LRI Emergency Department

Acute chest pain: NSTEMI rule in/out

Use in all patients aged > 24 years with chest pain unless:

- **No chest pain since > 72h**
- **Clearly stable angina only**
- **Clearly due to other causes (e.g. trauma or shingles)**
- **STEMI / new LBBB on ECG**
- **Suspected oesophageal rupture or aortic dissection**
- **Pain pleuritic**
- **Recent cocaine use**
- **Terminal illness**

Version 66

Disclaimer:
This is a clinical template; clinicians should always use judgment when managing individual patients

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Approved by ED consultant team on 05Oct16
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Patient details

Full name

DoB

Unit number

(use sticker if available)

HH:MM
Time (latest) chest pain episode started

HH:MM
Time of arrival

Clinical features of possible ACS – See box 1

- 12-lead ECG **NOW**
- Give Aspirin 300mg PO
- Establish IV access
- Oxygen only if needed
- Obtain CXR
- Provide good analgesia
- Obtain FBC, VBG, U&E, initial hs-cTnI and total cholesterol (additional bloods only as needed)

Analgesia may include

- GTN 800 micrograms SL **once**
- Paracetamol 1g PO
- Dihydrocodeine 30mg PO
- Morphine 2-10mg IV if pain severe (score 7-10)
- Metoclopramide 10mg IV **ONLY** if nausea (**NB**: **Avoid Cyclizine**)
- GTN infusion only if NSTEMI diagnosed **AND** pain recurs after an initial dose of Morphine

ECG features of NSTEMI with typical clinical picture? (Y / N)

Regional deep T-wave inversion or ST-depression

Await initial hs-cTnI

Initial hs-cTnI
ng/L
Time obtained
HH:MM

Initial hs-cTnI <5ng/L? (N / Y)

Initial hs-cTnI >16ng/L (women) or >34ng/L (men)? (Y / N)

Sample taken >2h after onset of chest pain? (Y / N)

HH:MM
Time 1-hour hs-cTnI required

Repeat hs-cTnI after 1h

Repeat hs-cTnI after 1h

Handover box
I will take the sample

1-hour hs-cTnI <5ng/L **AND** *change* <2ng/L? (Y / N)

1-hour hs-cTnI
ng/L
Time obtained
HH:MM

1-hour hs-cTnI >16ng/L (women) or >34ng/L (men), **OR** *change* >5ng/L? (Y / N)

NB: if diagnosis based on raised hs-cTnI only, consider also myocardial injury (type II AMI; e.g. due to heart failure, arrhythmia, PE or sepsis); if in doubt, consult with ED senior

Suitable for EDU (see box 3)? (Y / N)

* **NB**: Admission *may* not be in the best interest of people who are very frail, but decisions to discharge such patients are ethically complex and thus restricted to consultants

Clinical Frailty Score (see reverse) >5? (Y / N)

NSTEMI likely (type I AMI)

- Complete box 4
- Manage patient as per box 5

Admit to **AFU** for further work-up *

Admit to **CDU** for further work-up

Admit to **EDU** on 'NSTEMI Pathway'

Discharge (unless there are other concerns) after completing 'CAD likelihood assessment' proforma

ACS excluded

① Symptoms of possible ACS?

Tick as applicable

- Chest pain and / or pain in arms, back or jaw lasting at least 5min ☐
- Chest pain radiating to both arms ☐
- Chest pain associated with nausea and vomiting, sweating or SoB ☐
- Chest pain associated with hemodynamic instability (SBP <100, HR <50 or >100) ☐
- Frequently recurrent chest pain (either new onset or abrupt deterioration in previously stable angina) with little or no exertion ☐

② GRACE 2.0 risk and score

Turn over for web calculator instructions

☐ hs-cTnI raised above sex-specific limit
☐ ECG suggesting NSTEMI while observed

Age	HR	SBP	SCr

Killip Class (presence or absence of CHF)
☐ I - None
☐ II - Raised JVP or rhonchi
☐ III - Pulmonary oedema
☐ IV - Cardiogenic shock

Risk of death to six months

%	Score

③ Suitable for EDU?

☐ **YES**, as **ALL** of the below

- ECG non-diagnostic ☐
- Haemodynamically stable ☐
- Safe for discharge if NSTEMI excluded / no other reason to admit ☐
- No crescendo angina (known CAD or history of chest pain on exertion **AND** >1 pain episode within last 24h) ☐
- No coronary intervention (PCI or CABG) in last 4/52 ☐
- Grace 2.0 score <141 (use app or go to bit.ly/grace2calc) ☐

☐ **NO**, as not all of the above

④ Enoxaparin cautions required?

☐ **YES**, as at least one of the below

- Acute bacterial endocarditis ☐
- Active major bleeding ☐
- Stroke within last 8 weeks ☐
- History of heparin-induced thrombocytopenia ☐
- (History of) gastric or duodenal ulceration ☐
- Hypersensitivity to any heparin / LMWH ☐
- Known clotting disorder ☐
- Platelets < 50.000 ☐
- Decompensated liver disease ☐
- Diabetic retinopathy ☐
- Intracranial haematoma within last 4 weeks ☐
- Cerebral neoplasm ☐
- Neuro- or eye surgery within last 4 weeks ☐
- Current oral anticoagulation (unless INR < 2) ☐
- Current anticoagulation with another heparin ☐
- Systolic BP >180 or diastolic >110 ☐
  NB: this can often be managed by urgent treatment e.g. with IV beta blocker or GTN

☐ **NO**, as none of the above

⑤ NSTEMI management

- Calculate GRACE 2.0 risk and score (see box 2; omit this step if diagnosis based on ECG changes)
- If dynamic ECG changes, low BP or abnormal HR: manage in ER and 'blue-light' patient to GGH CCU
- Bleep cardiology 'registrar' on ***88-2584-[extn]** (try CCU **3719** or **3774** if no answer) to discuss
  - Enoxaparin cautions (if any - see box 4)
  - Disposition (CCU, often CDU or, rarely, AFU)
  - Appropriate transfer arrangements / urgency
- Give Enoxaparin 1mg/kg SC unless advised not to
- Ensure analgesia needs are met
- If significant ongoing pain / recurrent analgesia needs patient requires transfer by ambulance, otherwise Arriva transport crew is acceptable

① Assessment by ② Senior sign-off by (quality indicator; consultant if present, ST4-6 if not)

①

②

Print name | Signature | Position | Date | Time

Clinical Frailty Scale*

1 Very Fit – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.

2 Well – People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g. seasonally.

3 Managing Well – People whose **medical problems are well controlled,** but are **not regularly active** beyond routine walking.

4 Vulnerable – While **not dependent** on others for daily help, often **symptoms limit activities.** A common complaint is being "slowed up", and/or being tired during the day.

5 Mildly Frail – These people often have **more evident slowing,** and need help in **high order IADLs** (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.

6 Moderately Frail – People need help with **all outside activities** and with **keeping house**. Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.

7 Severely Frail – **Completely dependent for personal care**, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).

8 Very Severely Frail – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.

9. Terminally Ill - Approaching the end of life. This category applies to people with **a life expectancy <6 months**, who are **not otherwise evidently frail.**

Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

* 1. Canadian Study on Health & Aging, Revised 2008.
2. K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489-495.

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For link to GRACE 2.0 web calculator click on any ED PC and look in 'ED favorites' folder

1. Click / select as applicable

Age (years) 64

Heart rate (bpm) 70-79

Systolic blood pressure (mmHg) 120-129

CHF (Killip class) I

Diuretic usage ☐

Creatinine (mg dL^{-1} / µmol L^{-1}) 0.4-0.79 /

Renal failure ☐

ST-segment deviation ☐

Cardiac arrest at admission ☐

Elevated troponin* ☑

* Or other necrosis cardiac biomarkers

RESET CALCULATE

2. Click 'CALCULATE'

3. Read result

Death		
Time	% Risk (Score)	Histograms
In hospital	1.1	Not available
6 months	3.1-3.5 (96)	Not available
1 year	3.1-3.5	GRAPH
3 years	9.3	GRAPH

Death/MI		
Time		Histograms
1 year		GRAPH

4. Enter both % risk and score (number in brackets) into Box 2 on reverse