Mersey and West Lancashire Teaching Hospitals NHS Trust

NSTE-ACS/SUSPECTED CARDIAC SOUNDING CHEST PAIN PATHWAY

This pathway has been put in place to advise on the management of Non-ST-segment Elevation Acute Coronary Syndrome (NSTE-ACS: NSTEMI/Unstable Angina).

For patients diagnosed as ST-segment Elevation Myocardial Infarction (STEMI) please refer to *PPCI PATHWAY*.

Non-ST-Elevation Myocardial Infarction (NSTEMI)

A rise in cardiac biomarkers (preferably cardiac troponin) with at least one value above the 99th percentile of the upper reference limit of normal and/or a fall in cardiac biomarkers, together with at least one of the following:

- Symptoms of myocardial ischaemia
- New (or presumed new) significant ST-segment T-wave changes or left bundle branch block on electrocardiogram (ECG)
- Pathological Q wave changes on ECG
- Imaging evidence of new loss of viable myocardium

Unstable Angina (UA)

Symptoms of myocardial ischaemia (of increasing intensity and/or frequency) at rest or on minimal exertion in the absence of acute cardiomyocyte injury/necrosis. A diagnosis should be based on a **sound history** of ischaemic pain with or without ECG evidence of ischaemia.

Always consider OTHER CAUSES of chest pain

(list not exhaustive)

Cardiac: myopericarditis, cardiomyopathies, tachyarrhythmia, acute heart failure, hypertensive emergency, aortic valve stenosis, Takotsubo syndrome, coronary spasm, cardiac trauma

Pulmonary: pulmonary embolism, pneumothorax, bronchitis, pneumonia, pleuritis, chest trauma

Vascular: aortic dissection, symptomatic aortic aneurysm, stroke

GI: oesophagitis, gastro-oesophageal reflux disease, peptic ulcer, gastritis, cholecystitis, pancreatitis

Musculoskeletal: muscle injury/inflammation, costochondritis, cervical spine pathologies, Herpes Zoster

Type 1 vs. Type 2 Myocardial Infarction

Type 1: Spontaneous myocardial infarction related to ischaemia due to a primary coronary event such as plaque erosion and/or rupture, fissuring, or dissection i.e., Acute Coronary Syndrome (ACS).

Type 2: Myocardial infarction secondary to ischaemia due to either increased oxygen demand or decreased oxygen supply e.g., coronary artery spasm, coronary embolism, anaemia, arrhythmia, hyper/hypotension.

TYPE 2 MI should NOT be treated as Acute Coronary Syndrome.

Cardiac nurses are available for advice Mon-Fri 8am-4pm (bleep 7027) – outside of these hours please discuss with Senior clinical (Cardiologist on call if necessary)

NSTE-ACS PATHWAY (Version 1.0) 2023 *(Review date: November 2026)*
Authors: R Patten (Cardiology Pharmacist), StHK Cardiology Department, StHK Emergency Department
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Suspected Cardiac Sounding Chest Pain

- 12-lead ECG within 10 minutes of triage (repeat ECG if recurrent symptoms or diagnostic uncertainty)
    - Additional ECG leads (posterior/right ventricular leads) if ongoing ischemia suspected when standard leads inconclusive
- Routine bloods (including high sensitivity troponin (HS-TNI), random full lipid screen, U&Es, glucose, FBC, LFTs, CRP, INR)
- Chest X-ray

Prescribe the following on ePMA *(if no contraindications)*:

- **M**orphine Sulfate: 5-10mg IV PRN
- **O**xygen (if indicated as per Trust guidelines)
- **N**itrates: Glyceryl Trinitrate (GTN) – sublingual spray or tablets: T-TT SL PRN
- **A**spirin: 300mg PO STAT* (or PR if NBM) – unless already given
- **A**nti-emetic: Metoclopramide 10mg TDS PRN PO/IV (reduce IV dose if <60kg as per BNF advice)

*If the patient has a **TRUE allergy** to aspirin *(confirm nature of allergy with patient/relative/carer)* give clopidogrel 300mg PO STAT as alternative.

Guidance on using the following (red/amber/green) pathways

- When calculating HEART score - use MDCalc *(HEART Score for Major Cardiac Events)*
    - When using this score, the "normal" limit of troponin is <46
- **Timing of troponins is CRITICAL**
- "0 hour" refers to the time that the first troponin is taken – **please record the exact time clearly in the patient's medical notes**
- "2 hour" refers to the second troponin being taken 2 hours (+/- 10 minutes) after the first sample – **please record the exact time clearly in the patient's medical notes**
- Patients requiring a second troponin where the test is delayed beyond 2 hours 10 minutes should be seen by a clinician in the first instance
    - If clinically warranted the clock can be reset (i.e. do a new 0 and 2 hour troponin)
    - **The clinician should be responsible for taking the bloods**
- This pathway refers to the Acute Chest Pain Unit (ACPU) – the plan is for this to be an area within 1D, for the moment this will be AMU
- Type 2 MI should not be treated using this pathway – remember to treat the precipitating insult

HS-TNI <3 at 0 hr and onset of pain >3 hours ago **OR** **HS-TNI <8 at 0 hr and repeat HS-TNI at 2 hr does not rise by ≥7**	**HS-TNI 8-119 at 0 hr** **AND** **If no rise ≥20 at 2 hr**	**HS-TNI ≥120 at 0 hr** **OR** **HS-TNI 8-119 at 0 hr** **AND** **a rise of ≥20 at 2 hr**
NSTE-ACS RULED OUT *(assuming patient is pain free and ECG nil acute)* If HEART score is low and no dynamic ST/ECG changes **AND** there is clinical suspicion of angina **OR** patient has confirmed coronary artery disease ↓ **REFER TO LOW-RISK CHEST PAIN CLINIC** via CareFlow *(check criteria before referring)* If HEART score is moderate/high **AND** unstable angina highly suspected → **contact cardiac nurses & refer to ACPU**	**OBSERVE & REASSESS** Recurrent/ongoing chest pain mandates **repeat ECG and troponin** Any acute/dynamic changes → **ADMIT 1E & contact LHCH** If HEART score is moderate/high **AND** the history is suggestive of cardiac pain → **ADMIT 1D** If HEART score is low, but angina is presumed diagnosis → **ADMIT ACPU** Consider Type 2 MI (see Page 1) and treat accordingly. **If T2MI most likely → MED REG REVIEW** *admit 1D if cardiac, AMU if non-cardiac*	**TREAT AS NSTE-ACS** *(assuming NOT Type 2 MI)* If ongoing chest pain or significant/dynamic ECG changes → **ADMIT 1E & contact LHCH** If HEART score is high → **ADMIT 1E** If no ongoing chest pain, patient is clinically stable and HEART score is low/moderate → **ADMIT 1D/1E** **START ACS TREATMENT** *(follow guidance on next pages)* **If no beds available → cardiac nurses to review and discuss with Consultant Cardiologist**

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If NSTE-ACS has been ruled out – this protocol no longer applies.

If **diagnosis** of **NSTEMI** is **confirmed** ***(RED PATHWAY)*** → **load with clopidogrel* 300mg PO STAT** (in addition to initial aspirin loading), request an **URGENT ECHO** and follow the *NSTE-ACS treatment guidance* given below.

OR

If **ongoing** cardiac sounding chest pain or **dynamic** ECG changes consistent with **Unstable Angina** → **load with clopidogrel* 300mg PO STAT** (in addition to initial aspirin loading), request an **URGENT ECHO** and follow the *NSTE-ACS treatment guidance* given below.

Consider *ACCELERATED ACS PATHWAY*

***If the patient is on established anticoagulation (Warfarin/DOAC) → do NOT prescribe clopidogrel – continue aspirin and see additional guidance below**

If diagnosis is unclear (but suspected NSTE-ACS) ***(AMBER PATHWAY)*** **do NOT** prescribe a second antiplatelet until reviewed by Cardiology.

NSTE-ACS TREATMENT		
See BNF/SPC for specific cautions/contraindications BEFORE prescribing		
Drug	**Dose (PO unless stated)**	**Notes**
ASPIRIN *(dispersible)*	75mg OD	Commence the day after loading dose If the patient has a **TRUE** allergy to aspirin give clopidogrel (75mg OD)
CLOPIDOGREL*	75mg OD	Commence the day after loading dose (if given)
FONDAPARINUX	2.5mg SC OD	Do NOT prescribe if the patient is anticoagulated (see additional guidance) If CrCl <20mL/min prescribe enoxaparin 1mg/kg SC OD
ATORVASTATIN	80mg ON	Check random lipid panel & LFTs at baseline
BISOPROLOL	1.25mg OD	If patient already taking on admission, continue current dose or increase as heart rate allows
RAMIPRIL	1.25mg OD	If patient already taking on admission, continue current dose or increase as blood pressure allows Consider angiotensin receptor blocker if intolerant
GTN *(spray)*	T-TT SL PRN	Contraindicated in severe aortic stenosis
LANSOPRAZOLE	15mg OD	Consider gastroprotection in high risk patients
PARACETAMOL	500mg-1g QDS PRN	IV may be required if patient nil-by-mouth (NB. Dose reduction required in patients <50kg)
MORPHINE	2.5-5mg QDS PRN	IV may be prescribed if patient nil-by-mouth If CrCl <30mL/min consider oxycodone (1.25-2.5mg PO QDS PRN)

Established Anticoagulation

If the patient has an additional indication for anticoagulation e.g., AF, DVT/PE (prior to/at time of admission) **do NOT prescribe fondaparinux** as this only offers prophylactic cover and will therefore be subtherapeutic.

Admission anticoagulation	Action *(until cardiology review)*
WARFARIN (or coumarin derivatives)	**STOP** Continue aspirin Start enoxaparin 1mg/kg SC BD **when INR <2.0** (<2.5 if patient has a prosthetic valve) If CrCl <30mL/min adjust dose to 1mg/kg SC OD
DOAC (Edoxaban, Apixaban, Dabigatran, Rivaroxaban)	**CONTINUE** Continue aspirin Only to be stopped if/when referred to LHCH

Triple therapy (DOAC/warfarin + dual antiplatelet therapy) should ONLY be commenced on the advice of Cardiology.

Antiplatelet Therapy

Clopidogrel is the preferred antiplatelet agent *(in combination with aspirin)* of our specified tertiary centre (Liverpool Heart and Chest Hospital) and **should be used first line** for dual antiplatelet therapy (DAPT) *(within the guidance given above)***.**

Ticagrelor/Prasugrel should only be prescribed on the advice of cardiology after bleed risk has been calculated and considered.
Ticagrelor/Clopidogrel/Prasugrel should **NEVER** be prescribed in combination.

If patients are admitted already established on DAPT agents, additional doses may be given to deliver the appropriate loading dose in the same 24-hour period (for example: a patient already taking aspirin 75mg OD may be given an additional 225mg to provide a 300mg total dose).

Allergy/Intolerance

Confirm the exact nature/extent of any reported allergy/intolerance to the recommended medications listed with patient/relative/carer. The decision whether to prescribe should be made using clinical judgement/experience, balancing benefit versus risk of each treatment.