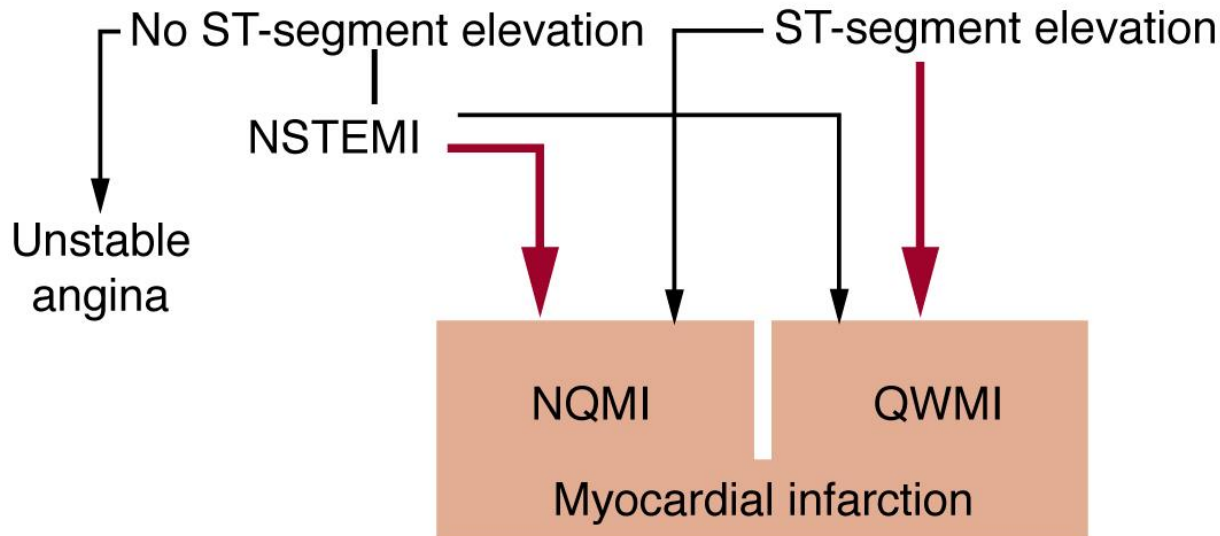
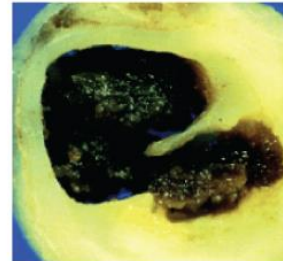
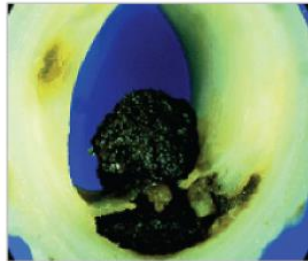


# CHẨN ĐOÁN HỘI CHỨNG ĐỘNG MẠCH VÀNH CẤP

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Viện Tim Tp. HCM*

# Các định nghĩa và sinh lý bệnh hội chứng động mạch vành cấp (HCĐMVC)

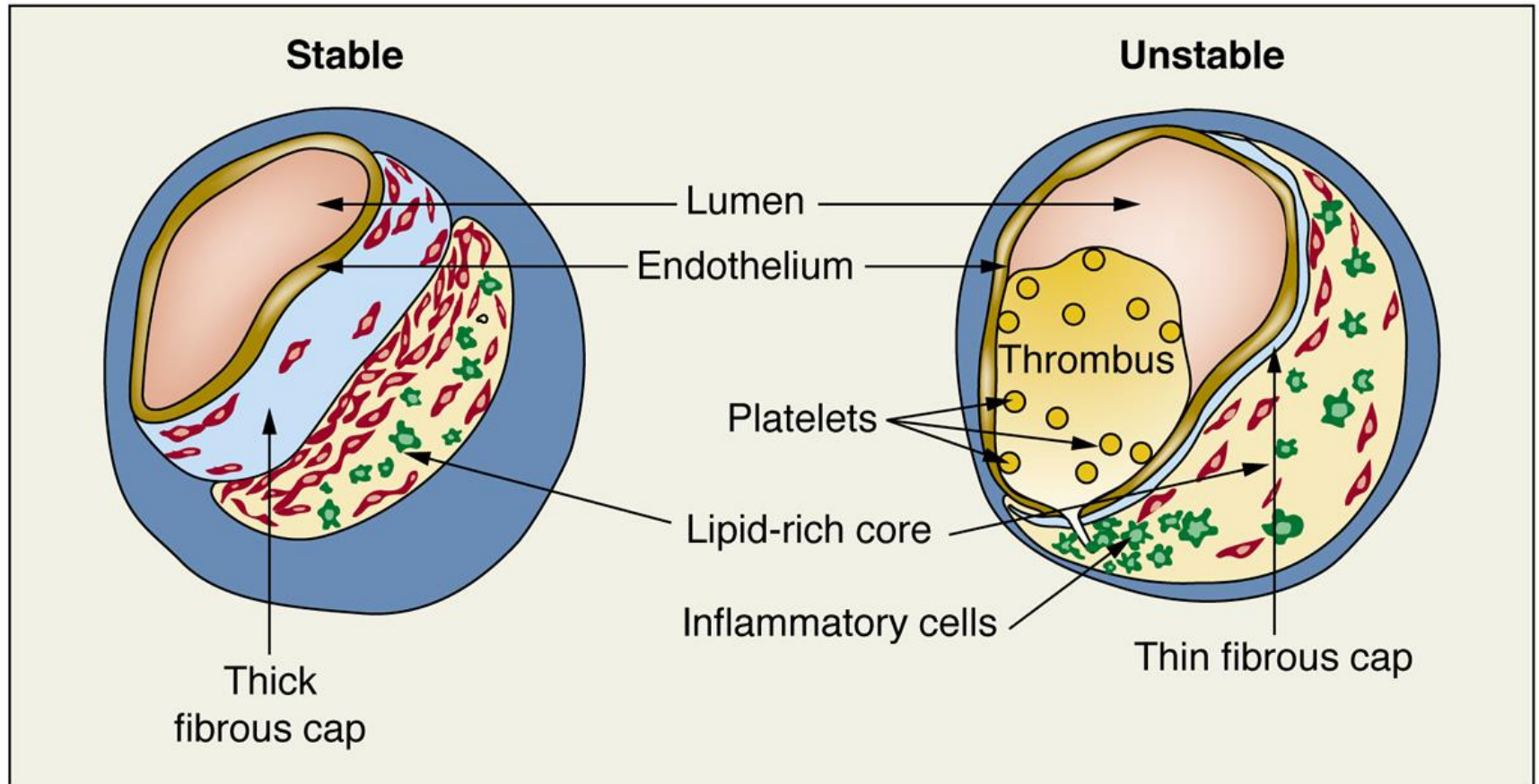
## Acute coronary syndrome



# Sinh lý bệnh

- Mảng xơ vữa dễ tổn thương (the vulnerable plaque)
- Huyết khối ĐMV (coronary thrombosis)
- Bệnh nhân dễ tổn thương (the vulnerable patient):
  - multiple sites of plaque rupture
  - ↑ various systemic markers of inflammation
  - ↑ coagulation system activation
- Rối loạn chức năng dẫn mạch của nội mạc
- Các cơ chế thứ cấp làm tăng nhu cầu oxy cơ tim (td: sốt, cường giáp, stress, tăng hoạt giao cảm...)

# Mảnh xơ vữa ổn định so với mảnh xơ vữa không ổn định



# Biểu hiện lâm sàng

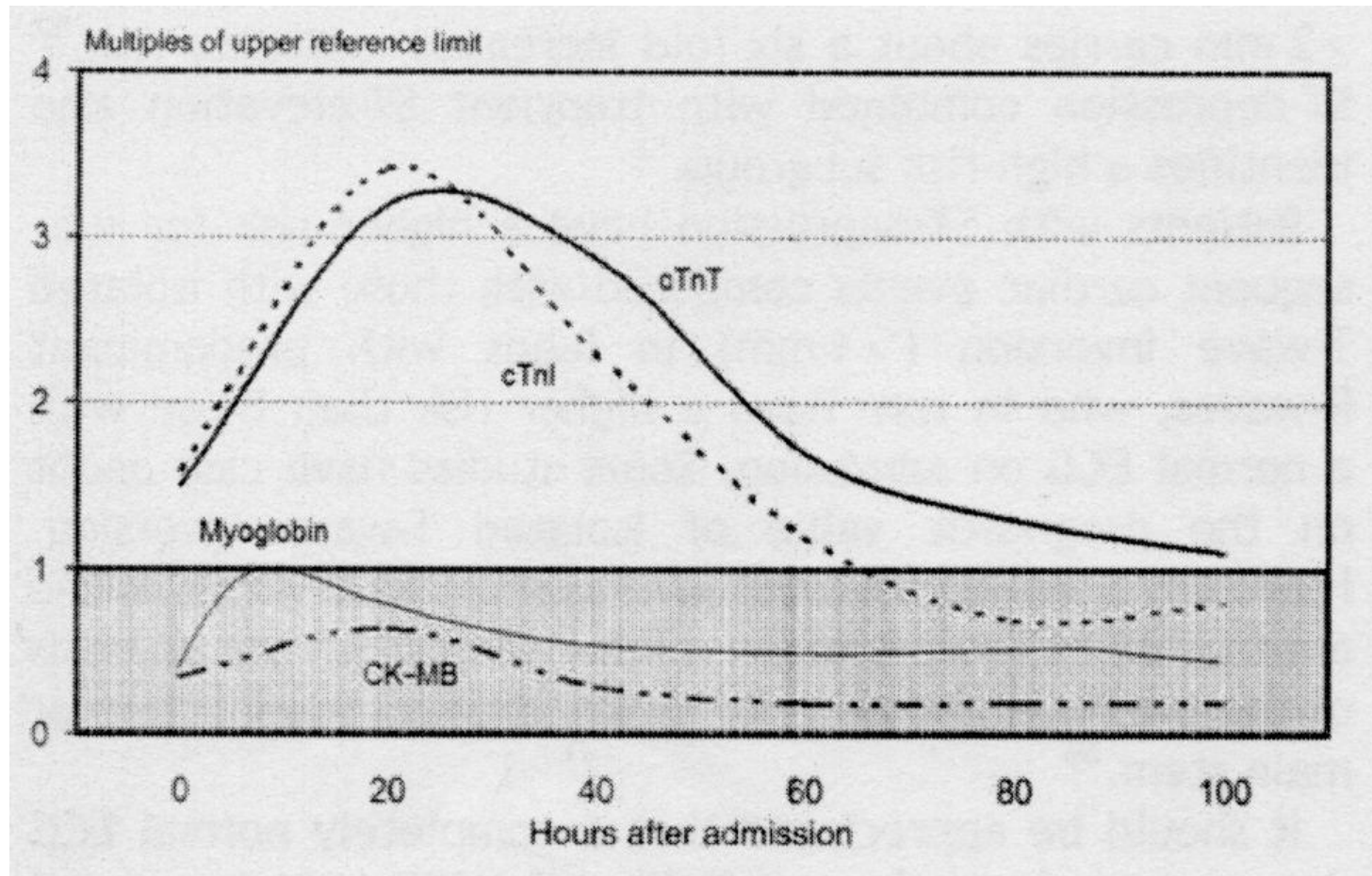
- Đau thắt ngực lúc nghỉ kéo dài (> 20 phút): 80%
  - Đau thắt ngực nặng (CCS III) mới khởi phát
  - Đau thắt ngực ổn định, nay nặng hơn (cơn xuất hiện gia tăng), ít nhất CCS III
  - Đau thắt ngực sau NMCT
- } 20%

*TL: Van Domburg RT et al. J Am Coll Cardiol 1998; 31: 1534 - 1539*

# Các phương tiện chẩn đoán

- Khám thực thể
- ECG – ECG gắng sức – Holter ECG
- Các chất chỉ điểm sinh học (Biomarkers)
- Siêu âm tim và phương tiện hình ảnh không xâm nhập khác (xạ ký cơ tim, MRI)
- Chụp ĐMV có cản quang

# Phóng thích chất chỉ điểm tổn thương cơ tim ở HC ĐMVC/KSTC



TL: Bassand JP et al. ESC Guidelines for the diagnosis and treatment of non ST segment elevation acute coronary syndrome. June 14, 2007

# Lượng định nguy cơ CĐTĐNKOĐ

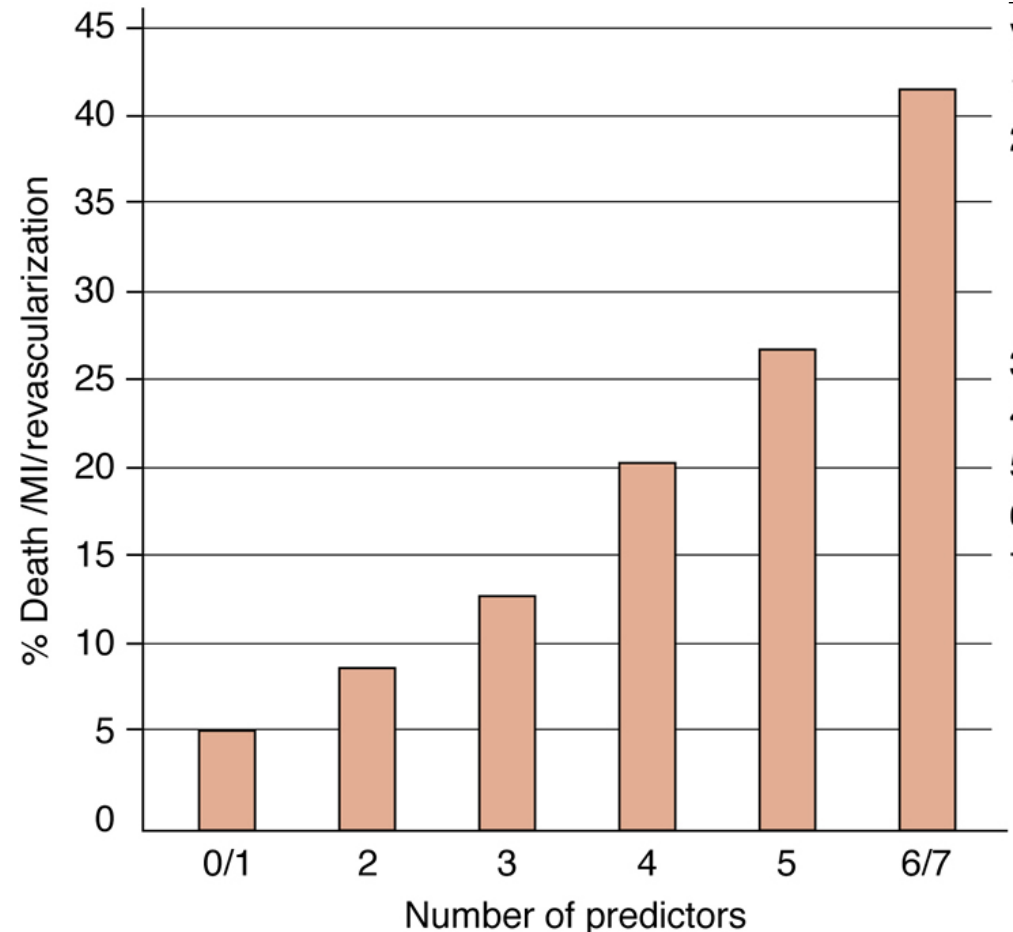
- Nguy cơ cao: tái lưu thông ĐMV ngay.
- Nguy cơ trung bình: TLTĐMV trong vòng 72 giờ
- Nguy cơ thấp: điều trị nội khoa



# Thang điểm nguy cơ TIMI/ hội chứng ĐMV cấp không ST chênh lên

## Variables

1. Age  $\geq$  65 y
2.  $\geq$ 3 CAD risk factors  
(high cholesterol, family history, hypertension, diabetes, smoking)
3. Prior coronary stenosis  $>$ 50%
4. Aspirin in last 7 d
5.  $\geq$ 2 anginal events in  $\leq$ 24 h
6. ST-segment deviation
7. Elevated cardiac markers  
(CK-MB or troponin)



# Bảng tính điểm chỉ số GRACE(1)

1. Find Points for Each Predictive Factor:

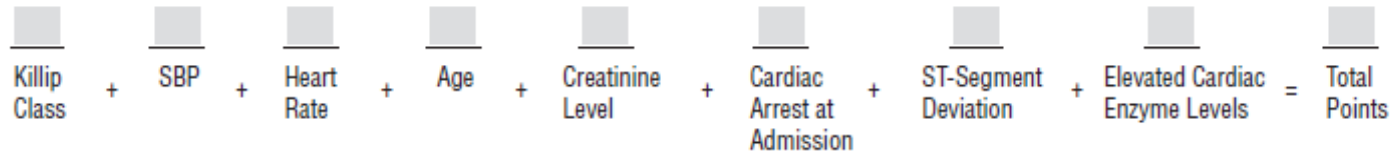
Killip Class	Points	SBP, mm Hg	Points	Heart Rate, Beats/min	Points	Age, y	Points	Creatinine Level, mg/dL	Points
I	0	≤80	58	≤50	0	≤30	0	0-0.39	1
II	20	80-99	53	50-69	3	30-39	8	0.40-0.79	4
III	39	100-119	43	70-89	9	40-49	25	0.80-1.19	7
IV	59	120-139	34	90-109	15	50-59	41	1.20-1.59	10
		140-159	24	110-149	24	60-69	58	1.60-1.99	13
		160-199	10	150-199	38	70-79	75	2.00-3.99	21
		≥200	0	≥200	46	80-89	91	>4.0	28
						≥90	100		

Other Risk Factors	Points
Cardiac Arrest at Admission	39
ST-Segment Deviation	28
Elevated Cardiac Enzyme Levels	14

TL: Granger C B et al. Arch Intern Med 2003; 163: 2345-2353

# Bảng tính điểm chỉ số GRACE (2)

## 2. Sum Points for All Predictive Factors:



## 3. Look Up Risk Corresponding to Total Points:

Total Points	≤60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	≥250
Probability of In-Hospital Death, %	≤0.2	0.3	0.4	0.6	0.8	1.1	1.6	2.1	2.9	3.9	5.4	7.3	9.8	13	18	23	29	36	44	≥52

For example, a patient has Killip class II, SBP of 100 mm Hg, heart rate of 100 beats/min, is 65 years of age, has serum creatinine level of 1 mg/dL, did not have a cardiac arrest at admission but did have ST-segment deviation and elevated enzyme levels.

His score would be:  $20 + 53 + 15 + 58 + 7 + 0 + 28 + 14 = 196$

This person would have about a 16% risk of having an in-hospital death.

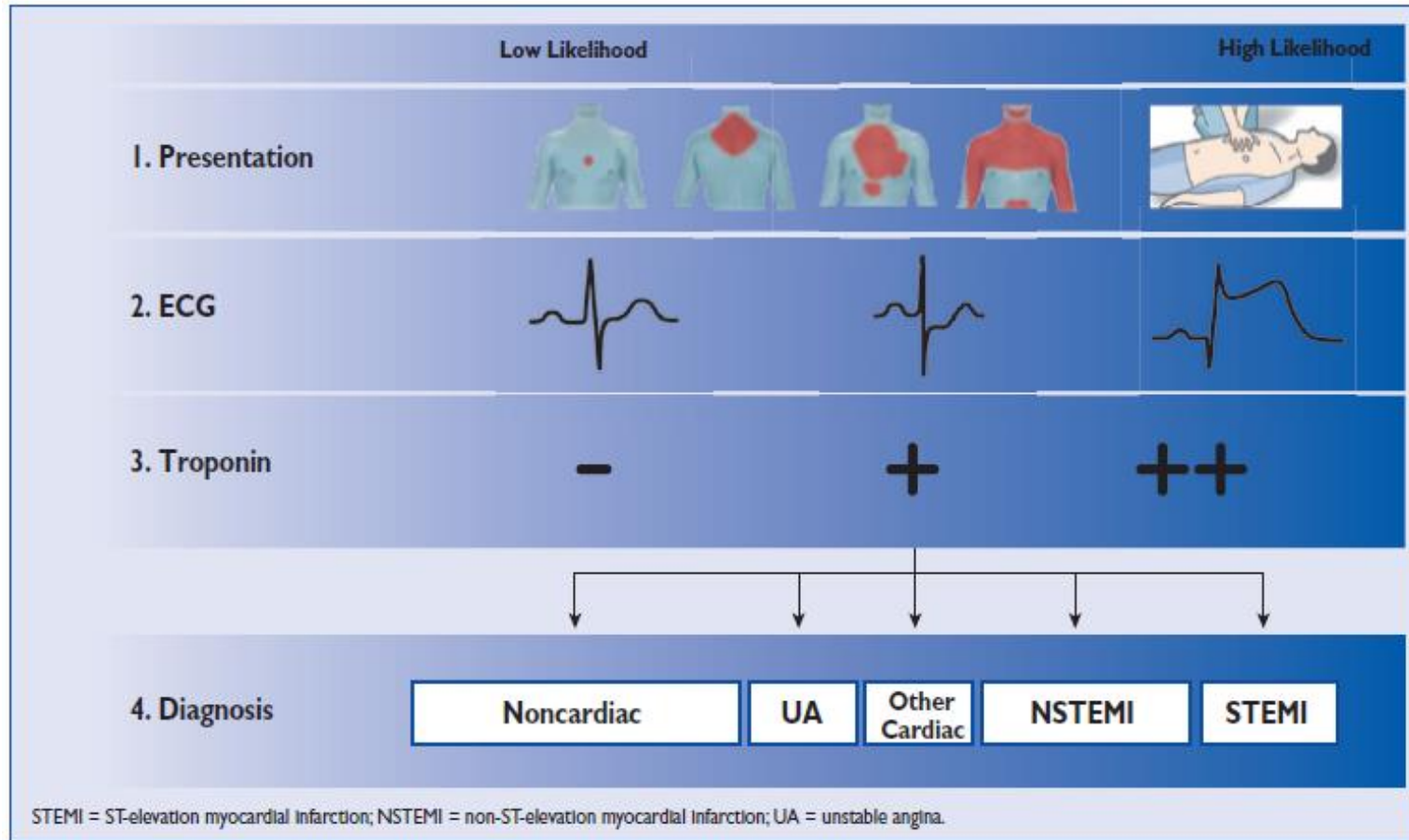
Similarly, a patient with Killip class I, SBP of 80 mm Hg, heart rate of 60 beats/min, is 55 years of age, has serum creatinine level of 0.4, and no risk factors would have the following score:

$0 + 58 + 3 + 41 + 1 = 103$ , which gives approximately a 0.9% risk of having an in-hospital death.

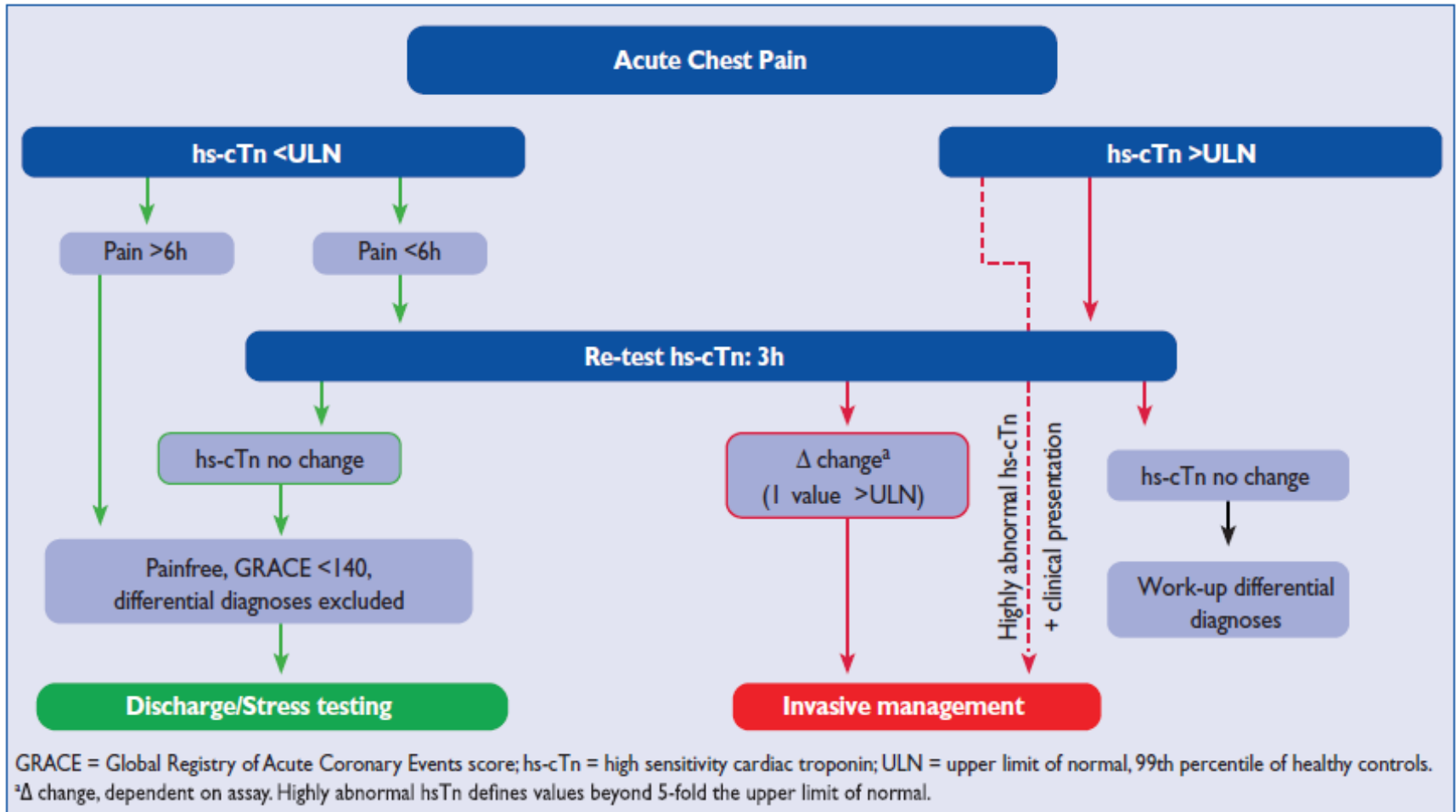
# Chẩn đoán NMCTC

- Vấn đề thời gian
- NMCTC/STCL: chuyển thẳng vào phòng thông tim
- HCĐMVC/KSTCL: cấp cứu

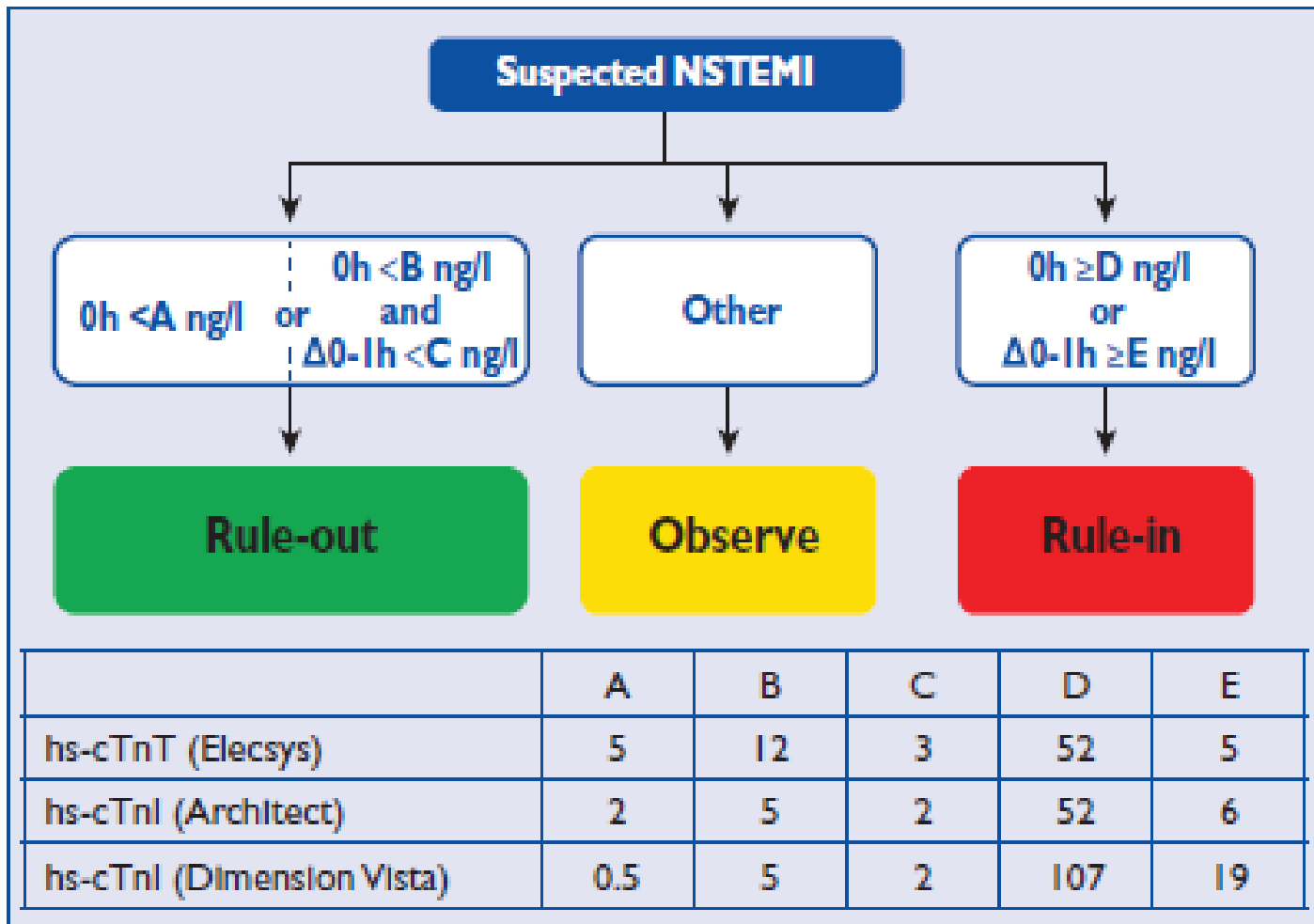
# Khảo sát bệnh nhân nghi bị HCĐMVC



# Quy trình 0 giờ/3 giờ giúp chẩn đoán NMCTC/KSTCL dựa vào trắc nghiệm troponin.



# Quy trình 0 giờ/1 giờ giúp loại trừ NMCTC/KSTCL dựa vào Troponin siêu nhạy (hs-cTn)



# Các trường hợp bệnh ngoài NMCTC typ 1, có tăng troponin

Tachyarrhythmias
Heart failure
Hypertensive emergencies
Critical illness (e.g. shock/ sepsis/ burns)
Myocarditis <sup>a</sup>
Tako-Tsubo cardiomyopathy
Structural heart disease (e.g. aortic stenosis)
Aortic dissection
Pulmonary embolism, pulmonary hypertension
Renal dysfunction and associated cardiac disease
Coronary spasm
Acute neurological event (e.g. stroke or subarachnoid haemorrhage)
Cardiac contusion or cardiac procedures (CABG, PCI, ablation, pacing, cardioversion, or endomyocardial biopsy)
Hypo- and hyperthyroidism
Infiltrative diseases (e.g. amyloidosis, haemochromatosis, sarcoidosis, scleroderma)
Myocardial drug toxicity or poisoning (e.g. doxorubicin, 5-fluorouracil, herceptin, snake venoms)
Extreme endurance efforts
Rhabdomyolysis

Bold = most frequent conditions; CABG = coronary artery bypass surgery; PCI = percutaneous coronary intervention.

<sup>a</sup>includes myocardial extension of endocarditis or pericarditis.



# Chẩn đoán phân biệt NMCTC với các đau ngực cấp khác

Cardiac	Pulmonary	Vascular	Gastro-intestinal	Orthopaedic	Other
<b>Myopericarditis</b> <b>Cardiomyopathies<sup>2</sup></b>	<b>Pulmonary embolism</b>	<b>Aortic dissection</b>	<b>Oesophagitis, reflux or spasm</b>	<b>Musculoskeletal disorders</b>	<b>Anxiety disorders</b>
<b>Tachyarrhythmias</b>	<b>(Tension)-Pneumothorax</b>	Symptomatic aortic aneurysm	Peptic ulcer, gastritis	Chest trauma	Herpes zoster
<b>Acute heart failure</b>	Bronchitis, pneumonia	Stroke	Pancreatitis	Muscle injury/ inflammation	Anaemia
<b>Hypertensive emergencies</b>	Pleuritis		Cholecystitis	Costochondritis	
<b>Aortic valve stenosis</b>				Cervical spine pathologies	
<b>Tako-Tsubo cardiomyopathy</b>					
<b>Coronary spasm</b>					
<b>Cardiac trauma</b>					

Bold = common and/or important differential diagnoses.

<sup>2</sup>Dilated, hypertrophic and restrictive cardiomyopathies may cause angina or chest discomfort.

Khuyến cáo về chẩn đoán, lượng định nguy cơ và theo dõi nhịp b/n nghi NMCTC/KSTCL (1)

Recommendations	Class <sup>a</sup>	Level <sup>b</sup>	Ref. <sup>c</sup>
<b>Diagnosis and risk stratification</b>			
It is recommended to base diagnosis and initial short-term ischaemic and bleeding risk stratification on a combination of <u>clinical history</u> symptoms, vital signs, other physical findings, ECG and laboratory results.	I	A	28, 109–112
It is recommended to obtain a 12-lead <u>ECG within 10 min</u> after first medical contact and to have it immediately interpreted by an experienced physician. It is recommended to obtain an additional 12-lead ECG in case of <u>recurrent symptoms</u> or diagnostic uncertainty.	I	B	28
Additional <u>ECG leads (V<sub>3R</sub>, V<sub>4R</sub>, V<sub>7</sub>–V<sub>9</sub>)</u> are recommended if ongoing ischaemia is suspected when standard leads are inconclusive.	I	C	
It is recommended to measure cardiac <u>troponins</u> with sensitive or high-sensitivity assays and obtain the results within 60 min.	I	A	6,30–36, 39, 51–59, 108
A rapid rule-out protocol at 0 h and 3 h is recommended if high-sensitivity cardiac troponin tests are available.	I	B	6, 30–36, 39, 51–59, 108



Khuyến cáo về chẩn đoán, lượng định nguy cơ và theo dõi nhịp b/n nghi NMCTC/KSTCL (2)

A rapid rule-out and rule-in protocol at 0 h and 1 h is recommended if a high-sensitivity cardiac troponin test with a validated 0 h/1 h algorithm is available. Additional testing after 3–6 h is indicated if the first two troponin measurements are not conclusive and the clinical condition is still suggestive of ACS.	I	B	30–34, 36, 39, 51–55
It is recommended to use established risk scores for prognosis estimation.	I	B	84,94, 106
The use of the CRUSADE score may be considered in patients undergoing coronary angiography to quantify bleeding risk.	IIb	B	106, 107
<b>Imaging</b>			
In patients with no recurrence of chest pain, normal ECG findings and normal levels of cardiac troponin (preferably high-sensitivity), but suspected ACS, a non-invasive stress test (preferably with imaging) for inducible ischaemia is recommended before deciding on an invasive strategy.	I	A	64,74, 113, 114
Echocardiography is recommended to evaluate regional and global LV function and to rule in or rule out differential diagnoses. <sup>d</sup>	I	C	
MDCT coronary angiography should be considered as an alternative to invasive angiography to exclude ACS when there is a low to intermediate likelihood of CAD and when cardiac troponin and/or ECG are inconclusive.	IIa	A	80

TL: Roffi M et al. 2015 ESC Guidelines for the management of ACS. Eur. H J August 29, 2015.



# Khuyến cáo về chẩn đoán, lượng định nguy cơ và theo dõi nhịp b/n nghi NMCTC/KSTCL (3)

Monitoring			
Continuous rhythm monitoring is recommended until the diagnosis of NSTEMI is established or ruled out.	I	C	101
It is recommended to admit NSTEMI patients to a monitored unit.	I	C	99,100
Rhythm monitoring up to 24 h or PCI (whichever comes first) should be considered in NSTEMI patients at <u>low risk</u> for cardiac arrhythmias. <sup>e</sup>	IIa	C	
Rhythm monitoring for > 24 h should be considered in NSTEMI patients at intermediate to high-risk for cardiac arrhythmias. <sup>f</sup>	IIa	C	
In the absence of signs or symptoms of ongoing ischaemia, rhythm monitoring in unstable angina may be considered in selected patients (e.g. suspicion of coronary spasm or associated symptoms suggestive of arrhythmic events).	IIb	C	

ACS = acute coronary syndromes; CAD = coronary artery disease; ECG = electrocardiogram; LV = left ventricular; MDCT = multidetector computed tomography; NSTEMI = non-ST-elevation myocardial infarction; PCI = percutaneous coronary intervention. 0 h = time of first blood test; 1 h, 3 h = 1 or 3 h after the first blood test.

<sup>a</sup>Class of recommendation.

<sup>b</sup>Level of evidence.

<sup>c</sup>References supporting level of evidence.

<sup>d</sup>Does not apply to patients discharged the same day in whom NSTEMI has been ruled out.

<sup>e</sup>If none of the following criteria: haemodynamically unstable, major arrhythmias, left ventricular ejection fraction <40%, failed reperfusion, additional critical coronary stenoses of major vessels or complications related to percutaneous revascularization.

<sup>f</sup>If one or more of the above criteria are present.

TL: Roffi M et al. 2015 ESC Guidelines for the management of ACS. Eur. H J August 29, 2015.



## Diagnosis of acute myocardial infarction in patients with renal insufficiency using high sensitivity troponin T

### ➤ Bối cảnh:

- Độ chính xác của hs-cTnT trong chẩn đoán NMCTC/ bệnh thận mạn

### ➤ Phương pháp:

- 2249 b/n đau ngực nhập viện
- 19.5% có e-GFR < 60ml/mm/1.73m
- 1108 (49.3%) có NMCTC KSTCL

### ➤ Kết luận

- Điểm cắt hs-cTnT cao hơn/ b/n bệnh thận mạn
- eGFR < 30ml/m/1.73: điểm cắt hs-TnT= 143.6 ng/L
- eGRE[30-60 ml/m/1.73]: điểm cắt hs-TnT = 54 ng/L

## Diagnostic accuracy of hs-cTnT for NSTEMI in all patients, and according to eGFR category

	NSTEMI, n (%)	Sensitivity, %	Specificity, %	PPV, %	NPV, %
All patients (n=1462)	321 (22.0%)				
Cut-off=14.0 ng·L <sup>-1</sup>		96 (94–98)	71 (69–74)	48 (46–51)	98 (98–99)
Cut-off=31.9 ng·L <sup>-1</sup> , AUC=0.94 (0.92–0.95)		84 (80–88)	90 (88–92)	70 (65–76)	95 (94–96)
Patients with eGFR<30 mL·min <sup>-1</sup> (1.73 m <sup>2</sup> ) <sup>-1</sup> (n=50)	19 (38.0%)				
Cut-off=14.0 ng·L <sup>-1</sup>		100 (82–100)	3 (0–17)	39 (33–42)	100 (0–100)
Cut-off=161.8 ng·L <sup>-1</sup> , AUC=0.94 (0.86–1.00)		95 (74–100)	87 (70–96)	82 (60–94)	97 (81–100)
Patients with 30≤eGFR<60 mL·min <sup>-1</sup> (1.73 m <sup>2</sup> ) <sup>-1</sup> (n=177)	70 (39.5%)				
Cut-off=14.0 ng·L <sup>-1</sup>		100 (95–100)	36 (27–46)	51 (46–55)	100 (89–100)
Cut-off=72.6 ng·L <sup>-1</sup> , AUC=0.91 (0.86–0.95)		87 (77–94)	87 (79–93)	81 (71–89)	91 (84–96)
Patients with 60≤eGFR<90 mL·min <sup>-1</sup> (1.73 m <sup>2</sup> ) <sup>-1</sup> (n=707)	143 (20.2%)				
Cut-off=14.0 ng·L <sup>-1</sup>		94 (88–97)	76 (72–79)	50 (44–54)	98 (96–99)
Cut-off=30.4 ng·L <sup>-1</sup> , AUC=0.93 (0.91–0.95)		90 (86–95)	87 (84–90)	64 (58–71)	97 (96–99)
Patients with eGFR≥90 mL·min <sup>-1</sup> (1.73 m <sup>2</sup> ) <sup>-1</sup> (n=528)	89 (16.9%)				
Cut-off=14.0 ng·L <sup>-1</sup>		97 (90–99)	79 (74–82)	48 (41–53)	99 (97–100)
Cut-off=20.0 ng·L <sup>-1</sup> , AUC=0.95 (0.92–0.97)		93 (86–97)	89 (86–92)	63 (55–71)	98 (97–99)

AMI, acute myocardial infarction; AUC, area under the ROC curve; eGFR, estimated glomerular filtration rate; hs-cTnT, high-sensitivity cardiac troponin T; NPV, negative-predictive value; NSTEMI, non-ST segment elevation myocardial infarction; PPV, positive-predictive value.

# Kết luận

- Troponin đơn độc: không đủ chẩn đoán NMCT cấp
- Cần theo đúng định nghĩa toàn cầu 2012 để chẩn đoán NMCT (biến đổi động học kèm một trong các dấu hiệu khác – LS, ECG, hình ảnh...)
- Tăng Troponin đơn độc, rất cao: bệnh lý khác? Kỹ thuật?