (>50% ST settlement with pain relief) or not
2. If successful, transfer patient for PCI within 3-24 hours
3. If thrombolysis failed, transfer patient immediately for PCI capable hospital
4. Enoxaparin (preferred over unfractionated heparin) to be continued till PCI OR discharge
LOOK FOR OTHER CAUSES OF CHEST PAIN (ONGOING OR WITHIN 12 HRS)
Unequal or absent peripheral pulses
Dissection of Aorta
Respiratory evaluation
Pleuritis/ Pneumonitis/ embolism/ pneumothorax
Pericardial rub
Neuralgia or herpes
PATIENT WITH STEMI IN 12-24 HOURS
Transfer to PCI capable hospital immediately
If ongoing pain, thrombolysis and transfer immediately
PATIENT WITH STEMI AFTER 24 HOURS
Angiography with a view to PCI only if any of following/ Contra indications of angiography:
Recurrent anginal pain not controlled by medical therapy
Cardiogenic shock
Acute LVF
Mecahnical complication
Dynamic ST-T changes
Life threatening ventricular arrhythmias
ABSOLUTE CONTRA-INDICATIONS TO THROMBOLYTIC THERAPY:
Previous intra-cerebral hemorrhage or stroke of unknown etiology
Ischemic stroke in last 6 months
CNS neoplasm or AV malformation
Recent (within 1 month) major trauma/ surgey/ head injury
Recent (within 1 month) major GI bleed
Known bleeding tendency (except menstrual bleed)
Aortic dissection
Severe uncontrolled hypertension
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-ischemic:
Metoprolol:
Short acting: 25-100 mg BD
Long acting: 25 -100 mg OD
Nitrates:
Isosorbide mono-nitare 20 to 60 mg in 2 divided 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 -10mg BD
Oxygen:
If oxygen saturation below 90%
Morphine:
Titrated in a dose of 2-4 mg IV every 15 minutes
Beta-blocker:
Oral beta-blocker if LVEF is less than 40%
Anti thrombotics:
1. Unfractionated heparin: Bolus of 60 U/Kg (maximum 5000 U) followed by 12 U/Kg hourly infusion to maintain APTT at 50-70 sec
2. Enoxaparin: 1 mg/Kg SC 12 hrly
Thrombolyic Therapy:
Tenecteplase
35 mg IV bolus if 60-70 Kg
40 mg IV bolus if 70-80 Kg
45 mg IV bolus if more than 80 Kg
Reteplase
10 mg IV bolus, repeat after 30 min
Alteplase
15 mg IV bolus followed by 0.75 mg/Kg over 30 min upto 50 Kg weight, then 0.5 mg/Kg over 60 min up to 35 mg
Streptokinase
1.5 million units IV over 60 min
STEMI DIAGNOSIS*
Primary-PCI capable centre
EMS or non primary-PCI capable centre
Preferably <60 mins
PCI possible <120 mins?
Immediate transfer to PCI centre
Primary PCI
Yes
No
Preferably <90mins (<60 mins in early presenters)
Rescue PCI
Preferably within 30 mins
Immediately
No
Yes
Successful fibrinolysis
Immediate transfer to PCI centre
Immediate fibrinolysis
Preferably 3-24 hours
Coronary angiography
*The time point the diagnosis is confirmed with patient history & ECG ideally within 10mins from the First Medical Contract (FMC). All delays are related to FMC.
KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES
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.
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