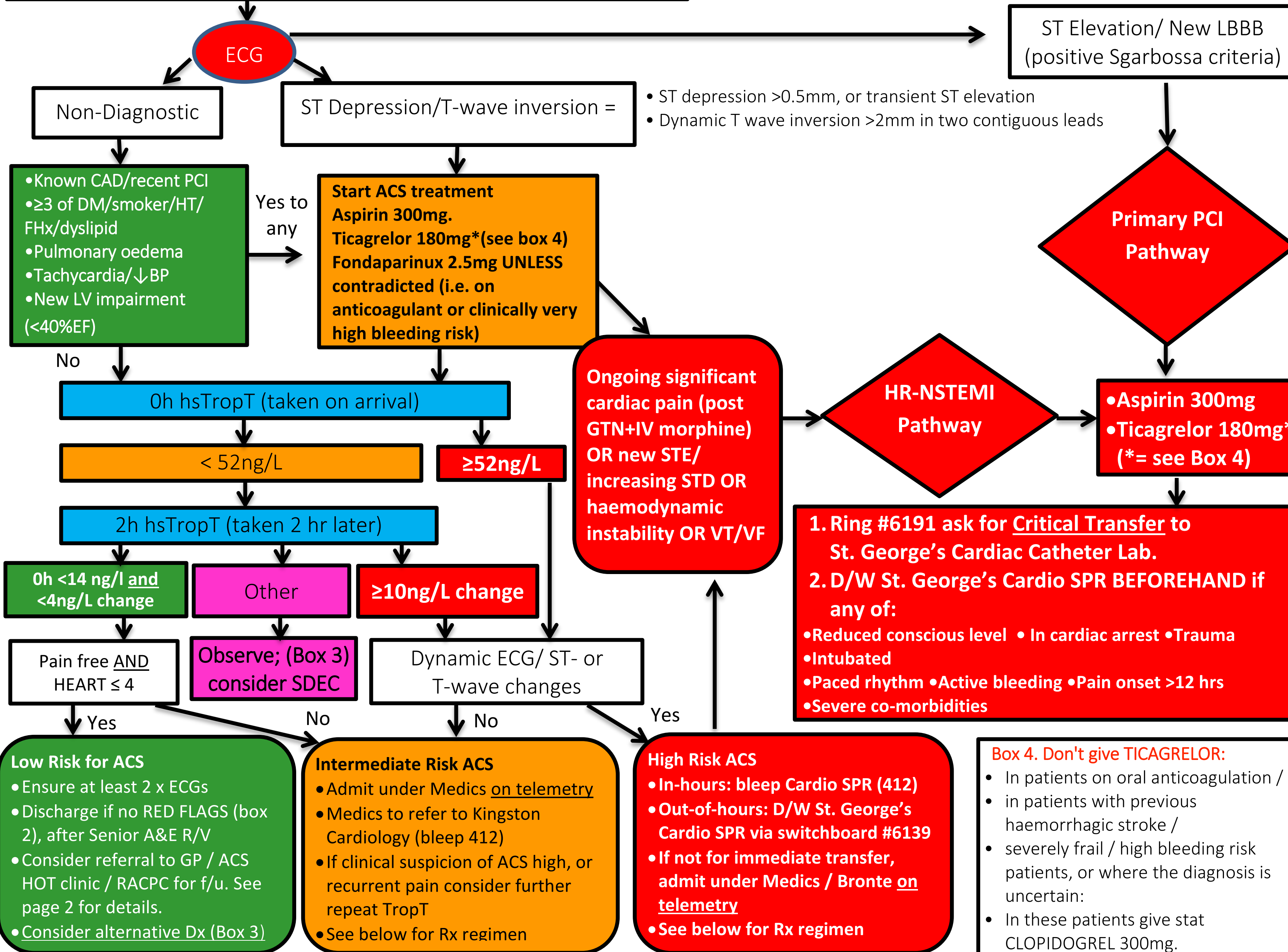
HIGH RISK CHEST PAIN PATHWAY

CARDIAC SOUNDING CHEST PAIN and SUSPECTED ACS (see Box 1)

If ACS is unlikely but needs exclusion then use 'LOW RISK CHEST PAIN PATHWAY'

- ST↑ 2mm in >2 contiguous chest leads, or
- ST↑ 1mm in >2 contiguous limb leads, or
- ST↓ 1mm in V1-V3 & dominant R wave in V1 (Posterior MI)
- New LBBB/ positive Sgarbossa criteria

NHS Kingston Hospital NHS Foundation Trust



Box 1. CARDIAC SOUNDING chest pain:

- Unstable if heavy or dull lasting > 20 mins (vs. stable angina lasts 2-5 mins)
- Radiation or paraesthesia in upper limbs / neck / jaw
- Associated symptoms (see box 2)
- Exertional / cold related
- ACS UNLIKELY IF: pleuritic pain, assoc. with palpitations / tingling / swallowing

Box 2. RED FLAG symptoms:

- New or dynamic ECG changes
- Associated symptoms (e.g. syncope, sweating, nausea, SOB)
- Cardiac sounding pain > 20 mins
- Ongoing pain / crescendo angina
- Recurrent pain
- Recent PCI

Box 3.Consider alternate diagnoses:

- Pericarditis
- Myocarditis
- Aortic dissection
- PE
- Sepsis
- Renal failure
- Arrhythmia
- HTN

Most patients will require a further troponin at 3 hours

Consider SDEC referral

Authors: Dr Rupert Williams (Cardiology) and Dr David Wilson (A&E and SDEC)

NHS
Kingston Hospital
NHS Foundation Trust

ANTIPLATELET REGIMEN FOR ACUTE CORONARY SYNDROMES

Low Risk for ACS

- D/C home after senior ED R/V if pain free AND no red flags AND non-dynamic ECG.
- If RED FLAGS (box 2) D/W Cardio.
- Continue regular medications.

Follow-up:

- Refer GP: if HEART SCORE 0-2
- Refer ACS HOT Clinic: if HEART 3-4 AND history scores ≥1 point. Unless contraindicated, discharge on Aspirin + Atorvastatin + GTN + Bisoprolol.
- Refer RACPC: only if chest pain is exertional and/or relieved by rest. Unless contraindicated, discharge on Aspirin + Atorvastatin + GTN + Bisoprolol.

Intermediate Risk ACS

- Aspirin 300mg STAT (if not already given)
- Atorvastatin 80mg OD
- Titrate Bisoprolol to reach target heart rate of 60bpm
- (if sys BP > 100mmHg, unless: AV block / severe asthma / pulmonary oedema)
- Refer for urgent IP ECHO, lipid profile + HbA1c
- Consider listing on Telelogic IHT system for all hospitals for urgent inpatient coronary angiogram +/- PCI (NICE recommend < 72 hours), after D/W Cardiology
- Consider insulin administration if glucose > 11mmol/l
- Day 2 onwards:
- Aspirin 75mg OD
- Ticagrelor 90mg BD * (unless contraindication on Box 4)
- Fondaparinux 2.5mg s/c OD (max 8 days; withhold on day of angiogram)
- PPI (if bleeding risk and/or >65 yrs)
- Ramipril 2.5mg OD (if sys BP >100mmHg), or ARB
- Continue regular medications + uptitrate anti-anginals

High Risk ACS

- Atorvastatin 80mg OD
- Titrate Bisoprolol to reach target heart rate of 60bpm (if sys BP > 100mmHg, unless: AV block / severe asthma / pulmonary oedema)
- Refer for urgent IP ECHO, lipid profile + HbA1c
- List on Telelogic IHT system for all hospitals to consider urgent inpatient coronary angiogram +/- PCI (< 24hours), after D/W Cardiology
- Consider insulin administration if glucose > 11mmol/l
- Day 2 onwards:
- Aspirin 75mg OD
- Ticagrelor 90mg BD* (unless contraindication on Box 4)
- Fondaparinux 2.5mg s/c OD (max 8 days; withhold on day of angiogram)
- PPI (if bleeding risk and/or >65 yrs)
- Ramipril 2.5mg OD (if sys BP >100mmHg), or ARB
- Continue regular medications + uptitrate anti-anginals

Caution: Fondaparinux accumulates in patients with severe renal impairment (CrCl <20ml/min). Use 2.5mg OD on alternate days for up to two doses. An additional dose will result in full anticoagulation, which will persist for several days and should only be given in exceptional clinical circumstances.

References

- A Rule-Out Strategy Based on High-Sensitivity Troponin and HEART Score Reduces Hospital Admissions. Ljung et all. Annals of Emergency Medicine https://doi.org/10.1016/j.annemergmed.2018.11.039
- The HEART Pathway Randomized Trial Identifying Emergency Department Patients With Acute Chest Pain for Early Discharge. Mahler et all. doi: 10.1161/circoutcomes.114.001384
- For alternative causes of a raised Troponin and important differential diagnoses see http://www.bmj.com/content/328/7447/1028
- Prospective validation of a 1-hour algorithm to rule-out and rule-in acute myocardial infarction using a high-sensitivity cardiac troponin T assay. Reichlin et all. CMAJ 2015. DOI:10.1503/cmaj.141349
- 2020 ESC Clinical Practice Guidelines for the management of non-ST-segment elevation acute coronary syndromes (NSTE-ACS). Collet JP, Thiele H, et all. doi/10.1093/eurheartj/ehaa575
- Rapid Assessment of Possible Acute Coronary Syndrome in the Emergency Department With High-Sensitivity Troponin T Study (RAPID-TnT). Chew et all. 2019 https://doi.org/10.1161/CIRCULATIONAHA.119.042891

This guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer. Always refer to the BNF / SPC of drugs before prescribing for latest exclusions / cautions / interactions to optimise care.

Authors:
Dr. Shahbaz Ahmed (ED ST6 Registrar)
Dr. Lindy-Lee Folscher (ED Consultant)
Dr. Rupert Williams (Cardiology Consultant)
Dr David Wilson (ED and SDEC Consultant)
Version 5.4, July 2021

HEART Score

Kingston Hospital NHS Foundation Trust

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

History

High risk:

- Middle or left sided
- Heavy chest pain
- Sweating
- Nausea / vomit
- Exertional
- Relief with nitrates
- Radiation

Low risk:

- Well localised
- Sharp pain
- Non-exertional
- No sweating
- No nausea

Highly suspicious
mostly high risk features

Moderately suspicious
mixture of high risk and low risk features

Slightly or non-suspicious
mostly low risk features

ECG

New ischaemic changes = 2 points:

- Ischaemic ST-segment ↓
- New ischaemic T wave inversion

Non-specific changes = 1 point:

- Repolarization abnormalities
- Non-specific T wave changes
- Non-specific ST-segment ↓ or ↑
- BBB
- LVH
- Early repolarization
- Digoxin effect

Risk Factors

- ↑Cholesterol
- ↑BP
- Diabetes
- Smoking
- +ve FHx
- Obesity

Troponin levels

- Normal limit <14 ng/L

LOW RISK CHEST PAIN PATHWAY

To help exclude NSTEMI in low risk presentations
If cardiac sounding chest pain and ACS is the most likely diagnosis (Box1) then follow the 'HIGH RISK CHEST PAIN PATHWAY'

- ST↑ 2mm in >2 contiguous chest leads, or
- ST↑ 1mm in >2 contiguous limb leads, or
- ST↓ 1mm in V1-V3 & dominant R wave in V1 (Posterior MI)
- New LBBB/ positive Sgarbossa criteria

NHS Kingston Hospital NHS Foundation Trust

ECG

- ST depression >0.5mm, or transient ST elevation
- Dynamic T wave inversion >2mm in two contiguous leads

→ Follow HIGH RISK CHEST PAIN Pathway

ST Elevation/ New LBBB (positive Sgarbossa criteria)

→ Follow Primary PCI Pathway

- Aspirin 300mg
- Ticagrelor 180mg* (see Box 4)

1. Ring #6191 ask for Critical Transfer to St. George's Cardiac Catheter Lab.
2. D/W St. George's Cardio SPR BEFOREHAD if any of:

- Reduced conscious level
- In cardiac arrest
- Trauma
- Intubated
- Paced rhythm
- Active bleeding
- Pain onset >12 hrs
- Severe co-morbidities

Calculate "pre troponin" HEART score

HEART Score ≥ 6 — Yes → Follow HIGH RISK CHEST PAIN Pathway

No ↓

0h hsTropT (taken on arrival)

Time of pain > 3 hours and <5ng/L	Time of pain > 6 hours and <14ng/L	Any other value	≥52ng/L

Any other value →

Move to SDEC or CDU
(Monitor not required)
Aspirin 300mg if not already given

2h hsTropT (taken 2 hr later)

0h <14 ng/l and <4ng/L change	Any other value	≥10ng/L change

NSTEMI Rule out

- Discharge if confident that pain does not represent unstable angina (ACS excluded)
- Consider referral to RACPC only if pain is exertional and/or relieved by rest
- Consider need to exclude alternative Dx (Box 3)

Observe

- Repeat ECG
- Repeat troponin 3 hours after 1st sample
- Consider SDEC
- Consider need to exclude alternative Dx (Box 3)

NSTEMI Rule in

- Start treatment as per HIGH RISK CHEST PAIN pathway – decide if intermediate or high risk ACS
- If not for immediate transfer, admit under Medics / Bronte on telemetry
- See below for Rx regimen

Box 1. CARDIAC SOUNDING chest pain:

- Unstable if heavy or dull lasting > 20 mins (vs. stable angina lasts 2-5 mins)
- Radiation or paraesthesia in upper limbs / neck / jaw
- Associated symptoms (see box 2)
- Exertional / cold related
- ACS UNLIKELY IF: pleuritic pain, assoc. with palpitations / tingling / swallowing

Box 5.Glossary

- NSTEMI = Non ST Elevation Myocardial Infarction
- ACS = Acute Coronary Syndrome
- hsTropT= High sensitivity Troponin T
- SDEC = Same Day Emergency Care
- CDU = Clinical Decisions Unit

Box 4. Don't give TICAGRELOR:

- In patients on oral anticoagulation /
- in patients with previous haemorrhagic stroke /
- severely frail / high bleeding risk patients, or where the diagnosis is uncertain:
- In these patients give stat CLOPIDOGREL 300mg.

Box 3.Consider alternate diagnoses:

- Pericarditis
- Myocarditis
- Aortic dissection
- PE
- Sepsis
- Renal failure
- Arrhythmia
- HTN

Most patients will require a further troponin at 3 hours

Authors: Dr Rupert Williams (Cardiology) and Dr David Wilson (A&E and SDEC)

VERSION CONTROL SHEET

Version	Date	Author/s	Status of Document	Comment
1	July 2021	Dr Rupert Williams (Cardiology) Dr David Wilson (A&E and SDEC)	Approved	Approved at CEC July 2021