10. Chest Pain (Acute Coronary Syndrome) 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.

Chest Discomfort Suggestive of Ischemia

(includes **anginal equivalents** (atypical symptoms) like exertional pain in the ear, jaw, neck, shoulder, arm, back, or epigastric area; exertional dyspnoea; nausea and vomiting; diaphoresis; and fatigue.

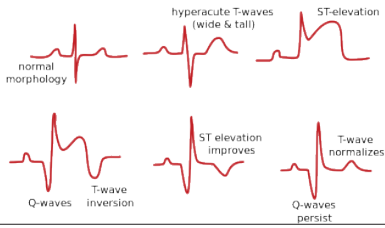
- Monitor, support ABCs in the **Resuscitation Room (ER)**. Be prepared to provide CPR
- **Obtain/review 12-lead ECG**
  - Do a **V4R** if ST elevation in lead V1 with simultaneous ST depression in V2 -? **Right sided STEMI**
  - Do **V7 - V9** if ST depressions ≥ 1 mm with upright T-waves in ≥ 2 contiguous anterior precordial leads (V1 to V3) -? **Posterior STEMI**
  - If there is **ST elevation in aVR ≥ 1mm** and **aVR ≥ V1** with widespread horizontal ST depression, most prominent in leads I, II and V4-6 – **consult a Cardiologist/Physician** immediately for PCI (**Left main coronary artery occlusion/Proximal LAD lesion/ Severe sub endocardial ischaemia, nonlocalized**)
  - Sinus Tachycardia, T wave inversion in III & V1, V3 or (S1, Q3, T3) pattern – Consider a **PE – see 11. Pulmonary Embolus Algorithm**
- Check vital signs (BP, PR, RR, SPO_2, T°C, **RBS**)
- Start Oxygen **IF** SPO_2 < 90% or if patient is dyspnoeic. Maintain SPO_2 ≥ 90%
- Establish IV access and send blood samples for **UEC**
- Perform brief, targeted history, physical exam – **Indicate time of symptoms onset**

- **Aspirin 300mg** to chew (if not given, not allergic, no active upper GI bleeding or retinal bleeding, not a haemophiliac).
- For pain, **DO NOT GIVE NSAIDS** (e.g. ibuprofen, diclofenac) as this will increase the patient's risk of death.
  Give morphine 2-4mg. **DO NOT** give morphine 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.
- For persistent pain, **consult a Cardiologist/Physician**

- **Consider other life-threatening causes of chest pain** (**pulmonary embolus, cardiac tamponade, aortic dissection, tension pneumothorax, oesophageal rupture**)
- **Review initial 12-lead ECG**

Sequence of ECG changes seen during evolution of myocardial infarction

In the early stages of acute myocardial infarction the electrocardiogram may be normal or near normal; **< ½ of patients with acute myocardial infarction have clear diagnostic changes on their first trace**. **About 10%** of patients with a proved acute myocardial infarction (on the basis of clinical history and enzymatic markers) fail to develop ST segment elevation or depression. In most cases, however, serial electrocardiograms show evolving changes that tend to follow well recognised patterns.



ST Elevation	MI Description	Coronaries affected
V2 – V5	Anterior	LAD
V1 – V2	Septal	Septal LAD
II, III, aVF	Inferior	RCx (20%) or RCA (80%)
V1 – V4	Anterolateral	
V3 – V6, I, aVL	Anteroseptal	
I, aVL, V5, V6	Lateral	LCx
V7, V8, V9	Posterior	RCx
V1, V4R	RV	RCA

ST elevation
ST-Elevation MI (STEMI)

ST depression > 0.5mm or dynamic T-wave inversion ≥ 2mm; strongly suspicious for ischemia
High-Risk Unstable Angina/Non-ST-Elevation MI (UA/NSTEMI)

Normal or Non-diagnostic changes in ST segment or T wave
Intermediate/Low Risk UA

Consult a Cardiologist/Physician
Consider immediate transfer to an appropriate facility