12. STEMI Algorithm

This clinical pathway is intended to supplement, rather than substitute for, professional judgment and may be changed depending upon a patient's individual needs. Failure to comply with this pathway does not represent a breach of the standard of care.

ST-Elevation MI (STEMI)

- Attach the patient to a **DEFIBRILATOR**
- Establish IV access in **left forearm or antecubital vein** and send blood samples for **UEC, & hsTroponin T**
- **Aspirin 300mg** to chew (if not given by EMS, not allergic, no active upper GI bleeding or retinal bleeding, not a haemophiliac)
- **Nitroglycerin sublingual spray 0.4mg SL** for pain relief **every 5mins** up to relief of discomfort or **MAX 3 doses** reached. **DO NOT** give nitroglycerin if:
  - SBP < 90mmHg (or 30 mm Hg below the patient's known baseline),
  - Heart rate > 100 bpm, or < 50 bpm.
  - Right ventricular infarction (right ventricular infarction causes a preload dependent state)
  - Use of sildenafil or vardenafil within the previous 24 hours or tadalafil within the previous 48 hours.
- **Fentanyl 50µg IV** if pain is **NOT** relieved by the 3 doses of SL nitroglycerin. Repeat **once** if still in pain after 5 mins. For persistent pain, **consult a Cardiologist/Physician**. Consider **IVI Nitroglycerin (see C/I above)**

Time from onset of symptoms?

- **> 12 hours** → **Consult Interventional Cardiologist**
- **≤ 12 hours** → **Consult an Interventional Cardiologist to determine if the patient is for Thrombolysis/Fibrinolysis OR Primary PCI**

Primary PCI

- **Obtain informed consent**
- **Give**:
  1. Clopidogrel (600mg) **OR** Prasugrel (60mg) **OR** Ticagrelor (180mg)
  2. **Enoxaparin** 0.5mg/kg IV bolus
- **Transfer to Cath lab CONNECTED TO A DEFIBRILLATOR within 30 minutes of arrival to the ER**

Thrombolysis/Fibrinolysis

Give:

1. **Clopidogrel 300mg (75 mg if age > 75 years)**
2. **Enoxaparin:**
   - If age <75 y: 30-mg IV bolus, followed in 15 min by 1 mg/kg SC (max.100 mg for the first 2 doses)
   - If age ≥ 75 y: no bolus, 0.75 mg/kg SC (max. 75 mg for the first 2 doses)
   - Regardless of age, if CrCl < 30 mL/min: 1 mg/kg SC

Review/Complete Fibrinolysis Checklist

Absolute Contraindications

- □ Any prior intracranial haemorrhage
- □ Known structural cerebral vascular lesson (e.g., AVM)
- □ Known malignant intracranial neoplasm (primary or metastatic)
- □ Ischaemic stroke within 6 months EXCEPT acute ischaemic stroke within 4.5 hours
- □ Suspected aortic dissection
- □ Active bleeding or bleeding diathesis (excluding menses)
- □ Significant closed-head trauma or facial trauma within 1 month
- □ Intracranial or intraspinal surgery within 1 month
- □ Severe uncontrolled hypertension (unresponsive to emergency therapy)
- □ For streptokinase, prior treatment with streptokinase within the previous 6 months
- □ Non-compressible vascular punctures in the past 24 hrs

Relative Contraindications

- □ Severe hypertension on presentation (SBP > 180 mmHg or DBP > 110 mmHg) - Lower BP first before fibrinolysis
- □ History of TIA in the preceding 6 months
- □ Traumatic or prolonged (>10 minutes) CPR
- □ Major surgery (< 3 weeks)
- □ Recent (within 2 to 4 weeks) internal bleeding
- □ Pregnancy or within 1-week post-partum
- □ Active peptic ulcer
- □ Oral anticoagulant therapy

No contraindications for Thrombolysis/Fibrinolysis

- **Obtain informed consent for fibrinolysis/thrombolysis**
- Ensure patient is **connected to a defibrillator** (ECG, SPO_2, BP) and repeat baseline vitals. **Administer fibrinolysis/thrombolysis within 10 mins of STEMI diagnosis**

Fibrinolytic Agent	Dose	Fibrin Specificity*	Antigenic	Patency Rate (90-min TIMI 2 or 3 flow)
Fibrin-specific:				
Tenecteplase (TNK-tPA) ***Half dose in patients ≥75 yrs)**	To reconstitute, mix the 50-mg vial in 10 mL sterile water (5 mg/mL). Give IV bolus based on weight as below: < 60 kg - 30 mg (6 mL) 60 to 69 kg - 35 mg (7 mL) 70 to 79 kg - 40 mg (8 mL) 80 to 89 kg - 45 mg (9 mL) ≥ 90 kg - 50 mg (10 mL)	+ + + +	No	85%
Reteplase (rPA)	10 U+10-U IV boluses given 30 min apart	+ +	No	84%
Alteplase (tPA)	Bolus 15 mg IV, then give infusion of 0.75 mg/kg for 30 min (maximum 50 mg), then 0.5 mg/kg (maximum 35 mg) over the next 60 min; total dose not to exceed 100 mg.	+ +	No	73% to 84%
Non–fibrin-specific:				
Streptokinase	Set up second IV line for the Streptokinase. The adult dose of streptokinase for STEMI is 1.5 Million U in 50 mL of 5% dextrose in water (D5W) given IV over 30-60 minutes. Allergic reactions force the termination of many infusions before a therapeutic dose can be administered. Run Ringer's Lactate/Hartmann's Solution TKVO in other line	No	Yes§	60% to 68%

*Strength of fibrin specificity; "+ + + +" is more strong, "+ +" is less strong.

§Streptokinase is highly antigenic and absolutely contraindicated within 6 mo of previous exposure because of the potential for serious allergic reaction.

IV indicates intravenous; rPA, reteplase plasminogen activator; TIMI, Thrombolysis In Myocardial Infarction; TNK-tPA, tenecteplase tissue-type plasminogen activator; and tPA, tissue-type plasminogen activator.

- Monitor vital signs (BP, PR, RR, SPO_2) **every 15 minutes** during the infusions
- Continue monitoring patient for **30mins after the end of the infusions**
- **Transfer patient to CCU/ICU CONNECTED TO A DEFIBRILLATOR**