Acute chest pain - Work up 01

Cardiovascular

1. ACS

- Serial ECGs → Ongoing chest pain - 10 minutes
  → No ongoing chest pain - 30 minutes
- Tropl
- ST elevation → STEMI work-up → STEMI Equivalent / STEMI Mimics
- ST depression/T inversion dynamic → NSTEMI/UA workup
- ST dep/T inversion no dynamic changes → HEART/EDACS score
- If ECG normal → HEART/EDACS score

HEART score

- 0-3: low risk → discharge
- 4-6: mod risk → admit
- 7-10: high risk → admit+ early angiography

2. Aortic dissection

- Hypertensive emergency refers hypertensive emergency workup
- BP control with beta-blockers(preferably)
- Cardio-thoracic referral

3. Cardiac tamponade

- Pericardiocentesis

4. Pericarditis

- Tropl/ECG → pericarditis work-up

Respiratory (Refer SOB work-up)

1. Pulmonary embolism
2. Pleurisy -pneumonia, lung malignancy, rib fractures, rheumatoid arthritis, and so on
3. Pneumothorax
4. Hyperventilation

Gastrointestinal

1. Malory Weiss syndrome → Boerhaave's syndrome

2. GORD Reflux oesophagitis, oesophageal spasm
   - PPIs/antacid/prokinetic

3. Peptic ulcer (PUD) /Gastric perforation /cholecystitis, pancreatitis

MSK

1. Costochondritis • Analgesics

Psychiatric

- Rule out organic causes → Depression → Psychiatric referral

The HEART Score for Chest Pain Patients in the ED		
History	• Highly Suspicious • Moderately Suspicious • Slightly or Non-Suspicious	• 2 points • 1 point • 0 points
ECG	• Significant ST-Depression • Nonspecific Repolarization • Normal	• 2 points • 1 point • 0 points
Age	• ≥ 65 years • > 45 - < 65 years • ≤ 45 years	• 2 points • 1 point • 0 points
Risk Factors	• ≥ 3 Risk Factors or History of CAD • 1 or 2 Risk Factors • No Risk Factors	• 2 points • 1 point • 0 points
Troponin	• ≥ 3 x Normal Limit • > 1 - < 3 x Normal Limit • ≤ Normal Limit	• 2 points • 1 point • 0 points
Risk Factors: DM, current or recent (<one month) smoker, HTN, HLP, family history of CAD, & obesity		
Score 0 – 3: 2.5% MACE over next 6 weeks → Discharge Home **Score 4 – 6:** 20.3% MACE over next 6 weeks → Admit for Clinical Observation **Score 7 – 10:** 72.7% MACE over next 6 weeks → Early Invasive Strategies		

Acute chest pain – Work up 02

Causes of chest pain and distinguishing features

Disease	Differentiative features
ACS	Pain—typically in the chest and/or other areas (e.g. the arms, back, or jaw) lasting longer than 15 minutes. The pain is classically described as a constricting discomfort/tightness. Associated autonomic symptoms—nausea, vomiting, sweating, breathlessness, or a combination of these. Chest pain associated with haemodynamic instability. New onset chest pain or abrupt deterioration in previously stable angina, with recurrent chest pain occurring frequently and with little or no exertion, and with episodes often lasting longer than 15 minutes.
Reflux oesophagitis, oesophageal spasm	Heartburn. Worse in recumbent position. No ECG changes.
Pulmonary embolism	Tachypnoea, hypoxia, hypocarbia. Hyperventilation. May resemble inferior wall infarction on ECG: ST ↑ in II, III, and aVF. Other ECG changes include sinus tachycardia, right ventricular strain, RBBB, 'S1, Q3, T3' pattern. No pulmonary congestion on CXR. PaCO2 ↓, PaO2 ↓
Hyperventilation	Dyspnoea. Often a young patient. Tingling and numbness of limbs and lips; dizziness. PaCO2 ↓, PaO2 ↑ or normal. NB An organic disease may cause secondary hyperventilation (e.g. diabetic ketoacidosis).

Spontaneous pneumothorax Dyspnoea; unilateral pleuritic chest pain.
Often a young patient (typically a tall, slim, male) or older patient with underlying lung pathology (e.g. COPD).
Auscultation of the chest may be normal or reveal decreased air entry on the affected side. The percussion note may be normal or hyper-resonant on the affected side.
CXR confirms the diagnosis.

Aortic dissection Severe pain with changing localization (as dissection extends).
Pain described as tearing and inter-scapular. New aortic regurgitation murmur.
Pulse deficit (asymmetry of pulses or difference of >20 mmHg between arms).
In type A dissections, the coronary ostium may be obstructed resulting in signs of an inferior-posterior infarct on ECG. CXR may reveal a broad mediastinum.

Pericarditis Change of posture and breathing influence pain. Pericardial friction rub may be heard.
ST-elevation (saddle-shaped) but no reciprocal ST-depression.

Pleurisy A jabbing pain when breathing.
Cough is the most common symptom.
CXR may reveal the underlying cause (e.g. pneumonia, lung malignancy, rib fractures, rheumatoid arthritis, and so on).

Costochondritis Palpation tenderness.
Movements of the chest influence pain.

Early herpes zoster No ECG changes. Dermatomal rash.
Localized paraesthesia before rash.

Peptic ulcer, cholecystitis, pancreatitis Clinical examination of the abdomen reveals tenderness (inferior wall ischaemia can resemble an acute abdomen).
Serum biochemistry (LFTs, amylase).

Depression Continuous feeling of heaviness in the chest. No correlation to exercise. Normal ECG.

Chest pain

ACS

Indications for admission

1. Conclusive diagnosis of STEMI/ NSTEMI/UA.
2. Non dynamic ST depression or T inversions/ ECG normal and suggestive pain- HEART score 4 or more.

Indications for discharge

-HEART score 3 or less

Pericarditis

Indications for admission*

Patients with acute pericarditis and 1 or more high risk markers-

-Fever > 38^0C
-Subacute course (without acute onset of chest pain)
-Haemodynamic compromise suggesting cardiac tamponade
-Large pericardial effusion seen on echocardiography
-Immunosuppressed patient
-Treatment with Warfarin or DOAC
-Acute trauma
-Elevated troponin suggesting myopericarditis

*Note- in most cases in the Sri Lankan setting will be admitted for to exclude infective causes; eg TB.

Pulmonary embolism

Indications for admission

Admit all patients except low-risk

PE- Low risk PE-

PESI class less than III or sPESI <1 **and** no RV dysfunction on TTE or CTPA and no social reasons to admit➔ Can be discharged if DOAC affordable.

Other causes of chest pain

Aortic dissection-Admit
Cardiac tamponade-Admit
GORD-Treat and discharge with PPI/antacid/prokinetic
Costochondritis-D/C with analgesics
Mallory Weiss-exclude Boerhaave's and D/C with PPI/prokinetic/antacid