



2022-23
MEDICINE
MASTERCLASS
PACKLET

Chapter 1: The basics and cardiovascular emergencies

Episode 1: ECG territories and ACS

- Main territories
- STEMI
- NSTEMI

Episode 2: Cardiovascular emergencies

- Shock
- Acute pulmonary oedema
- Cardiorespiratory arrest
- Cardiac tamponade

Chapter 2: The common conditions to master

Episode 1: Cardiovascular presenting complaints

- Chest pain
- Shortness of breath
- Syncope
- Palpitations
- Ankle swelling

Episode 2: Common chronic cardiology

- Angina
- Heart failure
- Atrial fibrillation
- Hypertension

Chapter 3: The weird and wonderful

Episode 1: Infections and pericardial disease

- Rheumatic fever
- Infective endocarditis
- Pericarditis

Episode 2: Cardiomyopathies

- Dilated
- Hypertrophic
- Restrictive
- Takotsubo's

Episode 3: Diseases of the heart muscle

- Atrial myxoma
- Myocarditis

Chapter 4: Funny sounds and rhythms

Episode 1: Murmurs and valvular disorders

- Murmurs
- Valves on the right
- Aortic stenosis
- Aortic regurgitation
- Mitral stenosis
- Mitral regurgitation

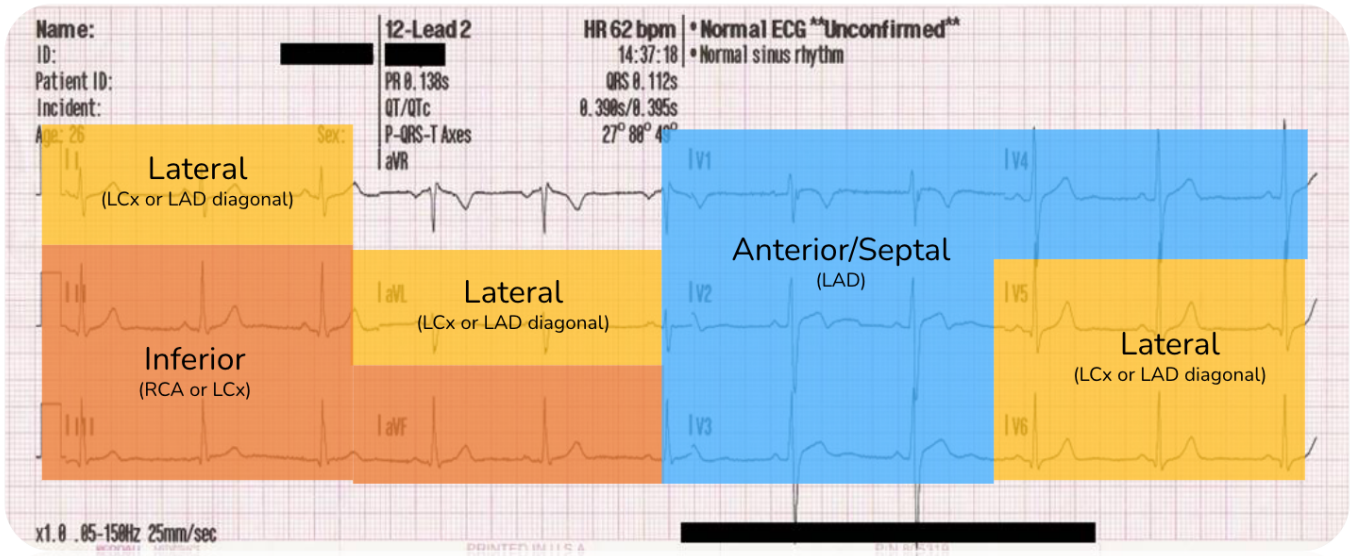
Episode 2: The ECG and arrhythmias

- Bradycardias (*sinus and sick sinus*)
- AV conduction blocks (*1st, 2nd I+II, 3rd*)
- Bundle branch blocks (*right and left*)
- Tachycardias (*sinus, narrow, broad*)
- ACLS

ACS



Central crushing chest pain, radiating to left arm
Can be atypical in women and diabetics



INITIAL MANAGEMENT = MONA-TAA

Morphine

2.5-5mg IV + give metoclopramide

Oxygen

? SPO2 <94%

Nitrates GTN

(2 Puffs) (Unless systolic BP <90)

Antiplatelets - DUAL

Aspirin 300mg + Ticagrelor 180mg

Tight glucose control

Ask for advice + Anticoagulation

Site	Leads	Reciprocal
Inferior	II, III, AVF	I, aVL
Lateral	V5, V6, I, aVL	II, III, aVF
Anterior	V1, V2, V3, V4	None
Posterior	None	V1, V2, V3, V4

SECONDARY MANAGEMENT 5As daily

Aspirin 75mg

Antiplatelet (ticagrelor/clopidogrel)

Atorvastatin 80mg

ACE inhibitor (ramipril titrated as tolerated)

Atenolol (beta blocker titrated as tolerated)

Primary Percutaneous Coronary Intervention (PPCI)

If symptom onset <12 hours

Can be performed within 90-120 mins of diagnosis

Thrombolysis in STEMI

Only if the patient is **unable to receive** PPCI within timeframe

Perform ECG 90 minutes after
At least 50% reduction in ST elevation
If inadequate, consider a rescue PPCI

Limitations post MI

Driving

If angioplasty – 1 week

No angioplasty – 4 weeks

Sexual Intercourse

Best avoid for at least 1 week

Air travel

Avoid for 2 months



Cardiovascular

An inability of the heart to produce a sufficient cardiac output for the demands of the body

Clinical Presentation

- Cool Peripheries, Cyanosis
- Tachycardia, Pulsus alternans
- Raised JVP
- PND and orthopnea
- Displaced Apex Beat
- S3, S4 or gallop rhythm
- Bilateral basal crackles
- Pitting Oedema

Causes = FAILURE

Forgotten medication
Arrhythmia, Anaemia
Ischaemia
Lifestyle
Upregulation of cardiac output
Renal failure
Embolism

Investigations



ECG:
Sinus tachycardia
AF
Left-axis deviation



Bloods:
FBC, U&E's, TFTs,
BNP, troponin
Magnesium, LFTs



Imaging:
CXR
ECHO

Other: Holter monitoring

Management

Lifestyle modifications!!!

First-Line

ACE-Inhibitors*
Beta-Blockers*
Diuretics

Second-Line

Aldosterone antagonist** (Spironolactone)
Vasodilators (hydralazine, isosorbide dinitrate)

* Improve mortality and morbidity

** Improve mortality

High Yield Exam Points

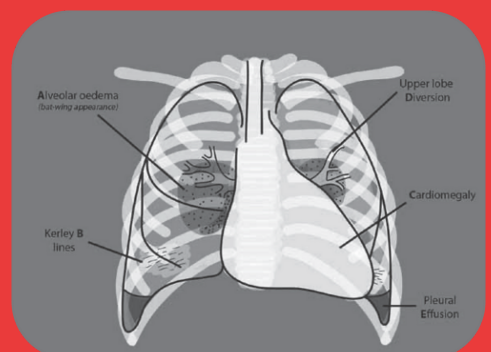
A-E CXR findings, useful in both OSCEs and written exams!

Most common cause is hypertension

Can be classified by function (NYHA) or structure (LVEF)

BNP >2000 = URGENT referral to specialist

Exam questions often ask which medications will impact mortality!



Atrial fibrillation

Cardiovascular

An irregularly
irregular rhythm!

Clinical Presentation

Often asymptomatic, found incidentally
Presenting symptoms can include:

- palpitations
- dyspnoea
- chest pain
- dizziness and syncope
- fatigue

Causes = PIRATES

Pulmonary: PE and COPD
Ischaemic heart disease + Heart Failure
Rheumatic heart disease + valvular pathologies
Anaemia, Alcohol, Advancing Age
Thyroid disease (hyperthyroidism)
Electrolyte disturbance
Sepsis and Sleep Apnoea
.... and many more

Investigations



ECG:
Absent P waves
Narrow QRS Complex Tachycardia
Irregularly irregular ventricular rhythm



Bloods:
FBC, U&E's, TFTs,
magnesium. LFTs,
coagulation screen



Imaging:
CXR which may indicate
structural cause

Other: ECHO, holter monitoring,
CT/MRI brain (stroke?)

Management

Main principles:

Rate control - BCD

Beta blockers
Calcium channel blockers
Digoxin

Rhythm control

chemical e.g. sotalolol, amiodarone, flecainide
or electrical

Anticoagulation

Determine need: CHA2DS2-VASc & ORBIT
Options: warfarin or NOAC

High Yield Exam Points

MOST COMMON tachyarrhythmia

Three types: paroxysmal, persistent, permanent

Increased risk of clot formation -> increased risk of embolic stroke

ALWAYS consider anticoagulation

Common in the elderly population especially when unwell

Can have cardiac causes and non-cardiac - think of the thyroid and sepsis, as well as drug use!

Stages of hypertension

STAGE 1

Clinic Blood Pressure (CBP) = 140/90 or Higher
AND
Ambulatory Blood Pressure (ABP) average = 135/85 or higher.

STAGE 2

CBP = 160/100 or Higher **AND**
ABP average = 150/95 or higher.

STAGE 3

Clinic Systolic = 180 or higher **OR**
Clinic Diastolic = 110 or higher

Investigations

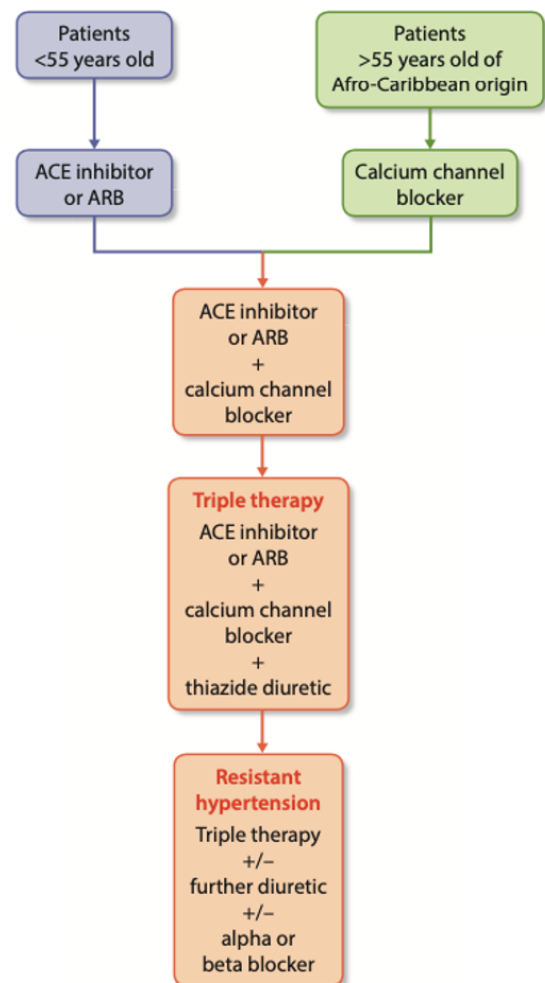


Urinalysis
Urinary PCR
ECG



Bloods:
U&E's
HbA1c
Lipid profile

Management



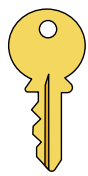
High Yield Exam Points

Exams commonly test on management of hypertension, harder questions may focus on stage 4 of management... the addition of a further diuretic, in these questions pay attention to the potassium level!

If $K^+ < 4.5$ mmol/L low dose spironolactone (K^+ sparing)

If $K^+ > 4.5$ mmol/L high dose thiazide-like diuretic

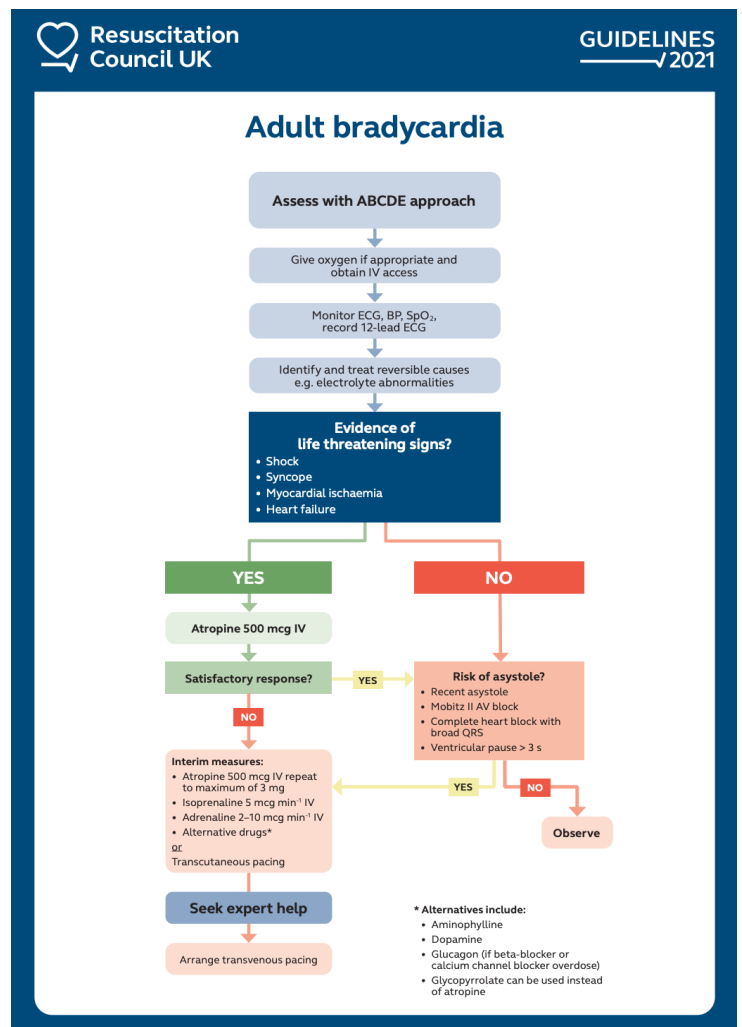
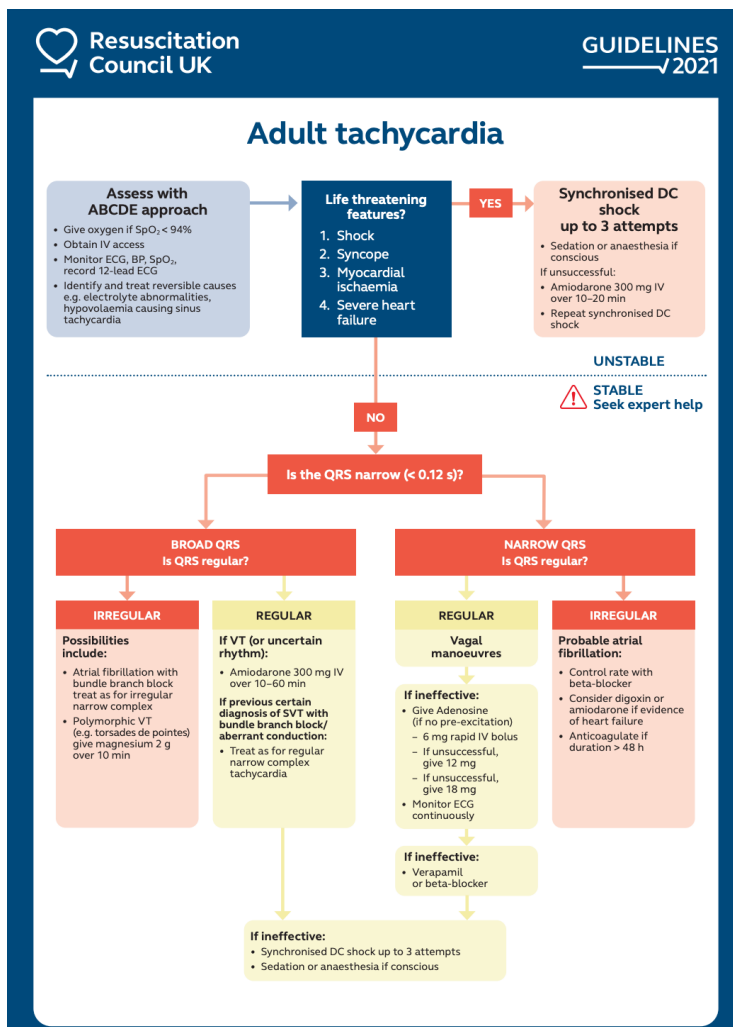
If neither work try alpha or beta-blocker



ARRHYTHMIAS

Key points for the exam

Arrhythmia	Feeling	Exacerbating Factors
Bradycardia	'Tired and Dizzy'	CCB, Beta-blockers, ischemic heart disease
Ventricular ectopic heartbeats	'Thump' or missed beats	Electrolyte disturbance, excess caffeine
Sinus Tachycardia	Fast heartbeat	Pain, exercise, anxiety and fever
Atrial Fibrillation and Atrial Flutter	Fluttering chest, dizzy, breathlessness and TLOC	Infection, dehydration, alcohol, ischemia, hyperthyroidism and caffeine
AVNT and AVNRT	Fluttering chest, dizzy, breathlessness and TLOC	Stress, caffeine and alcohol
Ventricular Tachycardia	Fluttering chest, dizzy, breathlessness and TLOC	Myocardial ischemia, heart failure and structural heart disease



Commonly tested in exams!



CARDIOLOGY SUMMARY



A 52-year-old woman presents to you after being seen two days ago following a fall. She has a past medical history of type 2 diabetes mellitus, bilateral knee replacements, chronic hypotension and heart failure, which means she rarely gets out the house. She weighs 120 kg. Her electrocardiogram (ECG) at the time showed that she had atrial fibrillation (AF) and her heart rate was 180 bpm. She was started on bisoprolol and it was decided that she should have a 48-hour ECG tape to monitor her heart rate. Having returned following the 48-hour tape, you find that she has non-paroxysmal AF.

What is the most appropriate management?

A	Increase the dose of bisoprolol
B	Start her on amlodipine
C	Give her amiodarone
D	Start her on digoxin
E	Send her for urgent electrical cardioversion

TOP
TIPS

EXAM Q EXPLAINED

This question is testing both exam skill and knowledge for safe practice. Here it is very important to read the question as the vignette has 2 key points aiding you toward to correct answer: she is tachycardic at 180bpm, and she has chronic hypotension.

The fact she is so tachycardic (with known heart failure) would point us toward **rate** control, this means we are left with either A or D as the correct answer.

Whilst the beta-blocker would be the usual choice, she has chronic hypotension, and heart failure, thus digoxin would be most appropriate. So D is correct.

Some common rate/rhythm controlling drugs for AF to rememeber!

Rate controlling	Rhythm controlling
<ul style="list-style-type: none">• Bisoprolol• Verapril• Digoxin	<ul style="list-style-type: none">• Amiodarone• Flecainide• Propafenone

Bisoprolol is a beta blocker.

Verapril is a cardio selective calcium channel blocker.

Amiodarone is a class III antiarrhythmic.

Flecainide and Propafenon are class Ic antiarrhythmics

Do not offer this to people with known ischaemic or structural heart disease!



Atrial fibrillation: diagnosis and management (NG196)

High yield topics covered: ACS, heart failure, AF and hypertension. Check out our website for more!



Chapter 1: Respiratory Introduction and Respiratory Emergencies

Episode 1: Respiratory basics

- Respiratory Failure
- Smoking cessation

Episode 2: Respiratory Emergencies

- Acute asthma
- COPD exacerbation
- Tension Pneumothorax
- Haemothorax
- DVT & PE
- ARDS

Chapter 2: The Conditions to Master

Episode 1: common conditions in respiratory medicine

- Pneumonia
- Asthma
- COPD
- Pneumothorax
- Effusions
- Lung cancer & associated complications
- OSA

Chapter 3: The weird and wonderful

Episode 1: weird and wonderful

- TB
- Sarcoidosis
- Pleural disease
- Interstitial lung disease
- Bronchiectasis and cystic fibrosis
- Occupational lung disease
- Extrinsic allergic alveolitis
- Fungi and the lung
- Cor pulmonale