Initial Management of Acute Coronary Syndrome Guideline

Guideline information

Guideline number: 594

Classification: Clinical

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Local Safety Standard for Invasive Procedures (LOCSSIP) reference: Not applicable
National Safety Standards for Invasive Procedures (NatSSIPs) standards: Not applicable

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Approval information

Approved by:
Clinical Written Control Documentation Group
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Review date: 03.06.2027

Summary of document:
A brief summary of important issues when investigating and treating patients with Acute Coronary Syndrome (ACS). Included is a flowchart outlining the initial management of ACS in the Hywel Dda University Health Board (HDUHB).

Scope:
This guideline is for healthcare professionals working in HDUHB, who are involved in the diagnosis and treatment of **inpatients** suffering from ACS.

NOTE: For patients with possible ACS who are pregnant, urgent discussion is necessary with both a senior obstetrician and the cardiology registrar at Morriston Hospital.

To be read in conjunction with:

Patient information:
https://patient.info/health/acute-coronary-syndrome-leaflet (opens in a new tab)

Owning group: task and finish group: Guideline led by Dr Clive Weston (Consultant Cardiologist and Clinical Lead for Cardiology), Dr Pyae Maung (Clinical fellow), in conjunction with our cardiology colleagues in the Swansea Bay University Health Board (SBUHB).

MMOG – 23.01.2024

Executive Director job title:
Director of Nursing

Reviews and updates:
Version 1 – new 18.11.20218
Version 2 – full review

Keywords
Acute Coronary Syndrome (ACS) Myocardial Infarction (MI) Heart attack; Chest pain; STEMI; NSTEMI; PCI; Ticagrelor; Prasugrel

Glossary of terms

Term	Definition
ACS	Acute Coronary Syndrome
BP	Blood Pressure
D/C	Discharge
ED	Emergency Department
GRACE	Global Registry of Acute Coronary Events
GTN	Glyceryl Trinitrate
HDUHB	Hywel Dda University Health Board
ICA	Invasive Coronary Angiogram
	hs-cTN high-sensitivity cardiac troponin
ICH	IntraCranial Haemorrhage
IV	IntraVenous
LBBB	Left Bundle Branch Block
LMWH	Low Molecular Weight Heparin
LV EF	Left Ventricular Ejection Fraction
MI	Myocardial Infarction
NSTEMI	Non ST-elevation Myocardial Infarction
PCI	Percutaneous Coronary Intervention
UFH	Un-Fractionated Heparin
SBUHB	Swansea Bay University Health Board
SDEC	Same Day Emergency Care
STEMI	ST-Elevation Myocardial Infarction

Contents

Scope

This guideline is for use in the treatment of any inpatient deemed to be suffering from ACS in the HDUHB. Local practice varies and it should not be taken as the universal treatment of ACS across the UK. Inpatient include those being assessed on arrival at admitting areas, e.g. Emergency Departments.

It affects those directly involved in the investigation and treatment of inpatients in the HDUHB, especially doctors and nurses. It is used in conjunction with clinical experience and IS NOT a treatment tool for all patients presenting with chest pain. The guideline is not prescriptive, the clinician responsible for the treatment of the patient should direct decisions whether these follow the guideline or not. However, they should be able to justify deviations from the guideline in suspected cases of ACS.

NOTE: For patients with possible ACS who are pregnant, urgent discussion is necessary with both a senior obstetrician and the cardiology registrar at Morriston Hospital.

Aim

The aim of this document is to:

- Standardise and clarify investigations, treatment and referral of patients with suspected Acute Coronary Syndrome (ACS) in the HDUHB.

This will simplify and occasionally improve the standard of care provided to these patients and may reduce time taken for definitive management to be reached.

Objectives

The aim of this document will be achieved by the following objectives:

- It is easily and quickly available on the intranet for all staff across HDUHB to use.
- It is easy to use, with a flowchart clearly showing the important steps and information in ACS.
- It is specific to HDUHB with certain details relevant only to this area while recognising that patients referred for interventional cardiology will usually be transferred to the Cardiac Centre in Morriston Hospital, Swansea.

History and physical examination

A focussed history and targeted clinical examination to differentiate

- Cardiac,
- Possible cardiac and
- Likely non-cardiac chest pain

Investigations

- Routine blood tests (FBC, U+Es, Coagulation screen, Lipid profile, HbA1c)

- hs-cTn 0hr (i.e. as soon after arrival at hospital) and at 1hr, or 2hr, after the '0hr' test*
- ECG
- CXR

*If acute coronary syndrome can be neither 'ruled out' nor 'ruled in' – consider a further measurement of hs-cTn at 3 hr +/- urgent echo.

GRACE scoring

When considering discharge or the need for early invasive management it may be useful to calculate a GRACE (Global Registry of Acute Coronary Events) score GRACE ACS Risk and Mortality Calculator (mdcalc.com) (opens in a new tab).

In practice, GRACE is seldom used in determining the early management of patients with STEMI, but is more often used in identifying patients with NSTEMI who may or may not be candidates for angiography during the index admission.

It is a validated tool based on observational data from >100,000 patients worldwide. It calculates an in-hospital, 6 month, 1 and 3 year mortality percentage based on:

- Age
- Systolic blood pressure
- Heart rate
- NY HF class
- Creatinine
- ST segment deviation
- Cardiac arrest at presentation
- Elevated troponin/ cardiac biomarker

Always consider alternative diagnosis. The following is a list of alternative causes for chest pain and/or raised troponin

Cardiac	Pulmonary	Vascular	Gastrointestinal	Orthopaedic	Other
Myopericarditis	Pulmonary Embolism	Aortic Dissection	Oesophagitis/ GORD/ spasm	Musculoskeletal	Anxiety
Tachyarrhythmias	(Tension) Pneumothorax	Aortic Aneurysm	Peptic ulcer/ gastritis	Trauma	Chronic Kidney Disease
Acute heart failure	Bronchitis/ Pleuritis	CVA	Pancreatitis	Costrochondritis	Critical illness (sepsis, shock)
Hypertensive emergencies	Pneumonia	Subarachnoid Haemorrhage	Cholecystitis		Infiltrative: amyloid, haemochromatosis, sarcoid, scleroderma
Tako-Tsubu cardiomyopathy					Rhabdomyolysis
Coronary Spasm					Anaemia
Cardiomyopathy/ Structural disease					Drugs: Cocaine, doxorubicin, Herceptin, 5-FU
Cardiac trauma					

Adapted from “Table 6. Differential diagnosis of ACS in the setting of acute chest pain” in Roffi and Patrono et al (2016)

ECG criteria for diagnosis of STEMI

In an appropriate clinical context,

1. ST elevation*

- 2mm in V1-V3 in men or 1.5mm in women
- And/or 1mm in any other leads

2. ST depression in V1-V3 with tall R waves.

3. New LBBB.

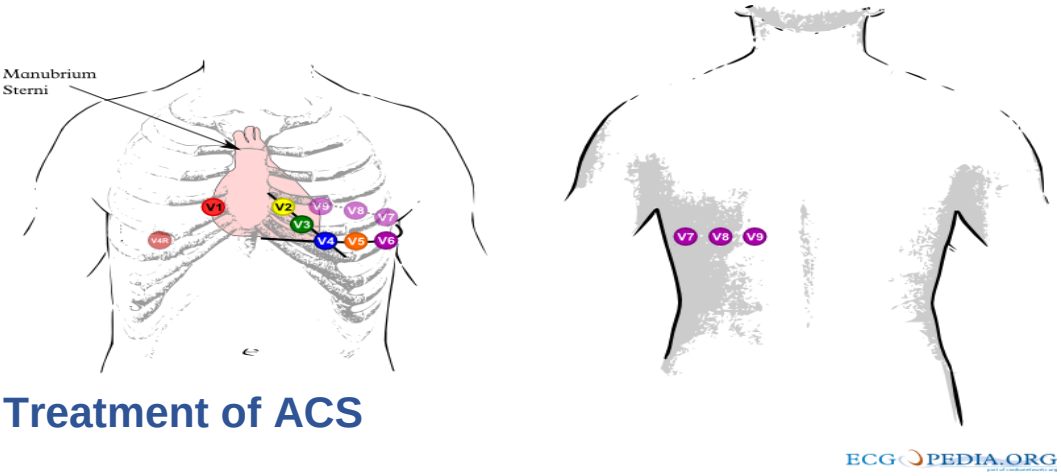
4. Left Main Stem MI – rare but high mortality

- 1mm ST elevation in aVR
- 1mm ST depression in leads I, II, V4-6

The ECG (appendix 3) should always be interpreted in the context of the clinical history. If there is a low clinical suspicion (and low GRACE score) but a suggestive ECG then confirmation with biochemistry may be necessary before invasive treatment, especially in the context of contraindications to anticoagulation.

Equally if there is a high clinical suspicion/ GRACE score but an absence of ECG changes then recording of ECG using additional lead positions***** should be performed and referral for inpatient assessment **may be necessary.**

*****Additional leads of V7- V9 can show ST-elevation in circumflex artery occlusion and V3R- V4R in right ventricular MI.



Placement of additional leads.

https://en.ecgpedia.org/wiki/Basics

Accessed on 01/11/2023

Treatment of ACS

- see guideline for STEMI (appendix 1)
- see guideline for NSTEMI (appendix 2)

Symptom control

- O2 therapy if SPO2 <90%
- Offer GTN for persisting pain
- IV Morphine **(consider 2.5mg-10 mg titrated slowly for pain/anxiety)**
- Nitrates* (***use as infusion (if BP allows) for persistent ischaemic pain or for high BP**)
- Beta blocker* (***IV metoprolol can be given only in STEMI patients**)

Treatment of ACS/STEMI

1. Initial loading with dual antiplatelet therapy

- Aspirin 300mg orally
- Prasugrel 60mg orally

2. UFH 5000 International Units (IU) intravenously.

3. Contact Morriston Hospital SBUHB for transfer for primary Percutaneous Coronary Intervention (PCI).

4. Consider thrombolysis if unable to perform primary PCI within 120 minutes/ patient unstable.

- If thrombolysis was unsuccessful, (persisting pain; no resolution of ST elevation) rescue PCI
- If thrombolysis was successful, ICA within 24 hours

5. Do not delay treatment – if in doubt of diagnosis/ECG changes, discuss with Cardiology registrar on call in Morriston Hospital SBUHB.

- Designated STEMI telephone number 01792 703920
- E-mail ccu1.ccu1@wales.nhs.uk

6. Duration of antiplatelet post PCI, will be guided by the PCI operator.

ECG criteria for diagnosis of ACS/NSTEMI

Please note that ECG changes are absent in one third of NSTEMI.

Varying ST changes or transient ST elevation needs to be treated with early revascularization (High risk).

The ECG is suggestive of NSTEMI if ST segment depression is:

- ≥ 1mm depression
- Apparent in ≥2 contiguous leads
- Horizontal or down-sloping (up-sloping ST depression is nonspecific)
- T wave inversion can lead to prompter identification of NSTEMI, but does not alter prognosis

Treatment of ACS/NSTEMI

1. Initial loading with dual antiplatelet

- Aspirin 300mg followed by maintenance of 75mg Once Daily (OD)
- Clopidogrel 300mg***** followed by maintenance of 75mg OD

2. LMWH Enoxaparin 1mg/kg twice daily (BD)

3. Monitored bed, oxygen as required, painkillers as required, transfer to Coronary Care Unit (CCU) when a bed is available

***Note the cardiac centre uses a loading dose of 600mg in patients likely to undergo PCI within 24 hour of admission. HDUHB patients are less likely to access PCI within 24 hours.**

4. Risk assessment

A. Very High risk - immediate invasive strategy, via Morriston Cardiac Centre

- Haemodynamically unstable
- Recurrent or persisting chest pain refractory to medical treatment
- Dynamic (varying) ECG changes suggestive of ischaemia
- Life threatening arrhythmias and cardiac arrest at presentation
- Acute heart failure secondary to ACS

B. High risk – refer routinely for inpatient transfer for angiography

- GRACE score >140
- Transient ST elevation
- Dynamic (i.e. changing) ST or T changes

C. Not high risk – discuss further inpatient assessment (e.g. stress testing) prior to decision regarding referral for invasive angiogram)

5. NSTEMI contact information

- Referral to Cardiology within HDdUHB
- If appropriate, the patient can be referred to Morriston SBUHB via the e-referral system

References

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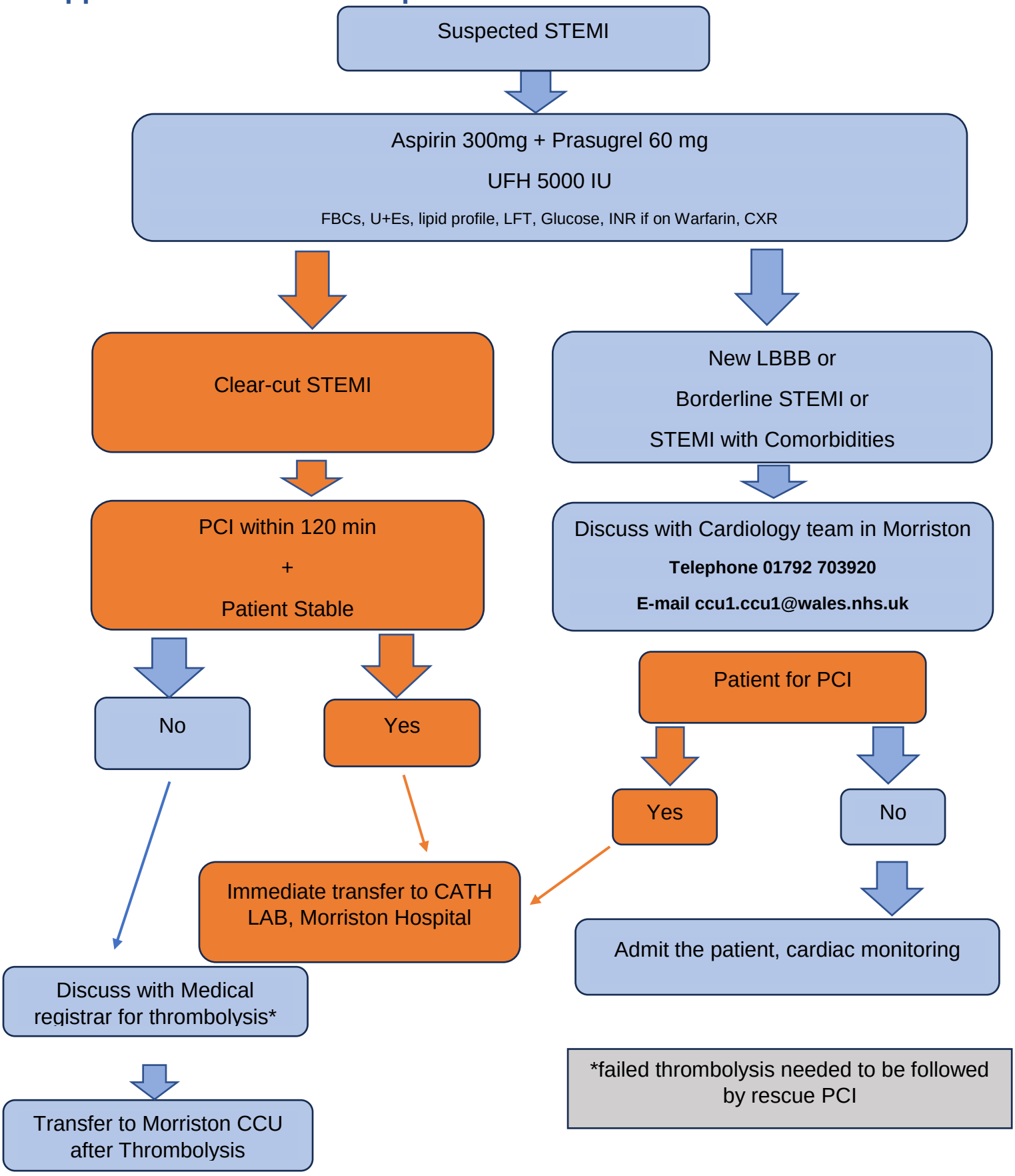
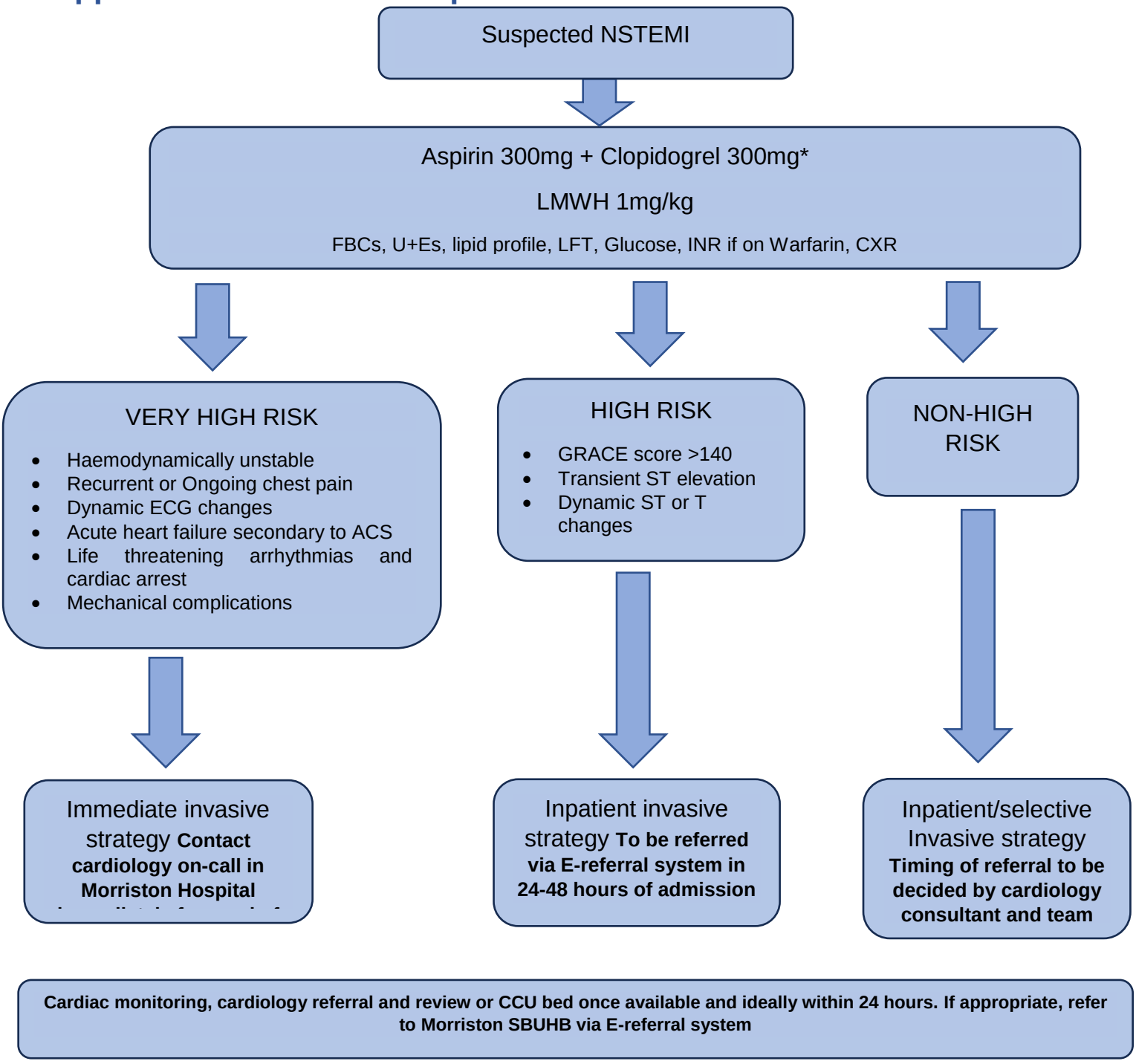
See also:

Summary of Product Characteristics

Appendix 1- Guideline suspected STEMI



Appendix 2- Guideline suspected NSTEMI



***Note the cardiac centre uses a loading dose of Clopidogrel 600mg in patients likely to undergo PCI within 24 hour of admission. HDUHB patients are less likely to access PCI within 24 hours.**

Appendix 3 - ECG

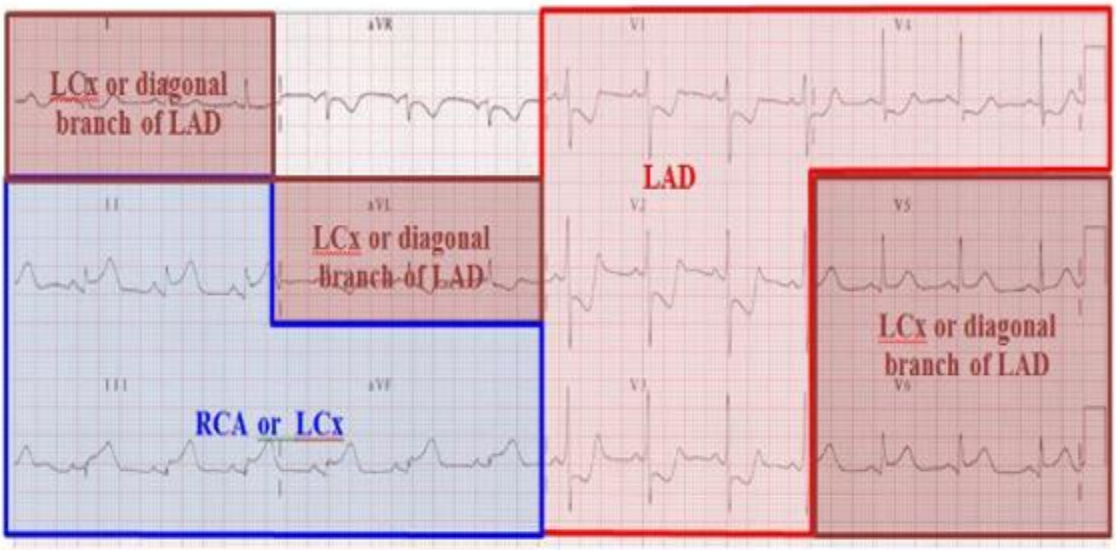


Image 1. ECG correlation to coronary arteries.

Deranged Physiology. ECG localisation of coronary artery territories | Deranged Physiology

Accessed on 01/11/2023

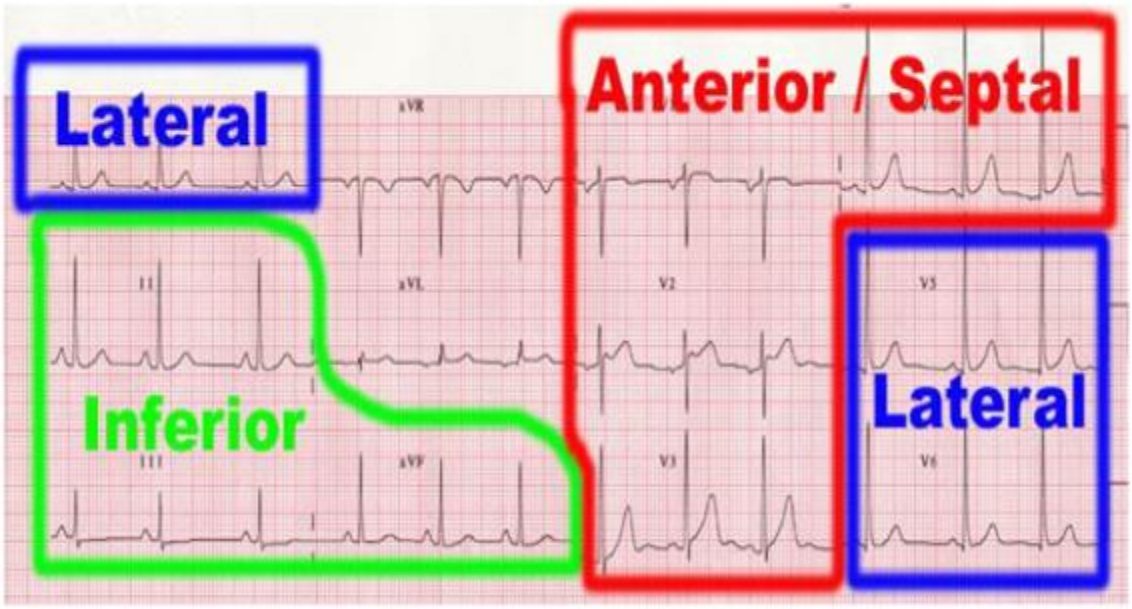


Image 2. ECG correlation to arterial territories.

clinical junior.com - ECG EKG Interpretation basics how to read MI myocardial infarction angina AF atrial fibrillation ST elevation depression

Accessed on 01/11/2023