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# Short window in history taking and physical examination

**PROF. NASSER GHALY YOUSIF**

AL MUTHANNA MEDICAL COLLEGE | AL MUTHANNA UNIVERSITY

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About the Editor

**Nasser Ghaly Yousif**

Affiliations and Expertise

Physician, Medical hemato/oncologist, MD, MSc, PhD, FRCP

Al Muthanna Medical College

Al Muthanna University

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## Preface

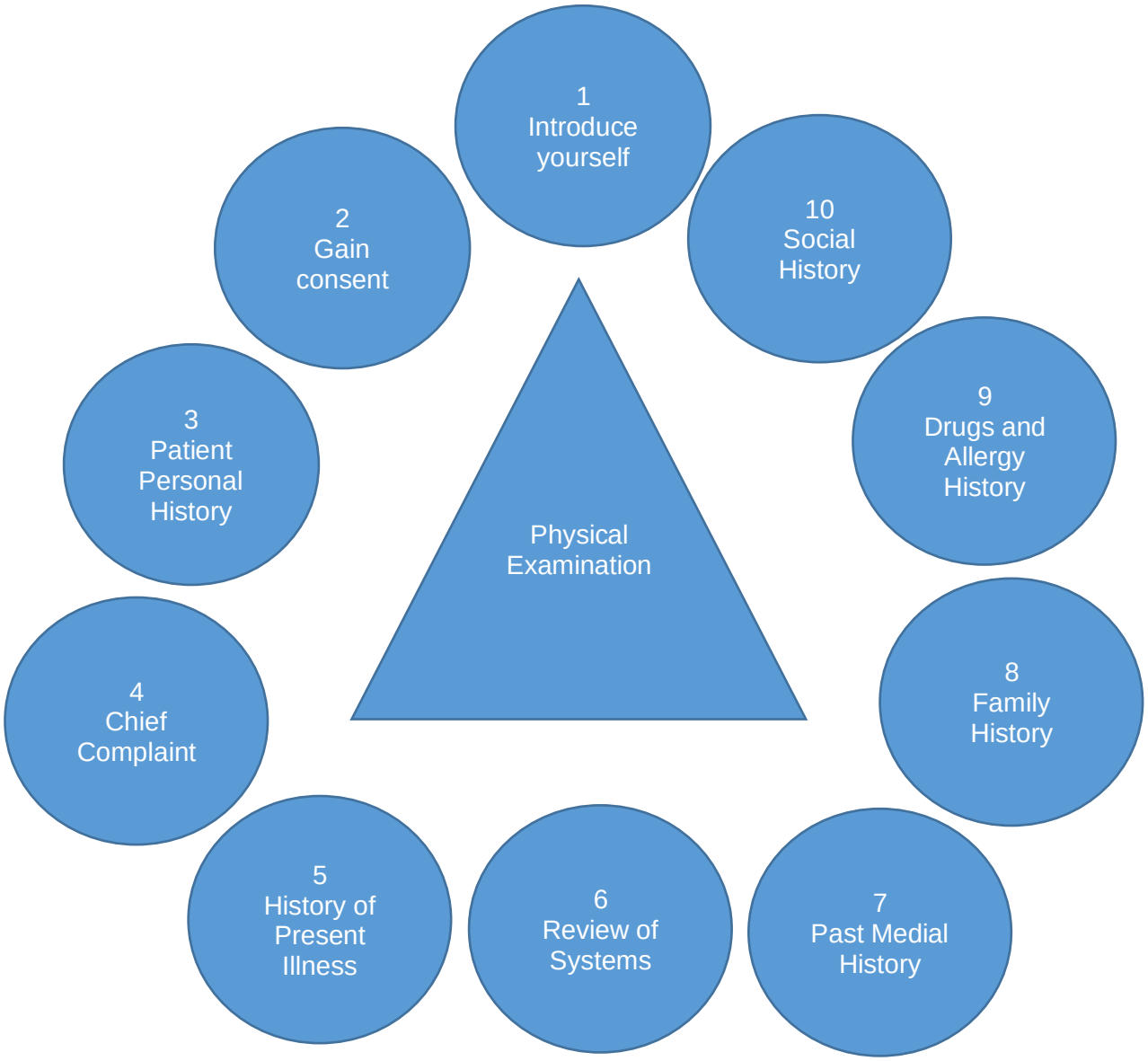
The taking of an accurate history is the most difficult and most important part of a consultation in the majority of medical diseases. It becomes progressively simpler as the clinician's knowledge of disease and experience increases.

An interpretation of symptoms and signs leading to identification of a disease. While complete description involves knowledge of the causation (etiology), anatomical and functional changes which are present. The past and present history of the illness also highly important together with the condition of the patient, as shown by a full clinical examination.

This book aims written in simple way beside many real own pictures to assist medical students and clinicians in developing the consultation skills required to elicit a clear history, and the practical skills needed to detect clinical signs of disease. Where possible, the physical basis of clinical signs is explained to aid understanding.

Nasser Ghaly Yousif

## Procedure Steps



# Part One History Taking

## Step 1
## Introduction

1. Wash your hands before and after interview.
2. Introduce yourself and your job (that you are a medical student).

   For example: My name is Nasser, fourth year medical class student.
3. Explain the purpose of the interview.

   For example: I'm going to ask you some questions about your loin pain.
4. Sit down in a chair if feasible approximately a meter away from patient. Ensure you are sitting at the same level as them and ideally not behind a desk.

## Step 2
## Gain consent

Gain consent (means a patient must give permission before they receive any type of treatment or examination).

For example: I'm going to ask you some questions about your chest pain, is that OK or is that FINE?").

Provide specific next steps

## Step 3
## Patient Personal History

- Patient name & Age

  For example: Can you please tell me your full name and age?
- Occupation enquires about patient's present occupation. If patient retired must be ask about his/her previous job.
- Marital status
- Address
- Date of admission
- Next of kin if applicable
- Blood group if applicable

**Presentation**: Samir Jamil Hamid 66-year-old, retired previously working in cement factory for 25 years ago. He is Married and lived in Samawa city, admitted at January 22,2022 with his wife as next of kin. He didn't know his blood group.

## Step 4
## Chief Complaint (Concern)

Ask the patient to mention her/his problem using open questions and elicit in the patient's own words, including the **duration** and elicit why the patient seeks help now

For example:

How can I be of help today? OR

What's brought you into hospital today?

For example: I have chest Pain for 2 days ago.

If more than one chief complaint, enumerate in order of importance: (1); (2) …

**Presentation**: Mr. Samir Jamil Hamid having chest pain for last week.

## Step 5
## History of Presenting Illness or Complaint (HPC)

The most questions in history of present illness are open question. Ask the patient to think back to the start of their illness and describe what they felt and how it progressed through used following points:

- Date and Mode of onset

Course of signs and symptoms appeared either abrupt like in acute disease within hours or gradual onset in chronic disease. Therefore, the best phrase started present of illness is date and mode of illness.

e.g., The condition started before 2-days ago as……. (Acute disease)

The patient is known case of ……. (Chronic disease)

- Location and characters

  It's very important to describe the location and all characters of complaint, e.g., for pain must analysis carefully as descried below.

- Exacerbating and relieving factors

  During the course of chief complaint, it essential to asking patient regarding the nature of exacerbation and remission that related with the present chief complaint.

- Effects of treatment

  Carefully analyzed all drugs and other therapeutic measurements that related with the present chief complaint whether in hospital or prescribed by doctor in private clinic. Further must be obtain details if these therapeutic measurements had relieved symptoms of chief complaint.

- Associated symptoms

  Symptoms of the same organ system that patient suffer.

  Symptoms of other organ systems that related to chief complaint.

- Hospital course

  Investigations

  Medications & Interventions

  Improving or not

**The 8 dimensions of a medical problem can be easily recalled using (SOCRATES)**

**Site, Onset, Character, Radiation, Associated symptoms, Timing, Exacerbating and relieving factors, Severity**

- **Site** — Where is the pain? Use one figure. When does it start?
- **Onset** — Is speed of pain sudden or gradual?
- **Character** — What does the pain feel like? sharp/dull, burning/tingling, boring/stabbing, crushing/ tugging, patient's own description only
- **Radiation** — Does the pain move anywhere?
- **Associated symptoms** — Are there any other symptoms?
- **Timing** — Is pain episodic or continuous?
- **Exacerbating and relieving factors** — What makes it worse? What makes it better?
- **Severity** — How severe is the pain?

Difficult to assess. May be can compare with other common pains like head ache or toothache

**Presentation**: This is the first admission for Mr. Samir Jamil Hamid, who states he was in good health until last day befor admission (explain the acute or chronic of the problem). The condition started as sudden onset of chest pain continue over a few minute as dull and aching in nature (onset/ character).

Mr. Samir explain that his pain began in the left sternum area mainly close to the nipple and radiated to the left shoulder (site/radaition). The episode of pain occurred when he was working in cleaning his car (exacerbating factor). The pain lasted approximately 5 minutes (time) and dissapered when he rested in ground (relieving factors). The pain was associated with shortness of breath, without head ache, sweating, nausea, or vomiting. No change in the pain with movement, and not associated with food (associated symptoms). When his is in hospital, ECG and blood tset was made, also he received tablet under his tonuge and intramuscular injuction (he didn't know the type of medicine), pain disappeared and the medical staff told him must be stay in hospital for more investigation (hospital course).

## Step 6
## Review of Systems (ROS)

You asking for review of system in very short questions it may not be possible to get through all of this but it is essential to ask about other symptoms related to the chief complaint. If the symptoms present in history of present illness no needs to mention again in review of system

- ✓ CNS: Headache, Dizziness, Change in behavior, Loss of consciousness, Weakness, Abnormal movement.
- ✓ GIT: Dysphagia, Heartburn, Jaundice, Hematemesis, Constipation, Diarrhea, Melena, Bleeding Per Rectum.
- ✓ Cardio-Pulmonary: Cough, Hemoptysis, Dyspnea, Chest Pain, Palpitations, Syncope, Claudication.
- ✓ Urogenital: Loin Pain, Dysuria, Polyuria, Hematuria, Urethral Discharge.
- ✓ Skin & Musculoskeletal: Pain, Muscle Wasting, Pigmentation, Ulcers.
- ✓ Hematology: Easy Fatigability, Petechial, Gum Bleeding, Pallor.

## Step 7
## Past Medial History (PMH)

Do you complain from any medical diseases? Ask open questions like:

Do you have any of the following:

- ✓ **M**yocardial infarction
- ✓ **J**aundice
- ✓ **T**uberculosis
- ✓ **H**ypertension/high cholesterol
- ✓ **R**heumatic fever
- ✓ **E**pilepsy
- ✓ **A**sthma/angina
- ✓ **D**iabetes
- ✓ **S**troke
- ✓ Cancer (and treatment if he/she now)

[Mnemonic-MJTHREADS]

Have you ever been admitted to hospital?
Do you have any of previous operation?

## Step 8
## Drugs and Allergies

Ask about any medications, taken in the past and for current illness

Ask about and record any adverse drug reactions/allergies

Ask about any recreational drug (drugs that induce perceptual distortions such as hallucination).

## Step 9
## Family History (FH)

Family history provides information about the health status of first-degree relatives (parents, siblings and children.), hereditary or family diseases (if death mention the cause of death if applicable).

If there is family history of genetically significant diseases and chronic illnesses like diabetes, cardiovascular disease, cancer, renal disease, neuromuscular

disease, bleeding diathesis, psychiatric illness, substance abuse) and significant communicable diseases (TB, HIV, HEP)

## Step 10
## Social History

**[Mnemonic-HOSE PIPERS]**

1. Housing Conditions

   Who is at home with you, or do you live alone?

   What is the type and condition of the patient's housing, rural or civilian area?

   What is type of water supply?

2. Occupation

   What is type of your work? Where is your work? Ask about

   If there are any contacts with exposures-inhaled gases, dust, metals, and animal.

3. Smoking

   Do you smoke? Type of smoking (cigarettes, cigars, pipe)?

   How many a day and for how long? When started and quit if smoking ceased?

   Pack year calculator:

   A pack-year is used to describe how many cigarettes you have smoked in your lifetime, with a pack equal to 20 cigarettes.

$$\frac{\text{Number of cigarettes smoked per day} \times \text{number of years smoking}}{20}$$

For example: Nasser smoked 10 cigarettes per day for 10 years.

Calculate Pack year?

1/2 pack (10 cigarettes) per day x 10 years = 5 pack-years

Or

10 *10/20= 100/20=5 pack-per

4. Ethanol (Alcohol)

   Do you drink alcohol? type? Present or past?

   How many units a week do you drink?

   If > 21 units a day for a man or > 14 units for a woman, ask about alcohol dependency, withdrawal symptoms, negative social or financial impact of drinking.

5. Psychiatry disorders

   Ask about patient about mood in general and sleeping.

6. Independence (self-sufficient)

   Can you look after yourself without help with dressing, washing, or feeding? Do you need more help?

7. Pets

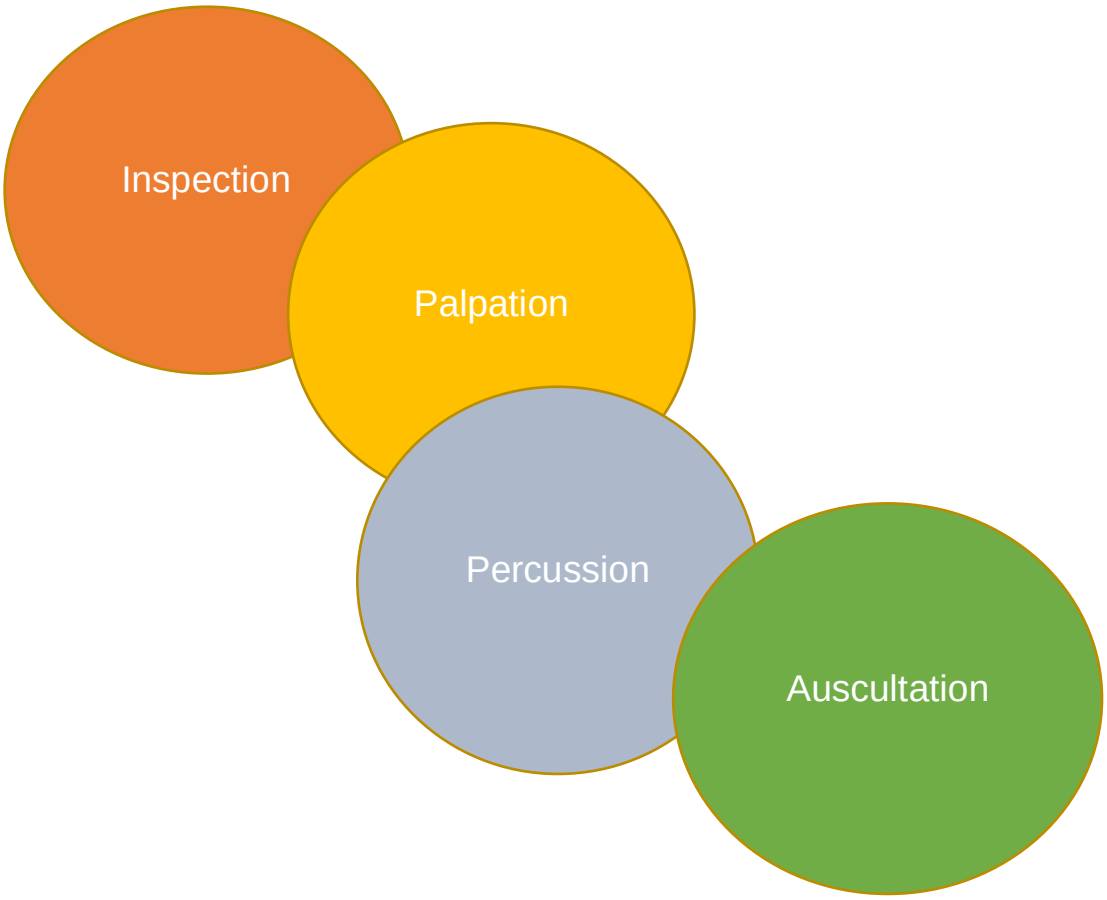
   Do you have any pets at home?

8. Travel (Expeditions/Excursions)

   Have you been out of the country in the last six months? Where?

9. Lifestyle/exercise

# Part Two Clinical Examination



# 1
# Cardiovascular Examination

## General Examination

### There is no single correct way to perform a physical examination

1. Introduce yourself to the patient and obtain and take permission (informed consent).
2. Wash your hand with water or sterilized with alcohol.
3. Look at the patient from the end of the bed with an inspection of the patient's general condition and their surroundings like any drains, urine catheter, intravenous (i.v) fluid and any medical equipment attached to the patient or in the bedspace.
4. Explain to the patient what you are doing in each step of examination.
5. Then move to the patient's right side (easy remember just move to your left-hand side).
6. And start to examine your patient.

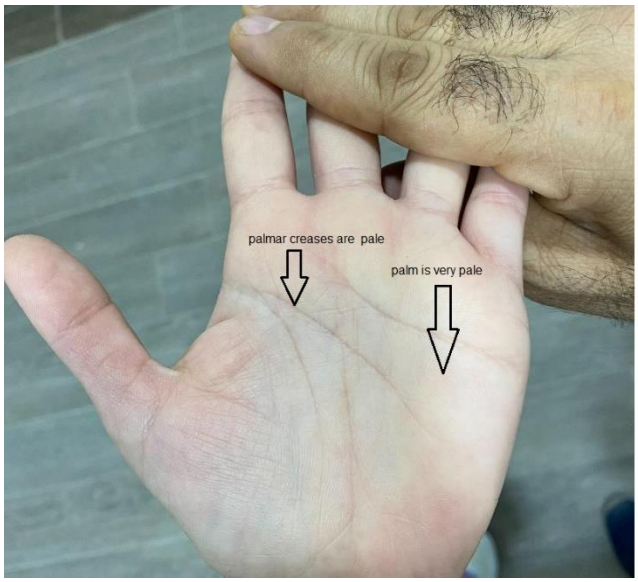
## Hand

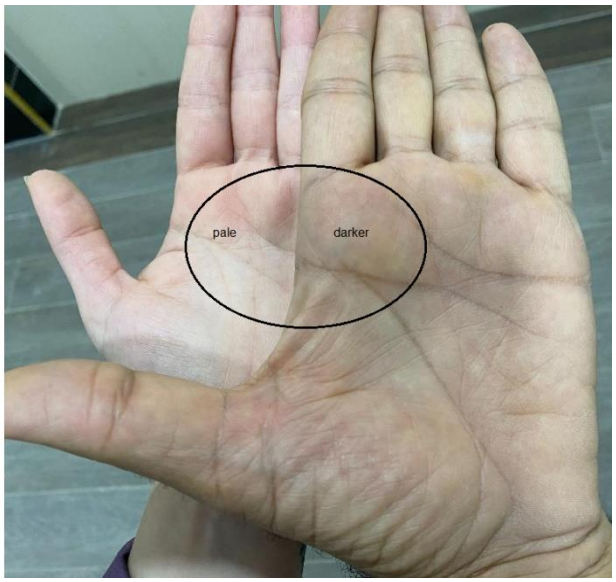
Its first window for general examination exam and looks to:

1. Dorsum of the hands.
    - Assess and compare the temperature (temperature of the patient's hand for assessment of peripheral perfusion),
    - Observe the color of the skin and any scar or swelling.
    - Looking for xanthomata (irregularly-shaped, yellowish nodules on the skin) along the extensor tendons indicates for cholesterol deposits.

2. Palm of hand
    - Palpate the muscle bulk of the thenar and hypothenar eminences if there is any muscle wasting. Wasting of the thenar eminence is suggestive of median nerve damage (e. g. carpal tunnel syndrome).
    - Inspect for any evidence of scars.
    - Exam for pallor in palms:
        - Palms should not be overstretched, compare the pinkness of the palm with your palm if you are healthy.
        - Observe for the pallor of the palmar creases, by hyperextending fingers and stretching skin on either side of the creases.

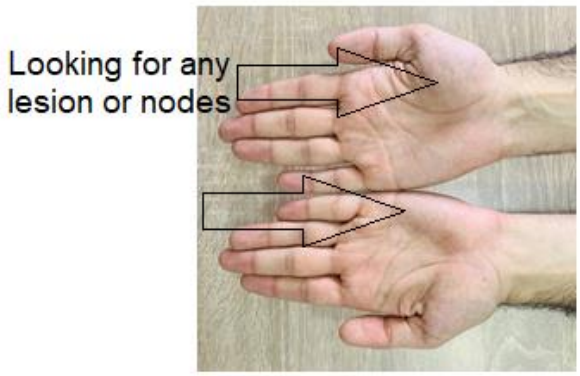
If the palm is mostly pale, but the creases are darker, there is some palmar pallor. If the palm is very pale, almost white or if even the palmar creases are also pale, then severe palmar pallor is said to be present.

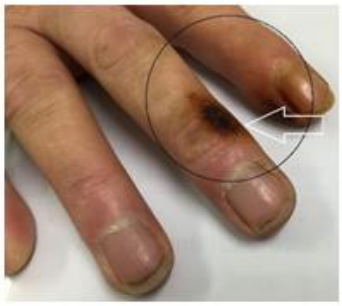



- Any thickening of the palmar fascia (Dupuytren's contracture).
- Palmar erythema: redness involving the heel of the palm, causes by: chronic liver disease, pregnancy, hyperthyroidism.
- Janeway lesions: non-tender, hemorrhagic lesions in thenar and hypothenar eminences of the palms it associated with infective endocarditis.
- Osler's nodes: red-purple, slightly raised, tender lumps with a pale center, it associated with infective endocarditis.

3. Examine the hands for tobacco staining



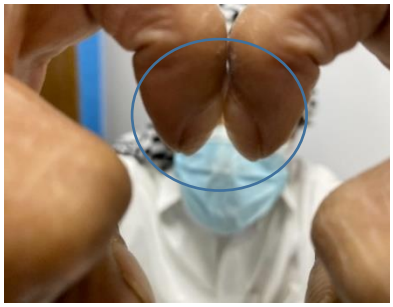



4. Exam the nail
   - Splinter hemorrhages: reddish-brown linear hemorrhages lying parallel to the long axis of the nail due to the small emboli becoming lodged in nailbed capillaries mostly signs of infective endocarditis, previous trauma, vasculitis or psoriatic nail
   - Nail clubbing: Its uniform soft tissue swelling of the terminal phalanx of a digit with subsequent loss of the normal angle between the nail and the nail bed, angle of greater than 180°. It causes by:

Congenital cyanotic heart disease, Infective endocarditis, Atrial myxoma, Bronchiectasis, Lung cancer, Cystic fibrosis, Inflammatory bowel disease

The nail clubbing exam:

- ✓ Asking the patient to curl the fingers of both hands towards the palms and then bring their hands together so the nails and distal interphalangeal joints of the two middle fingers touch (Schamroth's test): loss of diamond shaped gap between the two nails positive Schamroth's sign.



- ✓ Assessing nail-bed fluctuation. Place your both thumbs under the pulp of patient distal phalanx and use your both index fingers alternately to see if there is fluctuant movement of the nail on the nail bed

- Leukonychia: Whitening of the nail bed, causes by:

Nail bed trauma, Hypoalbuminemia (e.g. end-stage liver disease, protein-losing enteropathy), Chemotherapy

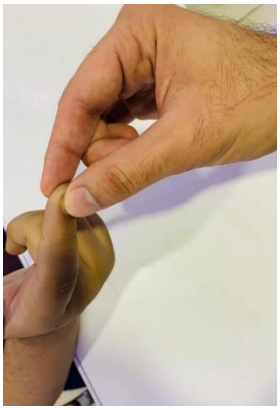
- Koilonychia: spoon-shaped nails, causes by:

Iron deficiency anemia (e. g. Crohn's disease), Lichen planus, Rheumatic fever

- Nail pitting: punctate depressions of the nail plate. It is most commonly associated with psoriasis.
- Paronychia: infection of the skin around your fingernails. Bacteria or a type of yeast called Candida typically cause this infection. Bacteria and yeast can even combine in one infection.

5. Exam for peripheral cyanosis: bluish discoloration of the fingertips
6. Capillary nail refill time- CRT- (Nail blanch test): use to assess the patient's peripheral perfusion. By remove colored nail polish before this test then squeezing the fingertip firmly for five seconds then letting go and recording the time taken for normal color to return. This is the capillary refill time and should be less than three seconds. Blanch times that are greater than 2 seconds may indicate:

Dehydration, Hypothermia, Peripheral vascular disease (PVD), Shock



## The Radial Pulse

1. Palpate the right radial pulse by placing the tips of your index, middle and ring fingers over the radial artery, just medial to the radius.

2. Assess the rate, rhythm, volume and the character of the pulse
    - Rate = counting beats per minute over a 15 second ×4, to obtain the rate in beats per minute (bpm).
        - ✓ Bradycardia: Less than 60/min (Myxedema, heart block, raised IC tension, obstructive jaundice)
        - ✓ Tachycardia: More than 100/min. (Sinus tachycardia, PAT, atrial flutter, ventricular tach)
    - Rhythm: regular, irregularly irregular, or regularly irregular.
        - ✓ Regular pulse: is at a constant frequency with a constant interval between the beats.
        - ✓ Irregular pulse: is not of a constant frequency.
        - ✓ Regularly irregular pulse: repeating pattern pulse, like two beats close together, then a gap and then another two beats close together.

- ✓ Irregularly irregular pulse: no repeating pattern beats, it arises randomly

- Volume: perceived degree of pulsation, normally increases in expiration and decreases during inspiration due to intrathoracic pressure changes affecting venous return to the heart
  - ✓ Physiological causes of increased pulse volume:

  Exercise, Pregnancy, Advanced age, Increased environmental Temperature
  - ✓ Pathological causes of increased pulse volume:

  Hypertension, Fever, Thyrotoxicosis, Anemia, Aortic regurgitation, Paget's disease of bone, Peripheral atrioventricular shunt
- Character of the pulse (incorporates pulse volume):
  - ✓ Slow-rising pulse has a delayed up-stroke and occurs in aortic stenosis.
  - ✓ Bounding pulse an increased up-stroke and down-stroke. This may be a sign of CO2 retention.
  - ✓ Jerky pulse is characteristic of hypertrophic cardiomyopathy, but this is unlikely to be detected peripherally.
  - ✓ Pulsus alternans is alternating strong and weak beats, causes by large pericardial effusion, left ventricular failure, asthma
  - ✓ Collapsing pulse (water hammer pulse, Corrigan's pulse): forceful pulse with a rapid upstroke and descent.

    Examiner raises the patient's arm vertically upwards. The examiner grasps the muscular part of the patient's forearm. A water hammer pulse is felt as a tapping impulse that is transmitted through the bulk of the muscles, causes:
    - Aortic regurgitation
    - Patent ductus arteriosus
    - Systolic hypertension
    - Bradycardia
    - Aortopulmonary window

- Aneurysm of sinus of Valsalva
- Fever
- Pregnancy
- High-output states; Anemia, Cor pulmonale, Cirrhosis of liver, Thyrotoxicosis, Arteriovenous fistula, Paget's

- ✓ pulse deficit: the difference between the heart rate and the pulse rate found in atrial fibrillation.
- ✓ Radio-radial delay: normal no delay, at same time palpate both the radial arteries by both your hands, using your left hand for patients right radial artery and vice versa. Delay occurs in:
  - Normal anatomical variations.
  - Thoracic inlet syndrome.
  - Aneurysm of the aorta.
  - Pre-subclavian coarctation.
  - Supravalvular aortic stenosis.
  - Pulseless disease (Takayasu's disease).
  - Peripheral embolism.
  - Atherosclerosis of aorta.
  - Pressure over an axillary artery by the tumor, lymph nodes.

- ✓ Radio-femoral delay: normally there is no radio-femoral delay, exam the radial and femoral artery at same time cause by:
  - Coarctation of the aorta.
  - Atherosclerosis of aorta.
  - Thrombosis or embolism of aorta.
  - Aortoarteritis.

Presentation: Heart rate 80 beat/mint, regular, good volume, no collapsing pulse, no radio-radial delay and no radio-femoral delay

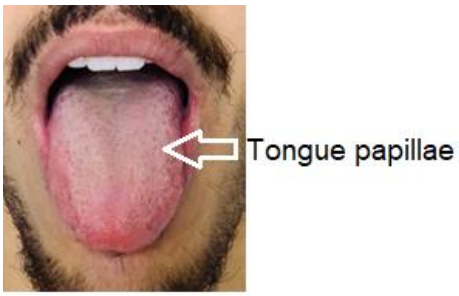
## Blood Pressure (BP)

1. Wrap the cuff of spyhgnomanometer around the upper arm at heart level with no tight clothing constricting the upper arm.
2. Palpate the radial artery and then inflate the cuff until the radial pulse can no longer be detected. This is estimating roughly the systolic BP.
3. Deflate the cuff and insert stethoscope over the brachial artery which is situated in the antecubital fossa.
4. Reinflate the cuff to around 200 mmHg above the estimated systolic blood pressure.
5. Deflate slowly (around 2-3 mmHg per second) until fist sound, this is called Korotkoff 1 (systolic BP).
6. Continue to deflate the cuff until the sounds muffle, this is called Korotkoff V (diastolic BP).
7. Normal arterial blood pressure calculates according the age, sex and comorbidities but it roughly less than 140/90 mmHg.
8. Pulse pressure = Systolic BP- Diastolic BP. Narrow in aortic stenosis and wide in aortic regurgitation.
9. Postural BP = Fall systolic BP in stand position > 15 mmHg and diastolic BP > 10 mmHg compare with BP in supine position).

## Exam the face

1. Eyes
    - Examine the upper and lower eyelids for xanthelasma (yellowish deposits plaques 1-2 mm) sign of hyperlipidemia.
    - Examine the iris for senile arcus (grey or white arc visible around the cornea.
    - Examine for anemia by ask the patient to look up, and retract the lower eyelid to inspect for conjunctival pallor.

2. Mouth
    - Examine the inside of the mouth by pen-torch for dental hygiene (remember poor dental hygiene is a risk factor for infective endocarditis).
    - Examine the tongue for any deformity, paralysis or loss of papillae (sign of anemia).
    - Examine below the tongue and the lips for central cyanosis (blue discoloration of the skin and mucous membranes) due to hypoxia.
    - Examine the mucosa for petechiae (infective endocarditis) and yellowish discoloration (jaundice).




## Neck

1. Jugular venous pressure (JVP)
    - Internal jugular vein (IJV) connects to the right atrium without any intervening valves. It runs between the medial end of the clavicle and the ear lobe, under the medial aspect of the sternocleidomastoid.
    - JVP level reflects right atrial pressure (normally <7 mmHg/9cmH2O). The sternal angle is approximately 5 cm above the right atrium, so the JVP in health should be ≤4 cm above this angle.
    - Paradoxical rise of JVP on inspiration (Kussmaul's sign) occurs in pericardial constriction, severe right ventricular failure and restrictive cardiomyopathy.
    - Approach to JVP
        - Position the patient in a semi-recumbent position (at 45°).
        - Ask the patient to turn their head slightly to the left.

- Inspect for evidence of the IJV, the IJV has a double waveform pulsation, which helps to differentiate it from the pulsation of the external carotid artery.
- Measure the JVP by assessing the vertical distance between the sternal angle and the top of the pulsation point of the IJV.
- if you are unsure if the vessel you are observing is the internal jugular vein, make **hepatojugular reflux** test:
  - ✓ Position the patient in a semi-recumbent position (45º).
  - ✓ Apply direct pressure to the liver 15-30 seconds.
  - ✓ Closely observe the IJV for a rise.
  - ✓ If the rise in JVP is sustained and equal to or greater than 4cm this is deemed a positive result (sign of right ventricular failure).
- Ask the patient to breathe slowly through the mouth, and look for the presence of Kussmaul's sign.

The JVP has its own waveform which consists of 5 parts (Normally two distinct peaks per cardiac cycle can see "a, v" and rarely third peak "c".

**A** wave: contraction of the right atrium.

- Absent in atrial fibrillation
- Prominent in tricuspid stenosis and pulmonary hypertension.
- Giant when the right atrium contracts against a closed tricuspid valve

**X** descent (part 1): relaxation of the right atrium

**C** wave: closure of the tricuspid valve.

**X** descent (part 2): final phase of right ventricular contraction. When the ventricle reaches its most contracted state

**V** wave: atrial filling during ventricular systole when the tricuspid valve is closed.

**Y** descent: the tricuspid valve opens, resulting in blood from the right atrium filling the right ventricle and blood from the SVC and IJV filling the right atrium, prominent in pericardial effusion.


2. Cervical lymph nodes (LN)

- Generally, when examine cervical LN needs to assess:
    - Site
    - Size
    - Fixation to surrounding and deep structures or Skin.
    - Consistency
    - Tenderness
    - Compare with the nodes on the contralateral side.
- Examine the cervical LN with the patient sitting for anterior triangle from behind by sequence:
    - Submental
    - Submandibular
    - Preauricular
    - Tonsillar
    - Supraclavicular
    - Deep cervical nodes in the anterior triangle of the neck
- Examine scalene nodes
    - Tell patient to tilt their head to the same side of examination
    - Placing index finger between the sternocleidomastoid muscle and clavicle and press firmly down towards the first rib.

- Examine the posterior triangles
    - Start from the front of the patient
    - Palpate the posterior triangles, up the back of the neck and the posterior auricular and occipital nodes

## Chest

- Inspection
    - Examine for any scars for previous operation or trauma.
    - Examine for any visible cardiac impulses.
    - Examine for any chest deformity (pectus excavatum-funnel chest and pectus carinatum-pigeon chest), since these deformities may displace heart sound during auscultation.

- Palpation
    - Apex beat
        - ✓ Position: Use your hand to palpate the apex beat and localize it with your finger, roll the patient into the left lateral position if necessary. The apex beat should be situated in the fifth intercostal space along the midclavicular line. If it is impalpable here, move inferiorly and laterally (Cardiomegaly). If palpable apex beat on the right side called dextrocardia, with a prevalence of 1:10,000.

Sometimes the apex beat is not palpable. This is usually due to a thick chest wall, emphysema, pericardial infusion, shock or dextrocardia.

- ✓ Character: normal apex beat is short and sharp.

Heave - is a palpable impulse that noticeably lifts examiner hand, sustained and forceful heave caused by aortic stenosis or systemic hypertension.

Thrills - transmitted heart murmurs, similar to a purring cat.

Thrills associated with aortic stenosis best over the upper right sternal border is. While thrill felt at the left and right sternal edges caused by a ventricular septal defect.

Double impulse apex - two beats per cardiac cycle is a sign of hypertrophic cardiomyopathy.

Diffuse, weak - Left ventricular failure, dilated cardiomyopathy

Thrusting - Aortic regurgitation, mitral regurgitation

Tapping - Mitral stenosis

A normal apical beat briefly lifts your fingers and is localized, no parasternal heave or thrill.

- Auscultate

Parts of stethoscope:

- Ear pieces
- Tube: it should be approximately 25 cm long and thick.
- Diaphragm: used to listen heart sound at apex, lower left sternal border and upper right and left sternal borders. Used for heard high-pitched sounds.
- Bell: Used for heard Low-pitched sounds

Types of stethoscopes

- Stethoscope used for pediatric and adult in same time (2 diaphragm without bell). Press diaphragm against chest wall firmly (diaphragm) loss pressure (bell).

- Stethoscope with both diaphragm and bell.
- Stethoscope with only diaphragm. Press diaphragm against chest wall firmly (diaphragm) loss pressure (bell).
- Electronic stethoscope for teaching purposes.

Major auscultatory findings include

Heart sounds

Murmurs

Added sound

Lung base

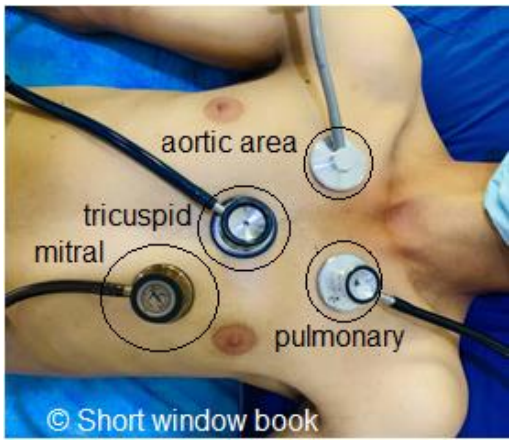
1. Heart Sounds

Examination

- Explain to the patient that you are going to examine the heart.
- Place the patient in a supine with left lateral decubitus position after all clothing has been removed from the chest.
- Warm your hands and stethoscope
- Palpate the first sound with the heel of the right hand and/or the finger pads, initially at the cardiac apex and then over the entire precordium.

Auscultatory examination is begun at the:

- aortic area (second right intercostal space)
- pulmonary area (second left intercostal space)
- tricuspid area (lower left sternal border)
- mitral area fifth intercostal space, midclavicular line (cardiac apex)

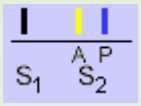
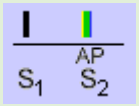
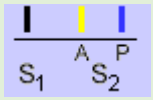
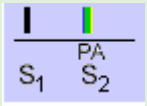
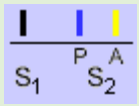



- First heart sound (S1)
  - ✓ It caused by the closure of the mitral and tricuspid heard like (lub).
  - ✓ S1 marks the start of systole and coincides with the peripheral pulsation.
  - ✓ Loud S1 in mitral stenosis, tricuspid stenosis, Lown-Ganong-Levine syndrome, tachycardia
  - ✓ Soft S1 mitral regurgitation, severe congestive heart failure, calcified mitral valve, left bundle branch block, long PR interval (1st degree atrioventricular block)
- Second heart sounds (S2)
  - ✓ It caused by the closure aortic valve closure (A2) and Pulmonary closure (P2) [semi-lunar valve] heard like (dub).
  - ✓ Soft / absent A2 in severe aortic stenosis (calcified)
  - ✓ Loud S2 - Loud A2 in systemic hypertension
  - ✓ Loud S2 - Loud P2 pulmonary hypertension

Splitting S2:

- ✓ Listen in the 2nd and 3rd left intercostal spaces. Ask the patient to breathe quietly, and then a bit more deeply.
- ✓ During inspiration you should hear the inspiratory splitting of S2 into A2 and P2.

**Split S2**

| Type | Inspiration | Expiration | Causes |
|---|---|---|---|
| Physiological |   |   | Physiologically "split" during inspiration but not during expiration. |
| Wide, fixed splitting |   |   | Atrial septal defect (ASD) |
| Wide split, varies with inspiration |   |   | Pulmonary stenosis, RBBB<br>Pulmonary hypertension<br>Ventricular septal defect |
| Paradoxical splitting<br>Widens in expiration<br>(reversed splitting) |   |   | Hypertrophic cardiomyopathy<br>Aortic stenosis<br>Left bundle branch block<br>Ventricular pacing |

- Third heart sound (S3)
  - ✓ Low frequency and thus best heard with the bell of the stethoscope.
  - ✓ Sounds like [lub du bub], the cadence similar to "Kentucky"
  - ✓ S3 present, 0.14–0.16 seconds after S2
  - ✓ Results from increased atrial pressure leading to increased flow rates.
  - ✓ Seen in:
    - Ventricular septal defect
    - Atrial septal defect
    - Aortic regurgitation
    - Mitral regurgitation
    - Tricuspid regurgitation
    - Patent ductus arteriosus
    - Pregnancy

- Congestive heart failure
- Hyperdynamic circulation (fever, anemia, atrioventricular fistula, thiamine deficiency, hyperthyroidism, infection, Paget's disease, pregnancy)
- Physiological < 40 years' old

- Fourth heart sound (S4)
  - ✓ Low frequency and thus best heard with the bell of the stethoscope.
  - ✓ It present, 0.08-0.12 seconds before S1
  - ✓ Sounds heard like: Belub dup S1S4S2 cadence similar to "Tennessee"
  - ✓ Seen in patients with stiffened left ventricles.
  - ✓ Resulting from conditions such as:
    - Hypertension (systemic or pulmonary)
    - Hypertrophic cardiomyopathy
    - Acute myocardial infarction
    - Coronary artery disease
    - Congestive heart failure
    - Aortic stenosis
    - Pulmonary stenosis

2. Added sounds
   - Opening snap
     - ✓ High-frequency early diastolic sound (occurs 50-100 msec after A2)
     - ✓ Associated with mitral stenosis
     - ✓ Often diminishes with inspiration' accentuated in left lateral position.
     - ✓ Location between apex and left lower sternal border
     - ✓ It is best heard with the diaphragm at the apex.
     - ✓ Sounds heard like RUP bu Dup rrrrrrRup Bu Dup
   - Ejection clicks
     - ✓ Results from abrupt halting of semilunar valves
     - ✓ It high-pitched sounds best heard with the diaphragm.
     - ✓ Most common early systolic sound just after the S1

- ✓ Occur in patients with congenital pulmonary or aortic stenosis
- ✓ Do not occur in calcific aortic stenosis because the cusps are rigid

- Mid-systolic clicks
  - ✓ It high-pitched and best heard at the apex with the diaphragm.
  - ✓ It occurs in mitral valve prolapse
  - ✓ Mechanical heart valves
  - ✓ The closure sound is normally louder.
  - ✓ The sounds are high-pitched, 'metallic' and often palpable
  - ✓ May be heard without a stethoscope
- Pericardial rub (friction rub)
  - ✓ Heard over pericardium, often loudest at left lateral side boarder
  - ✓ It characterized by one systolic sound and two diastolic sounds (3 component rub) (systolic sound between S1 and S2)
  - ✓ One diastolic sound in early diastole and one at end diastole (2 component rub)
  - ✓ High frequency best hears with diaphragm of stethoscope
  - ✓ Clearer with the patient holding their breath in expiration.
  - ✓ Heard like scratchy, grating or squeaking
  - ✓ It is most often heard in acute pericarditis or a few days after an extensive myocardial infarction.
  - ✓ Many patients with a pericardial friction rub also have a tachycardia

3. Murmurs

It arises from turbulent flow in the heart or great vessels, due to the structural abnormality of the heart, or increased flow across normal cardiac structures.

It divided into three categories based on where they occur in the cardiac cycle.

- Systolic Murmurs:
  - ✓ Ejection type: aortic stenosis, pulmonary stenosis, hypertrophic obstructive cardiomyopathy, severe anemia
  - ✓ Pansystolic type: mitral regurgitation, tricuspid regurgitation, ventricular septal defect, leaking mitral, tricuspid prosthesis
  - ✓ Late systolic type: mitral valve prolapse

- Diastolic Murmurs:
  - ✓ Aortic regurgitation - early diastole
  - ✓ Mitral stenosis - mid to late diastole
- Continuous Murmur:
  - ✓ patent ductus arteriosus (PDA)

The following features require examination of murmur:
Timing, location, character, pitch, radiation, intensity, others (relation to respiration, position and maneuvers such as Valsalva or hand grip)

- Time

Palpate the patient's carotid pulse while listening to the precordium to determine the onset of ventricular systole, if the murmur is systolic, diastolic, or continuous in nature.

- Location

The site is important to differentiate diastolic murmurs (mitral stenosis at the apex, aortic regurgitation at the left sternal edge) but is less helpful with systolic murmurs, which are often audible across the precordium

- Character
  - ✓ Crescendo-decrescendo (aortic stenosis, pulmonary stenosis)
  - ✓ Decrescendo (aortic insufficiency)
  - ✓ Crescendo (grows louder)
  - ✓ Plateau
- Pitch
  - ✓ High-pitch murmurs are best heard with the diaphragm (AS)
  - ✓ Low-pitch murmurs are best heard with the bell (MS).
- Radiation
  - ✓ Radiates to the carotids and to the suprasternal notch (AS)
  - ✓ Left axilla, pansystolic murmur (MR)
  - ✓ Left sternal edge (AR)
  - ✓ Back (PDA)

- Intensity

The intensity of a murmur does not correlate with severity of valve dysfunction.

Grade the intensity of the murmur (Levine grading 1-6)

- ✓ Grade 1 Faint and hard to hear with stethoscope
- ✓ Grade 2 Louder and heard easily with stethoscope — without thrill
- ✓ Grade 3 Very loud with stethoscope
- ✓ Grade 4 Heard with stethoscope on chest with thrill
- ✓ Grade 5 Heard over wide area with stethoscope and thrill — with thrill
- ✓ Grade 6 Very loud, audible without stethoscope

- Others
  - ✓ Relation to respiration:

[Mnemonic RILE] right sided murmurs are heard with greatest intensity in Inspiration while Left sided murmurs are heard with greatest intensity in Expiration.

- ✓ Relation position:

Most murmurs are best heard in the supine position Except:

(AR) leaning forward with breath held in exhalation

(TS) leaning forward with breath held in Inspiration.

(MS) left lateral position.

- ✓ Maneuvers such as Valsalva or hand grip (murmurs decrease in length and intensity EXCEPT:

Hypertrophic cardiomyopathy and Mitral valve prolapse

4. Auscultation of lung Bases
   - ✓ Patient leaning forward and auscultate the lung bases listening for:

     Crackles of pulmonary edema

     Absent breath sounds of a pleural effusion (left ventricular failure).

## Additional points for cardiovascular examination

- Examination of pitting edema:
  - ✓ Examiner impresses thumb into skin over bony surface
    Tibia, Fibula, Sacrum
  - ✓ Withdraw thumb and measure depth of pit and record in millimeters (1-4 plus Pitting Edema)
  - ✓ Grade of edema
    - Grade +1: up to 2mm of depression, rebounding immediately.
    - Grade +2: 3–4mm of depression, rebounding in 15 seconds or less.
    - Grade +3: 5–6mm of depression, rebounding in 60 seconds.
    - Grade +4: 8mm of depression, rebounding in 2–3 minutes.
- Palpate the abdomen for a pulsatile (tricuspid regurgitation) or enlarged liver (hepatic congestion) and ascites (severe right heart failure).
- Pulses Palpate the peripheral pulses (femoral, popliteal, posterior tibial, dorsalis pedis).
- Finishing off:
  Thank the patient and offer to help them get dressed.
- Request:
  - ✓ Request to measure the BP
  - ✓ Oxygen saturations
  - ✓ EGG tracing
  - ✓ Chest x-ray of the patient (if appropriate).
  - ✓ State you would also like to dipstick the urine
  - ✓ Fundoscopy (looking for signs of hypertension and/or endocarditis).

# 2
# Respiratory system Examination

## General Examination

### There is no single correct way to perform a physical examination

1. Introduce yourself to the patient and obtain and take permission (informed consent).
2. Wash your hand with water or sterilized with alcohol.
3. Look at the patient from the end of the bed with an inspection of the patient's general condition and their surroundings like any drains, urine catheter, iv fluid and any medical equipment attached to the patient or in the bedspace.
4. Explain to the patient what you are doing.
5. Then move to the patient's right side (easy remember just move to your left-hand side).
6. And start to examine your patient as mentioned in cardiovascular examination.

- ✓ **General inspection**
- ✓ **Hand**
- ✓ **The Radial Pulse**
- ✓ **Blood Pressure (BP)**
- ✓ **Face**
- ✓ **Cervical lymph nodes (LN)**

## Chest

- **Inspection**
  - Examine for any scars for previous operation or trauma.
  - Examine for any visible cardiac impulses.
  - Examine for any chest deformity (pectus excavatum-funnel chest and pectus carinatum-pigeon chest), since these deformities may displace heart sound during auscultation.
- **Palpation**
  - Support the patient's head with a pillow before examining the neck, to facilitate relaxation of the sternocleidomastoid muscles.
  - Examine trachea

    Use the index finger to feel the trachea and comparing one side to the other, an assessment is made of the position of the trachea: midline or deviation away from the centrist position.

| | |
|---|---|
| The trachea deviates away from lesion | |
| | Retrosternal goiter |
| | Tumors |
| | Pneumothorax |
| | Pleural effusions |
| The trachea deviates towards lesion | |
| | Fibrosis |
| | Collapse (Atelectasis) |
| | Pneumonectomy |
| | Lung agenesis/aplasia |

  - Apex beat

    Palpate the apex beat of the heart; it will be displaced if the mediastinum is displaced or distorted (see page)

- Chest expansion technique:
  - ✓ Place your hands on the patient's chest, inferior to the nipples.
  - ✓ Wrap your fingers around either side of the chest.
  - ✓ Bring your thumbs together in the midline, so that they touch.
  - ✓ Ask the patient to take a deep breath in.
  - ✓ Observe the movement of your thumbs (in healthy individuals they should move symmetrically upwards/outwards during inspiration and symmetrically downwards/inwards during expiration).
  - ✓ Reduced movement of one of your thumbs indicates reduced chest expansion on that side.

- **Percussion**

Percussion used to determine if the area under the percussed finger is air filled sounding resonant like a drum, fluid filled a dull sound or solid a flat sound.

Area for percussion

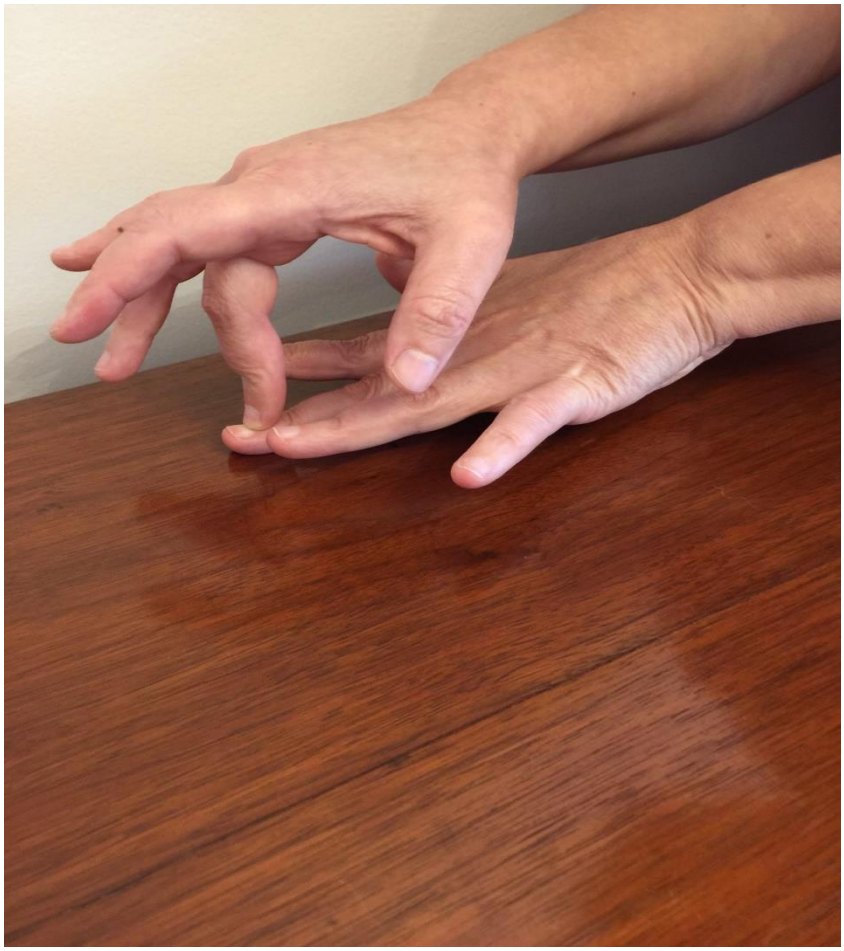
- ✓ Supraclavicular region: lung apices
- ✓ Clavicle
- ✓ Infraclavicular region
- ✓ Chest wall: percuss over 3-4 locations bilaterally
- ✓ Axilla

The clavicle is percussed directly, usually about a third of the way between the sternum and the acromium.

Technique for clavicle

- ✓ percussion is done by right middle finger.
- ✓ Over the most prominent part of clavicle, or
- ✓ Over the medial I /3 rd of the clavicle, just lateral to its expanded medial end.

- ✓ During percussion, stretch the overlying skin downwards with the left thumb so that the percussing finger does not slip over the clavicle. Place your non-dominant middle and index fingers directly onto the patient's skin.
- ✓ With your distal interphalangeal joints held firmly against the patient's chest.
- ✓ Using your dominant middle finger, tap the middle finger of your non-dominant hand (firmly placed on the patient's chest) at the level of the distal interphalangeal joint.
- ✓ Quick flick of the wrist to achieve a solid strike on the finger.



Clinical Presentations

Normal: healthy lung tissue should produce a resonant note.

Dull: indicative of abnormal lung density, found in consolidation, tumor, lobar collapse.

Stony dullness: typically caused by an underlying pleural effusion.

Hyper-resonant: indicates too much air is present within the lung tissue. Found in emphysema or pneumothorax.

- **Vocal resonance**

Assessing the conduction of sound through lung tissue and involves auscultating over different areas of the chest wall whilst the patient repeats a word or number consistently.

Technique

1. Place the stethoscope (same technique of auscultation) at various levels over the back and ask the patient to whisper "ninety-nine" each time. Note how well the sound is transmitted.
2. The sound is muffled over a normal lung:
   - ✓ Increased if there is consolidation.
   - ✓ Decreased or absent if there is effusion or collapse.

- **Auscultation**

Breath sounds

- ✓ Vesicular: the normal quality of breath sounds in healthy individuals.
- ✓ Bronchial: harsh-sounding (similar to auscultating over the trachea), inspiration and expiration are equal with pause due to absent alveolar phase. It is normally heard anteriorly over the manubrium and posteriorly between the C7 and T3 vertebrae. This type of breath sound is associated with consolidation.

- ✓ Added sounds:
  - Wheeze: continuous musical sounds with definite pitch that appear on both inspiratory and expiratory phase through narrowed airways due to secretion or an obstructive lesion, causing the walls to vibrate is often associated with asthma, COPD and bronchiectasis.
  - Ronchi: continuous, musical sounds similar to wheezes but with a coarser and lower-pitched sound. It caused by narrowed bronchial or larger airways due to secretion such as pneumonia and cystic fibrosis.
  - Stridor: high-pitched extra-thoracic breath sound resulting from turbulent airflow through narrowed upper airways. Main causes, including foreign body inhalation (acute) and subglottic stenosis (chronic).
  - Crackles (Rales):
    - Coarse crackles: discontinuous, brief, popping lung sounds typically associated with pneumonia, bronchiectasis and pulmonary oedema.
    - Fine end-inspiratory crackles: often described as sounding similar to the noise generated when separating Velcro, associated with pulmonary fibrosis.
  - Pleural rub: creaking nonmusical, short explosive sounds, grating, and rubbing caused by stiff pleural membranes such as with pleurisy.

Differentiation between crackles and pleural friction rub

| Pleural friction rub | Crackles |
|---|---|
| Biphasic | Just with inspiration/expiration/both |
| Localized | Widespread |
| Palpable | Nonpalpable |
| Intensify by Pressure of stethoscope | Without effects of presser |
| Local tenderness and Pleuritic pain | Without chest pain/ pleuritic pain |
| Not related to coughing | Clear after coughing |

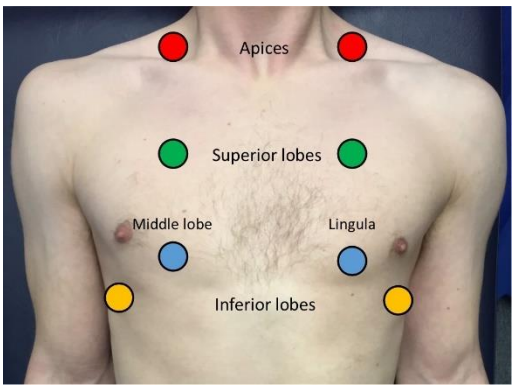
- ✓ Absent breath sounds

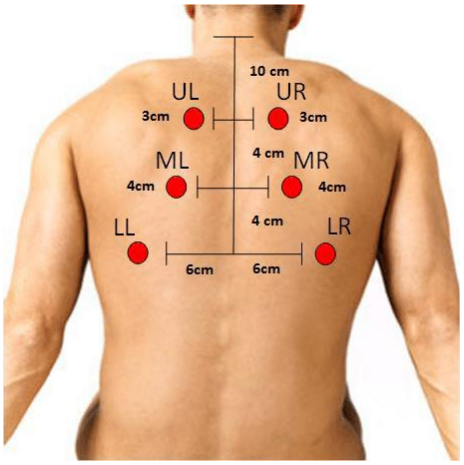
  Absent of breath sounds on auscultation caused by pneumothorax, pleural effusion or lung consolidation that inhibit the transmission of sounds.

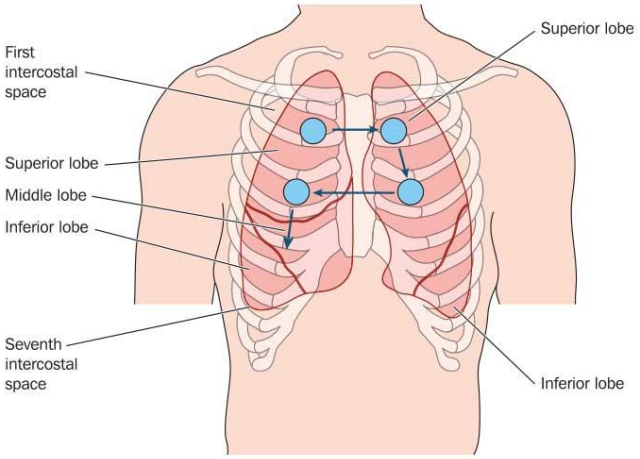
Technique of chest auscultation

1. Explain the procedure to the patient.
2. Gain informed consent.
3. Positioning the patient
4. Both the following positions will facilitate the assessment of chest auscultation:
   - Sitting in a chair or,
   - lying on the side of the bed or,
   - lying at a 45° angle.
5. Rearrange the patient's clothing to enable you to see the chest.
6. Warm stethoscope between your hands if it's cold before applying it to the chest.
7. Create a seal of stethoscope ear tips by point the position of ear tips in slightly forward towards the nose; this will reduce external noise.
8. Holding stethoscope between the index and middle finger of your dominant hand, or holding it from the end of tube. Don't press your finger on diaphragm or bell.
9. Place the bell (medical students/junior doctor can use diaphragm) on the patient's chest with gentle pressure.
10. Auscultate the chest through systematic way on the anterior chest (stepladder approach).
11. Ask the patient to take breathing slowly and deeply through an open mouth.

12. Use same approach for the posterior chest and avoid the scapula as lung sounds cannot be heard through bone (six posterior chest location for auscultation).
13. Replace the patient's clothing and make them comfortable.



# 3

# Abdominal Examination

There is no single correct way to perform a physical examination

1. Introduce yourself to the patient and obtain and take permission (informed consent).
2. Wash your hand with water or sterilized with alcohol.
3. Look at the patient from the end of the bed with an inspection of the patient's general condition and their surroundings like any drains, urine catheter, iv fluid and any medical equipment attached to the patient or in the bedspace.
4. Explain to the patient what you are doing.
5. Then move to the patient's right side (easy remember just move to your left-hand side).
6. And start to examine your patient.

**Inspection**

- Patient lying flat on the bed, with their arms by their sides and legs uncrossed.
- Expose the abdomen from the xiphisternum to the symphysis pubis, leaving the chest and legs covered. **LOOK** for:
  - ✓ Appearance of the abdomen. Is it flat? If enlarged, does this appear symmetrical/asymmetrical.
  - ✓ Peristaltic bowel movements (bowel obstruction).
  - ✓ Scars of past surgical history.
  - ✓ Abdomen distended? Can be caused by a wide range of pathology including the six f's (**f**at, **f**luid, **f**latus, **f**eces, **f**etus or **f**ulminant mass).
  - ✓ Caput medusae: engorged paraumbilical veins associated with portal hypertension (e.g., liver cirrhosis).
  - ✓ Striae (stretch marks)? Are irregular areas of skin (bands, stripes or lines) and may be caused by abnormal collagen formation (Cushing's syndrome, Ehlers-Danlos syndrome) or rapid stretching of the skin (pregnancy, obesity).

- ✓ Hernias, confirm by asking the patient to cough and observe for any protrusions through the abdominal wall (e.g., umbilical hernia, incisional hernia).
- ✓ Cullen's sign: bruising of the tissue surrounding the umbilicus associated with hemorrhagic pancreatitis (a late sign).
- ✓ Grey-Turner's sign: bruising in the flanks associated with hemorrhagic pancreatitis (a late sign).

**Palpation (superficial, deep, enlarged organs)**

- The aim of palpation is to detect tenderness, masses and organomegaly
- The patient should already be positioned lying flat on the bed with arms by their sides to help relax the abdominal wall and head resting on a pillow.
- Ask the patient to show you any pain (if present, examine these areas last).
- Use your right hand, keeping it flat and in contact with the abdominal wall.
- Kneel beside the patient to carry out palpation.
- Observe the patient's face throughout for any sign of discomfort.

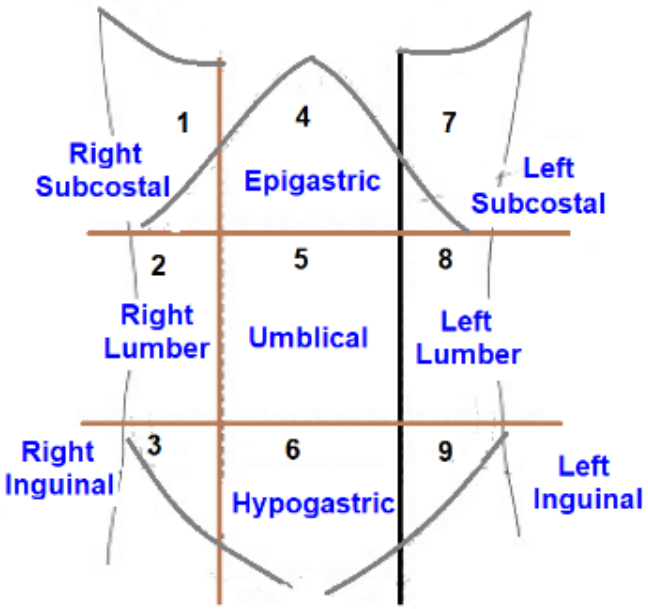
Superficial palpation (light palpation)

Starting from the area furthest from the point of maximal pain and move systematically through the NINE regions of the abdomen. If no pain is present, any starting point can be chosen.

The following points assess in superficial palpation:

- Tenderness: region(s)and severity of the tenderness.
- Rebound tenderness: compressed abdominal wall slowly, then released rapidly and results in sudden sharp abdominal pain. In some cases, be associated with peritonitis (e.g. appendicitis).
- Guarding: involuntary tension in the abdominal muscles that occurs on palpation associated with peritonitis (e.g., appendicitis, diverticulitis).

- Rovsing's sign: palpation of the left iliac fossa causes pain to be experienced in the right iliac fossa. This sign was historically said to be indicative of appendicitis.
- Masses: large or superficial masses (e.g., hernias) may be noted on light palpation.

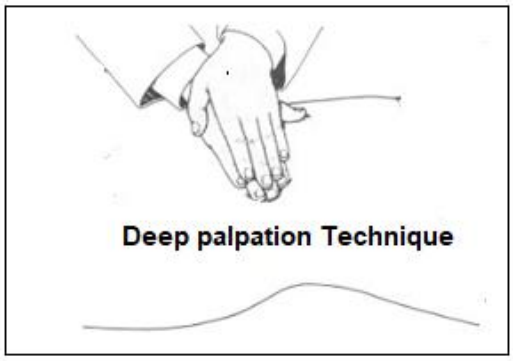



**Nine abdominal regions**

Deep palpation

- ✓ This technique used for identify any deeper masses.
- ✓ Ask patient to let you know if they want you to stop when feel uncomfortable.
- ✓ Palpate each of the nine abdominal regions.
- ✓ Begin at the right lower quadrant.
- ✓ Applying more pressure to identify any deeper masses.
- ✓ Looks to the patient's face for evidence of discomfort.
- ✓ known tender areas should be palpated last.
- ✓ Normal pulsations of the aorta are recognizable in thin patients.
- ✓ If the colon is filled with feces, you can leave an indentation by gentle pressure.

- ✓ Technique:
  - Placing the flat of your hand on the abdominal wall and applying firm, steady pressure.
  - You can use two-handed palpation, particularly in evaluating a mass.
  - Upper hand is used to exert pressure, while the lower hand is used to feel.
  - If identified mass must be assess as following point:
    - Location: according nine abdominal regions.
    - Size
    - Shape
    - Consistency (smooth, soft, hard, irregular)
    - Mobility (attached to superficial or underlying structures)
    - Pulsatility (e.g., abdominal aortic aneurysm)




Palpate the liver

- ✓ Palpation started in the right iliac fossa.
- ✓ Using the flat edge of your hand (the radial side of your right index finger) at the edge of the superior iliac spine.
- ✓ Palpate the abdomen when patient take deep breath.
- ✓ When the liver edge passes below your hand during inspiration at this step it suggests gross hepatomegaly.

- ✓ Repeat this process of palpation moving 1-2 cm superiorly from the right iliac fossa each time towards the right costal margin.
- ✓ As you get close to the costal margin (typically 1-2 cm below it) the liver edge may become palpable in healthy individuals.
- ✓ When feel the margin of liver assess the following points:
- ✓ Degree of extension below the costal margin
- ✓ Greater than 2 cm this suggests hepatomegaly.
- ✓ Consistency of the liver edge (nodular consistency is suggestive of cirrhosis).
- ✓ Tenderness (hepatitis or cholecystitis)
- ✓ Pulsatility (tricuspid regurgitation)

**Causes of hepatomegaly**

There is a wide range of possible causes of hepatomegaly including:

- Hepatitis (infective and non-infective)
- Hematological - leukemia, myeloproliferative disease, lymphoma Myeloma, hemolytic leukemia
- Hepatocellular carcinoma
- Hepatic metastases
- Wilson's disease
- Hemochromatosis
- Glandular fever, Leishmaniasis
- Primary biliary cirrhosis
- Tricuspid regurgitation
- Other: Amyloidosis, acromegaly, SLE

Palpate the spleen

- ✓ Starting palpation in the right iliac fossa.
- ✓ Using the flat edge of your hand (the radial side of your right index finger) at superior right iliac spine.

- ✓ Palpate the abdomen with your fingers when patient take deep breath (inspiration).
- ✓ When you feel the splenic edge, the splenic notch may be noted.
- ✓ Moving 1-2 cm superiorly from the right iliac fossa with deep breath towards the left costal margin.
- ✓ You not able to palpate the spleen in healthy individuals.
- ✓ When palpate spleen at the edge of the left costal margin would suggest splenomegaly (three times its normal size).

**Causes of splenomegaly**

There is a wide range of possible causes of splenomegaly including but not limited to:

- Myelofibrosis
- Other Myeloproliferative neoplasm (MPN)
- Portal hypertension secondary to liver cirrhosis
- Hemolytic anemia
- Congestive heart failure
- Splenic metastases
- Glandular fever

**Palpate the gallbladder**

- Normally in healthy individuals the gallbladder is not usually palpable.
- Starting palpation at the right costal margin, in the mid-clavicular line (the tip of the 9th rib).
- If feel a well-defined round mass that moves with respiration that is mean gallbladder is enlarged.
  - When palpation led to tenderness i.e., cholecystitis (positive Murphy's sign), gall stone.
  - Palpation showed distended painless gallbladder associated with jaundice indicate pancreatic cancer.

**Murphy's sign**

Position your fingers at the right costal margin in the mid-clavicular line at the liver's edge.

Ask the patient to take a deep breath.

Murphy's sign positive when patient suddenly stops mid-breath due to pain (cholecystitis).

**Bimanual method of kidney palpation (Balloting)**

- Place your left hand behind the patient's back, below the ribs and underneath the right flank.
- Then place your right hand on the anterior abdominal wall just below the right costal margin in the right flank.
- Push your fingers together, pressing upwards with your left hand and downwards with your right hand.
- Ask the patient to take a deep breath and as they do this feel for the lower pole of the kidney moving down between your fingers.
- Positive balloting exam, needs to assess the size and consistency.
- Exam the left kidney in same way.

**Causes of enlarged kidneys**

- Normally in health people, the kidneys are not usually ballotable, however, in patients with a low body mass index, the inferior pole can sometimes be palpated during inspiration.
- Bilaterally enlarged, ballotable kidneys can occur in polycystic kidney disease or amyloidosis.
- A unilaterally enlarged, ballotable kidney can be caused by a renal tumor.

Palpate the aorta

- Using both hands perform deep palpation just superior to the umbilicus in the midline.
- The movement of your fingers as following:
  - In healthy individuals, your hands should begin to move superiorly with each pulsation of the aorta.
  - When your hands move outwards, it suggests expansile mass (e.g., abdominal aortic aneurysm (needs more investigation to confirm diagnosis).

Palpate the bladder

- Tell the patient to go to the toilet since may be patient uncomfortable and sudden urge to pass urine.
- In most healthy patients the bladder will not be palpable.
- Palpated bladder in the suprapubic area arising from behind the pubic symphysis suggested distended bladder e.g., urinary obstruction/retention.

**Abdominal auscultation**

**A/ Listen for bowel sounds**

- It is performed before abdominal percussion or palpation as vigorously touching the abdomen may disturb the intestines.
- The auscultation of the abdomen has a relatively minor role compared to the cardiac and pulmonary exams.
- Before starting with auscultation warmed diaphragm of stethoscope by rubbing it against the front of your shirt.
- Placed diaphragm of stethoscope over any area of the four quadrants abdomen.
- Auscultate over at least two positions on the abdomen to assess bowel sounds.
- Listening for 15 or 20 seconds.
- Assess bowel sounds:

Normal bowel sounds: typically described as gurgling.

Tinkling bowel sounds: typically associated with bowel obstruction.

Absent bowel sounds: you need to auscultate for at least 3 minutes, if absent bowel sounds this suggests ileus. Causes of ileus include:

- Electrolyte abnormalities
- Recent abdominal surgery

**B/ Listen for bruits**

- ✓ Auscultate over the aorta 1-2 cm superior to the umbilicus, a bruit here may be associated with an abdominal aortic aneurysm (Aortic bruits).
- ✓ Auscultate 1-2 cm superior to the umbilicus and slightly lateral to the midline on each side. A bruit in this location may be associated with renal artery stenosis (Renal bruits).

## Abdominal percussion

### Percuss the liver

- ✓ Liver span (6-12 cm): Start in chest, below nipple (mid-clavicular line) & move down – tone changes from resonant (lung) to dull (liver) to resonant (intestines)
- ✓ Percuss upwards 1-2 cm at a time from the right iliac fossa (the same position used to begin palpation) towards the right costal margin until the percussion note changes from resonant to dull indicating the location of the lower liver border.
- ✓ Continue to percuss upwards 1-2 cm at a time until the percussion notes changes from dull to resonant indicating the location of the upper liver border.
- ✓ Use the knowledge of the upper and lower border of the liver to determine its approximate size.

Percuss the spleen

- ✓ Percuss upwards 1-2 cm at a time from the right iliac fossa towards the left costal margin.
- ✓ Continue with percussion until the percussion changes from resonant to dull indicating the location of the spleen.
- ✓ In the absence of splenomegaly, the spleen should not be identifiable using percussion.

Percuss the bladder

- ✓ Percuss downwards in the midline from the umbilical region towards the pubic symphysis.
- ✓ A distended bladder will be dull to percussion allowing you to approximate the bladder's upper border.

**Exam for Ascites**

**A/ Shifting dullness**

- ✓ Its type of percussion used to assess for the presence of ascites.
- ✓ Percuss from the umbilical region to the patient's left flank.
- ✓ If dullness is noted, this may suggest the presence of ascitic fluid in the flank.
- ✓ Whilst keeping your fingers over the area at which the percussion note became dull, ask the patient to roll onto their right side (towards you for stability).
- ✓ Keep the patient on their right side for 30 seconds and then repeat percussion over the same area.
- ✓ If ascites is present, the area that was previously dull should now be resonant (i.e., the dullness has shifted).

**B/ Fluid thrill**

- ✓ Used for abdomen is tensely distended and examiner are uncertain whether ascites is present.

- ✓ Place the palm of your left hand flat against the left side of the patient's abdomen and flick a finger of your right hand against the right side of the abdomen.
- ✓ If there is a ripple against your left hand.
- ✓ Prevents transmission of the impulse via the skin rather than through the ascites by the patient place the edge of their hand on the midline of the abdomen.
- ✓ If you still feel a ripple against your left hand, a fluid thrill is present (ascites).

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