心血管常見問題之評估

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心臟科常見問題？

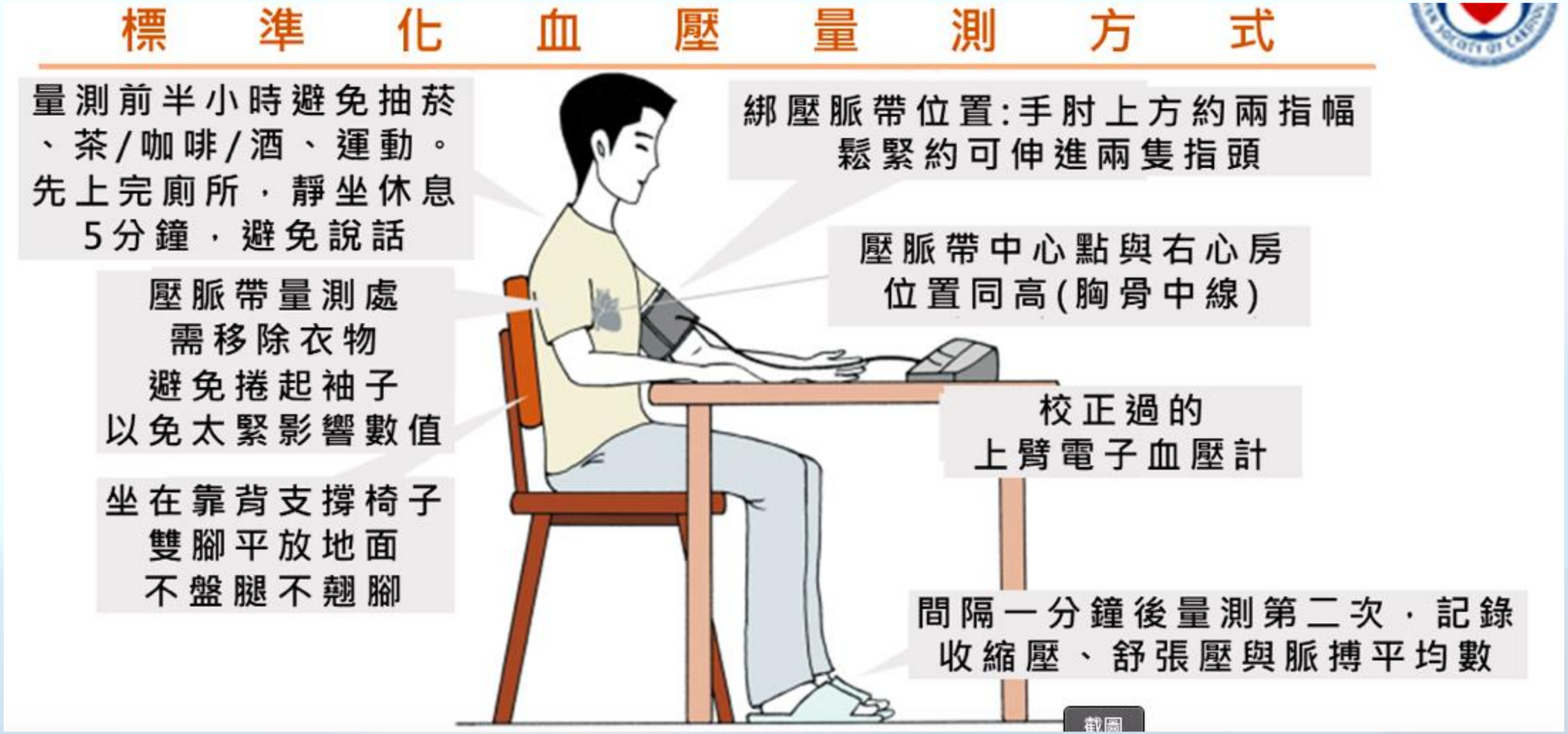
高血壓
高血脂
冠心症
心衰竭
其他

高血壓

- 住院病患血壓量測為135/85mmHg，可以診斷為高血壓嗎？

高血壓

- 怎麼確認血壓高低



高血壓

2022年台灣高血壓治療指引

量測血壓的722原則

7 **連續7天**(至少連續4天)

2 **早晚一次分別記錄**
1.睡醒1小時內、早餐和服藥前
2.睡前1小時內

2 **2次以上取平均**
每次間隔1分鐘
若Af 建議3次以上取平均

血壓範圍	722頻率時機
血壓正常(<120/80)	每年一次
血壓偏高(120-129/<80)	每半年一次
高血壓**開始藥物**	兩周後
高血壓**調整藥物**	兩周後
高血壓**尚待控制**	每月一次
高血壓**穩定控制**	每季一次

高血壓

- 高血壓分類

Table 5. Definition and grading of hypertension (based on home BP measurements following the 722 protocol or standardized office BP [if home BP is not available])

BP category	SBP (mmHg)		DBP (mmHg)
Normal	< 120	and	< 80
Elevated	120-129	and	< 80
Hypertension			
Grade 1	130-139	or	80-89
Grade 2	≥ 140	or	≥ 90

BP, blood pressure; DBP, diastolic blood pressure; SBP, systolic blood pressure.

高血壓　量測血壓方式 v.s 數值差異

量測方式			
1. 診間血壓(ROBP)		2. 自動診間(AOBP)	
3. 居家血壓(HBPM)		4. 動態血壓(ABPM)	

居家 HBPM	診間 ROBP	AOBP	清醒 ABPM	睡眠 ABPM	24時均 ABPM
120/80	120/80	120/80	120/80	100/65	115/75
130/80	**130/80**	**130/80**	**130/80**	**110/65**	**125/75**
135/85	140/90	135/85	135/85	120/79	130/80
145/90	160/90	145/90	145/90	140/85	145/90

ABPM: ambulatory blood pressure monitoring
HBPM: home blood pressure monitoring
AOBP: automated office blood pressure
ROBP: routine office blood pressure.

高血壓

Changes in recommendations	
2015/2017	2022
Definition and grading	
The diagnosis of hypertension depends on office BP measurements, complemented by HBPM and ABPM.	• HBPM is recommended as the foundation for the diagnosis and grading of hypertension, and also for the treatment thresholds and targets.
不再以診間血壓為主，而改以居家血壓	• Routine office BP should not be used for the diagnosis and management of hypertension unless the recommended BP measurement protocol is followed.
居家血壓> 130/80 mmHg即可診斷為高血壓	Hypertension should be diagnosed if average home BP is ≥ 130/80 mmHg (the equivalent standardized office BP is ≥ 130/80 mmHg).
居家高血壓與診間高血壓標準無異	All three cut-off values for grading, 120/80 mmHg, 130/80 mmHg, and 140/90 mmHg, are recommended for both home BP and standardized office BP.
如果同時間測量了超過三次數值，則以最低的兩次平均值為主	If more than three BP readings are taken on one occasion, document the average of the two readings with the lowest SBP values to provide a more reliable BP estimate.

高血壓

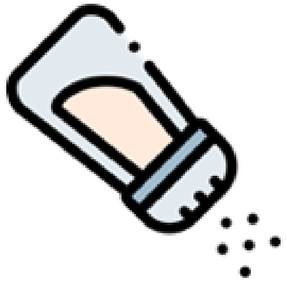
Lifestyle modifications	
To control hypertension, the daily intake of alcohol should be limited to < 30 g/d in men and < 20 g/d in women.	• People without a habit of alcohol consumption should not start drinking for any reason.
	• Alcohol consumption should be limited to < 100 g/week (14 g/day or 1 drink/day) in men and < 50 g/week (7 g/day or 0.5 drinks/day [one standard drink = 14 g pure alcohol]) in women without the ALDH2*2 dysfunctional allele to improve BP control and lower the risk of all-cause mortality.
	• Alcohol consumption should be limited to < 64 g/week (9 g/day or 4 drinks/week) in men and < 28 g/week (4 g/day or 2 drinks/week) in women with the ALDH2*2 dysfunctional allele to improve BP control and lower the risk of all-cause mortality.
	• Binge drinking (defined as ≥ 5 and ≥ 4 drinks for men and women, respectively, in 2 hours) should be strictly prohibited to reduce BP, as well as the risk of atrial fibrillation, stroke and sudden death.
T	An ideal BMI is 20-24.9 kg/m^2 to improve BP control and lower the risk of all-cause mortality.
For the purpose of reducing overall CV risk, cessation of cigarette smoking is recommended.	Cessation of cigarette smoking, irrespective of conventional or electronic cigarettes, is recommended to reduce overall CV risk.
To control hypertension, regular aerobic exercise (≥ 40 min/day, ≥ 3 days/week) is recommended.	• Regular aerobic exercise (≥ 30 min of moderate-intensity exercise on ≥ 5 days/week), with or without resistance exercise, is recommended to improve BP control and reduce CV mortality.
	• Neuromotor exercise or training, such as tai chi, yoga, and meditation, can be suggested to reduce BP.
	• High-intensity exercise is not recommended for patients with uncontrolled hypertension (SBP > 160 mmHg).

生活型態調整：

1. 減少酒精攝取
2. BMI : 20-24.9
3. 戒菸
4. 運動： >30min, 5 days/week
5. 也可運用太極，瑜伽或冥想
6. 血壓未控制<160 mmHg者不建議高強度運動

2022年台灣高血壓治療指引

生活型態調整 - SABCDE



Na: 2-4g/天

鹽: 5-10g/天

使用低鈉鹽

Sodium

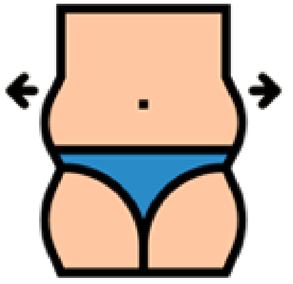
男: <100g/周

ALDH2*2<64g/周

女: <50g/周

ALDH2*2<28g/周

Alcohol



BMI

20~24.9

Kg/m²

Body weight

戒菸

傳統&電子

Cigarette

DASH

多蔬果

Diet

至少30min

5~7天/周

Exercise

高血壓

	SBP values to provide a more reliable BP estimate.
Thresholds for pharmacological treatment	
The threshold for patients with diabetes, CHD, and proteinuric 治療起點： 無危險因子：> 140/90 mmHg 其他：>130/80 mmHg	• A BP level of ≥ 140/90 mmHg should be the threshold for low-risk (no established ASCVD or HMOD, and < 3 ASCVD risk factors) hypertensive patients to initiate pharmacological treatment. • For the other hypertensive patients, a BP level of ≥ 130/80 mmHg is recommended as the threshold to initiate pharmacological treatment.
BP treatment targets	
• The office BP target for patients with diabetes, CHD, or proteinuric CKD is 130/80 mmHg. For other hypertensive 根據 722準則量測血壓 有危險因子病患應盡可能達到 SBP< 120 mmHg recommended.	• A universal BP target of < 130/80 mmHg, based on HBPM obtained according to the 722 protocol, is recommended for all hypertensive patients. • The SBP target can be < 120 mmHg for patients with ASCVD or at high CV risk, if tolerable.

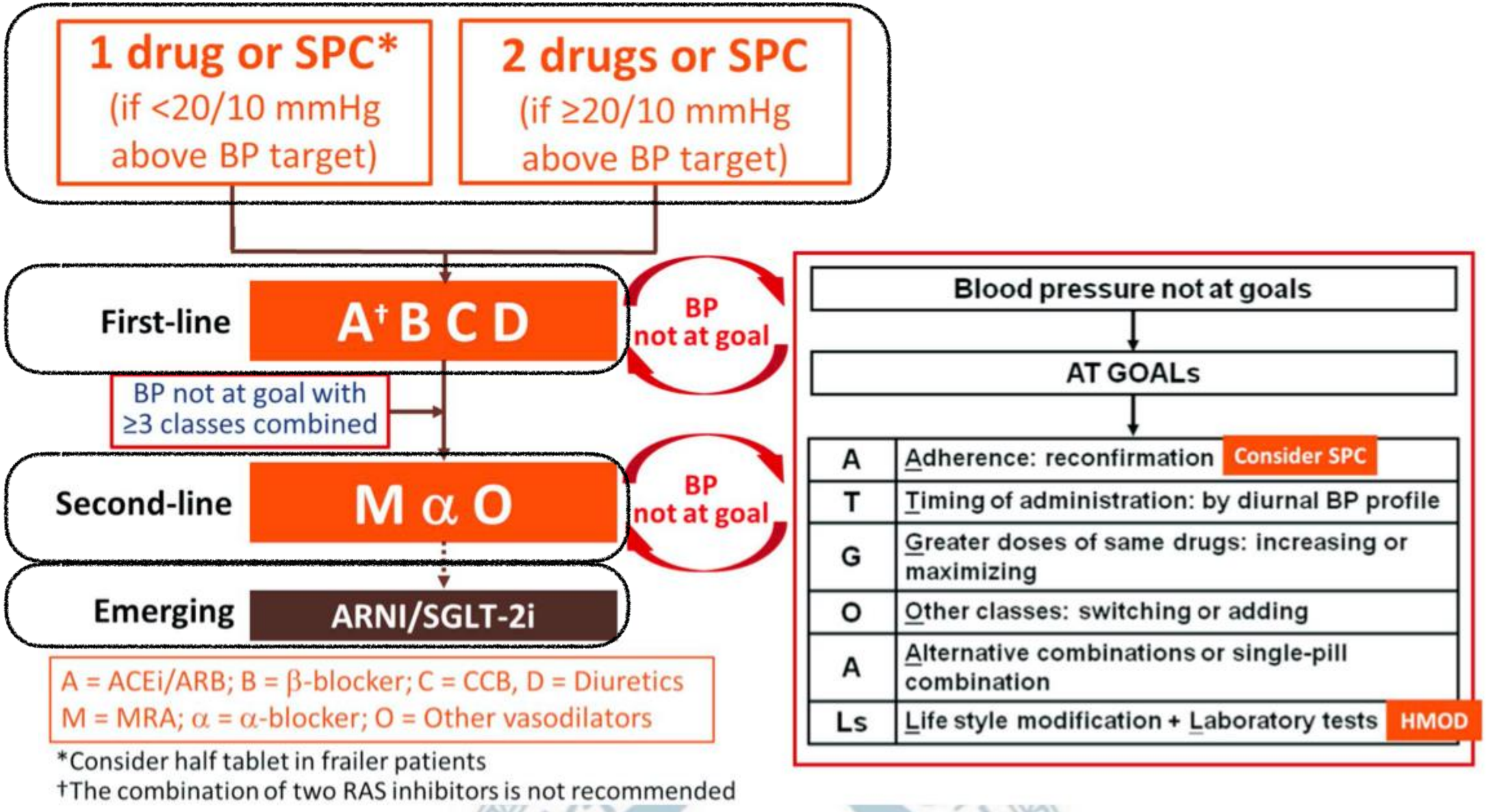


Figure 6. *Adjustment flowchart for the pharmacological treatment of hypertension. ACE, angiotensin-converting enzyme; ARB, angiotensin receptor blocker; ARNI, angiotensin receptor-neprilysin inhibitor; BP, blood pressure; CCB, calcium channel blocker; MRA, mineralocorticoid receptor antagonist; RAS, renin angiotensin system; SGLT-2i, sodium glucose cotransporter-2 inhibitor; SPC, single-pill combination.*

改變了什麼？

2015/2017	2022
Pharmacological treatment	
In patients with BP ≥ 160/100 mmHg, or in select patients with BP ≥ 150/90 mmHg, a single-pill combination can be used as the	• Initial combination therapy, preferably in a single-pill combination, is recommended for patients with BP ≥ 20/10 mmHg above targets.
血壓高於20/10者：可使用兩種成分複方藥物 血壓未高於20/10者：使用單方藥物	• For patients with BP < 20/10 mmHg above targets, a single-pill combination can be considered as the initial antihypertensive drug.
Device therapy	
Use of device-based therapies is not recommended for the	Renal denervation can be considered as a BP-lowering strategy in hypertensive patients with high CV risk, such as resistant or masked uncontrolled hypertension, established ASCVD, intolerant or nonadherent to antihypertensive drugs, or features indicative of neurogenic hypertension, after careful clinical and imaging evaluation.
如無法控制良好高血壓患者可考慮 腎臟交感神經阻斷術治療系統」(The Renal Denervation system, RDN)	

改變了什麼？

Stroke	
For patients with prior stroke, an office BP target of < 140/90 mmHg is recommended.	• A BP target of < 130/80 mmHg should be considered for most patients in the chronic stage of stroke.
密集監測藥物副作用以達到血壓<130/80	• Careful observation of brain hypoperfusion-related side effects caused by BP-lowering therapy may be considered in patients with bilateral internal carotid artery significant stenoses or basilar artery stenosis (> 70% luminal diameter stenosis).
Chronic kidney disease	
• For patients with CKD stages 2-4 without albuminuria, the BP target is < 140/90 mmHg.	• For patients with CKD before dialysis, an SBP target of < 130 mmHg, based on HBPM or standardized office BP, is recommended.
未接受透析血壓目標：SBP<120-130 mmHg 已透析過血壓目標：SBP<130/80 mmHg	• For patients with CKD before dialysis, an SBP target of < 120 mmHg can be considered, if well-tolerated by the patients.
• For patients with CKD with an eGFR of 20-60 ml/min/1.73 m², the AOBP target for SBP is < 120 mmHg.	
• For patients with CKD stage 5, the BP target is < 150/90 mmHg.	
• For patients receiving maintenance dialysis, BP targets are < 140/90 mmHg before dialysis, and < 130/80 mmHg after dialysis.	• For CKD patients under dialysis, interdialytic home BP or ABPM is the preferred target. An interdialytic home BP target of < 130/80 mmHg may be considered.

改變了什麼？

The elderly	
• For elderly patients aged ≥ 75 years, a BP target of < 140/90 mmHg, based on AOBP monitoring, is recommended.	For patients aged ≥ 65 years, the SBP target for pharmacological treatment is < 130 mmHg.
Women	
A BP ≥ 160/110 mmHg during pregnancy should be considered an emergency requiring hospitalization.	An SBP >170 mmHg and/or DBP >110 mmHg during pregnancy should be considered an emergency requiring hospitalization.
aspirin (60-80 mg/d) from 12 weeks until the birth of the baby is suggested to prevent preeclampsia.	Low-dose aspirin (75-150 mg/day) is recommended in women at high or moderate risk of preeclampsia from week 12 to weeks 36-37.

高齡血壓目標 SBP < 130 mmHg

懷孕血壓SBP>170 mmHg or DBP>110mmHg應住院治療
子癲前症者應於12週至36-37週服用低劑量Aspirin

腦中風血壓控制目標

Table 19. BP thresholds and targets for patients with stroke

Stage	Hyperacute	Acute			Convalescence		Chronic
Timing	Ambulance-based	< 1 h		1-24 h	24-72 h (or before discharge)		> 72 h (or after discharge)
Decision	Threshold/target	Threshold	BP target	BP target	Threshold	BP target	BP target (HBPM)
IS w/o IVT or EVT	NR	BP ≥ 220/120 mmHg or others*	SBP ↓15%	Individualized	Stable stroke#	< 140/90 mmHg	< 130/80 mmHg†
IS with IVT	NR	BP ≥ 185/110 mmHg	Before IVT: < 185/110 mmHg	After IVT: < 180/105 mmHg	Stable stroke#	< 140/90 mmHg	< 130/80 mmHg†
IS with EVT	NR	BP ≥ 185/110 mmHg	Before EVT: < 185/110 mmHg; During EVT: 140-180 mmHg	After EVT: < 180/105 mmHg; < 140/90 mmHg (successful recanalization)	Stable stroke#	< 140/90 mmHg	< 130/80 mmHg†

腦出血血壓控制目標

ICH	NR	SBP ≥ 220 mmHg	SBP ↓15%	Individualized (approximately SBP < 140 mmHg)	Stable stroke[#]	< 140/90 mmHg	< 130/80 mmHg
		SBP ≥ 160 mmHg	SBP↓ by 20-60 mmHg	< 140 mmHg			
SAH	NR	SBP ≥ 160 mmHg	120-160 mmHg before the aneurysm is treated		Stable stroke[#]	120-160 mmHg before the aneurysm is treated	< 130/80 mmHg (after or intentionally waiving aneurysm treatment)

高血脂

- 住院抽血發現膽固醇過高，要治療嗎？

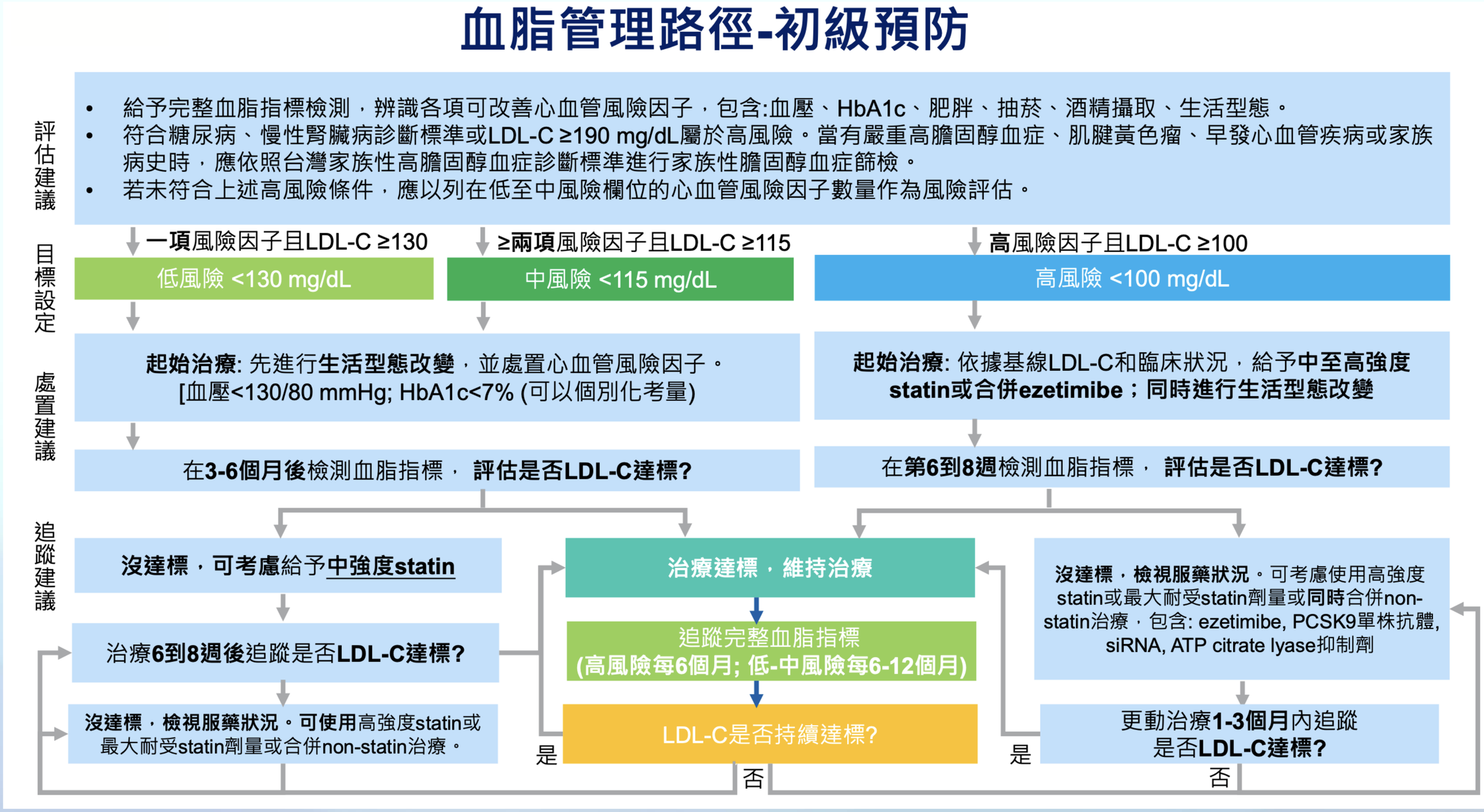
高血脂

表一：風險分級目標對象定義

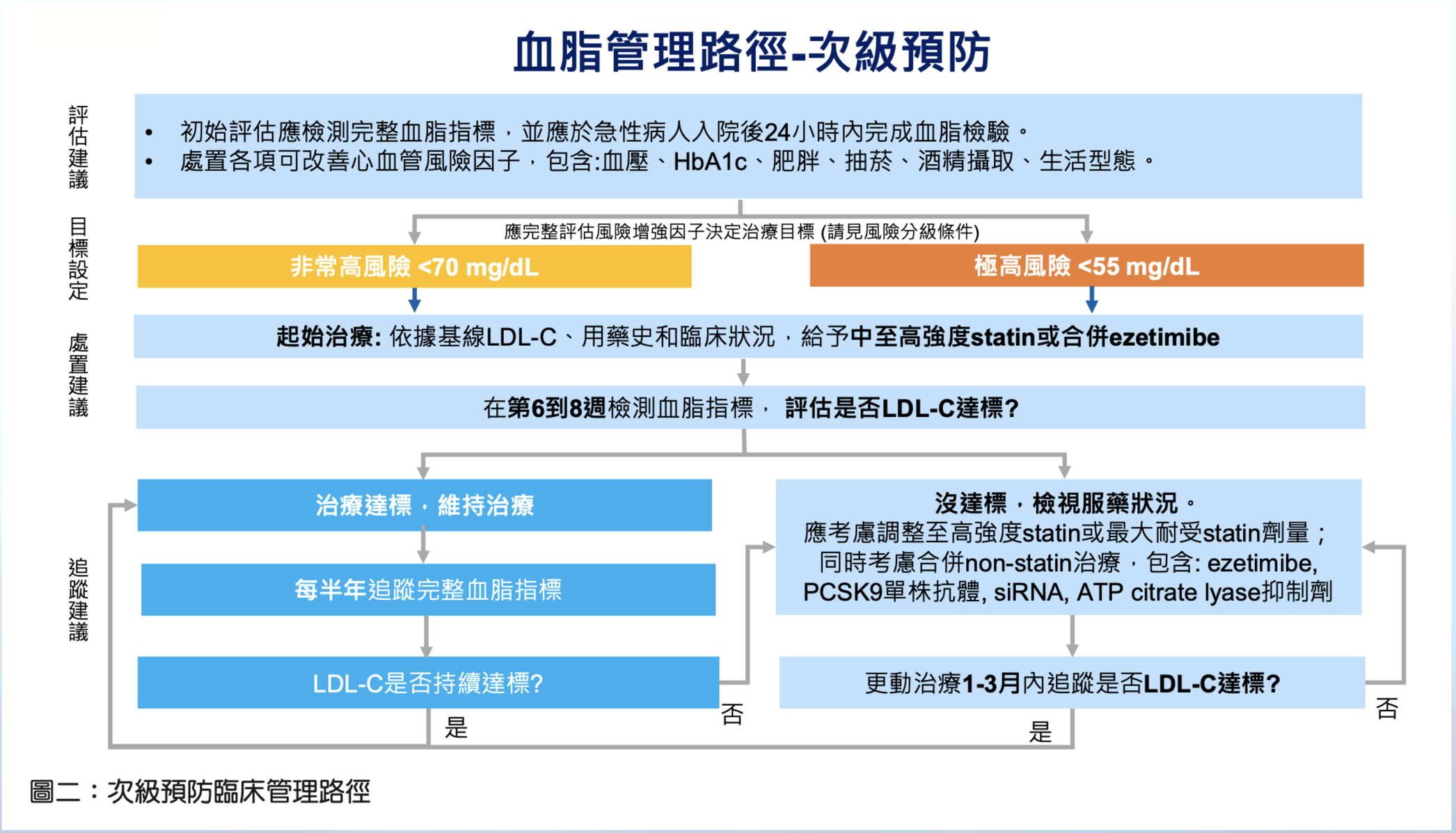
低 / 中	高	非常高	極高
● 心血管風險因子: （低：一項; 中：≥兩項） 1) 高血壓 2) 年齡 (男≥45歲; 女≥55歲) 3) 早發性冠心病家族史 (男≤55歲; 女≤65歲) 4) HDL-C (男<40 mg/dL;女<50 mg/dL) 5) 抽菸 6) 代謝性症候群 (符合以下至少三項) – 腹部肥胖 (男≥90cm;女≥80cm) – 血壓偏高(≥130/85 mmHg或使用高血壓藥物) – 空腹血糖偏高 (≥100mg/dL或使用糖尿病藥物) – 空腹TG偏高 (≥150mg/dL或使用治療TG血脂藥物) – HDL-C偏低(男<40mg/dL;女<50mg/dL)	● 糖尿病 ● 慢性腎臟病 (進入透析治療前的慢性腎臟病，包括UACR ≥ 30 mg/g or eGFR < 60 mL/min/1.73 m2 至少持續3個月) ● LDL-C ≥190 mg/dL ● 冠狀動脈鈣化分數(CAC) ≥ 400	● 經臨床檢查確診為動脈硬化心血管疾病，包含: 1) 急性冠心症病史 2) 接受血管再通術 (心導管介入治療或外科冠狀動脈繞道手術) 3) 缺血性中風/短暫性腦缺血發作合併動脈硬化相關疾病病史 4) 周邊動脈疾病 (曾接受血管再通術、有肢體缺血相關症狀或截肢) ● 經影像檢查確認有顯著斑塊負擔，定義為≥50%直徑狹窄，包含: 1) 冠狀動脈血管攝影 2) 冠狀動脈或周邊血管電腦斷層攝影 3) 頸動脈或周邊血管超音波	● 冠狀動脈疾病合併下列任一臨床狀況: 1) 一年內曾經歷心肌梗塞 2) ≥兩次心肌梗塞病史 3) 多支冠狀動脈阻塞 4) 急性冠心症合併糖尿病 5) 周邊動脈疾病或頸動脈狹窄 ● 周邊動脈疾病合併有 1) 冠狀動脈疾病 或 2) 頸動脈狹窄

eGFR, estimated glomerular filtration rate; HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; TG, triglyceride; UACR, urine albumin-creatinine ratio.

高血脂


血脂管理路徑-初級預防
評估建議
• 給予完整血脂指標檢測，辨識各項可改善心血管風險因子，包含:血壓、HbA1c、肥胖、抽菸、酒精攝取、生活型態。
• 符合糖尿病、慢性腎臟病診斷標準或LDL-C ≥190 mg/dL屬於高風險。當有嚴重高膽固醇血症、肌腱黃色瘤、早發心血管疾病或家族病史時，應依照台灣家族性高膽固醇血症診斷標準進行家族性膽固醇血症篩檢。
• 若未符合上述高風險條件，應以列在低至中風險欄位的心血管風險因子數量作為風險評估。
目標設定
一項風險因子且LDL-C ≥130
低風險 <130 mg/dL
≥兩項風險因子且LDL-C ≥115
中風險 <115 mg/dL
高風險因子且LDL-C ≥100
高風險 <100 mg/dL
處置建議
起始治療: 先進行生活型態改變，並處置心血管風險因子。
[血壓<130/80 mmHg; HbA1c<7% (可以個別化考量)
起始治療: 依據基線LDL-C和臨床狀況，給予中至高強度statin或合併ezetimibe；同時進行生活型態改變
在3-6個月後檢測血脂指標， 評估是否LDL-C達標?
在第6到8週檢測血脂指標， 評估是否LDL-C達標?
追蹤建議
沒達標，可考慮給予中強度statin
治療達標，維持治療
沒達標，檢視服藥狀況。可考慮使用高強度statin或最大耐受statin劑量或同時合併non-statin治療，包含: ezetimibe, PCSK9單株抗體, siRNA, ATP citrate lyase抑制劑
治療6到8週後追蹤是否LDL-C達標?
追蹤完整血脂指標
(高風險每6個月; 低-中風險每6-12個月)
沒達標，檢視服藥狀況。可使用高強度statin或最大耐受statin劑量或合併non-statin治療。
LDL-C是否持續達標?
更動治療1-3個月內追蹤是否LDL-C達標?
是
否
是
否

高血脂



圖二：次級預防臨床管理路徑

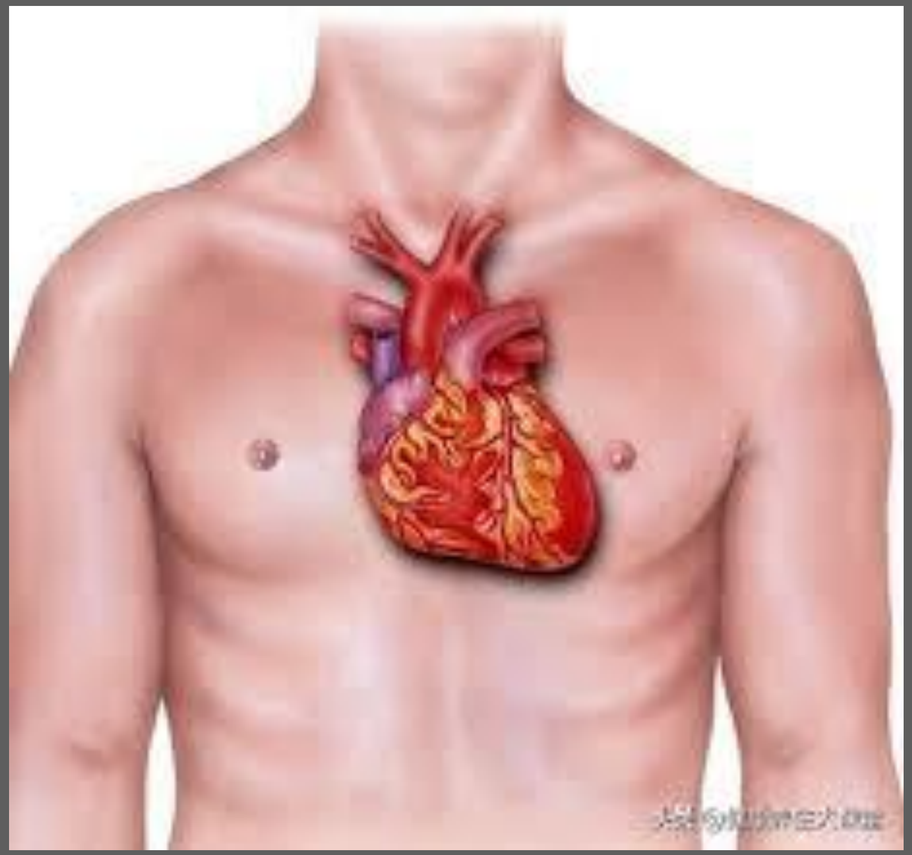
高血脂

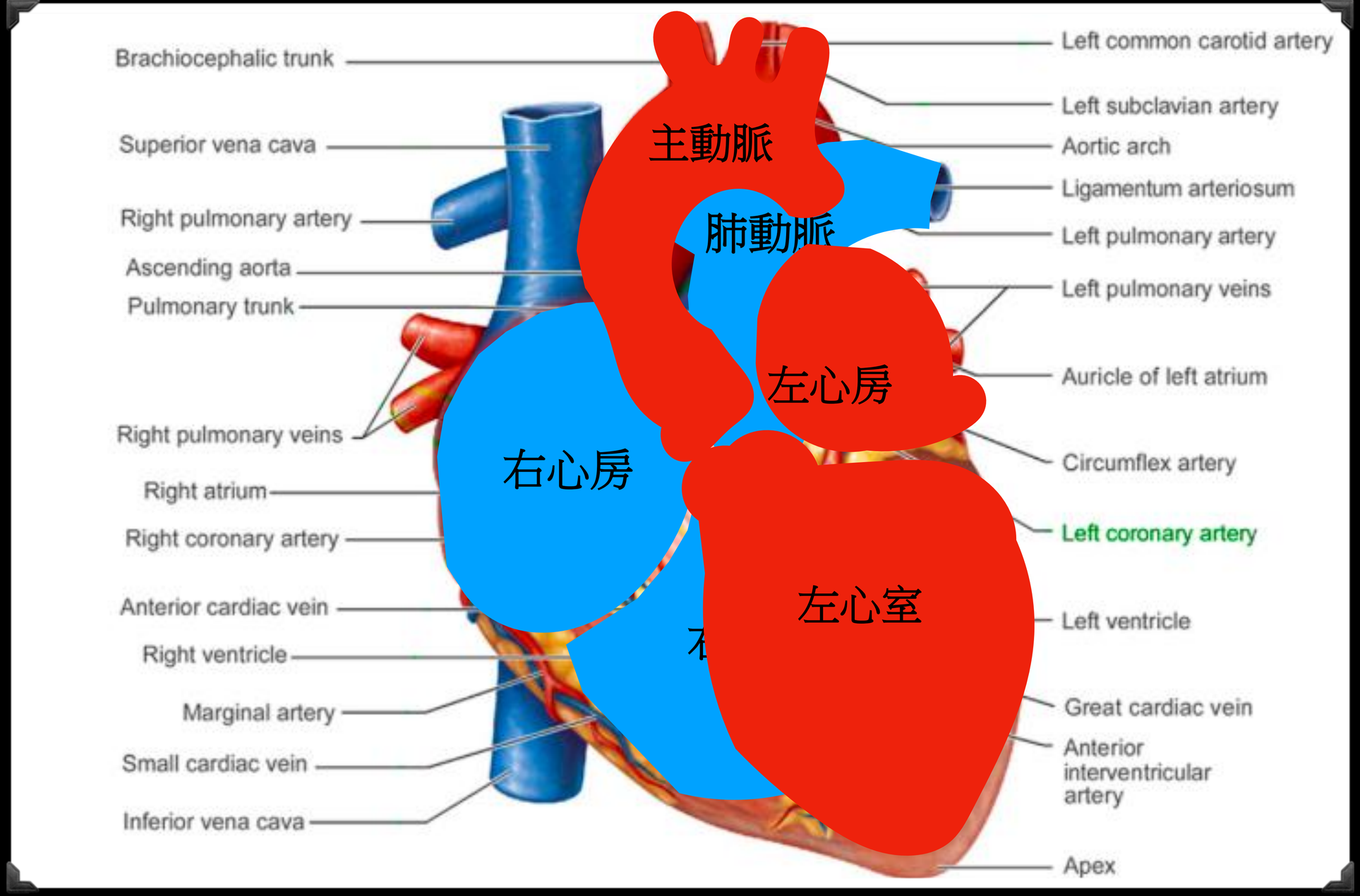
藥物種類	原理	常用藥名	治療血脂效用	副作用
纖維酸鹽衍生物（Fibric acid derivatives）	刺激脂蛋白脂解的分解活性，促進低密度脂蛋白代謝，並抑制肝細胞中脂質代謝。	● Gemfibrozil ● Fenofibrate ● Clofibrate	LDL ↓ 10～35% HDL ↑ 10～20% TG ↓ 20～50%	消化不良 膽結石 肌肉病變
膽酸結合樹脂（Bile acid sequestrant resin）	阻止腸胃道中的膽酸再吸收，增加肝臟代償，進而增加低密度膽固醇的代謝。	● Cholestyramine ● Colestipol ● Colesevelam	LDL ↓ 15～30% HDL ↑ 3～5% TG 沒有改變	腸胃道不適 便秘 降低其他藥物吸收效果
菸鹼酸（Nicotinic acid）	屬於維生素 B 群之一，大劑量可以降低低密度膽固醇製造，降低三酸甘油酯。	● Niacin ● Niaspan	LDL ↓ 5～25% HDL ↑ 15～35% TG ↓ 20～50%	腸胃道不適 臉潮紅 高尿酸 高血糖 肝毒性
史塔汀（Statins）（HMG-CoA reductase inhibitors）	抑制肝細胞的膽固醇合成，減少肝臟分泌壞膽固醇，提升好的膽固醇，降低三酸甘油酯。	● Rosuvasatatin ● Lovastatin ● Simvastatin ● fluvastatin ● atorvastatin	TC ↓ 30～40% LDL ↓ 18～55% HDL ↑ 5～15% TG ↓ 7～30%	肌肉病變 肝細胞酵素增加 血糖升高（5%）
膽固醇吸收抑制劑（Ezetimibe）	經由抑制飲食攝取的膽固醇在小腸絨毛邊緣細胞的吸收，而降低總膽固醇。 ※ 單獨服用療效不佳，必須和史塔汀藥物並用，才能達到雙重抑制效果。	● Ezetimibe	LDL ↓ 16%	頭痛 腹痛 腹瀉

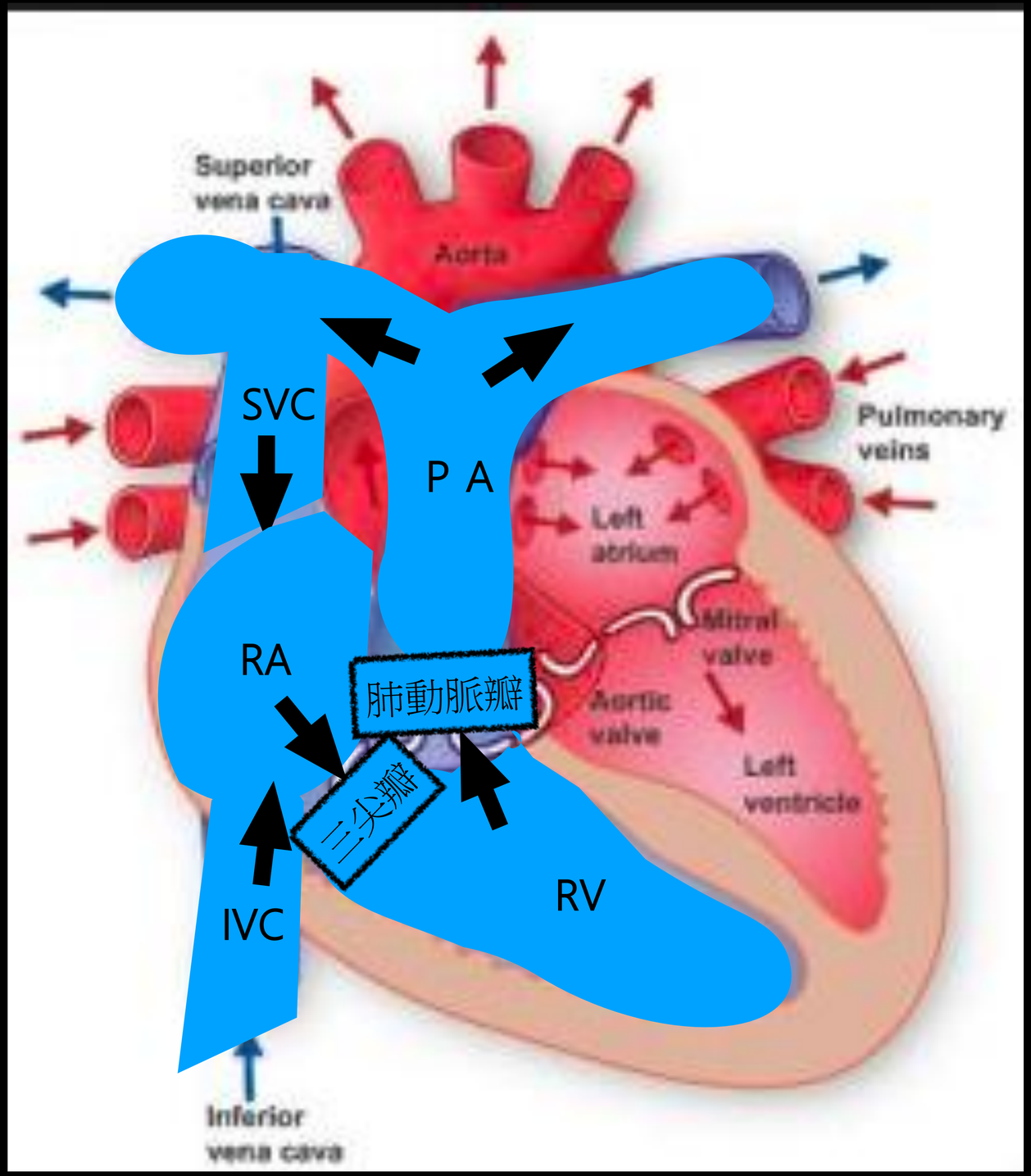
冠心症

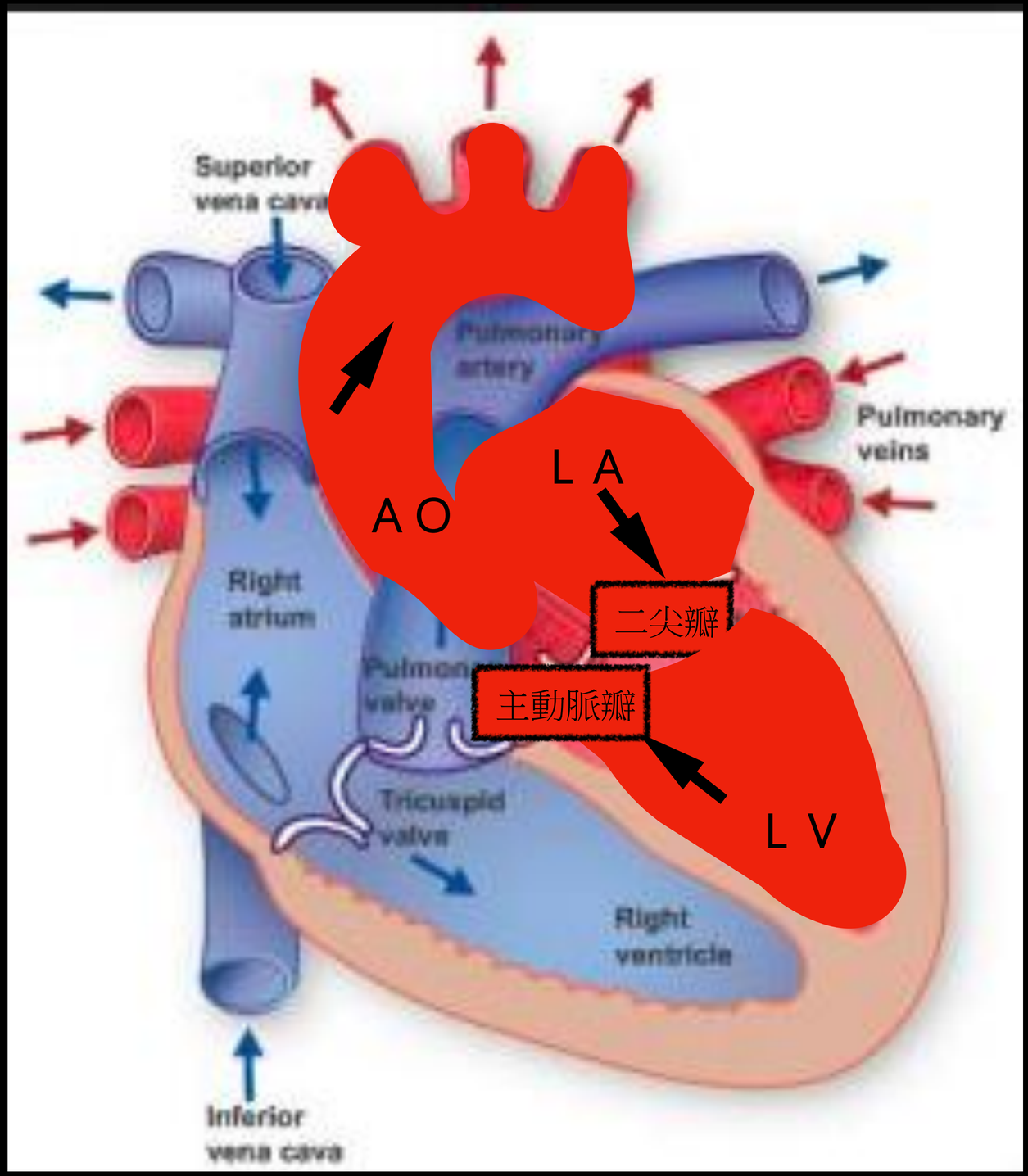
- 病患胸悶痛，需要做心導管嗎？

心臓位置？
冠状動脈位置？

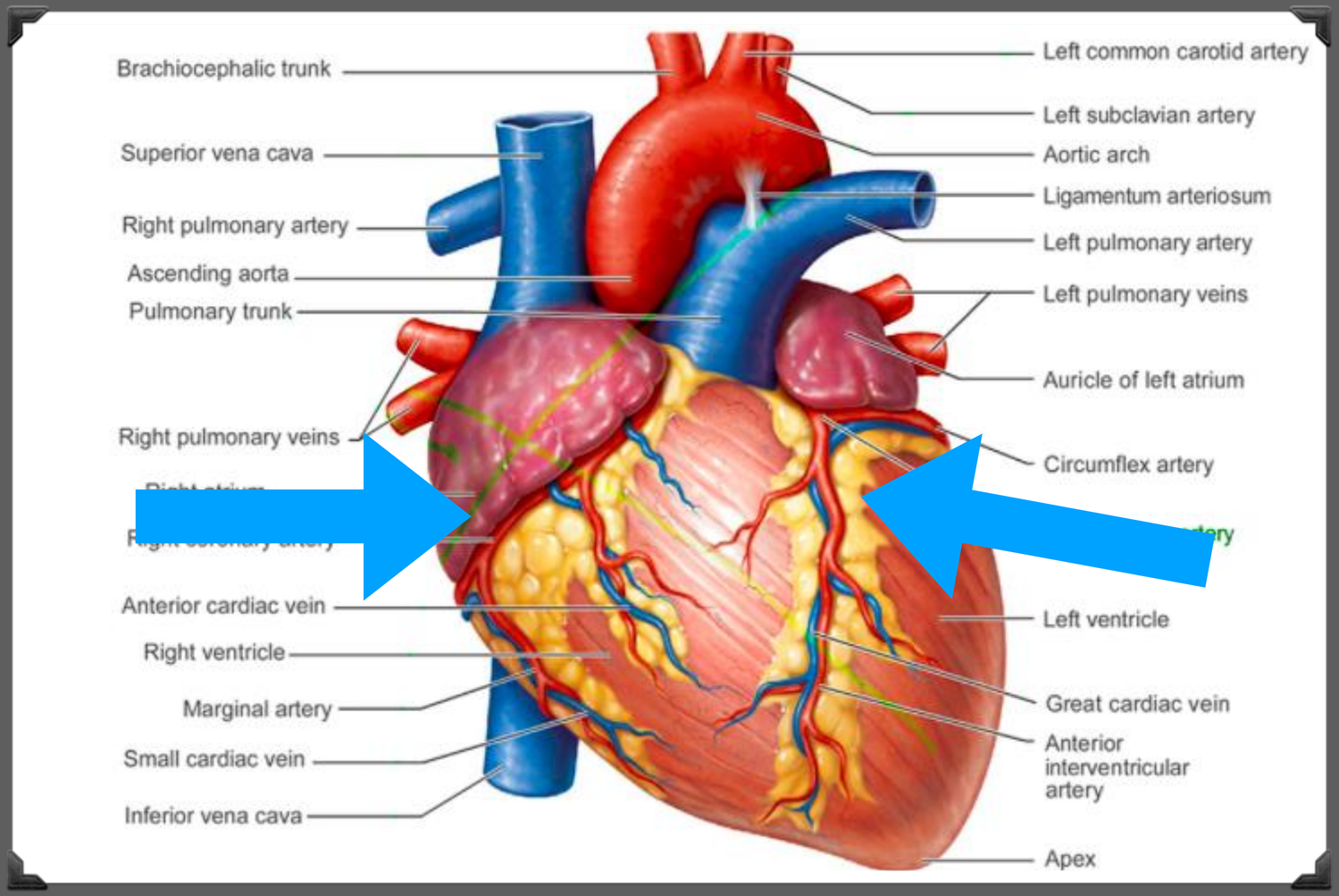



Brachiocephalic trunk
Superior vena cava
Right pulmonary artery
Ascending aorta
Pulmonary trunk
Right pulmonary veins
Right atrium
Right coronary artery
Anterior cardiac vein
Right ventricle
Marginal artery
Small cardiac vein
Inferior vena cava
主動脈
肺動脈
右心房
左心房
左心室
Left common carotid artery
Left subclavian artery
Aortic arch
Ligamentum arteriosum
Left pulmonary artery
Left pulmonary veins
Auricle of left atrium
Circumflex artery
Left coronary artery
Left ventricle
Great cardiac vein
Anterior interventricular artery
Apex


Superior
vena cava
Aorta
SVC
P A
Pulmonary
veins
Left
atrium
Mitral
valve
RA
肺動脈瓣
Aortic
valve
三尖瓣
Left
ventricle
RV
IVC
Inferior
vena cava

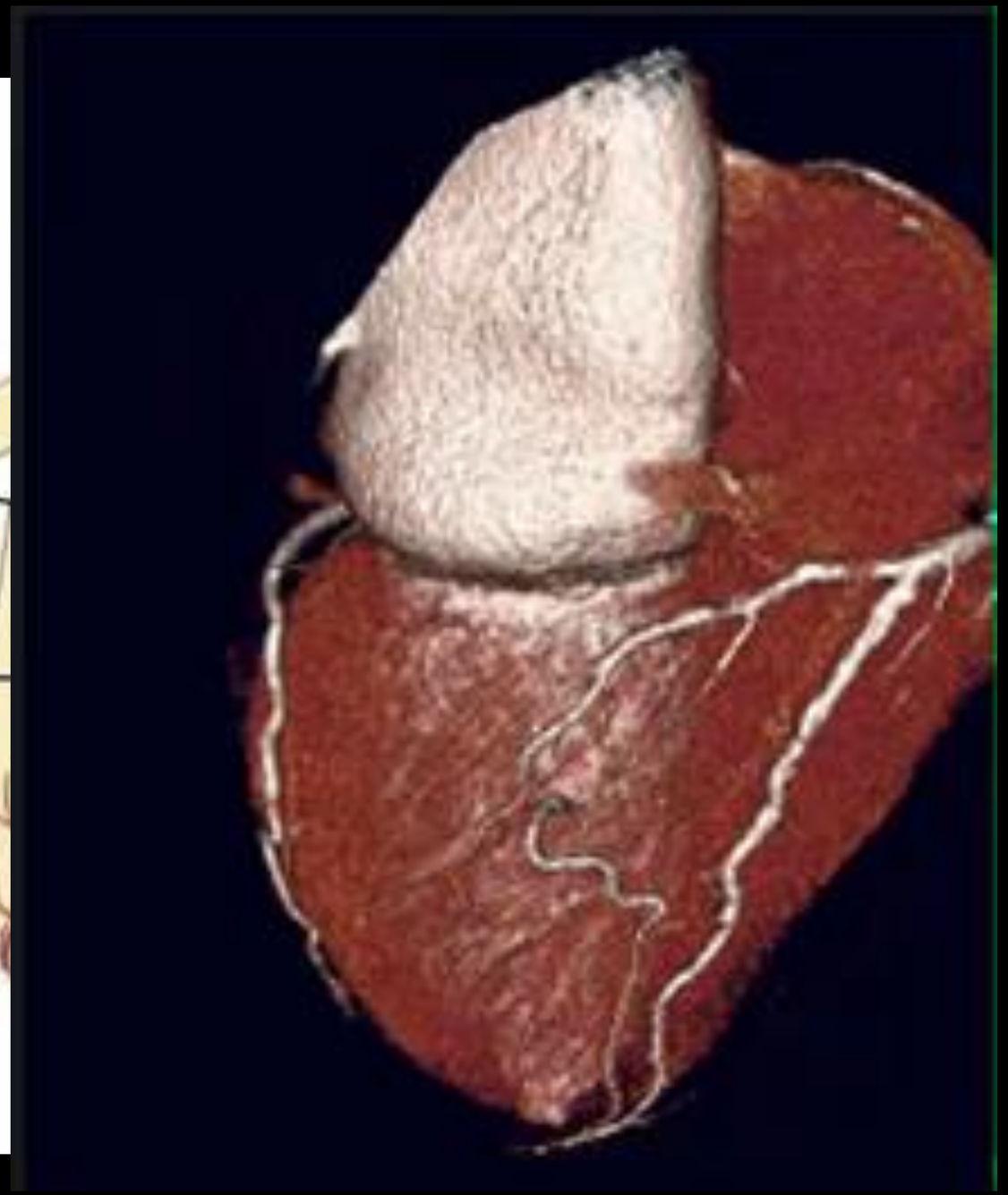

Superior
vena cava
Pulmonary
artery
Pulmonary
veins
A O
L A
二尖瓣
主動脈瓣
L V
Right
atrium
Pulmon
valve
Tricuspid
valve
Right
ventricle
Inferior
vena cava

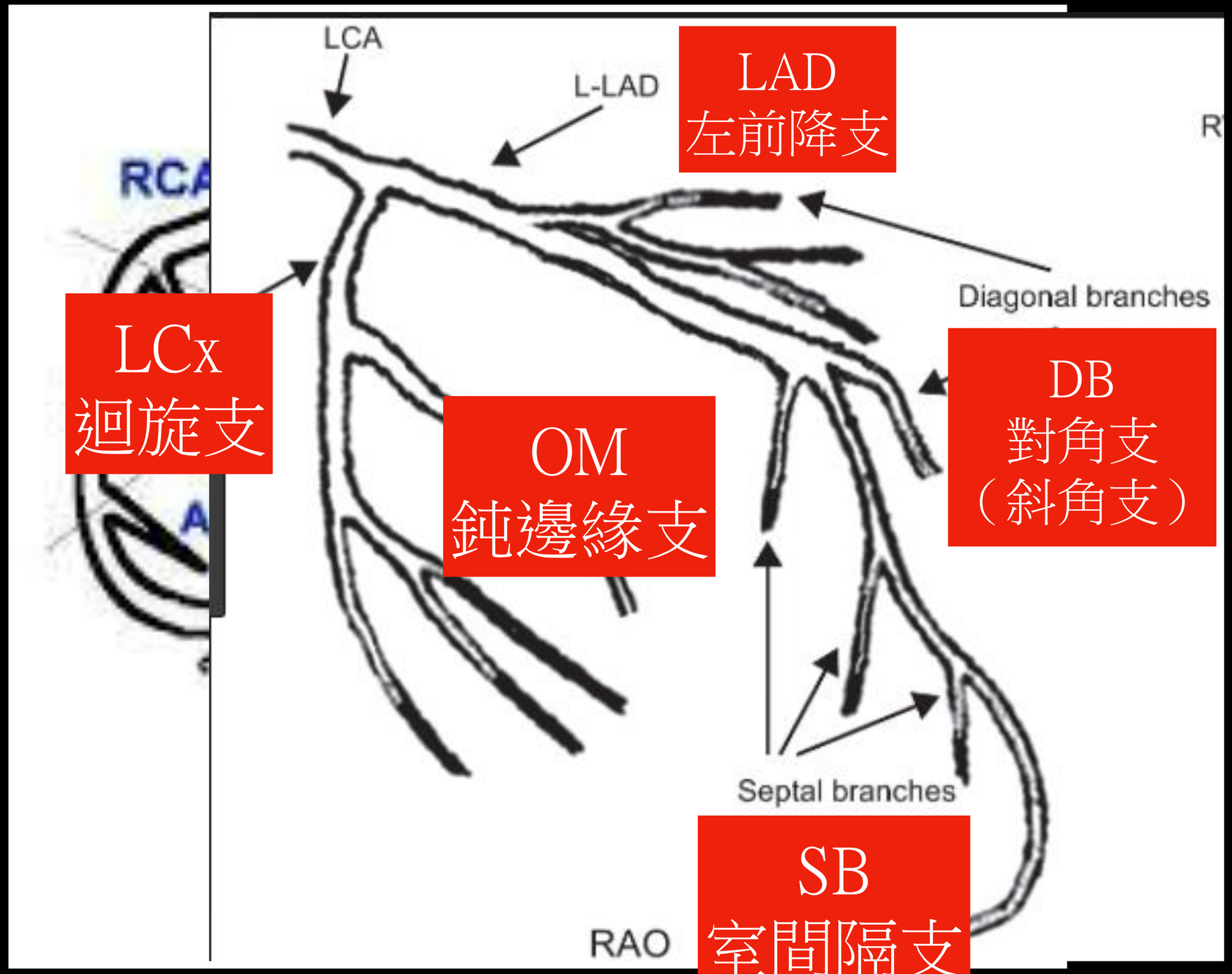
冠狀動脈在哪裡？

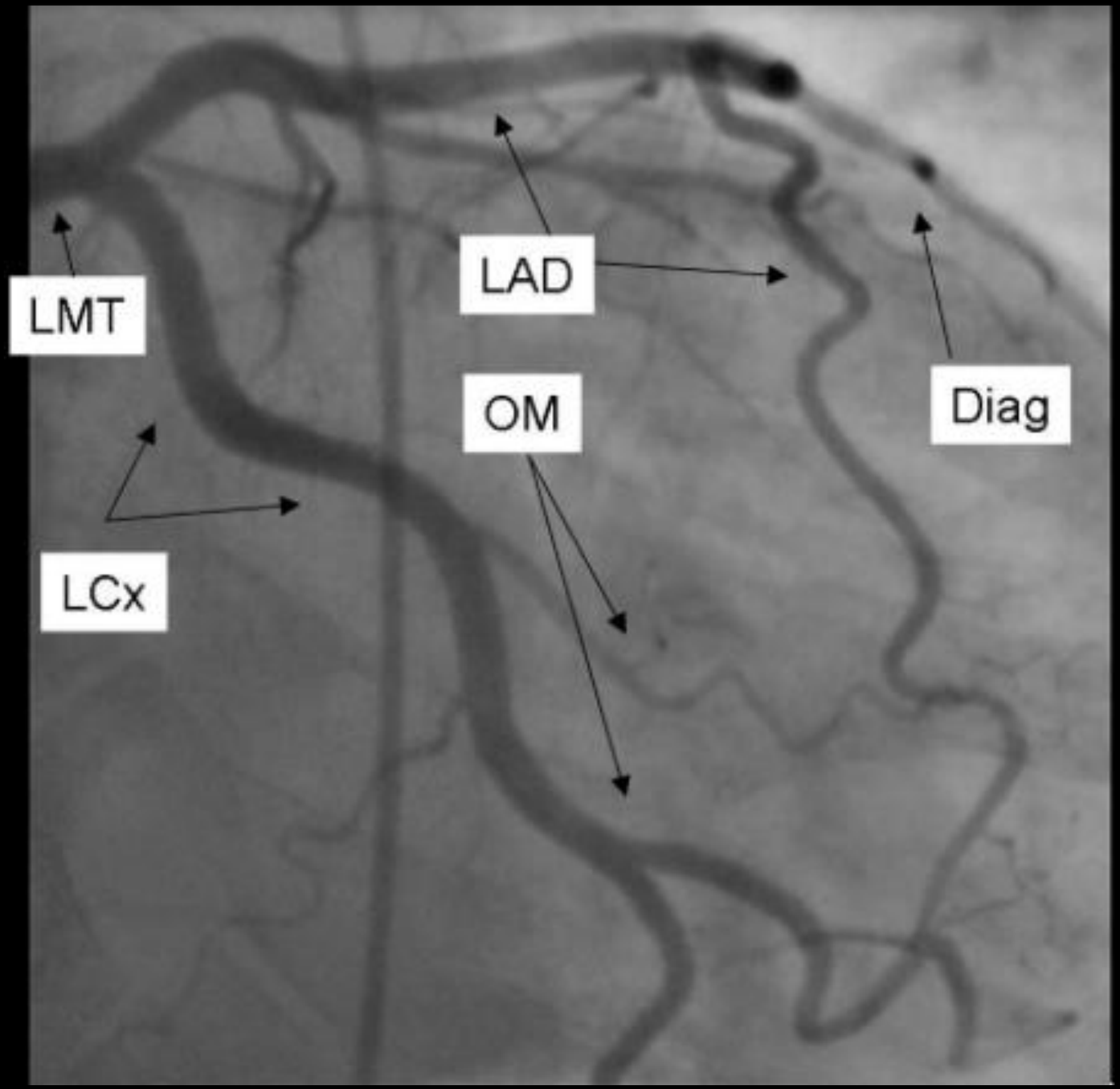

Brachiocephalic trunk
Superior vena cava
Right pulmonary artery
Ascending aorta
Pulmonary trunk
Right pulmonary veins
Anterior cardiac vein
Right ventricle
Marginal artery
Small cardiac vein
Inferior vena cava
Left common carotid artery
Left subclavian artery
Aortic arch
Ligamentum arteriosum
Left pulmonary artery
Left pulmonary veins
Auricle of left atrium
Circumflex artery
Left ventricle
Great cardiac vein
Anterior interventricular artery
Apex

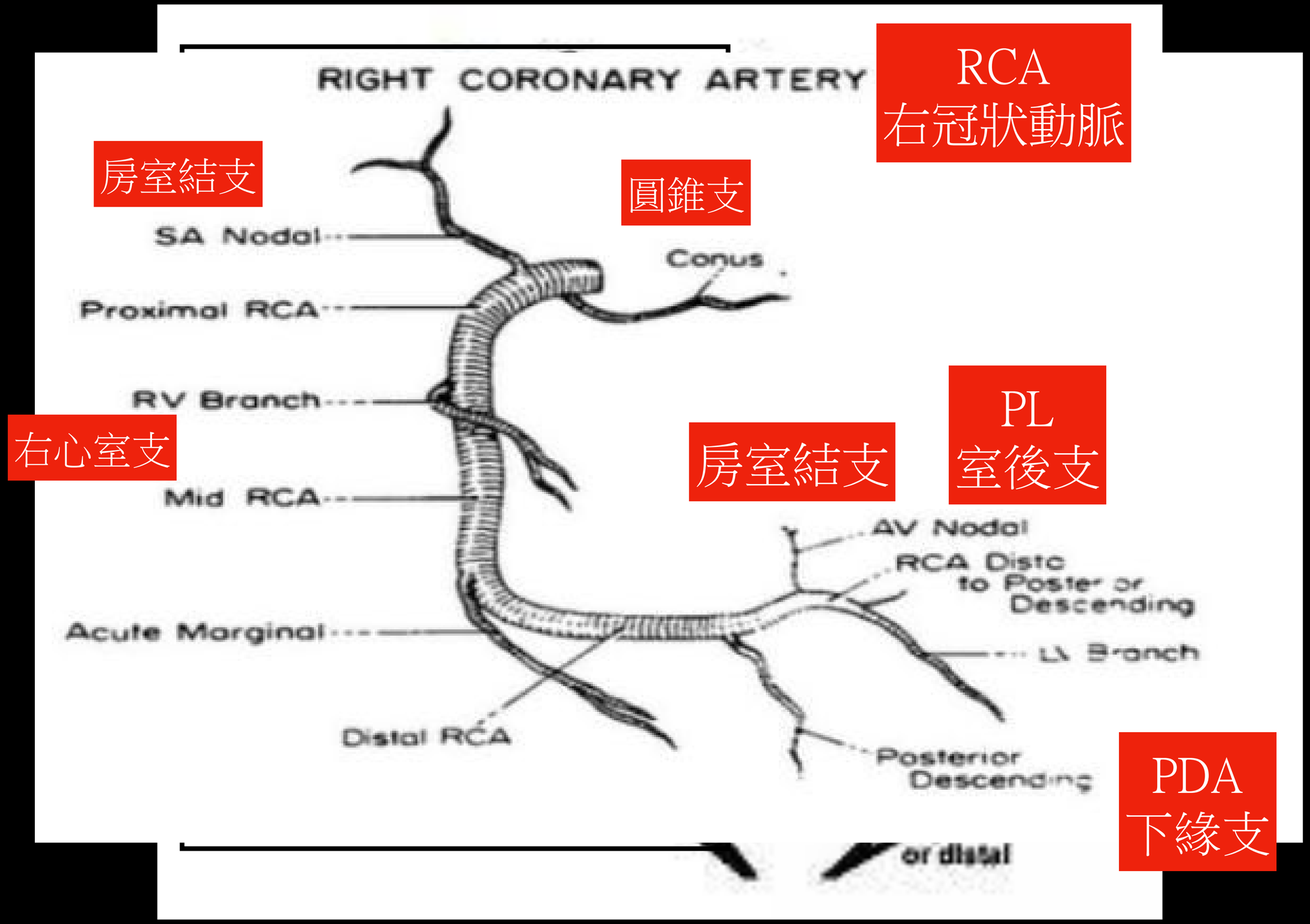
左冠状动脉

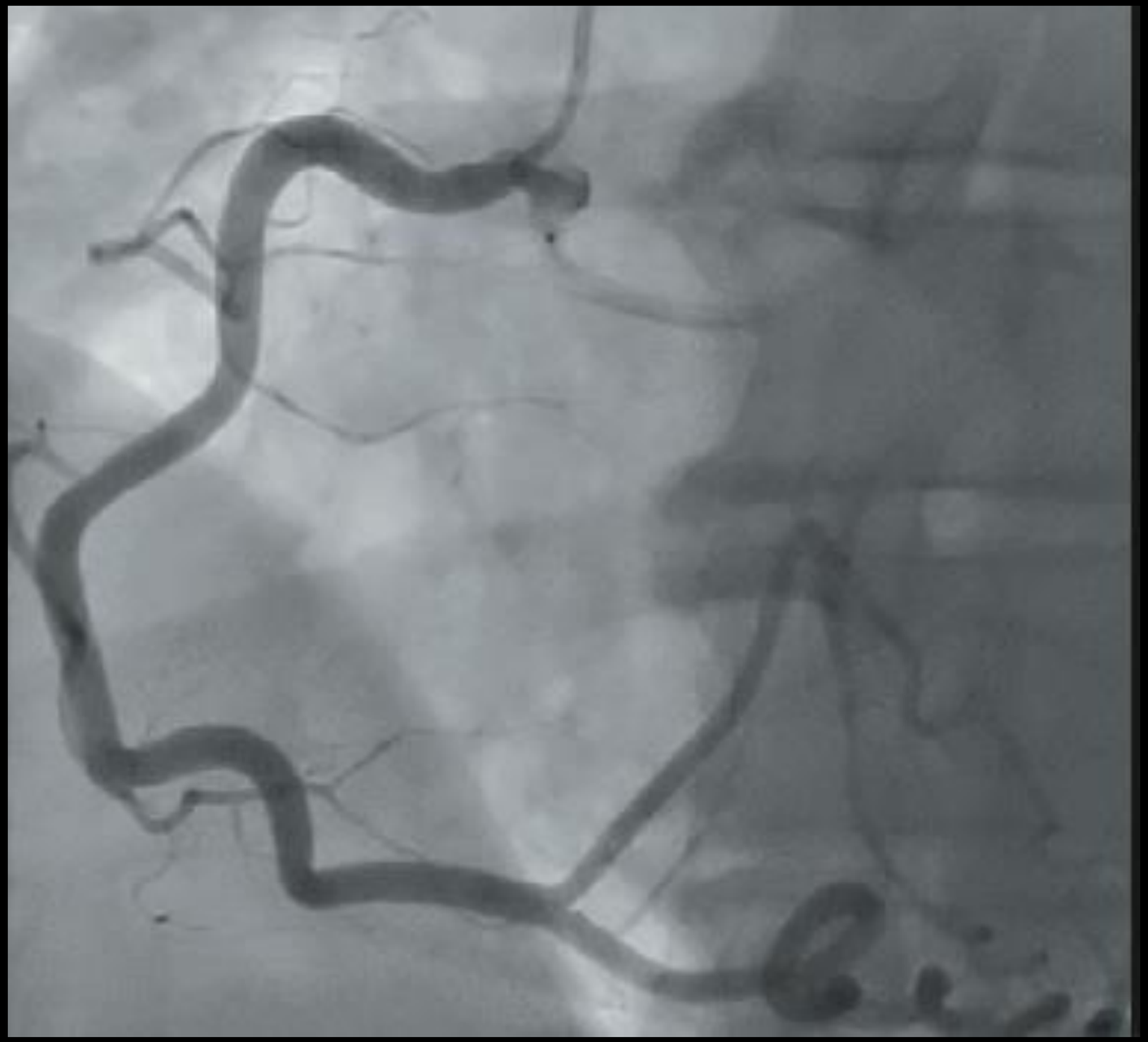
右冠状动脉




LCA
L-LAD
LAD
左前降支
RCA
LCx
迴旋支
Diagonal branches
DB
對角支
（斜角支）
OM
鈍邊緣支
Septal branches
SB
室間隔支
RAO


LMT
LAD
OM
Diag
LCx


RIGHT CORONARY ARTERY
房室結支
SA Nodal
圓錐支
Conus
Proximal RCA
RV Branch
右心室支
房室結支
PL
室後支
Mid RCA
AV Nodal
RCA Distc
to Poster or
Descending
Acute Marginal
LA Branch
Distal RCA
Posterior
Descending
PDA
下緣支
or distal
RCA
右冠狀動脈



TO PART 2