Essential Examination for Advancing Clinical Practice

Emma Mellors and Vicky MacArthur

Step-by-step guides to clinical examinations
with practical tips and key facts

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PREFACE

This new book is written for the advancing practitioner and aims to underpin a breadth of clinical examination knowledge. It is based on a book originally written to support medical students preparing for undergraduate exams; Alasdair Ruthven's *Essential Examination* rapidly became a trusted resource for a wide range of healthcare professionals seeking to enhance their skills in physical examination. Our version, *for Advancing Clinical Practice*, recognises the diversity of clinicians in roles from nursing to the allied health professions.

Clinicians using this book will be guided to advance their practice by developing a consistent level of high-quality examination skill, in order to flexibly address service user problems arising across all body systems. It is not intended to develop a great depth of examination skills in a particular specialism, nor cover tests requiring additional training, as these are both better supported in specialist texts.

Since its inception in 1948, the NHS has increasingly been required to provide for an ageing population with progressively more complex health needs. Health professionals require development in generalist skills to be able to proactively provide for adult service users with multiple comorbidities. Individual practitioners may have a depth of knowledge related to a particular speciality, but require a breadth of examination skills that they can draw upon when required in order to shorten the service user's journey. Expertise is situational, such that not all clinicians are experts in every situation. Their ability to adapt and apply broad skills to varied situations is what separates levels of skill acquisition for contemporary healthcare demands.

The emphasis in this book is on enhancing an understanding of what is being done and why, to an extent that the reasoning can be verbalised and shared. The history taken from the service user at the start of an assessment is the foundation for this. The crucial role of the history is explicitly emphasised in guiding the clinician's approach to the physical examination. The clinician is encouraged to consider two coinciding agendas: their own

objectives and the service user's perspective and needs, to promote mutual understanding as to what is being done and why.

The book offers a 'real world' rational approach to guide and enhance the assessment undertaken by clinicians in advancing practice roles. It also serves as a useful study tool to support preparation for OSCE examinations at postgraduate level.

Emma Mellors and Vicky MacArthur

INTRODUCTION

HISTORY BUILDING APPROACH

Never underestimate what can be uncovered from the service user before any physical examination or investigations are done (Mellors & Macarthur, 2024). Gathering a thorough history can provide up to 80% of the information required to make a diagnosis, but listening carefully also contributes to a person-centred approach (Ospina *et al*., 2019). "*Listen to the patient, he is telling you the diagnosis*", is a quote attributed to Sir William Osler, a strong advocate for clinician–patient conversations (Sarasohn-Kahn, 2019).

A narrative approach should be encouraged by asking open questions and allowing the person to tell their story, their way (Mellors & Macarthur, 2024). Useful clues are supplied freely, whilst assisting in the pursuit of a holistic approach (Greenhalgh & Hurwitz, 1999). This could ultimately save time by getting to the crux of what really matters for the person. A practical approach moves the clinician away from taking a history toward building one (Launer, 2018).

Asking follow-up questions to review a person holistically using a thorough review of systems (RoS) approach, moves away from focusing purely on the most obvious body system for the presenting complaint. In this way, useful clues and correlations may be revealed and problems set in a wider context to promote clinical reasoning and understanding of an individual's problems, not just signs and symptoms.

Individuals report problems affecting their lives and can prioritise those which are most disruptive. Constructing a prioritised problem list is a useful way to group a multitude of complaints that make sense to the person having them. Using a timeline, problems can be connected, and elements of a narrative correlated to construct a bigger picture in the context of the whole person. People do not present like textbooks, so not everything will fit into a neat differential diagnosis (DD). There could be more than one disease process but only one illness narrative and there should be room for thinking to evolve as new information and

findings come to light (Mellors & Macarthur, 2024). Deal in theories not certainties, as Osler back in the 19th century alluded to:

"*If it were not for the great variability among individuals, medicine might as well be a science and not an art*" (Olser, cited in Iohom *et al*., 2004).

Using critical thinking and reasoning, the history given by the service user should be central to guiding the course of the physical examination and subsequent plan of care. Clues from a carefully taken history allow the formulation of theories or DDs that can be tested in the physical examination. In this way, tests are applied with rationale and in partnership with the service user.

In developing examination and consultation skills there should be greater emphasis in partnering with the service user and a focus on explicitly promoting understanding to support their involvement.

A GUIDE TO REVIEW OF SYSTEMS

The premise of advancing practice asks that the practitioner takes a holistic approach to assessment, considering the service user more broadly beyond the obvious presenting complaint. The RoS is an important component of a comprehensive health history that assists in achieving this aim.

The RoS can be focused, extended or complete, based on the acuity of the service user who is presenting and whether this is a first or follow-up visit (Teall *et al.,* 2022). There are two objectives: (1) to obtain additional information about the service user's presenting complaint, and (2) to identify symptoms of potential problems in related systems (Phillips *et al*., 2017). The RoS is a key part of gathering the clues that will inform the physical examination and plan of care. It may also uncover problems that the service user has overlooked or did not mention, thinking that they weren't relevant to their current health issue.

A RoS is a process of systematic questioning arranged by systems. The questions in the RoS mostly relate to specific symptoms. It should include asking for and documenting any pertinent negative as well as positive findings, but remember to use person-friendly terminology. Any positive symptoms should be investigated using a structured approach similar to that used for interrogation of the presenting complaint, e.g. OLDCARTS (Bickley *et al*., 2023). The practitioner will then be able to prioritise which systems to follow up in the physical examination.

There are a potentially large number of common or concerning symptoms that may be relevant in each system and examples are shown in the table below. RoS question ideas are indicated in the '**Why this system?**' table at the start of each chapter. This outlines the type of information to seek in order to focus on examining the relevant system.

System	Common or concerning symptoms
Cardiac	Chest pain, palpitations, dyspnoea (orthopnoea / nocturnal).
Eyes, ears, nose, throat	ENT irritation / pain / discharge? Vision changes. Hearing loss. Dysphagia, changes in taste / smell.
Gastrointestinal	Mouth ulcers / teeth / gum problems, nausea / vomiting, appetite change, indigestion, dysphagia, abdominal pain / distension, change in bowel habit, change in colour of stool, unexpected weight loss or gain.
Musculoskeletal	Back pain, neck pain, joint pain / swelling, mobility, falls.
Neurological	Functional / gait / balance / coordination problems, headaches, fits, faints, falls, dizziness / ataxia, tremor, altered sensation, weakness, memory or concentration changes.
Peripheral vascular	Pallor / pain / change in temperature of extremities, claudication, peripheral oedema.
Respiratory	Dyspnoea, cough, sputum (haemoptysis), wheeze, chest pain.
Other	
Genitourinary	Dysuria, urinary frequency, nocturia, haematuria, incontinence.
Female biology	Last menstrual period, irregular / heavy / prolonged menstrual bleeding, vaginal discharge, breast pain / discharge / lumps, contraception, sexual function.
Male biology	Urinary hesitancy / poor stream / terminal dribbling, urethral discharge, erectile dysfunction.
Integumentary	Rashes, lumps, itching, bruising.
Mental health	Energy, sleep, low mood, anxiety, coping / wellbeing.

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HOW TO USE THIS BOOK

Each system chapter is split into 3 main sections.

1. WHY THIS SYSTEM?

This section will help you to confirm that you are about to examine an appropriate system. You can use the service user's history, their reported problems and pertinent details to generate theories in the form of potential DDs (please note this list is not exhaustive). Establishing what it is you are looking for, and seeking to test this in the form of DDs early on, will support clarity and organisation of the subsequent examination process. Being able to openly articulate clinical reasoning and justify your examination approach with both the service user and colleagues is an important skill in advancing your practice.

2. EXAMINATION

Examination is the part where you test the likelihood of your theories and aim to **localise** the problem, whilst being mindful of the service user's needs.

A table before each examination prompts you to consider the service user's perspective and supports you to proactively explore any potential concerns with them before you start.

Examination is split into the following sections to encourage a systematic and reasoned approach:

- **General inspection:** this covers commencing the examination process with an initial hands-off inspection.
- **Core examination:** this details components considered essential for the given system and which it is recommended to perform early on in the examination.

- **Additional examination:** this section is where you can use the history, your DDs or core examination findings, to choose additional tests. These tests can support existing findings, explore how widespread a problem is or be used to double-check you are not missing something. It is not necessary to perform all additional tests, but to choose and prioritise based on sound clinical reasoning. Consideration should be made of both time and potential burden of examination on the service user.
- **Conclusion:** this section advises on concluding the examination and next steps in using the findings.

N.B. Please note that the column indicating *'potential findings'* is illustrative and is not intended as an exhaustive list of differential diagnoses.

3. NOTES

Supporting detail and further relevant knowledge can be found here.

ACKNOWLEDGEMENTS

We would like to acknowledge the community of educators and learners at Oxford Brookes University and the University of Cumbria for inspiring our efforts to adapt this resource for the needs of advancing practice in the context of contemporary healthcare demands.

Standing on the shoulders of giants, we acknowledge and thank the author of the original *Essential Examination* book, Alasdair K. B. Ruthven, for allowing us to use his approach and adapt and build on his content.

ABBREVIATIONS

#	fracture
A&P	anatomy and physiology
AA	abdominal aorta
AAA	abdominal aortic aneurysm
AAL	anterior axillary line
ABG	arterial blood gas
ABRS	acute bacterial rhinosinusitis
AC	air conduction
ACEi	angiotensin-converting enzyme inhibitor
ACL	anterior cruciate ligament
ACS	acute coronary syndrome
ACTH	adrenocorticotrophic hormone
ADLs	activities of daily living
AF	atrial fibrillation
ALS	amyotrophic lateral sclerosis
AP	advanced practitioner
APKD	adult polycystic kidney disease
AR	aortic regurgitation
ARS	acute rhinosinusitis
AS	ankylosing spondylitis or aortic stenosis
ASIS	anterior superior iliac spine
AV	atrioventricular
AVN	avascular necrosis
B12	vitamin B12
BC	bone conduction
BCC	basal cell carcinoma
BMI	body mass index
BP	blood pressure
BPPV	benign paroxysmal positional vertigo
Ca	cancer
CABG	coronary artery bypass graft
CAD	coronary artery disease
CAM	confusion assessment method
CCF	congestive cardiac failure
CEO	chronic external ophthalmoplegia
CES	cauda equina syndrome
CFA	cryptogenic fibrosing alveolitis
CFS	chronic fatigue syndrome
CHD	congenital heart disease
CLD	chronic liver disease
CLL	chronic lymphoid leukaemia
CML	chronic myeloid leukaemia
CMT	Charcot–Marie–Tooth disease
CNS	central nervous system
COPD	chronic obstructive pulmonary disease
CPSP	central post-stroke pain
CR	chronic rhinosinusitis
CRPS	complex regional pain syndrome
CRT	capillary refill time
CSF	cerebrospinal fluid
CT	computed tomography
CVA	cerebrovascular accident
CVD	cardiovascular disease
CVS	cardiovascular system
CXR	chest X-ray
DD	differential diagnosis
DDH	developmental dysplasia of the hip
DHS	dynamic hip screw
DMARD	disease-modifying antirheumatic drug
DIP	distal interphalangeal
DIPJ	distal interphalangeal joint
DVT	deep vein thrombosis
EAA	extrinsic allergic alveolitis
EBV	Epstein–Barr virus
ECG	electrocardiogram
ENT	ear, nose and throat
ER	external rotation
FBC	full blood count
FH	family history
FOOSH	fall on outstretched hand

GB	Guillain–Barré syndrome
GCA	giant cell arteritis
GCS	Glasgow coma scale
GI	gastrointestinal
GORD	gastro-oesophageal reflux disease
HB	heart block
HCC	hepatocellular carcinoma
HF	heart failure
HIV	human immunodeficiency virus
HM	hepatomegaly
HOCM	hypertrophic obstructive cardiomyopathy
HPV	human papillomavirus
HR	heart rate
HTN	hypertension
IBD	inflammatory bowel disease
IBS	irritable bowel syndrome
ICP	intracranial pressure
ICS	intercostal space
IDA	iron-deficiency anaemia
IE	infective endocarditis
IHD	ischaemic heart disease
IJV	internal jugular vein
INO	internuclear ophthalmoplegia
IP	interphalangeal
IR	internal rotation
IV	intravenous
IVDU	intravenous drug use
JVP	jugular venous pressure
LBP	lower back pain
LCL	lateral collateral ligament
LHS	left hand side
LIMA	left internal mammary artery
LL	lower limb
LLQ	left lower quadrant
LLSE	left lower sternal edge
LMN	lower motor neurone
LUQ	left upper quadrant
LV	left ventricular
LVF	left ventricular failure
LVH	left ventricular hypertrophy
MCL	medial collateral ligament (MSK) or mid-clavicular line
MCP	metacarpophalangeal
MDT	multidisciplinary team
ME	myalgic encephalomyelitis
MGP	Marcus Gunn pupil
MI	myocardial infarction
MND	motor neurone disease
MR	mitral regurgitation
MRI	magnetic resonance imaging
MS	mitral stenosis or multiple sclerosis
MSK	musculoskeletal
MTP	metatarsophalangeal
NaCl	sodium chloride
NOF	neck of femur
NS	nervous system
NSAID	non-steroidal anti-inflammatory drug
OA	osteoarthritis
OE	otitis externa
OM	otitis media
P+Ns	pins and needles
PAD	peripheral arterial disease
PBC	primary biliary cirrhosis
PCA	posterior cerebral artery
PCL	posterior cruciate ligament
PD	Parkinson's disease
PE	pulmonary embolism
PEO	progressive external ophthalmoplegia
PFR	peak flow rate
PIPJ	proximal interphalangeal joint
PMH	past medical history
PND	paroxysmal nocturnal dyspnoea
PNS	parasympathetic nervous system
PR	pulmonary regurgitation
PS	pulmonary stenosis
PSC	primary sclerosing cholangitis
PSIS	posterior superior iliac spine
PVD	peripheral vascular disease
RA	rheumatoid arthritis
RAAS	renin–angiotensin–aldosterone system
RAM	rapid alternating movement
RAPD	relative afferent pupil defect
RHF	right heart failure

RLQ	right lower quadrant
ROM	range of movement
RoS	review of systems
RR	respiratory rate
R-R	radio-radial
RS	respiratory system
RUQ	right upper quadrant
RVF	right ventricular failure
Rx	treatment or therapy
SAH	subarachnoid haemorrhage
SBP	spontaneous bacterial peritonitis
SCC	squamous cell carcinoma
SCDC	subacute combined degeneration of the cord
SCI	spinal cord injury
SCLC	small cell lung cancer
SCM	sternocleidomastoid
SLE	systemic lupus erythematosus
SOB	shortness of breath
SSS	sick sinus syndrome
SU	service user
SUFE	slipped upper femoral epiphysis
SVC	superior vena cava
TAH	total abdominal hysterectomy
TB	tuberculosis
TBI	traumatic brain injury
THR	total hip replacement
TIA	transient ischaemic attack
TKA	total knee arthroplasty
TM	tympanic membrane
TMJ	temporomandibular joint
TNF	tumour necrosis factor
TR	tricuspid regurgitation
TS	tricuspid stenosis
UC	ulcerative colitis
UKR	unicompartmental knee replacement
UL	upper limb
UMN	upper motor neuron
URTI	upper respiratory tract infection
USS	ultrasound scan
VEB	ventricular ectopic beat
VI	venous insufficiency
VSD	ventricular septal defect
VT	ventricular tachycardia
WCC	white cell count
WOB	work of breathing

WHY THIS SYSTEM?

Clues / correlations with history	Cardiac DDs
• Chest pain	ACS, AS, IE, pericarditis
• Shortness of breath	HF, MS, MR, AS, AR, IDA, IE
• Fatigue	HF, MS, MR, AR, IDA, IE
• Palpitations	Arrhythmias (AF, AR, CHD)
• Swelling or oedema	HF, RVF, constrictive pericarditis, DVT, IE
• Fainting	Syncope (cardiomyopathy, valvular disease, aortic dissection, tamponade, pericardial disease)
• Unexplained weight gain	Ascites
• High BMI / FH of hyperlipidaemia / high dietary fat	Hyperlipidaemia
• Smoking history	Increased CVD risk
• FH of young CVD	Increased genetic risk of CVD
• Diagnosis of severe mental illness / learning disability / autism	Increased CVD risk

! BEFORE starting the examination !

Service user perspective: proactively explore any potential concerns beforehand

- Concern for vulnerable exposure: explain the extent of exposure required, reassure about maintaining dignity, offer a chaperone
- Anxiety that this may be cardiac-related and therefore life-threatening: acknowledge and reassure around the need for assessment to make an informed shared decision
- Symptomatic relief prior to examination: oxygen, pain relief
- Minimise position changes if older adult / fatigue / SOB
- May be unable to lie semi-supine if SOB

GENERAL INSPECTION

Component / action	Examine for	DD / potential findings / extra information
Introduction ● Wash / gel hands ● Introduce yourself, confirm SU, explain examination ● Gain informed consent, explain the ability to withdraw or stop the examination ● Use draping to expose only as required for each examination step		Consider a chaperone or ask "*Would you like to be supported by someone – is there someone in the waiting room?*"
General appearance	● Unwell / distressed / in pain ● Oxygen, fluids & medication	 → e.g. GTN spray
Hands ● Feel temperature & check capillary refill time ● CRT – raise limb above heart level, press on distal phalanx of digit for 5 sec and release (time how long it takes for colour to return – should be <2 sec)	● Peripheral cyanosis ● CRT >2 sec ● Tendon xanthomata ● Osler's nodes & Janeway lesions	→ Shock, MI, HF, heart block, VT, tamponade → PVD, Raynaud's, CCF or with central cyanosis **[see notes 6, 7]** → Hypercholesterolaemia → IE
Nails	● Finger clubbing (look closely) ● Koilonychia ● Splinter haemorrhages ● Nailfold infarcts	→ IE, cyanotic CHD, atrial myxoma **[see notes 23]** → IDA → IE, trauma (e.g. gardening, joinery) → Vasculitis, SLE
Wrists **Palpate radial pulse for:** ● Rate (time over 1 min and compare with other side) ● Rhythm ● Volume ● Character	● Tachycardia ● Bradycardia ● Irregular **[see notes 9]** ● Thready ● Bounding ● Bisferiens pulse ● Slow rising pulse	→ CAD, IHD, cardiomyopathy, hypovolaemia, IDA → SSS, AV block, IHD, cardiomyopathy → AF **[see notes 10]**, atrial flutter, SSS, IHD, cardiomyopathy → Shock, pericardial pathology, aortic pathologies, hypovolaemia → AR, sepsis, AV block → Mixed AR / AS → AS
Arms ● Measure BP (in both arms if R-R delay)	● Wide pulse pressure ● Narrow pulse pressure ● Scars	→ AR → AS → Needle tracks in IV drug use increase risk of IE
Face	● Malar flush	→ MS
Eyes (gently pull down lower eyelid)	● Corneal arcus & xanthelasma ● Conjunctival pallor	→ Hypercholesterolaemia → Anaemia

Mouth (use a pen torch)	• Central cyanosis • Poor dentition	→ Lung disease, cardiac shunt, abnormal Hb **[see notes 7]** → Risk factor for IE
Neck • Palpate carotids to assess pulse character; only ever palpate one side at a time. • Auscultate each in turn for bruits (breath held in expiration with bell)	• Exaggerated pulsation (Corrigan's sign) • Bruit present	→ AR → Carotid stenosis; radiated AS murmur
JVP • SU at 45°, head turned slightly to their left • Use tangential lighting to highlight contours and subtle pulsations • Don't turn head too far – you want neck muscles to relax • Look for double pulsation on right side of neck **[see notes 1]** • Estimate height above sternal angle in cm • Normally <3–4 cm if raised can measure **[see notes 2]**	• Prominent IJV extending higher 3-4cm above the sternal angle • Kussmaul's sign (rises with inspiration)	→ **[see notes 3]** → Tamponade, constrictive pericarditis, restrictive cardiomyopathy

CORE EXAMINATION

Component / action	Examine for	DD / potential findings / extra information
Inspection ● For scars and visible heaves ● Expose left side of chest, draping right side	● Scars ● Visible heave	→ **[see notes 5]** → Apical (LVH) or parasternal (RVH)
Palpation ● Feel for thrills and heaves over each heart valve **[see notes 4]**: fingertips for heaves, ball of hand for thrills ● Apex beat: normally in the 5th intercostal space, midclavicular line; locate & physically count rib spaces, assess character	● Heaves ● Thrills ● Unable to locate ● Tapping ● Heaving ● Thrusting	→ Right ventricular hypertrophy → Palpable murmur – grade 4 or above by definition → Consider why **[see notes 12]** → MS → LVH DD **[see notes 13]** → MR/AR, LVF
Auscultation ● Four primary valve areas **[see notes 4]** ○ Apex (mitral) – [B then D] ○ LLSE (tricuspid) – [B then D] ○ 2nd left intercostal space (pulmonary) – [D] ○ 2nd right intercostal space (aortic) – [D] Recommended side of stethoscope: B – Bell D – Diaphragm	● S3 **[see notes 14]** ● S4 **[see notes 14]** ● Murmur	→ HF, MR, dilated cardiomyopathy → LVH, HTN, AS, hypertrophic cardiomyopathy, IHD → **[see notes 16]**

ADDITIONAL EXAMINATION

Choose tests according to priority from a range of options (below) based on clinical reasoning – not necessary to do all

Cues from history / DDs / core examination	Component / action	Examine for	DD / potential findings / extra information
Shortness of breath, swelling in ankles, feet or abdomen, sudden unexpected weight gain, chronic cough with white or pink mucus, persistent fatigue, palpitations	Auscultate lungs **[see Respiratory]**	Crepitations	LVF, RVF
	Palpate ankles **[see Peripheral vascular]**	Oedema	LVF, RVF **[see Peripheral vascular notes]**
Raised JVP, anorexia, GI distress, dependent oedema	Abdominal and liver examination **[see Gastrointestinal]**	Hepatomegaly, ascites	RVF
Osler's nodes, Janeway lesions, finger clubbing, splinter haemorrhages, aortic/mitral regurgitation	Examination of spleen **[see Gastrointestinal]**	Splenomegaly	IE
Infection or malignancy DD	Axillary lymph node examination **[see Appendix for location]**	Lymphadenopathy **[see Appendix]**	**[see Appendix]**

CONCLUSION

Component / action	Examine for	DD / potential findings / extra information
Conclusion ● Wash / gel hands ● Thank SU & allow them to re-dress; check they are OK ● Review observation chart (HR, BP, RR, SpO_2, temperature) ● Decide on next steps with the SU or discuss and follow up once findings reviewed		Return to the aim of the examination – to localise the problem by: ● Organising & correlating the history & test findings using clinical reasoning ● Gathering sufficient information to allow more confident / directed action ● Making a final list of DDs / concerns, in order of priority Action ● Put together a reasoned / safe plan to cover all potential problems identified This could include: 1. Request further tests, e.g: haematology, ECG, CXR, echocardiogram 2. Give advice / take appropriate action within scope 3. Make a referral / consult with MDT 4. Use safeguarding / gain a second opinion if any uncertainty 5. Arrange a follow-up

1. How to measure the JVP

With the patient in a semi-recumbent position (at 45°) and their head turned slightly to the left, find the highest point of pulsation of the IJV. Measure the JVP by assessing the vertical distance between the sternal angle (a bony ridge marking the articulation of the second ribs with the sternum) and the top of the pulsation point of the IJV (see *Fig. 1*). Extend a ruler horizontally from the highest point of pulsation. Extend a second ruler vertically from the sternal angle of Louis. Measure the distance from the sternal angle to the point where the two rulers intersect. In healthy individuals, this should be no greater than 3 cm.

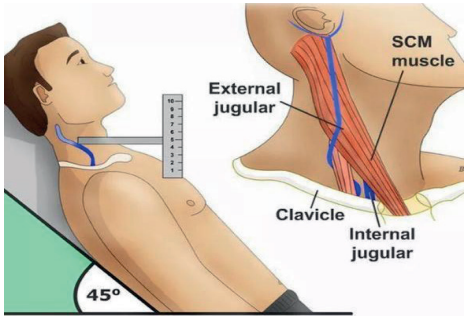

Fig. 1: How to measure the JVP. Reproduced from https://medizzy.com/feed/2859957

2. Features of the JVP (vs. carotid pulse)

- Double pulsation
- Non-palpable
- Obliterated when pressure applied at base of neck
- Height changes with respiration
- Height changes with angle of SU
- Rises with hepatojugular reflux

3. Key JVP abnormalities

- Elevated — RVF, volume overload, PE, constrictive pericarditis
- Elevated with ↓BP — Tension pneumothorax, cardiac tamponade, massive PE, severe asthma
- Elevated & fixed — SVC obstruction

4. Locations where the heart valves are best heard (*Fig. 2*)

- Aortic valve: 2nd intercostal space at the right sternal edge
- Pulmonary valve: 2nd intercostal space at the left sternal edge
- Tricuspid valve: 4th or 5th intercostal space at the lower left sternal edge
- Mitral valve: 5th intercostal space in the midclavicular line

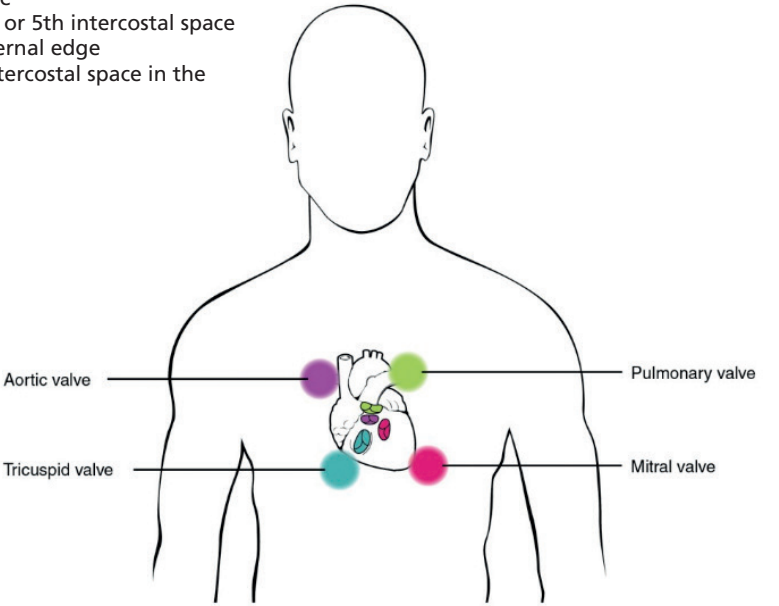

Fig. 2: Best places to hear the heart valves. Reproduced from https://courses.lumenlearning.com/suny-ap2/chapter/cardiac-cycle/ (under a CC-BY-4.0 Attribution licence)

5. Cardiac surgery scars give you clues during examination

- Midline sternotomy + leg scar = simple CABG most likely, possible valve replacement with CABG
- Midline sternotomy with no leg scar = valve replacement most likely, possible CABG without vein graft (LIMA or radial artery graft only)

6. Differentiating between types of cyanosis

- Pure peripheral cyanosis causes cold blue hands
- Central cyanosis causes blue lips and tongue, and when severe can also cause blue hands (usually warm)

7. DD Central cyanosis (blue lips & tongue)

- Hypoxic lung disease
- Right-to-left cardiac shunt
  - Cyanotic congenital heart disease
  - Eisenmenger's syndrome
- Methaemoglobinaemia
  - Drugs
  - Toxins

8. DD Peripheral cyanosis (blue hands)

- Peripheral vascular disease
- Raynaud's syndrome
- Heart failure
- Shock
- (Central cyanosis when severe)

9. DD Irregularly irregular pulse

- AF
- Ventricular ectopic beats (VEBs)
- Complete HB + variable ventricular escape

To differentiate between AF and VEBs without an ECG you can exercise the SU – this will abolish VEBs but AF will remain

10. Six important causes of AF

- Ischaemic heart disease
- Rheumatic heart disease
- Thyrotoxicosis
- Pneumonia
- PE
- Alcohol

11. Some causes of an absent radial pulse

- Congenital (usually bilateral)
- Arterial embolism (e.g. due to AF)
- Atheroma (usually subclavian)
- Previous arterial line
- Previous coronary angiography
- Cervical rib
- Coarctation of the aorta
- Aortic arch dissection
- Significant hypotension

12. Causes of a non-palpable apex beat

1. Something is between your fingers and the apex
   - Adipose tissue (obese SU)
   - Air (pneumothorax or emphysema)
   - Fluid (pleural or pericardial effusion)
2. The apex is not in its normal position
   - Displaced (usually laterally in LVF)
   - Dextrocardia

CCF = biventricular failure = LVF + RVF

13. DD Heaving apex (LVH)

- Aortic stenosis
- Hypertension
- HOCM
- Coarctation of the aorta

14. Extra heart sounds

3rd heart sound (S3)

- Heard just after S2
- Due to rapid ventricular filling
- May be normal if <30 years old
- Think *volume overload*
- Causes: CCF, MR, AR, large anterior MI

4th heart sound (S4)

- Heard just before S1
- Due to poorly compliant ventricle
- Always abnormal
- Cannot occur in AF (requires atrial systole)
- Think *pressure overload*
- Causes: AS, HTN, HOCM, post-MI fibrosis

15. Causes of cardiac failure

1. Pump failure
   - IHD
   - Cardiomyopathy
   - Constrictive pericarditis
   - Arrhythmia
   - Drugs (negative inotropes)
2. Excessive preload
   - Regurgitant valvular disease (MR/AR)
   - Fluid overload (renal failure, IV fluids)
   - VSD
3. Excessive afterload
   - AS
   - HTN
4. High-output failure (rare)
   - Anaemia
   - Pregnancy
   - Metabolic (hyperthyroidism, Paget's)
5. Isolated RVF
   - Cor pulmonale
   - Primary pulmonary HTN

16. Heart murmurs

		Mitral stenosis	Mitral regurgitation

Aetiology		• Rheumatic heart disease (99%)	• Primary MR (structural)
			  ○ Rheumatic heart disease
			  ○ IE
			  ○ Valve prolapse
			  ○ Papillary muscle rupture (e.g. post-MI)
			  ○ Marfan's
			  ○ SLE
			• Secondary MR (functional)
			  ○ LV dilatation

Presentation		• SOB & fatigue • Pulmonary oedema / haemoptysis • RVF (late)	• SOB & fatigue • Other LVF (orthopnoea, PND)
Features [see notes 17]	**T**	• Mid-diastolic	• Pansystolic
	I	• 1–4	• 1–6
	P	• Apex	• Apex
	P	• On LHS & with expiration (Bell)	• –
	Q	• Rumbling (low-pitched)	• Blowing
	R	• None	• Axilla
	S	• Opening snap • Tapping apex • AF • Loud 1st heart sound • Mitral facies • Signs of RVF (late)	• 3rd heart sound • Thrusting, displaced apex • Quiet 1st heart sound • Obliterated 2nd heart sound • AF • Audible 'click' in valve prolapse
ECG features		• AF common • P mitrale (bifid P waves)	• AF common • VEBs
CXR features		• Enlarged left atrium • Pulmonary venous congestion	• Cardiomegaly (late) • Cardiac failure **[see notes 15]**

DD		• Austin Flint (2° AR)
		• Carey Coombs (rheumatic fever)
		• TS (usually rheumatic)
			• VSD (important DD post-MI)
			• TR (usually functional)
			  ○ Pulsatile hepatomegaly
			  ○ Giant V waves in JVP
			• AS (in DD for any systolic murmur)

Treatment		• AF Rx + anticoagulation • Diuretics	• AF Rx + anticoagulation • Diuretics • ACEi (HTN worsens MR)

		Aortic stenosis	Aortic regurgitation
Aetiology		• Rheumatic heart disease • Calcified bicuspid valve (age 50–60) • Calcified tricuspid valve (age 70+)	• Rheumatic heart disease • IE • Luetic heart disease (syphilis) • Bicuspid valve • Hypertension • Aortic dissection • Marfan's • RA • Ankylosing spondylitis
Presentation		• SOB • Syncope / pre-syncope • Angina	• SOB & fatigue • Palpitations • (Often asymptomatic)
Features	**T**	• Ejection systolic	• Early diastolic
	I	• 1–6	• 1–4
	P	• Aortic	• LLSE
	P	• –	• Sitting up & with expiration [Diaphragm]
	Q	• Crescendo–decrescendo	• Breath-like (high-pitched)
	R	• Carotids	• None
	S	• 4th heart sound • Heaving apex • Slow-rising pulse • Narrow pulse pressure • Ejection click • Quiet 2nd heart sound (if severe)	• 3rd heart sound • Thrusting, displaced apex • Collapsing pulse • Wide pulse pressure • Eponymous signs **[see notes 21]** • Austin Flint murmur (mid-diastolic)
ECG features		• LVH / LV strain pattern	• –
CXR features		• –	• Cardiomegaly • Cardiac failure **[see notes 15]**
DD		• Aortic sclerosis **[see notes 20]** • HOCM • PS (usually congenital) • MR (in DD for any systolic murmur)	• PR • Graham Steele (PR 2° pulmonary hypertension)
Treatment		Treat HTN	• Diuretics • Vasodilators

17. System for describing features of a heart murmur

For the non-specialist AP the key features of heart murmurs to note (for the purpose of referral) are T and P1.
It can be difficult to recall the features of a murmur. To help do this, use a method such as the TIPPQRS system. Keep reciting T-I-P-P-Q-R-S to yourself until it comes instantly.

T Timing
I Intensity – thrills are rare so generally grade 2 if quiet and grade 3 if loud
P_1 Position of stethoscope on precordium where heard loudest
P_2 Position of SU when murmur heard loudest – usually only relevant to diastolic murmurs
Q Quality
R Radiation
S Systemic features – other heart sounds, characteristics of the apex beat/pulse, etc.

18. Grading of murmur intensity

- Grade 1 Very faint, just audible by an expert in optimal conditions
- Grade 2 Quiet, just audible by a non-expert in optimal conditions
- Grade 3 Moderately loud
- Grade 4 Loud with palpable thrill
- Grade 5 Very loud with thrill, audible with stethoscope partly off chest
- Grade 6 Very loud with thrill, audible without a stethoscope

} Systolic only

19. Stigmata of infective endocarditis

- Changing heart murmurs
- Finger clubbing
- Splinter haemorrhages
- Mild splenomegaly
- Microscopic haematuria
- Eponymous signs (rare!)
  - Osler's nodes on finger pulps
  - Janeway lesions on palms and soles
  - Roth spots on the retina

20. Aortic 'sclerosis'

- *Asymptomatic*
- Does not radiate to carotids
- No slow-rising pulse
- Normal pulse pressure
- 2nd heart sound normal/loud

21. Eponymous signs in AR

- Corrigan's: Exaggerated carotid pulse
- Quincke's: Nailbed pulsation
- De Musset's: Head-nodding
- Duroziez's: Diastolic femoral murmur
- Traube's: 'Pistol shot' femorals

22. Features of finger clubbing

- Increased fluctuance of nailbed
- Loss of nailbed angle
- Increased longitudinal curvature of nail
- Drumsticking

23. DD Finger clubbing

- Cardiovascular disease
  - Cyanotic congenital heart disease
  - Infective endocarditis
  - Atrial myxoma
- Other causes (see also Respiratory and Gastrointestinal)
  - Thyroid acropachy (Graves' disease)
  - Familial

NOTES

WHY THIS SYSTEM?

Clues / correlations with history	ENT DDs
• Earache (otalgia)	Acute OM, OE, mastoiditis, trauma / barotrauma, chronic rhinosinusitis, referred pain from teeth/TMJ [**see Cranial nerves – facial function**]
• Sore throat	Pharyngitis (viral or bacterial), tonsillitis, epiglottitis, GORD, rhinosinusitis
• Ear discharge (otorrhoea)	OE, acute / chronic OM with tympanic perforation, cholesteatoma, trauma
• Nose discharge (rhinorrhoea)	Viral URTI, rhinosinusitis, nasal polyps
• Hearing loss / change	Conductive: cerumen impaction, OM with effusion, otosclerosis, tympanic membrane perforation, cholesteatoma Sensorineural: cranial nerve VIII / vestibulocochlear dysfunction: age-related, noise-induced, acoustic neuroma, Ménière's disease, ototoxicity (e.g. aminoglycoside antibiotics [gentamycin], chemotherapy drugs, NSAIDs, loop diuretics [furosemide])
• Tinnitus	Noise-induced, acoustic neuroma, Ménière's disease, ototoxicity, vascular abnormalities, TMJ disorder [**see Cranial nerves – facial function**].
• Vertigo	Peripheral causes (inner ear): BPPV, Ménière's disease, vestibular neuritis or labyrinthitis, acoustic neuroma, perilymph fistula Consider central causes [**see Neurological**], e.g. CVA / TIA, MS, migrainous vertigo, tumours of vestibular pathways
• Swallowing difficulties (dysphagia)	Oropharyngeal causes: pharyngitis / tonsillitis, rhinosinusitis, epiglottitis, retropharyngeal / peritonsillar abscess, oropharyngeal cancer Oesophageal causes: GORD, oesophageal strictures, achalasia, oesophagitis Neurological: bulbar function palsy [**see Cranial nerves**]
• Voice change / hoarseness	Acute laryngitis (usually viral), vocal cord nodules / polyps, laryngeal cancer, GORD, vocal cord paralysis (bulbar function palsy [**see Cranial nerves**], tumour, trauma), thyroid disease
• Smoking history	Increased risk of laryngeal and throat cancer; chronic rhinosinusitis
• Alcohol history	Increased risk of head and neck cancers, particularly oral cavity, larynx and pharynx
• Inhaled recreational drug use	Increased risk of nasal mucosal and septal damage
• Recurrent URTI	Increased risk of rhinosinusitis, OM and tonsillitis
• PMH of GORD	Increased risk of laryngitis, chronic cough, laryngeal cancer
• PMH of HPV infection	Increased risk of oropharyngeal cancer, particularly tonsils and base of tongue
• FH of otosclerosis, Ménière's disease, head and neck cancer	Increased risk of the condition
• Occupational exposure to irritants	Increased risk of rhinosinusitis
• Frequent voice use	Increased risk of laryngitis, vocal cord nodules / polyps

! BEFORE starting the examination !

Service user perspective: proactively explore any potential concerns beforehand

- Fear of discomfort or pain, previous negative experience: explain the procedure in simple terms before starting so that the SU knows what to expect
- Reassure that most procedures are quick and relatively painless: give explicit permission to raise a hand during the procedure to signal discomfort
- Acknowledge anxiety and reassure around the need for assessment to make an informed shared decision
- Feeling of invasiveness due to close physical contact required: use distraction techniques like talking about neutral topics, and short breaks between steps
- Sensitive gag reflex: suggest breathing through the nose during throat exam to reduce gag reflex

GENERAL INSPECTION

Component / action	Examine for	DD / potential findings / extra information
Introduction • Wash / gel hands • Introduce yourself, confirm SU, explain examination • Gain informed consent, explain ability to withdraw, stop the examination, decline specific tests or ask questions • Position SU – sitting in chair / on side of bed • Use draping to expose only as required for each examination step		Consider a chaperone or ask "*Would you like to be supported by someone – is there someone in the waiting room?*"
General appearance	• Unwell / distressed / in pain	
	• Hearing aids	→ Pre-existing hearing deficit can cause ear wax impaction
	• Hoarse voice	→ Laryngitis, vocal cord nodules, laryngeal nerve damage, bulbar function palsy [**see Cranial nerves**]
	• Stridor	→ Partial upper airway obstruction (e.g. epiglottitis, foreign body, vocal cord paralysis)
	• Mouth breathing	→ Nasal obstruction (e.g. adenoid hypertrophy, polyps, deviated septum)
	• Visible otorrhoea / rhinorrhoea	→ Infection, allergy, trauma
Face	• Asymmetry	→ Nerve dysfunction (e.g. Bell's palsy) → Infection (e.g. OM, rhinosinusitis, cholesteatoma) → Trauma (e.g. facial fractures) → Tumours (benign or malignant, e.g. parotid gland)
Mouth (use a pen torch)	• Cracking or sores on lips	→ Nutritional deficiencies, herpes simplex, angular stomatitis
	• Poor oral hygiene	→ Risk of infections (e.g. tonsillitis, Ludwig's angina)
	• Gingival bleeding / swelling	→ Vitamin C deficiency, periodontal disease
	• Ulceration	→ Trauma, infection (e.g. herpes simplex), malignancy
	• Smooth swollen tongue	→ Glossitis – vitamin B12 or iron deficiency
	• White patches on tongue / buccal mucosa	→ Candida infection or leukoplakia
Neck	• Asymmetry or swelling	→ Enlarged lymph nodes, infection (e.g. strep throat, scrofula), malignancy (lymphoma, metastases), inflammatory conditions (e.g. SLE) [**see Appendices: lymph nodes & general lumps**] → Thyroid enlargement [**see Appendix: general lumps**]

CORE EXAMINATION – EARS

Component / action	Examine for	DD / potential findings / extra information
Inspection (bilateral)		
• Pinna	• Erythema & oedema	→ OE
	• Skin lesions	→ Pre-maliganant (actinic keratoses) and malignant (BCC, SCC) [**see Appendix: skin lesions**]
	• Deformity	→ Acquired (cauliflower ear), congenital (microtia, low-set ears, e.g. Down's or Turner's syndrome)
	• Psoriatic plaques (neck & scalp too)	→ Plaque psoriasis [**see Appendix: skin lesions**]; consider MSK examination
	• Gouty tophi	→ Chronic tophaceous gout; consider MSK examination
• External auditory canal		
• Character of discharge	• Clear watery	→ Allergy, irritation, CSF leak 2° to trauma / surgery
	• Purulent	→ OM with perforation, OE
	• Blood-tinged	→ Trauma, infection with ulceration, ruptured TM
	• Thick white / yellow odourless	→ Cholesteatoma (unilateral)
	• Brown or black	→ Excess cerumen, otomycosis, old blood
	• Foreign body	
• Mastoid area	• Erythema & swelling	→ Mastoiditis
Palpation (bilateral)		
• Press on tragus	• Pain / tenderness	→ Tragus – OE
• Gently pull helix		→ Helix – OE, trauma, perichondritis
• Palpate mastoid area		→ Mastoid – mastoiditis
Test (bilaterally)		
• Whisper test – stand behind SU 60 cm away, SU occlude one ear, whisper 3 words; test other ear using different words	• Inability to correctly repeat 2 of 3 words	→ Possible high-frequency hearing loss (sensorineural), occluded external ear canal (e.g. cerumen, infection), noise-induced damage, otosclerosis, Ménière's disease
		→ Cranial nerve VIII / vestibulocochlear dysfunction
		→ If abnormal, use Rinne and Weber to test further [**see notes 1**]

• Examine with otoscope using correct technique [**see notes 4**]		
• Bilaterally, examine non-affected ear first	• Excessive earwax	→ Conductive hearing loss [**see notes 2**]
• Ear canal	• Erythema and oedema	→ OE
	• Discharge	→ [**see Inspection**]
	• Foreign bodies	
• Tympanic membrane	• Erythema	→ Inflammation, e.g. OM, myringitis
	• Bulging	→ Increased middle ear pressure, e.g. OM with effusion
	• Retraction	→ Reduced middle ear pressure, e.g. Eustachian tube dysfunction secondary to URTI / allergies
	• Absent or distorted light reflex (cone of light)	→ Bulging with OM
	• Perforation	→ OM, trauma, cholesteatoma (esp. if in superior TM)
	• Scarring	→ Tympanosclerosis 2° to OM or grommet insertion

CORE EXAMINATION – NOSE

Component / action	Examine for	DD / potential findings / extra information
Inspection: external surface from front and sides	• Skin changes	→ BCC, SCC, keratoacanthoma, cellulitis [**see Appendix: skin lesions**]
	• Deformities	→ Trauma (fracture, dislocation)
Ask "*Have you noticed any changes in your sense of smell?*"	• Report of reduced sense of smell	→ Infection, allergy, nasal polyps, chronic rhinosinusitis, olfactory nerve palsy [**see Cranial nerves**]
Palpation		
• Nasal bones	• Alignment, tenderness, irregularity	→ Trauma / fracture, rhinosinusitis
• Nasal cartilage	• Alignment, tenderness, inflammation	→ Trauma / fracture, perichondritis
• Sinuses [**see notes 6**]	• Pain, tenderness	→ Rhinosinusitis
○ frontal – press your thumbs under the bony brow on each side of the nose		
○ maxillary – press your thumbs under the zygomatic processes		
Test (bilaterally)		
• Ask SU to occlude nostrils in turn and breathe in	• Occlusion	→ Obstruction (e.g. polyps, septal deviation)
	• Congestion	→ Rhinosinusitis, allergy, infection
Examine with otoscope using correct technique [**see notes 5**]		
• Bilaterally, examine non-affected nostril first	• Pale or red membranes	→ Pale in allergies, red in infections
• Nasal mucosa	• Crusting or scabbing	→ e.g. chronic rhinosinusitis, dryness
	• Polyps	→ Chronic rhinosinusitis
• Nasal cavity	• Tumours	→ Squamous cell carcinoma, adenocarcinoma
	• Septal haematoma	→ Nasal or facial trauma
• Septum	• Deviation, perforation	→ Trauma, cocaine use, chronic use of nasal sprays
• Character of mucus / discharge	• Clear watery fluid	→ Early viral infection, allergic and non-allergic rhinitis, CSF leak 2° to trauma / surgery (often unilateral)
	• Purulent (yellow / green)	→ Bacterial infection, e.g. bacterial rhinosinusitis, chronic sinus infection, odontogenic rhinosinusitis (often unilateral)
	• Blood-tinged	→ Nasal / sinus mucosal trauma, neoplasia, fungal infections
	• Frank haemorrhage	→ Trauma, fungal infections, neoplasia
	• Foul-smelling unilateral	→ Chronic rhinosinusitis, nasal polyps / tumours, foreign body

CORE EXAMINATION – THROAT

Component / action	Examine for	DD / potential findings / extra information
Inspection Ask "*Do you have any changes in your swallowing?*"	• Report of difficulty swallowing	→ [**See Additional examination**]
• Palate	• White slough with underlying erythema • Ulceration • Papillomas – cauliflower-like projections on surface	→ Candidiasis → Trauma, infection (e.g. herpes simplex), malignancy → HPV
• Tonsils	• Enlargement • Asymmetry • Ulceration • Peritonsillar swelling	→ Chronic tonsillar hypertrophy, tonsillitis, glandular fever → Tonsillitis, unilateral tonsilloliths, malignancy → Viral infection (e.g. herpes simplex), malignancy → Quinsy
• Pharyngeal arches	• Inflammation	→ Pharyngitis, glandular fever
• Uvula	• Deviation	→ Quinsy, vagus nerve lesion [**see Cranial nerves**] (can be normal)
• Floor of mouth	• Swelling / increased prominence of parotid duct ± inflammation • Ulceration	→ Submandibular gland sialolithiasis ± infection → Trauma, infection (e.g. herpes simplex), malignancy

ADDITIONAL EXAMINATION

Choose tests according to priority from a range of options (below) based on clinical reasoning – not necessary to do all

Cues from history / DDs / core examination	Component / action	Examine for	DD / potential findings / extra information
Infection or malignancy DD	**Head and neck lymph node examination [see Appendix: lymph nodes for location]**	Lymphadenopathy [**see Appendix: lymph nodes**]	→ [**see Appendix: lymph nodes**]
Difficulty swallowing, globus sensation	Ask the SU to swallow a sip of water to evaluate their swallowing reflex	Signs of choking, coughing, or difficulty swallowing that might indicate dysphagia or aspiration	→ Neurological – bulbar function palsy [**see Cranial nerves**] → Muscular / structural: achalasia, pharyngeal infections → Obstruction: oesophageal stricture, oesophageal tumour, foreign body → Inflammatory conditions: oesophagitis, GORD → Psychogenic dysphagia
Failed whisper test	**Weber test** Purpose: to check for lateralisation of sound How: a 512 Hz tuning fork is struck and placed on the centre of the forehead; ask the SU "*Where do you hear the sound?*"	Abnormal test: sound is not heard equally in both ears	→ Conductive or sensorineural hearing loss [**see notes 1**]
	Rinne test Purpose: to compare air conduction (AC) vs. bone conduction (BC) hearing How: a 512 Hz tuning fork is struck and firmly placed on the mastoid bone (BC) until the SU reports that they can no longer hear it; the tuning fork is then placed near the ear canal (AC); ask the SU if they can hear the sound	Abnormal test: after BC is no longer heard, SU reports that they cannot hear sound once the tuning fork is moved next to ear (BC > AC)	→ Conductive or sensorineural hearing loss [**see notes 1**]

CONCLUSION

Component / action	Examine for	DD / potential findings / extra information
Conclusion ● Wash / gel hands ● Thank SU, allow them to re-dress; check they are OK ● Review observation chart (HR, BP, RR, SpO_2, temperature) ● Decide on next steps with the SU or discuss & follow up once reviewed findings		Return to the aim of the examination – to localise the problem by: ● Organising & correlating the history & test findings using clinical reasoning ● Gathering sufficient information to allow more confident / directed action ● Making a final list of DDs / concerns, in order of priority Action ● Put together a reasoned / safe plan to cover all potential problems identified This could include: 1. Request further tests as appropriate, e.g. FBC, monospot test 2. Give advice / take appropriate action within scope 3. Make a referral / consult with MDT 4. Use safeguarding / gain a second opinion if any uncertainty 5. Arrange a follow-up

1. Hearing tests

The Weber and Rinne tests are both used to assess hearing loss, and they complement each other to help determine the type of hearing impairment (conductive vs. sensorineural). Weber helps identify which ear is affected. Rinne helps determine whether the hearing loss is conductive or sensorineural. Together, they provide a fuller picture of hearing function and the potential cause of hearing loss.

Rinne test	Weber test	Diagnosis
• Air > bone (both ears)	• Central	• Normal (referred to as a positive test)
• Bone > air in one ear (e.g. left)	• Lateralises to same ear (i.e. left)	• Conductive hearing loss in left ear
• Air > bone (both ears)	• Lateralises to one ear (e.g. left)	• Sensorineural loss in right ear
• Bone > air in one ear (e.g. left)	• Lateralises to opposite ear (i.e. right)	• Complete sensorineural deafness in left ear*

* This is because sound is conducted via the skull across to the unaffected right ear when bone conduction is tested, but nothing is heard when air conduction is tested in the left ear.

2. Causes of conductive hearing loss

Outer ear causes:
- Impacted cerumen
- Otitis externa
- Foreign bodies in the ear canal
- Congenital malformations (microtia, atresia)

Middle ear causes:
- Otitis media
- Eustachian tube dysfunction (allergies/infections)
- TM perforation
- Cholesteatoma (unilateral)
- Otosclerosis
- Middle ear tumour

NOTES

3. Causes of sensorineural hearing loss

- Congenital, e.g. genetic disorders, birth complications, infection during pregnancy
- Presbycusis
- Noise-induced hearing loss
- Head trauma
- Medical conditions, e.g. Ménière's disease, acoustic neuroma
- Infections, e.g. meningitis, mumps, measles, herpes
- Ototoxic drugs (e.g. aminoglycoside antibiotics, chemotherapy drugs, NSAIDs, loop diuretics)
- Diabetes
- Stroke

4. Correct use of an otoscope for inspection of the ear

The otoscope is held 'upside down' between your thumb and index finger like a pen. Extend your little finger and place it along the person's cheek so that the otoscope is steady and braced to avoid trauma if the person moves their head unexpectedly; use your opposite hand to gently pull the outer ear up and back on adults to straighten the ear canal (for children under 3, pull the outer ear down and back).

NOTES

5. Correct use of an otoscope for inspection of the nasal cavity

Carefully elevate the tip of the nose with your thumb, insert the tip of the otoscope to examine the nasal cavity.

6. Palpating the sinuses

Frontal

Maxillary

NOTES

7. Rhinosinusitis (the term 'rhinosinusitis' is considered more accurate because sinusitis is almost always accompanied by inflammation of the contiguous nasal mucosa)

Term	Definition	Diagnostic criteria
Acute rhinosinusitis (ARS)	Symptoms resolve within 12 weeks	Sinonasal inflammation lasting <12 weeks and associated with the sudden onset of *at least two* diagnostic symptoms: **Adults** ● Nasal blockage / obstruction / congestion or nasal discharge (anterior / posterior nasal drip) ● Facial pain / pressure (or headache) ● Reduction (or loss) of the sense of smell **Children** ● Nasal blockage / obstruction / congestion ● Discoloured nasal discharge (anterior / posterior nasal drip) ● Cough (daytime and night-time)
Acute viral rhinosinusitis (AVRS)		Symptoms of ARS for less than 10 days
Acute bacterial rhinosinusitis (ABRS)		At least 3 of the following features: ● Symptoms for more than 10 days ● Discoloured or purulent nasal discharge ● Severe localised pain (often unilateral, particularly pain over teeth and jaw) ● Fever >38°C ● Marked deterioration after an initial milder phase (double sickening)
Chronic rhinosinusitis (CR)	Symptoms last longer than 12 weeks	Sinonasal inflammation lasts ≥12 weeks, with a combination of *at least two* diagnostic symptoms **Adults** ● Nasal blockage / obstruction / congestion or nasal discharge (anterior / posterior nasal drip) ● Facial pain / pressure (or headache) ● Reduction (or loss) of the sense of smell **Children** ● Nasal blockage / obstruction / congestion ● Discoloured nasal discharge (anterior / posterior nasal drip) ● Cough (daytime and night-time) **AND objective evidence of sinonasal inflammation (at least one of the following):** ● Mucopurulent mucus, oedema, or polyps on examination ● Radiographic evidence of sinonasal inflammation ● Endoscopic or CT (computed tomography) evidence of sinonasal inflammation
Recurrent acute rhinosinusitis	4 or more episodes per year with distinct symptom-free intervals	Each episode should reach diagnostic criteria of ARS

From: https://cks.nice.org.uk/topics/sinusitis/