

A patient with chest pain and ST-elevation in aVR and ST depression in all other leads

ACCA Masterclass 2017

Sofie Gevaert



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Mr LP, 55-years-old

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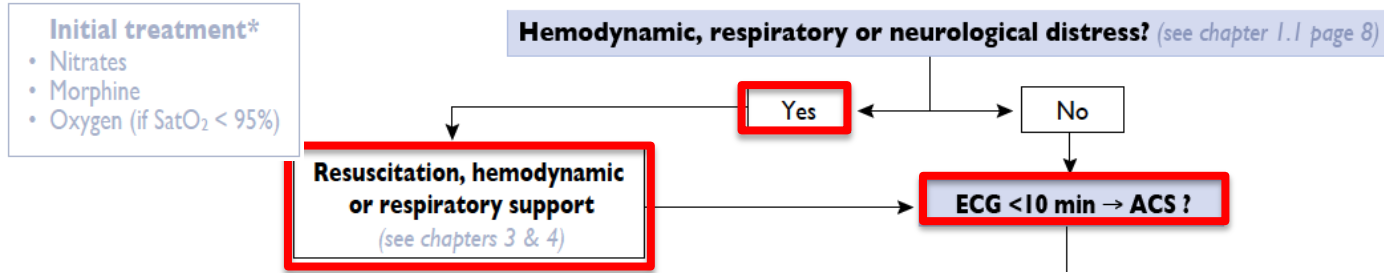
- **History:**
 - Hypertension, treated with Perindopril 5mg and Nebivolol 5mg
- **Current:**
 - 01.00 am: progressive severe thoracic pain radiating to left arm
 - Orthopnoea
 - 112→Medical emergency team
- **Other CV risk factors:**
 - Hyperlipidaemia
 - Obesity
 - Sudden death of father at 50 y

MET 08.00 am: parameters, clinical exam

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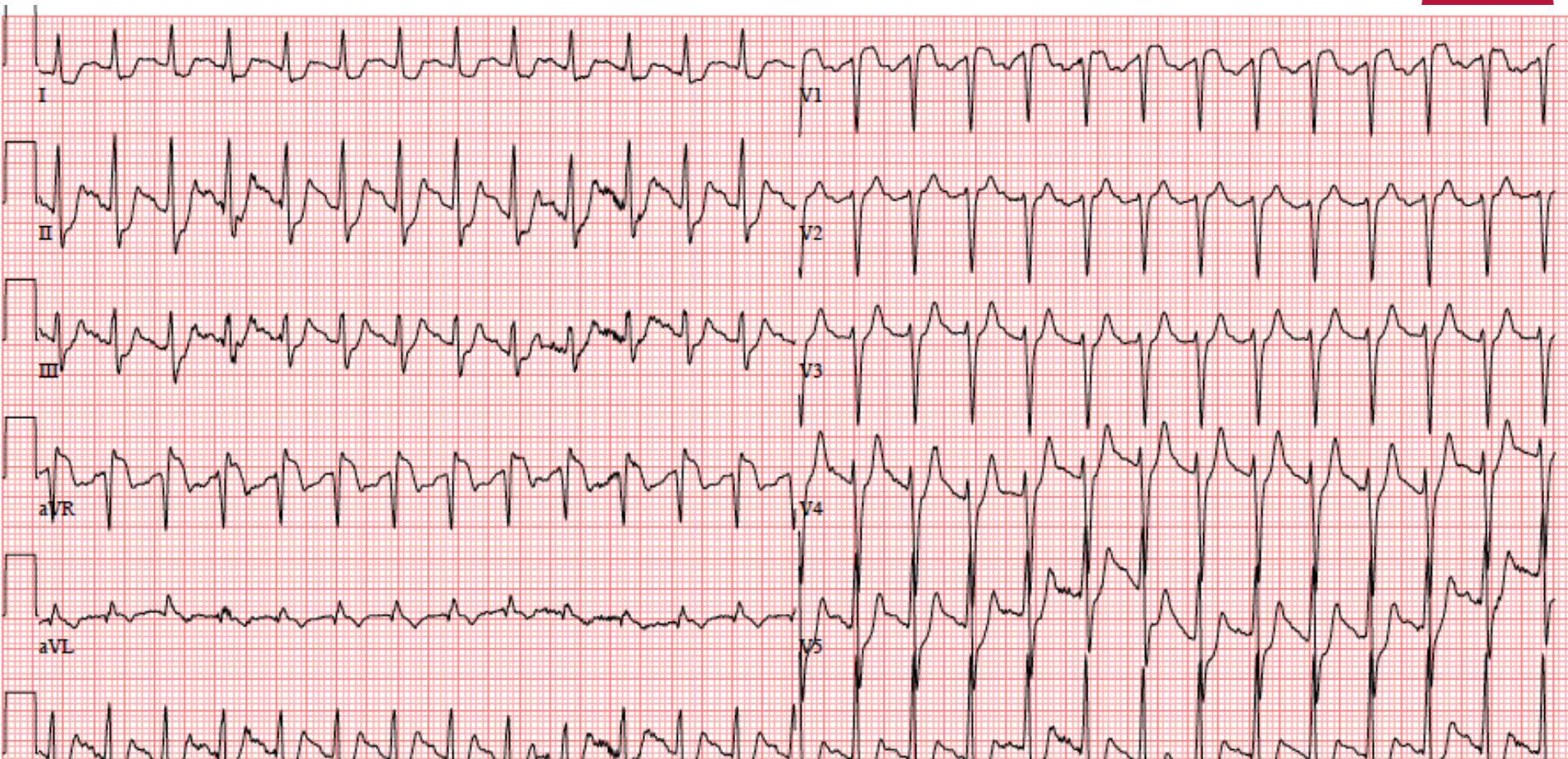
- BP 142/72 mmHg, HR 160 bpm, regular, SaO₂ 88%, Resp R 27/min
- Clammy, cold extremities
- No jugular distension
- No cardiac murmur
- Bilateral crepitations
- No peripheral edema

FMC in patient with chest pain



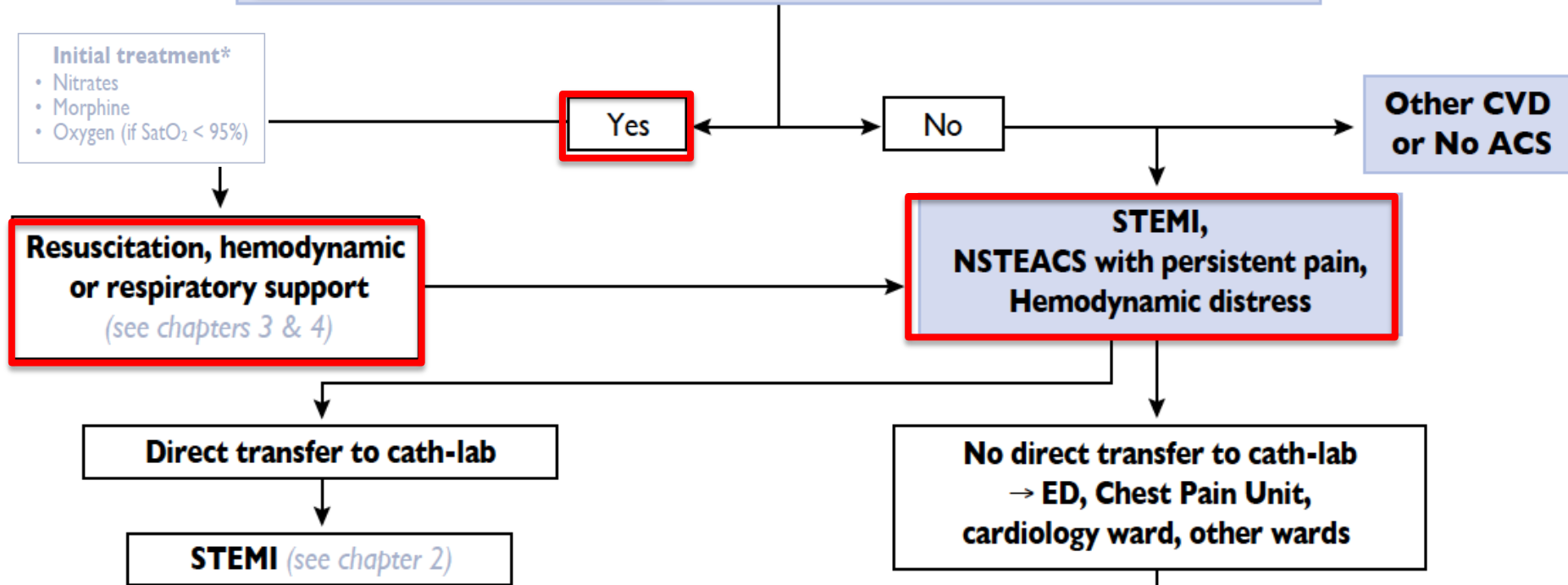
ECG 08.05 am

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1. ER: Patient with chest pain, 08.28 am

Hemodynamic, respiratory or neurological distress? (see chapter 1.1 page 6)



Further strategy?

- Further stabilisation, diagnostics in ER?
- Direct transfer to cathlab?

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2. ER: dyspnoea, orthopnoea

50% have ≥ 2 diagnoses, which may result in acute respiratory failure*!

Basic measures

- BP, HR, respiratory rate, SpO₂ & temperature
- Start oxygen to target SpO₂ 94-98%
- Start i.v. line & monitor patient

Criteria for transfer to ICU

(despite treatment for 30 minutes)

- Respiratory rate >35/min
- SpO₂ <85%
- SBP <90 mmHg
- HR >120 bpm

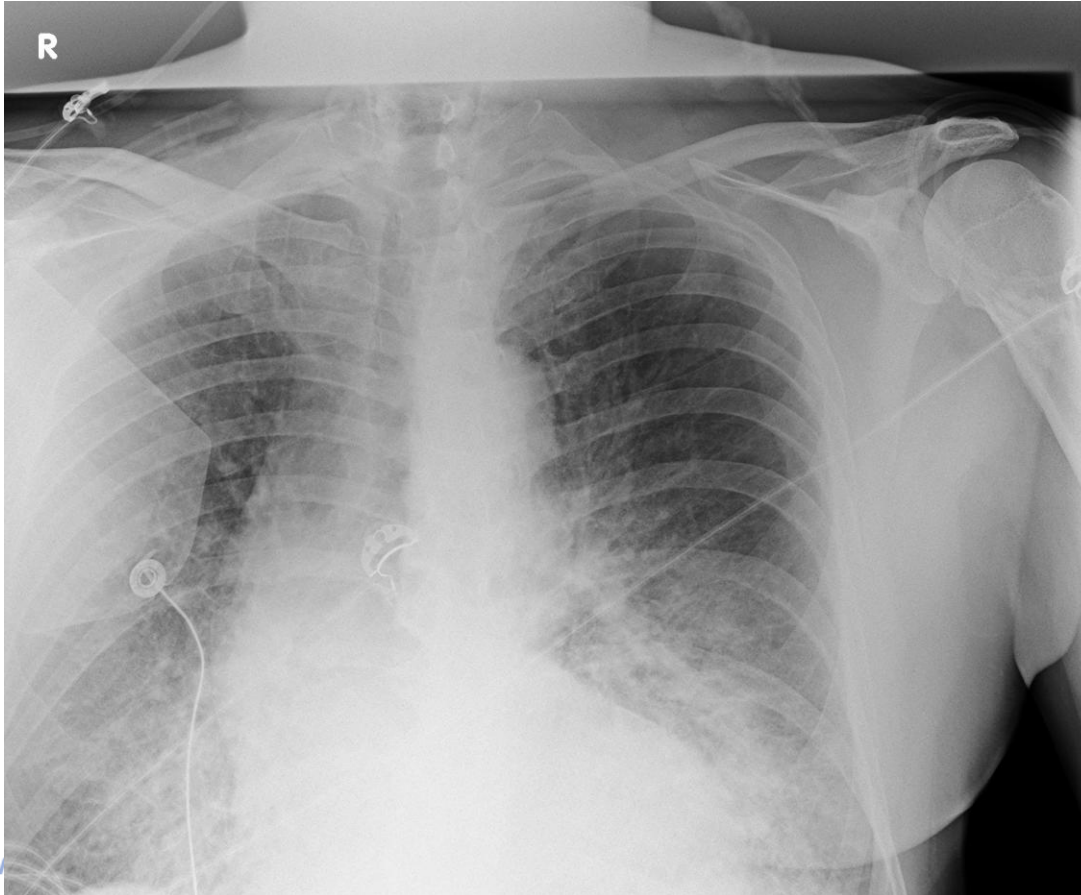
Investigations:

- ECG
- BNP

- Chest X-ray
- Venous BG

- Blood count
- D-dimers if suspicion of PE
- Tn

Chest X-ray 08.32 am



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Furosemide 40mg IV (MET)

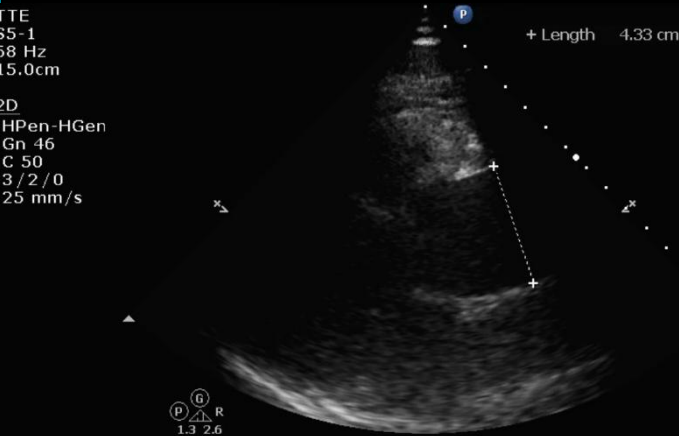


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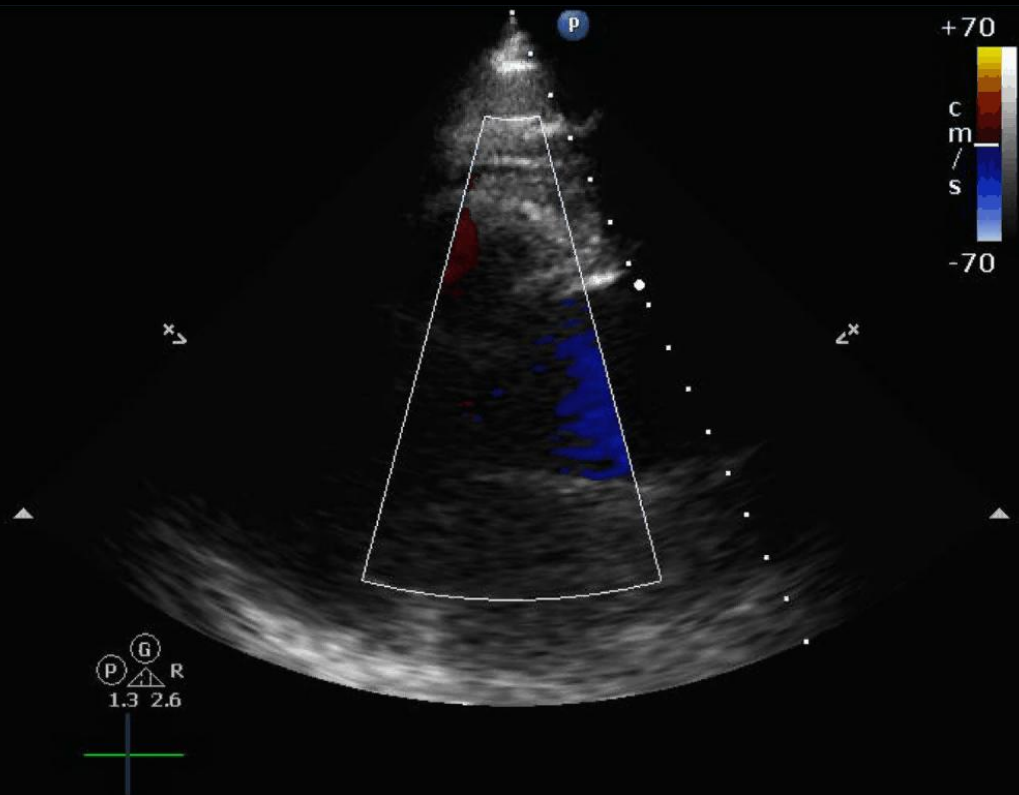
Quick look echo

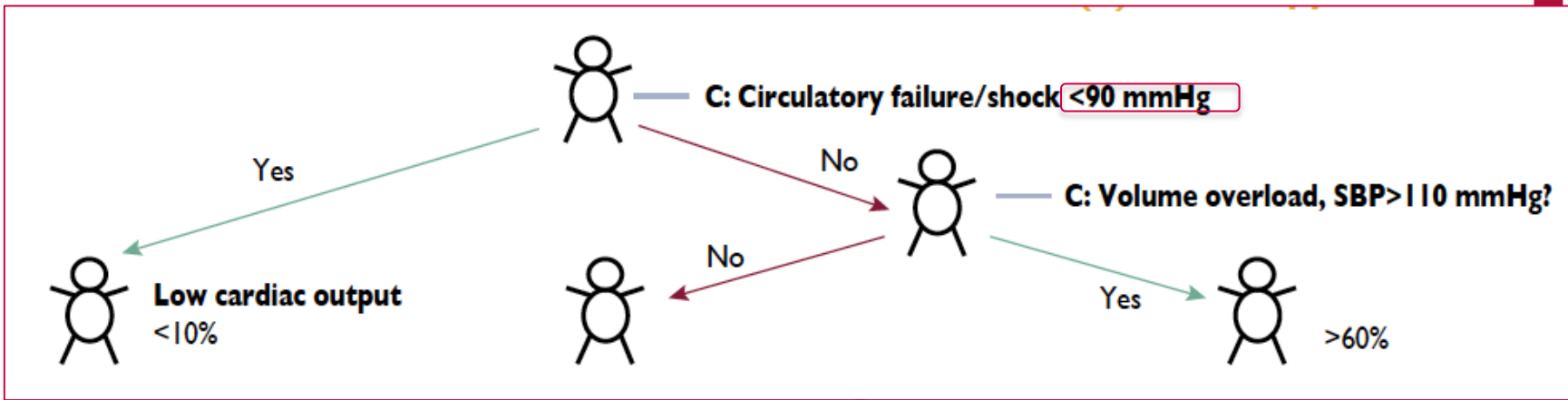


TTE
S5-1
68 Hz
15.0cm

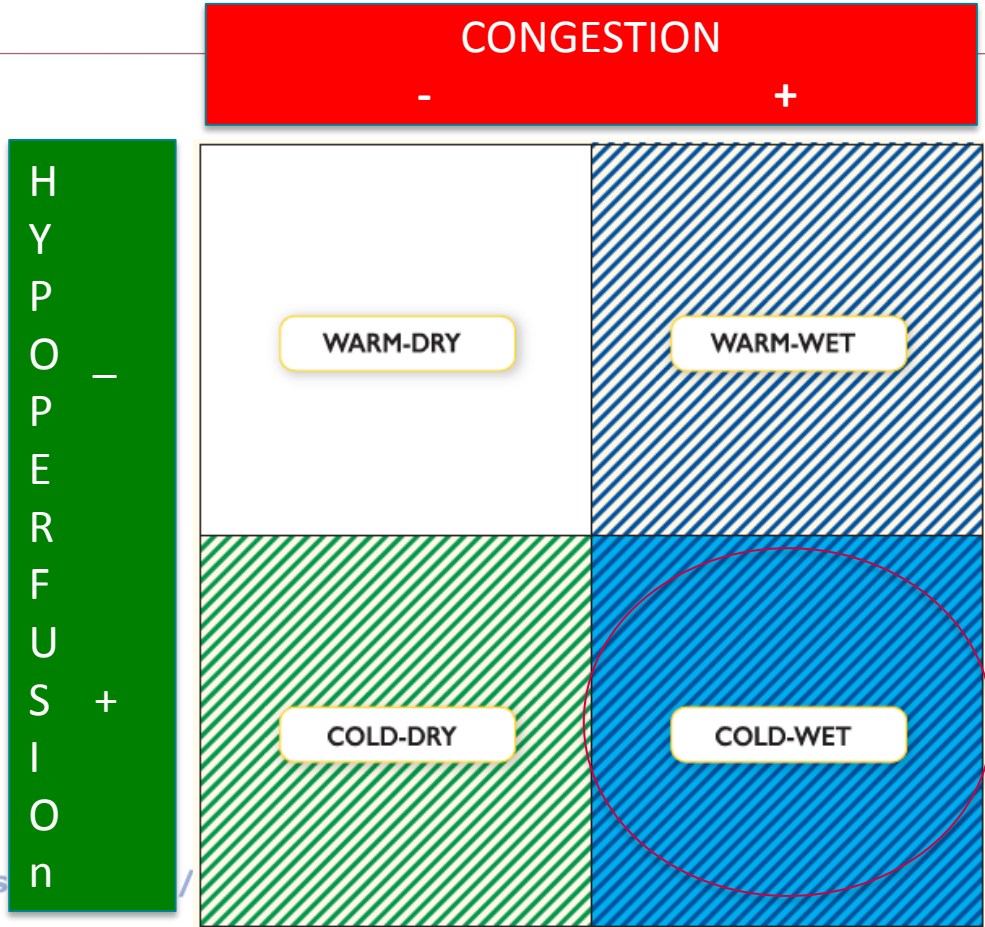
2D
HPen-HGen
Gn 98
C 50
3/2/0
25 mm/s

Color
2.5 MHz
Gn 60
6/6/0
Fltr High





Clinical condition defined as the inability of the heart to deliver an adequate amount of blood to the tissues to meet resting metabolic demands as a result of impairment of its pumping function.



ESC guidelines AHF 2015

This protocol should be initiated as soon as cardiogenic shock/end organ hypoperfusion is recognised and should not be delayed pending intensive care admission.

EMERGENCY DEPARTMENT	0 min	CARDIAC INTENSIVE CARE UNIT	<p>EARLY TRIAGE & MONITORING</p> <p>Start high flow O₂ Establish i.v. access</p>	<ul style="list-style-type: none"> • Age: 65–74, ≥75 • <u>Heart rate >100 beats per minute</u> • <u>Systolic blood pressure <100 mmHg</u> • Proportional pulse pressure ≤25 % (CI <2.2l/min/m²) • <u>Orthopnea (PCWP >22 mmHg)</u> • <u>Tachypnea (>20/min), >30/min (!)</u> • <u>Killip class II-IV</u> • Clinical symptoms of tissue hypoperfusion/hypoxia: <ul style="list-style-type: none"> - cool extremities, <u>decreased</u> urine output (urine output <40 ml/h) - decreased capillary refill or mottling - alteration in mental status
	5 min		<p>INITIAL RESUSCITATION</p> <ul style="list-style-type: none"> • <u>Arterial and a central venous catheterization with a catheter</u> capable of measuring central venous oxygen saturation • Standard transthoracic echocardiogram to assess left (and right) ventricular function and for the detection of potential mechanical complications following MI • <u>Early coronary angiography in specialized myocardial intervention center</u> when signs and/or symptoms of ongoing myocardial ischemia (e.g. ST segment elevation myocardial infarction). 	<ul style="list-style-type: none"> • CORRECT: hypoglycemia & hypocalcemia, • TREAT: sustained arrhythmias: brady- or tachy- • Isotonic saline-fluid challenge of 20 to 30 ml per kilogram of body weight over a 30-minute period to achieve a central venous pressure of 8 to 12 mmHg or until perfusion improves (with a maximum of 500 ml) • CONSIDER NIV/mechanical ventilation for comfort (fatigue, distress) or as needed: <ul style="list-style-type: none"> - To correct acidosis - To correct hypoxemia • INOTROPIC SUPPORT (dobutamine and/or vasopressor support)
	15 min		<p>TREATMENT GOALS</p> <ul style="list-style-type: none"> • a mean arterial pressure of 60 mmHg or above, • a mean pulmonary artery wedge pressure of 18 mmHg or below, • a central venous pressure of 8 to 12 mmHg, • a urinary output of 0,5 ml or more per hour per kilogram of body weight • an arterial pH of 7.3 to 7.5 • a central venous saturation (ScvO₂) ≥70% (provided SpO₂ ≥93% and Hb level ≥9 g/dl) 	
	60 min			
			<p>In persistent drug-resistant cardiogenic shock, consider mechanical circulatory support</p>	

08.45 am

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- Ongoing chest pain despite high dose opioids
- SaO₂ 90 despite FiO₂ 90%
- Persisting respiratory failure despite initial measures
- Troponin T 435 ng/L, creatinine 2.1 mg/dL (CKD-EPI 30 mL/min), Hct 42%
- PH 7.24, PCO₂ 47mmHg, lactate 34.1 mg/dL (<11.3 mg/dL, =3.8mmol/L)

Sedation, Intubation

Invasive strategy: Timing, antithrombotic R/ and access

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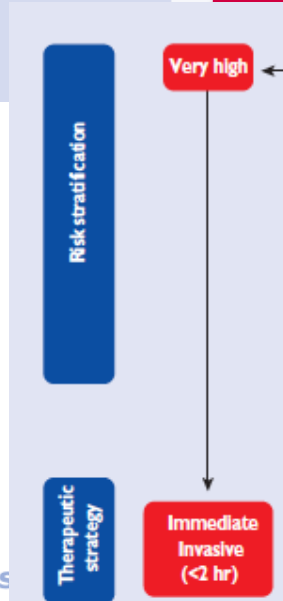
- **Timing?**
- **Antiplatelet?**
 - None
 - ASA mono
 - DAPT
- **Anticoagulation?**
 - None
 - UFH
 - LMWH
 - Fondaparinux
 - Bivalirudin
- **Access?**

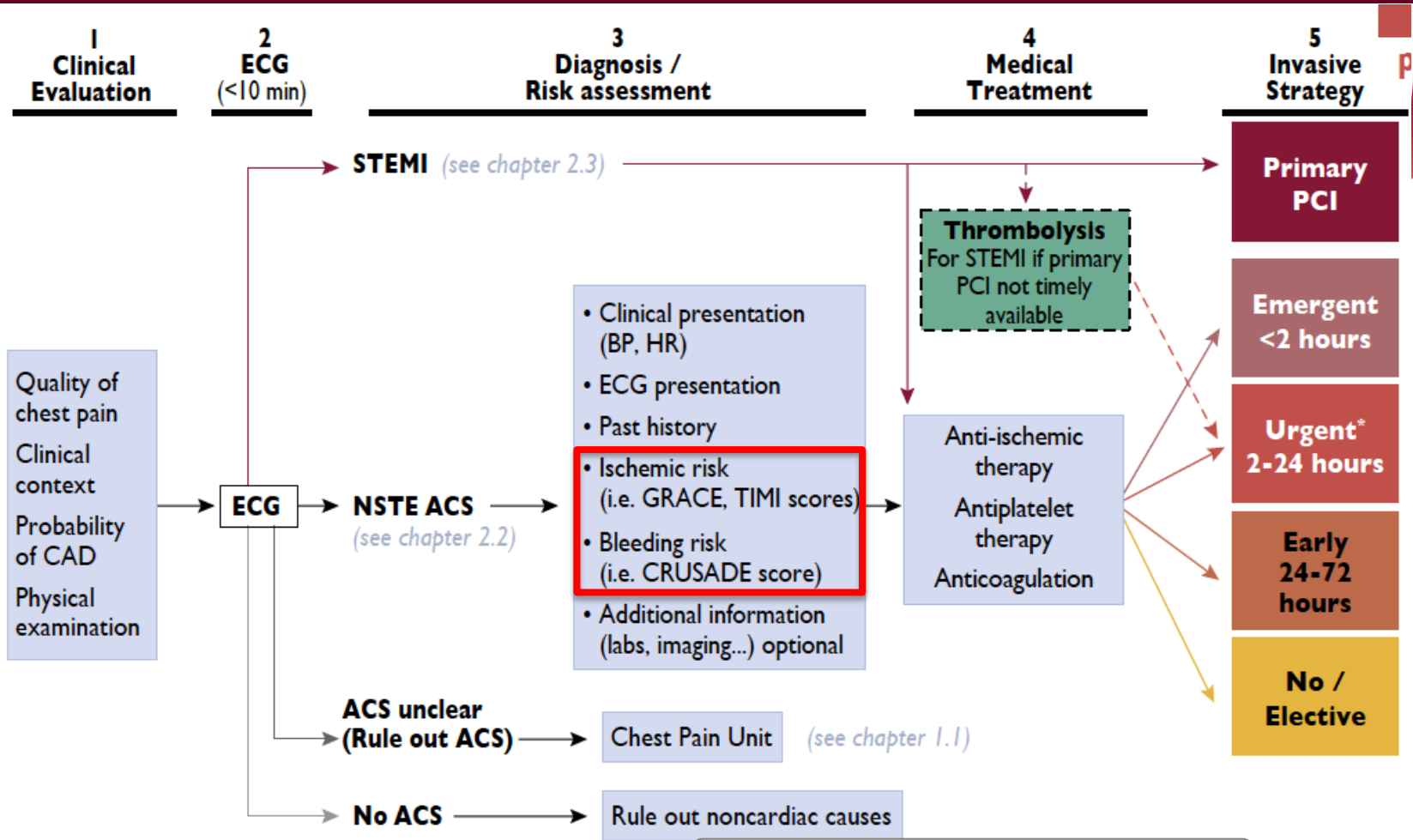
Timing

Very-high-risk criteria

- Haemodynamic instability or cardiogenic shock
- Recurrent or ongoing chest pain refractory to medical treatment
- Life-threatening arrhythmias or cardiac arrest
- Mechanical complications of MI
- Acute heart failure

urrent dynamic ST-T wave changes, particularly with intermittent ST-elevation





Ischemic risk

Calculator

1. INPUT DATA > 2. DEATH / DEATH MI RESULTS

Age (years)	56	ST-segment deviation	<input checked="" type="checkbox"/>										
Heart rate (bpm)	150-199	Cardiac arrest at admission	<input type="checkbox"/>										
Systolic blood pressure (mmHg)	140-159	Elevated troponin*	<input checked="" type="checkbox"/>										
CHF (Killip class)	IV	* Or other											
Diuretic usage	<input type="checkbox"/>	1. INPUT DATA > 2. DEATH / DE											
Creatinine (mg dL ⁻¹ / μmol L ⁻¹)	2.0-3.99	<table border="1"><thead><tr><th>Time</th><th>% Risk (Score)</th></tr></thead><tbody><tr><td>In hospital</td><td>26</td></tr><tr><td>6 months</td><td>24-44 (178)</td></tr><tr><td>1 year</td><td>24-44</td></tr><tr><td>3 years</td><td>34</td></tr></tbody></table>		Time	% Risk (Score)	In hospital	26	6 months	24-44 (178)	1 year	24-44	3 years	34
Time	% Risk (Score)												
In hospital	26												
6 months	24-44 (178)												
1 year	24-44												
3 years	34												
Renal failure	<input type="checkbox"/>	<table border="1"><thead><tr><th>Time</th><th>% Risk</th></tr></thead><tbody><tr><td>1 year</td><td>38</td></tr></tbody></table>		Time	% Risk	1 year	38						
Time	% Risk												
1 year	38												
RESET	CALCULATE												

www.gracescore.org

www.escardio.org/ACCA

TIMI Risk Score Calculator for UA/NSTEMI

- Age ≥ 65 years? Yes (+1)
- ≥ 3 Risk Factors for CAD? Yes (+1)
- Known CAD (stenosis ≥ 50%)? Yes (+1)
- ASA Use in Past 7d? Yes (+1)
- Severe angina (≥ 2 episodes w/in 24 hrs)? Yes (+1)
- ST changes ≥ 0.5mm? Yes (+1)
- + Cardiac Marker? Yes (+1)

Score: 3 points

What does this score mean?

13% risk at 14 days of: all-cause mortality, new or recurrent MI, or severe recurrent ischemia requiring urgent revascularization.

www.timi.org

Bleeding risk

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Bleeding Score
Calculator

INTRODUCTION

CALCULATOR

ABOUT

REFERENCES

LINKS

DISCLAIMER

DOWNLOADS

Last Updated:
March 2008

Enter values in drop-down boxes below:

Baseline Hematocrit ?	> 39.9	Prior Vascular Disease ?	No
GFR: Cockcroft-Gault ?	31 - 60 Calculate GFR	Diabetes Mellitus	No
Heart rate on admission	> 120	Signs of CHF on admission ?	Yes
Systolic blood pressure on admission	121 - 180	Sex	Male

[Clear Selections](#)

CRUSADE
Bleeding Score ?

47

High Risk

Risk of In-Hospital
Major Bleeding ?

11.4%

CRUSADE Bleeding Score

The CRUSADE Bleeding Score (range 1-100 points) equals the sum of the weighted scores for each of the eight predictors.

Patients are categorized into quintiles of risk groups based on the following Bleeding Scores: <21 Very Low Risk, 21-30 Low Risk, 31-40 Moderate Risk, 41-50 High Risk, and >50 Very High Risk.

Palm OS and Pocket PC versions of this calculator are available on the [same](#) page.

Funding Source: This website is supported by Washington University's Mentors in Medicine Research Grant. The

www.crusadebleedingscore.org

High ischemic and high bleeding risk KD and shock state

UFH 5000 IU bolus
ASA 200mg IV

It is recommended to assess kidney function by eGFR in all patients.	I	C
It is recommended to administer the same first-line antithrombotic treatment as in patients with normal kidney function, with appropriate dose adjustment if indicated.	I	B
Depending on the degree of renal dysfunction, it is recommended to switch parenteral anticoagulation to UFH or to adjust the doses of fondaparinux, enoxaparin and bivalirudin, as well as the dose of small molecule GPIIb/IIIa inhibitors.	I	B
It is recommended to switch s.c. or iv. anticoagulation to UFH infusion adjusted to the aPTT when eGFR is <30 mL/min/ 1.73 m ² (for fondaparinux, when eGFR is <20 mL/min/ 1.73 m ²).	I	C

ESC guidelines NSTEMI-ACS 2015

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Oral antiplatelet therapy

Aspirin is recommended for all patients without contraindications at an initial oral loading dose^d of 150–300 mg (in aspirin-naïve patients) and a maintenance dose of 75–100 mg/day long-term regardless of treatment strategy.

I

A

A P2Y₁₂ inhibitor is recommended, in addition to aspirin, for 12 months unless there are contraindications such as excessive risk of bleeds.

I

A

- Ticagrelor (180 mg loading dose, 90 mg twice daily) is recommended, in the absence of contraindications,^e for all patients at moderate-to-high risk of ischaemic events (e.g. elevated cardiac troponins), regardless of initial treatment strategy and including those pretreated with clopidogrel (which should be discontinued when ticagrelor is started).

I

B

- Prasugrel (60 mg loading dose, 10 mg daily dose) is recommended in patients who are proceeding to PCI if no contraindication.^e

I

B

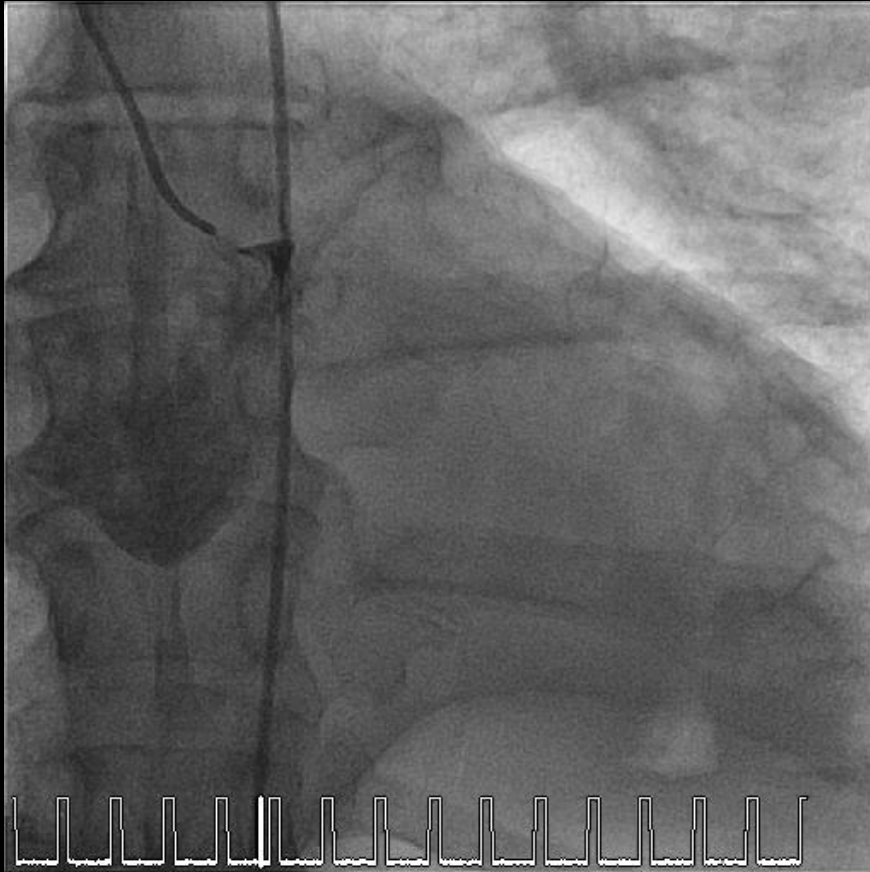
- Clopidogrel (300–600 mg loading dose, 75 mg daily dose) is recommended for patients who cannot receive ticagrelor or prasugrel or who require oral anticoagulation.

I

B

Coronary angiography 09.20 am

Shock, peripheral VC:
Femoral access



CT angiography 09.50 am



Imaging

TTE is recommended as an initial imaging investigation.

I

C

In unstable^d patients with a suspicion of AAS, the following imaging modalities are recommended according to local availability and expertise:

- TOE

I

C

- CT

I

C

Type A dissection with dissection left main

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- Urgent surgery
 - Tear ascending aorta
 - Urgent surgery: Hemiarch
 - Sinotubular junction → proximal arch
 - Postoperative: stroke, AKI
 - Rehab program

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THANK YOU

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