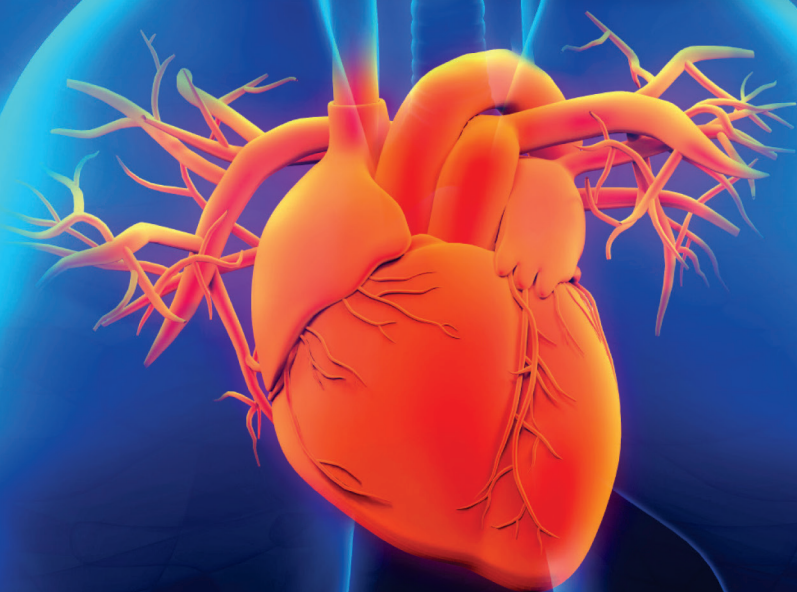


CLINICAL GUIDE TO

# Cardiology



Edited by  
**Christian F. Camm**  
**A. John Camm**



**WILEY** Blackwell



# Clinical Guide to Cardiology

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# Clinical Guide to Cardiology

*Edited by*

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# Acronyms and Abbreviations

2D	two-dimensional
3D	three-dimensional
A2	aortic valve component of heart sound 2
AAA	abdominal aortic aneurysm
ABG	arterial blood gas
ABPM	ambulatory blood pressure monitoring
ACC	American College of Cardiology
ACE	angiotensin-converting enzyme
ACEi	angiotensin-converting enzyme inhibitor
ACR	albumin:creatinine ratio
ACS	acute coronary syndrome
ACTH	adrenocorticotrophic hormone
ADP-P2Y	adenosine diphosphate-P2Y receptor
AF	atrial fibrillation
AHA	American Heart Association
AI	angiotensin I
II	angiotensin II
AKI	acute kidney injury
ALD	alcoholic liver disease
ALP	alkaline phosphatase
ALS	advanced life support
AMA	American Medical Association
AMB	acute marginal branch
AMTS	Abbreviated Mental Test score
APS	antiphospholipid syndrome
aPTT	activated partial thromboplastin time
AR	aortic regurgitation
ARB	angiotensin-II receptor blocker
ARDS	acute respiratory distress syndrome
AS	aortic stenosis
ASD	atrial septal defect
AST	aspartate aminotransferase
ATP	adenosine triphosphate
AV	atrioventricular
AVN	atrioventricular node
AVNRT	AV-nodal re-entrant tachycardia
AVPU	alert/responsive to voice/responsive to pain/unresponsive
AVRT	atrioventricular re-entrant tachycardia
AVSD	atrioventricular septal defect
BAH	bilateral adrenocortical hyperplasia
BAV	balloon aortic valvuloplasty
BCS	British Cardiovascular Society
BD	twice a day
BE	base excess
beta-hCG	beta human chorionic gonadotrophin
BM	Boehringer-Mannheim – capillary glucose test
BMI	body mass index
BNP	brain natriuretic peptide

BP	blood pressure
BPH	benign prostatic hyperplasia
bpm	beats per minute
CABG	coronary artery bypass graft
CAC	coronary artery calcium
CAD	coronary artery disease
Cath Lab	(coronary) catheterization laboratory
CCB	calcium-channel blocker
CCF	congestive cardiac failure
CCP	cyclic citrullinated peptide
CCU	cardiac care unit
CK-MB	creatinine kinase – MB isoform
CKD	chronic kidney disease
CMV	cytomegalovirus
CN	coagulase negative
CNS	central nervous system
CO	cardiac output
CoA	coarctation of the aorta
COPD	chronic obstructive pulmonary disease
COX	cyclo-oxygenase
CPAP	continuous positive airway pressure
CPR	cardiopulmonary resuscitation
CRP	C-reactive protein
CRT	cardiac resynchronization therapy
CRT-D	cardiac resynchronization therapy + cardiac defibrillator
CT	computed tomography
CTPA	computed tomography pulmonary angiogram
CTR	cardiothoracic ratio
CV(S)	cardiovascular (system)
CVA	cerebrovascular accident
CVD	cerebrovascular disease
CVP	central venous pressure
CXA	X-ray coronary angiography
CXR	chest X-ray
DAPT	dual anti-platelet therapy
DC	direct current
DCM	dilated cardiomyopathy
DH	drug history
DHP	dihydropyridine
DKA	diabetic ketoacidosis
DM	diabetes mellitus
DVLA	Driver and Vehicle Licensing Agency
DVT	deep vein thrombosis
EBV	Epstein–Barr virus
ECG	electrocardiogram
echo	echocardiogram
ED	emergency department
EDV	end-diastolic volume
EEG	electroencephalogram
EF	ejection fraction
EGDT	early goal-directed therapy
eGFR	estimated glomerular filtration rate
ELR	external loop recorder
EPS	electrophysiological study
ESC	European Society of Cardiology

ESM	ejection systolic murmur
ESR	erythrocyte sedimentation rate
ESV	end-systolic volume
EVAR	endovascular aneurysm repair
FAST	focused assessment with sonography for trauma
FBC	full blood count
FFP	fresh frozen plasma
FFR	fractional flow reserve
FH	family history
FY2	foundation year 2 doctor
G6PD	glucose-6-phosphate dehydrogenase
GCS	Glasgow coma scale
GFR	glomerular filtration rate
GI	gastrointestinal
GMP	guanosine monophosphate
GORD	gastro-oesophageal reflux disease
GP	general practitioner
GRA	glucocorticoid-remediable aldosteronism
GRACE	Global Registry of Acute Coronary Events
GTN	glyceryl trinitrate
GZA	glycyrrhizic acid
HACEK	organisms associated with culture-negative infective endocarditis
Hb	haemoglobin
HbA1c	glycated haemoglobin
HBPM	home blood pressure monitoring
HCG	human chorionic gonadotrophin
HCM	hypertrophic cardiomyopathy
HDL	high density lipoprotein
HDU	high dependency unit
HF	heart failure
HF-PEF	heart failure with preserved ejection fraction
HF-REF	heart failure with reduced ejection fraction
HIT	heparin-induced thrombocytopenia
HIV	human immunodeficiency virus
HOCM	hypertrophic obstructive cardiomyopathy
HPC	history of the presenting complaint
HR	heart rate
HTN	hypertension
IABP	intra-aortic balloon pump
IC	intercostal
ICD	implantable cardioverting defibrillator
ICH	intracerebral haemorrhage
IE	infective endocarditis
IGG	immunoglobulin G
IHD	ischaemic heart disease
ILR	internal loop recorder
IM	intramuscular
INR	international normalized ratio
ISMN	isosorbide mononitrate
ITU	intensive therapy unit
IV	intravenous
IVCD	intraventricular conduction delay
IVDU	intravenous drug user
IVUS	intravascular ultrasound
JVP	jugular venous pulse/pressure

LA	left atrium
Lac	lactate
LAD	left anterior descending coronary artery
LBBB	left bundle branch block
LCx	left circumflex artery
LDH	lactate dehydrogenase
LDL cholesterol	low density lipoprotein cholesterol
LFT	liver function test
LGV	large goods vehicle
LL	left leg
LMA	laryngeal mask airway
LMCA	left main coronary artery
LMWH	low molecular weight heparin
LQTS	long QT syndrome
LV	left ventricular/left ventricle
LVEDP	left ventricular end-diastolic pressure
LVEDV	left ventricular end-diastolic volume
LVEF	left ventricular ejection fraction
LVESD	left ventricular end-systolic diameter
LVH	left ventricular hypertrophy
LVOT	left ventricular outflow tract
LVOTO	left ventricular outflow tract obstruction
MAHA	microangiopathic haemolytic anaemia
MAOI	monoamine oxidase inhibitor
MAP	mean arterial pressure
MAU	medical assessment unit
MCA	middle cerebral artery
MCV	mean corpuscular volume
MDCT	multi-detector row computed tomography
MDM	multidisciplinary meeting
MDT	multidisciplinary team
MEN	multiple endocrine neoplasia
MI	myocardial infarction
MIBG	meta-iodobenzylguanidine
MR	mitral regurgitation
MRA	mineralocorticoid receptor antagonist
MRI	magnetic resonance imaging
MS	mitral stenosis
MVP	mitral valve prolapse
NAC	N-acetylcysteine
NBM	nil by mouth
NICE	National Institute for Health and Care Excellence
NOAC	novel oral anticoagulant
NPA	nasopharyngeal mask airway
NSAID	non-steroidal anti-inflammatory drug
NSTE ACS	non-ST-elevation acute coronary syndrome
NSTEMI	non-ST-elevation myocardial infarction
NYHA	New York Heart Association
OCT	optical coherence tomography
OD	once a day
OMB	obtuse marginal artery
OMT	optimal medical therapy
OR	odds ratio
OSCE	objective structured clinical examination
P2	pulmonary valve constituent of the second heart sound

PAD	peripheral arterial disease
P <sub>a</sub> O <sub>2</sub>	partial pressure of arterial oxygen
PCA	patient-controlled analgesia
PCC	prothrombin complex concentrate
PCI	percutaneous coronary intervention
PCR	protein:creatinine ratio
PCV	passenger-carrying vehicle
PDA	patent ductus arteriosus
PDE-5	phosphodiesterase-5
PE	pulmonary embolism
PEF	peak expiratory flow
PET	positron emission tomography
PFO	patent foramen ovale
PG	prostaglandin
PICC	peripherally inserted central catheter
PLV	posterior left ventricular branch
PMC	percutaneous mitral commissurotomy
PMH	past medical history
PND	paroxysmal nocturnal dyspnoea
PO	<i>per os</i> – taken orally
PP	pulse pressure
PPI	proton-pump inhibitor
PR	<i>per rectum</i>
PRN	<i>pro re nata</i> – as needed
PT	prothrombin time
PUO	pyrexia of unknown origin
PVI	pulmonary vein isolation
QDS	four times a day
QTc	corrected QT interval
RA	right atrium
RAA	renin–angiotensin–aldosterone
RBBB	right bundle branch block
RCA	right coronary artery
RCM	restrictive cardiomyopathy
RCT	randomized controlled trial
RF	risk factor
ROSC	return of spontaneous circulation
RR	respiratory rate
RRR	relative risk reduction
RV	right ventricular
RVOT	right ventricular outflow tract
RVST	right ventricular systolic pressure
S1	heart sound 1
S2	heart sound 2
S3	heart sound 3
S4	heart sound 4
SAN	sinoatrial node
S <sub>a</sub> O <sub>2</sub>	saturation of arterial oxygen
SAVR	surgical aortic valve replacement
SBAR	situation/background/assessment/recommendation
SC	subcutaneously
SG	specific gravity
SHO	senior house officer
SIRS	systemic inflammatory response syndrome
SLE	systemic lupus erythematosus

SOB	shortness of breath
SOBOE	shortness of breath on exertion
SPECT	single-photon emission computed tomography
SpO <sub>2</sub>	oxygen saturation
SpR	specialist registrar
SSRI	selective serotonin reuptake inhibitor
STE ACS	ST-elevation acute coronary syndrome
STEMI	ST-elevation myocardial infarction
SV	stroke volume
SVC	superior vena cava
SVR	systemic vascular resistance
SVT	supraventricular tachycardia
T-LOC	transient loss of consciousness
TA	transapical
TAVI	transaortic valve implantation
TB	tuberculosis
TDS	three times a day
TF	transfemoral
TFT	thyroid function test
TGA	transposition of the great arteries
TIA	transient ischaemic attack
TIMI	Thrombolysis In Myocardial Infarction (study)
TOE	transoesophageal echocardiogram
TR	tricuspid regurgitation
TSH	thyroid-stimulating hormone
TTE	trans-thoracic echocardiogram
TXA2	thomboxane A2
U&E	urea and electrolytes
UA	unstable angina
UFH	unfractionated heparin
USS	ultrasound scan
UTI	urinary tract infection
VBG	venous blood gas
VF	ventricular fibrillation
VKA	vitamin K antagonist
VSD	ventricular septal defect
VT	ventricular tachycardia
VTE	venous thromboembolism
WCC	white cell count
WHO	World Health Organization
WPW	Wolff–Parkinson–White syndrome

## About the Companion Website

This book is accompanied by a companion website:



[www.wiley.com/go/camm/cardiology](http://www.wiley.com/go/camm/cardiology)

The website includes:

- MCQs
- EMQs
- SAQs
- Clinical cases
- Audio
- Audio scripts



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## **PART 1**

# Examination Techniques



# 1 Examination Techniques

Christian F. Camm

*John Radcliffe Hospital, Oxford, UK*

## 1.1 COMMON CONDITIONS TO BE LOOKED FOR ON THE EXAMINATION

- |                                 |   |
|---------------------------------|---|
| 1. Arrhythmias                  | ■ |
| 2. Valvular pathology           | ■ |
| 3. Endocarditis                 | ■ |
| 4. Heart failure                | ■ |
| 5. Ischaemic heart disease      | ■ |
| 6. Inherited cardiac conditions | ■ |
| 7. Poor perfusion/shock         | ■ |
| 8. Anaemia                      | ■ |

## 1.2 CLINICAL EXAMINATION – PERIPHERIES

**Table 1.1** Elements to be undertaken prior to examining the patient

Item	Detail
1. Appropriate hand hygiene	Wash hands with soap and water or alcohol hand rub
2. Introduce yourself	Full name and job title
3. Confirm patient identity	Check full name and date of birth, verify against wrist band
4. Gain permission for the examination	Explain your role and what the examination will involve
5. Enquire about pain	Particularly chest and shoulder pain
6. Position the patient	45° on examination couch or bed
7. Expose the patient appropriately	Entire chest (women can leave bras on) Remember to cover patient when not examining the chest itself

1. Arrhythmias ■ 2. Valvular pathology ■ 3. Endocarditis ■ 4. Heart failure ■ 5. Ischaemic heart disease ■ 6. Inherited cardiac conditions ■ 7. Poor perfusion/shock ■ 8. Anaemia ■

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Companion website: [www.wiley.com/go/camm/cardiology](http://www.wiley.com/go/camm/cardiology).

**Table 1.2** Examination features from the end of the bed

Item	Detail
1. Does the patient look well?	<ul style="list-style-type: none"><li>• Sitting up and talking, or reduced consciousness?</li><li>• Difficulty breathing?</li><li>• Severe cyanosis?</li><li>• Pallor?</li><li>• Sweating?</li></ul>
2. Are there any obvious scars?	<ul style="list-style-type: none"><li>• Midline sternotomy</li><li>• Lateral thoracotomy</li><li>• Saphenous vein harvest scar</li><li>• Pacemaker/ICD device or scar</li></ul>
3. Lines in and out of patient	<ul style="list-style-type: none"><li>• IV infusions</li><li>• Catheters</li><li>• Oxygen</li></ul>
4. Patient monitoring	<ul style="list-style-type: none"><li>• Continuous ECG</li><li>• Pulse oximetry</li><li>• Haemodynamic monitoring (e.g. blood pressure)</li></ul>
5. Any medications around the patient	<ul style="list-style-type: none"><li>• Glyceryl trinitrate (GTN) spray or inhalers</li><li>• Drug infusions</li><li>• Warfarin (or anticoagulation cards/booklets)</li></ul>

**Table 1.3** Examination findings in the nails

Item	Conditions
1. Clubbing	■ / ■
2. Splinter haemorrhages	■
3. Capillary refill time >2 seconds	■
4. Peripheral cyanosis	■ / ■
5. Nicotine stains	■

**Box 1.1** Stages of clubbing

1. Fluctuation and softening of the nail bed
2. Loss of normal nail bed angle (Lovibond's angle)
3. Increased convexity of the nail fold
4. Thickening of the whole distal finger
5. Striations and increased shine on nails and surrounding skin

**Table 1.4** Examination findings in the hand

Item	Conditions
1. Tendon xanthomata	■ / ■
2. Osler nodes	■
3. Janeway lesions	■
4. Palmar crease pallor	■
5. Temperature	■
6. Bruising (anticoagulation or antiplatelet agents)	■

1. Arrhythmias ■ 2. Valvular pathology ■ 3. Endocarditis ■ 4. Heart failure ■ 5. Ischaemic heart disease ■ 6. Inherited cardiac conditions ■  
7. Poor perfusion/shock ■ 8. Anaemia ■

**Table 1.5** Examination findings in the wrist

Item	Conditions
1. Pulse rate	■ / ■
2. Pulse rhythm	■
3. Radio-radial delay	■
4. Radio-femoral delay	■
5. Collapsing pulse	■
6. Blood pressure	■ / ■ / ■ / ■

**Table 1.6** Examination findings in the eyes

Item	Conditions
1. Corneal arcus	■/age
2. Conjunctival pallor	■
3. Petechial haemorrhages	■
4. Xanthelasma over eyelids	■
5. Roth spots	■
6. Lens dislocation	■

**Table 1.7** Examination findings in the mouth

Item	Conditions
1. Hydration status	general
2. Dentition	■
3. Central cyanosis	■ / ■
4. High arched palate (Marfan's)	■

**Table 1.8** Examination findings in the neck

Item	Conditions
1. Carotid pulse – character	■ / ■
2. JVP	■

**Box 1.2** How to examine the JVP

- 1. Located between heads of sternocleidomastoid
- 2. JVP has double pulse (rather than single found in carotid)
- 3. JVP can be occluded
- 4. JVP may be made more visible by lowering angle of the bed
- 5. Hepato-jugular reflux
- 6. Height measured from the sternal angle (angle of Louis)

1. Arrhythmias ■ 2. Valvular pathology ■ 3. Endocarditis ■ 4. Heart failure ■ 5. Ischaemic heart disease ■ 6. Inherited cardiac conditions ■  
7. Poor perfusion/shock ■ 8. Anaemia ■

Box 1.3 Central pulse character

- 1. **Slow rising:** aortic stenosis
- 2. **Small volume:** tachycardia, volume depletion, cardiogenic shock, aortic stenosis
- 3. **Bounding:** CO<sub>2</sub> retention, Paget's disease, aortic regurgitation
- 4. **Collapsing:** aortic regurgitation
- 5. **Pulsus bisferiens:** combined aortic stenosis and regurgitation

Table 1.9 Examination findings in the legs. This is often undertaken after examining the praecordium

Item	Conditions
Pitting oedema	■
Saphenous vein harvest scars	■

1.3 CLINICAL EXAMINATION – THE PRAECORDIUM

Table 1.10 Inspection features of the praecordium

Item	Conditions
1. Scars	■ / ■ / ■
2. Pacemaker/ICD	■ / ■
3. Visible apex beat	■ / ■

Table 1.11 Palpation features of the praecordium

Item	Conditions
1. Apex beat	■
2. Thrills	■ (aortic and pulmonary valve pathology)
3. Right ventricular heave	■ / ■

Box 1.4 The apex beat

- 1. Most lateral and inferior precordial cardiac pulsation
- 2. Normal position – fifth intercostal space, inside mid-clavicular line
- 3. Lateral and inferior displacement represents LV dilation
- 4. Diffuse apex beat represents LV dilation
- 5. Tapping of the apex beat is seen in mitral stenosis
- 6. Double impulse is a sign of hypertrophic obstructive cardiomyopathy

1. Arrhythmias ■ 2. Valvular pathology ■ 3. Endocarditis ■ 4. Heart failure ■ 5. Ischaemic heart disease ■ 6. Inherited cardiac conditions ■ 7. Poor perfusion/shock ■ 8. Anaemia ■

**Table 1.12** Auscultation of the praecordium

Location	Valve auscultated
1. Apex	Mitral valve
2. Fourth intercostal (IC) space, left sternal edge	Tricuspid valve + aortic (regurgitation)
3. Second IC space, left sternal edge	Pulmonary valve
4. Second IC space, right sternal edge	Aortic (stenosis)
5. Axilla	Mitral (regurgitation)
6. Carotids	Aortic (stenosis) + carotid bruits

**Box 1.5** Auscultatory elements

- To be successful at auscultation, it is important to actively listen (ask yourself what you can hear)
- The auscultatory elements that make up each cardiac cycle must be identified
- When identified, each component should then be characterized:
  1. **First heart sound:** mitral and tricuspid valve closure
  2. **Second heart sound:** aortic and pulmonary valve closure
  3. **Additional sounds:** S3, S4
  4. **Murmurs**
  5. **Non-valvular sounds:** e.g. pericardial rub
  6. **Mechanical heart valve sounds**

**Box 1.6** Reinforcement manoeuvres

1. **Rolled to left side:** for mitral valve murmurs
2. **Hold breath in expiration:** left-sided murmurs
3. **Hold breath in inspiration:** right-sided murmurs
4. **Sit patient forward:** aortic regurgitation

**Box 1.7** The first heart sound

- Caused by blood hitting the closed mitral and tricuspid valves
- Represents the start of ventricular systole
- Usually a single sound
- Heard best at the cardiac apex
  1. **Split sound:** bundle branch block
  2. **Soft S1:** first-degree AV block, aortic regurgitation
  3. **Loud S1:** mitral stenosis
  4. **Variable intensity:** ventricular arrhythmias, variable AV block

**Box 1.8** The second heart sound

- Caused by blood hitting the closed aortic and pulmonary valves
- Represents the end of ventricular systole
- Heard well over the entire praecordium

- Usually a split sound on inspiration
  - Pulmonary component follows aortic
1. **Widely split:** right bundle branch block
  2. **Fixed splitting:** atrial septal defects
  3. **Soft aortic component:** aortic stenosis

Table 1.13 Examination findings on the back

Item	Conditions
Lung bases	■
Sacral oedema	■

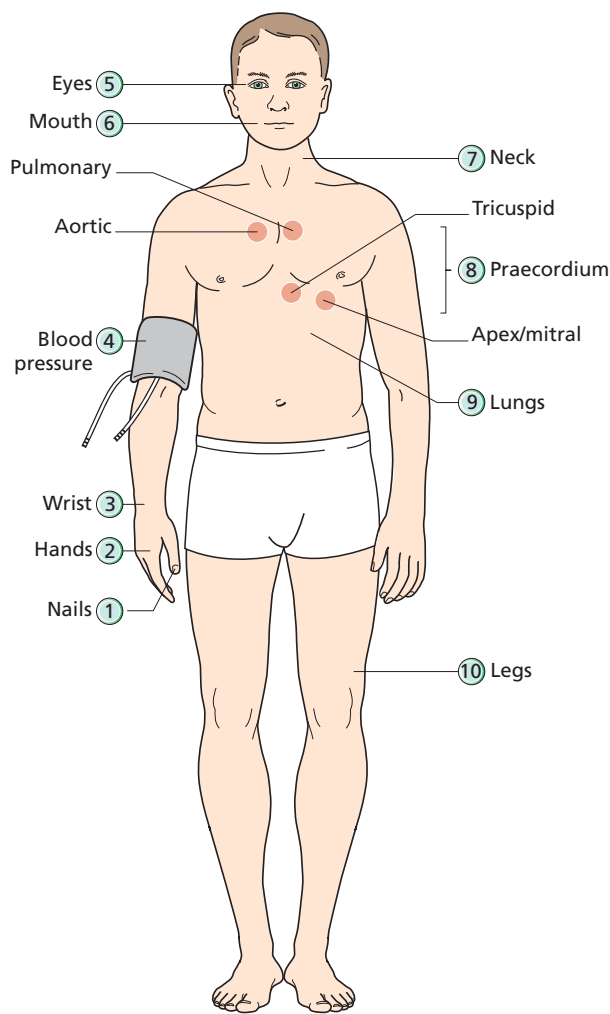


Figure 1.1 The examination circuit.

(See Audio Podcast 1.1 at [www.wiley.com/go/camm/cardiology](http://www.wiley.com/go/camm/cardiology))

1. Arrhythmias ■ 2. Valvular pathology ■ 3. Endocarditis ■ 4. Heart failure ■ 5. Ischaemic heart disease ■ 6. Inherited cardiac conditions ■ 7. Poor perfusion/shock ■ 8. Anaemia ■



## 1.4 HOW TO PRESENT YOUR FINDINGS

### Safety first approach

#### Details

- An approach that works well when not sure of your findings
- Useful for objective structured clinical examinations (OSCEs) to ensure that information is not missed
- Discuss the positive findings (and key negatives) in the order that you examined
- Give a potential diagnosis after presenting findings

#### Example

I examined this 52-year-old patient. He presented with shortness of breath and leg swelling. On inspection he was clearly dyspnoeic but otherwise appeared well. He was alert. There was a well healed midline sternotomy scar. His pulse was regular at 80 bpm. His blood pressure was 110/80 mmHg. The patient was well hydrated. The JVP was raised by 8 cm. There were no additional peripheral signs elucidated. On the praecordium he had no additional scars. His apex beat was not inappropriately located. On auscultation S1 and S2 were both heard. Additionally a third heart sound was heard across the praecordium. There were no additional sounds. There were inspiratory crackles at the lung bases and some sacral oedema. A clear scar along the course of the long saphenous vein was seen on the left leg, this was combined with bilateral pitting oedema reaching the mid-calf.

In conclusion, this patient presents with shortness of breath and signs suggestive of heart failure.

### Ward-round based

#### Details

- An approach to be used when you are confident or pressed for time
- Give your suspected diagnosis first
- Discuss the examination findings that support the diagnosis and help to exclude others
- Discuss findings in the order of most supportive to least supportive of your diagnosis

#### Example

I examined this 52-year-old patient. He presented with shortness of breath and leg swelling. Examination revealed a patient with a clinical picture of congestive heart failure. This was supported by findings of inspiratory crackles at the lung bases, pitting oedema in the sacral region and bilaterally in the legs up to the mid-calf level. In addition, the JVP was raised to 8 cm above the angle of Louis. On auscultation S1 and S2 were clearly heard with the addition of a third heart sound. The patient has a history of coronary artery bypass surgery as supported by the midline sternotomy scar and long saphenous vein graft scar on the left leg. Given these findings, this suggests a history of heart failure potentially secondary to ischaemic heart disease.

## 1.5 EPONYMOUS SIGNS AND SYMPTOMS

**Table 1.14** Eponymous signs in cardiology

Eponym	Details
Austin Flint murmur	Low-pitched rumbling murmur in mid-diastole due to aortic regurgitation causing mitral stenosis
Beck's triad	Three signs associated with cardiac tamponade: <ol style="list-style-type: none"> <li>i. Low arterial blood pressure</li> <li>ii. Distended neck veins</li> <li>iii. Muffled heart sounds</li> </ol>
Corrigan's pulse	A large-volume pulse which collapses away due to aortic regurgitation – observed at the carotid
De Musset's sign	Rhythmic nodding of the head due to increased pulse pressure in aortic regurgitation
Duroziez's sign	Compression of the femoral artery with the bell of the stethoscope leads to an audible diastolic murmur – aortic regurgitation
Ewart's sign	Collection of signs at the left lung base due to pericardial effusion: <ol style="list-style-type: none"> <li>i. 'Woody' dullness to percussion</li> <li>ii. Increased vocal resonance</li> <li>iii. Bronchial breath sounds</li> </ol>
Friedreich's sign	Significant drop in JVP during the diastolic phase due to constrictive pericarditis
Graham Steell murmur	Pulmonary regurgitant murmur heard in the left 2 <sup>nd</sup> intercostal space
Janeway lesions	Non-tender, small erythematous nodular lesions on the palms/soles indicative of endocarditis
Kussmaul's sign	Paradoxical rise in JVP on inspiration, indicative of reduced right ventricular filling (e.g. right heart failure or constrictive pericarditis)
Mayne's sign	A drop >15 mmHg in diastolic blood pressure when the arm is raised – aortic regurgitation
Müller's sign	Bobbing of the uvula due to wide pulse pressure of aortic regurgitation
Oliver's sign	Downward tug of the trachea during systole – aneurysm of the aortic arch
Osler nodes	Painful, raised lesions on the hands/feet caused by immune complex deposition and suggestive of infective endocarditis
Osler's sign	Falsely elevated blood pressure due to calcification of the vessels
Quinke's pulse	Alternating blushing and blanching of the fingernails – aortic regurgitation
Roth spots	Retinal haemorrhages with a pale fibrin centre caused by immune complex deposition and suggestive of infective endocarditis
Still's murmur	Innocent flow murmur
Watson's waterhammer pulse	As with Corrigan's pulse, but observed over the radial artery



For additional resources and to test your knowledge, visit the companion website at:



[www.wiley.com/go/camm/cardiology](http://www.wiley.com/go/camm/cardiology)

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## **PART 2**

# Approach to Presenting Complaints



## 2 Chest Pain

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### 2.1 DEFINITION

Any pain or discomfort that is felt to originate in and around the thorax.

### 2.2 DIAGNOSTIC ALGORITHM

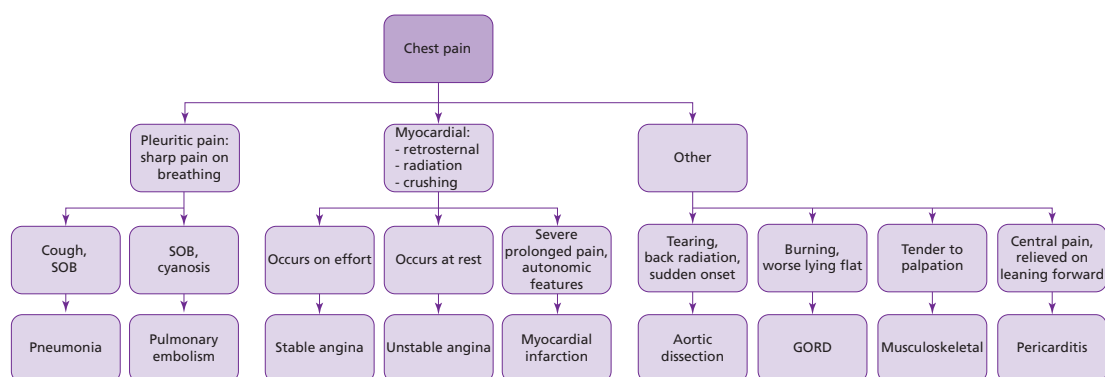


Figure 2.1 Algorithm for the diagnosis of chest pain.

### 2.3 DIFFERENTIALS LIST

#### Dangerous diagnoses

1. Acute coronary syndrome
2. Aortic dissection
3. Pulmonary embolism
4. Tension pneumothorax
5. Boerhaave's syndrome (oesophageal rupture)

#### Common diagnoses

1. Cardiac causes
  - a. Stable angina
  - b. Pericarditis
2. Pulmonary causes
  - a. Pneumonia
  - b. Pneumothorax
3. Gastrointestinal causes
  - a. Gastro-oesophageal reflux disease
  - b. Oesophageal spasm

4. Musculoskeletal causes
  - a. Rib contusions/fractures
  - b. Intercostal muscle strains
  - c. Costochondritis (including Tietze and Bornholm syndromes)

### Diagnoses to consider

1. Psychiatric causes
2. Herpes zoster

## 2.4 KEY HISTORY FEATURES

(See Audio Podcast 2.1 at [www.wiley.com/go/camm/cardiology](http://www.wiley.com/go/camm/cardiology))

### Dangerous diagnosis 1

**Diagnosis:** Acute coronary syndrome

#### Questions

- a. Is the pain crushing or heavy in nature?

*These are the typical descriptions, but the pain may also be described as tight, gripping or pressing.*

- b. Does the pain radiate to the left arm or jaw?

*These distinctive sites of radiation are highly suggestive of myocardial pain.*

- c. Are there associated autonomic symptoms?

*Commonly nausea/vomiting and sweating.*

- d. Are there any cardiac risk factors?

See Box 2.1.

#### Box 2.1 Cardiac risk factors

Non-modifiable:

1. Increasing age
2. Male gender
3. Family history
4. Previous cardiovascular events
5. Diabetes

Modifiable:

1. Smoking
2. Hypertension
3. Obesity
4. Low physical activity

### Dangerous diagnosis 2

**Diagnosis:** Aortic dissection

#### Questions

- a. Is the pain tearing, central and extremely severe?

*Interscapular when involving the descending aorta, anterior when involving the ascending aorta.*

- b. Does the pain radiate through to the back?

*The pain may also radiate to the abdomen; these sites help distinguish dissection from ACS.*

- c. Sudden onset?

*The pain occurs very suddenly, as the layers of the aorta are rapidly forced apart.*

