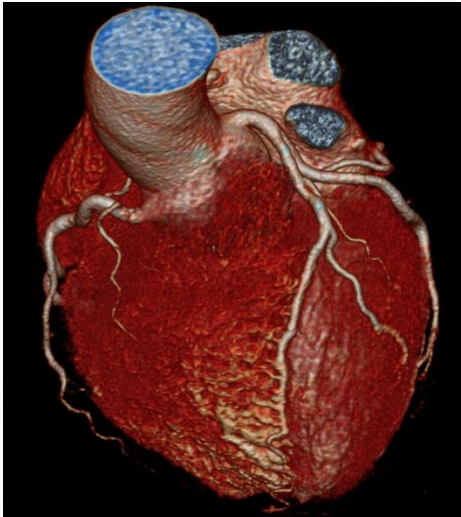


Management of chronic stable angina



Dr. Gary Mak

麥耀光 醫生

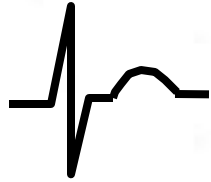
FACC, FCCT, FSCAI, FRCP

Director of The Pro-Cardio Heart Disease
and Stroke Prevention Center

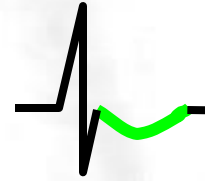


Acute Coronary Syndromes

Stable Angina



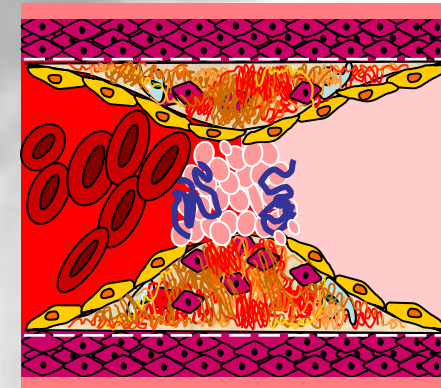
UA/NSTEMI



STEMI



Continuum of Severity



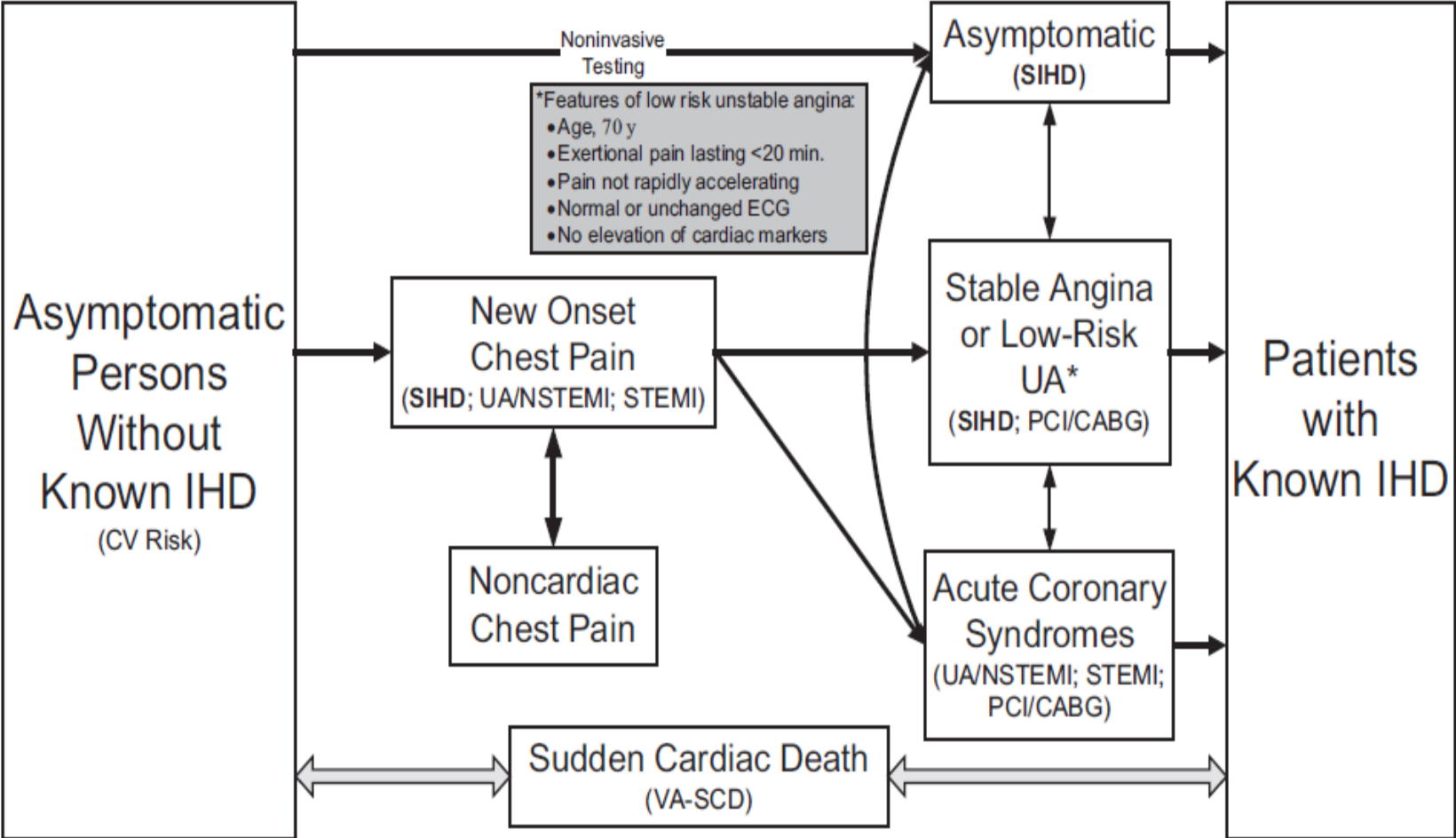
PRO-CARDIO 心滙

UA=Unstable angina; NSTEMI=Non-ST-elevation myocardial infarction; STEMI=ST-elevation myocardial infarction

Adapted from Cannon CP. *J Thrombolysis* 1995;2:205-218



Spectrum of IHD



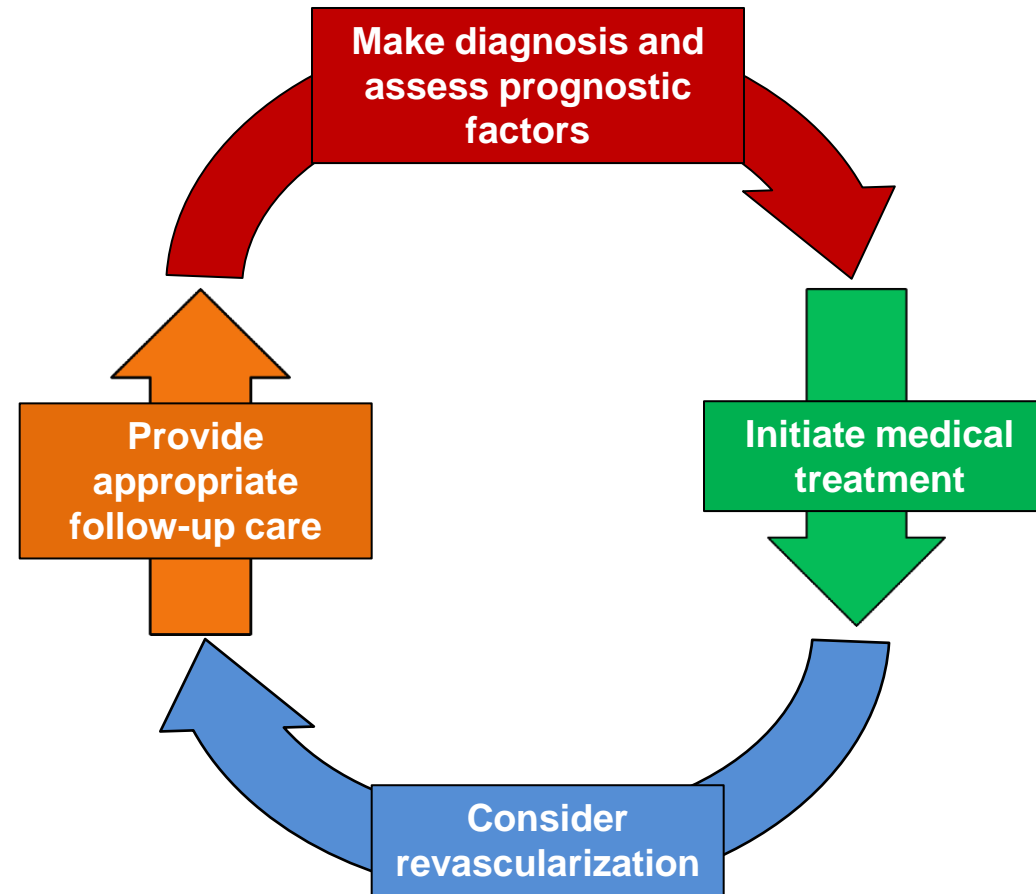
Guidelines relevant to the spectrum of IHD are in parentheses



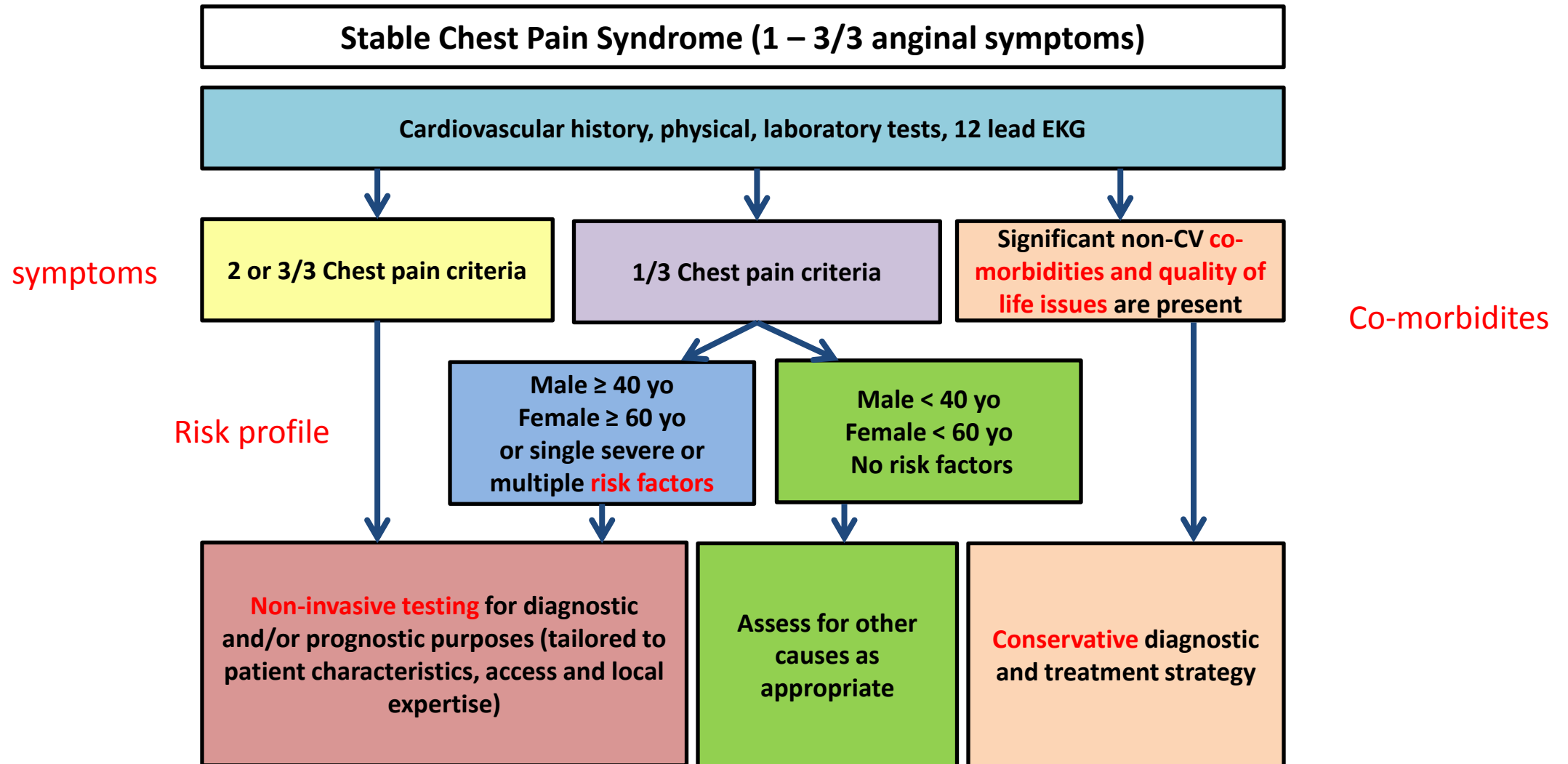
Helping Cardiovascular Professionals
Learn. Advance. Heal.



Diagnosis and management of patients with stable ischemic heart disease



Use of non-invasive testing for diagnostic and prognostic purposes in patients with classical anginal chest pain symptoms suggestive of SIHD.



When to intervene beyond medication...

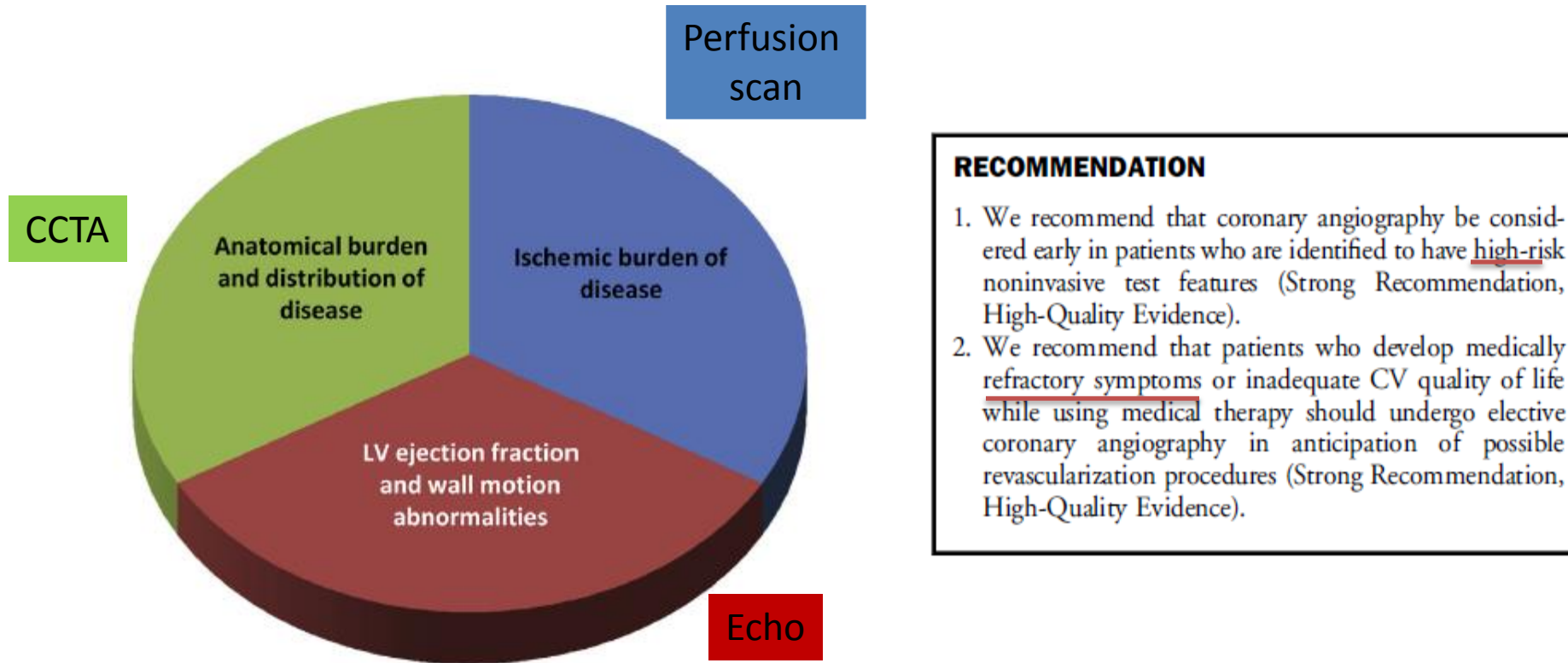
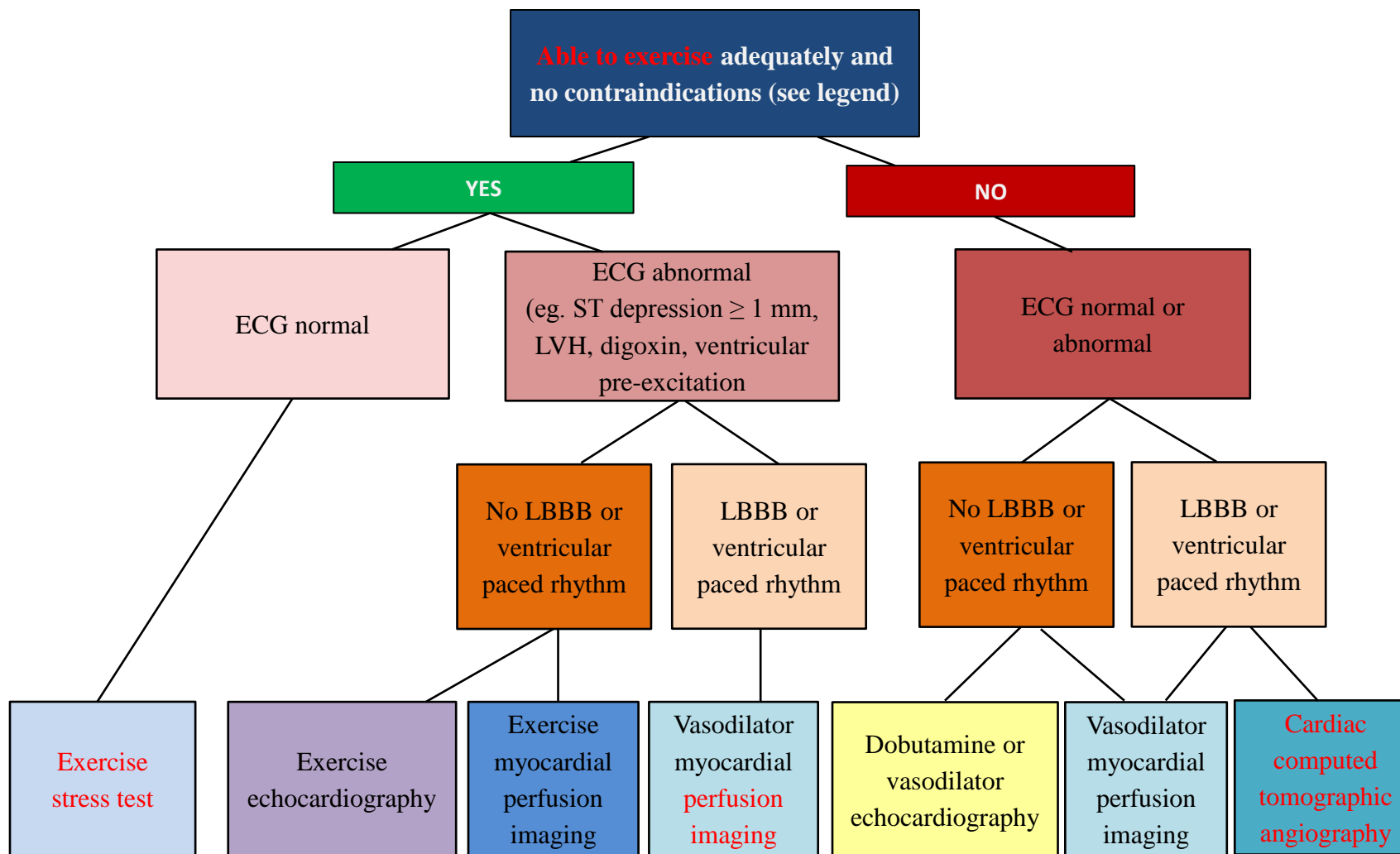


Figure 5. Fundamental prognostic factors for assessing stable ischemic heart disease. LV, left ventricular.

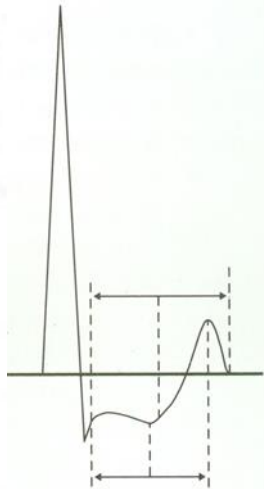
Guidance for selection of an initial non-invasive test for diagnosing suspected CAD in routine practice settings.



Limitations of Stress Test



- Highly dependent on pre-test likelihood of disease
- High false positive rate in physically active individual (>10%).
- Only become positive if coronary stenosis > 70%
- A Negative test does not guarantee protection against coronary events.



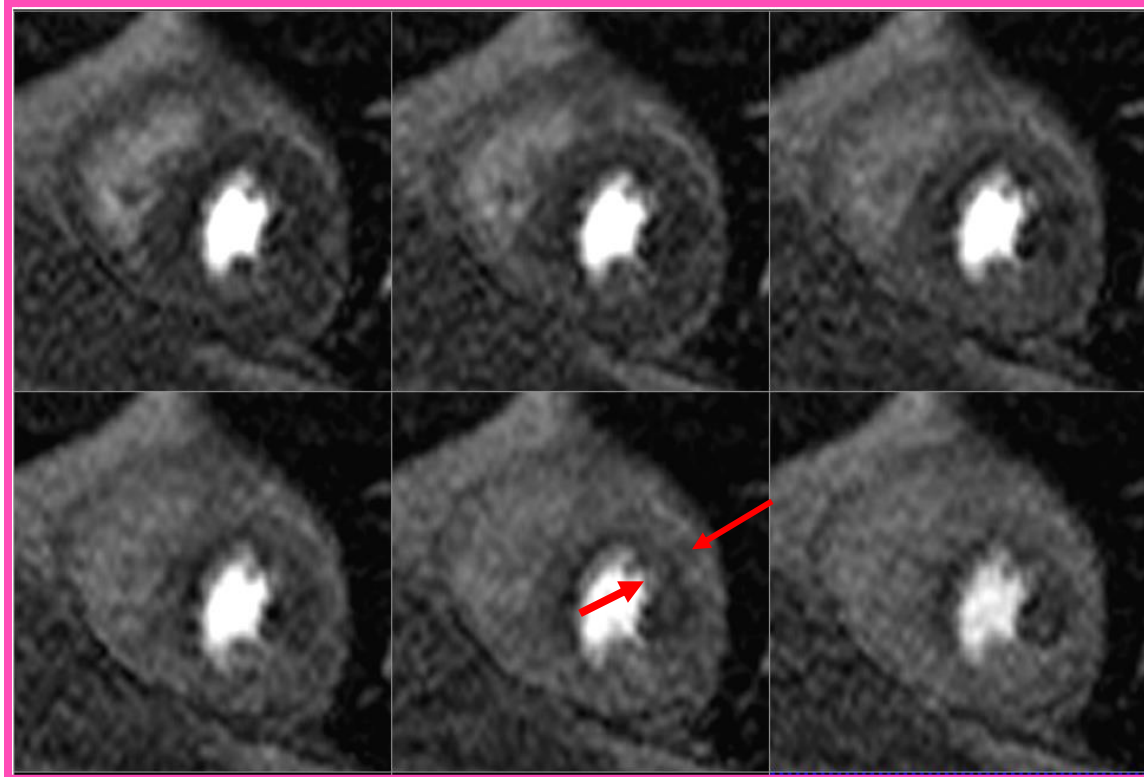
AMPLITUDE AT
TIME-NORMALIZED
ST MIDPOINT



Cardiac MR

Perfusion Imaging

Midventricular slice at stress



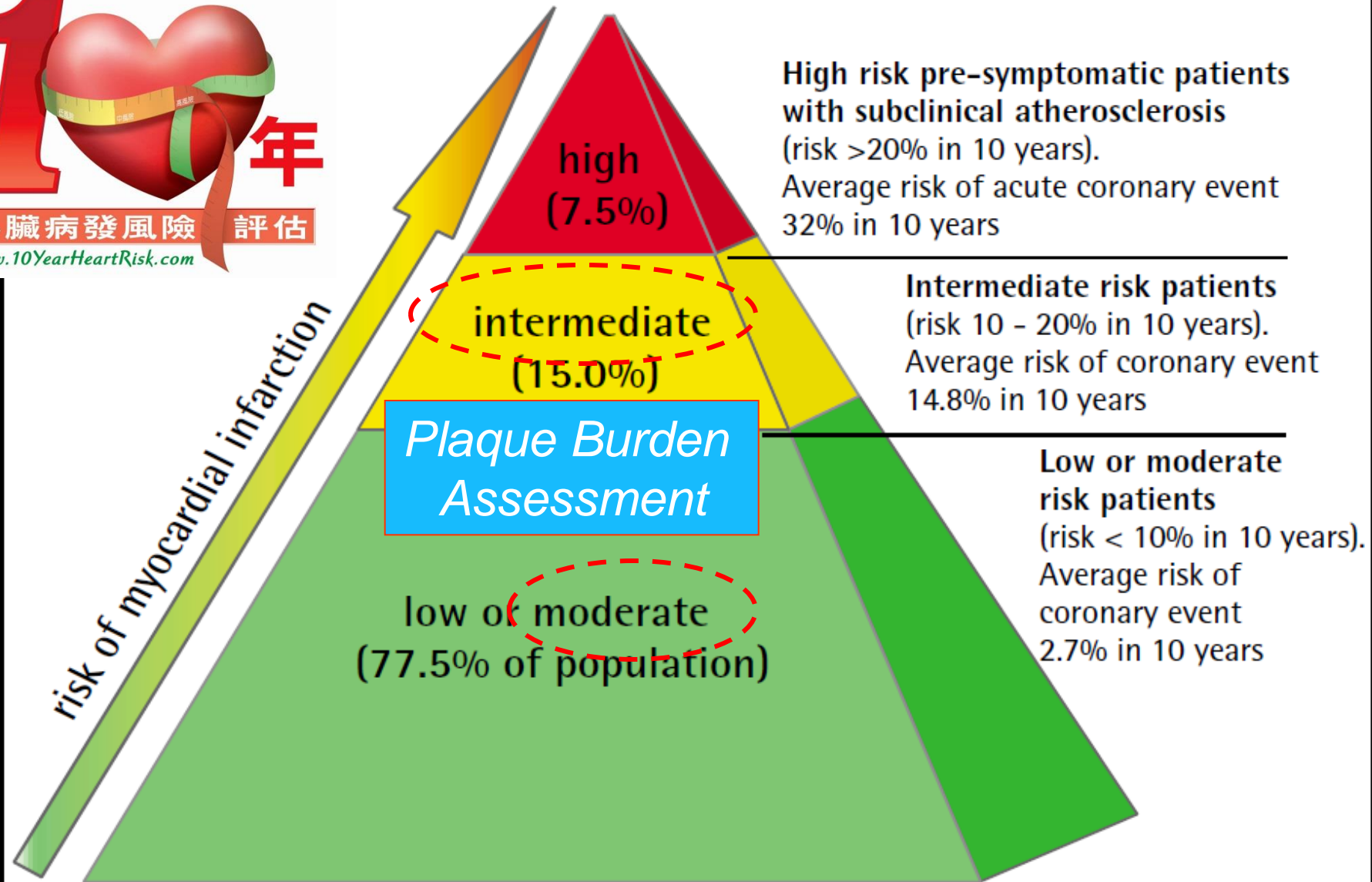
Subendocardial ischemia

X-ray Angiogram



Stenosis at the LM

The myocardial infarction risk pyramid



Data from the PROCAM Study

PRO



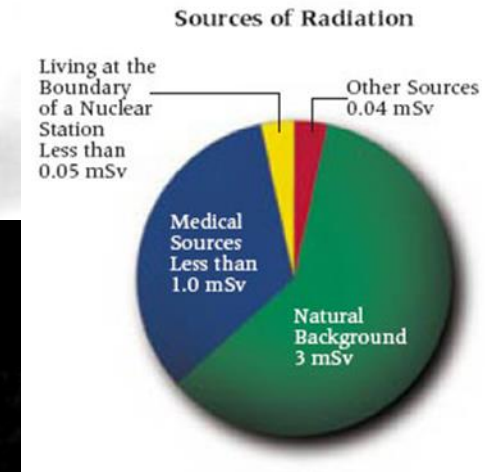
CAD Evaluation with Low Radiation CT Scan



PRO-CARDIO 心滙



Turbo Flash Scanning for Coronary CTA



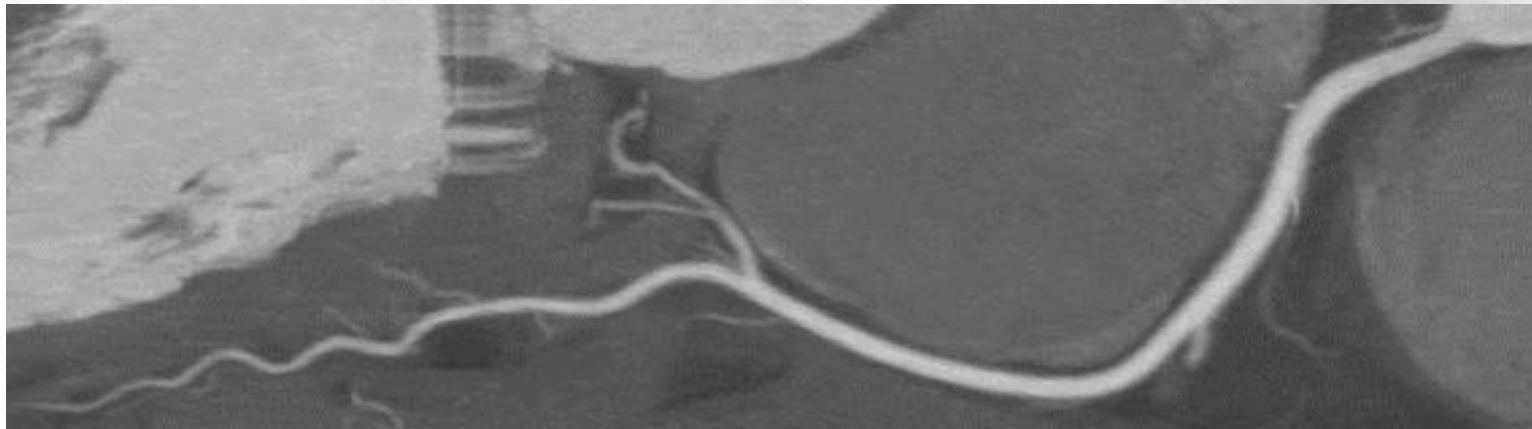
collimation: 192 x 0.6 mm
pitch: 3.2
scan time: 0.18 s
scan length: 132 mm
rotation time: 0.25 s
tube setting:
70 kV, 628 mAs
CTDIvol: 1.77 mGy
DLP: 31 mGy cm
0.4 mSv

**Coronary CTA
without breath hold**

Negative Predictive Value 100%

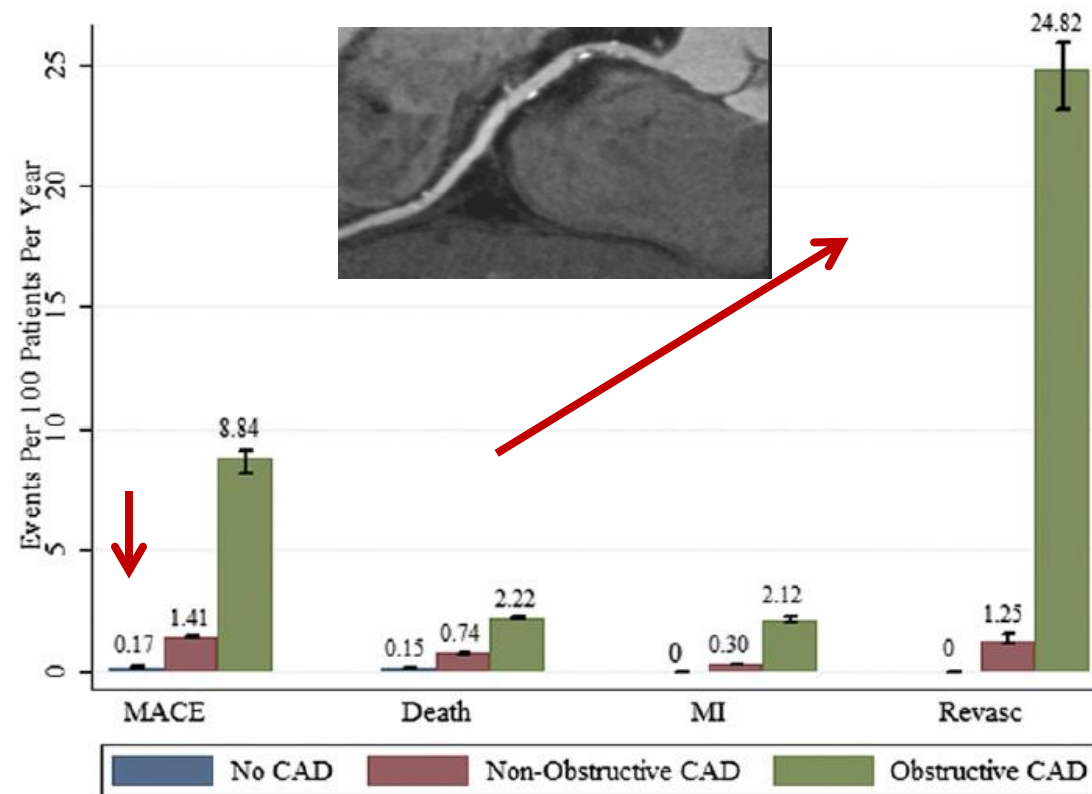
陰性預測值達100%

Negative CCTA Rule Out Significant CAD



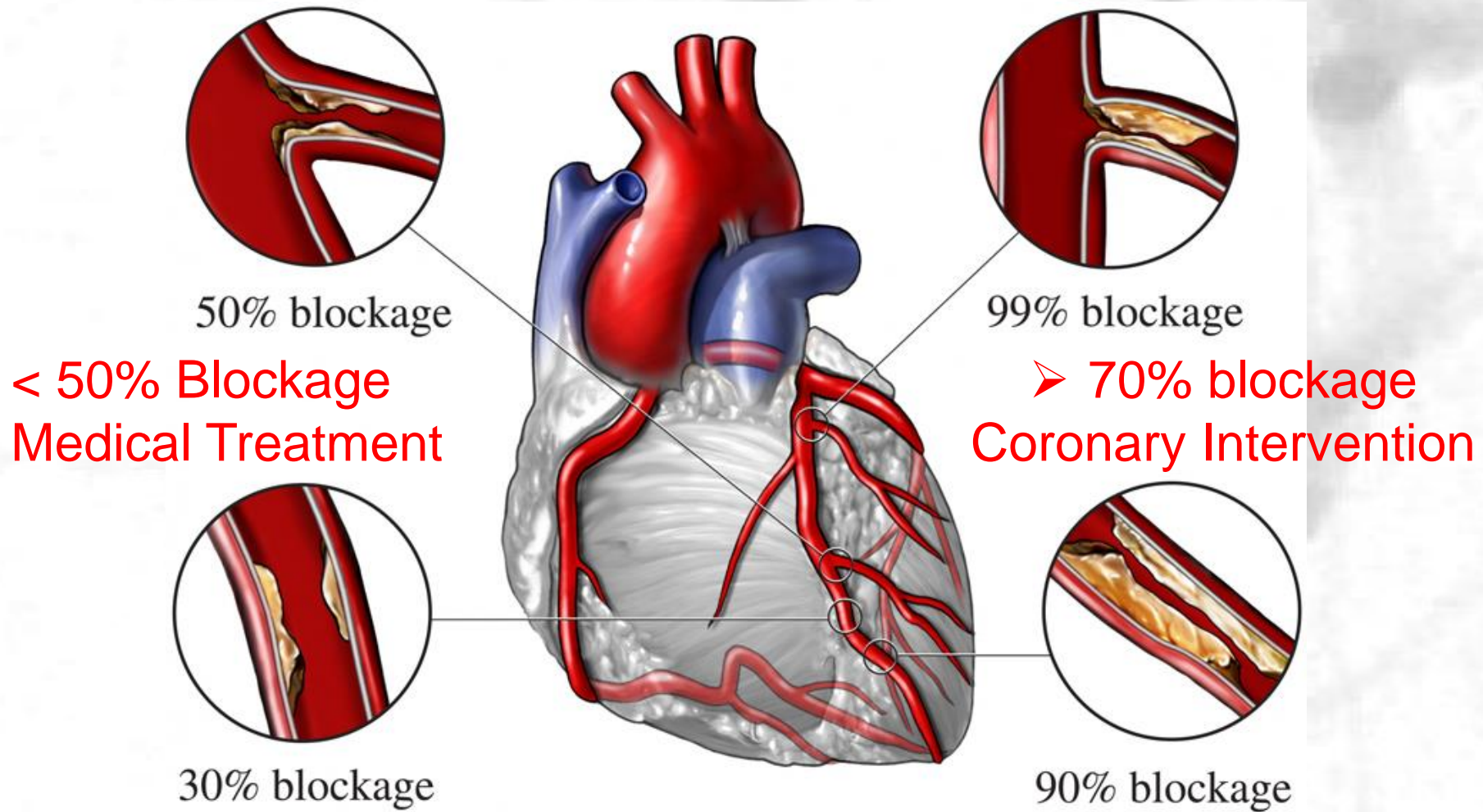
Prognostic Value of Cardiac Computed Tomography Angiography

A Systematic Review and Meta-Analysis



PRO





Guideline-Directed Medical Therapy

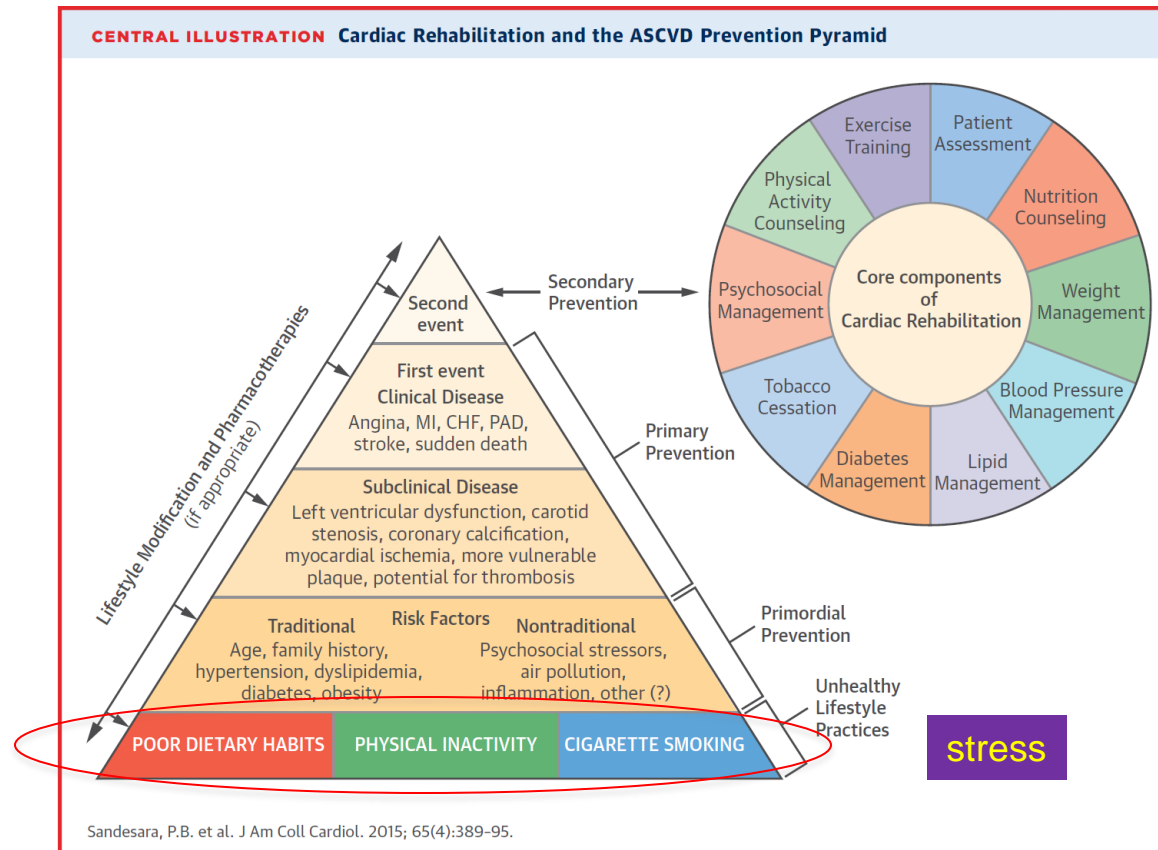
- Patients with SIHD should generally receive a “package” of GDMT that include **lifestyle interventions** and medications shown to improve outcomes which includes (as appropriate):
 - Diet, weight loss and regular physical activity;
 - If a smoker, smoking cessation;
 - Aspirin 75-162mg daily;
 - A statin medication in moderate dosage;
 - If hypertensive, antihypertensive medication to achieve a BP <140/90; If diabetic, appropriate glycemic control.



*Helping Cardiovascular Professionals
Learn. Advance. Heal.*



心臟復康療程 Cardiac Rehabilitation Program



Stable CAD
Post PCI
Post MI
CHF

CRP is a Physician-led exercise-centered multidisciplinary program that targets to **life style intervention and cardiopulmonary training**

Evidence Supporting the Guidelines

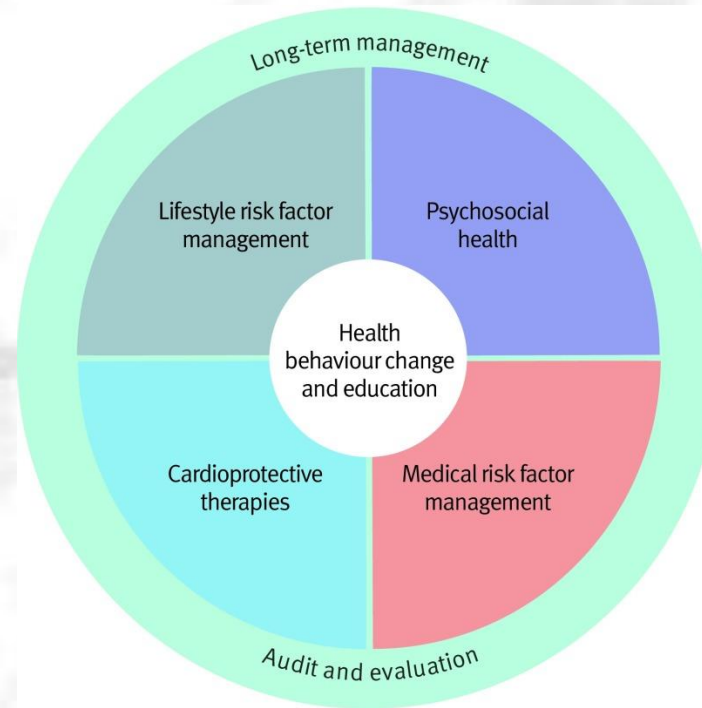
- Decreases Mortality at up to 5 years Post Participation
- Decreases Cardiovascular Events
- Improves Modifiable Risk Factors
- Improves Adherence with Preventive Medications
- Improves Function and Exercise Capacity
- Improves Quality of Life
- Fosters Lifelong Healthy Behaviors

Meta-analysis of 34 randomized controlled trials showed that CR programs are associated with: 47% lower risk of reinfarction, 36% decrease in cardiac mortality and 26% decrease in all-cause mortality



Personalized out-patient CR Service in PRO-CARDIO

- Trial run in June 2011
- Fully implemented in Nov 2011
- Team members:
 - Cardiologists
 - Nurse
 - Dietitian
 - Physical Trainer
 - Clinical Psychologist



**Core components of cardiac
rehabilitation from BACPR**



運動處方前運動心電圖評估 Exercise Prescription based on Exercise test findings



- Maximal capacity
- Tolerance to exercise
- Ischemic threshold
- Pattern of CV response



Provision of Appropriate Clinical Follow-Up

Recommendation 3

- Patients with Stable Ischemic Heart Disease
 - Moderate-Vigorous Physical Activity

Canadian Physical Activity Guidelines

FOR ADULTS - 18 – 64 YEARS

Guidelines



To achieve health benefits, adults aged 18-64 years should accumulate at least 150 minutes of moderate- to vigorous-intensity aerobic physical activity per week, in bouts of 10 minutes or more.



It is also beneficial to add muscle and bone strengthening activities using major muscle groups, at least 2 days per week.



More physical activity provides greater health benefits.



Exercise Therapy
in PRO-CARDIO



Mancini GBJ, Gosselin G, et al., *Can J Cardiol* 2014

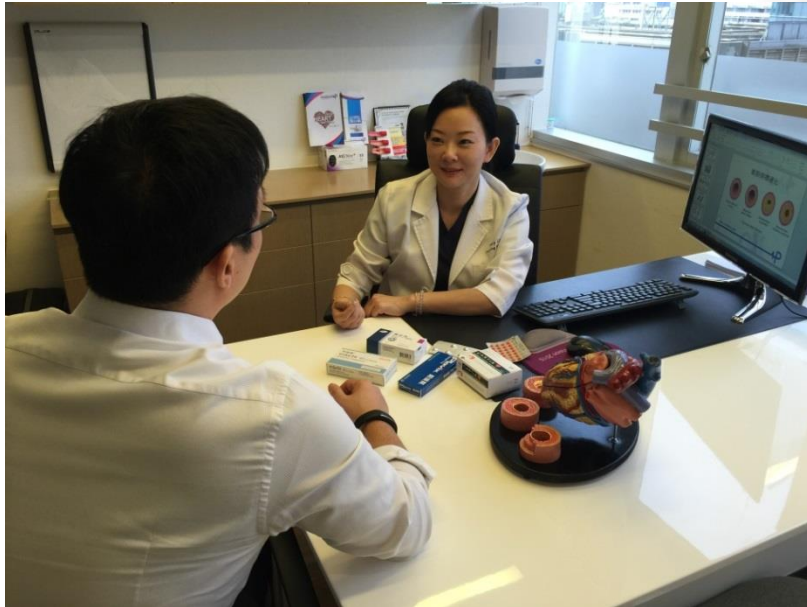
Exercise Prescription

FITT-VP Principle

- FREQUENCY (how often)
- INTENSITY (how hard)
- TIME (Duration/ how long)
- TYPE (mode/ what kind)
- VOLUME (total amount)
- PROGRESSION (advancement)



Professional advice from Cardiac Rehab Nurse 心臟復康護士



- Smoke cessation 戒煙
- Ensure compliance to medications
服用藥物諮詢
- Set targets on body weight, BP,
cholesterol and blood sugar
定立體重, 血壓, 膽固醇及血糖指標
Assessment on potential mood
issues, ie. Anxiety, hostility and
depression 情緒管理



Professional advice from Senior Dietitian

- Consultation with Senior Dietitian
- Functional Foods for heart health
- Lifestyle Modification, Weight Management
- Healthy eating out strategies
- Nutrition labeling education



Results of Cardiac Rehabilitation Program in Pro-Cardio Heart Diseases and Stroke Prevention Centre

- Total of 161 patients* completed the 8 weeks CRP program with completed data from 2011 - 2018.
- Average age: 57.5 years old; 120 males; 61 females;
- Smoking status: 129 non smokers; 19 ex-smokers; 13 smokers

	Pre	Post	Difference
Weight (kg)	68.4	67.8	-0.7 ± 2
BMI (kg/m ²)	24.86	24.62	-0.2 ± 1
SBP (mmHg)	129	126	-2.4 ± 19
DBP (mmHg)	77	75	-1.9 ± 14
HR (beats/minute)	79	77	-0.2 ± 14
Body Fat (%)	25.3	23.9	-1.3 ± 3
Waist circumference (cm)	91	89.4	-1.6 ± 3
6 minutes walk (m)	531.2	595.5	+ 64.3 ± 49



Conclusions

- Patients presenting with angina should be categorized as stable vs. unstable. Those at moderate or high risk should be treated emergently for acute coronary syndrome.
- Patients with at high risk or symptomatic should have non-invasive tests such as treadmill, CCTA or perfusion scan and consider intervention when appropriate.
- Patients with CAD should generally receive a “package” of GDMT that include lifestyle interventions and medications shown to improve outcomes.
- Cardiac Rehabilitation Program (CRP) is a Physician-led exercise-centered multidisciplinary program that targets to life style intervention and risk factors modification.
- A structured exercise program based on individual risk profile, cardiovascular status, functional capacity and response to training will improve the overall wellness and long term prognosis. However it is under prescribed worldwide.



www.pro-cardio.com



以心為心

PRO-CARDIO 心滙

Suite 1808, 18/F, HK Pacific Centre, 28 Hankow Road, TST
尖沙嘴漢口道28號亞太中心18樓1808室 TEL: 2779 8388

