Khuyến cáo của Hội tim châu Âu 2019 về chẩn đoán và điều trị các hội chứng động mạch vành mạn

(2019 ESC Guideline for the diagnosis and management of chronic coronary syndromes)

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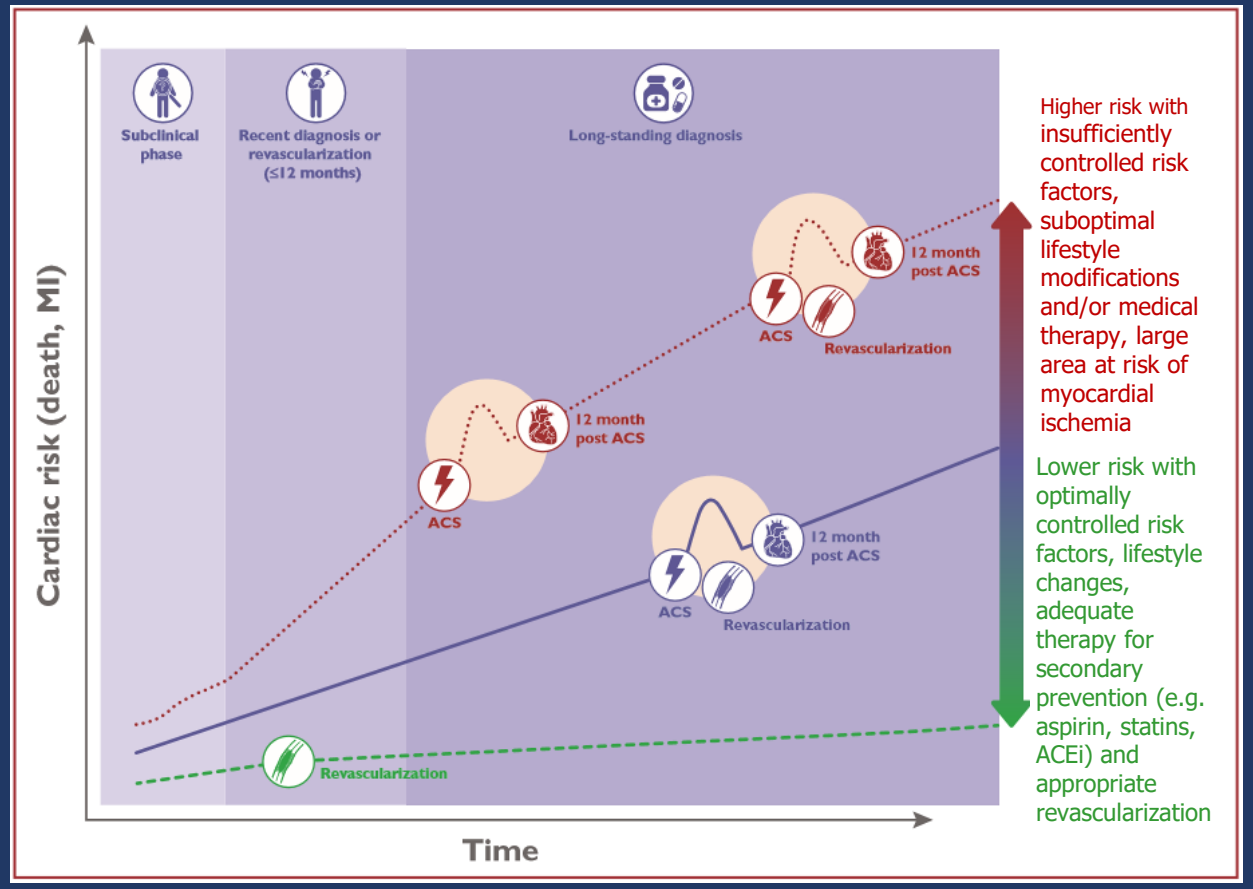
Six chronic coronary syndromes

- "Stable" anginal symptoms and/or dyspnea
- New onset of HF or LV dysfunction and suspected CAD
- Asymptomatic and symptomatic patients with stabilized symptoms < 1 year after ACS or recent revascularization
- Asymptomatic and symptomatic patients with stabilized symptoms > 1 year after initial diagnosis or revascularization
- Patients with angina and suspected vasospastic or microvascular disease
- Asymptomatic subjects in whom CAD is detected at screening

TL: Knuuti J, et al. 2019 ESC Guidelines for the diagnosis and management of chronic coronary syndromes. European Heart Journal (2019) 00,1 - 71. Doi:10.1093/eurheartj/ehz425

Natural history of chronic coronary syndromes (CCS)



Higher risk with insufficiently controlled risk factors, suboptimal lifestyle modifications and/or medical therapy, large area at risk of myocardial ischemia

Lower risk with optimally controlled risk factors, lifestyle changes, adequate therapy for secondary prevention (e.g. aspirin, statins, ACEi) and appropriate revascularization

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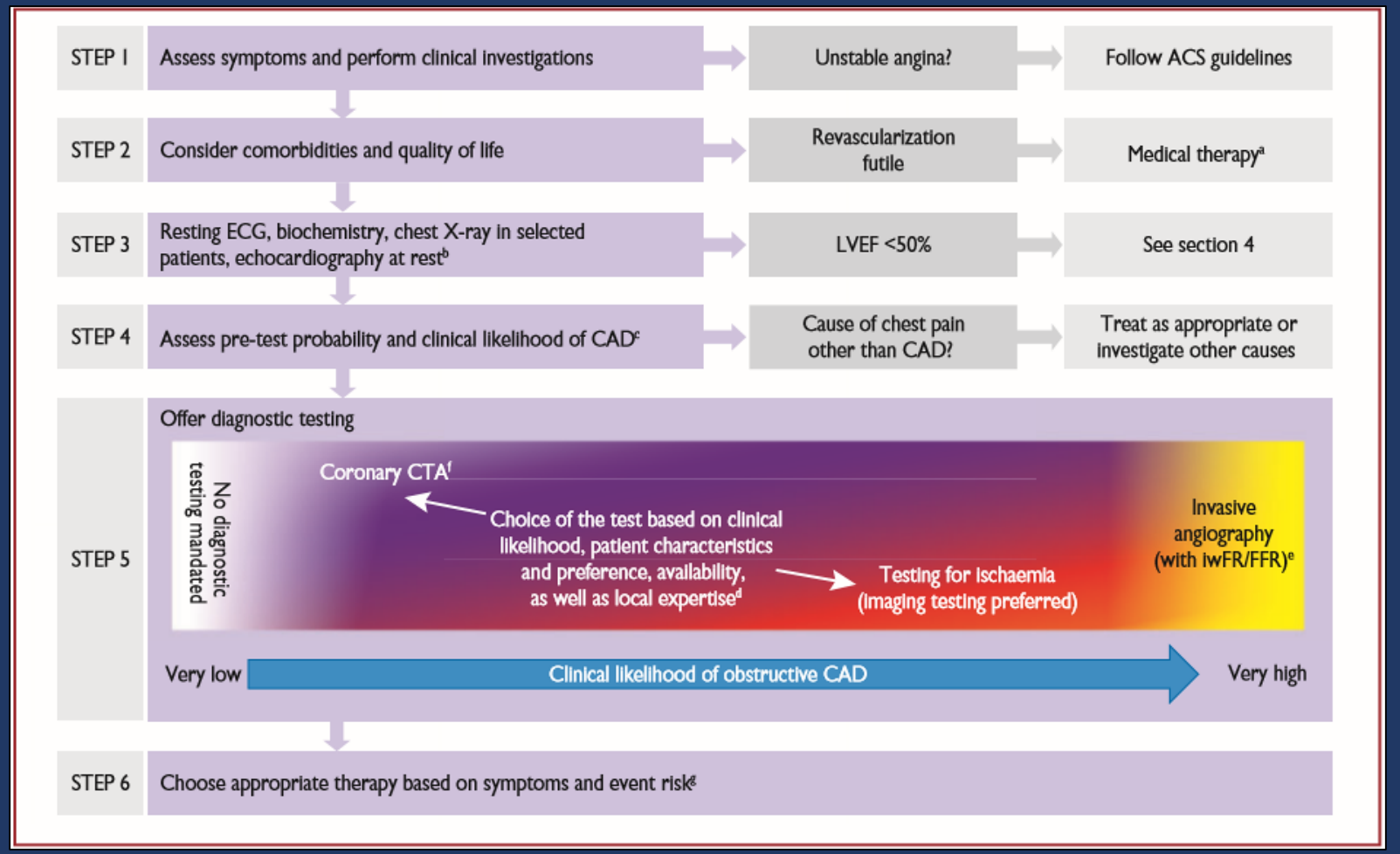
Approach for the initial diagnostic management of patients with angina and suspected CAD



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Basic biochemistry testing in the initial diagnostic management of patients with suspected CAD

Recommendations	Class	Level
If evaluation suggests clinical instability or ACS, repeated measurements of troponin, preferably using high-sensitivity or ultrasensitive assays, are recommended to rule-out myocardial injury associated with ACS.	I	A
The following blood tests are recommended in all patients		
• Full blood count (including haemoglobin);	I	B
• Creatinine measurement and estimation of renal function;	I	A
• A lipid profile (including LDL-C).	I	A
It is recommended that screening for type 2 diabetes mellitus in patients with suspected and established CCS is implemented with HbA1c and fasting plasma glucose measurements, and that an oral glucose tolerance test is added if HbA1c and fasting plasma glucose results are inconclusive.	I	B
Assessment of thyroid function is recommended in case of clinical suspicion of thyroid disorders	I	C

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Ambulatory ECG monitoring in the initial diagnostic management of patients with suspected CAD

Recommendations	Class[a]	Level[b]
Ambulatory ECG monitoring is recommended in patients with chest pain and suspected arrhythmias.	I	C
Ambulatory ECG recording, preferably monitoring with 12 lead ECG, should be considered in patients with suspected vasospastic angina.	IIa	C
Ambulatory ECG monitoring should not be used as a routine examination in patients with suspected CCS.	III	C

CAD = coronary artery disease; CCS = chronic coronary syndromes; ECG = electrocardiogram.
[a]Class of recommendation.
[b]Level of evidence.

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Resting ECG/ suspected CAD

Recommendations	Class[a]	Level[b]
A resting 12 lead ECG is recommended in all patients with chest pain without an obvious non-cardiac cause.	I	C
A resting 12 lead ECG is recommended in all patients during or immediately after an episode of angina suspected to be indicative of clinical instability of CAD.	I	C
ST-segment alterations recorded during supraventricular tachyarrhythmias should not be used as evidence of CAD.	III	C

CAD = coronary artery disease; CCS = chronic coronary syndromes; ECG = electrocardiogram.
[a]Class of recommendation.
[b]Level of evidence.

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Resting echocardiography and CMR/ suspected CAD

Recommendations	Class[a]	Level[b]
A resting transthoracic echocardiogram is recommended in all patients for: (1) Exclusion of alternative causes of angina; (2) Identification of regional wall motion abnormalities suggestive of CAD; (3) Measurement of LVEF for risk stratification; and (4) Evaluation of diastolic function [44,45,52,58]	I	B
Ultrasound of the carotid arteries should be considered, and be performed by adequately trained clinicians, to detect plaque in patients with suspected CCS without known atherosclerotic disease.	IIa	C
CMR may be considered in patients with an inconclusive echocardiographic test.	IIb	C

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CAD = coronary artery disease; CCS = chronic coronary syndromes; CMR = cardiac magnetic resonance imaging; LVEF = left ventricular ejection fraction.
[a]Class of recommendation.
[b]Level of evidence.

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Chest X-ray/ suspected CAD

Recommendation	Class[a]	Level[b]
Chest X-ray is recommended for patients with atypical presentation, signs and symptoms of HF, or suspicion of pulmonary disease.	I	C

HF = heart failure.
[a]Class of recommendation.
[b]Level of evidence.

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Pre-test probabilities of obstructive CAD in 15 815 symptomatic patients

	Typical		Atypical		Non-anginal		Dyspnoea[a]	
Age	Men	Women	Men	Women	Men	Women	Men	Women
30–39	3%	5%	4%	3%	1%	1%	0%	3%
40–49	22%	10%	10%	6%	3%	2%	12%	3%
50–59	32%	13%	17%	6%	11%	3%	20%	9%
60–69	44%	16%	26%	11%	22%	6%	27%	14%
70+	52%	27%	34%	19%	24%	10%	32%	12%

CAD = coronary artery disease; PTP = pre-test probability.

Dark green (PTP > 15%): non-invasive testing most beneficial

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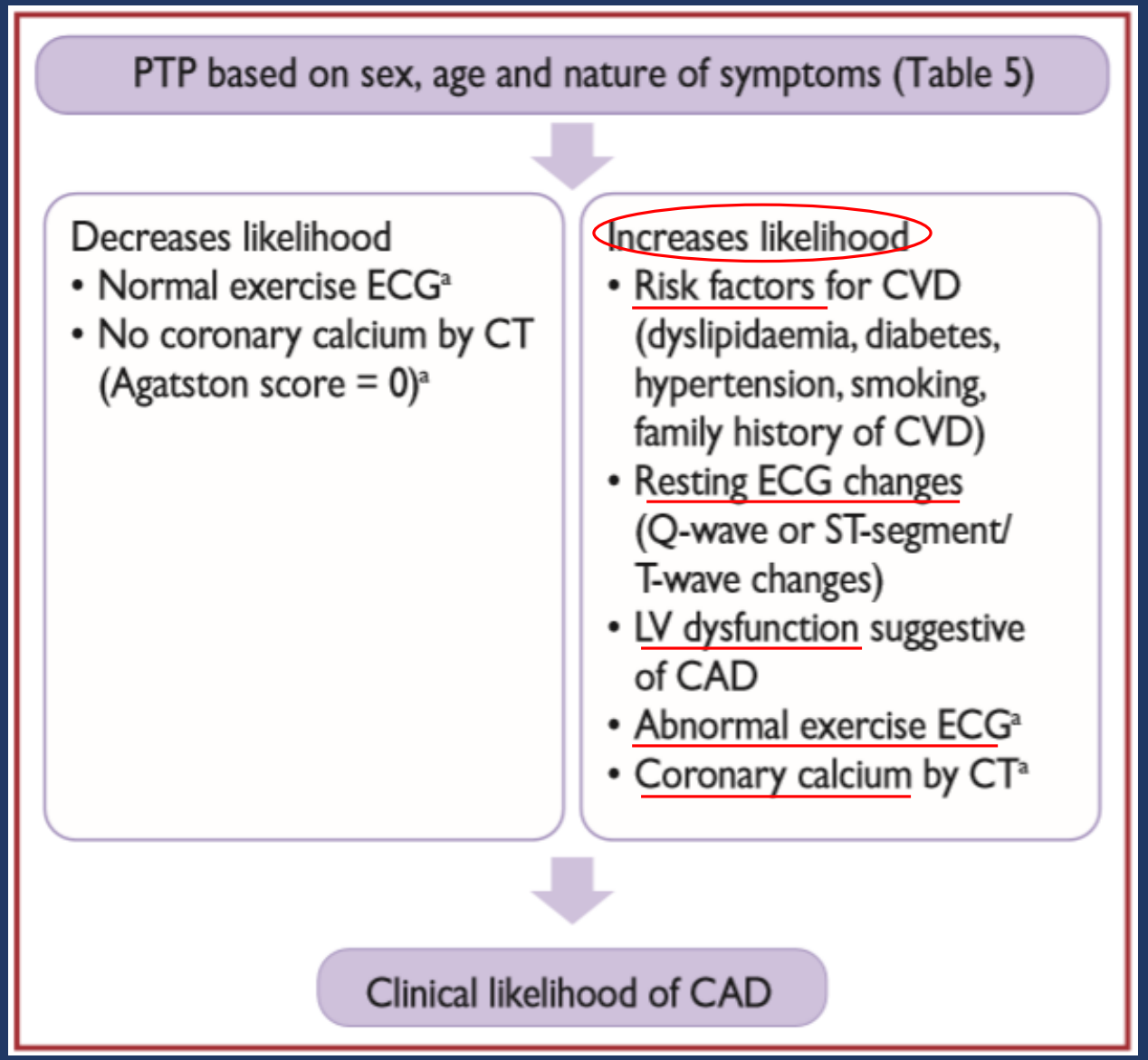
Determinants of the clinical likelihood of obstructive CAD



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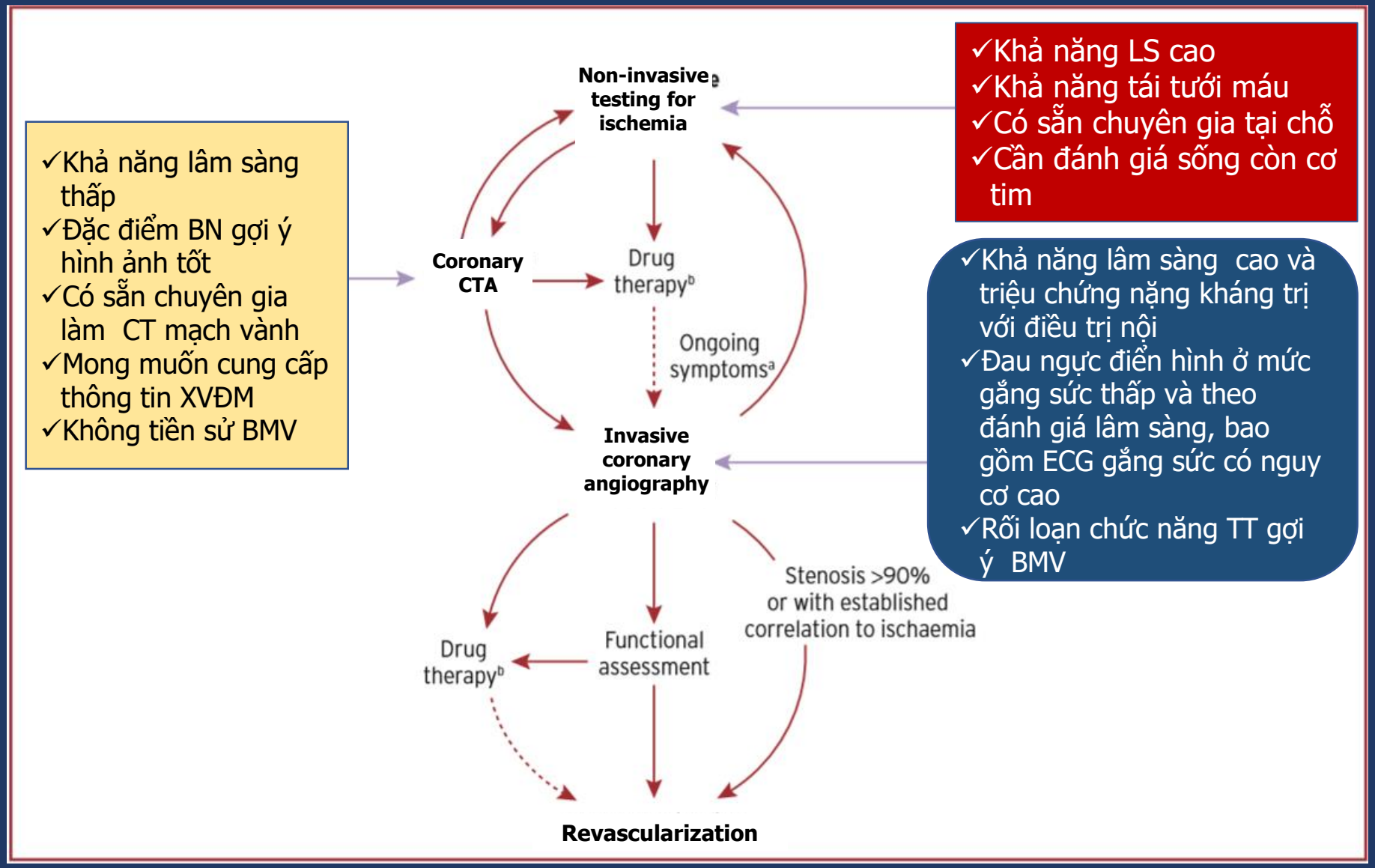
Main diagnostic pathways in symptomatic patients with suspected obstructive CAD

- ✓Khả năng lâm sàng thấp
- ✓Đặc điểm BN gợi ý hình ảnh tốt
- ✓Có sẵn chuyên gia làm CT mạch vành
- ✓Mong muốn cung cấp thông tin XVĐM
- ✓Không tiền sử BMV



- ✓Khả năng LS cao
- ✓Khả năng tái tưới máu
- ✓Có sẵn chuyên gia tại chỗ
- ✓Cần đánh giá sống còn cơ tim

- ✓Khả năng lâm sàng cao và triệu chứng nặng kháng trị với điều trị nội
- ✓Đau ngực điển hình ở mức gắng sức thấp và theo đánh giá lâm sàng, bao gồm ECG gắng sức có nguy cơ cao
- ✓Rối loạn chức năng TT gợi ý BMV

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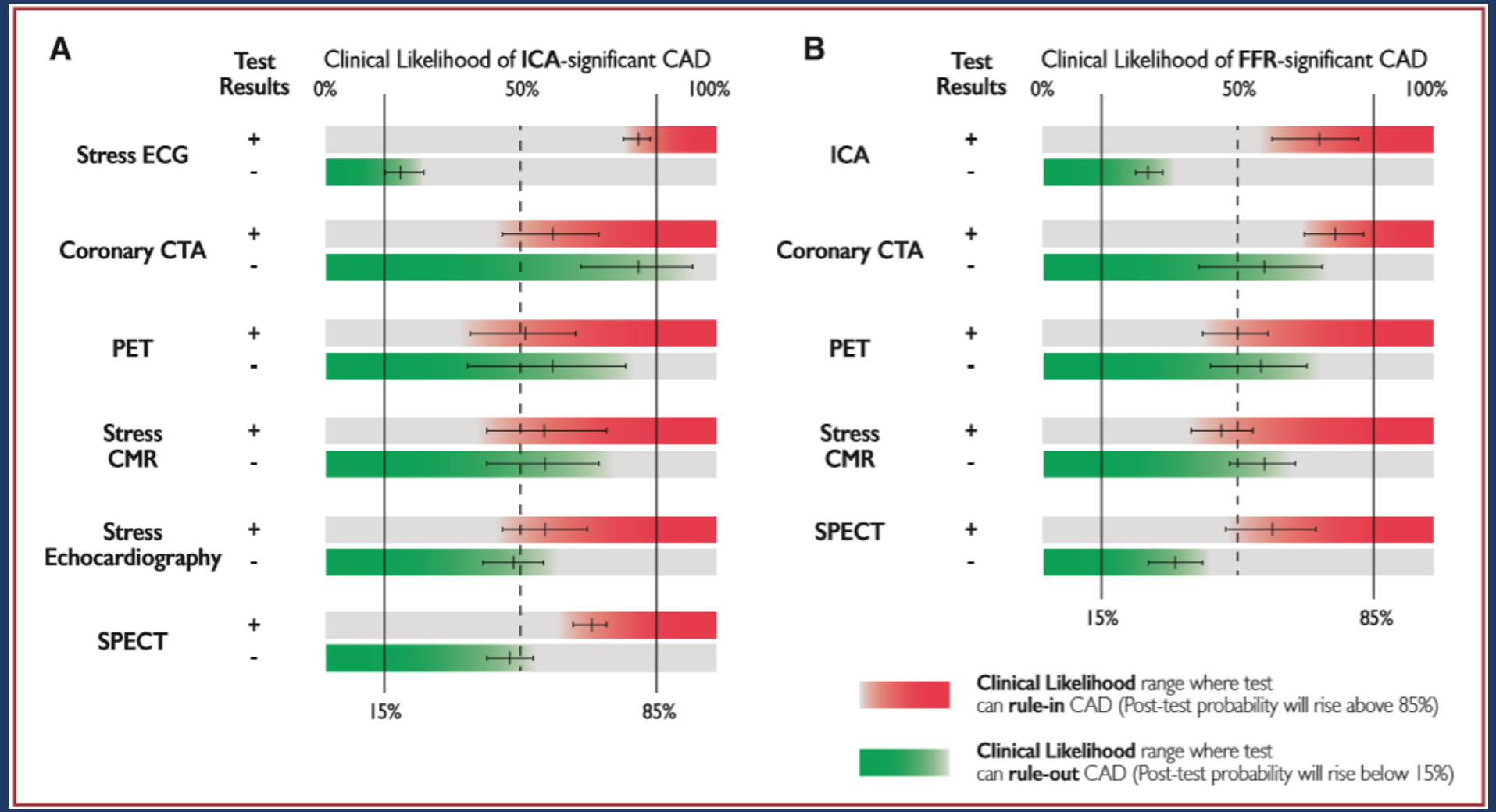
Ranges of clinical likelihood of CAD



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Diagnostic imaging tests in the diagnostic management of symptomatic patients with suspected CAD (1)

Recommendations	Class	Level
Non-invasive functional imaging for myocardial ischaemiac or coronary CTA is recommended as the initial test to diagnose CAD in symptomatic patients in whom obstructive CAD cannot be excluded by clinical assessment alone.	I	B
It is recommended that selection of the initial non-invasive diagnostic test is done based on the clinical likelihood of CAD and other patient characteristics that influence test performance, local expertise, and the availability of tests.	I	C
Functional imaging for myocardial ischaemia is recommended if coronary CTA has shown CAD of uncertain functional significance or is not diagnostic.	I	B
Invasive coronary angiography is recommended as an alternative test to diagnose CAD in patients with a high clinical likelihood, severe symptoms refractory to medical therapy or typical angina at a low level of exercise, and clinical evaluation that indicates high event risk. Invasive functional assessment must be available and used to evaluate stenoses before revascularization, unless very high grade (>90% diameter stenosis).	I	B

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Diagnostic imaging tests in the diagnostic management of symptomatic patients with suspected CAD (2)

Recommendations	Class	Level
Invasive coronary angiography with the availability of invasive functional evaluation should be considered for confirmation of the diagnosis of CAD in patients with an uncertain diagnosis on non-invasive testing.	IIa	B
Coronary CTA should be considered as an alternative to invasive angiography if another non-invasive test is equivocal or non-diagnostic.	IIa	C
Coronary CTA is not recommended when extensive coronary calcification, irregular heart rate, significant obesity, inability to cooperate with breath-hold commands, or any other conditions make obtaining good image quality unlikely.	III	C
Coronary calcium detection by CT is not recommended to identify individuals with obstructive CAD.	III	C

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Use of exercise ECG in the initial diagnostic management of patients with suspected CAD

Recommendations	Class[a]	Level[b]
Exercise ECG is recommended for the assessment of exercise tolerance, symptoms, arrhythmias, BP response, and event risk in selected patients.[c]	I	C
Exercise ECG may be considered as an alternative test to rule-in and rule-out CAD when non-invasive imaging is not available.[73,83]	IIb	B
Exercise ECG may be considered in patients on treatment to evaluate control of symptoms and ischaemia.	IIb	C
Exercise ECG is not recommended for diagnostic purposes in patients with ≥0.1 mV ST-segment depression on resting ECG or who are being treated with digitalis.	III	C

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Definitions of high event risk

Exercise ECG	**Cardiovascular mortality >3% per year according to Duke Treadmill Score**
SPECT or PET perfusion imaging	Area of ischaemia ≥ 10% of the left ventricle myocardium
Stress echocardiography	≥ 3 of 16 segments with stress-induced hypokinesia or akinesia
CMR	≥ 2 of 16 segments with stress perfusion defects or >_3 dobutamine-induced dysfunctional segments
Coronary CTA or ICA	Three-vessel disease with proximal stenoses, LM disease, or proximal anterior descending disease
Invasive functional testing	FFR ≤ 0.8, iwFR ≤ 0.89

CTA = computed tomography angiography; CMR = cardiac magnetic resonance; FFR = fractional flow reserve; ICA = invasive coronary angiography; iwFR = instantaneous wave-free ration (instant flow reserve); PET = positron emission tomography; SPECT = single-photon emission computed tomography

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Lifestyle recommendations for patients with CCS

Lifestyle factor	
Smoking cessation	Use pharmacological and behavioural strategies to help patients quit smoking. Avoid passive smoking.
Healthy diet	Diet high in vegetables, fruit, and wholegrains. Limit saturated fat to <10% of total intake. Limit alcohol to <100 g/week or 15 g/day.
Physical activity	30-60 min moderate physical activity most days, but even irregular activity is beneficial.
Healthy weight	Obtain and maintain a healthy weight (<25 kg/m2), or reduce weight through recommended energy intake and increased physical activity.
Other	Take medications as prescribed. Sexual activity is low risk for stable patients not symptomatic at low-to-moderate activity levels.

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Healthy diet characteristics

Characteristics
Increase consumption of fruits and vegetables (>_200 g each per day).
35 - 45 g of fibre per day, preferably from wholegrains.
Moderate consumption of nuts (30 g per day, unsalted).
1 - 2 servings of fish per week (one to be oily fish).
Limited lean meat, low-fat dairy products, and liquid vegetable oils.
Saturated fats to account for <10% of total energy intake; replace with polyunsaturated fats.
As little intake of trans unsaturated fats as possible, preferably no intake from processed food, and <1% of total energy intake.
≤ 5 - 6 g of salt per day
If alcohol is consumed, limiting intake to ≤ 100 g/week or < 15 g/day is recommended.
Avoid energy-dense foods such as sugar-sweetened soft drinks.

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The five As of smoking cessation

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Recommendations on lifestyle management

Recommendations	Class	Level
Improvement of lifestyle factors in addition to appropriate pharmacological management is recommended.	I	A
Cognitive behavioural interventions are recommended to help individuals achieve a healthy lifestyle.	I	A
Exercise-based cardiac rehabilitation is recommended as an effective means for patients with CCS to achieve a healthy lifestyle and manage risk factors.	I	A
Involvement of multidisciplinary healthcare professionals (e.g. cardiologists, GPs, nurses, dieticians, physiotherapists, psychologists, and pharmacists) is recommended.	I	A
Psychological interventions are recommended to improve symptoms of depression in patients with CCS.	I	B
Annual influenza vaccination is recommended for patients with CCS, especially in the elderly.	I	B

CCS = chronic coronary syndrome;
GPs = general practitioners

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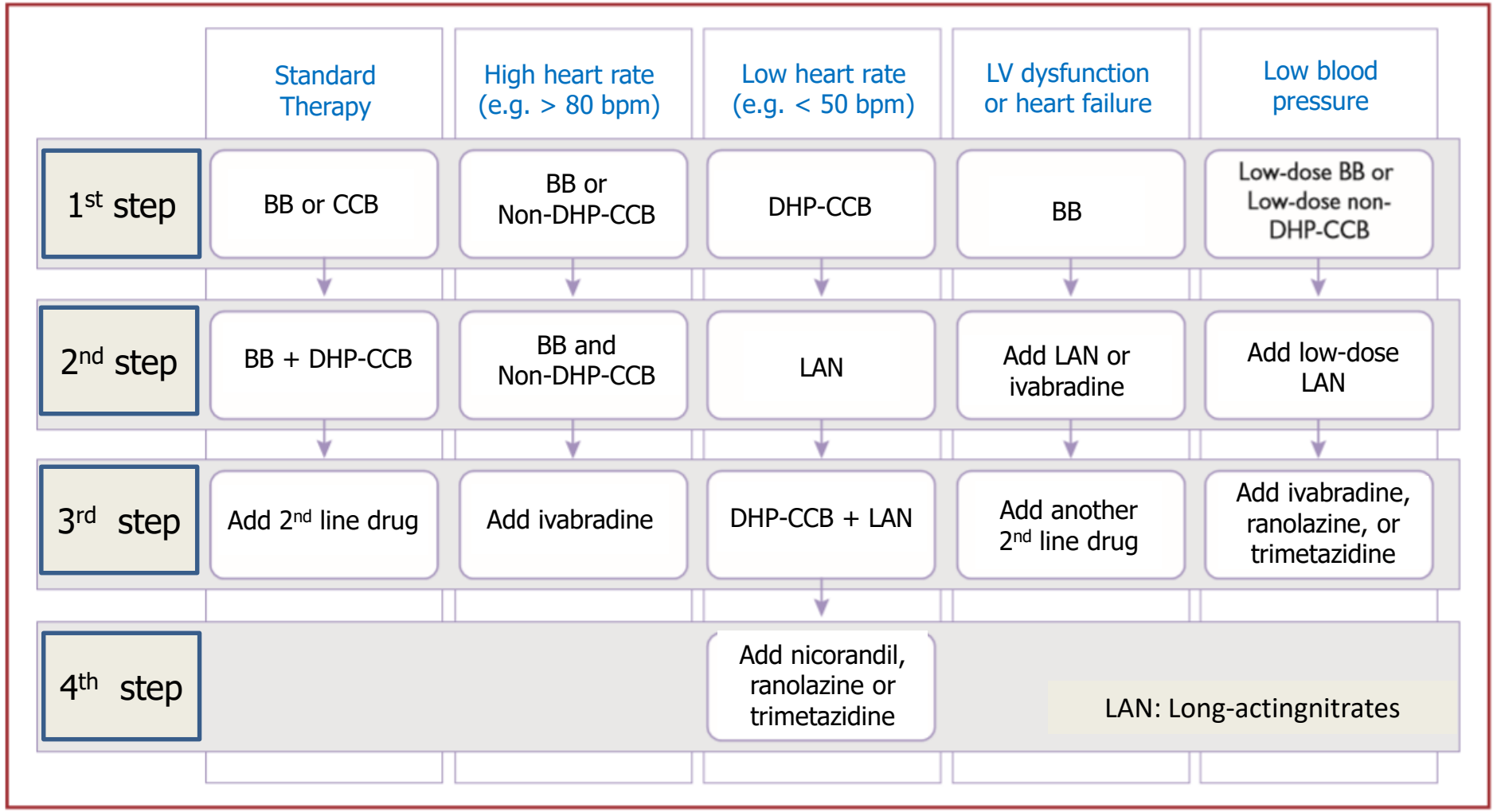
Stepwise strategy for long-term anti-ischaemic drug therapy



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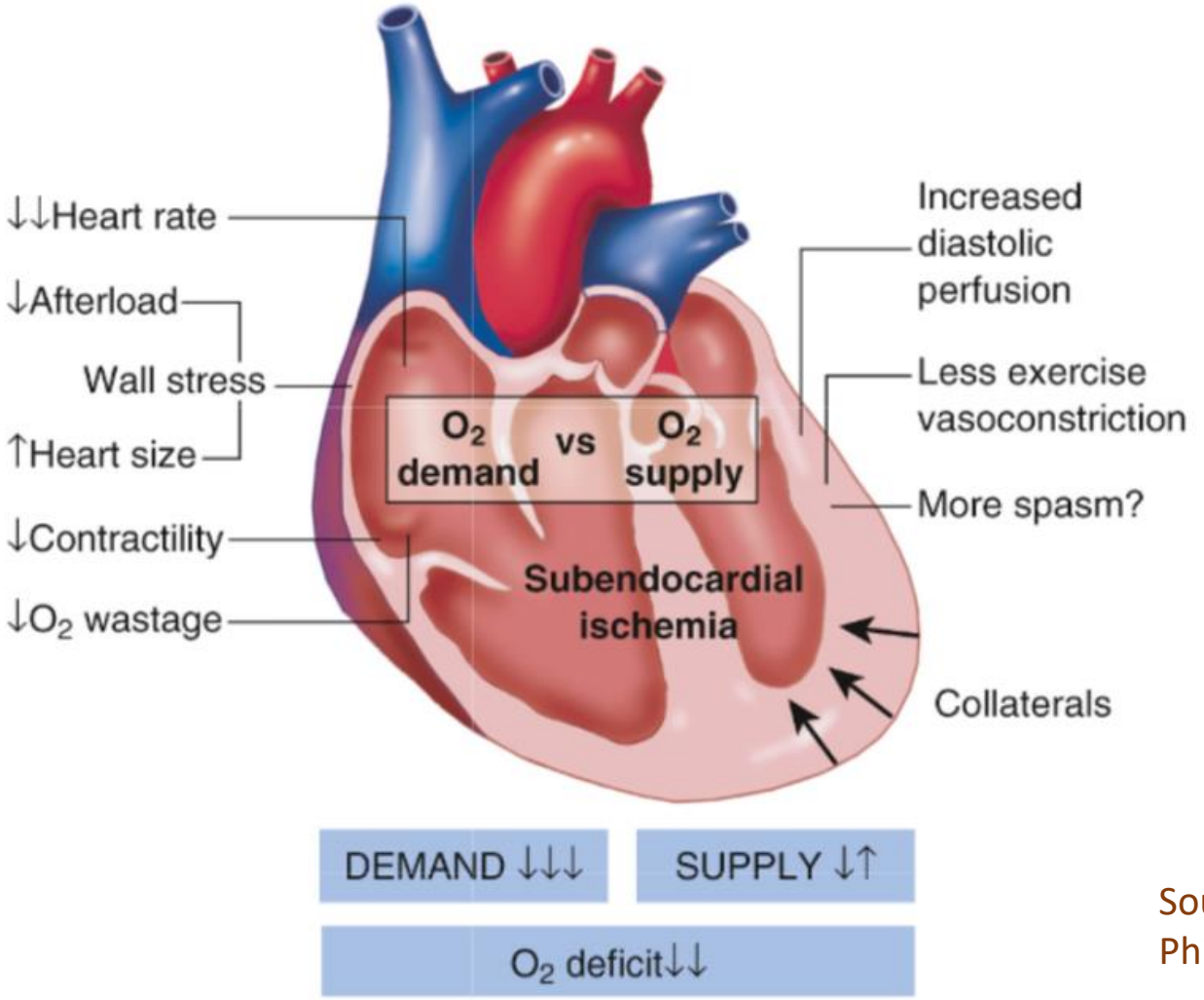
Hiệu quả của chẹn bêta trên TMCB cơ tim



Source: Opie LH: Drugs for the Heart. 4th ed. Philadelphia: Saunders; 1995, p 6.

Dược tính và dược động học một số thuốc chẹn bêta

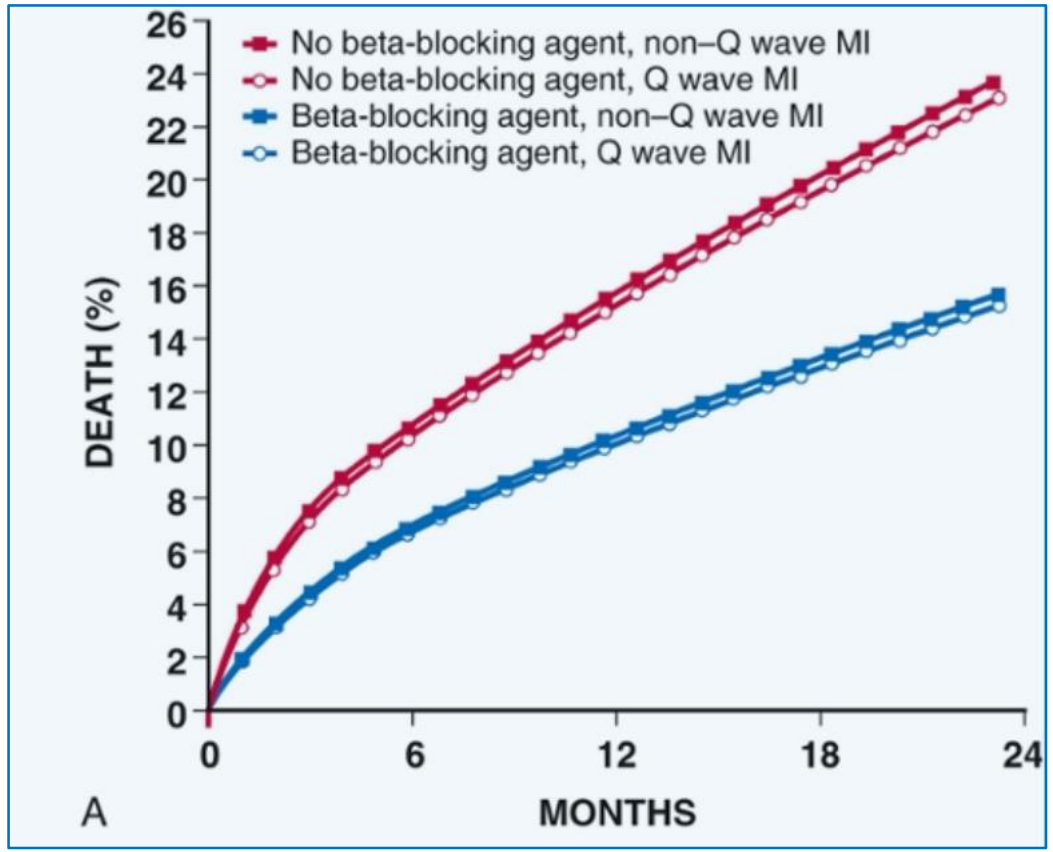
CHARACTERISTIC	ATENOLOL	METOPROLOL/ XL	SOTALOL	ACEBUTOLOL	LABETALOL	BISOPROLOL	CARVEDILOL/CAR VEDILOL CR
FDA-Approved Indications:							
Hypertension	Yes	Yes/Yes	No	Yes	Yes	Yes	Yes/Yes
Angina	Yes	Yes/Yes	No	No	No	No	No/No
After MI	Yes	Yes/No	No	No	No	No	No/No
Heart failure	No	Yes/Yes	No	No	No	No	Yes/Yes

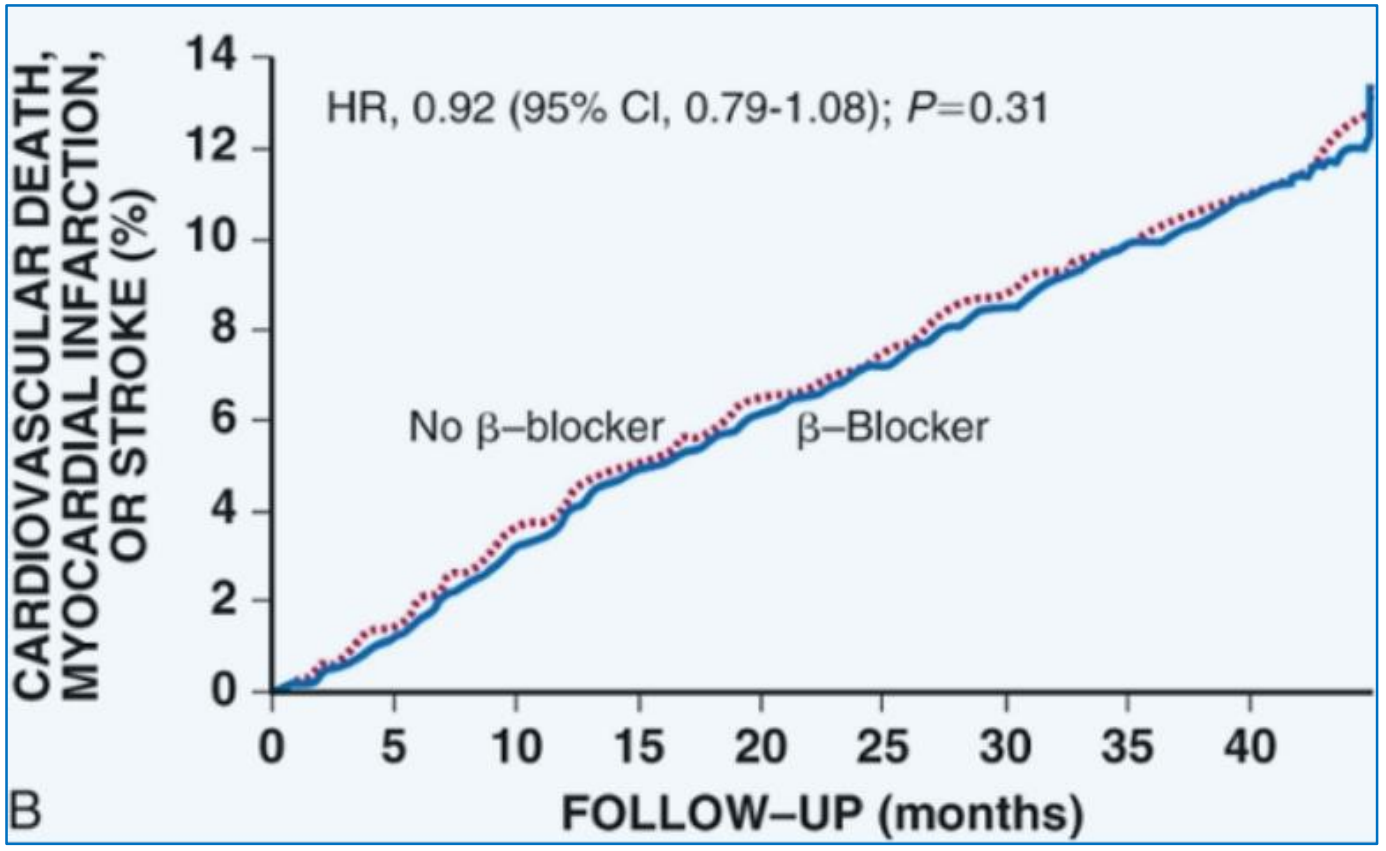
FDA: U.S. Food and Drug Administration; *HM,* hepatic metabolism; *MI,* myocardial infarction; *RE,* renal excretion.

TL: Morrow D.A, de Lemos JA. In Braunwald's Heart Disease, 2019, 11th ed, Elsevier, P 1209 - 1258

Điều trị bằng thuốc giúp phòng ngừa thứ phát (2)

❖Chẹn bêta





TL: Morrow D.A, de Lemos JA. In Braunwald's Heart Disease, 2019, 11th ed, Elsevier, P 1209 - 1258

Recommendations for event prevention I (1)

Recommendations	Class	Level
Antithrombotic therapy in patients with CCS and in sinus rhythm		
Aspirin 75 - 100 mg daily is recommended in patients with a previous MI or revascularization.	**I**	**A**
Clopidogrel 75 mg daily is recommended as an alternative to aspirin in patients with aspirin intolerance.	**I**	**B**
Clopidogrel 75 mg daily may be considered in preference to aspirin in symptomatic or asymptomatic patients, with either PAD or a history of ischaemic stroke or transient ischaemic attack.	**IIb**	**B**
Aspirin 75 - 100 mg daily may be considered in patients without a history of MI or revascularization, but with definitive evidence of CAD on imaging.	**IIb**	**C**
Adding a second antithrombotic drug to aspirin for long-term secondary prevention should be considered in patients with a **high risk of ischaemic events** and without high bleeding risk.	**IIa**	**A**
Adding a second antithrombotic drug to aspirin for long-term secondary prevention may be considered in patients with at least a **moderately increased risk** of ischaemic eventse and without high bleeding risk.	**IIb**	**A**

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Recommendations for event prevention I (2)

Recommendations	Class	Level
Antithrombotic therapy post-PCI in patients with CCS and in sinus rhythm		
Aspirin 75 - 100 mg daily is recommended following stenting.	I	A
Clopidogrel 75 mg daily following appropriate loading (e.g. 600 mg or > 5 days of maintenance therapy) is recommended, in addition to aspirin, for 6 months following coronary stenting, irrespective of stent type, unless a shorter duration (1 - 3 months) is indicated due to risk or the occurrence of life-threatening bleeding.	I	A
Clopidogrel 75 mg daily following appropriate loading (e.g. 600 mg or >5 days of maintenance therapy) should be considered for 3 months in patients with a higher risk of life-threatening bleeding.	IIa	A
Clopidogrel 75 mg daily following appropriate loading (e.g. 600 mg or >5 days of maintenance therapy) may be considered for 1 month in patients with very high risk of life-threatening bleeding.	IIb	C
Prasugrel or ticagrelor may be considered, at least as initial therapy, in specific high-risk situations of elective stenting (e.g. suboptimal stent deployment or other procedural characteristics associated with high risk of stent thrombosis, complex left main stem, or multivessel stenting) or if DAPT cannot be used because of aspirin intolerance.	IIb	C

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Ticagrelor in patients with diabetes and stable coronary artery disease with a history of previous percutaneous coronary intervention (THEMIS-PCI): a phase 3, placebo-controlled, randomised trial

Deepak L Bhatt, Philippe Gabriel Steg*, Shamir R Mehta, Lawrence A Leiter, Tabassome Simon, Kim Fox, Claes Held, Marielle Andersson, Anders Himmelmann, Wilhelm Ridderstråle, Jersey Chen, Yang Song, Rafael Diaz, Shinya Goto, Stefan K James, Kausik K Ray, Alexander N Parkhomenko, Mikhail N Kosiborod, Darren K McGuire, Robert A Harrington, on behalf of the THEMIS Steering Committee and Investigators†*

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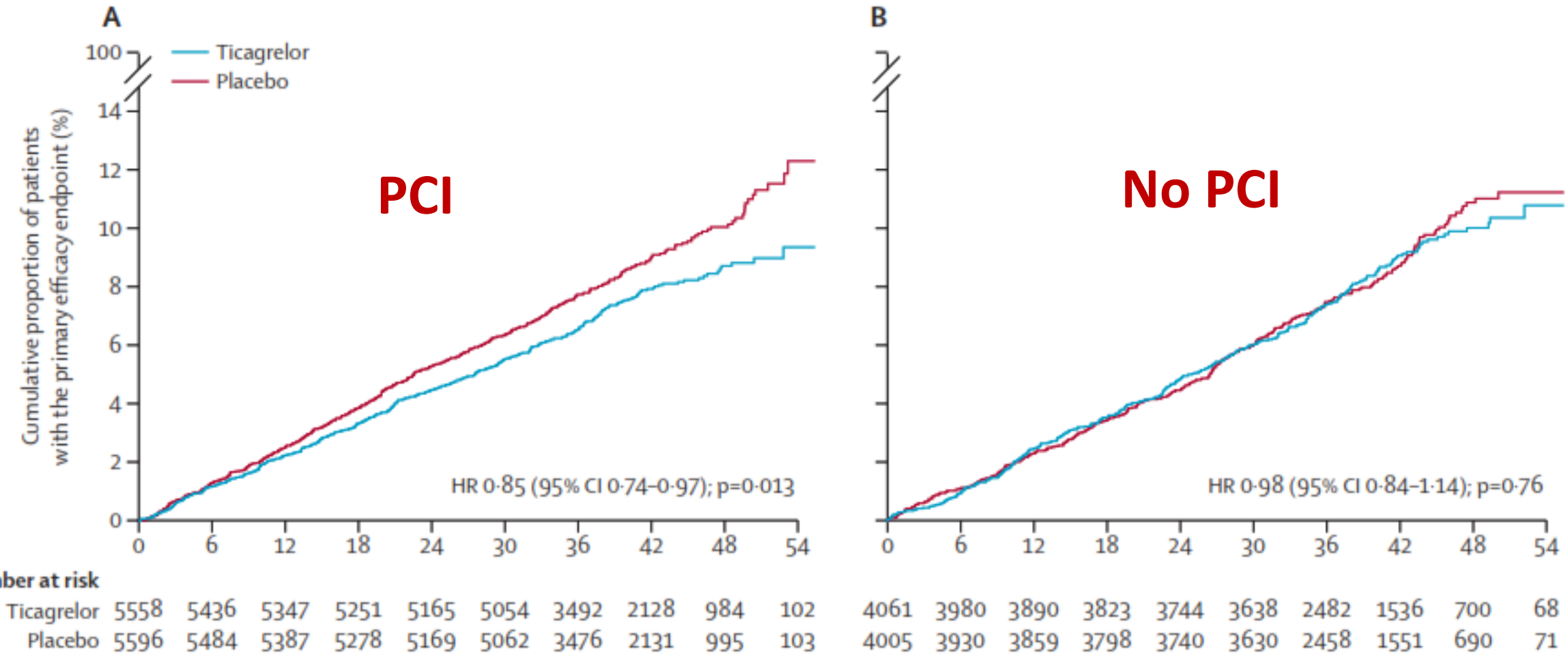
http://dx.doi.org/10.1016/S0140-6736(19)31887-2

THEMIS PCI: primary efficacy endpoint



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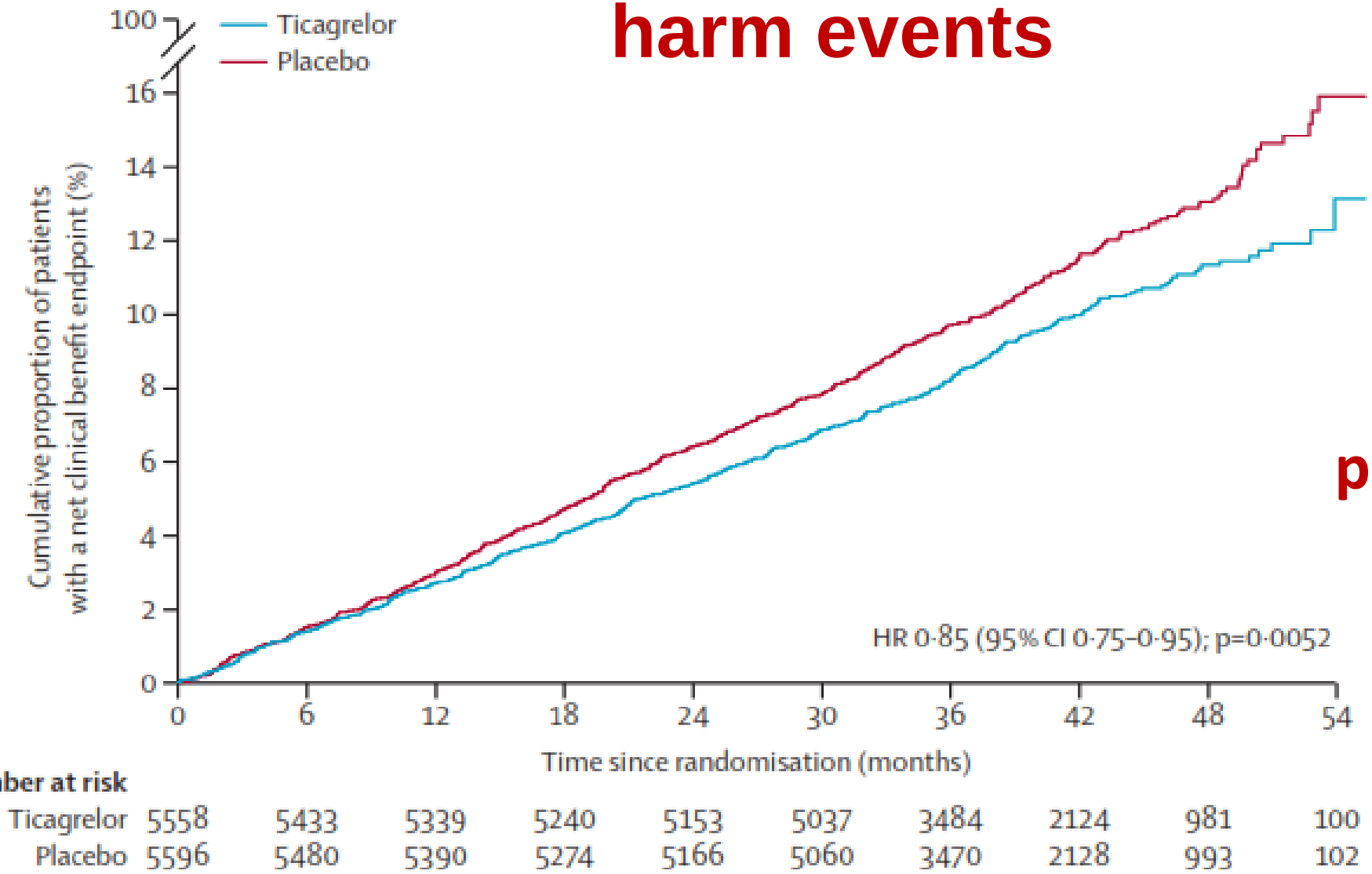
http://dx.doi.org/10.1016/S0140-67

THEMIS PCI: net clinical benefit of irreversible harm events

all-cause mortality, MI , stroke, fatal bleeding, and intracranial hemorrhage



PCI patients

Pham Nguyen Vinh

http://dx.doi.org/10.1016/S0140-67

Recommendations for event prevention I (3)

Recommendations	Class	Level
Antithrombotic therapy in patients with CCS and AF		
When oral anticoagulation is initiated in a patient with AF who is eligible for a NOAC, a NOAC is recommended in preference to a VKA.	**I**	**A**
Long-term OAC therapy (NOAC or VKA with time in therapeutic range >70%) is recommended in patients with AF and a CHA_2DS_2-VASc score ≥ 2 in males and ≥ 3 in females.	**I**	**A**
Long-term OAC therapy (NOAC or VKA with time in therapeutic range >70%) should be considered in patients with AF and a CHA_2DS_2-VASc score of 1 in males and 2 in females.	**IIa**	**B**
Aspirin 75 - 100 mg daily (or clopidogrel 75 mg daily) may be considered in addition to long-term OAC therapy in patients with AF, history of MI, and at high risk of recurrent ischaemic eventsc who do not have a high bleeding risk	**IIb**	**B**

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Recommendations for event prevention I (4)

Recommendations	Class	Level
Antithrombotic therapy in post-PCI patients with AF or another indication for an OAC		
It is recommended that peri-procedural aspirin and clopidogrel are administered to patients undergoing coronary stent implantation.	I	C
In patients who are eligible for a NOAC, it is recommended that a NOAC (apixaban 5 mg b.i.d., dabigatran 150 mg b.i.d., edoxaban 60 mg o.d., or rivaroxaban 20 mg o.d.) is used in preference to a VKA in combination with antiplatelet therapy.	I	A
When rivaroxaban is used and concerns about **high bleeding risk** prevail over concerns about stent thrombosish or ischaemic stroke, rivaroxaban 15 mg o.d. should be considered in preference to rivaroxaban 20 mg o.d. for the duration of concomitant single or dual antiplatelet therapy.	IIa	B
When dabigatran is used and concerns about **high bleeding risk** prevail over concerns about stent thrombosish or ischaemic stroke,g dabigatran 110 mg b.i.d. should be considered in preference to dabigatran 150 mg b.i.d. for the duration of concomitant single or dual antiplatelet therapy.	IIa	B
After uncomplicated PCI, early cessation (≤ 1 week) of aspirin and continuation of dual therapy with an OAC and clopidogrel should be considered if the **risk of stent thrombosish is low**, or if concerns about bleeding risk prevail over concerns about the risk of stent thrombosis, irrespective of the type of stent used.	IIa	B

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Recommendations for event prevention I (5)

Recommendations	Class	Level
Antithrombotic therapy in post-PCI patients with AF or another indication for an OAC		
Triple therapy with aspirin, clopidogrel, and an OAC for ≥ 1 month should be considered when the risk of stent thrombosis outweighs the bleeding risk, with the total duration (≤ 6 months) decided according to assessment of these risks and clearly specified at hospital discharge.	**IIa**	**C**
In patients with an indication for a VKA in combination with aspirin and/or clopidogrel, the dose intensity of the VKA should be carefully regulated with a target international normalized ratio in the range of 2.0 - 2.5 and with time in therapeutic range >70%.	**IIa**	**B**
Dual therapy with an OAC and either ticagrelor or prasugrel may be considered as an alternative to triple therapy with an OAC, aspirin, and clopidogrel in patients with a moderate or high risk of stent thrombosis, irrespective of the type of stent used.	**IIb**	**C**
The use of ticagrelor or prasugrel is not recommended as part of triple antithrombotic therapy with aspirin and an OAC	**III**	**C**
Use of proton pump inhibitors		
Concomitant use of a proton pump inhibitor is recommended in patients receiving aspirin monotherapy, DAPT, or OAC monotherapy who are at high risk of gastrointestinal bleeding.	**I**	**A**

TL: Knuuti J, et al. 2019 ESC Guidelines for the diagnosis and management of chronic coronary syndromes. European Heart Journal (2019) 00,1 - 71. Doi:10.1093/eurheartj/ehz425

Treatment options for dual antithrombotic therapy in combination with aspirin 75 - 100 mg daily

Drug option	Dose	Indication	Additional cautions
Clopidogrel	75 mg o.d.	Post-MI in patients who have tolerated DAPT for 1 year	
Prasugrel	10 mg o.d or 5 mg o.d.; if body weight <60 kg or age >75 years	Post-PCI for MI in patients who have tolerated DAPT for 1 year	Age > 75 years
Rivaroxaban	2.5 mg b.i.d.	Post-MI >1 year or multivessel CAD	Creatinine clearance 15-29 mL/min
Ticagrelor	60 mg b.i.d.	Post-MI in patients who have tolerated DAPT for 1 year	

Dual antithrombotic therapy in combination with aspirin 75 - 100 mg daily in patients who have a high or moderate risk of ischaemic events, and do not have a high bleeding risk.

TL: Knuuti J, et al. 2019 ESC Guidelines for the diagnosis and management of chronic coronary syndromes. European Heart Journal (2019) 00,1 - 71. Doi:10.1093/eurheartj/ehz425

Recommendations for event prevention II

Recommendations	Class	Level
Lipid-lowering drugs		
Statins are recommended in all patients with CCS.	**I**	**A**
If a patient's goal is not achieved with the maximum tolerated dose of statin, combination with ezetimibe is recommended.	**I**	**B**
For patients at very high risk who do not achieve their goalc on a maximum tolerated dose of statin and ezetimibe, combination with a PCSK9 inhibitor is recommended.	**I**	**A**
ACE inhibitors		
ACE inhibitors (or ARBs) are recommended if a patient has other conditions (e.g. heart failure, hypertension, or diabetes).	**I**	**A**
ACE inhibitors should be considered in CCS patients at very high risk of cardiovascular events.	**IIa**	**A**
Other drugs		
Beta-blockers are recommended in patients with LV dysfunction or systolic HF.	**I**	**A**
In patients with a previous STEMI, long-term oral treatment with a beta-blocker should be considered.	**IIa**	**B**

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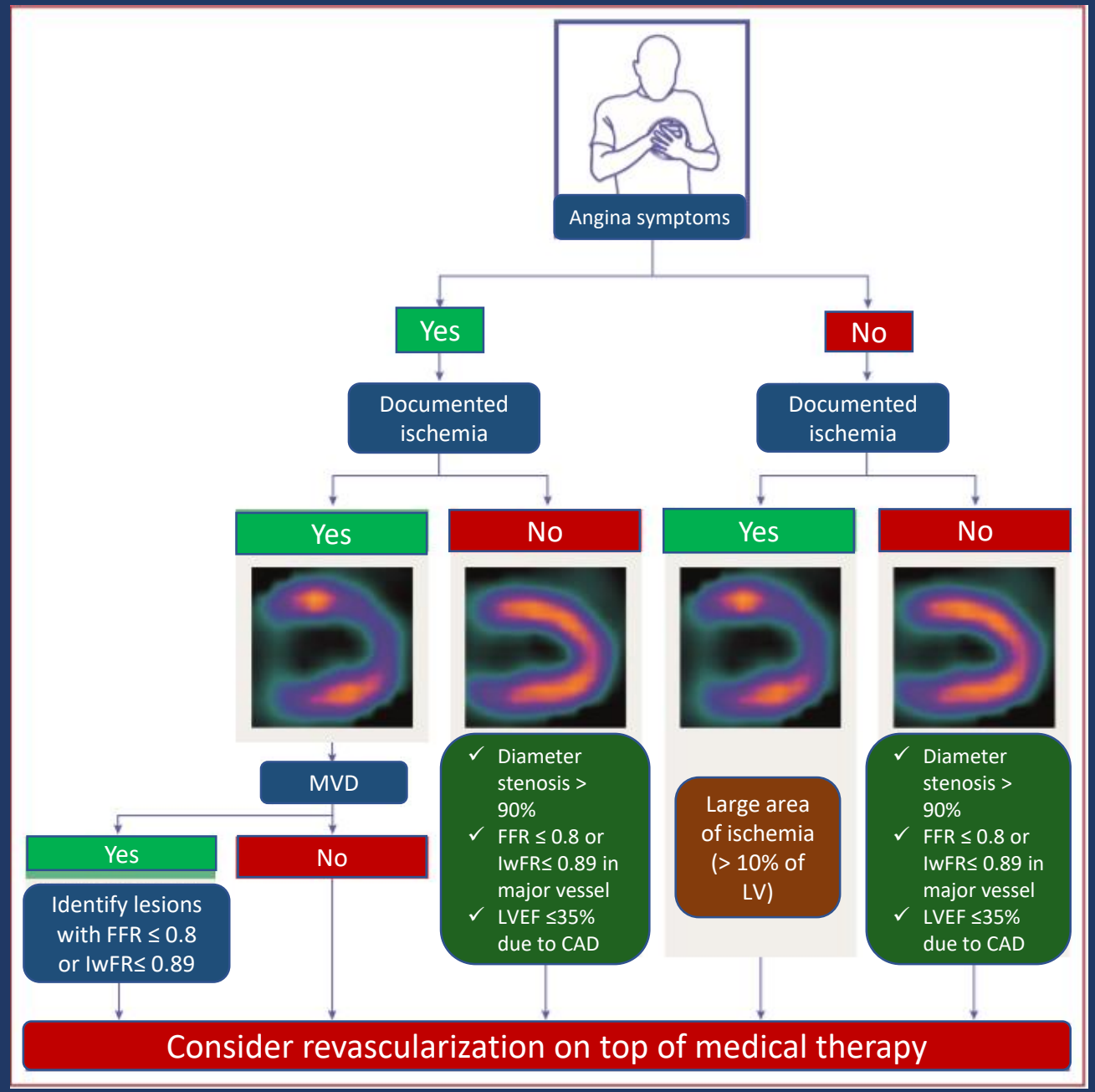
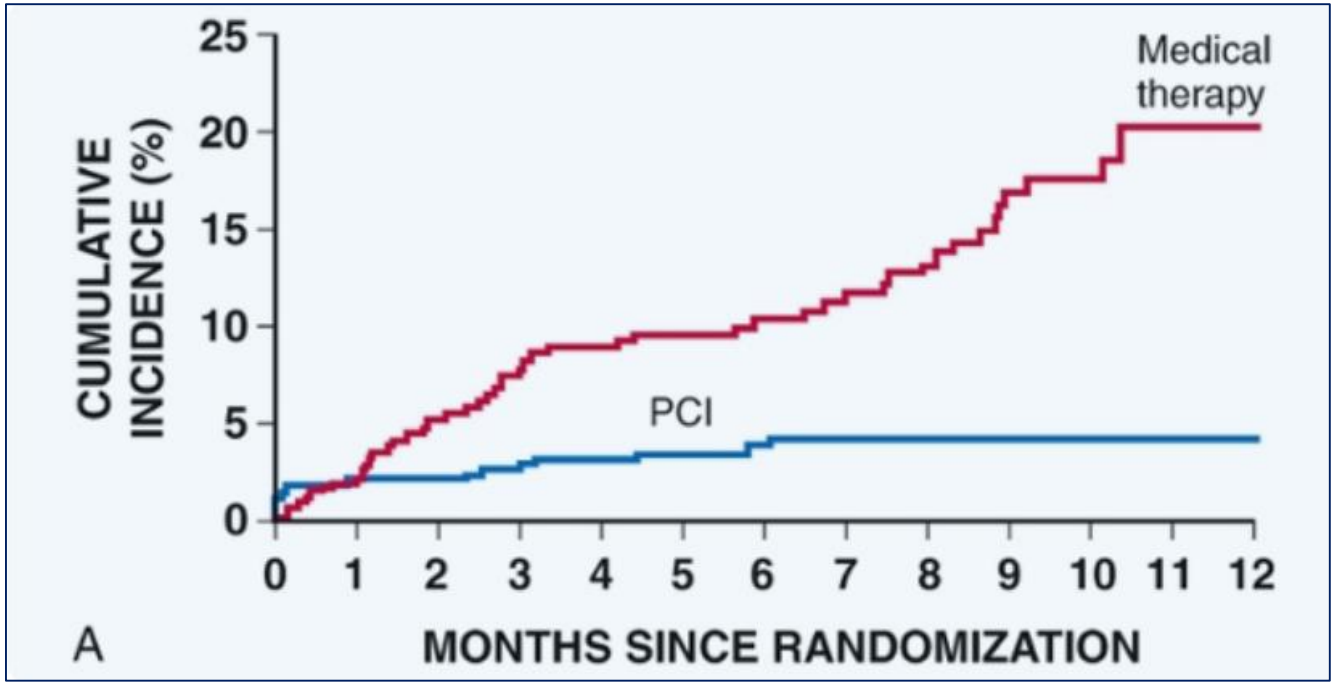
Decision tree for patients undergoing invasive coronary angiography

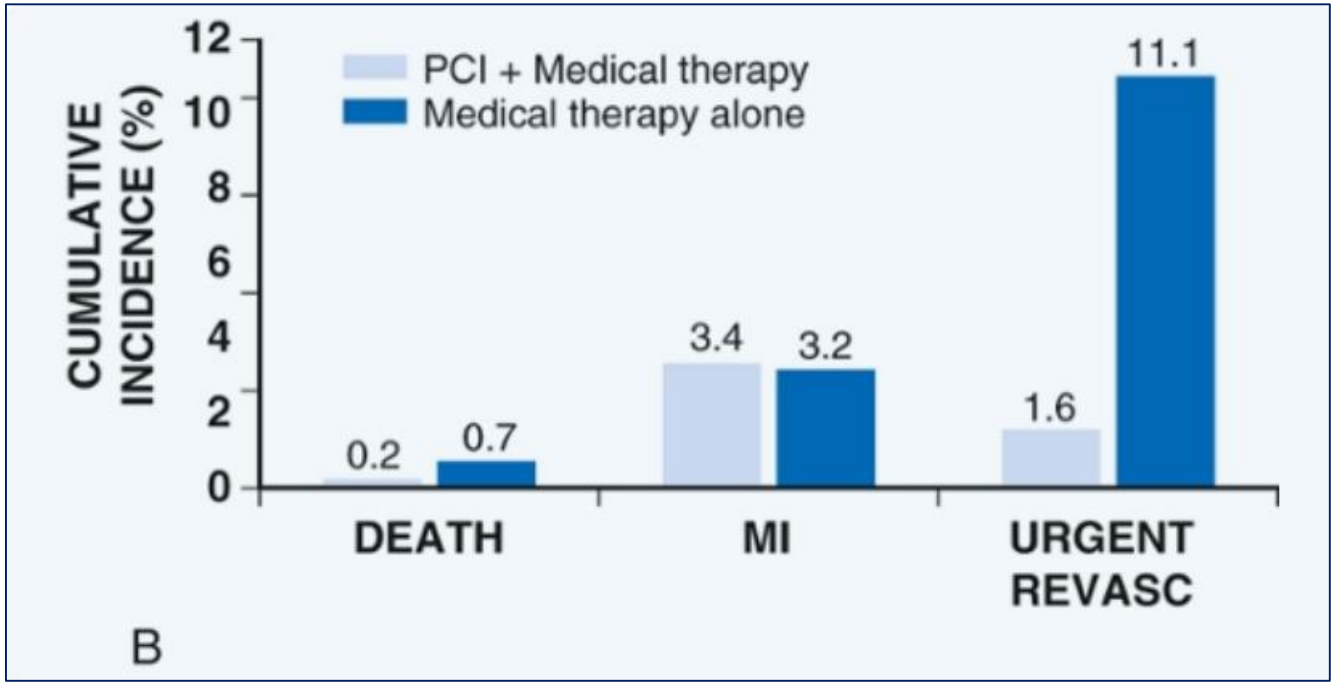


TL: Knuuti J, et al. 2019 ESC Guidelines for the diagnosis and management of chronic coronary syndromes. European Heart Journal (2019) 00,1 - 71. Doi:10.1093/eurheartj/ehz425

Nghiên cứu FAME 2: chỉ giảm tái thông ĐMV khẩn cấp ở nhóm PCI kèm điều trị nội tối ưu so với điều trị nội tối ưu đơn độc

TL: De Bruyne, NH Pijls, B Kalesan, et al.
N Engl J Med. 367:991-1001 2012





Pham Nguyen Vinh

Nghiên cứu ISCHEMIA (37 nước, 5.179 bn)

- So sánh PCI + OMT với OMT đơn thuần/SIHD
- Tiêu chí chính: NMCT, nhập viện vì đau thắt ngực không ổn định, nhập viện vì suy tim, ngưng tim được cứu sống.
- Kết quả sau 3.3 năm: tương đương giữa 2 nhóm (HR 0.93; 95% CI:0.8 – 1.08; p= 0.34)
- Tiêu chí phụ (tử vong tim mạch hoặc NMCT): tương tự

TL: Hochman J et al. AHA congress 2019, Philadelphia 16 Nov.

General recommendations for the management of patients with CCS and symptomatic HF (1)

Recommendations for drug therapy	Class	Level
Diuretic therapy is recommended in symptomatic patients with signs of pulmonary or systemic congestion to relieve HF symptoms.	I	B
Beta-blockers are recommended as essential components of treatment due to their efficacy in both relieving angina, and reducing morbidity and mortality in HF.	I	A
ACE inhibitor therapy is recommended in patients with symptomatic HF or asymptomatic LV dysfunction following MI, to improve symptoms and reduce morbidity and mortality.	I	A
An ARB is recommended as an alternative in patients who do not tolerate ACE inhibition, or an angiotensin receptor-neprilysin inhibitor in patients with persistent symptoms despite optimal medical therapy.	I	B
An MRA is recommended in patients who remain symptomatic despite adequate treatment with an ACE inhibitor and beta-blocker, to reduce morbidity and mortality.	I	A
A short-acting oral or transcutaneous nitrate should be considered (effective antianginal treatment, safe in HF).	IIa	A
Ivabradine should be considered in patients with sinus rhythm, an LVEF <_35% and a resting heart rate >70 b.p.m. who remain symptomatic despite adequate treatment with a beta-blocker, ACE inhibitor, and MRA, to reduce morbidity and mortality.	IIa	B
Amlodipine may be considered for relief of angina in patients with HF who do not tolerate beta-blockers, and is considered safe in HF.	IIb	B

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General recommendations for the management of patients with CCS and symptomatic HF (2)

For devices, comorbidities, and revascularization	Class	Level
In patients with HF **and bradycardia with high-degree atrioventricular block** who require pacing, **a CRT** with a pacemaker rather than right ventricular pacing is recommended.	I	A
An implantable cardioverter-defibrillator is recommended in patients with documented ventricular dysrhythmia causing haemodynamic instability (secondary prevention), as well as in patients with symptomatic HF and an LVEF ≤ 35%, to reduce the risk of sudden death and all-cause mortality.	I	A
CRT is recommended for symptomatic patients with HF in sinus rhythm with a QRS duration ≥ 150 ms and LBBB QRS morphology, and with LVEF ≤ 35%, despite optimal medical therapy to improve symptoms, and reduce morbidity and mortality.	I	A
CRT is recommended for symptomatic patients with HF in sinus rhythm with a QRS duration 130-149 ms and LBBB QRS morphology, and with LVEF ≤ 35%, despite optimal medical therapy to improve symptoms, and reduce morbidity and mortality.	I	B
Comprehensive risk profiling and **multidisciplinary management**, including treatment of major comorbidities such as hypertension, hyperlipidaemia, diabetes, anaemia, and obesity, as well as smoking cessation and lifestyle modification, are recommended.	I	A
Myocardial revascularization is recommended when angina persists despite treatment with antianginal drugs.	I	A

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Investigations in patients with suspected coronary microvascular angina

Recommendations	Class	Level
Guidewire-based CFR and/or microcirculatory resistance measurements should be considered in patients with persistent symptoms, but coronary arteries that are either angiographically normal or have moderate stenoses with preserved iwFR/FFR.	**IIa**	**B**
Intracoronary acetylcholine with ECG monitoring may be considered during angiography, if coronary arteries are either angiographically normal or have moderate stenoses with preserved iwFR/FFR, to assess microvascular vasospasm.	**IIb**	**B**
Transthoracic Doppler of the LAD, CMR, and PET may be considered for non-invasive assessment of CFR.	**IIb**	**B**

CFR = coronary flow reserve; CMR = cardiac magnetic resonance; FFR = fractional flow reserve; iwFR = instantaneous wave-free ratio; PET = positron emission tomography.

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Recommendations for investigations in patients with suspected vasospastic angina

Recommendations	Class	Level
An ECG is recommended during angina if possible.	I	C
Invasive angiography or coronary CTA is recommended in patients with characteristic episodic resting angina and ST-segment changes, which resolve with nitrates and/or calcium antagonists, to determine the extent of underlying coronary disease.	I	C
Ambulatory ST-segment monitoring should be considered to identify ST-segment deviation in the absence of increased heart rate.	IIa	C
An intracoronary provocation test should be considered to identify coronary spasm in patients with normal findings or non-obstructive lesions on coronary arteriography and a clinical picture of coronary spasm, to diagnose the site and mode of spasm.	IIa	B

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Recommendations for screening for coronary artery disease in asymptomatic subjects (1)

Recommendations	Class	Level
Total risk estimation using a risk-estimation system such as SCORE is recommended for asymptomatic adults >40 years of age without evidence of CVD, diabetes, CKD, or familial hypercholesterolaemia.	I	C
Assessment of family history of premature CVD (defined as a fatal or non-fatal CVD event, or/and established diagnosis of CVD in first-degree male relatives before 55 years of age or female relatives before 65 years of age) is recommended as part of cardiovascular risk assessment.	I	C
It is recommended that all individuals aged <50 years with a family history of premature CVD in a first-degree relative (<55 years of age in men or <65 years of age in women) or familial hypercholesterolaemia are screened using a validated clinical score.	I	B
Assessment of coronary artery calcium score with computed tomography may be considered as a risk modifierc in the cardiovascular risk assessment of asymptomatic subjects.	IIb	B
Atherosclerotic plaque detection by carotid artery ultrasound may be considered as a risk modifier in the cardiovascular risk assessment of asymptomatic subjects.	IIb	B

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Recommendations for screening for coronary artery disease in asymptomatic subjects (2)

Recommendations	Class	Level
ABI may be considered as a risk modifierc in cardiovascular risk assessment.	IIb	B
In high-risk asymptomatic adults (with diabetes, a strong family history of CAD, or when previous risk-assessment tests suggest a high risk of CAD), functional imaging or coronary CTA may be considered for cardiovascular risk assessment.	IIb	C
In asymptomatic adults (including sedentary adults considering starting a vigorous exercise programme), an exercise ECG may be considered for cardiovascular risk assessment, particularly when attention is paid to non-ECG markers such as exercise capacity.	IIb	C
Carotid ultrasound IMT for cardiovascular risk assessment is not recommended	III	A
In low-risk non-diabetic asymptomatic adults, coronary CTA or functional imaging for ischaemia are not indicated for further diagnostic assessment.	III	C
Routine assessment of circulating biomarkers is not recommended for cardiovascular risk stratification.	III	B

ABI = ankle-brachial index; CTA = computed tomography angiography; IMT = intima-media thickness; SCORE = Systematic COronary Risk Evaluation.

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Recommendations for hypertension treatment in chronic coronary syndromes

Recommendations	Class	Level
It is recommended that office BP is controlled to target values: systolic BP 120-130 mmHg in general and systolic BP 130-140 mmHg in older patients (aged >65 years).	I	A
In hypertensive patients with a **recent MI**, beta blockers and RAS blockers are recommended.	I	A
In patients with symptomatic **angina**, beta blockers and/or CCBs are recommended.	I	A
The combination of ACE inhibitors and ARBs is not recommended	III	A

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Recommendations for valvular disease in chronic coronary syndromes

Recommendations	Class	Level
ICA is recommended before valve surgery and for any of the following: history of CVD, suspected myocardial ischaemia, LV systolic dysfunction, in men >40 years of age and postmenopausal women, or one or more cardiovascular risk factors.	I	C
ICA is recommended in the evaluation of moderate-to-severe functional mitral regurgitation.	I	C
Coronary CTA should be considered as an alternative to coronary angiography before valve intervention in patients with severe valvular heart disease and low probability of CAD.	IIa	C
PCI should be considered in patients undergoing transcatheter aortic valve implantation and coronary artery diameter stenosis >70% in proximal segments.	IIa	C
In severe valvular heart disease, stress testing should not be routinely used to detect CAD because of the low diagnostic yield and potential risks.	III	C

ICA = invasive coronary angiography

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Recommendations for diabetes mellitus in chronic coronary syndromes

Recommendations	Class	Level
Risk factor (BP, LDL-C, and HbA1c) control to targets is recommended in patients with CAD and diabetes mellitus.	I	A
In asymptomatic patients with diabetes mellitus, a periodic resting ECG is recommended for cardiovascular detection of conduction abnormalities, AF, and silent MI	I	C
ACE inhibitor treatment is recommended in CCS patients with diabetes for event prevention.	I	B
The sodium-glucose co-transporter 2 inhibitors empagliflozin, canagliflozin, or dapagliflozin are recommended in patients with diabetes and CVD.	I	A
A glucagon-like peptide-1 receptor agonist (liraglutide or semaglutide) is recommended in patients with diabetes and CVD.	I	A
In asymptomatic adults (age >40 years) with diabetes, functional imaging or coronary CTA may be considered for advanced cardiovascular risk assessment.	IIb	B

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Tóm tắt các điểm chính (1)

1. Khảo sát cẩn thận bệnh sử, YTNC, biểu hiện bệnh tim mạch, các xét nghiệm cơ bản
2. Trắc nghiệm đầu tiên: TN hình ảnh không xâm nhập hoặc CT động mạch vành
3. Lựa chọn trắc nghiệm không xâm nhập đầu tiên dựa vào PTP
4. Quyết định tái lưu thông mạch: dựa vào tổn thương giải phẫu và chức năng (trừ phi hẹp > 90%)
5. BN có nguy cơ biến cố cao, cần khảo sát xâm nhập dù ít hay không TC/CN

Tóm tắt các điểm chính (2)

6. Thay đổi lối sống: rất cần thiết, giảm biến cố
7. Điều trị chống TMCB: thay đổi cho phù hợp với b/n, tần số tim, huyết áp và chức năng thất trái
8. Chẹn bêta và/hoặc ức chế calci: lựa chọn đầu tiên (first-line drugs)
9. Điều trị chống huyết khối: thiết yếu
10. Statin: tất cả b/n; UCMC (hoặc ARBs): b/n có ĐTĐ, suy tim, tăng huyết áp, nguy cơ cao