SCGH Acute Coronary Syndrome (ACS) Assessment and Treatment Algorithm

1 Triage and initial care

Chest pain / symptoms consistent with ACS

Consider important differentials such as Aortic dissection, PE, pneumothorax …

UNSTABLE OR DISTRESSED PATIENT MANDATES IMMEDIATE SENIOR MEDICAL REVIEW

Care

Care

- Triage 1 or 2 as per ACEM guidelines
- Direct to resuscitation area
- Monitor ECG and O2 stats
- Observations – BP (bilateral if dissection considered), temp, pulse, resps, SpO2, pain assessment
- Bloods – FBP, U&E, BSL, troponin (take purple, green and blue top (so senior doctor can add D-dimer if indicated))
- CXR
- Aspirin 300mg unless already given or contraindicated
- Oxygen only if hypoxia (SpO2 <93%) or shock; if there in hypercapnoeic resp failure aim at sats 88-92%.

2 ECG

ECG
Immediate 12 lead ECG – review by ED reg or consultant within 10 minutes

STEMI

ECG changes consistent with STEMI

- ST elevation >1mm in 2 contiguous limb leads or
- ST elevation >2mm in 2 contiguous chest leads
- New LBBB (for discussion with cardiology consultant)

STEMI

SEE SCGH ED CODE STEMI PROTOCOL

3 Evaluate, risk stratify and start treatment

Evaluate and risk stratify

- Clinical history
- Examination
- Initial troponin
- ECG (repeat every 20 mins if ongoing pain)
- CXR
- Evaluate clinical likelihood of ACS using **EDACS score and any high risk features**?
- Consider other causes and investigate appropriately
- Ensure aspirin 300mg given
- GTN (SL then IV if required) ***(beware hypotension, phosphodiesterase inhibitors (Sildenafil), severe AS)***
- Other analgesia – e.g. titrated morphine

Assess

EDACS SCORE

Age	Score	Other factors	Score
18-45	+ 2	Male sex	+ 6
46-50	+ 4	Aged 18-50 years and either: • Known coronary artery disease or • 3 or more risk factors*	+ 4
51-55	+ 6		
56-60	+ 8		
61-65	+ 10	Symptoms and signs	
66-70	+ 12	• Diaphoresis	+ 3
71-75	+ 14	Radiates to arm or shoulder	+ 5
76-80	+ 16	Pain** occurred or worsened with inspiration	- 4
81-85	+ 18		
86+	+ 20	Pain** is reproduced by palpation	- 6
SCORE 1		**SCORE 2**	

TOTAL SCORE =	SCORE 1 + SCORE 2 =

*Risk factors: family history of premature CAD, dyslipidaemia, diabetes, hypertension, current smoker.
**Pain that caused presentation to hospital.

Any high risk features for ACS?

- **ECG changes**
  - ischaemic / dynamic changes
  - if in doubt seek senior opinion
- **Chest pain**
  - Ischaemic sounding chest pain on minimal exertion
  - Recent acceleration of angina pattern or ↓threshold
  - Ongoing ischaemic sounding chest pain
- **Other high risk features**
  - Syncope
  - Systolic BP less than 90mm Hg (not due to GTN)
  - Haemodynamic instability (shock)
  - Signs and symptoms heart failure / pulmonary oedema
  - Recent PCI less than 6 months or prior CABG
  - Sustained arrhythmia VT (>3 beats) / any VF

4 Assess post 1st troponin

Low risk ACS group
Negative initial troponin
EDACS Score <16 and No high risk features
EDU slip, ED review after 2nd troponin / ECG

Not low risk ACS group
Negative initial troponin
EDACS Score ≥ 16 and No high risk features
EDU slip, call for cardiology review

Undifferentiated high risk group
Slightly raised troponin
where non-ACS cause of raised troponin is likely
Ix for PE, dissection, AF, sepsis, renal failure…
Appropriate booking slip as soon as possible

High risk ACS group
Positive initial troponin OR
Any high risk feature for ACS (see above)

- **≤ 80 yo and relatively well and independent**
  Inform cardiology reg, put in booking slip and send to ward when bed ready (as per admission policy)
  * If unstable cardiology review in ED is required
- **81-85 yo**
  - **Well and independent**
    Inform cardiology reg as for ≤ 80 yo group
  - **Not well and independent**
    MAU admit
- **> 85 yo or multiple non-cardiac comorbidities**
  Non-invasive strategy appropriate - admit MAU
- Where there is disagreement or delay the ED consultant or SR may admit at their discretion

5 Repeat trop & ECG

If the first troponin is taken >4 hours after maximal pain and is negative, repeat troponin is not required (consider as serial troponin negative patient).
Repeat troponin 2 hours after initial bloods and at least 4 hours after maximal pain; also perform serial ECG

6 Final ED Assessment & Plan

Minimal risk ACS

1. Negative serial troponin
2. Serial ECG not ischaemic
3. Low risk ACS group

Alternate diagnosis likely on clinical assessment.

Probable Non-ACS.

Manage other causes, likely discharge. GP follow up.

Low risk ACS stable and pain free

1. Negative serial troponin
2. Serial ECG not ischaemic
3. Low risk ACS group

Alternate diagnosis not apparent.

Risk major adverse cardiac event <1/100

Give written advice, return if further pain, GP review, further Ix discretionary.

Not low risk ACS group

1. Negative serial troponin
2. Serial ECG not ischaemic
3. No high risk features
4. Not low risk ACS group because EDACS >=16

Cardiology review and expedited investigation either as inpatient or outpatient.

Cardiology reg will arrange investigation and follow up

Alternate diagnosis likely

1. Minimally raised *stable* troponin (<50% rise)

Clinically considered unlikely to be of ACS origin

Investigate and manage other conditions and admit as appropriate.

Reconsider NSTEMI as possible diagnosis & seek cardiol review if ACS remains a possibility

High risk ACS

1. Initial negative troponin becomes positive
2. If initial troponin was slightly raised and alternative diagnosis was being considered but not found, and troponin rises >50% from baseline

Manage as High risk ACS group (see box above right)

Non-ST elevation ACS Management in ED

- Ensure aspirin 300mg
- Ticagrelor 180mg load then 90mg bd unless contraindication (if bradycardia <50 use Clopidogrel 600mg load then 75mg daily)
- No Enoxaparin in ED unless specified by cardiology
- No need for B-blocker in ED (esp not IV)