



Acute Coronary Syndrome – Part 1

According to 2023 ESC guidelines

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Figure 1

Central illustration

Animation available online on the European Heart Journal website and in the ESC pocket Guidelines App

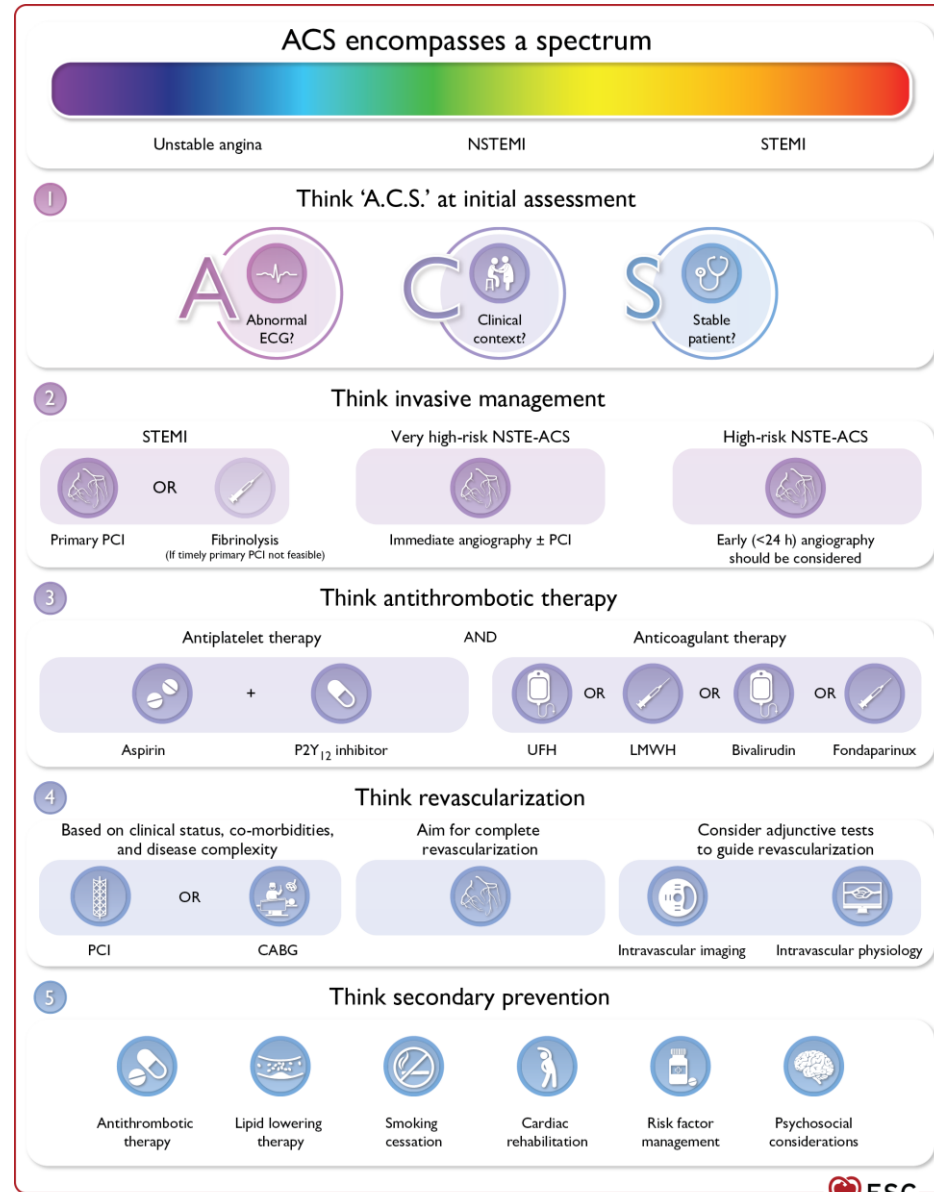
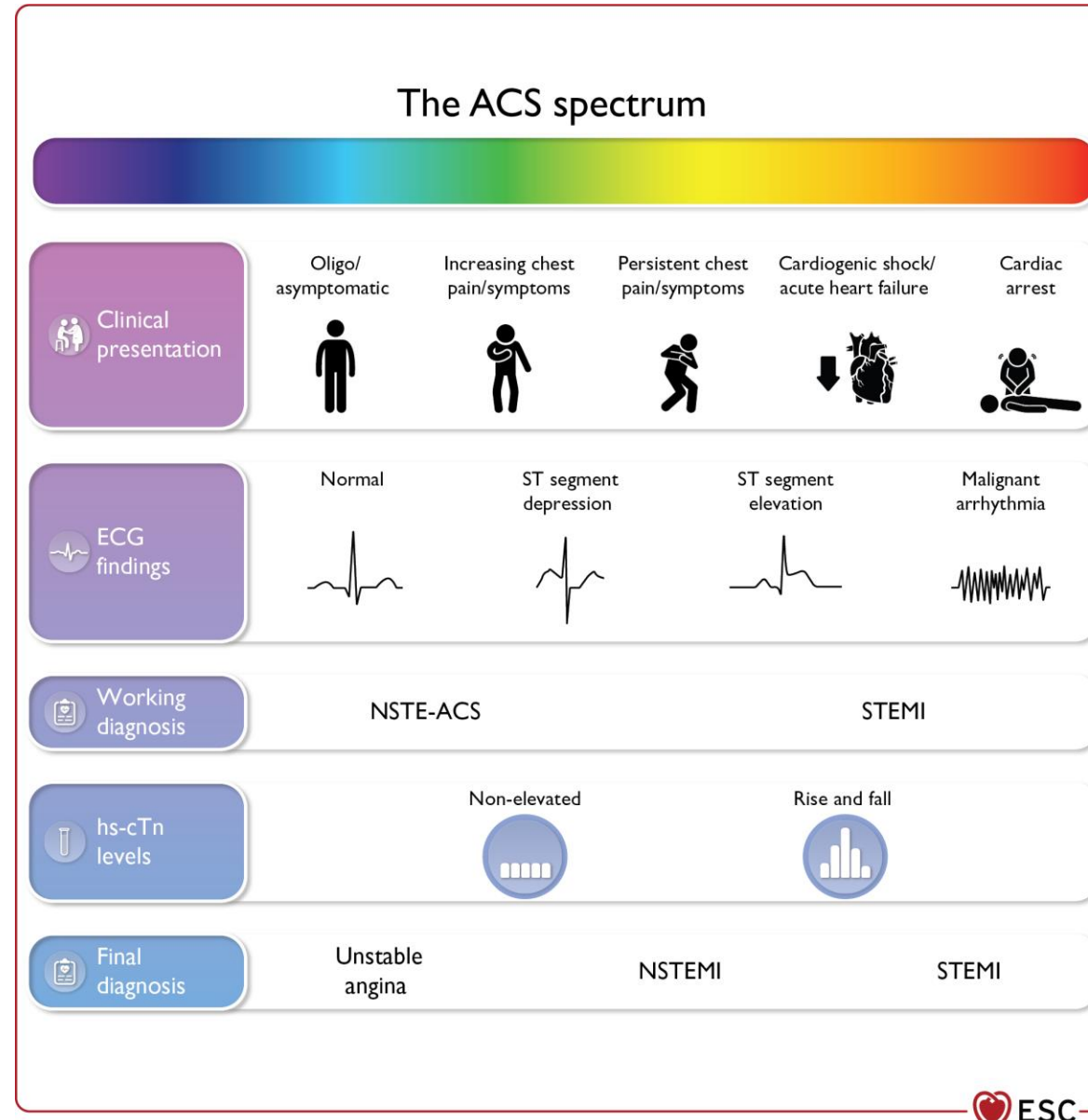


Figure 2

The spectrum of clinical presentations, electrocardiographic findings, and high-sensitivity cardiac troponin levels in patients with acute coronary syndrome



Definitions of terms related to invasive strategy and reperfusion therapy commonly used in this guideline (1)



Term	Definition
First medical contact (FMC)	The time point when the patient is initially assessed by a physician, paramedic, nurse, or other trained emergency medical services worker who can obtain and interpret the ECG and deliver initial interventions (e.g. defibrillation). FMC can be either in the pre-hospital setting or upon patient arrival at the hospital (e.g. the emergency department)
STEMI diagnosis	The time at which a patient with ischaemic symptoms is interpreted as presenting with ACS and ST-segment elevation (or ST-segment elevation equivalent)
Primary PCI	Emergent PCI with balloon, stent, or other approved device, performed on the IRA without previous fibrinolytic treatment
Primary PCI strategy	Emergency coronary angiography and PCI of the IRA if indicated

Definitions of terms related to invasive strategy and reperfusion therapy commonly used in this guideline (2)

Term	Definition
Rescue PCI	Emergency PCI performed as soon as possible in cases of failed fibrinolytic treatment
Routine early PCI strategy after fibrinolysis	Coronary angiography, with PCI of the IRA if indicated, performed between 2 h and 24 h after successful fibrinolysis
Pharmaco-invasive strategy	Fibrinolysis combined with rescue PCI (in cases of failed fibrinolysis) or routine early PCI strategy (in cases of successful fibrinolysis)
Immediate invasive strategy	Emergency coronary angiography (i.e. as soon as possible) and PCI/CABG of the IRA if indicated

Definitions of terms related to invasive strategy and reperfusion therapy commonly used in this guideline (3)



Term	Definition
Early invasive strategy	Early coronary angiography (<24 h from diagnosis of ACS) and PCI/CABG of the IRA if indicated
Selective invasive strategy	Coronary angiography ± PCI/CABG based on clinical assessment and/or non-invasive testing

Figure 3
Classification of patients presenting with suspected acute coronary syndrome: from a working to a final diagnosis

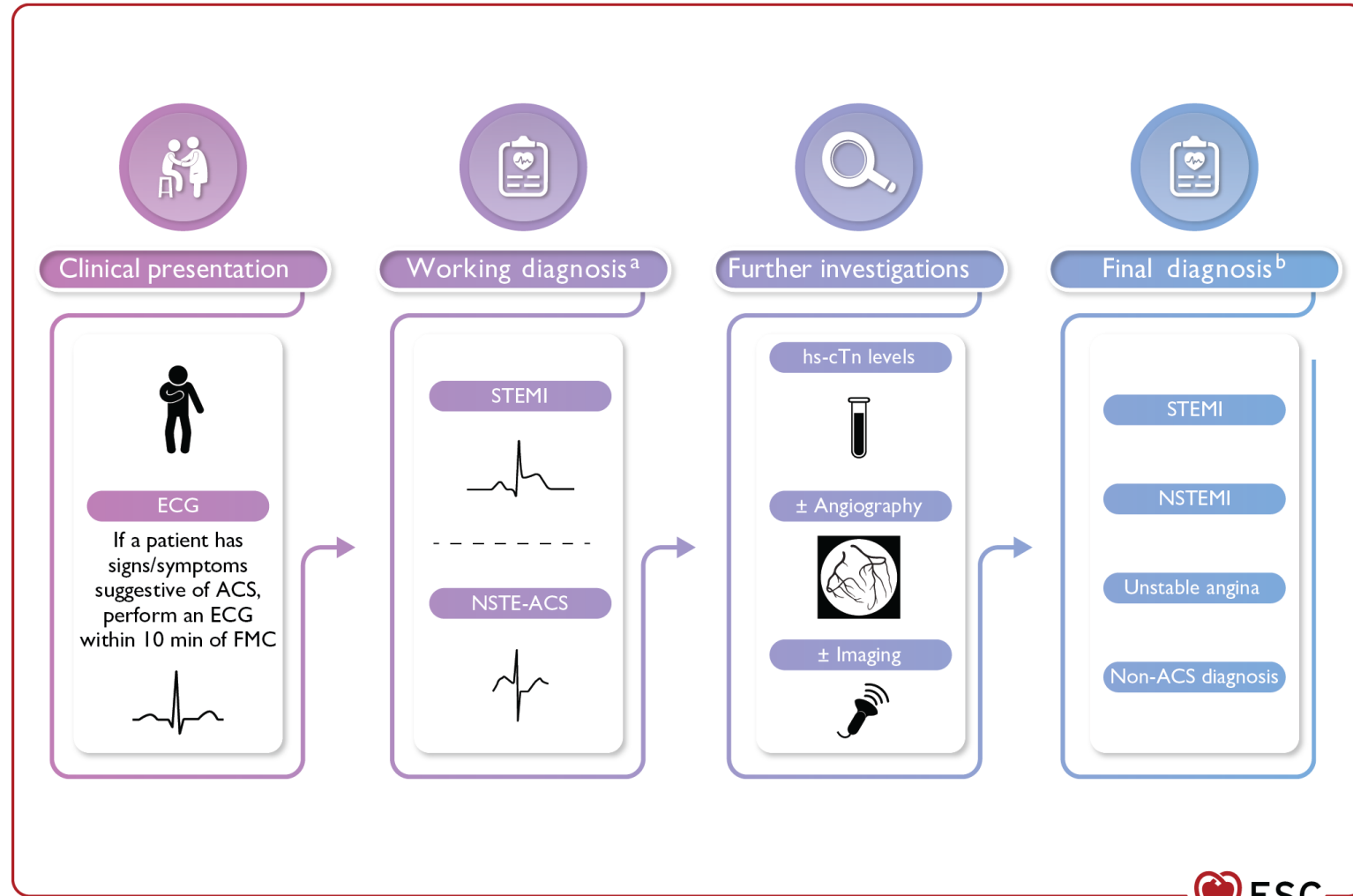


Figure 4

An overview of the initial triage, management and investigation of patients who present with signs and symptoms potentially consistent with acute coronary syndrome

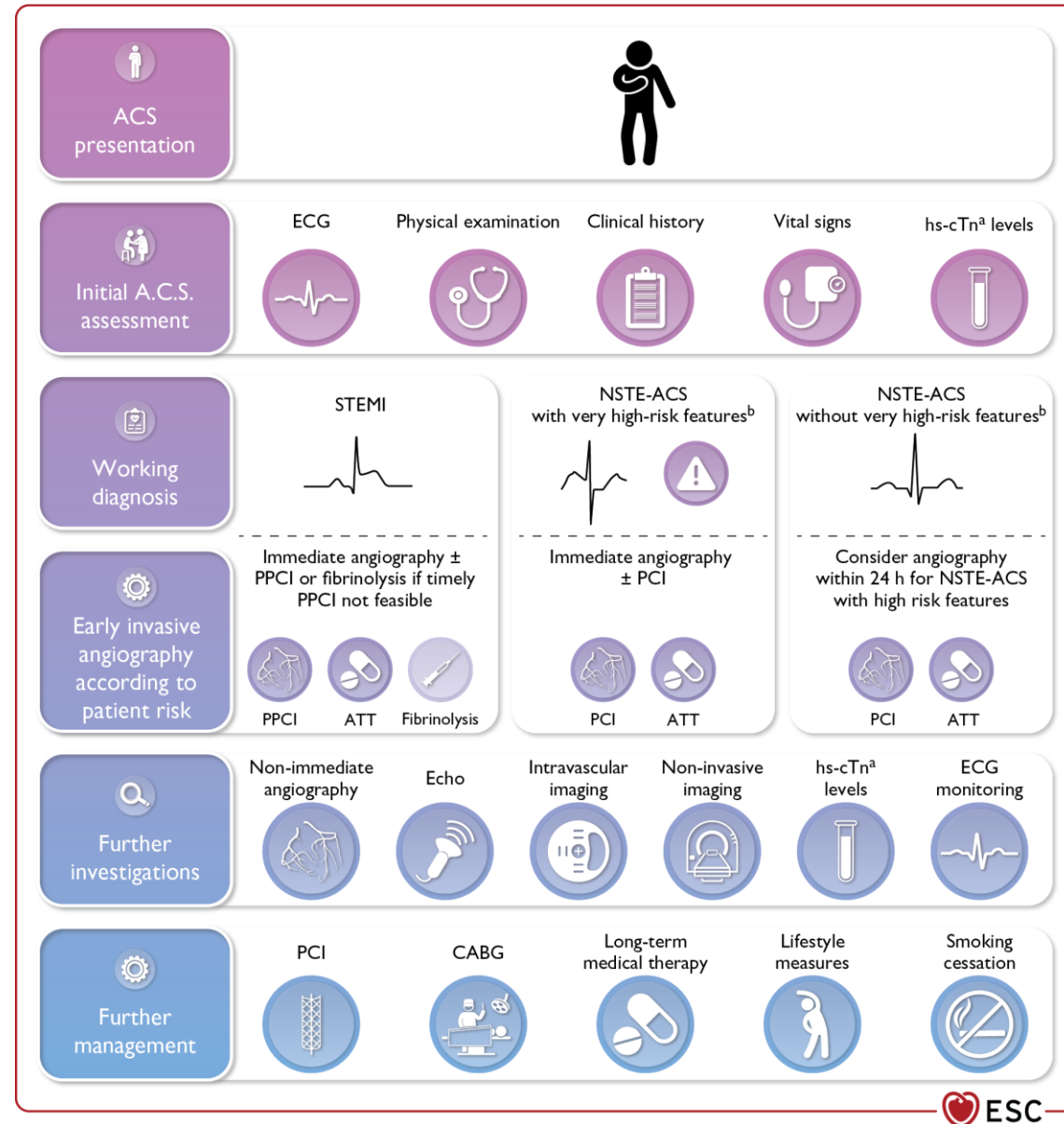
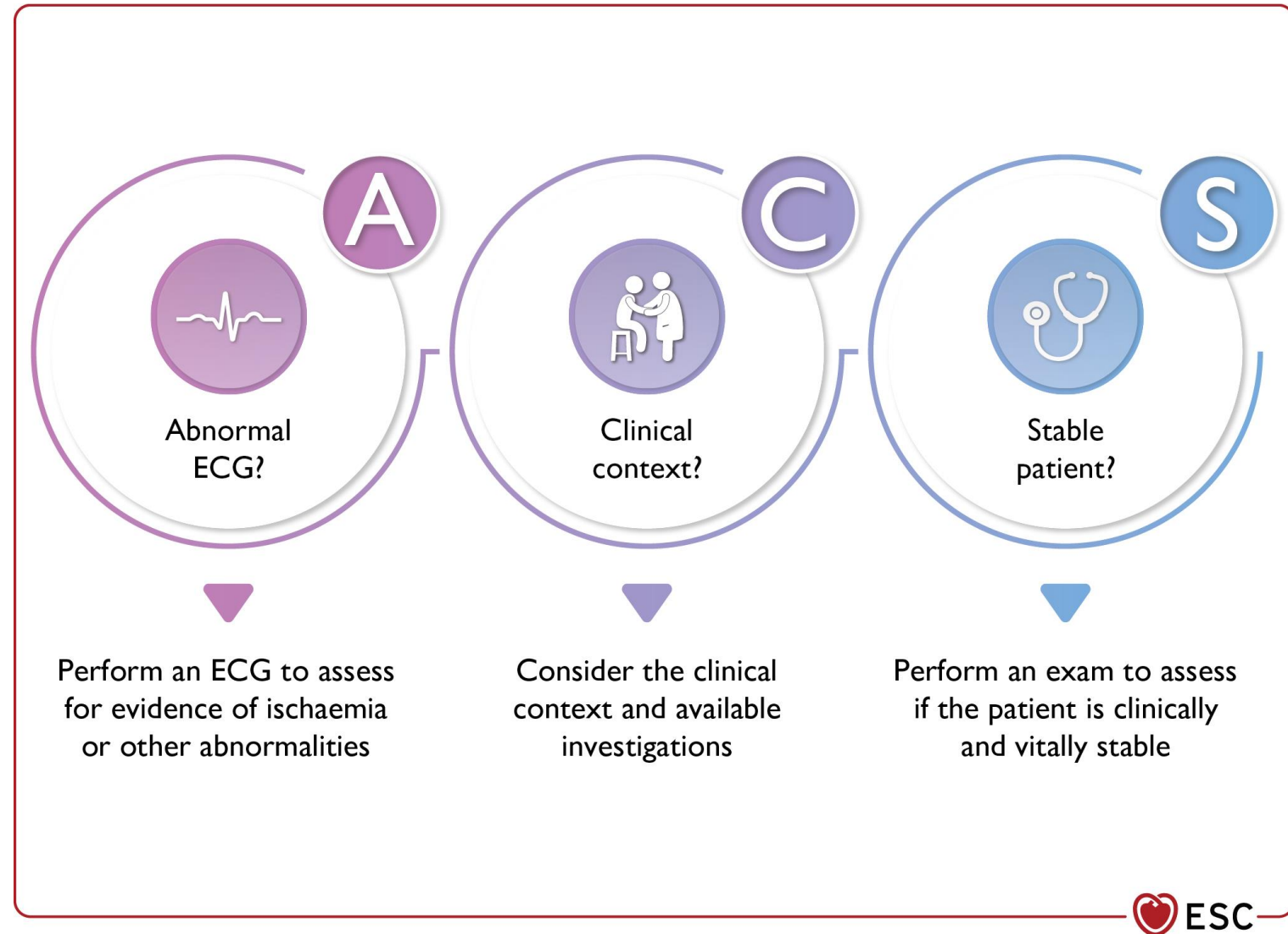


Figure 5

The A.C.S. assessment for the initial evaluation of patients with suspected acute coronary syndrome



Recommendations for clinical and diagnostic tools for patients with suspected acute coronary syndrome (1)

Recommendations	Class	Level
It is recommended to base the diagnosis and initial short-term risk stratification of ACS on a combination of clinical history, symptoms, vital signs, other physical findings, ECG, and hs-cTn.	I	B
ECG		
Twelve-lead ECG recording and interpretation is recommended as soon as possible at the point of FMC, with a target of <10 min.	I	B
Continuous ECG monitoring and the availability of defibrillator capacity is recommended as soon as possible in all patients with suspected STEMI, in suspected ACS with other ECG changes or ongoing chest pain, and once the diagnosis of MI is made.	I	B
The use of additional ECG leads (V3R, V4R, and V7–V9) is recommended in cases of inferior STEMI or if total vessel occlusion is suspected and standard leads are inconclusive.	I	B
An additional 12-lead ECG is recommended in cases with recurrent symptoms or diagnostic uncertainty.	I	C

Recommendations for clinical and diagnostic tools for patients with suspected acute coronary syndrome (2)

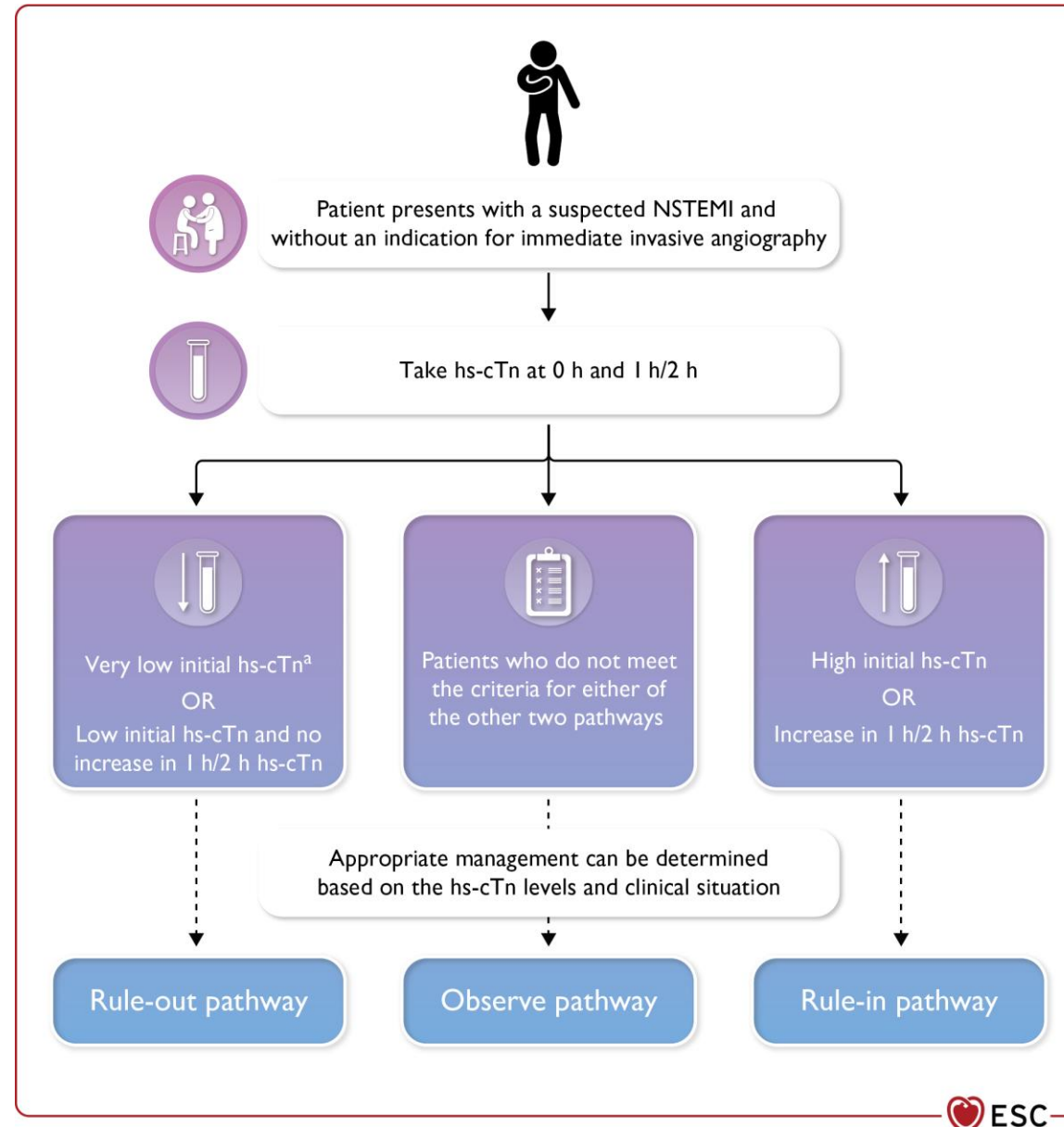
Recommendations	Class	Level
<i>Blood sampling</i>		
It is recommended to measure cardiac troponins with high-sensitivity assays immediately after presentation and to obtain the results within 60 min of blood sampling.	I	B
It is recommended to use an ESC algorithmic approach with serial hs-cTn measurements (0 h/1 h or 0 h/2 h) to rule in and rule out NSTEMI.	I	B
Additional testing after 3 h is recommended if the first two hs-cTn measurements of the 0 h/1 h algorithm are inconclusive and no alternative diagnoses explaining the condition have been made.	I	B
The use of established risk scores (e.g. GRACE risk score) for prognosis estimation should be considered.	IIa	B

Recommendations for clinical and diagnostic tools for patients with suspected acute coronary syndrome (3)

Recommendations	Class	Level
<i>Triage for emergency reperfusion strategy</i>		
It is recommended that patients with suspected STEMI are immediately triaged for an emergency reperfusion strategy.	I	A

Figure 6

The 0 h/1 h or 0 h/2 h rule-out and rule-in algorithms using high-sensitivity cardiac troponin assays in patients presenting to the emergency department with suspected NSTEMI and without an indication for immediate invasive angiography



Recommendations for non-invasive imaging in the initial assessment of patients with suspected acute coronary syndrome

Recommendations	Class	Level
Emergency TTE is recommended in patients with suspected ACS presenting with cardiogenic shock or suspected mechanical complications.	I	C
In patients with suspected ACS, non-elevated (or uncertain) hs-cTn levels, no ECG changes and no recurrence of pain, incorporating CCTA or a non-invasive stress imaging test as part of the initial workup should be considered.	IIa	A
Emergency TTE should be considered at triage in cases of diagnostic uncertainty but this should not result in delays in transfer to the cardiac catheterization laboratory if there is suspicion of an acute coronary artery occlusion.	IIa	C
Routine, early CCTA in patients with suspected ACS is not recommended.	III	B

Recommendations for the initial management of patients with acute coronary syndrome (1)

Recommendations	Class	Level
<i>Hypoxia</i>		
Oxygen is recommended in patients with hypoxaemia (SaO ₂ <90%).	I	C
Routine oxygen is not recommended in patients without hypoxaemia (SaO ₂ >90%).	III	A
<i>Symptoms</i>		
Intravenous opioids should be considered to relieve pain.	IIa	C
A mild tranquilizer should be considered in very anxious patients.	IIa	C
<i>Intravenous beta-blockers</i>		
Intravenous beta-blockers (preferably metoprolol) should be considered at the time of presentation in patients undergoing PPCI with no signs of acute heart failure, an SBP >120 mmHg, and no other contraindications.	IIa	A

Recommendations for the initial management of patients with acute coronary syndrome (2)

Recommendations	Class	Level
<i>Pre-hospital logistics of care</i>		
It is recommended that the pre-hospital management of patients with a working diagnosis of STEMI is based on regional networks designed to deliver reperfusion therapy expeditiously and effectively, with efforts made to make PPCI available to as many patients as possible.	I	B
It is recommended that PPCI-capable centres deliver a 24/7 service and are able to perform PPCI without delay.	I	B
It is recommended that patients transferred for PPCI bypass the emergency department and CCU/ICU and are transferred directly to the catheterization laboratory.	I	B
It is recommended that EMS transfer patients with suspected STEMI to a PCI-capable centre, bypassing non-PCI centres.	I	C

Recommendations for the initial management of patients with acute coronary syndrome (3)

Recommendations	Class	Level
<i>Pre-hospital logistics of care (continued)</i>		
It is recommended that ambulance teams are trained and equipped to identify ECG patterns suggestive of acute coronary occlusion and to administer initial therapy, including defibrillation, and fibrinolysis when applicable.	I	C
It is recommended that all hospitals and EMS participating in the care of patients with suspected STEMI record and audit delay times and work together to achieve and maintain quality targets.	I	C