جامعة الملك سعود
King Saud University

كلية الطب
College of Medicine

Basic Clerkship Guide

المجلس الطلابي

Second Edition
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KSUMSC1

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هذا العمل مقدم لكم من أخوتكم دفعة **434** وقام بتحديثه أخوتكم دفعة **436** جامعة الملك سعود. وقد نبعت فكرته مما واجهنا من صعوبة في إيجاد مصدر شامل لدراسة المهارات الإكلينيكية وإتقانها. نتمنى أن يكون خير عون لكم خلال دراستكم وحياتكم المستقبلية.

ولا تنسونا من خالص دعائكم

434 Team

Mohammad Alotaibi
Maha Alrabiah
Omar Alrahbeeni
Reem labani
Hussain Alkaff
Sara Almubrik
Abdullrahman Almizel
Khalifah Aldawsari
Nouf Almasoud
Nada Alamri
Najla Aldraiweesh

436 Team

Haneen Alsubki
Allulu Alsulayhim
Fatimah AlTassan
Dania Alkelabi
Jawaher Abanumy
Raneem AlGhamdi
Wejdan Alzaid
Maha AlGhamdi
Alanoud Abuhaimed
Ashwaq Almajed
Heba Alnasser
Rawan Alqahtani
Sarah Alshamrani
Doaa Abdulfattah

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General History Taking

Personal Data:

- Name, Age, Occupation, Residence. (Ask them even if it was written on the paper in front of you)

History of presenting illness:

- SOCRATES:

  Site, Onset (Rapid? Gradual? Continuous? Intermittent? Frequency?), Character, Radiates, Alleviating factors, Timing (Noticed when? Better or worse in night or day? Progressive?), Exacerbating factors, Severity.

Associated symptoms:

- Other specific questions related to the chief complaint.
- Symptoms related to the system
- Constitutional symptoms:
  - Fatigue
  - Fever
  - Night sweat
  - Weight loss
  - Nausea and vomiting

Risk Factors related to DDx:

- Medical history (always ask similar previous episodes? and was it diagnosed) , drugs, allergies.
- Surgical history; Trauma, Blood transfusion
- Social Hx: Alcohol, Smoking, sexual contact, marital status
- Family Hx: hx of the same illness in the family.

Systematic review:

(a) Alimentary system and abdomen (AS): Appetite. Diet Weight. Nausea. Dysphagia. Regurgitation. Flatulence. Heartburn. Vomiting. Haematemesis. Indigestion pain. Abdominal pain. Abdominal distension. Bowel habit. Nature of stool. Rectal bleeding. Mucus. Slime. Prolapse. Incontinence. Tenesmus. Jaundice.

(b) Respiratory system (RS): Cough. Sputum. Haemoptysis. Dyspnoea. Hoarseness. Wheezing. Chest pain. Exercise tolerance.

(c) Cardiovascular system (CVS): Dyspnoea. Paroxysmal nocturnal dyspnoea. Orthopnoea. Chest pain. Palpitations. Dizziness. Ankle swelling. Limb pain. Walking distance. Colour changes in hands and feet.

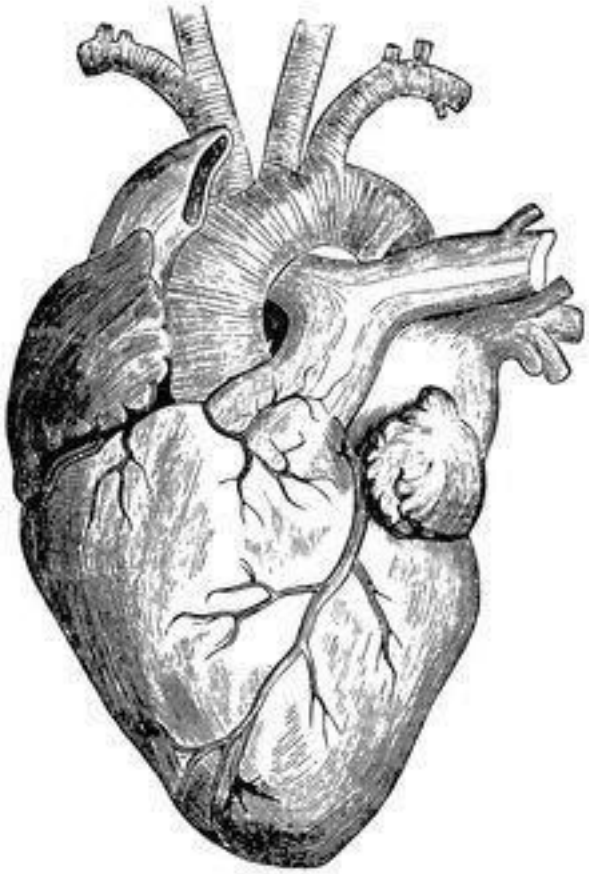
(d) Urogenital system (UGS): Loin pain. Frequency of micturition including nocturnal frequency. Poor stream. Dribbling. Hesitancy. Dysuria. Urgency. Precipitancy. Painful micturition. Polyuria. Thirst. Haematuria. Incontinence.

- In men Problems with sexual intercourse and impotence.
- In women Date of menarche or menopause. Frequency. Quantity and duration of menstruation. Vaginal discharge. Dysmenorrhoea. Dyspareunia. Previous pregnancies and their complications. Prolapse. Urinary incontinence. Breast pain. Nipple discharge. Lumps. Skin changes.

(e) Nervous system (NS, CNS): Changes of behaviour or psyche Depression. Memory loss. Delusions. Anxiety. Tremor. Syncopal attacks. Loss of consciousness. Fits. Muscle weakness. Paralysis. Sensory disturbances. Paresthesia. Dizziness. Changes of smell, vision or hearing. Tinnitus. Headaches.

(f) Musculoskeletal system (MSkS): Aches or pains in muscles, bones or joints. Swelling joints. Limitation of joint movements. Locking. Weakness. Disturbances of gait.

Internal Medicine



Cardiovascular System

Common Presenting Problems in the Cardiac System

Chest Pain

DDx:

- Cardiac: Ischemic or Nonischemic (Aortic Dissection, pericarditis).
- Pulmonary: PE, pneumonia, pleuritis, pneumothorax.
- GI: Esophageal (e.g.GERD, esophageal spasm, esophagitis), PUD, cholecystitis, pancreatitis.
- MSK: Muscle strain, costochondritis.
- Psychogenic: panic attack.

Angina		
1- Typical Angina	**2- Atypical Angina**	**3- Non-Cardiac Chest Pain**
Meet these 3 Characteristics: 1. Retrosternal chest discomfort with typical quality and duration. 2. Provoked by exertion or emotion. 3. Relieved by rest or GTN or both.	Meet 2 of the characteristics that are mentioned in "Typical Angina"	Meet 1 or none of the characteristics that are mentioned in "Typical Angina"

History Taking:

Personal Data:

- Age (CAD is usually in men above 50's and woman above 60's)

HPI:

- How long does it last?
  - Brief (2-20 min) → Angina
  - Very brief <15 sec → noncardiac (e.g. psychogenic, MSK)
  - Prolonged (>20 min) → MI, pericarditis, Pulmonary disorder, esophageal disease, aortic dissection.
- Site
  - Retrosternal (diffuse) → MI, PE
  - Superficial structures (localized)→ Musculoskeletal pain
  - At the region of left nipple? → Psychogenic
- Onset
  - Sudden onset → MI, PE, Pneumothorax, Aortic dissection, Panic attack.
  - Gradual → GI, pneumonia.
- Character
  - Pressure, squeezing, tightness, heaviness, burning, or strangling → MI.
  - Tightness or heaviness→ MI, GERD.
  - Indigestion, (I feel I need to belch) → MI, GERD.

    - Tearing→ Aortic dissection.
    - Sharp stabbing (pleuritic pain) → PE, pleuritis, pneumonia or pericarditis.
    - Dull, persistent ache → Psychogenic.
- Radiation
    - Right or left shoulder/arm or both → MI, pericarditis.
    - Neck, lower jaw or teeth → MI.
    - Right shoulder → Cholecystitis.
    - Back → Aortic dissection, pericarditis, pancreatitis, esophageal disease, PUD.
    - Epigastrium→ MI, GERD.
- Alleviating factor (relieving)
    - Rest or Nitrates → Stable angina.
    - Sitting up and leaning forward → Pericarditis, pancreatitis.
    - Antacids or food → GERD, PUD.
    - Holding breath at deep expiration → Pleuritis.
- Exacerbating Factors
    - Exertion, stress → Stable angina.
    - Eating → Stable angina, GERD, PUD.
    - Lying down or changing position → Pericarditis, pancreatitis.
    - Respiration → PE, Pleuritis.

Severity using CCS which is based on degree of limitation on ordinary physical activity	
Class 1	No limitation
Class 2	Slight limitation
Class 3	Marked limitation
Class 4	With any physical activity, at rest

- Associated symptoms:
    - SOB → MI, PE, pneumonia or pneumothorax.
    - Syncope, palpitations, hypotension → MI, PE.
    - Hemoptysis → PE, pneumonia.
    - Cough → Pneumonia.
    - Waterbash (acid reflux) → GERD.
- Associated symptoms with angina (dyspnea, nausea, diaphoresis)

Risk factors:

- Past medical:
    - IHD risk factors:
        - Modifiable risk factors: HTN, DM, Hyperlipidemia, smoking, obesity, sedentary lifestyle, emotional distress.
        - Non-modifiable: age, sex(male), family history of premature CAD (m<55, f<65), Hx of (MI, any cardiac disease, PAD).
    - PE risk factors: Hx of DVT or PE, Hx of Malignancy, Hx of Nephrotic syndrome, Hx of hypercoagulable state, immobilization or travel at long distance.
    - Hx of Marfan syndrome (aortic dissection).

- Drugs: OCP.
- Surgery or trauma: open heart surgery or any major surgery (e.g. hip replacement or abdominal surgery).
- Social: Smoking, alcohol, Drug abuse (septic embolism→ PE), Obesity.
- Family Hx: Premature CHD in first degree relative (Male <55, Woman <65), familial hypercholesterolemia.

Dyspnea (Heart Failure)

Orthopnea	Paroxysmal Nocturnal Dyspnea "PND"
Dyspnea when lying flat. Typically described in terms of number of pillow the patient uses to breathe comfortably to sleep	Dyspnea that awakes the patient from sleep.

DDx:

- **Acute:** PE, MI ,acute heart valve insufficiency, pneumothorax, anaphylaxis, foreign body, aspiration, pulmonary oedema
- **Sub acute:** acute asthma, exacerbation of COPD, or pulmonary oedema, pneumonia
- **Chronic:** CHF, COPD, cardiomyopathy, Pulmonary fibrosis, Pulmonary HTN, valvular heart disease, or anaemia, Musculoskeletal disease

History taking:

Personal data:

- Age? (older? CHF. Young? Asthma. Occupation? (occupation exposure)

HPI:

- Onset: acute Vs chronic
- Sudden or gradual? Very quickly (PE) Instantaneously (Pneumothorax).
- Constant or progressive? Worsen progressively: pulmonary fibrosis, interstitial lung disease.
- Continuous or intermittent? If intermittent. When is it worse/better? Varies from day to day: asthma.
- Duration: How long have you been short of breath?
    - Seconds to minutes: (Asthma, PE, Pneumothorax, Foreign body)
    - Hour to days: (Acute exacerbation of COPD, Pleural effusion, Cardiac failure)
    - Weeks or longer: (Pulmonary fibrosis, COPD, Interstitial lung disease)
- Character: tightness? (asthma) shallow and fast breathing? (Restrictive pulmonary disease)
- Relieving factors: head elevation? (CHF), resting, inhaler?
- Aggravating? sleeping? (CHF) working? (occupation induced asthma) cold, pets, exercise? (asthma)
- Severity: How does the SOB affect your life? How much exercise can you do before your SOB stops you or slows you down? Can you walk up a flight of stairs (NYHA classification)

Limitations on Physical Activity	Symptoms with Physical Activity	Findings at Rest	Class
none	none	comfortable at rest	I
slight	symptomatic with greater than ordinary activities	comfortable at rest	II
marked	symptomatic with ordinary activities	comfortable at rest	III
any activity increases symptoms	symptomatic at less than ordinary levels of activity	may or may not be symptomatic at rest	IV

- Associated symptoms:
  - Chest pain? (MI, Pneumothorax, PE)
  - Cough? (Productive? Pneumonia, COPD, CHF. Nonproductive? Asthma, GERD)
  - Hemoptysis? (TB , PHTN , PE , Pneumonia , Acute bronchitis , Malignancy)
  - Rash and joint pain?(Interstitial lung disease)
  - Swelling of the leg? (DVT that cause PE)
  - Itching hives? lips (Anaphylactic).
  - CVS:
    - Chest pain
    - PND, orthopnea, lower limb edema: to exclude cardiac dyspnea
    - Syncope
    - Palpitations and Intermittent claudication
  - Respiratory:
    - Cough? Sputum?: Asthma (non-productive), Pneumonia, GERD, Aspiration, PE (non-productive with occasional scant hemoptysis), Flash pulmonary edema (pink frothy sputum), COPD and ILD
    - Wheezing?: Asthma, COPD, foreign body obstruction, Tumors, bronchiolitis
    - Hoarseness?
  - Hematologic (Anemia):
    - Palpitations, tachycardia, syncope, pale or cold skin, easy bruisability.
  - Psychiatric (Panic Attack)
  - Constitutional symptoms: fever, night sweat, weight loss (TB, lung disease)

Risk factors:

- Exposure to dust, animals (asthma)
- Recent prolonged immobilizations, OCP use or estrogen? (PE)
- History of cardiac problems (MI, CHF)? (CHF)

Medical:

- CHF, asthma, COPD, lung cancer, allergy, Previous episodes of SOB?,DM, HTN, high cholesterol, heart disease?

Drug history (Important):

- Cytotoxic agent: Methotrexate (for rheumatological disease) and nitrofurantoin (for UTI) can cause Interstitial Lung Disease
- Chemotherapy: (bleomycin) can cause pulmonary fibrosis. Doxorubicin: heart failure and anemia
- Radiation therapy to the chest can cause constrictive pericarditis and accelerated coronary artery disease
- OCP, Estrogen: PE
- Have you been taking your prescribed medications, and in the proper doses? Nonadherence
- With CHF (ACEI, BB) or COPD (bronchodilator, steroid, oxygen) medication often leads to an exacerbation.

Surgery:

- Trauma (pneumothorax), Hospital admissions, blood transfusions, allergies, surgeries?

Social:

- Smoking? (COPD), occupation? (occupation exposure, asthma) Useful in assessing chronic dyspnea where exposure to lung toxins (asbestos) or organic material (causing hypersensitivity pneumonitis) or chemical associated with asthma may explain chronic dyspnea, recent immobilization (PE), contact with TB patients, travel history (TB)

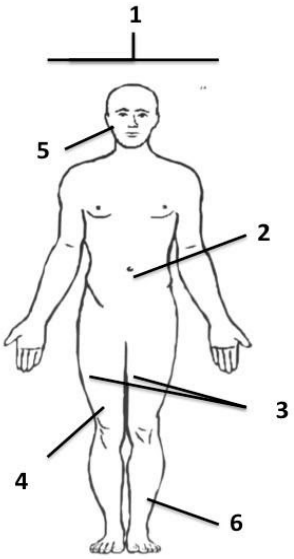
Family:

- Serious heart condition? At what age? A family history of premature coronary disease is significant when a first-degree relative has had significant CAD before 55 if male and 65 if female.
- Similar problem?

TABLE 4.2 History of dyspnoea: heart versus lungs

Favours heart failure	Favours lung disease
History of heart failure or infarction	History of smoking >10 packet years
History of valvular heart disease	History of asthma
Orthopnoea	Dust exposure
Paroxysmal nocturnal dyspnoea	History of lung disease
	Wheezing
	Relief with bronchodilators
	Cough
	Fever

Edema



Key terms	Definitions
1) Anasarca	Edema involving all aspects of the body: upper and lower extremities and the face.
2) Ascites	Collection of fluid in the peritoneal cavity.
3) Lipedema	Edema caused by fluid retained in the interstitial space by lipids in the dermis.
4) Lymphedema	Edema caused by obstruction of lymphatic drainage of the tissues. *usually unilateral
5) Myxedema	Edema resulting from hypothyroidism.
6) Pretibial myxedema	Not technically edema, the swelling on the anterior shins is due to coalescing of subcutaneous plaques due to Graves disease antibodies infiltrating dermal tissue.

DDx:

Non-pitting	Pitting (skin is intended and only slowly refills)	
	Bilateral	Unilateral
Hypothyroidism, Lymphedema	• Cardiac: CHF, right sided HF • Hepatic: Cirrhosis • Renal: Renal failure, Nephrotic syndrome	Deep venous thrombosis, Cellulitis

History Taking:

Personal data:

- Age (elderly: CHF), occupation (i.e: teacher, surgeon)

HPI:

- Site? Unilateral/bilateral? Facial (nephrotic, hypothyroidism)? Ascending; legs→ abdomen (CHF)? Descending; abdomen → legs (constrictive pericarditis)? Sacral (in Bedridden)?
- Onset? (gradual → systemic Or sudden → DVT) progressing and continuous (systemic) or intermittent (nephrotic)? Specific time of the day? All day (lymphatic obstruction).
- Character? Pitting or nonpitting?
- Alleviating factor (diuretics, leg elevation)?
- Exacerbating factor (long standing, increase sodium intake, non-compliance to medication → diuretics, lying flat)
- Severity level (to the ankle, below the knee, ...), interfere with daily activity.
- Associated symptoms?
- Painful? redness? itching? warm? DVT, Cellulitis.
- Prominent veins? Varicose vein.
- Constitutional symptoms: Tumor? Lymphedema, fever? Cellulitis.
- System related? Cardiac, Renal, GI, Endo.

Risk factors:

- Medical hx: DVT, OCP, malignancy, (DVT), Drugs eg: ACEI, CCB, steroids? Hypothyroidism, HTN, DM? Prior MI? CHF, Renal failure
- Surgical or trauma hx: Major surgeries (DVT)
- Social hx: alcohol abuse (liver cirrhosis), travel to tropical areas, smoking, Diet (increase salt intake)
- Family hx: cardiac or thyroid disease? contact family member with hepatitis?

Palpitation & Syncope

What is palpitation? it is unexpected awareness of the heartbeat.

DDx:

- Cardiac
  - Arrhythmia: Atrial Fibrillation, Atrial Flutter, Supraventricular Tachycardia (SVT), Ventricular Tachycardia, Premature Atrial or Ventricular Contractions.
  - Hyperdynamic: thyrotoxicosis, hypoglycemia, fever, anemia, pregnancy, hypovolemia, stimulant.
- Psychiatry: Panic Disorder or Panic attack.

History Taking:

Personal Data:

- Age: Elderly (structural heart Disease), Younger (Stimulants: caffeine).
- Gender: Women (SVT).

HPI:

- Onset: Sudden? SVT, VT, Panic attack.
  - Gradual and continuous? Sinus tachycardia, Anemia, thyrotoxicosis, VHD.
- Character: regular, forceful but not fast (panic attack), feeling of normal heartbeat interrupted by missed or strong beat? (Premature contraction), Fast & completely irregular? (Atrial fibrillation), Fast & Regular? (SVT, VT)
- Aggravating: exercise, Stimulants?
- Relieving: deep breathing or holding it (Valsalva)? (SVT).
- Associated symptoms:
  - Syncope? (SVT, VT)
  - Chest pain? Fatigue? Breathlessness?
  - Polyurea? (SVT)
- Constitutional symptoms?
- Risk Factors:
  - Medical history: heart disease, thyroid disease, anemia, previous panic attack.
  - Clinical conditions associated with AF: Underlying heart conditions (e.g. valvular heart disease, heart failure, coronary artery disease, hypertension).
  - Social history: caffeine intake, alcohol, smoking, drug abuse.
  - Family history: arrhythmia, structural heart disease.

Cardiovascular Examination

WIP3E: **W**ash your Hands, **I**ntroduce yourself, **P**ermission/**P**rivacy/**P**osition, **E**xposure
Position: Laying in bed at 45o
Exposure: full exposure of the trunk.

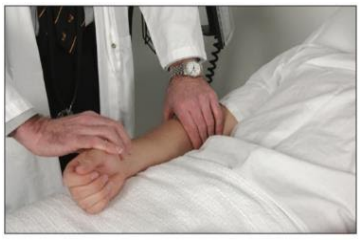
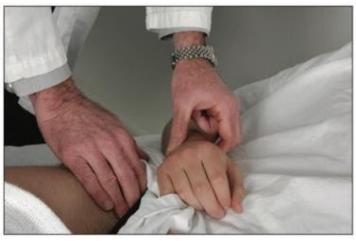
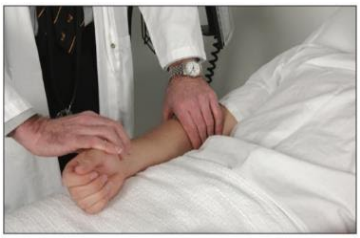
General appearance look for: **ABC2DE**

- Appearance: stressed, tachypneic
- Body built: Cachectic? Obese?
- Color: Cyanosed? Pale? (Anemia)
- Connections: to any devices: Holter monitor? Pacemaker? or intracardiac defibrillator?
- Distress: in pain, respiratory or neurological distress
- Else: orientation, consciousness, alertness

Hands:

- Inspect:
  Clubbing Yes, called Schamroth's sign.
  - Splinter hemorrhage
  - Osler's nodes? Janeway lesions
  - Tendon xanthomata
  - Subcutaneous nodules

- Palpate:
  Radial pulse: rate? rhythm?
  - At the wrist just medial to the radius.
  - Radio-radial delay.
  - Radio-femoral delay.

Face:

- Inspect:
  - Jaundice in sclera
  - pale conjunctiva
  - Xanthelasma
  - Arcus senilis at pupils
  - Mitral facies (rosy cheeks with a bluish tinge; mitral stenosis)

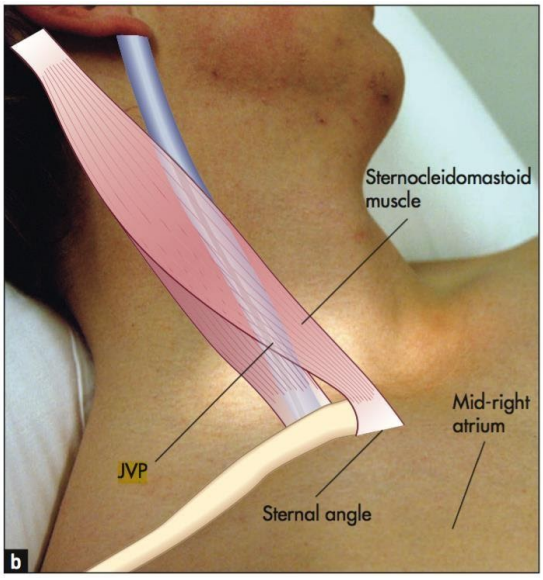
- Look in Patient's Mouth using a Torch Looking for:
  - High arched palate *(Marfan's syndrome)*

- Central cyanosis *(low blood perfusion)*
- Mucosal petechiae *(Infective endocarditis)*
- Normal clean teeth *(Maybe a source of organisms responsible for infective endocarditis)*

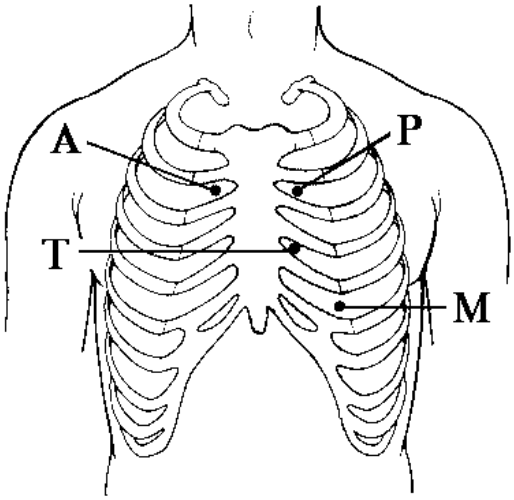
Neck:

- Inspect:
  - Jugular venous pressure
  - Hepatojugular reflux: Press firmly with the palm over the middle of the abdomen for 10 sec, observe the JVP for a rise. In healthy individuals this should last no longer than 1-2 cardiac cycles (it should then fall)

- Palpate:
  - Carotid pulse: volume? character? (Medial to the sternocleidomastoid muscles)
    NEVER PALPATE BOTH CAROTID ARTERIES SIMULTANEOUSLY
  - Measure the Jugular Venous Pressure (JVP):
    Position: lying down at 45 to the horizontal with his or her head on pillows
    1. Ask the patient to turn the head slightly to the left.
    2. Look at the internal jugular vein medial to the clavicular head of sternocleidomastoid
    3. Assuming that the patient is at 45 degrees, the vertical height of the jugular distension from the sternal angle should be no greater than 4cm.



Pericardium Examination

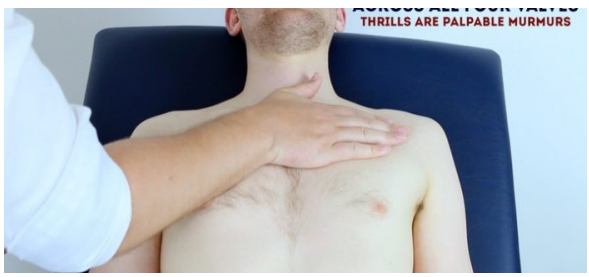


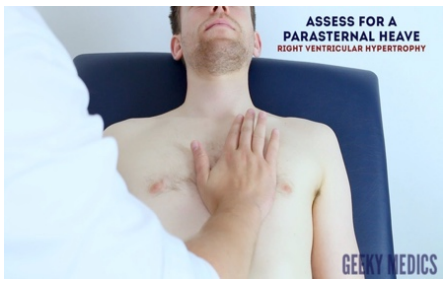
Inspect for:

- Shape and deformities: Pectus excavatum? (funnel shaped; depressed sternum) Pectus carinatum? (pigeon shaped; prominent sternum) Kyphoscoliosis? (curvature of the vertebral column).
- Scars: Lateral thoracotomy? Midline sternotomy? (CABG) Clavicular? (pacemaker)
- Apex beat: Visible pulsations or not (with the aid of a torch)

Palpate for:

- Apex beat: felt with tip of the fingers; in the lower most and the outermost pulsatile area in the chest → then count down from the mid-clavicle (normally in the 5th ICS/midclavicular line unless it's displaced)
- Parasternal impulse (Heaves): felt when the heel of the hand is rested just to the left of the sternum with the fingers lifted slightly off the chest.
    - If heaves are present you should feel the heel of your hand being lifted with each systole.
    - Causes of heaves RVH or severe left atrial enlargement.
- Thrills (palpable murmurs):
    - Using the flat of your hand, over the valve areas.
    - Thrills are best felt with patient sitting up or leaning forwards and in full expiration.
    - Apical thrills can be more easily felt with patient rolled over to the left side.





- If there is RVH then palpate the epigastric area:
    - If there is pulsation on your fingertip → RVH.
    - Pulsation on the right side of your hand → liver.
    - Pulsation on your palm → aortic aneurysm

Percuss for: (Not usually done)

- Cardiac outline

Auscultate:

- First use the diaphragm of your stethoscope and auscultate systematically starting with the mitral valve, then the tricuspid valve, then the aortic valve, then the pulmonary valve.
- When you're done listening with the diaphragm use the bell again and listen to the four valves, then auscultate the carotid artery for carotid bruit then go to the mid axillary line for to see if there is radiation of the murmur.

How to present heart sounds?

After you auscultate comment as the following:

1. Are heart sounds present?
2. Are s1 and s2 present equally?
3. Any extra heart sounds (S_3 and S_4)
4. Any additional sounds such as clicks or snaps
5. Describe if there are any murmurs
6. Presence or absence of pericardial rub

Example: Normal S1 and S2, no added sounds, or murmurs were heard.

The abdomen:

- Examine the abdomen for hepatomegaly/ascites. "See abdominal examination"

The back:

- Inspect back for sacral edema
- Auscultate the lung bases for crackles

Lower limb:

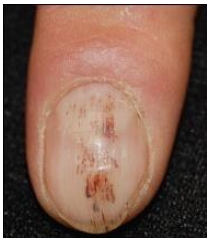
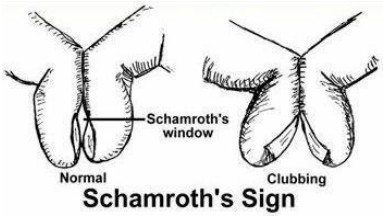
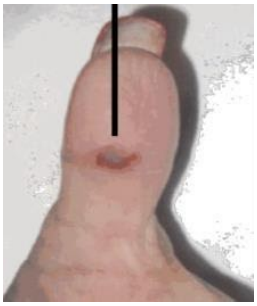
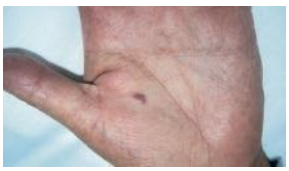
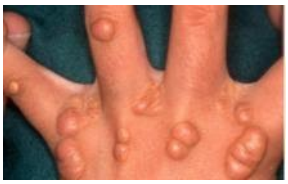
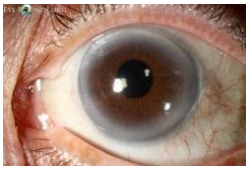
- Inspect the lower limb for edema and check peripheral pulses.

➽ ***End your examination with:***

- Respiratory examination
- Peripheral vascular examination

*Note: If you were asked to do cardiovascular examination, start focused (pericardium) and then do general; to gain time, but ideally the general should be done first.

Physical Signs in Cardiovascular Examination

Sign	Site	Causes	Image
Splinter hemorrhage: linear haemorrhages lying parallel to the long axis of the nail.	Nail beds	1. Infective endocarditis 2. Trauma in manual workers (most common) 3. Vasculitis	
Clubbing: Loss of the angle between the nail bed and finger.	Nail bed	**CLUBBING:** • **C**yanotic congenital heart disease • **L**ung abscess • **U**lcerative colitis & crohn's disease • **B**ronchiectasis, Bronchogenic carcinoma • **I**nfective endocarditis • **N**othing (Idiopathic) • **G**raves	
Osler's nodes: Red, raised, tender palpable nodules.	Pulps of the fingers (or toes) or on the thenar or hypothenar eminences.	Infective endocarditis	
Jenway lesions: Non-tender erythematous maculopapular lesions.	Palms of the hand or sole of the foot.	Infective endocarditis	
Tendon xanthomata: Yellow or orange deposits of lipid in the tendons.	Over the tendons of the hand and arms.	Type II hyperlipidemia	
Arcus senilis	Edge of cornea.	Hyperlipidemia	

Rheumatic Fever

1. Personal Data
2. Ask general q's about the CC: onset, duration, relieving factors, aggravating factors, frequency?
3. Roll out other DDx of the CC:joint pain? is it migratory? how many joint is involved? is there morning stiffness?
4. Ask about the presence of the associated Symptoms: restlessness, clumsiness, skin lesions or nodules, chest pain
5. Ask about the Risk Factors:
    1. Social hx: Poverty? living in crowded areas?
    2. Family hx: FHx of RF?

Physical Examination of RF	
General	Polyarthritis; Large joints are predominantly affected Epistaxis.
Heart	Carditis; pericardial rub, effusion, tachycardia, muffled heart sounds, a gallop rhythm, pansystolic murmur of mitral regurgitation.
Skin	Subcutaneous nodules usually occur over bony prominences such as the olecranon, external occipital protuberance and vertebral bodies Erythema marginatum.
CNS	Chorea, emotional lability

Infective endocarditis

Key points to ask:

- Constitutional symptoms, skin lesion and nodules.
- Complications: weakness, arthralgias, headache, meningitis (septic emboli), shortness of breath (heart failure), hematuria (glomerulonephritis).
- Medical hx: hx of rheumatic fever, endocarditis, artificial prosthetic heart valves, congenital heart disease, heart transplant, previous dental procedure.
- Social hx: IV drug use.

Physical Examination of IE	
General	Fever, weight loss, pallor.
Hands	Splinter hemorrhages, clubbing, Osler's nodes, Janeway lesions.
Arms	Evidence of intravenous drug use.
Eyes	Pale conjunctivae, Roth's spots.
Heart	Signs of underlying heart disease: 1. Acquired: mitral regurgitation, mitral stenosis, aortic stenosis, aortic regurgitation 2. Congenital: patent ductus arteriosus, ventricular septal defect, coarctation of the aorta
Abdomen	Splenomegaly.
CNS	Evidence of embolization.
Urinalysis	Haematuria.

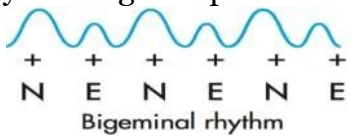
Hypertension (HTN)

Patients may present with headaches, nosebleeds, visual symptoms, or neurological symptoms

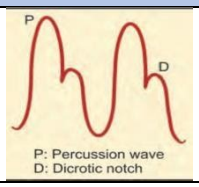
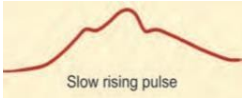
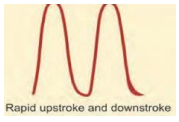
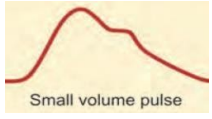
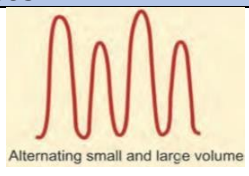
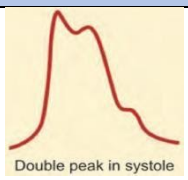
History Taking:

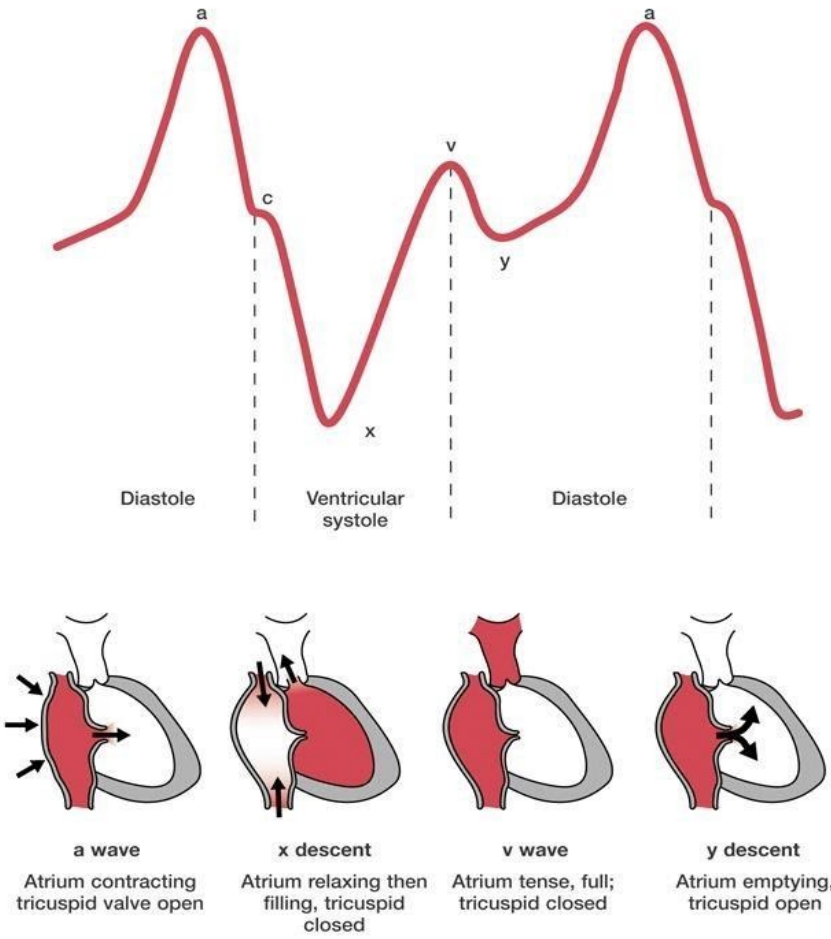
- Ask about Age? Gender? Occupation?
- Time? Duration? Character? Aggravating and relieving factors?
- Cardiovascular risk factors: Smoking, DM, IHD, TIA or previous stroke or MI High cholesterol, Obesity, Age>55 for men and>65 for women, Family history of CVD.
- Medication.
- You should identify the cause of high blood pressure either primary or secondary. There are some features that may lead to a suspicion of an underlying cause (secondary hypertension): Young patient, Rapid onset of hypertension, Sudden change In BP Unresponsive to medication.
- Look for signs that indicate end organ damage:

Cardiovascular disease	• Symptoms of cardiac failure include: ○ Shortness of breath ○ Ankle oedema ○ PND ○ Orthopnea. • Angina may also be reported. • Examination may reveal: Cardiac murmurs, thrills, or heaves. • Left ventricular hypertrophy diagnosed either by echocardiography or by ECG.
Cerebrovascular disease	• Any history of symptoms of a TIA or CVA should be obtained. These may include speech difficulties, visual disturbance, or transient focal neurology. • Carotid bruits may indicate carotid artery stenosis and warrant further duplex imaging to determine blood flow and degree of stenosis.
Renal failure	May be asymptomatic, but urinary symptoms such as decreased or increased frequency of urination, pruritus, lethargy, and weight loss may suggest renal damage.
Retinopathy	This is often asymptomatic but may present with visual loss or headaches.

Arterial Pulse		
Observation	Normal	Abnormal
Rate	60-100 beats/min	• Bradycardia: <60 beats/min • Tachycardia: >100 beats/min
Rhythm	Sinus rhythm	1. Irregularly irregular: e.g. A fib 2. Regularly irregular: e.g. Sinus arrhythmia (the normal raising with each inspiration and slowing with each expiration) 3. Bigeminal rhythm: e.g. ectopic beat  Bigeminal rhythm 4. Trigeminal rhythm: e.g. 2nd degree AV block "Wenckebach phenomenon"  Trigeminal rhythm
Radiofemoral delay	Both occur together	A noticeable delay in the arrival of the femoral pulse wave suggests the diagnosis of coarctation of the aorta
Radial-radial delay	Both occur together	A delay can be due to: dissection of the thoracic aorta, subclavian artery stenosis on one side
Volume	Normal volume pulse	• Small volume: heart failure • Large volume: AR
Postural blood pressure	No difference between standing & setting	A fall of more than 15 mmHg in systolic or 10 mmHg in diastolic due to e.g. Antihypertensive drugs.

- Pulse volume depends on stroke volume & Arterial compliance.
- Pulse character best assessed in carotid arteries.

Abnormal Arterial Pulse Character					
 	 	 	 	 	
Normal	Anacrotic pulse: Severe AS	Collapsing: AR, PDA, AV fistula	Small volume: heart failure, shock, AS	Pulsus alternans: Severe LVF	Pulsus bisferiens: AS with AR


a
c
x
v
y
a
Diastole
Ventricular systole
Diastole
a wave
Atrium contracting tricuspid valve open
x descent
Atrium relaxing then filling, tricuspid closed
v wave
Atrium tense, full; tricuspid closed
y descent
Atrium emptying, tricuspid open

Jugular Venous pressure (JVP)

Sign	Explanation	Causes
High JVP	More than 4 cm above the sternal angle.	• Volume overload • Right-sided heart failure • Tricuspid stenosis or regurgitation • Constrictive pericarditis • Cardiac tamponade • Superior vena cava obstruction
Kussmaul's sign	Raised JVP during deep inspiration, best elicited with the patient sitting up at 90 degree and breathing quietly through the mouth.	• Constrictive pericarditis • Restrictive cardiomyopathy • Cardiac tamponade • Right-sided heart failure • Tricuspid stenosis
Hepatojugular reflux	Positive if JVP raises transiently and remain elevated for the duration of the compression.	• Right-sided heart failure • Tricuspid regurgitation
Waves	**Canon a wave:** when the right atrium contracts against the closed tricuspid valve.	• Complete heart block
	Giant a waves: large but not explosive a waves with each beat.	• Tricuspid stenosis • Pulmonary stenosis • Pulmonary hypertension
	Large v waves: visible waves welling up into the the neck during each ventricular systole.	• Tricuspid regurgitation

JVP vs Carotid artery.

Carotid artery	Jugular
Medial to sternocleidomastoid	Lateral to sternocleidomastoid
Palpable	Visible but not palpable
One peak per heartbeat	Two peaks per heartbeat
No variation with posture and respiration	Variation with posture, respiration and abdominal compression
Not Obliterative	Obliterable

Types of apex beat	Impulse	Causes
Pressure loaded (heaving)	Forceful and sustained impulse	– Aortic stenosis – Hypertension
Volume loaded (thrusting)	Displaced, diffuse, nonsustained impulse	– Aortic regurgitation – Advanced mitral regurgitation – Dilated cardiomyopathy
Dyskinetic apex beat	Uncoordinated impulse	– Left ventricular dysfunction
Double impulse	Two distinct impulses are felt with each systole	– Hypertrophic cardiomyopathy
Tapping	When the first heart sound is palpable	– Mitral stenosis – Tricuspid stenosis (rare)

Note: Apex can be normally impalpable in about 50% of adult.

Other causes of impalpable apex beat (**DOPES**):

- **D**eath (or shock)
- **O**besity (thick chest wall)
- **P**ericardial effusion
- **E**mphysema, other COPD
- **S**inus inversus (dextrocardia).

Heart sounds		
	S1	**S2**
Feature	• Best heard at apex • Occurs just before or coincident with the upstroke of the carotid pulse (any murmur detected with the pulse is systolic murmur)	It is softer, shorter and at a slightly higher pitch than S1, Best heard at the aortic and pulmonary area
Cause	Closure of mitral and tricuspid valve at the onset of ventricular systole.	Closure of aortic and pulmonary valve at the end of systole (two components)
Abnormalities	**Loud** in mitral stenosis, **Soft** in first-degree heart block, LBBB, Mitral regurgitation.	**Loud S2:** • A2: Systemic hypertension, Congenital aortic stenosis • P2: Pulmonary hypertension **Soft S2:** Aortic regurgitation, calcified aortic valve **Splitting of S2**: Increased normal splitting (wider on inspiration): RBBB, Pulmonary stenosis, VSD **Audible splitting of S2:** When the closure of P2 occurs later than A2, best appreciated in pulmonary area. Splitting of S2 is wider on inspiration because of increased venous return to RV a. Fixed splitting (no respiratory variation): ASD. b. Reversed splitting (when P2 occurs first and splitting occurs in expiration): LBBB, severe aortic stenosis, coarctation of the aorta.
	S3	**S4**
	A low pitched mid-diastolic sound using the bell of the stethoscope.	A late diastolic sound pitched slightly higher than S3, best heard at the apex with the bell, always pathological.
Causes	• Physiological (in high cardiac output): fever, pregnancy, young adult, athletes. • Pathological: Aortic regurgitation, Mitral regurgitation, CHF, VSD.	• Forceful atrial contraction against a poorly compliant ventricle. • Aortic stenosis, systemic hypertension, ischemic heart disease, advanced age.

Notes: when both S3 and S4 are present the rhythm is described as a quadruple rhythm.
It usually implies severe ventricular dysfunction

✓ **Other Heart Sounds:**

- **The opening snap**
  - A high-pitched sound at a variable distance after S1. It is due to sudden opening of stenosed valve.
  - Best heard at the lower left sternal edge with the diaphragm of the stethoscope.
  - Heard in mitral stenosis.
- **A systolic ejection click**
  - Occurs in cases of congenital aortic or pulmonary stenosis where the valve remains mobile.
- **A non-ejection systolic click**
  - Occurs in Mitral valve prolapse.
- **A diastolic pericardial knock**
  - Due to abrupt diastolic filling of the ventricles.
  - Caused by constrictive pericardial disease.
- **A pericardial rub**
  - A sound due to sliding of the two inflamed layers of the pericardium in pericarditis
  - The sound can vary with posture and respiration, it tends to come and go. Best heard along the left sternal edge in 3rd & 4th ICS

Murmurs

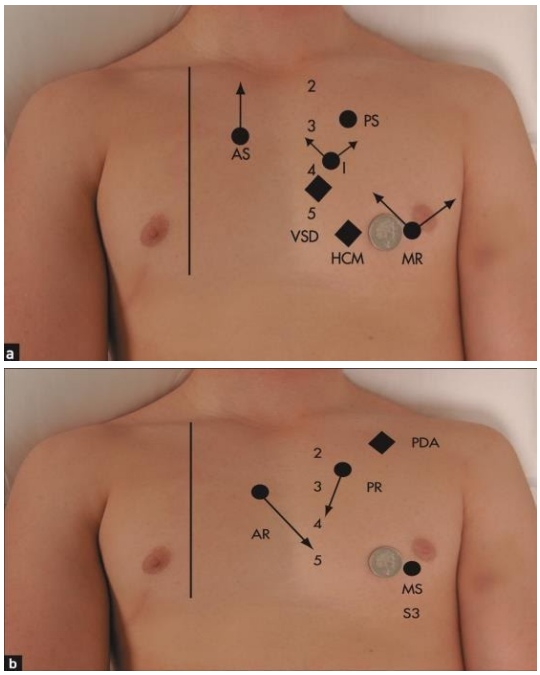
Area of greatest intensity and Radiation

A. Systolic murmurs:

- AS = aortic stenosis
- MR = mitral regurgitation
- PS = pulmonary stenosis
- VSD = ventricular septal defect

B. Diastolic murmurs and sounds:

- AR = aortic regurgitation
- MS = mitral stenosis
- S3 = third heart sound
- PR = pulmonary regurgitation
- PDA = patent ductus arteriosus (continuous murmur).



Loudness and pitch

- Grade 1/6 very soft and not heard.
- Grade 2/6 soft, but can be detected.
- Grade 3/5 moderate; there is no thrill.
- Grade 4/6 moderate; with thrill.
- Grade 5/6 loud; thrill easily palpable.
- Grade 6/6 very loud; can be heard even without placing the stethoscope right on the chest.

Effect of Different Dynamic Manoeuvres on Cardiac Murmurs:

	HOCM	MVP	AS	MR
Valsalva or standing (decreases preload)	↑	↑	↓	↓
Squatting, leg raise or lying down (increases preload)	↓	↓	↑	↑
Hand grip (increases afterload)	↓	↓	↓	↑

All murmurs increase by inspiration are right sided murmurs (in the pulmonary or tricuspid).
All murmurs increase by expiration are left sided murmur (in the aortic or mitral)

Neck bruits:

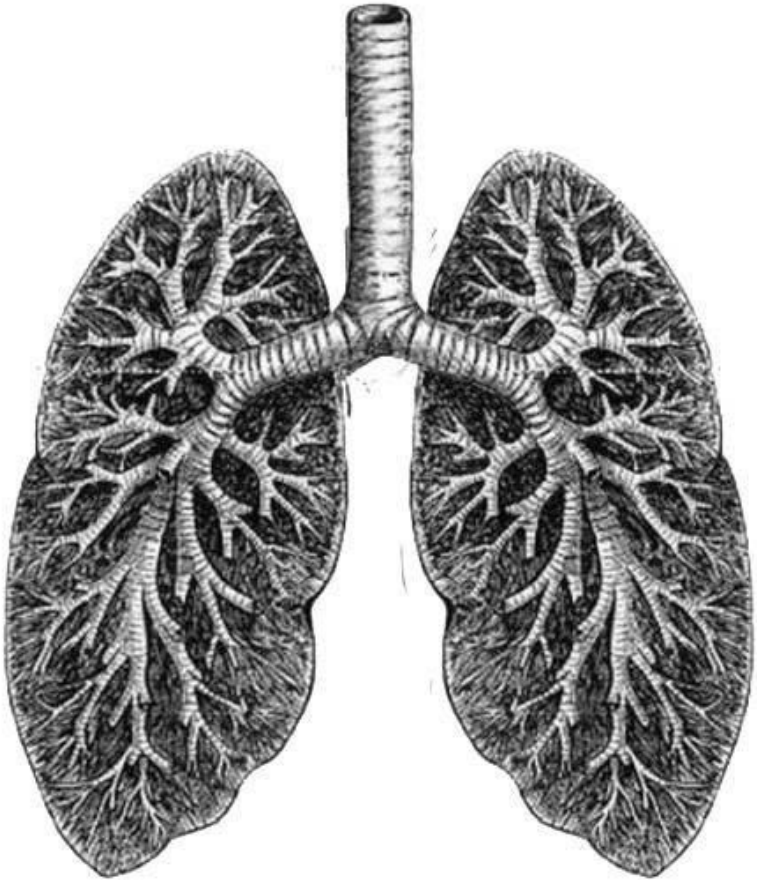
- The murmur of aortic stenosis can be audible in the neck
- Carotid artery stenosis → cause of carotid bruit which will not be audible over the base of the heart.
- Thyrotoxicosis → systolic bruit due to the increased vascularity of the gland.

TABLE 7.1 Features of important valve lesions and congenital abnormalities

	Site	Timing	Radiation	Character	Accentuation and manoeuvres	Other features
Aortic regurgitation	Aortic area	Early diastolic	Lower left sternal edge	Decrescendo	Expiration, patient leaning forwards	Wide pulse pressure, eponymous signs
Aortic stenosis	Aortic area	Systolic	Carotids	Ejection	Expiration	Separate from heart sounds, slow-rising pulse
Mitral stenosis	Apex	Middle and late diastolic	–	Low-pitched (use stethoscope bell)	Presystolic accentuation, left lateral position, exercise	Loud S1, opening snap
Mitral regurgitation	Apex	Pansystolic or middle and late systolic (mitral valve prolapse)	Axilla or left sternal edge	Blowing (MVP)	Longer and louder with Valsalva (MVP)	Parasternal impulse (enlarges left atrium)
Ventricular septal defect	Lower left sternal edge	Pansystolic	None	Localised	–	Often associated with a thrill
Tricuspid regurgitation	Lower left and right sternal edge	Pansystolic	–	–	Louder on inspiration	Big *v* waves, pulsatile liver
Hypertrophic cardiomyopathy	Apex and left sternal edge	Late systolic at left sternal edge, pan-systolic at apex	–	–	Louder with Valsalva, softer with squatting	S4, double-impulse apex beat, jerky carotid pulse

MVP = mitral valve prolapse.

Any murmur will make the sound of its corresponding sound decrease "muffled" **except** mitral and tricuspid stenosis will cause loud sound. E.g. aortic regurgitation will have muffled S_2 (S_2 is closure of aortic and pulmonary valve), mitral regurgitation will create muffled S_1 (S_1 is closure of mitral and tricuspid valve.



Respiratory System

Common Presenting Problems in the respiratory System

Cough

DDx:

Acute cough (<3 weeks)	Chronic cough (>3 weeks)
• Upper Respiratory Tract Infection. • Exacerbation of COPD/ asthma. • Sinusitis. • Allergic Rhinitis. • Pneumonia.	• Post nasal drip. • Asthma. • Gastroesophageal Reflux Disease (dry cough). • Lung Airway disease: COPD, Bronchiectasis (very productive cough), Tumor, Foreign Body. • Lung Parenchymal disease: Interstitial Lung disease (dry cough), Lung Abscess. • Drugs: ACE Inhibitors (dry cough).

History taking:

Personal data

- (name, age, gender, occupation, residency).

Chief complaint and history of presenting illness

- Questions related to cough: since when? Is it productive* or dry? (ask about amount, color, blood) Pattern of cough (seasonal changes, worse in the morning/ during the day/ at night and awakening from sleep). Is it painful? Does it cause syncope?
- Progression of cough (was it dry then productive? Is it worsening? + aggravating (exercise?) and relieving factors.
- Constitutional symptoms (fever, weight loss, night sweats, fatigue).
- Questions related to ddx: smoking (COPD), heartburn/ worse after eating or drinking (acid-reflux), sinus problems (URTI), frequent throat clearing (post-nasal drip), wheezes (asthma, COPD), chest pain (pneumonia), SOB (COPD, CHF), medications (side effects), recurrent infections during childhood (bronchiectasis) and hoarseness of voice (acid-reflux, malignancy).

Past medical history

- Pre-existing pulmonary disease.
- Chronic diseases (CHF, liver diseases (alpha-1 antitrypsin deficiency)).
- Atopic diseases.

Medications and allergies

- Medications that cause cough: ACE inhibitors, B-blockers, chemotherapy (Bleomycin).

Vaccinations and blood transfusions.

Family history:

- Pulmonary diseases.
- Similarly symptoms.
- Allergies (ex. if it's a child and the mother has eczema suspect asthma).
- Chronic diseases.

Social history

- Smoking, alcohol (aspiration pneumonia), traveling, contact with a sick patient, IV drug use.

*Characteristics of sputum:

Pink frothy sputum	Pulmonary edema
Foul smelling, dark color and purulent sputum	Lung abscess
Yellow to green sputum	Bronchiectasis
Blood	Bronchiectasis, malignancy, TB, bronchitis

Hemoptysis (coughing up blood)

DDx:

- TB.
- Pneumonia/ bronchitis.
- Bronchiectasis.
- Cancer.

History taking:

Personal data

- (name, age, gender, occupation, residency).

Chief complaint and history of presenting illness:

- Since when? color of the sputum (dark or bright red)? Is it mixed with the sputum?
- Amount of blood*:
    - Mild → less than 20 mL in 24 hours (streaks of blood).
    - Massive → more than 250 mL in 24 hours (medical emergency).
- Blood elsewhere (urine, stool), easy bruising.
- Progression + aggravating and relieving factors.
- Constitutional symptoms (fever, weight loss, night sweats, fatigue, chills).
- Questions related to ddx: recent travel/ contact with a sick patient (TB), previous history of cancer/ smoking (bronchogenic carcinoma), recurrent infections during childhood (bronchiectasis), neck stiffness (tuberculous meningitis), signs of shock (PE), hematuria (wegner's/ goodpasture syndrome).

Past medical history:

- Pre-existing pulmonary disease.
- Cancer.
- Chronic diseases (HIV).

Medications and allergies.

Vaccinations (BCG) and blood transfusions.

Family history:

- Pulmonary diseases.
- Cancer.
- Chronic diseases.

Social history

- Smoking, alcohol, traveling, contact with a sick patient, recent immigration, imprisoned.

*Distinguish between hemoptysis, hematemesis and nasopharyngeal bleeding:

Favors hemoptysis	Favors hematemesis	Favors nasopharyngeal bleeding
1. Mixed with the sputum. 2. Occurs immediately after coughing.	1. Follows nausea. 2. Mixed with vomitus; follows dry retching. 3. Symptoms related to significant blood loss are commonly present (ex. orthostatic dizziness).	Blood appears in the mouth.

Chronic obstructive pulmonary disease (COPD)

DDx:

- CHF (orthopnea, PND).
- Asthma (since childhood, sinusitis, rhinitis, eczema).
- Bronchiectasis (recurrent infections in childhood, very productive cough).
- TB (hemoptysis, constitutional symptoms).

History taking:

Personal data

- (name, age, gender, occupation, residency).

Chief complaint and history of presenting illness

- Onset, wheezing, cough, SOB, chest tightness/ pain (SOCRATES), sputum production and hemoptysis, headache or drowsiness (CO2 retention).
- Pattern of symptoms (worse in the morning?).
- Precipitating/ risk factors (smoking, exposure to air pollution).
- Constitutional symptoms (fever, weight loss, night sweats).
- If diagnosed → age of onset and diagnosis, progression of the disease, current treatment and response.
- Impact on daily living (number of days missed from work), limitation of activities, economic impact.
- Ask about complications: effect on sleep, symptoms of cor-pulmonale (LL edema, reduced exercise intolerance).

Past medical history

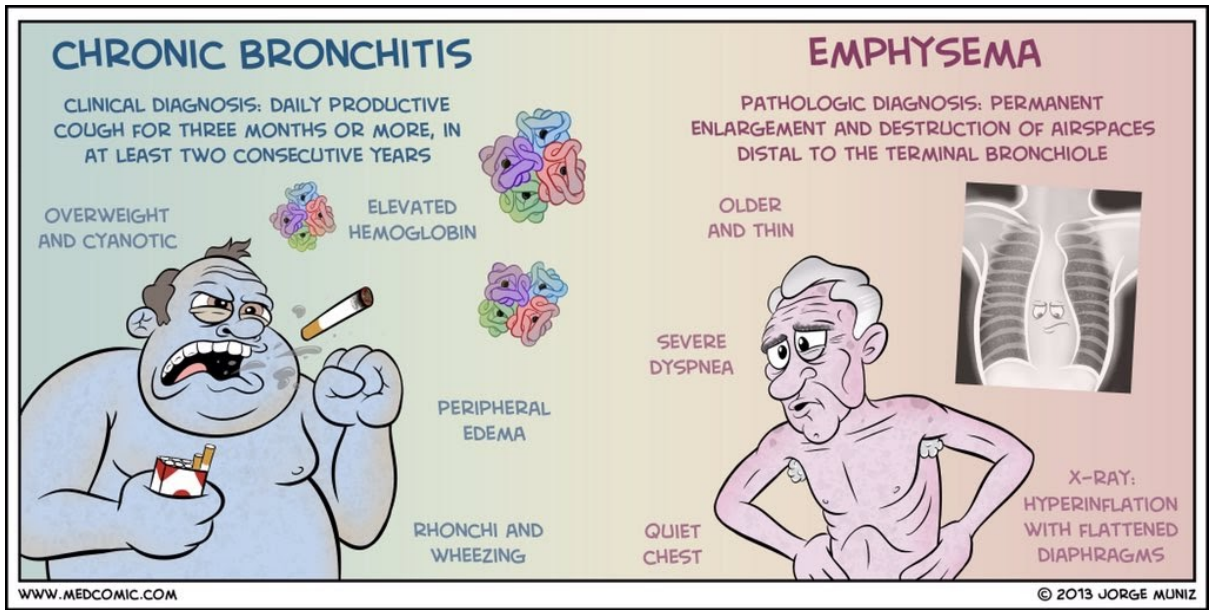
- Pre-existing pulmonary disease.
- Liver cirrhosis (antitrypsin deficiency).
- Chronic diseases.

Social history

- Smoking

+ve signs on examination:

- General: use of accessory muscles, expiration through pursed lips, nicotine staining on fingernails, cyanosis, muscle weakness, raised JVP if there's cor-pulmonale, peripheral edema, no clubbing (if present, suspect lung cancer).
- Barrel-shaped chest.
- Palpation: reduced chest expansion on the affected side, Hoover's sign, tracheal tug (downward pulls of the trachea).
- Percussion: hyperresonant with decreased liver dullness (due to hyperinflation).
- Auscultation: reduced breath sounds with early inspiratory crackles and rhonchi.
- Signs of heart failure may be present in late stages of the disease (loud P2).


CHRONIC BRONCHITIS
CLINICAL DIAGNOSIS: DAILY PRODUCTIVE COUGH FOR THREE MONTHS OR MORE, IN AT LEAST TWO CONSECUTIVE YEARS
OVERWEIGHT AND CYANOTIC
ELEVATED HEMOGLOBIN
PERIPHERAL EDEMA
RHONCHI AND WHEEZING
EMPHYSEMA
PATHOLOGIC DIAGNOSIS: PERMANENT ENLARGEMENT AND DESTRUCTION OF AIRSPACES DISTAL TO THE TERMINAL BRONCHIOLE
OLDER AND THIN
SEVERE DYSPNEA
QUIET CHEST
X-RAY: HYPERINFLATION WITH FLATTENED DIAPHRAGMS
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Asthma

DDx:

- COPD (older age).
- Bronchiectasis (history of recurrent infections during childhood).
- Pneumonia (in asthma exacerbation).
- Airway obstruction.

History taking:

Personal data

- (name, age, gender, occupation, residency).

Chief complaint and history of presenting illness:

- Onset, wheezing, cough, SOB, chest tightness/ pain (SOCRATES), sputum production and hemoptysis.
- Pattern of symptoms (seasonal? episodic? number of days and nights per week/month).
- Precipitating factors (infections, allergens, smoking, exercise, stress, drugs, occupation, food, changes in weather, GERD).
- Constitutional symptoms (fever, weight loss, night sweats).
- If diagnosed → age of onset and diagnosis, progression of the disease, current treatment and response, frequency of using SABA, need for oral corticosteroids and frequency of use.
- Impact on daily living (number of days missed from school/ work), limitation of activities, effect on sleep and growth, economic impact.

Past medical history:

- Sinusitis, rhinitis, eczema or nasal polyps.
- Chronic diseases.
- History of exacerbations: ask about signs and symptoms, rapidity of onset, duration, frequency (number of exacerbations in the past year), severity (hospitalization, admission to ICU).

Family history:

- Asthma, allergy, sinusitis, eczema or nasal polyps, chronic diseases.

Social history:

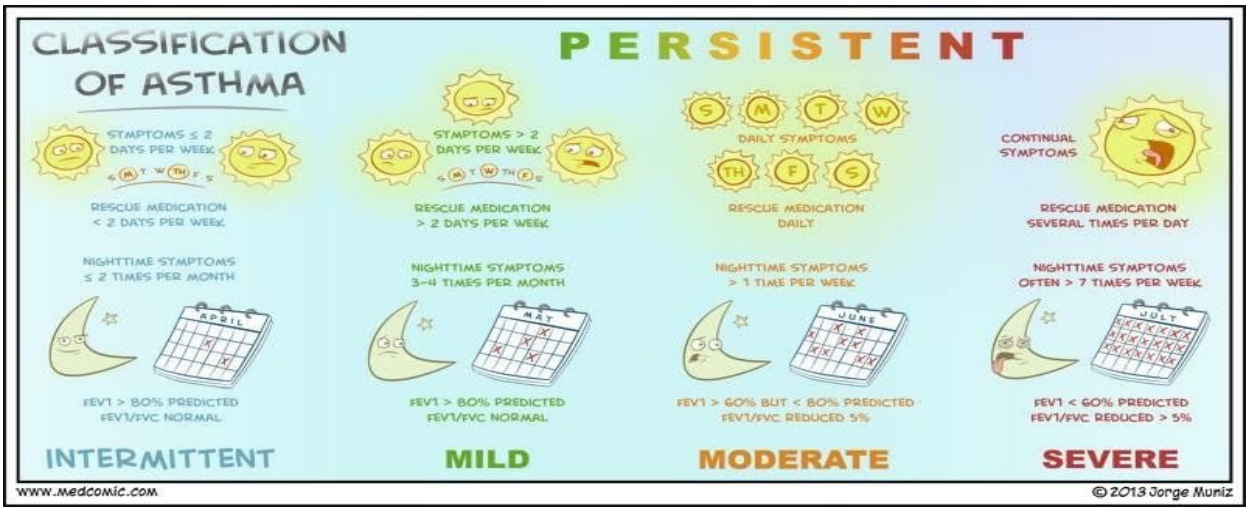
- Social factors that interfere with adherence such as substance abuse, social support, level of education.

Gynecological history

- (if menses or pregnancy are affecting asthma).

+ve signs on examination:

- Exacerbation: inspiratory and expiratory wheezing, dry or productive cough, tachypnea, tachycardia, prolonged expiration, use of accessory muscles.
- Signs of severe asthma: appearance of exhaustion and fear, inability to speak because of breathlessness, drowsiness due to hypercapnia, cyanosis, reduced breath sounds/ silent chest (status asthmaticus).


CLASSIFICATION OF ASTHMA
PERSISTENT
SYMPTOMS ≤ 2 DAYS PER WEEK
RESCUE MEDICATION < 2 DAYS PER WEEK
NIGHTTIME SYMPTOMS ≤ 2 TIMES PER MONTH
APRIL
FEV1 > 80% PREDICTED FEV1/FVC NORMAL
INTERMITTENT
SYMPTOMS > 2 DAYS PER WEEK
RESCUE MEDICATION > 2 DAYS PER WEEK
NIGHTTIME SYMPTOMS 3-4 TIMES PER MONTH
MAY
FEV1 > 80% PREDICTED FEV1/FVC NORMAL
MILD
DAILY SYMPTOMS
RESCUE MEDICATION DAILY
NIGHTTIME SYMPTOMS > 1 TIME PER WEEK
JUNE
FEV1 > 60% BUT < 80% PREDICTED FEV1/FVC REDUCED 5%
MODERATE
CONTINUAL SYMPTOMS
RESCUE MEDICATION SEVERAL TIMES PER DAY
NIGHTTIME SYMPTOMS OFTEN > 7 TIMES PER WEEK
JULY
FEV1 < 60% PREDICTED FEV1/FVC REDUCED > 5%
SEVERE
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Interstitial lung disease (ILD)

DDx:

- Idiopathic pulmonary fibrosis (>6 months).
- Sarcoidosis (extrapulmonary manifestations).
- Hypersensitivity pneumonitis (bird keeping).
- Asbestosis (asbestos exposure → working in a shipyard).

History taking:

Personal data

- (name, age, gender, occupation (mining, shipyards, quarrying, sandblasting, farming, residency).

Chief complaint and history of presenting illness:

- Onset, SOB, hemoptysis, dry cough, exercise intolerance and wheezing.
- Duration of the illness (is it better during vacations/ worse during work days?).
- Progression of the disease.
- Hobbies (bird keeping).
- Extrapulmonary manifestations: ocular, cutaneous (erythema nodosum/ papules), myocardial (cor-pulmonale), rheumatologic (joint pain), GI and neurologic (facial palsy).
- Constitutional symptoms (fever, night sweats, weight loss).

Past medical history:

- Pre-existing pulmonary disease.
- Chronic diseases.

Medications (amiodarone, bleomycin, previous radiation) and allergies.

Family history (of pulmonary diseases).

Social history (smoking, travel history).

+ve signs on examination:

- General: cyanosis, clubbing may be present.
- Palpation: chest expansion is slightly reduced.
- Auscultation: late or pan-inspiratory crackles over the affected lobes.
- Signs associated with connective tissue disease: rheumatoid arthritis, SLE, scleroderma and dermatomyositis.

Pneumonia

DDx:

- TB (history of travel, hemoptysis).
- Bronchiectasis (recurrent infections in childhood, very productive cough).
- COPD (worse in the morning, chronic).
- Brucellosis (drinking unpasteurized milk, joint pain).

History taking:

Personal data (name, age, gender, occupation, residency).

Chief complaint and history of presenting illness:

- Onset, dyspnea, productive cough (timing, smell), pleuritic chest pain (worse during inspiration?), hemoptysis.
- Duration of the illness, precipitating factors.
- Progression of the disease.
- Hospital visits in the past 90 days.
- Constitutional symptoms (fever, weight loss, night sweats).
- Close contact with a sick person.
- Drinking unpasteurized milk or eating uninspected/ raw meat.

Past medical history:

- Pre-existing pulmonary disease.
- Sinusitis, rhinitis.
- Previous hospitalization/ ventilation.
- Chronic diseases.

Medications (prescribed meds and response to them/ over the counter meds) and allergies.

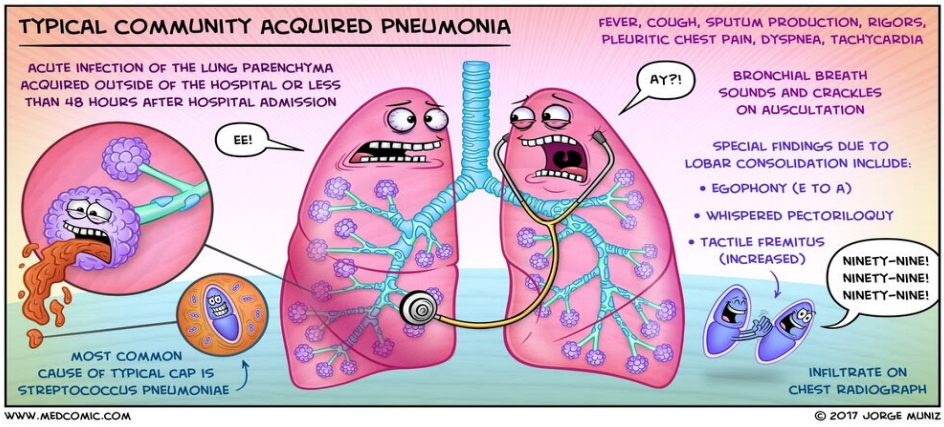
Vaccinations and blood transfusions.

Social history (smoking, alcohol drinking, recent travel).

Systemic review (ask about joint pain).

+ve signs on examination:

- Palpation: dullness, chest expansion is reduced on the affected side.
- Increased vocal fremitus and vocal resonance on the affected side.
- Auscultation: bronchial breath sound, late or pan-inspiratory crackles, egophony (E to A). Pleural rub may be present



Tuberculosis (TB)

DDx:

- Pneumonia (acute).
- Lung cancer.
- Brucellosis (drinking unpasteurized milk, joint pain).
- Sarcoidosis (non-caseating granuloma).

History taking:

Personal data

- (name, age, gender, occupation, residency).

Chief complaint and history of presenting illness:

- Onset, dyspnea, cough, hemoptysis, fatigue.
- Duration of illness.
- Progression of symptoms.
- Recent travel to areas with high TB rates (ex. india).
- Constitutional symptoms (fever, weight loss, night sweats).
- Close contact with a sick person.
- Undergone PPD test before and what was the result.
- Drinking unpasteurized milk or eating uninspected/ raw meat.

Past medical history:

- Chronic diseases.
- HIV.
- Previous diagnosis of TB and what was done.

Medications and allergies.

Vaccinations (BCG) and blood transfusions.

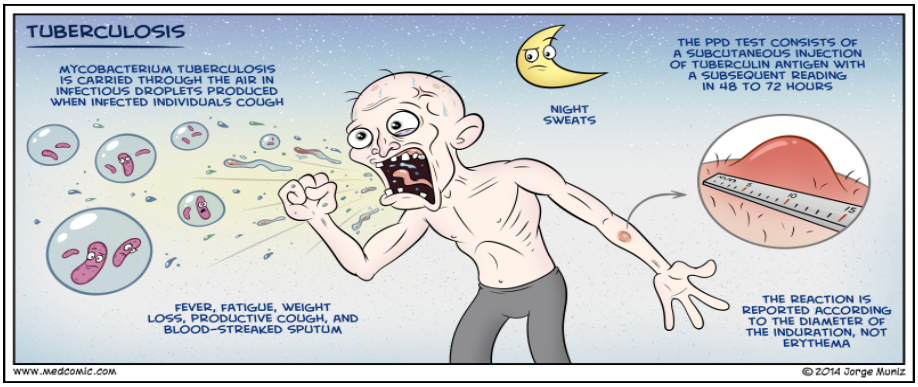
Family history (same symptoms).

Social history (smoking, alcohol, IV drug use).

Systemic review (ask about joint pain).

+ve signs on examination: depends on the time of presentation, they could be asymptomatic.

- Tracheal compression → stridor accompanied by respiratory distress.
- Recurrent laryngeal nerve involvement → hoarseness.
- Paralysis of phrenic nerve → dullness to percussion on the affected base, absence of breath sounds.



Brucellosis

Ddx:

- TB (history of travel, hemoptysis).
- Bronchiectasis (recurrent infections in childhood, very productive cough).
- COPD (worse in the morning, chronic).
- Pneumonia (contact with a sick person, hospitalization).

History taking:

Personal data (name, age, gender, occupation, residency).

Chief complaint and history of presenting illness:

- Onset, dyspnea, productive cough (timing, smell), chest pain, hemoptysis.
- Accompanied by joint/ muscle pain, headache, chills, lethargy and weakness?
- Duration of the illness, precipitating factors.
- Progression of the disease.
- Constitutional symptoms (fever, weight loss, night sweats).
- Close contact with a sick person.
- Drinking unpasteurized milk or eating uninspected/ raw meat.

Past medical history.

- Pre-existing pulmonary disease.
- Sinusitis, rhinitis.
- Previous hospitalization/ ventilation.
- Chronic diseases.

Medications and allergies.

Vaccinations and blood transfusions.

Family history.

Social history (smoking, alcohol, recent travel).

+ve signs on examination:

- Hepatosplenomegaly may be the only finding, however, the patient could have muscle weakness, joint swelling, tenderness and limited range of motion.

Respiratory Examination

WIP3E: **W**ash your hands, **I**ntroduce yourself, **P**ermission, **P**rivacy, **P**osition, **E**xposure.
Position: Sitting (to examine front and back).
Exposure: full exposure of the trunk.
In respiratory examination we do: inspection (general and chest), palpation, percussion, auscultation.
*Also mention that you'll do vital signs.
***DON'T FORGET TO COMPARE BOTH SIDES.**
*If you are asked to do focused respiratory examination, do the **CHEST PART** only.

Inspection (general and chest):

1. **General:**

i. ***ABC2DE:*** Appearance, body built, color, connections to any devices, distress, else (orientation, consciousness, alertness).

ii. ***Hands****:*

1. Nails: clubbing, peripheral cyanosis.
2. Fingers: tar staining.
3. Muscle wasting/ weakness, palmar erythema.
4. Temperature (both hands and arms).
5. Pulse rate: tachycardia and pulsus paradoxus are important signs of severe asthma.
6. Flapping tremor (asterixis): occurs with severe co2 retention, ask the patient to dorsiflex the wrist with the arms outstretched and to spread out the fingers. If it doesn't immediately appear, it can be accentuated by gently hyperextending the patient's wrist.

iii. ***Face:***

1. Eyes: pallor and horner's syndrome (constricted pupils, partial ptosis and anhidrosis).
2. Nose (you may need a speculum and a torch):
    1. Nasal polyps → Asthma.
    2. Engorged turbinates → Allergy.
    3. Deviated septum → Nasal obstruction.
3. Mouth: oral hygiene (broken/ rotten tooth stump), tonsillar enlargement (URTI) and central cyanosis below the tongue.

iv. ***Neck:***

1. Assess the carotid and JVP (internal jugular vein) by placing the patient on 45 degrees. Differences between them:

mnemonic: POLICE	Carotid artery	Internal jugular vein
Palpation	Palpable	Non-palpable
Occlusion	Non-occludable	Readily occludable

Location	IJV is between the 2 heads of sternocleidomastoid muscle, lateral to carotid	
Inspiration	No changes with inspiration	Drops with inspiration
Contour	IJV has biphasic waveforms	
Erection/ position	Doesn't change with position	Drops when sitting erect +ve hepatojugular reflux

v. ***Chest:***

***FRONT:**

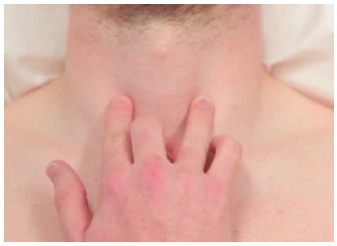
1. Shape and deformities: pectus excavatum, carinatum, barrel chest or kyphoscoliosis.
2. Scars: lobectomy, pneumonectomy, midline sternotomy (tracheostomy), lateral thoracotomy (chest tube).
3. Prominent veins (could indicate SVC syndrome).
4. Subcutaneous emphysema (air under the skin).
5. Movement of chest wall and symmetry during inspiration:
    - Females: thoracoabdominal.
    - Males: abdominothoracic.
6. Use of accessory muscles during breathing (sternocleidomastoid, platysma and the strap muscles of the neck).
7. Apex beat: visible or not.

***BACK:**

1. Shape and deformities: scoliosis, kyphosis, kyphoscoliosis.
2. Scars.
3. Symmetry.

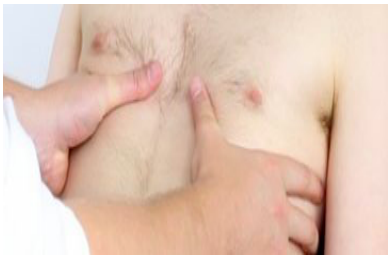
Palpation (chest): *ask the patient if he has any pain before starting

***FRONT:**



1. Tracheal position: check if the trachea is centrally located, put your index and ring fingers on the sternoclavicular junctions while your middle finger is on the trachea.
2. Tracheal tug (a sign of hyperinflation): downward displacement of the trachea with inspiration. It is demonstrated when the finger resting on the tracheal feels it move inferiorly with each inspiration.
3. Palpate the neck and supraclavicular lymph nodes.
4. Palpate the ribs for bony tenderness (rib fracture).
5. Feel the apex beat (fifth intercostal space, mid-clavicular line).
6. Tactile vocal fremitus: ask the patient to say (ninety nine in English or أربعة وأربعين بالعربي).

7. Chest expansion: ideally, it is measured by hand or meter over the three areas: upper middle and lower. تحط يدك حول صدر المريض وتقول له ياخذ نفس عميق وتشوف إذا فيه اختلاف



   - At the apex of the lung: place your hands on the apices and observe their movement up and down with each respiratory cycle.
   - Middle and lower zones (below the nipple): place your hands as a circle around the chest and observe your thumbs moving apart with each respiratory cycle. A separation of 3-5 cm is considered a good expansion. Comment if normal symmetrical chest expansion.

***BACK:**

1. Tactile vocal fremitus.
2. Chest expansion.

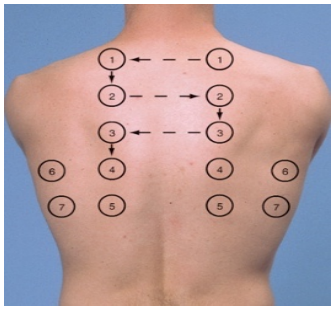
Percussion (chest):

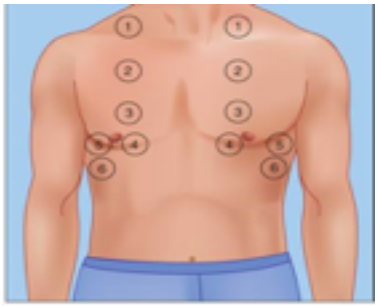
***FRONT:**

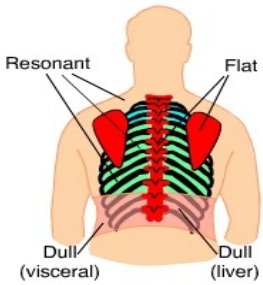
- Normally it is resonant and symmetrical in both sides, you may also check for liver dullness to assess the extent of the diaphragm.
- Normally, the upper level of liver dullness is the sixth intercostal space in the right midclavicular line. If the chest is resonant below this level it's a sign of hyperinflation (emphysema or asthma).

***BACK:**

- Normally it is resonant and symmetrical in both sides, don't forget to ask the patient to join his hands when percussing the upper lobes to move the scapula out of the lung fields.







Auscultation (chest):

***FRONT:**

1. Using the diaphragm of the stethoscope, it's important to compare each side with the other.
2. Remember to listen high up into the axillae and, by applying the bell of the stethoscope above the clavicles, to listen to the lung apices.
3. Describing breath sounds:
   1. Intensity: normal or reduced.
   2. Type of breathing and if there's any added sounds*.

4. Vocal resonance:
    1. Ask the patient to say (ninety nine or أربعة وأربعين), if there's consolidation vocal resonance will increase.
    2. Aegophony: ask the patient to say "e" and if it sounds like "a" that means there's consolidation.
    3. If vocal resonance is increased → whispering pectoriloquy test: ask the patient to whisper (1,2,3..etc), normally they will not be clear, if they are clear, it confirms the presence of consolidation.

***BACK:**

1. Don't forget to ask the patient to join his hands when auscultating the upper lobes.
2. Describe breath sounds.
3. Vocal resonance and whispering pectoriloquy test.

*Normal breath sounds:

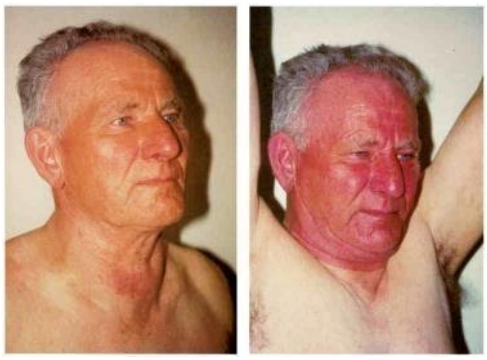
1. Vesicular: inspiratory phase longer than expiratory phase with no gap.
2. Bronchial: inspiratory phase equal to expiratory phase with gap in between. It's heard normally over the trachea and apex (other than these two is considered abnormal -usually consolidation-).

*Added (adventitious) sounds:

Wheezes (continuous)	• Must be timed in relation to the respiratory cycle (inspiratory/ expiratory). • Why is wheezing louder on expiration? (this is because the airways normally dilate during inspiration and are narrower during expiration). An inspiratory wheeze implies severe airway narrowing. ○ (wheezing) high-pitched → acute airway obstruction → asthma, acute bronchitis. ○ (rhonchi) low-pitched → chronic airway obstruction COPD. • A fixed bronchial obstruction, usually due to a carcinoma of the lung, tends to cause a localised wheeze, which has a single musical note. • It must be distinguished from stridor which sounds very similar to wheezing but is louder over the trachea and is always inspiratory.
Crackles (non-continuous)	• Caused by the opening and closing of small airways. • Crackles can be described according to their timing (early or late) and intensity (fine (rales), medium, coarse (crepitations)): ○ Early inspiratory crackles —> COPD. ○ Late inspiratory crackles —> CHF ○ Fine crackles —> interstitial lung disease. ○ Medium crackles —> CHF ○ Coarse —> bronchiectasis or any disease that leads to retention of secretions.
Pleural friction rub	• When thickened, roughened pleural surfaces rub together as the lungs expand and contract, indicates pleurisy, which may be secondary to pulmonary infarction or pneumonia. • The difference between pleural friction rub and pericardial friction rub is when the patient stops breathing the pleural friction rub stops while the pericardial continues.

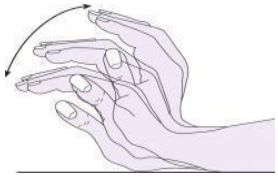
Others:

1. Pemberton's sign: ask the patient to lift the arms over the head and wait for one minute, note the development of facial plethora, cyanosis, inspiratory stridor and non-pulsatile elevation of JVP. This occurs in SVC obstruction.
2. Legs: edema may suggest cor-pulmonale, look for signs of deep venous thrombosis.
3. Sacral edema.
4. Respiratory rate on exercise.



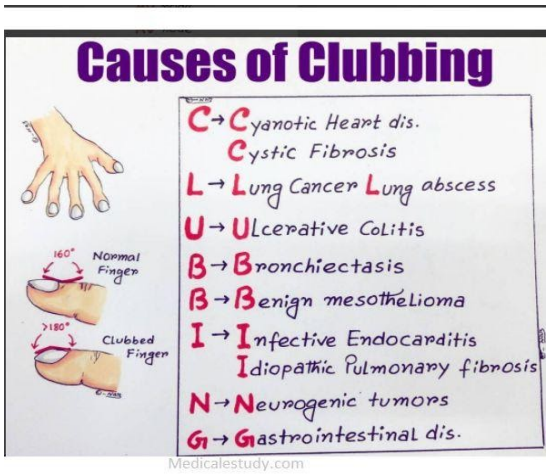
Mention that you'll end your examination with CVS examination.

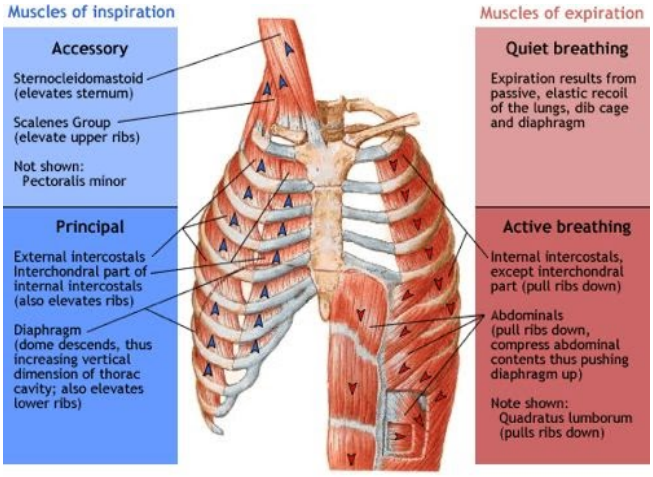
Physical Signs in Respiratory Examination

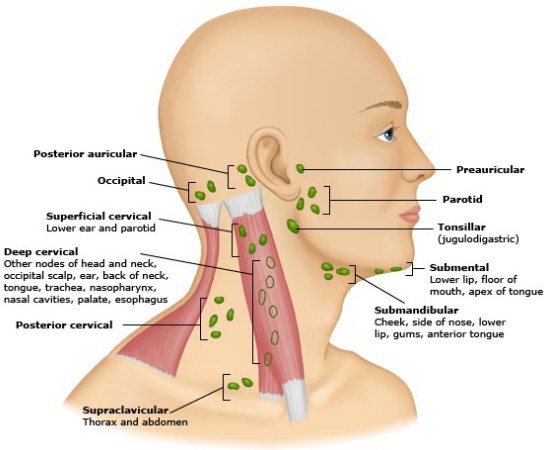
General	Dyspnea	• Normal breathing range (16-25) • Tachypnoea: more than 25 • Bradypnoea: less than 8
	Cyanosis	Central cyanosis: blueness of the tongue and oral cavity (due to fall in arterial O2)
		Peripheral cyanosis: blueness of the hands and feet (due to cold or circulatory disease)
	Stridor (requires urgent attention)	• Loud, inspiratory, intense sound with constant pitch • Best heard over the extrathoracic airways • Causes: foreign body, tumor, infection
	Hoarseness	Causes: Laryngitis (most common), use of inhaled corticosteroids for asthma, GERD, recurrent laryngeal nerve palsy associated with carcinoma of the lung (usually left-sided), laryngeal carcinoma.
Hands	Pulsus paradoxus	A fall of systolic blood pressure of >10 mmHg during the inspiratory phase • Severe asthma • Cardiac tamponade
	Flapping tremor (asterixis)	Three failures: 1. Respiratory failure (high co2) 2. Liver failure (high ammonia) 3. Chronic renal failure (high urea) 
Others	Nasal polyps	Asthma
	Crowding of the pharynx (reduction in the size of the velopharyngeal lumen)	Sleep apnoea
	Tenderness over the sinuses	Acute sinusitis
	Facial plethora or cyanosis	Superior vena cava obstruction
	Horner's syndrome (a constricted pupil, partial ptosis and loss of sweating)	Apical lung carcinoma (Pancoast's tumor)

Respiratory diseases

Disorder	Pleural effusion	Consolidation	Emphysema	Pneumothorax	Collapse
Chest expansion	Decreased	Decreased	Decreased	Decreased	Decreased
Tracheal deviation	Contralateral	-	-	Contralateral	Ipsilateral
Fremitus	Decreased	Increased	Decreased	Decreased	Decreased
Percussion	Stony dullness	Dull	Hyper-resonant	Hyper-resonant	Dull
Pectoriloquy	Decreased	Increased	Decreased	Decreased	Decreased
Breath sounds	Decreased	Bronchial	Crackles	Decreased	Decreased

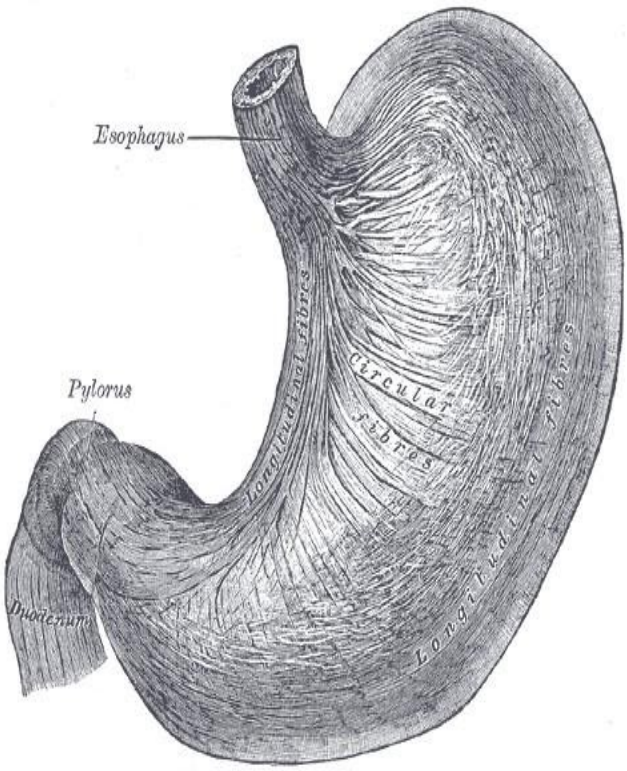






LIST 10.2 Causes of tracheal displacement

1. **Towards the side of the lung lesion**
   Upper lobe collapse
   Upper lobe fibrosis
   Pneumonectomy
2. **Away from the side of the lung lesion (uncommon)**
   Massive pleural effusion
   Tension pneumothorax
3. **Upper mediastinal masses, such as retrosternal goitre**



Gastrointestinal System

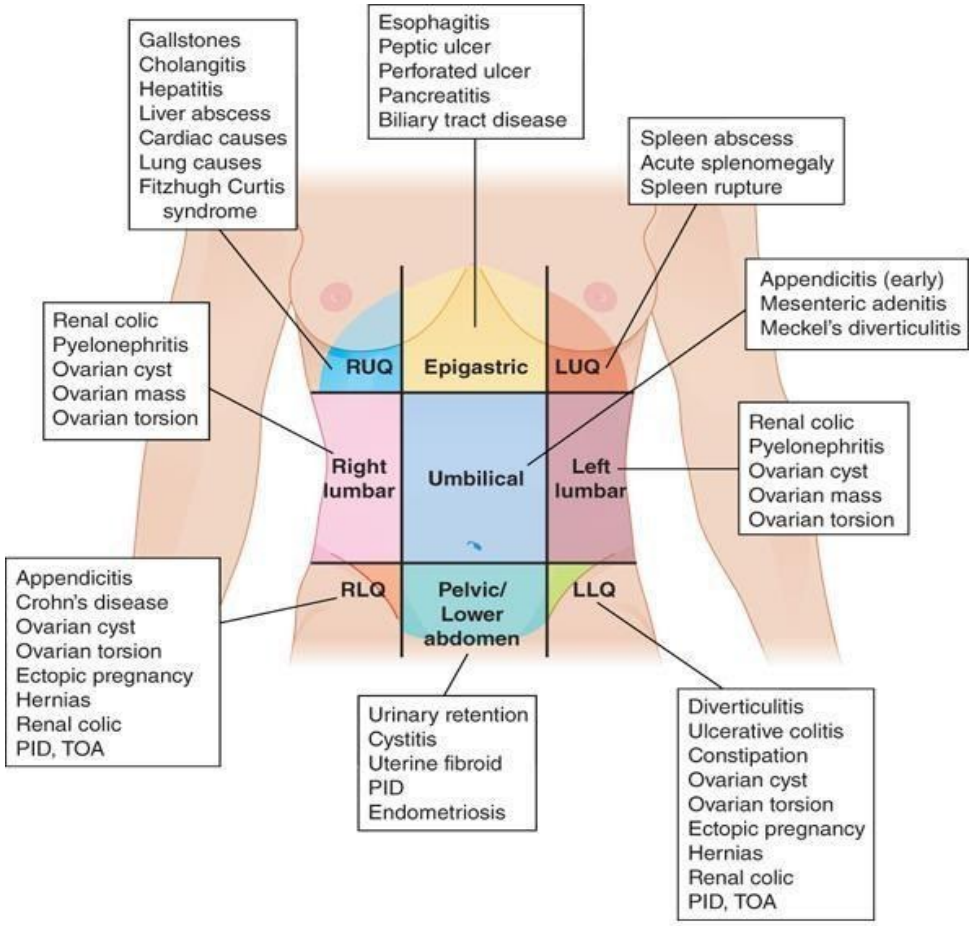
Common Presenting Problems in Gastrointestinal system

Abdominal pain:

Acute Causes				
Disease	**Timing**	**Location and Radiation**	**Associated Symptoms**	**Comments**
Appendicitis	Sudden onset	Often starts *periumbilical* with migration to *RLQ*	Nausea, Vomiting, Anorexia, Fever	- Severe abdominal pain. - More common in children and young adults.
Diverticulitis	Persistent	*LLQ*	Fever, anorexia, Nausea, Vomiting, Abdominal distension	- Hx of diverticulosis
Pancreatitis	Acute onset, Constant	*Mid-abdomen / epigastric* pain that often radiates to the *back*	Nausea, Vomiting	- Severe pain - Hx of biliary colic, alcohol abuse *Causes of acute pancreatitis?* - Idiopathic - Gallstones - Ethanol - Trauma - Steroids - Mumps - Autoimmune (eg. PAN) - Scorpion Venom Hyperlipidaemia, Hypercalcaemia - ERCP - Drugs (azathioprine, thiazides, valproate, asparaginase, allopurinol) - Pregnancy *Complications of acute pancreatitis?* Early: - Shock, Acute kidney injury, ARDS, Sepsis, Hypocalcaemia, hyperglycaemia, pancreatic necrosis Late: - Pancreatic necrosis, pseudocyst (May need internal (via stomach) or external drainage), Abscess, Thrombosis- splenic/gastroduodenal arteries
Bowel Obstruction (Adhesion) Bowel Obstruction (Incarcerated/ strangulated hernia)	Intermittent	-	Nausea, Vomiting, Constipation Absence of flatus	- Cramp-like abdominal pain - Hx of abdominal or pelvic surgery/hernia

Cholecystitis	-	*RUQ* radiates to the right *shoulder or back*	Fever, Nausea, Vomiting	- Hx of cholelithiasis and biliary colic. Exacerbated by eating (especially fatty foods) - More common in women than men - Risk factors: obesity, age over 50, pregnancy
Cholangitis		*RUQ*	Fever, Jaundice	- Charcot's triad: RUQ, pain, fever, and jaundice
Nephrolithiasis	-	*Flank* radiating to the *groin*	Nausea, Vomiting, Diaphoresis, Hematuria, Frequency, Urgency	- Severe abdominal - Previous hx of stones - May be renal angle tenderness
Pyelonephritis			Fever, chills, rigors Loin pain Urinary frequency and dysuria	- Loin tenderness - Renal angle tenderness
Perforated PU / peritonitis	Sudden, Constant	*Epigastric*	-	- All movement, including respiration, makes the pain worse causing the patient to lie immobile on the bed. - Guarding - Rebound tenderness - Hx of Ulcer, -H.pylori, -NSAID use
Aortic dissection	-	*Thorax or abdomen,* radiates to the *back*	-	- Severe, sharp or tearing pain - Hx of HTN - Increased risk in Marfan and Ehlers-Danlos syndrome or other collagen vascular disorders
Ectopic pregnancy	-	Unilateral *pelvic*	Amenorrhea, vaginal bleeding	- Hx of recent early pregnancy or missed last menstrual period
Acute intestinal ischemia	Constant	*Periumbilical* non-radiating	-	- Age >50 years - Recent hx of postprandial abdominal pain - Hx of atrial fibrillation, coronary artery disease, MI, and CHF - Risk factors include smoking, HTN, hyperlipidemia, and DM Soft abdomen (pain out of proportion to exam)

Chronic Causes	
Disease	**Characteristics**
IBS	Abdominal pain with alteration of bowel habits; pain relieved with defecation; may be associated with diarrhea or constipation, or both; exacerbated by psychosocial stressors.
PUD	Epigastric pain, may be worsened or relieved by food, hx of NSAID and alcohol use, hx of black stool, hematemesis.
IBD (ulcerative colitis)	Bloody diarrhea is the principle symptom, defection may relieve lower abdominal cramps.
IBD (crohn's disease)	Crampy abdominal pain, intermittent diarrhea, weight loss, fatigue, Family hx of inflammatory bowel disease.
Chronic cholecystitis	Upper abdominal indigestion-like pain after eating, Hx of gallstones.
Celiac disease	Nonspecific abdominal pain, bloating; diarrhea; greasy, foul-smelling stools; weight loss; anemia, ataxia, osteoporosis.
GERD	Burning epigastric/chest pain, heartburn, regurgitation worse with some foods and recumbence; improved by antacids.
Chronic intestinal ischemia	Dull, crampy, periumbilical abdominal pain, comes after the meal by 1h, the patient is usually smoker and having other atherosclerotic disease (CAD, intermittent claudication).



Personal Data:

- Age: Young? appendicitis, Old? Diverticulitis.
- Gender: female? biliary colic.

HPI:

- Site:
  - Epigastric? (pancreatitis, peptic ulcer, MI, aortic dissection).
  - RUQ? (Cholecystitis, gallstone, hepatitis).
  - RLQ? (appendicitis, inguinal hernia).
  - LUQ? (Pancreatitis, Peptic ulcer).
  - LLQ? (Diverticulitis, Inguinal hernia).
- Onset:
  - <12w? (acute).
  - >12w? (chronic).
- Character:
  - Colicky? (intestinal obstruction, Gallstone, Renal colic, IBS).
  - Dull? (MI, bowel ischemia).
  - Tearing? (Aortic dissection).
  - Burning? (Peptic ulcer).
  - Sharp? (Appendicitis).
- Radiation:
  - To the back? (pancreatitis, aortic dissection, PU).
  - To the right shoulder? (Cholecystitis, biliary colic).
  - To the left shoulder? (Splenomegaly, splenic infarction).

    - To the neck? (GERD).
- Relieving:
    - Eating? (Duodenal ulcer).
    - Lean forward? (pancreatitis).
    - Stay still? (peritonitis).
    - Defecation? (IBS).
    - Antacids? (GERD).
- Aggravating:
    - Eating? (Pancreatitis, gastric ulcer, mesenteric ischemia).
    - Fatty food? (Gallstone).
    - Dairy? (Lactose intolerance).
    - Movement? (Appendicitis, peritonitis).

Associated symptoms:

- N&V? (pancreatitis, intestinal obstruction).
- Diarrhea (infection, malabsorption, IBD).
- Jaundice? (Cholangitis).

Constitutional symptoms:

- Weight loss?
    - With decreased appetite? (GI malignancy).
    - With increased appetite? (Malabsorption, hypermetabolic state).
- Fever? (Appendicitis, cholangitis, cholecystitis, IBD).
- Anorexia? (Pancreatitis, appendicitis).

Risk Factors:

- Medical:
    - Hx of gallstone? (Pancreatitis).
    - H. pylori infection? (Ulcer).
- Social:
    - Obesity, pregnancy? (Gallstone).
    - Alcohol? (Pancreatitis, liver disease).
    - Stress? (IBS).
- Medications:
    - Antibiotic use? (Pseudomembranous colitis).
    - Hx of NSAID? (Ulcer).
- Surgical: previous surgery?

Dysphagia

DDx:

- Oropharyngeal dysphagia:
  - Neuromuscular → Stroke, MS, Myasthenia gravis.
  - Structural → Zenker's diverticulum.
  - Iatrogenic.
- Esophageal dysphagia:
  - Mechanical → Esophageal CA, strictures, esophageal webs/rings, Goiter.
  - Motility → Achalasia, diffuse esophageal spasm, scleroderma.

HPI:

	Question	Hint
Site	• Where does it hold-up?	● Cervical region→ Oropharyngeal ● Esophageal → The lesion is at or below the region to which they point.
Onset	● Sudden? Progressive? ● Is it persistent or intermittent (if intermittent how many times)? ● Have you experienced sudden onset of dysphagia after swallow large piece of meat (steakhouse syndrome)?	● Sudden → Stroke. ● Progressive → Tumor (usually solid then liquid), achalasia. ● Intermittent suggests lower esophageal ring (only with big bolus), spasm (unrelated to food/swallowing). ● Esophageal ring.
Character	● Do you have trouble swallowing solids or liquids, or both solid and liquid? ● Do you have difficulty initiating a swallow?	● Solid only→ mechanical e.g. cancer or stricture. ● Both →motility e.g. Achalasia. ● Oropharyngeal dysphagia.
Alleviating	● Symptoms relieved by repeated swallows? ● Do you ever have to bear down or raise your arms over your head to help a food bolus pass?	Motility disorder
Time	For how long?	Short period suggest inflammatory process.
Exacerbating	● Symptoms experienced after repeated swallows? ● Symptoms worse with very hot or cold liquids?	● Myasthenia gravis. ● Motility (spasm).

Associated Symptoms:

• Do you hear gurgling noise when you swallow? • Do you feel like you have bad breath?	Zenker diverticulum
• Do you regurge old fool?	• Distal esophageal obstruction • Zenkers's diverticulum, achalasia
• Dysarthria	Stroke
• Is it painful when you swallow (odynophagia)?	Esophagitis
• Oral thrush • Oral ulcers	• Candida • HSV
• Chest pain?	Spasm (relieved by nitrates but unlike ischemic heart disease it's unrelated to exertion).
• Blood in stool	Tumor, PU
• System involved: Upper GI	Heartburn (if he has Hx of long standing → peptic stricture)
• Constitutional symptoms	Tumor

Risk factors:

- Medical: Oropharyngeal or esophageal cancer, Stroke, Parkinson, Myasthenia gravis or any neuromuscular disorder, MS, GERD, scleroderma/CREST.
- Surgery or trauma (head injury): on your larynx, esophagus, stomach, or spine.
- Medications: potassium chloride, ferrous sulfate and NSAIDs.
- Caustic ingestion (alkaline or acid): strictures.
- Social: Smoking, alcohol, Obesity, Radiation therapy, allergies.
- Family Hx: of same symptoms, Achalasia, Neuromuscular disorder, Cancer.

Constipation

DDx

- Stricture or fissure
- Carcinoma
- Diverticular disease
- Hemorrhoids
- IBS (alternating with diarrhea, stress, certain foods)
- Bowel obstruction (usually results in obstipation[1])
- Hypothyroidism (cold intolerance, weight gain, menorrhagia)
- Starvation or change in diet
- Psychological distress

Causes of bowel obstruction:

- Small bowel obstruction: hernia, adhesion, crohn disease, appendicitis, intussusception (in children)
- Large bowel obstruction: malignancy (95%), diverticular disease (3%)

	Small bowel	**Large bowel**
Pain	• Early symptom • Central (periumbilical) • Short intermittent cramps	• Late symptom • Localized in the lower third of abdomen • Long intervals between cramps
Vomiting	• Develops early. • With pyloric obstruction, the vomitus is watery and acid. • High small bowel obstruction produces a bile-stained vomit. • Large amounts. • No or little odor.	• Develops later. • Brown vomit with foul smelling • Feculent vomitus • Small volume • Foul odor • Vomiting is unusual
Constipation	Late	Early
Distension	Usually no distension.	Usually there is distension.

[1] Severe intestinal obstruction where patient can't pass both gas and stool

HPI

- When? And for how long? (acute: obstruction, fissure, chronic: IBS, Carcinoma).
- How often do you have a bowel movement?
- Are your stools hard or difficult to pass? (fissure, psychological).
- What do the stools look like (stool form, e.g. small pellets)?
- Do you have mucus on your stool?
- Any blood in the stools? if yes.. Fresh blood or clotted (Malignancy, UC).
- Do you strain excessively on passing stool?
- Do you feel there may be a blockage at the anus area when you try to pass stool? (Tumor, Hemorrhoids).
- Do you ever press your finger in around the anus (or vagina) to help stool pass?
- Has your bowel habit changed recently?
- Do you have pain on defecation? (fissure).
- Aggravating factors? food, caffeine, stress.

Associated and Constitutional Symptoms

- Weight loss, Diarrhea, Abdominal pain, Vomiting (how much? how often? Colour & content?), Cold-intolerance, Nausea, Fever, Loss of appetite, Bloating and Lower back pain.

Risk factors

- Medical: Endocrine diseases (e.g. hypothyroidism, hypercalcaemia, diabetes mellitus, pheochromocytoma, hypokalaemia).
- Medications: opioids/codeine, antidepressants, or calcium antacids, CCB, Anticholinergics, iron.
- Surgical: Previous procedures (adhesions).
- Social: Diet and exercise, Smoking (UC).
- Family hx: Do you have a history of colon polyps or cancer? Any family history of colon cancer?

Examination of constipation

- Most examinations will be normal.
- Lymphadenopathy, abdominal mass, anaemia would be suspicious for colorectal carcrinoma.
- Digital rectal examination is essential: look for fissures/haemorrhoids, impacted stool, blood/mucus.

Diarrhea

DDx:

- Acute (<14d): infection, drugs, beginning of chronic cause.
- Chronic (>1 month):
    1. Colonic ⇒ IBD, IBS, colon cancer.
    2. Small intestine ⇒IBD.
    3. Malabsorption ⇒ celiac, lactose intolerance, small bowel bacterial overgrowth (SBBO), pancreatic.
    4. Endocrinological: Hyperthyroidism, carcinoid syndrome.
    5. Factitious: laxatives or exogenous thyroxine.

HPI:

- Onset: Acute? chronic?
- Characteristic:
    - Volume and frequency?
        - Large volume and less frequency→ small intestine.
        - Low volume and high frequency→ large intestine.
- Content:
    - Contains blood? → IBD, cancer, infectious (Shigella, Salmonella, Campylobacter).
    - Mucous → IBS, ulcerative colitis.
    - Oily or greasy → Malabsorption.
- Aggravated by:
    - Milk product→ Lactose intolerance.
    - Wheat, barley → Celiac.
- Awaken the pt from sleep → exclude IBS

Associated symptoms:

- Abdominal pain: Periumbilical (small bowel) Lower abdomen (Large bowel→ ulcerative colitis, bacterial dysentery), Right iliac fossa (Crohn's disease), Epigastric (chronic pancreatitis), if there is a pain, is it relieved with defecation → IBS
- Abdominal bloating (IBS, celiac disease, lactose intolerance).
- Nausea and vomiting (viral gastroenteritis, food poisoning) (how much?/how often?/colour & content?).
- Tenesmus / urgency (UC).
- Joint pain or redness (IBD).
- Rash (celiac dermatitis herpetiformis).
- Fatigue, pallor (celiac).
- Heat intolerance, weight loss, tremors, oligomenorrhea/amenorrhea (hyperthyroidism).
- Flushing and wheezing: carcinoid syndrome.

Constitutional symptoms:

- Fever (infection, IBD).
- Weight loss (cancer, celiac).

Risk Factors:

- Medical: Hyperthyroidism, AIDS (inc risk of infections), Diabetes (SBBO).
- Surgical: Gastric bypass (SBBO).
- Medications: Recent antibiotic (clostridium difficile), laxative.
- Social: Ate from a restaurant? (infection), Recent travel? (infection), Smoking? (cancer).
- Family hx: similar symptoms (infection), of IBD, colon cancer, IBS.

GI Bleeding

Hematemesis (Vomiting Blood)

DDX:

- **Peptic Ulcers (Most common)**
- **Gastro-esophageal Varices:**
  - Signs of liver disease e.g. RUQ pain, weakness, fatigue, anorexia, jaundice, portal HTN (e.g. ascites), hepatic encephalopathy (e.g. confusion).
  - Risk factors for liver disease e.g. Alcoholism, contact with hepatitis patient, unprotected sex, needle-stick injury, blood transfusion, Schistosomiasis, Thrombotic disease (budd-chiari).
- **Mallory-Weiss Tear:**
  - Usually small and self-limited episodes of hematemesis (Resolve spontaneously).
  - Hx of retching, vomiting, coughing or straining.
  - Risk factors e.g. pregnancy, alcohol, hiatal hernia.
- **Malignancy:** Constitutional symptoms, blood in the stool, smoking, alcohol, old age.
- **Coagulopathy:** Anticoagulants.
- **Acute gastritis.**
- **Angiodysplasia.**

Personal Data: Name? Age? Residency? Occupation?

Chief Complaint: what brought you to the hospital? For how long?

HPI:

- How many times have you vomited blood? What is the volume? What was the color? (Bright or dark, Fresh or clotted)? Coffee ground emesis.
- Does the blood come with coughing? To rule out confusion with hemoptysis.

Associated symptoms:

- Abdominal pain? (Epigastric → Peptic ulcer, RUQ → Varices) → Yes? SOCRATES
- Bloating/distention? (Liver disease, esophageal varices)
- Dysphagia (solid\liquid or both? where does it hold up?)? Odynophagia? GERD? Water brash? Infections or pill-induced esophageal ulceration, Esophageal ulcer
- Yellowish discoloration Jaundice? Esophageal varices, Pruritus?
- Change in stool character Diarrhea/constipation (frequency now vs. past)? Color? Blood in stool?
- Pain in defecation (fissure)? Tenesmus? Incomplete emptying?
- Change in urine color? Blood?
- Chest pain? Severe palpitations? Cold/clammy extremities? Dizziness and confusion? Severe bleeding, hypovolemic shock.
- Fatigue? Pallor? SOB or chest pain? Anemia from chronic bleeding

Constitutional symptoms:

- Fever? Weight/appetite change (How many kg in how much time? Was intentional?)? Fatigue? Night Sweats?

Red Flags\ Risk factors:

- Have you done any procedure (upper endoscopy)? Medications? (NSAIDs, Anticoagulants, Immunosuppressants, Antibiotics Bisphosphonates)? Smoking? Alcohol? any sort of contact with a Hepatitis patient?

PMH:

- Hx of H. pylori? Hx of Rheumatoid arthritis? Peptic ulcer.

Family Hx:

- Similar symptoms? GI disorders? Malignancy? Bleeding disorders? Chronic diseases (DM, HTN..)?

Social Hx:

- Caffeine? Peptic ulcer.

Lower GI Bleeding

DDX:

- Diverticulosis (Most common)
- Hemorrhoids
- Anal fissure
- Colon cancer/polyps
- Angiodysplasias
- Colitis

Keywords:

- Hematochezia: Bright red blood per rectum, source typically left colon or rectum.
- Bloody diarrhea.
- Melena: black/Tarry stool foul-smelling stool, indicate that blood has remained in GI tract for several hours, commonly upper GI is involved.

Personal Data: Name? Age? (elderly: diverticulitis, ischemic colitis, Malignancy) Residency? Occupation?

HPI:

- Onset: When did you first notice this symptom?
- Character?
  - Can you describe what you saw in the toilet bowl?
  - Frequency? volume? What was the color? Bright\dark, Fresh\clotted? Mucus?
  - Volume: was it a cup of fresh blood or only small clots mixed with the stool? (to assess the blood loss)
- Was the bleeding associated with defecation only or was it spontaneous?
- Painless? (Diverticular disease, Colonic angiodysplasia, Ischemic colitis)
- Painful? (Anal fissure)

Associated symptoms:

- Abdominal pain? (LLQ → Diverticular disease, Lower abdomen→ ischemic colitis, UC) →Yes? SOCRATES.
- Bloating/distention? (Liver disease, esophageal varices).
- Change in stool character? frequency now vs. past? (Diarrhea → Diverticular disease \ ischemic colitis \ Crohn's, Constipation → Diverticular disease, UC, HEMORRHOID).
- Pain in defecation (fissure)? Tenesmus? Incomplete emptying?
- Dysphagia (solid\liquid or both? where does it hold up?)? Odynophagia? GERD? Water brash?
- Nausea/vomiting? (Amount? Frequency? Color? Hematemesis).
- Yellowish discoloration Jaundice? Pruritus?
- Change in urine color? Blood?
- Chest pain? severe palpitations? cold/clammy extremities? dizziness and confusion? Severe bleeding, hypovolemic shock.
- Fatigue? Pallor? SOB or chest pain? Anemia from chronic bleeding.

Constitutional symptoms:

- Fever? Weight/appetite change (How many Kg in how much time? Was intentional?)? Fatigue? Night Sweats?

Red Flags\ Risk factors:

- Have you done any procedure (colonoscopy)? Medications? (Antiplatelets agents, heparin and warfarin (Blood thinning drugs), steroids)? any sort of contact with a Hepatitis patient?

PMH:

- Hx of Diverticular disease? Varices or portal hypertensive gastropathy? Hemorrhoids? anal fissure? Colorectal cancer? IBD? Bleeding disorders?

Past Surgical Hx:

- Previous procedure (iatrogenic tear of the liver)? Blood transfusions?

Family Hx:

- Similar symptoms? GI disorders (IBD)? Malignancy? Bleeding disorders? Chronic diseases (DM, HTN..)?

Social Hx:

- Recent travel (Infection)? Have you engaged in anal sexual activity?

Jaundice

DDX:

Prehepatic	Hepatic	Post hepatic
• Haemolytic Anemia • Congenital defect: Gilbert's disease or Crigler-Najjar syndrome • Physiologic jaundice of the newborn	• Viral Hepatitis • Alcoholic hepatitis • Nonalcoholic steatohepatitis • Toxin (Cocaine) • Primary biliary cirrhosis • Vascular injury • Autoimmune hepatitis • Impaired conjugation	• Gallstones • Primary sclerosing cholangitis • Cholangiocarcinoma • Budd-chiari syndrome

Personal Data: Name? Age? Residency? Occupation?

HPI:

- Onset: When did you first notice this symptom?
  - **Sudden:** Choledocholithiasis- Acute hepatitis - cholangitis, sepsis, hemolysis.
  - **Gradual:** Cancer in the head of the pancreas, Chronic hepatitis, CHF.
- Does the discoloration change with time, stress, fasting or menstruation?
  - Gilbert syndrome.

Associated symptoms:

- Abdominal pain? (RUQ → Cholecystitis, Cholangitis, Gallstones, Acute hepatitis) → Yes? SOCRATES.
- Bloating/distention? (Liver cirrhosis).
- Pruritus? Change in urine color (Dark urine)? Change in stool color (pale)? High level of bilirubin (obstructive jaundice).
- Nausea/vomiting? (Amount? Frequency? Color? Hematemesis).
- Dysphagia (solid\liquid or both? where dose it hold up?)? Odynophagia? GERD? Water brash?
- Change in stool character? Frequency now vs. past? Blood in stool? Blood in urine?
- Pain in defecation (fissure)? Tenesmus? Incomplete emptying?
- Confusion? (Liver cirrhosis)
- Increased or easy bruisability?

Constitutional symptoms:

- Fever? Weight/appetite change (How many Kg in how much time? Was intentional?) Fatigue? Night Sweats? Tumor of the head of pancreas\hepatobiliary carcinoma
- Fever with rigor and chills might indicates cholangitis

Red Flags\ Risk factors:

- Medications? (drug induced hepatitis)

PMH:

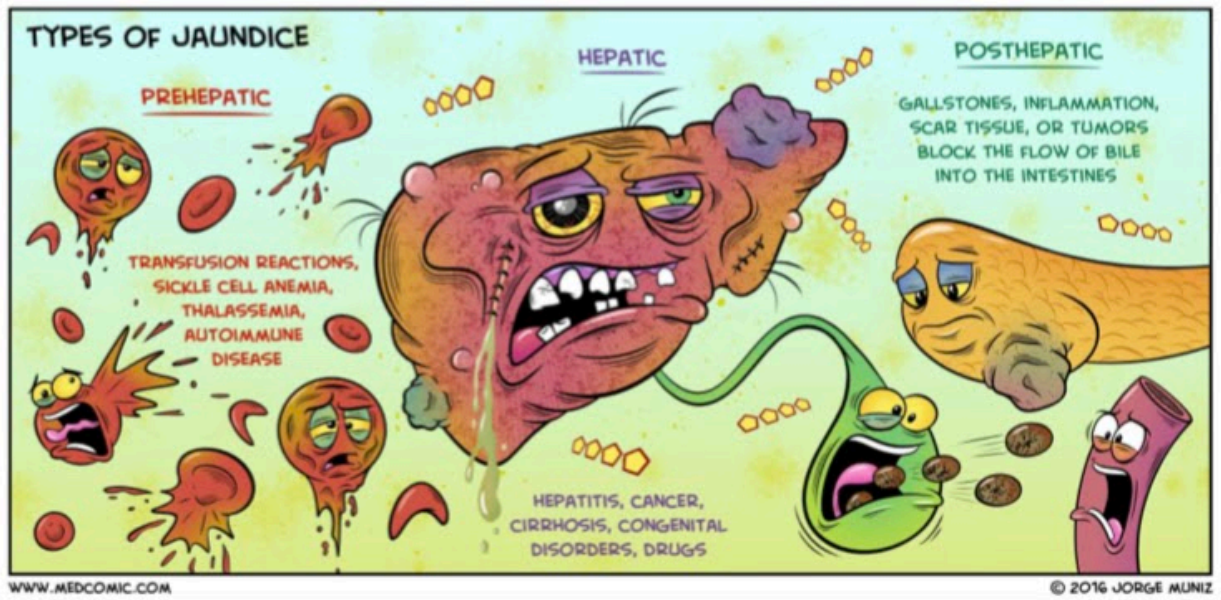
- Hx of liver cirrhosis? hepatitis? biliary stones? hemolytic anemia? GI cancer? Sickle cell disease?

Past Surgical Hx:

- Stricture of the bile duct? Blood transfusion? (HBV, HCV, hemolysis)

Social Hx:

- Alcohol? (alcoholic hepatitis), Food poisoning? (hepatitis A), Recent travel? (hepatitis E), Unprotected sex?



Abdominal Examination

WIP3E: Wash your Hands, Introduce yourself, Permission/Privacy/Position, Exposure
Position: Lying flat with the head resting on one pillow
Exposure: Ideally from nipple to mid thighs

1. **General appearance look for: ABC2DE**
   a. Appearance: Well or ill, young middle aged or old.
   b. Body built: normal, cachectic, obese.
   c. Color: pale, cyanosed or jaundiced.
   d. Connections: NGT, IV line.
   e. Distress: In pain.
   f. Else: Conscious, alert Vital signs.

2. **Inspection**
   - *Hands*
     - Leukonychia
     - Koilonychias
     - Clubbing
     - Palmar erythema
     - Pallor
     - Dupuytren's contracture (alcoholic liver disease)
     - Flapping tremor (asterixis)
   - *Arms*
     - Bruises or petechiae
     - Scratch marks
   - *Eyes*
     - Pale conjunctiva
     - Jaundice
     - Kayser-Fleischer rings (wilson's disease)
   - *Mouth*
     - Angular stomatitis, glossitis
     - Fetor Hepaticus
     - Mouth ulcers
     - Gum hypertrophy, pigmentation, or candidiasis
   - *Chest*:
     - Gynecomastia
     - Spider naevi
   - *Abdomen:*
     - Inspect the abdominal contour and comment (Normal abdomen contour that moves Symmetrically with respiration).
     - Distention: (causes of distention are 5 Fs: Fat, Flatus, Feces, Fluid, Fetus, Functional) (ascites causes full flanks so comment on the flanks whether concave or convex).
     - 3Ps → Prominent veins, prestalisasis, visible Pulses.
     - 4Ss → Scars, skin lesions (e.g. cautery marks), stria, stoma bags.
     - Umbilicus: inverted or everted.
     - Hernia: ask the patient to cough.

3. Palpation:

Before starting the palpation:

- Make sure that your hands are warm.
- Your eyes should be on the patient's face throughout the examination for signs of discomfort.
- Ask if the patient has pain or tenderness anywhere before you begin and examine this area last!

- **Superficial palpation:**
  - Start from the right iliac fossa by gently resting one hand on the patient's abdomen and pressing lightly → move anticlockwise direction to reach left iliac fossa (but don't forget to palpate the periumbilical region).
  - Look for superficial masses, tenderness or guarding signs on the patient's face.

- **Deep palpation:**
  - Repeat the same process but with pressing more *firmly* and *deeply*.
  - Look for deep masses or organomegaly.

Liver	*Usually not palpable – Start at the right iliac fossa, put your hand parallel to the right costal margin. – With each expiration, the hand is moved 1 -2 cm closer to the right costal margin. – Mark the lower edge of the liver by a marker or ask the patient to point it. – Go to the right 2nd intercostal space, at the midclavicular line, and start to percuss, liver dullness is usually at the 5th or 6th intercostal space. – Measure the liver span. <u>If there is hepatomegaly you must comment on:</u> a. Edge: tenderness, consistency, regularity, and pulsation. b. Surface: smooth or nodular. c. Span: normal liver span 8-12 cm and it is more in men than women.
Spleen	*Usually not palpable – Palpate from Right iliac fossa going obliquely to LUQ (because spleen is enlarged obliquely). – Move your hand between breaths. lf you can't palpate it, use bimanual maneuver; role the patient to the right side and do palpation by bimanual push at the 11th and 12th ribs area to feel the spleen notch.
Kidneys	*Usually not palpable – Examine both kidneys by placing your left hand behind the patient's loin between the 12th rib and the iliac crest→ lift the loin and kidney forwards (when moving one hand the other should be constant) → place your right hand anteriorly just below the right costal margin → feel any masses between the two hands as the patient breath. – This is called kidney balloting.

4. Percussion:

Spleen	* Percuss over the lowest intercostal spaces in the left anterior axillary line over Traube's triangle (this usually tympanic) then Ask the patient to take a deep breath: – Remains tympanic on inspiration → splenomegaly less likely. – Shift from tympanic to dullness → splenomegaly more like
Bladder	*Percuss from the umbilicus down the midline, look for suprapubic dullness it could indicate an enlarged bladder or pelvic mass.

5. Auscultation

- Bowel sounds: auscultate for 30 seconds, if not heard listen up to 2 minutes. (Exaggerated sounds indicate obstruction and absence of sound indicate paralytic ileus.)
- Aortic bruits: bruits are presents in arteriosclerosis or aneurysm.
- Renal artery bruit: positive in renal artery stenosis.
- Friction rub: auscultate over the liver and spleen. Presence indicate possible peritoneal abnormality.
- Venous hum: between xiphisternum and umbilicus. Present in portal hypertension.

Examining ascites:

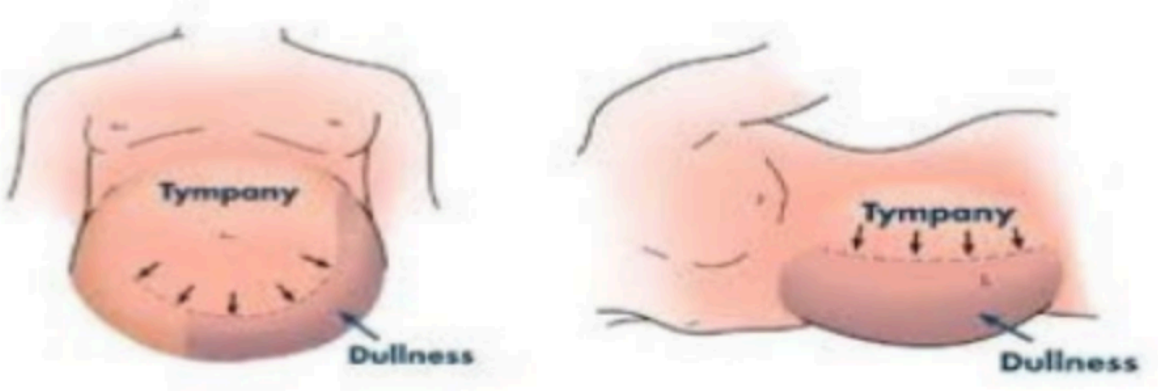
- *Bulging Flanks:* Observes whether the flanks are pushed outward.
- *Causes:* Ascites or Obesity.

1. Flank Dullness: Percussion note is tympanic* over the umbilicus and dull over the lateral abdomen and flank areas.

***The tympany over the umbilicus occurs in ascites because bowel floats to the top of the abdominal fluid.**

2. If dullness is detected in the flanks, the sign of **shifting dullness** should be sought.
   A. **Shifting Dullness:** Detect small amount of fluid.
      - With your hand flat and the fingers directed downward, start percussing with the other hand from the midline, and move to the left flank (away from you)
      - When you find the area of dullness, fix your hand, roll the patient to your side, and wait for 30 seconds(so that fluid can move inside the abdominal cavity), then percuss again, If the area becomes resonant, the test is positive.

   **Positive test:* When ascites is present, the area of dullness will shift to the dependent site(umbilicus) and the area of tympany will shift toward the top/left flank.



   B. **Fluid thrill:** Usually positive in huge ascites
      - Ask the patient to place one hand firmly on the center of his/her abdomen. the examiner places the fingertips of one hand along one flank, and with the other hand firmly gives a sharp tap along the opposite flank.

   **Positive test:* The examiner is able to detect "a shock wave" of fluid moving against the fingertips pressed along the flank.

➽ ***End your examination with:***

- Per rectal and external genitalia examination.

Things to Elicit During Your Examination:

- Rigidity Vs Guarding

Rigidity	Guarding
– Constant contraction of the abdominal muscles. – Pathological only (Always associated with tenderness). – Indicates peritoneal irritation. – Involuntary.	– Resistance to palpation due to contraction of the abdominal muscles. – May result from tenderness or anxiety. – Protective reflex in sensitive patient. – Voluntary or involuntary.

- **Rebound tenderness:** Press your hand firmly & steadily on the patient's abdomen for a minute or two, and then release suddenly > if the patient felt a sudden stab of pain upon removal then this is positive (it detect early sign of visceral inflammation).

- **Mass**: Any mass should be examined for the following Site (which quadrant), Size & shape, Surface (regular or irregular), hard or soft? Mobile or not? Does it move with inspiration? pulsatile or not?
    - How to differentiate an intra abdominal mass from mass in the abdominal wall? Ask the patient to fold the arms across the upper chest and sit halfway up. An intraabdominal mass disappears or decreases in size, but one within the layers of the abdominal wall will remain unchanged.

- **Succussion splash:** A splashing noise due to excessive fluid retained in an obstructed stomach.
    - To elicit the sound In a case of suspected gastric outlet obstruction; grasp both hips with your hands > place your stethoscope close to the epigastrium > shake the patient vigorously from side to side.

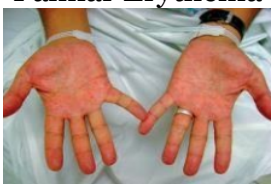
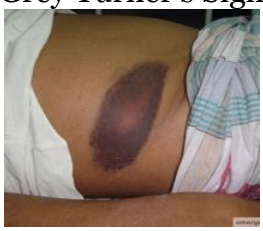
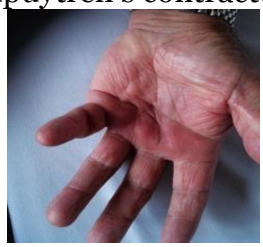
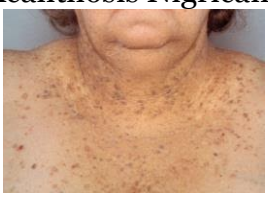
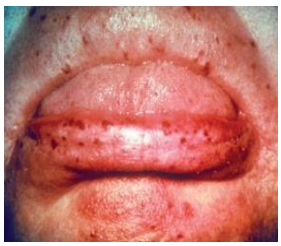
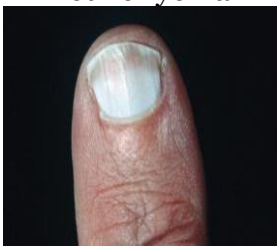
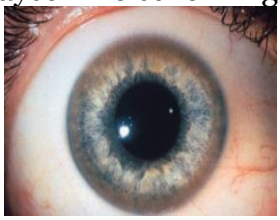
- **Full bladder:** An empty bladder is impalpable. In case of Urinary retention, the full bladder may be palpable above the pubic symphysis and may reach as high as the umbilicus. It's typically regular, smooth, firm and oval-shaped.

- **Aorta**: Normal Aortic pulsation may be felt in the epigastrium esp. in a thin person.
    - To examine the aortic pulse place two fingers parallel to each other on the outermost palpable margins of the pulse and notice their movement with systole:
        - Upward movement = pulsatile.
        - Outward movement (away from each other) = expansile (suggestive of AAA).

- **Murphy's Sign:** Positive in Cholecystitis.
    - Place your palpating hand just below the costal margin, approximately midclavicular (this is just above the gallbladder) > Then ask the pt to breath in.
    - *A positive Murphy's sign* is when the patient stops breathing in due to pain that is caused by the diaphragm pushing the inflamed gallbladder into the palpating hand.

- **Rovsing's sign:** In Acute appendicitis, palpation in the left iliac fossa produces pain in the right iliac fossa.

- **Psoas sign:** Pain with lifting extended right leg against resistance. Positive in Retrocecal appendicitis or other retroperitoneal irritation (abscess of Crohn disease, pancreatitis, pyelonephritis).

Signs may be noticed during the examination			
Sign	*Cause*	*Sign*	*Cause*
Cullen's sign 	Pancreatitis	Palmar Erythema 	Hyperthyroidism Pregnancy Co2 Retention Chronic liver failure
Grey Turner's Sign 	Pancreatitis	Dupuytren's contracture 	Alcoholic liver disease
Acanthosis Nigricans 	Insulin resistance Cushing syndrome Obesity	Leukoplakia 	Immuno-compromised
	Hereditary haemorrhagic telangiectasia involving the lips	Angular stomatitis 	Iron Deficiency anemia
Leukonychia 	Hypo-albuminemia	Kayser-Fleischer rings 	Wilson's disease

Hepatomegaly causes:

- Hepatocellular Carcinoma
- Right heart failure
- Leukemia, Lymphoma
- Hemochromatosis
- Amyloidosis
- Tender liver

Hepatitis causes:

- Rapid liver enlargement (e.g. right heart failure,Budd-Chiari* syndrome [hepatic vein thrombosis])
- Hepatocellular cancer
- Hepatic abscess
- Biliary obstruction cholangitis

Pulsatile liver causes:

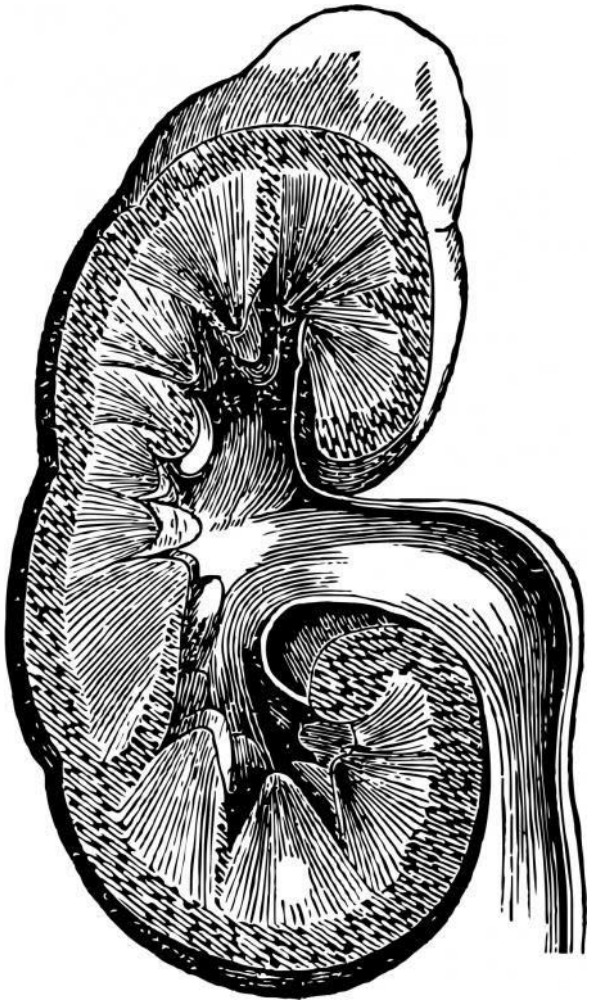
- Tricuspid regurgitation
- Hepatocellular cancer
- Vascular abnormalities

Liver Cirrhosis (Chronic Liver Disease) signs and symptoms:

- Spider Angioma (Spider Nevi)
- Jaundice
- Yellow sclera
- palmar erythema
- asterxis
- Gynecomastia
- Ascites
- Encephalopathy
- Testicular atrophy

Differential diagnosis of Abdominal masses:

Right Hypochondrium	Epigastric	Left Hypochondrium
• Cholecystitis (tender ++) • Cholangiocarcinoma (tender +; irregular) • Hepatomegaly • Liver cancer (firm, lumpy)	• Hepatomegaly • Pancreatic abscess/ pseudocyst • Gastric carcinoma	• Splenomegaly • Gastric carcinoma • Pancreatic abscess/ pseudocyst • Kidney disease e.g. polycystic kidney, hydronephrosis, cyst, tumour, TB • Colon disease e.g. carcinoma, faeces, diverticular abscess
Right Flank	**Periumbilical**	**Left Flank**
• Hydronephrosis (smooth, spongy) • Renal carcinoma (smooth, firm, nontender)	• Abdominal aortic aneurysm (pulsatile; occasionally expansile) • Tumour • Hernia • Crohn's disease	• Hydronephrosis • Renal carcinoma
Right Iliac fossa	**Suprapubic**	**Left Iliac Fossa**
• Colon cancer • Crohn's disease (multiple tender, sausage shaped) • Hernia • Appendix mass/abscess • Other abscess (amoebic, actinomycosis)	• Distended bladder (firm- extended from pubic symphysis) • Neuroblastoma (in children)	• Diverticular abscess • Hernia • Colorectal tumour



Renal System

Common Presenting Problems in the Renal System

Hypertension

- Primary/Essential hypertension: Unknown, environmental and genetic factors.
    - Risk factors: old age, obesity, sedentary lifestyle, high salt intake, family history and race.
- Secondary hypertension: underlying cause.
    - Renal disease (The most common cause of 2ndry HTN): CKD, renal artery stenosis.
    - Endocrine disease: Cushing syndrome, Pheochromocytoma, Primary hyperaldosteronism (Conn's syndrome).
    - Obstructive sleep apnea.
    - Coarctation of aorta (narrowing of aorta).
    - Drugs: OCP, steroids, NSAIDs.
- Hypertensive crisis:

Hypertensive emergency	**Hypertensive urgency**
SPB>180 mmHg and/or DBP> 120 mmHg	
Sever and acute elevation of BP with new onset or worsening organ damage.	Elevation of BP without evidence of acute hypertension organ damage.

DDX:

- Depending on the patient's presenting complaint and clinical manifestation.

History Taking:

- Patients may be asymptomatic or may present with headaches, nosebleeds, visual symptoms, neurological symptoms, symptoms of underlying secondary cause.
    - Ask about Age? Gender? occupation?
    - Time? Duration? character? aggravating and relieving factors?
    - Diagnosed previously with HTN? Duration? Compliance to medication?
    - Associated symptoms of renal, cardiovascular, CNS or endocrine system.
    - Cardiovascular risk factors: Smoking, DM, IHD, MI, High cholesterol, TIA or previous stroke, Obesity, Age>55 for men and>65 for women.
    - Habits: salt intake, lifestyle and activity, stimulants abuse like cocaine, psychosocial stressors.
    - Family history of CVD, HTN or renal disease.
    - Medication.
    - You should Identify the cause of high blood pressure either primary or secondary.
- There are some features that may lead to a suspicion of an underlying cause (secondary hypertension): Young patient, Rapid onset of hypertension, Sudden change In BP, Unresponsive to medication.

- Look for signs that indicate end organ damage

Cardiovascular disease	• Symptoms of cardiac failure include:
	  ○ Shortness of breath
	  ○ Ankle oedema
	  ○ PND
	  ○ Orthopnoea.
	• Angina may also be reported.
	• Examination may reveal: Cardiac murmurs, thrills, or heaves.
	• Left ventricular hypertrophy diagnosed either by echocardiography or by ECG.

Cerebrovascular disease	• Any history of symptoms of a TIA or CVA should be obtained. These may include speech difficulties, visual disturbance, or transient focal neurology. • Carotid bruits may indicate carotid artery stenosis and warrant further duplex imaging to determine blood flow and degree of stenosis.
Renal failure	• May be asymptomatic, but urinary symptoms such as decreased or increased frequency of urination, edema, pruritus, lethargy, and weight loss may suggest renal damage.
Retinopathy	• This is often asymptomatic, but may present with visual loss or headaches.

Physical Examination: (mainly CVS exam)

- Two blood pressure measurements 2 minutes apart on each arm.
- Calculate the BMI.
- Fundoscopic exam: looking for AV nicking, papilledema (seen in hypertensive emergencies), cotton wool spots, hemorrhages.
- Check for neck bruits and raised JVP (cardiovascular disease).
- Auscultate the heart for rate and murmurs (cardiovascular or valvular disease).
- Check the PMI (point of maximal impact) looking for signs of hypertrophy or cardiomegaly.
- Auscultate the chest (pulmonary edema).
- Check for abdominal bruits (for renal artery stenosis or cardiovascular disease).
- Assess all peripheral vasculature (cardiovascular or diabetic disease).
- Evaluate for lower extremity edema (cardiovascular disease).
- Getting a good baseline neurological exam is important even if the examination is non focal.
- Examine the thyroid: looking for thyromegaly or polyps or other signs of hyperthyroidism (a cause of secondary hypertension).

Hematuria

- Hematuria: bleeding from the urinary tract.
- Macroscopic/gross Hematuria: The presence of blood in the urine in sufficient quantity to be visible to the naked eye.
- Microscopic Hematuria: present of at least 3 RBC per high-power field on urine microscopy.

DDX of Hematuria

A. Non glomerular

- Stones: Renal calculus (Flank pain radiates to the testis) or Ureteral calculus (Severe colicky pain radiating from loin to groin).
- Infection: Pyelonephritis (Flank pain, fever, chills, vomiting, costovertebral angle tenderness), Cystitis (Frequency/urgency, suprapubic pain), Prostatitis (Perineal or rectal pain, urinary frequency, urgency, tender prostate), Urethritis (Common in young, Urethral discharge, frequency and urgency are frequently absent), infection with Schistosoma haematobium.
- Renal TB (Malaise, weight loss, Hx of TB exposure).
- Tumors: Benign prostatic hyperplasia (voiding & storage symptoms), bladder carcinoma (smoking, above 50 of age) or prostate carcinoma (above 50 of age, family Hx).
- Trauma (renal or abdominal injury).
- Iatrogenic (indwelling catheter or any recent procedure).
- Drugs (Rifampicin, anticoagulant or blood thinner).
- Inherited disorders (Sickle cell anemia).
- Exercise induced.
- Hematuria Mimics: Menstruation, Rhabdomyolysis (myoglobinuria), Intravascular hemolysis (hemoglobinuria).

B. Glomerular

- Primary glomerulonephritis**:**
  - IgA Nephropathy (Recurrent gross hematuria, associated with upper respiratory tract infection).
  - Post infectious glomerulonephritis (gross hematuria, 1 to 2 weeks post-pharyngitis).
  - Idiopathic (e.g. focal glomerulosclerosis).
- Secondary glomerulonephritis:
  - Granulomatosis with polyangiitis (Wegner): (Hemoptysis & hematuria).
  - Goodpasture: (Hemoptysis & hematuria).
  - SLE (15 and 45 years, more common in females, malar rash, arthralgia).
- Familial:
  - Thin basement membrane (benign familial hematuria).
  - Hereditary nephritis: (Alport's syndrome).

History taking:

HPI

- Do you see blood in your urine? Or Have you been told that there is blood in your urine? (to determine if the patient has gross or microscopic hematuria)
- When did it start? How did you notice it ?
- Is it painful or painless?
    - Painless Hematuria → malignancy, bleeding disorder, drugs related.
    - Painful Hematuria → Renal stone, UTI, trauma but does not r/o malignancy.
- If it's painful ask about the timing of pain:
    - Before hematuria: stone (Hx of pain for 1 weak then developed hematuria).
    - After hematuria: clot, colic, malignancy or arteriovenous malformation.
- Does the urine contain clots? Non-glomerular source
- If there are clots, what is the shape?
    - Pipes like? Bleeding from the ureter
    - Balls like? Bleeding from the bladder
- Is the blood present:
    - At the beginning? Lesion from the urethra or distal to the bladder neck.
    - At the end? Lesion from the bladder neck, bladder trigone or posterior urethra.
    - Throughout? Haemorrhagic, cystitis, renal or ureteral source, malignancy.
- Is this the first episode? (IgA nephropathy present with multiple episode over years to months)
- Red flags:
    - Increased age (older than 40-50), male sex, present of constitutional symptoms or heavy smoking history.
- Risk factors:
    - Did you exercise vigorously prior to the hematuria? (Exercise Induced Hematuria)
    - Have you had a recent injury to your abdomen, back or flank? (Trauma)
    - Are you having your menstrual period? (Vaginal source or Endometriosis)
    - Have you recently had Urinary catheter, Urinary Procedure or UTI? (Iatrogenic or Recurrent UTI)
    - Have you recently had URT symptoms OR sore throat?
    - If the hematuria starts after the symptoms by 1-3 days: most likely IgA nephropathy.
    - If after 1-3 weeks: Post infection GN.
- Associated symptoms
    - Urinary symptoms?
    - Fever? Pyelonephritis, Acute prostatitis, Prostatic abscess and Renal cell carcinoma.
    - Sharp pain in your lower abdomen or above the groin? Renal calculus.
    - Suprapubic pain? Cystitis
    - Flank pain? Pyelonephritis, Papillary necrosis, Renal calculus and renal infarction
    - Voiding and storage symptoms? BPH
    - Weight, appetite loss and malaise? Malignancy
    - Swelling of the eyelids or feet? GN
    - Deafness? Alport's syndrome
    - Hemoptysis? Wegener's, Goodpasture

- Joint or skin rash? GN secondary to SLE, polyarteritis nodosa
- Easy bruising, bleeding from other sites? Bleeding disorder

Past medical

- Have you ever had Kidney stone? Urinary calculus
- Have you ever had gout? Uric acid stone
- Do you have sickle cell anemia?
- Hx of Nephrotic syndrome? Renal vein thrombosis
- Hx of endocarditis? GN

Are you taking drugs?

- Anticoagulants?
- Cyclophosphamide? Hemorrhagic cystitis , bladder cancer.
- Rifampin? discoloration of the urine.

Family history

- Of renal disease, stones or malignancy.

Social hx:

- Smoking? Bladder cancer
- Occupation? Leather, dye, rubber, tire manufacturing? Bladder cancer.
- Hx of traveling (e.g. Egypt)? Schistosoma haematobium → bladder cancer.
- Contact with sike? TB

Physical examination

- Haemodynamic status: adopt an ABCDE approach if the patient is unwell.
- Examine for signs of anaemia: pallor (including conjunctiva), Obvious bruising or bleeding.
- Evidence of pharyngitis (GN).
- Systemic signs: Arthralgia, lymphadenopathy, purpuric rashes.
- Oedema.
- Hypertension.
- Abdominal examination is essential, alongside potential digital rectal examination and/or examination of the external genitalia depending on the presentation.

Nephrotic Syndrome

- It's defined as:
  - Heavy proteinuria (>3.5g/24h)
  - Edema
  - Hypoalbuminemia
  - Hyperlipidemia

- The key with nephrotic syndrome is an excess amount of protein in the urine, whereas nephritic syndrome is where there is an excess amount of blood in the urine.

- The causes of Nephrotic syndrome:
  - Membranous nephropathy (the most common cause in adults).
  - Minimal change disease (the most common cause in children).
  - Focal segmental glomerulosclerosis.
  - Other secondary causes: Diabetes mellitus, Amyloid.

DDX of nephrotic syndrome:

- Congestive heart faluire (the JVP in CHF is elevated, while in nephrotic syndrome it's normal or low unless there is concomitant renal failure).
- Liver cirrhosis (signs of chronic liver failure on examination help in differentiating nephrotic syndrome from liver cirrhosis).
- Diabetic nephropathy.

History taking

Patients may present with one or more of the following: Edema, Foamy urine, Fatigue, loss of appetite, Nausea & vomiting, Abdominal pain, Weight gain due to fluid retention, SOB if having pleural effusion, thrombotic complication like deep venous thrombosis or pulmonary embolism may be the first presentation.

HPI

- Age?
- All the Details of the chief complaint
  - If edema→ site? unilateral/bilateral? onset? characteristic pitting or non pitting? painful or painless? continuous or intermittent? alleviating factors? exacerbating factors? (edema of nephrotic syndrome is usually gradual, intermittent, generalized and involves the face, pitting and painless).
- History of cardiac disease? (CHF), HTN? DM? (Nephropathy)
- Associated symptoms
  - Changes of urine? hematuria? any urinary symptoms? (frothy urine)
  - Cough? chest pain? SOB? (pulmonary edema or pleural effusion)
  - Overlying skin? redness? itching? (DVT, cellulitis)
  - Joint pain? Rashes? (exclude autoimmune)
  - Abdominal pain, nausea/vomiting?
  - Yellowish discoloration of the body? (cirrhosis and chronic liver disease)
  - Systems related symptoms? Cardiac, renal, GI. endocrine.
- Risk factors for HIV or viral hepatitis?
- Constitutional symptoms: fever? Weight changes? loss of appetite? fatigue?

Past Hx

- Similar complaints? chronic disease?

Drug history?

Family Hx

- Of Similar complaints? DM, HTN, Cardiac disease, kidney disease?

Social Hx:

- Alcohol? (liver cirrhosis), smoking? Diet?

Physical examination

- General appearance and Vital signs
- General physical exam (LL edema, facial edema, Peripheral pulses, lymph nodes)
- Abdominal exam
- Chest: chest expansion and auscultation
- CVS: heart auscultation and evaluation of JVP.

Polyuria

DDx:

- Endocrine: Diabetes mellitus, diabetes insipidus, Cushing's syndrome
- Renal: Acute Kidney injury, relief of urinary tract obstruction
- Iatrogenic: Diuretic therapy, alcohol, lithium
- Metabolic: Hypercalcemia, potassium depletion
- Psychological polydipsia

HPI:

- Onset: sudden (Central) or gradual (excessive water intake, DM)?
- Duration? Is it the first time? (Acute or chronic?)
- Ask about the amount of fluid consumed? (to distinguish between polyuria and frequency)

Associated symptoms:

- Polydipsia, fatigue, visual problem, numbness, tingling, loss of sensation (DM).
- Weight loss? (malignancy or chronic infection, DM).
- Night sweats? (malignancy or chronic infection).

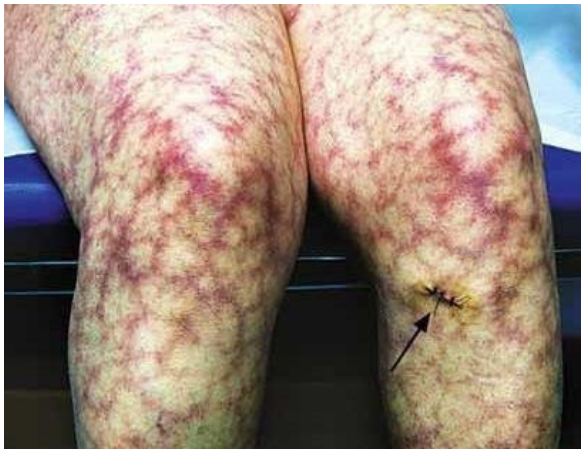
Risk factors:

- History of hypertension.
- Acute kidney injury, hypercalcemia, urinary tract obstruction.
- History of meningitis, psychiatric illness, head injury or brain surgery (DI).
- IV fluid or feeding tubes.
- Drugs such as diuretic, Alcohol, lithium.

Chronic Kidney Disease (CKD)

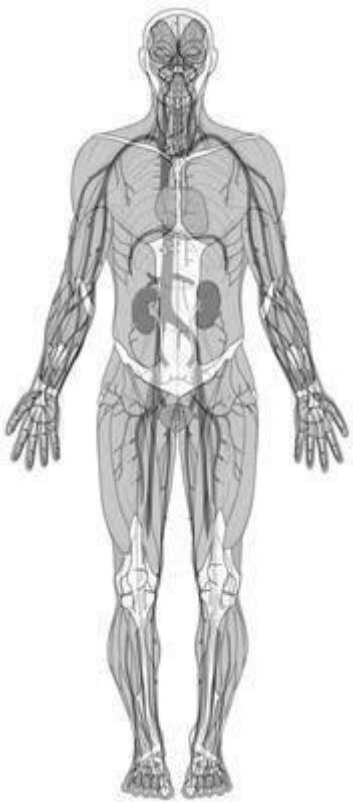
Key points to ask CKD pt:

- Weakness and loss of appetite
- Nausea and occasional vomiting
- Swelling and puffiness of the face
- Dyspnea
- Persistent itching
- Past medical hx:
    - hx of long standing diabetes or HTN, Glomerulonephritis.
    - hx of recurrent UTI, stones or BPH.
    - hx of urologic intervention.
    - hx of autoimmune disease e.g. SLE, rheumatoid arthritis.
- Family hx:
    - First degree relative with CKD.
    - Family hx of polycystic kidney disease or alport syndrome.
- Medication hx:
    - Frequent use of NSAIDs or pain-killers , long-term exposure to nephrotoxic antibiotics or radiocontrast agents, chemotherapeutic use.



livedo reticularis

CKD	
1. General inspection	• Pale anemic, confused or drowsy (uremia). • Hyperventilation (metabolic acidosis). • Bronzing of the skin (iron overload).
2. Hands	• Pallor of the palmar crease. • Muscular twitches or cramps (high Ca).
3. Arms	• Surgically created arteriovenous fistulas or shunts (used for haemodialysis access) in the wrist or forearm. • Scratch marks and excoriations (due to uraemic pruritus). • Bruising and bleeding. • High BP.
4. Face	• **Eyes**: anemia, band keratopathy (Ca deposition in the cornea), hypertensive or diabetic changes in the fundus. • **Mouth**: uremic fetor, mucosal ulcers.
5. Neck	• Raised JVP. • Carotid bruits (generalised atherosclerotic disease).
6. Chest	• **CVS**: pericardial friction rub or signs of cardiac tamponade, CHF. • **Resp**: signs of pleural effusion or pulmonary edema.
7. Abdomen	• **Inspection**: peritoneal dialysis catheter, nephrectomy or renal transplant scars, distended abdomen (large polycystic kidneys or ascites). • **Palpation**: enlarged kidneys (bulges forward), perinephric abscess (bulges backward), transplanted kidney (in the iliac fossa), enlarged bladder (obstructive cause), hepatomegaly as a result of hepatic cysts (seen in PKD). • **Percussion**: ascites. • **Auscultation**: bruits (renal artery stenosis).
8. Back	Using the base of your fist, try to elect: • Bony tenderness over the spine (renal osteodystrophy). • Renal angle tenderness (Murphy's kidney punch).
9. Lower limbs	• Edema. • Livedo reticularis (atheroembolic disease). • Signs of peripheral neuropathy (sensory > motor) or myopathy.



Hematological System

Common Presenting Problems in Hematological System

Fatigue:

DDx:

- Anemia, Leukemia or lymphoma.

Personal History:

- Age, Gender.

HPI:

- Onset.
- Duration.
- Progression.
- Exacerbating factors (Physical efforts, exertion) → Muscle weakness, cardiopulmonary disease.
- Relieving factors (Weekend, night rest) → Chronic occupational stress, sleep deprivation.
- Impact on life.

Associated Symptoms:

- Constitutional symptoms: Fever, night sweat, weight loss, appetite → Infection, lymphoma.
- Continued sore throat, rashes, skin changes → Infectious mononucleosis
- Lymph node enlargement → Lymphoma
- SOB, palpitation, chest pain → Anemia
- Back pain, diffuse bony pain → Metastatic carcinoma, Multiple myeloma.
- Excessive thirst, urination → DM.
- Abdominal pain, diarrhea, rectal bleeding → IBD.
- Sleep disturbance → Depression, Sleep apnea.
- Cold intolerance, constipation, voice changes, muscle cramp, hair changes → Hypothyroidism.

PMH:

- DM, HTN, Hypo/Hyperthyroidism, Anemia.

Medication History:

- Radiotherapy, NSAIDs and bisphosphonates, Antidepressant, Antihistamines, Benzodiazepines.
- Hypnotics, Narcotics, heroin.

Surgical History:

- Recent surgery → Postoperative fatigue.
- Bariatric surgery → B12 deficiency and malabsorption.

Family History:

- Same symptoms, Inherited hemoglobinopathies (thalassemia, Sickle cell anemia) /G6PD/Hemophilia/ GI cancer)

Social History:

- Travel → Parasitic infection.
- Sexual partners → HIV.
- Alcohol consumption → Alcoholism.
- Mood → Depression, Anxiety.
- Stressors → Stress related or psychogenic fatigue.
- Poor diet → Anemia
- Ill contacts.
- Tobacco.

Menstrual History

Epistaxis

Personal data:

- Gender (male → hemophilia).

HPI:

- Character? Color (bright or dark red).
- Severity? Assessed by frequency and amount.

Associated symptoms:

- Petechiae, ecchymosis, purpura → superficial bleeding due to platelets disorder.
- Bruises, hematuria, Hemarthrosis → deep bleeding due to coagulation disorder.
- Fatigue, palpitation, SOB → symptoms of anemia (due to blood loss).
- Chest pain, diaphoresis, hyperthermia → cocaine or other sympathomimetics ingestion.
- Confusion, cold hand, low urine output, shaking (hypovolemic shock) → as complication of bleeding.

Risk factors:

- Past medical hx: hemophilia, VW disorder and platelets disorder.
- Surgical hx: previous maxillofacial or skull base surgeries.
- History of trauma.
- Medication: use of Anticoagulants.

Splenomegaly

Causes of splenomegaly		
Infective	Bacterial	• Infective endocarditis • Typhoid • TB • Septicemia • Abscess
	Viral	• Infectious mononucleosis • Hepatitis • Cytomegalovirus • HIV
	Protozoal	• Malaria (common in Africa, causes massive splenomegaly)
	Parasitic	• Hydatid cyst • Kala azar (داء اللشمانيا)
Inflammatory		• Rheumatoid arthritis • Lupus • Vasculitis • Infiltrations (e.g. amyloid, sarcoid)
Neoplastic		• Metastases • Leukaemia (e.g Chronic myeloid leukaemia causes massive splenomegaly) • Lymphoma (e.g primary lymphoma of the spleen) • Primary tumors
Haemolytic Disease		• Hereditary spherocytosis • Acquired hemolytic anemia • Thrombocytopenic purpura
Hematological		• Thalassemia • Sickle cell anemia • Myelofibrosis
Storage Diseases		• Gaucher's disease
Deficiency Diseases		• Severe iron-deficiency anaemia • Pernicious anaemia
Splenic Vein Hypertension		• Cirrhosis (portal hypertension) • Portal /Splenic vein thrombosis

Personal data:

- Occupation: (Hydatid disease More common in rural sheep-farming regions).
- Age (hereditary spherocytosis in children).

HPI:

- Onset:
  - Acute → Congestion.
  - Chronic → Sickle cell anemia.
- Character: painful or painless.
- Relieving factors: blood transfusion.
- Severity: Size.

Associated symptoms:

- LUQ pain, early satiety (massive enlarged).
- SOB, palpitation, fatigue (sickle cell Anemia, thalassemia), itching (polycythemia vera).
- Jaundice, ascites, RUQ pain → liver disease.
- Petechiae, easily bruising, fatigue, fever → hematological malignancy.
- Joint pain, rash (SLE , RA).

PMH:

- History of Sickle cell anemia, thalassemia, SLE, Rheumatoid arthritis, chronic infection, Liver cirrhosis.
- History of trauma.
- Past surgical.
- Blood transfusion.

Social History:

- Travel history: Did you travel recently? Where? (endemic diseases like malaria, schistosomiasis).
- Typhoid: “malaise, headache, fever, cough, constipation initially and then diarrhea”.
- TB: “weight loss, night sweats and a cough”.
- Drug abuse: septic emboli from endocarditis can cause splenic abscess.

Surgical History:

- Ask about history of blood loss for deficiency cause.

Anemia

Defined as Hemoglobin concentration of <13.5 g/dl in men <11.5 in women.

DDx :

Microcytic Anemia (MCV <80 fl)	• Iron deficiency • Thalassemia • Anemia of chronic disease
Normocytic Anemia (MCV 80-95 fl)	• Acute blood loss • Hemolytic anemia: (sickle cell anemia – malaria – drugs- G6PD deficiency) • Bone marrow failure • Pregnancy • Secondary anemia due to liver or renal disease
Macrocytic anemia (MCV>95 fl)	• Megaloblastic; Vitamin B12 deficiency, Folate deficiency and pernicious anemia. • Non-megaloblastic; Alcoholism, Hypothyroidism, myelodysplasia.

Personal data:

- Age, Gender, residency

History of presenting illness:

- Symptoms of anemia are fatigue, palpitations, SOB, headache, postural dizziness, chest pain, angina of effort, syncope.

Associated symptoms:

- Hx of bleeding from other sites (e.g. bleeding per rectum, vomiting blood, hematuria, hemoptysis, heavy menstrual bleeding) (heartburn? may indicate GERD and PUD → blood loss due to GI bleeding).
- Constitutional symptoms; Fever, loss of appetite and weight loss.
- Symptoms of hemolytic anemia: jaundice, scleral icterus, dark urine, hepatosplenomegaly.
- Symptoms of iron deficiency: ex. Pica, hair thinning/lose.
- Dysphasia? “Plummer-Vinson Syndrome: triad of dysphagia, iron-deficiency anemia and esophageal web.
- Neurological symptoms ex. Peripheral neuropathy → B12 deficiency.

Risk factors

Medical History:

- History of gastric ulcer and gastrointestinal cancer.
- History of malabsorption (crohn's disease, celiac disease).
- Hx of Liver and kidney diseases.
- Hx of chronic disease associated with anemia (e.g. Rheumatoid arthritis, SLE), condition associated with iron deficiency (e.g. pregnancy).

- Drugs e.g. NSAIDs and bisphosphonates → GI bleeding, Blood thinning drugs ex. (Heparin, warfarin, Aspirin), Metformin → B12 deficiency, Phenytoin or sulfa medications → folate deficiency, herbal medication.
- Recent ingestion of beans → G6PD.
- Bony deformities "extramedullary erythropoiesis in thalassemia".

Surgical History:

- Gastric surgery e.g. bariatric surgery (B12 deficiency and malabsorption), recent operations (Acute blood loss).

Family History:

- Same symptoms, family hx of Inherited hemoglobinopathies (thalassemia, Sickle cell anemia)/ G6PD/ Hemophilia/ GI cancer.

Social History:

- Travel → (parasitic infections e.g. hookworm and malaria).
- Alcohol → interfere with absorption of nutrients such as folate.
- Vegetarian diet → iron and B12 deficiency.

VTE (DVT and PE)

DDX of DVT → cellulitis "Unilateral swelling"

Clinical presentations:

- DVT: **unilateral** unexplained extremity swelling – pain – warmth – erythema – cramps and heaviness, especially in calf – increased visible skin veins – blue-red or cyanotic discolouration.
- PE: dyspnea – tachypnea – pleuritic chest pain – cough – fever – symptoms of shock or syncope with massive PE – hemoptysis – leg pain or swelling "DVT".

HPI:

- Ask about above-mentioned symptoms.
- Onset?? Rapid onset.
- Recent surgery?

PMH and PSH:

- History of thrombophilia: factor V Leiden mutation – protein C/S deficiency - antithrombin deficiency – SLE "antiphospholipid syndrome".
- Ask about conditions which may be risk factors: history of DVT In suspected case of PE – recent surgery ex. joint replacement – major trauma "endothelial injury" – cancer – pregnancy or postpartum state – polycythemia.

Medication history:

- OCP? HRT?

Family history:

- History of inherited thrombophilia? Cancer?

Social history:

- Prolonged bed rest and immobility? Travel?
- Smoking?

SCD and Vaso-occlusive crises

Most individuals with skill cell disease are Diagnosed at birth or during infancy.

Presentations and HPI:

- **Vaso-occlusive crisis**
  - **Pain**?? Most commonly in **extremities**, chest, back and thighs – sudden in onset – may be localized or migratory, continuous or throbbing
  - Triggers include stress, exposure to cold, **infection** (**ask about fever?**), hypoxia (ask about high altitude?)
- **Acute chest syndrome** half of affected patient have antecedent painful **VOC**
  - SOB – cough – fever – chest, rib and Sternal pain?
- Splenic sequestration
  - Symptoms of anaemia.
  - Left side abdominal pain, nausea, vomiting, lethargy and irritability.
- Stroke "mechanical obstruction of blood vessels by dens sickled RBCs"
  - Headache? Hemiparesis? Aphasia? Facial drop?
- Priapism

PMH:

- Vaccination history?
- History of acute or chronic complications?, previous episode of same symptoms?
- History of transfusion?
- History of biliary colic "bilirubin gallstone from chronically elevated bilirubin levels"
- History of infections ? "particularly encapsulated organisms, ex. Osteomyelitis from salmonella"
- Visual disturbance → retinopathy "retinal infarction"

Family History:

- History of sickle cell disease?

Hematological Examination

WIP3E: **W**ash your Hands, **I**ntroduce yourself, **P**ermission/**P**rivacy/**P**osition, **E**xposure
Position: Laying in bed
Exposure: full exposure to the body.

General appearance look for: **ABC2DE**

- Appearance: Stressed, Tachypneic.
- Body built: Cachectic? Obese?
- Color: Cyncoed? Pale? Jaundice?
- Connections: to any devices: Holter monitor? Pacemaker? or intracardiac defibrillator?
- Distress: in pain, respiratory or neurological distress.
- Else: orientation, consciousness, alertness.

Hands:

- Inspect:
  - Nails → Koilonychia
  - Palmar crease → Pallor
  - Fingers → Arthropathy (haemophilia)

Arms:

- Inspect:
  - Petechia
  - Scratch marks → Myeloproliferative disease, lymphoma
  - Bruising → Thrompocytopenea
  - Pigmentation → Lymphoma
  - Ulceration → Haemoglobinopathy
- Examine:
  - Epitrochlear nodes
  - Axillary lymph node

Face:

- Inspect:
  - Sclera → Jaundice, pallor, conjunctival suffusion
  - Mouth → Gum hypertrophy (leukemia), ulcrations, infection, angular cheilitis (anemia), atrophic glossitis (anemia), tonsillar enlargement (leukemia).
- Examine: **While patient is in a sitting position**
  - Cervical nodes
  - Feel the supraclavicular area

While your pt is **sitting** feel the bones for any tenderness which indicates myeloma or carcinoma (Spine, clavicle, sternum, shoulders)

Legs: **Pt is laying in bed again**

- Inspect:
  - Petechia
  - Scratch marks → Myeloproliferative disease, lymphoma
  - Bruising → Thrompocytopenea

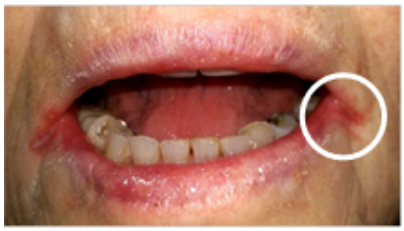
- Pigmentation → Lymphoma
- Ulceration → Haemoglobinopathy

- Examine:
  - Neurological aspect → peripheral neuropathy (Vit B12 diff)

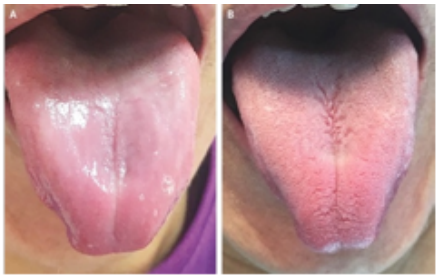
Abdomen:

- Feel for splenomegaly and hepatomegaly
- Inguinal lymph node

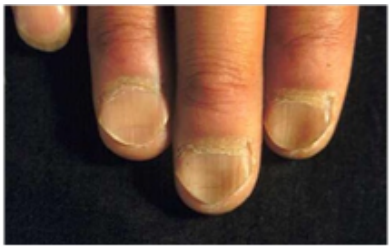
Finish your examination with rectal and pelvic examination for evidence of bleeding



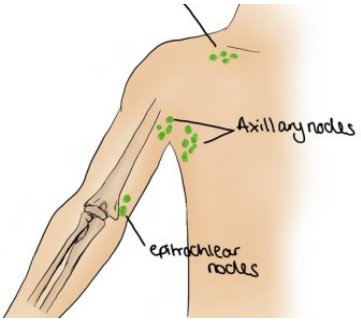
angular cheilitis



atrophic glossitis normal



koilonychia



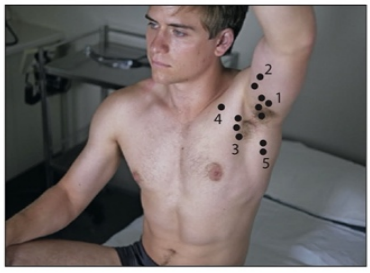


Figure 6.18 The axillary lymph nodes. 1 = central, 2 = lateral, 3 = pectoral, 4 = infraclavicular, 5 = subscapular.

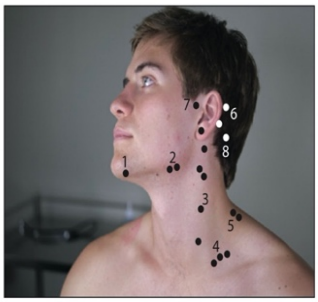
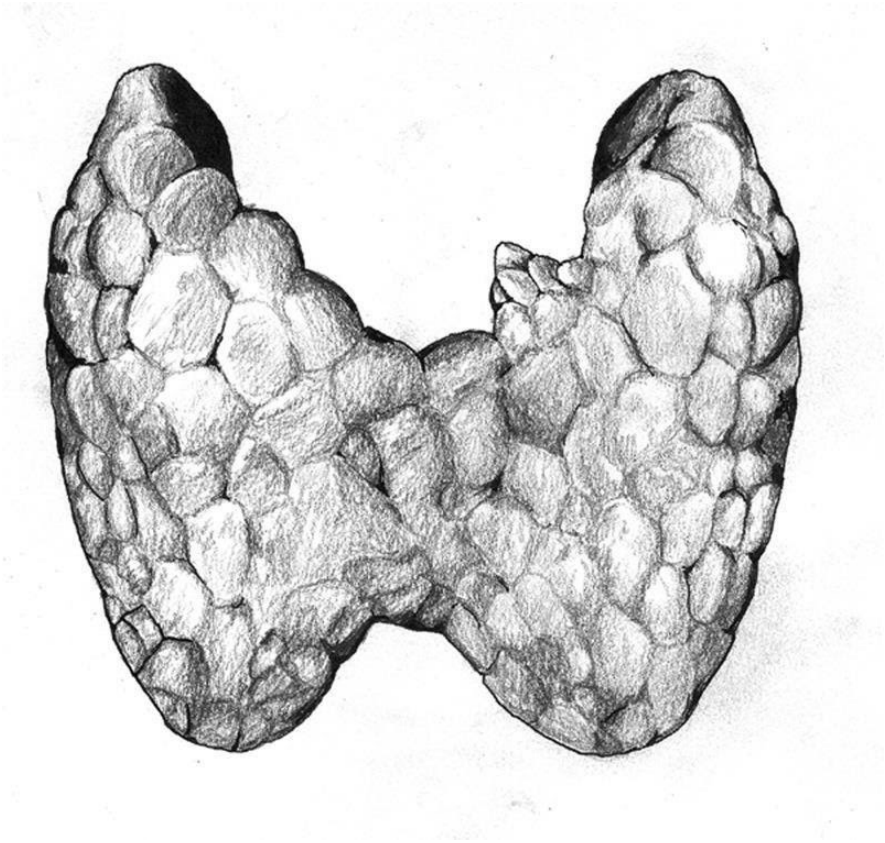


Figure 6.19 Cervical and supraclavicular lymph node groups. 1 = submental, 2 = submandibular, 3 = jugular chain, 4 = supraclavicular, 5 = posterior triangle, 6 = postauricular, 7 = preauricular, 8 = occipital.

Epitrochlear nodes	**The axillary lymph nodes:** 1= central, 2= lateral, 3= pectoral 4= infraclavicular, 5= subscapular	**Cervical and supraclavicular lymph nodes:** 1= submental, 2= submandibular, 3= jugular chain, 4= supraclavicular 5= posterior triangle, 6= postauricular 7= preauricular, 8=occipital



Endocrine System

Common presenting problems in Endocrine system

Diabetes Mellitus (DM)

The patient may come with one of the following or more:

- Polyuria
- Polydipsia
- Weight loss
- Blurred vision.

Or even they can present with either hypoglycemia episode or DKA as the first manifestation of Diabetes.

Key points to ask suspected DM patient:

- Onset.
- Duration.
- Relieving and aggravating factors.
- Frequency? of any of the above.
- Rule out other DDx of polyuria, polydipsia:
    - Drink water at the night (physiological).
    - Hx of Brain infection/surgery or tumor (central).
    - Lithium use (Nephrogenic DI).
    - Do you feel excessive thirst (psychogenic Polydipsia).
    - Diuretics intake?

If they are already diagnosed:

- Type of diabetes.
- When and how did he diagnose?
- Type of drug used (Insulin or oral hypoglycemic).
- Do they take the drug regularly? It is important to assess the compliance in each visit.
- How many times they measure it per day.
- What are the readings.
- what was the last measured HBA1C?
- Hx of any hospital admission or ICU due DM?

Ask about diabetes complications:

- Blurred vision? (retinopathy)
- Numbness? (Neuropathy)
- Angina, fatigue ? (CVD)
- Frothy urine, edema, (nephropathy).
- Recurrent skin infection, UTI, (low immunity)
- Nausea and vomiting, abdominal pain (DKA).
- Palpitation, sweating, dizziness (Hypoglycemia episode)

Risk Factors:

Past Medical History

- Autoimmune disease?
- HTN?
- Obesity?
- Steroid intake?
- Hyperlipidemia?

Social History

- Smoking, Alcohol
- Exercise
- Diet

Family history

- DM and other Autoimmune Disease?

Diabetic Ketoacidosis (DKA)

It is one of important endocrine emergencies, and it is one of complications of DM in type 1 usually but can happen in type 2 especially who are on insulin injection. Most of the time there is a trigger or precipitated factor that's why you have to ask about them in the history and take them into consideration in the management plan to prevent further episodes. Some example for circumstances you may see DKA:

- Diabetic patient who skip one of his insulin therapy.
- Diabetic patient with stressful conditions such as (Infections, Sepsis, Surgery, MI, vigorous exercise or change in diet).
- Undiagnosed diabetic patients may come to the ER with DKA as the first presentation.

The patient may come and present with one of the following or more:

- Nonspecific abdominal pain
- Vomiting and Nausea
- Polyuria, Polydipsia and weight loss
- Fatigue or weakness
- Mental status changes
- Comatose (rare)

<u>Key points to ask suspected DKA patient:</u>

- Onset (it is acute, and present to ER).
- Duration (it is ranging from hours to day or two).
- SOCRATES for pain analysis.
- Relieving and aggravating factors.
- Frequency? Of any of the above. (especially vomiting we have to dig more in history and ask him about the amount and frequency of that vomits, and don't forget to ask about symptoms of dehydration such as thirsty, palpitation and dizziness).
- Rule out other DDx of abdominal pain and vomiting and other presentation of DKA:
    - Cardiac cause such as MI can present with epigastric pain, nausea and vomiting (can co-exist with DKA as is considered as precipitated factor)
    - Acute Abdomen including obstruction or perforation or other GI cause pancreatitis, gall stone.
    - Systemic cause such as sepsis, shock, or infection (because in sever DKA may present with unstable vitals such tachypneic, hypotensive and drowsy)

<u>If they are already diagnosed:</u>

- Type of diabetes
- Type of drug used (Insulin or oral hypoglycemic)
- When and how did he diagnose?
- Do they take the drug regularly? It is important to assess the compliance in each visit.
- How many times they measure it per day? What are the readings ?
- What was the last measured HBA1C?
- Hx of any hospital admission or ICU due DM?

Ask about diabetes complications:

- Numbness? (Neuropathy).
- Blurred vision? (Retinopathy).
- Angina, fatigue? (CVD).
- Frothy urine, edema, (Nephropathy).
- Recurrent skin infection, UTI, (Low immunity).
- Foot deformity, ulcer, (Diabetic foot).
- Nausea and vomiting, abdominal pain (DKA).
- Palpitation, sweating, dizziness (Hypoglycemia episode).

Risk Factors:

You have to figure out the stressors or precipitating factor for DKA , which are most commonly one of the following:

- Having an infection, such as flu or a urinary tract infection (UTI) or even sepsis from wound infection due to diabetic foot.
- Do not follow the treatment plan, such as missing doses of insulin or decrease it.
- An injury or surgery.
- Taking certain medicines, such as steroids.
- Binge drinking alcohol or using illegal drugs.
- Vigorous exercise or sudden change in diet.
- Sometimes, there's no obvious trigger

Past Medical and Surgery History and medications:

- HTN? Hyperlipidemia? Autoimmune disease? Obesity?
- Steroid intake? Allergy?
- Surgery? Trauma?

Social History

- Smoking, Alcohol
- Exercise
- Diet

Family history

- DM and other Autoimmune Disease?

Key points to look for in PHYSICAL EXAMINATION with suspected DKA patient:

Vital signs:

- Vital signs may show various findings depending on the volume status, extent of academia, and presence of infection in the presenting patient.
- Vitals consistent with dehydration may be observed (hypotension, reflex tachycardia).
- Drowsy and alter mental states.

General Examination:

- Signs of dehydration: dry mucous membranes and poor skin turgor.
- Fruity breath odor: this is caused by the presence of acetone (a ketone) in the blood.

Respiratory exam might reveal:

- Kussmaul respirations are “classically” seen in DKA. Kussmaul breathing is a type of hyperventilation that is the lung’s emergency response to acidosis and causes a labored, deeper breathing rate.
- Signs of pulmonary infection: crackles/auditory findings on auscultation may be present in some patients.

Abdominal exam could be notable for:

- Generalized/nonspecific abdominal pain may be observed in DKA.
- Abdominal pain that might suggest pancreatitis/or other underlying abdominal pathologies.

It is important to utilize the physical exam in such patients to try and localize if there is any source of infection that requires targeted treatment.

After the patient is stabilized you can complete your examination with other systems especially Neuro-Vascular and foot examination.

Physical Signs of Endocrine System

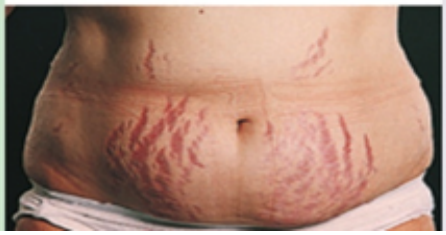
Cushing's disease/syndrome

Cushing's disease is not the same as Cushing's syndrome. Cushing disease is a specific type of Cushing syndrome. It occurs when a pituitary tumor causes the body to make too much cortisol. While Cushing's syndrome refers to the general state characterized by excessive levels of cortisol in the blood. It can occur for reasons other than a pituitary tumor, including (Tumors of the adrenal glands producing cortisol or Certain types of cancer, elsewhere in the body, can make ACTH, which is called ectopic ACTH production. The most common cause of elevated cortisol levels is taking medications that have cortisol, including: hydrocortisone, prednisone pills, skin ointments, asthma inhalers and joint steroid injections, so you have to keep all these as a differential in any patient present with a clinical picture of Cushing's.

Symptoms

- Weight gain (central)
- Change of appearance
- Depression
- Insomnia
- Amenorrhoea/ oligomenorrhoea
- Poor libido
- Thin skin/ easy bruising
- Hair growth/acne
- Muscular weakness
- Growth arrest in children
- Back pain
- Polyuria/polydipsia
- Psychosis

Old photographs may be useful



Signs

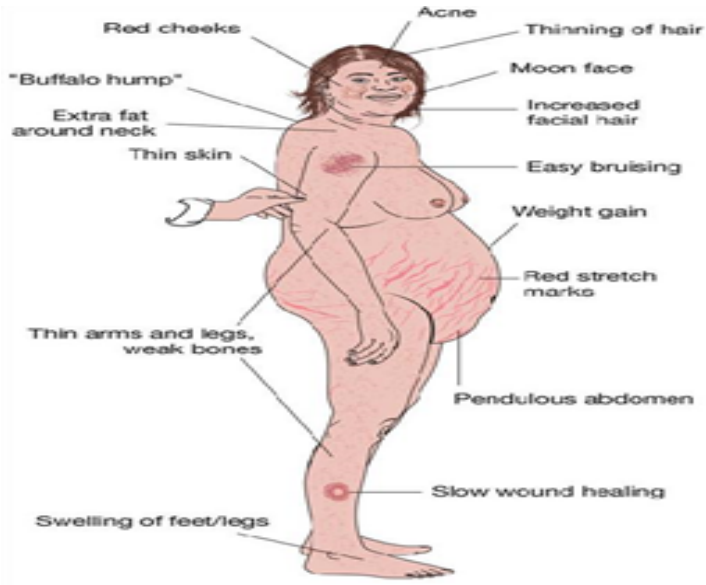
- Moon face
- **Plethora**
- Depression/ psychosis
- Acne
- Hirsutism
- Frontal balding (female)
- **Thin skin**
- **Bruising**
- Poor wound healing
- Pigmentation
- Skin infections
- **Hypertension**
- Osteoporosis
- **Pathological fractures (especially vertebrae and ribs)**
- Kyphosis
- 'Buffalo hump' (dorsal fat pad)
- Central obesity
- **Striae (purple or red)**
- Rib fractures
- Oedema
- **Proximal myopathy**
- Proximal muscle wasting
- Glycosuria

The patient may come and present with one of these listed above:

Key points to ask suspected Cushing's:

- According to the chief complain you can direct your questions toward that symptoms in details to rule out other differential dx for each symptom.
- You have to ask about all other symptoms of Cushing other than the chief complain.
- You have to try to find the underline Causes by asking about associated symptoms and risk factors such as:
    - Headaches, Vision problems, Acromegaly, Infertility and Changes in menstrual cycles in women (in case of Cushing's disease most commonly due to pituitary adenoma patient may present with pressure symptoms or with impair of other Pituitary hormones)
    - Constitutional symptoms and other symptoms such as Cough, Wheezing, Shortness of breath, Chest pain, Diarrhea and skin flushing which suggested (Ectopic ACTH-producing tumors like small cell lung carcinoma or carcinoid tumors)
    - Ask about Low potassium levels, Rapid or irregular heartbeats, Feelings of anxiety, panic, fear, Tremor and Sweating, all these symptoms may give you a hint about impaired adrenal hormones level such as aldosterone or adrenaline (which may reveal underlying Adrenal tumor).
    - Ask about Medications especially steroids in all forms (Exogenous Cushing's Syndrome due to Glucocorticoid administration)
    - Any medical conditions such Pregnancy, alcohol use disorder, morbid obesity, polycystic ovarian syndrome, end-stage renal disease, severe major depressive disorder, and poorly controlled diabetes. (All these can cause Pseudo-Cushing's Syndrome)
- Ask about Cushing's complications:
    - Metabolic syndrome, consisting of hypertension, visceral obesity, impairment of glucose metabolism, and dyslipidemia.
    - Musculoskeletal disorders, such as myopathy, osteoporosis, and skeletal fractures
    - Neuropsychiatric disorders, such as impairment of cognitive function, depression, or mania
    - Immunosuppression during active disease causes susceptibility to infections, possibly complicated by sepsis.
    - Impairment of reproductive and sexual function.
    - Dermatological manifestations, mainly represented by acne, hirsutism, and alopecia.
- If child, ask about growth is it affected or not.

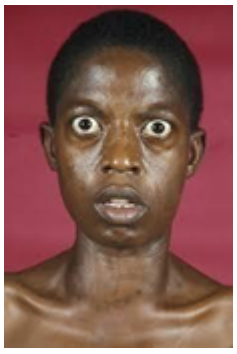
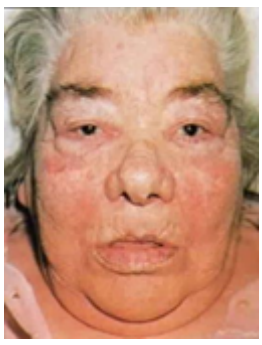
Key points to look for in PHYSICAL EXAMINATION with suspected Cushing's:

Cushing Disease/Syndrome	
	
1. General inspection	• Moon face • Hair growth (Hirsutism) • Central (Truncal) Obesity with thin extremities.
2. Eyes	• Examine the eyes for Bitemporal hemianopsia or papilledema.
3. Arms	• Proximal myopathy (examined by asking the patient to squat) • High BP
4. Face	• Frontal Balding (Female) • Facial plethora • Acne
5. Chest and Abdomen	• Gynecomastia • Purple Striae
6-Back	• Buffalo hump • Bony tenderness over the vertebra (due to osteoporosis)
7. Skin	• Poor wound healing • Pigmentations • Thin Skin/easy bruising • Skin Infections
8. Other	• Amenorrhea/Oligomenorrhea • Growth arrest in children • edema

Thyroid disease (Hyperthyroidism & Hypothyroidism)

Whenever the patient present with S/S of thyroid disease you should ask about:

- Compressive symptoms e.g. SOB, choking sensation, dysphagia, hoarseness.
- Risk factors of thyroid disease e.g. radiation, other autoimmune disease, Iodine intake.
- S/S/ of hypo- and hyperthyroidism are summarized collectively in table bellow:

	Hyperthyroidism	Hypothyroidism
Symptoms and Signs		
General	Heat intolerance, sweating, weight loss, increased appetite, malaise. Hands: Onycholysis, clubbing, sweating, warmth.	Cold intolerance, edema, mild obesity, weight gain.
CNS	Nervousness, irritability, insomnia, tremor, hyperreflexia.	Psychosis, dementia, ataxia, carpal tunnel syndrome, hyporeflexia, muscle cramps.
CVS	Palpitation, breathlessness, tachycardia.	HTN, heart failure, bradycardia, pericardial effusion.
GIT	Vomiting, diarrhea.	Constipation.
Musculoskeletal	Muscle weakness, proximal muscle wasting.	Muscular hypertrophy, proximal myopathy, myotonia.
Eyes	Staring and protrusion eyes(exophthalmos), lid lag, lid retraction,, chemosis.	Loss of hair at the outer third of the eyebrow, periorbital puffiness.
Others	Loss of libido, gynecomastia, tall stature in children, goiter.	Myxedema, Large tongue, dry thin hair, deep voice, deafness, goiter.
Pictures		

Signs only in graves: puffiness of the eyes, Exophthalmos, lid retraction, myxedema.

HypErthyroidism

Hyperthyroidism has many causes; these may involve excessive stimulation of a normal thyroid gland (eg, by thyroid-stimulating hormone [TSH], human chorionic gonadotrophin [hCG], ingestion of iodine or iodine-containing drugs), excessive hormone synthesis by an abnormal thyroid (eg, Graves disease, toxic nodular goiter), excessive release of thyroid hormones (eg, due to thyroiditis), or ingestion of excessive quantities of thyroid hormone. Most symptoms and signs are the same regardless of the cause. Exceptions include infiltrative ophthalmopathy and dermopathy, which occur only in Graves disease.

The patient may come and present with one of these symptoms and signs listed below:

Symptoms

Weight loss
Increased appetite
Irritability/behaviour change
Restlessness
Malaise
Stiffness
Muscle weakness
Tremor
Choreoathetosis
Breathlessness
Palpitation
Heat intolerance
Itching
Thirst
Vomiting
Diarrhoea
Eye complaints*
Goitre
Oligomenorrhoea
Loss of libido
Gynaecomastia
Onycholysis
Tall stature (in children)
Sweating

*Only in Graves' disease

Signs

Tremor
Hyperkinesis
Psychosis

Tachycardia or atrial fibrillation
Full pulse
Warm vasodilated peripheries
Systolic hypertension
Cardiac failure

Exophthalmos*
Lid lag and 'stare'
Conjunctival oedema
Ophthalmoplegia*
Periorbital oedema
Goitre, bruit
Weight loss

Proximal myopathy
Proximal muscle wasting
Onycholysis
Palmar erythema

Graves' dermopathy*
Thyroid acropachy
Pretibial myxoedema

*Only in Graves' disease

<u>Ask about Hyperthyroidism complications:</u>

- Osteoporosis
- Cardiac: like atrial fibrillation that increases your risk of stroke, and congestive heart failure
- Thyrotoxicosis crisis: Thyroid storm causes sudden intensification of the symptoms of hyperthyroidism and present to ER with (fever, marked weakness and muscle wasting, extreme restlessness with wide emotional swings, confusion or delirium, psychosis, coma, nausea, vomiting, diarrhea). Even may present with cardiovascular collapse and shock. Thyroid storm is a life-threatening emergency requiring prompt treatment.

HypOthyroidism

Hypothyroidism is thyroid hormone deficiency. It is diagnosed by clinical features and by low levels of thyroid hormones. Symptoms develop insidiously and typically include cold intolerance, constipation, and cognitive and/or personality changes; later, the face becomes puffy and the facial expression dull.

The patient may come and present with one of these symptoms and signs listed below:

Symptoms

Tiredness/malaise
Weight gain
Anorexia
Cold intolerance
Poor memory
Change in appearance
Depression
Poor libido
Goitre
Puffy eyes
Dry, brittle unmanageable hair
Dry, coarse skin
Arthralgia
Myalgia
Muscle weakness/stiffness
Constipation
Menorrhagia or oligomenorrhoea in women
Psychosis
Coma
Deafness

Signs

Mental slowness
Ataxia
Poverty of movement
Deafness
Psychosis/dementia (rare)

'Peaches and cream' complexion
Dry thin hair
Loss of eyebrows

Hypertension
Hypothermia
Heart failure
Bradycardia
Pericardial effusion

Cold peripheries
Carpal tunnel syndrome
Oedema
Periorbital oedema
Deep voice
Goitre

Dry skin
Overweight/obesity

Myotonia
Muscular hypertrophy
Proximal myopathy
Slow-relaxing reflexes

Anaemia

Thyroid Examination

WIP3E: Wash your Hands, Introduce yourself, Permission/Privacy/Position, Exposure.
Position: Sitting
Exposure: Complete exposure of the head and neck down to clavicles

General Appearance look for: **ABC2DE**

- Appearance:
- Body built: Cachectic? Obese?
- Color: Cyanosed? Pale? (Anemia).
- Connections: to any devices: Holter monitor? Pacemaker? or intracardiac defibrillator?
- Distress: in pain, respiratory or neurological distress.
- Else: orientation, consciousness, alertness.

General inspection:

- Look for any sign of:
  - Hyperthyroidism: Weight loss, Anxiety, Frightened facies of thyrotoxicosis, Sweaty.
  - Hypothyroidism: Overdressed, Facial myxedema, Look for signs of mental and physical sluggishness.
- Nails: Onycholysis, thyroid Acropathy (phalangeal bone overgrowth), peripheral cyanosis.
- Hands: Termer, palmar erythema.
- Pulse: Tachycardia, Bradycardia with regular or irregular rhythm.
- Arms: Ask the patient to raise the arms above the head to test for proximal myopathy.
- Tap the arm for abnormal briskness reflexes.
- Eyes: Inspect from the front, side and above to look for:
  - Exophthalmos a protrusion of the eyeball from the orbit.
  - complications of Exophthalmos: chemosis, Conjunctivitis, corneal ulceration.
  - Lid retraction: The sclera is visible above the iris.
  - Lid lag: by asking the patient to follow your finger as it descends at a moderate rate from the upper to the lower part of the visual field.
  - Periorbital edema.
- Chest: Gynecomastia (due to increased prolactin).
- Legs: pretibial myxedema, proximal myopathy, Knee reflex.

Neck Inspection:

- Look at the front and sides of the neck for any masses, scars, pigmentation, dilated veins and overlying skin
- Ask the patient to swallow and watch the neck movement: Only a goiter or thyroglossal cyst will rise during swallowing.
- Ask the patient to protrude tongue: If the mass moves it is most likely thyroglossal cyst

Neck Palpation: "Ask if there is any pain before palpation then stand behind the patient"

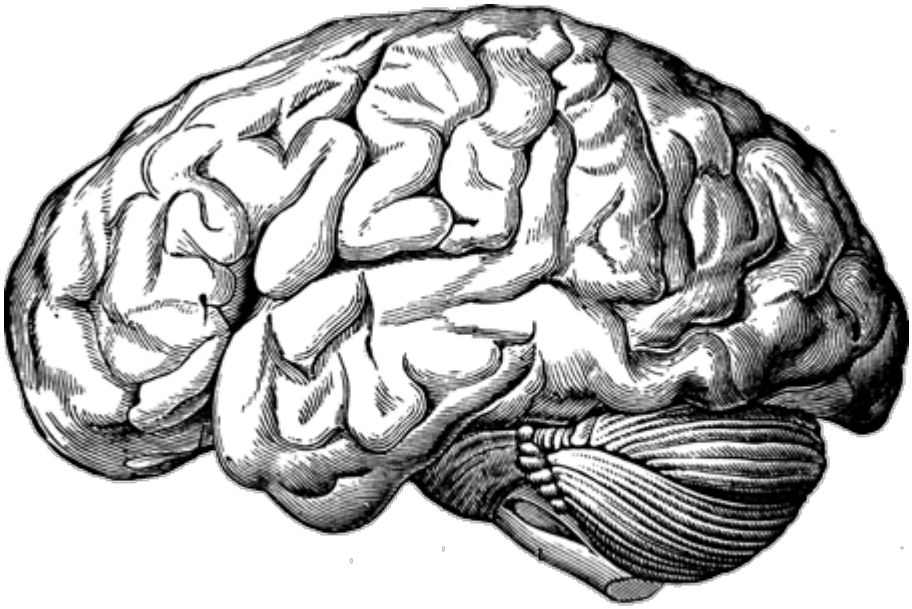
- Flex the neck slightly, put your thumbs behind the neck and the rest of your fingers in front and then palpate the thyroid lobe and the isthmus.
- Repeat the assessment while the patient swallowing and protruding the tongue.
- While you palpate the glands comment on:
    - Size: Feel particularly carefully for a lower border, because its absence suggests retrosternal extension.
    - Shape: Note whether the gland is uniformly enlarged or irregular and whether the isthmus is affected.
    - Consistency: Soft (normal), Firm (Simple goiter), Rubbery hard (Hashimoto's thyroiditis), Stony hard (carcinoma).
    - Tenderness: Feature of thyroiditis.
    - Mobility: carcinoma may be tether the gland.
- Palpate the cervical and supraclavicular lymph nodes.
- From The front: assess the trachea if it central or not

Percussion:

- Percuss over the upper part of the manubrium.
- Change from resonant to dull indicate retrosternal goiter.

Auscultation:

- Ask the patient to take a deep breath and hold it Then Use the bell to listen over each lobe for a bruit.



Neurological System

Headache

DDx

- Primary**:**
  - Migraine, Cluster, Tension, or Primary stabbing/coughing/exertional-related.
- Secondary:
  - Medications overuse, Sinus headache, Raised ICP (brain tumors, intracranial hemorrhage), Infections (meningitis, encephalitis), Inflammatory (temporal arteritis, other vasculitis, arthritis), Referred pain from other structures (Neck or orbit).

Headache			
Types	**Tension**	**Migraine**	**Cluster**
Site	Bilateral frontal pain that spread to the entire head	Unilateral (on one side might alternates)	Unilateral orbitotemporal pain (does not alternates)
Onset	• Once or twice per week • 4-6 hours	• Once or twice per months • 4 hours or more	• 1-4 per day • Episodic pain, same time every day • 15 - 180 min
Character	Band like pressure	Pulsatile or throbbing pain which gradually get worse	Intense pain
Radiation	-	Radiate to the neck on the same side as pain	No radiation
Alleviating factors	• Analgesics • Rest	• NSAIDS • Triptan	• Oxygen • Sumatriptan
Timing	Afternoon (after work)	Weekends	Morning
Exacerbation	Emotional stressors, depression, insomnia	Relation to food, emotions, meneses	Movement or activity or sleep
Severity	Not severe	Severe	Severe
Associated symptoms		Preceded by flashing lights or zig zag lines (migraine with Aura), and associated with photophobia, nausea and vomiting	Lacrimation, rhinorrhea and flushing of the forehead

Other causes of headache:

Headache cause	Characteristic
Secondary (Tumor, obstructive sleep apnea)	Comes after waking up in the morning.
Raised intracranial pressure	Generalized headache, worse in the morning, with drowsiness and vomiting.
Temporal (Giant cell) arteritis	Persistent unilateral headache over the temporal area associated with Visual disturbance (blurry vision diplopia), tenderness over temporal artery, jaw claudication, systemic symptoms such as muscle pain, fatigue, weakness and weight loss.
Meningitis	Generalized headache of gradual onset with photophobia, fever and neck stiffness.
Acute sinusitis	Headaches with pain or fullness over the cheeks, forehead or behind the eyes.
Wisdom tooth	Drinking or eating sweet, hot, or cold foods or fluids.
Subarachnoid hemorrhage	"Worst headache of my life".
Trigeminal neuralgia	Sudden attacks of stabbing unilateral facial pain, triggered by touching the face, chewing, speaking or brushing teeth.
Caffeine withdrawal headaches	Weekends "when patient usually drink coffee only at work in weekdays".
Cervical spondylitis	Headache over the occipital and neck steadiness.

Associated Symptoms
Red flags:

- Sudden onset ⇒ Subarachnoid hemorrhage, Cerebral venous sinus thrombosis, Pituitary apoplexy, Meningitis.
- Focal neurological symptoms⇒ Intracranial mass lesion.
- Constitutional symptoms⇒ Neoplastic (lymphoma or metastases), Meningoencephalitis, Inflammatory (vasculitic)
- Raised intracranial pressure (worse on weakening/laying down, associated vomiting) ⇒ Intracranial mass lesion
- New onset aged > 60 yrs ⇒ Temporal arteritis

Other symptoms:

- Fever alone with no red-flags → viral syndrome, sinusitis, meningitis.
- Nausea, Vomiting → migraine, increased ICP.
- Otalgia, hearing loss → otitis media.
- Reddened eyes, excessive lacrimation, nasal congestion, facial swelling→ Cluster headache.
- +/- Aura, photophobia → migraine.

Risk Factors related to Headache:

- Medical hx: HIV, Malignancy, HTN ,DM, Brain abscess, Stroke, Anemia, Hx of migraine, Congenital brain deformity, Hemophilia.
- Drugs: Anticoagulant, Antiplatelets, Vasodilators (Nitrates).
- Surgical hx: (specifically intracranial surgery), Trauma (posttraumatic headache), blood transfusion.
- Social Hx: Smoking, Sexual contact (HIV).
- Family Hx: Tumors, Migraine.

Signs of meningism:

- Neck stiffness: With the patient lying flat in bed, slip your hand under the occiput and gently flex the neck passively (i.e. without assistance from the patient). Bring the chin up to approach the chest wall
- Brudzinski sign: spontaneous flexion of the hips during flexion of the neck by the examiner and indicates meningism.
- Kernig's sign: Flex each hip in turn, then attempt to straighten the knee while keeping the hip flexed.

Weakness

DDx:

- CNS: Stroke, TIA, neoplasm, infection, MS, myopathies.
- PNS: Peripheral neuropathy, Guillain-Barre, Lumbar Eaton.
- Radiculopathies: compression, cervical spondylosis.

History:

Personal Data:

- Age (stroke more common elderly), occupation (heavy lifting can cause desk prolapse).

History of presenting illness:

- Site:
  - Bilateral weakness (MS, Neuromuscular junction disorders, Guillain-Barre syndrome).
  - Unilateral (Stroke) systemic (myopathy).
- Onset:
  - Sudden (Stroke, intracranial hemorrhage).
  - Gradual (Myasthenia gravis, Guillain-Barre syndrome, Hyperparathyroidism, myotonic dystrophy or spinal cord atrophy).
  - Steadily worsen (MS).
- Character:
  - Rapidly progressive descending tetraparesis (botulism, organophosphate poisoning, brainstem stroke).
  - Rapidly progressive ascending paraparesis (GBS).
  - Rapidly progressive descending paraparesis (spinal cord compression).
- Alleviating factors:
  - Exercise? (Joint disease, Lumbar eaton).
- Exacerbating factors:
  - All daily activity? (Hypothyroidism).
  - Exercise? (Muscular dystrophy, MS).
  - Heat exacerbates the symptom? (MS).
- Time Course:
  - Comes and goes? (myasthenia gravis).
  - Steadily worsen? (MS).
  - Gradually improve?
- Severity: Is the weakness preventing you from daily activity?

Associated symptoms:

- Constitutional symptoms (malignancy).
- CNS Symptoms (MS, stroke, Myasthenia gravis, brain tumor).
- Hyperthyroidism symptoms.

Risk Factors related to DDx:

- Medical history of:
  - Injury (head or spinal) Cancer, Hyperthyroidism, heavy exercise.
  - HTN, Hypercholesterolemia, vascular disease, atrial fibrillation, MI > Stroke.
  - Hematological disorders.
- Medications Hx: (drugs, allergies)
  - Hx of injection drugs or Organophosphate poisoning.
  - Estrogen use.
  - Anticonvulsants, antidepressants, anti HTN, Steroids, anticoagulants or antiplatelets drugs.
- Surgical Hx
  - Previous operations? (nerve compression/ infection).
  - Trauma, Blood transfusion.
- Social Hx:
  - Smoking?
  - Alcohol?
  - Sexual contacts? HIV.
  - Tick exposure.
- Family Hx:
  - Neurological or mental disease.
  - Other family member developed the same weakness > Botulism or Organophosphate poisoning.

Ataxia

DDx:

Acute symmetrical ataxia	Subacute/ chronic symmetrical ataxia	Unilateral ataxia
• Alcohol intoxication. • Viral infection or a post infectious syndrome. • Vestibular nerve or labyrinthine disease.	• Hypothyroidism. • Lyme disease, tabes dorsalis and prions. • Alcohol and other toxins. • Paraneoplastic syndrome. • Subacute cortical cerebellar degeneration. • Inherited condition. • Bilateral proximal leg weakness.	• Stroke. • Tumors (cerebellar glioma or metastatic tumor). • Multiple sclerosis. • Progressive multifocal leukoencephalopathy. • Congenital malformations.

History

Personal Data:

- Age, occupation.

History of presenting illness:

- Site: unilateral or bilateral?
- Onset: Acute? Subacute? Chronic?
- Time Course: Intermittent? Progressively increasing?

Associated symptoms:

- Visual blurring?
- Unclear ("scanning") speech.
- Hand in coordination.
- Tremors with movement.
- Weakness in extremities? (Subacute combined degeneration).
- Dizziness, or light-headedness (vestibular or labyrinthine disease).

Constitutional symptoms: weight loss, loss of appetite, night sweats, nausea and vomiting. (tumor).

Risk Factors related to DDx:

- Medical history of:
  - Freiderich's ataxia, malignancy, hypothyroidism, previous stroke, HTN, Hypercholesterolemia, vascular disease, atrial fibrillation, MI > Stroke, Hematological disorders.
- Medications Hx: (drugs, allergies)
  - Benzodiazepines.
  - Lithium.
  - Phenytoin.
  - Chemotherapy.
- Surgical Hx
  - Previous operations? (nerve compression/ infection).
  - Trauma, Blood transfusion.

- Social Hx:
    - Smoking?
    - Alcohol?
    - Sexual contacts? HIV
- Family Hx: cerebellar disorders?

Tremors

Types:

- Resting: oscillation occurs at rest, eg: parkinsonian tremor.
- Active: oscillation occurs or increases during voluntary movement, eg: intention tremor.
- Postural: oscillation occurs while maintaining a fixed posture against gravity or during other fixed posture (clenched fist, standing), eg: essential tremor, Enhanced physiologic tremor.

DDx

- Primary → Essential tremor, Parkinson's disease, cerebellar dysfunction, psychogenic.
- Secondary → medications (eg: amphetamines, beta agonist, TCA, lithium, caffeine), fatigue, anxiety, fear.

History of Presenting Illness:

- Site:
  - Unilateral or asymmetric? (Parkinson's).
  - Bilateral? (Essential tremor, Enhanced physiologic tremor).
  - Hand head or voice? (Essential tremor).
  - Jaw or face? (Parkinson's).
- Onset:
  - Sudden? Acute onset tremor (stroke, toxic, metabolic related, structural lesion, psychogenic).
  - Gradual? (Essential, Enhanced physiologic tremor, Parkinson's).
  - After a stressful event? (Psychogenic).
  - After new medication? (Medication related, metabolic related).
- Characteristic:
  - At rest? (Parkinson's disease, parkinsonism).
  - With posture like holding something? (Essential tremor, Enhanced physiologic tremor, toxic, metabolic related).
  - With action like drinking, eating, writing, dressing? (Essential tremor).
  - With action when reaching the target? (Cerebellum or its connections).
- Alleviating factors:
  - Alcohol (essential tremor).
- Timing:
  - Gotten worse? (Essential tremor, Parkinson's disease/parkinsonism).
  - Has it changed? (Enhanced physiologic tremor).
  - Was it unilateral and now bilateral? (Parkinson's disease).
- Exacerbating factors:
  - Stress, anxiety, fatigue? (may affect all tremor types).
- Severity: does it affect your daily life?
- Associated symptoms:
  - Stiffness, slowness, gait changes? (Parkinsonism).
  - Stress, anxiety? (Enhanced physiologic tremor).
  - Weight loss, diaphoresis, heat intolerance, palpitation? (thyrotoxicosis).
  - Seizure, delirium, hallucination, tremulousness (alcohol withdrawal).
  - Diaphoresis, anxiety, palpitation, confusion, seizure? (hypoglycemia).
  - Cognitive impairment, visual hallucinations? (Lewy body dementia).

- Constitutional symptoms?
- Risk Factors:
    - Medical history: DM? (hypoglycemia).
    - Medications?
    - Social history: hx of alcohol? (alcohol withdrawal). hx of smoking?
    - Family history: tremor? (essential tremor).

Loss of Consciousness (LOC)

DDx:

- Cardiac syncope:
  - Arrhythmias e.g. → Ventricular arrhythmias, SA node or implanted device dysfunction, SVT, inherited syndromes (e.g. Long QT, Brugada).
  - Structural cardiopulmonary disease e.g. → Valvular, myocardial (e.g. HOCM, MI), cardiac tamponade, pulmonary embolism/HTN, acute aortic dissection.
- Non-cardiac syncope:
  - Reflex (neurally mediated) → Vasovagal syncope, situational syncope.
  - Orthostatic → Dysautonomia (e.g. Baroreflex failure, diabetic Dysautonomia), hypovolemia.
  - Neurogenic → Seizures, TIA/stroke, migraine.
- Metabolic → hypoglycemia.
- Psychiatric (hyperventilation).
- Drug induced.

First you must distinguish Syncope from other causes of loss of consciousness (LOC) e.g. seizures, intoxications etc…

Questions to ask:

- Was there a loss of consciousness? If no → could be Vertigo, Presyncope, Lightheadedness, Disequilibrium, etc…
- If the answer for Q1 was yes, then ask; was it brief and self-limited? If no → Coma, Intoxication, Sleep disorders, etc…
- If the answer for Q2 was yes, then it could be syncope or seizure.

Clues help you differentiate syncope from seizures:

- Seizure: had seizures before? sense of déjà vu1 or jamais vu2 before episodes? anyone noted head turning, being unresponsive, jerking limbs, unusual posturing or being blue during an episode? Wake up with No memory of the episode, confused and drowsy? woke up with a tongue cut after the episode
- Syncope: ever had lightheaded spells? Sweet or have SOB before spells? pallor?

REMEMBER: The onset is rapid, the duration is brief, and the recovery is spontaneous and complete, this is <u>what characterizes syncope</u>.

Taking History:

Personal Data: Age → above 40, male (Common IHD)

History of presenting illness:

- Was it complete loss of consciousness or just a drop attack? If just a drop attack → TIA.
- Was it brief and self-limited?
  - If no → Coma, Intoxication, Sleep disorders, etc…
  - If Yes → Syncope or Seizure.
- Have you had light-headed spells? Syncope.

Before the attack	
Was there any triggers?	• Changing position from sitting to standing: orthostatic hypotension • Sitting or lying down: cardiac problems, orthostatic hypotension • During heavy exercise: aortic stenosis • Syncope with arm exercise: subclavian steal • During urination, coughing, defecation, swallowing: situational syncope • Emotional response (fear, anxiety): vasovagal syncope • Migraine attack • Severe facial or throat pain: glossopharyngeal neuralgia.
Was there any warnings?	• Nausea, ringing in the ears: vasovagal syncope • Palpitation, chest pain and SOB: cardiac syncope. • Sweating, weakness and confusion: hypoglycemia • Olfactory (aura), sense of deja vu: seizure
Was there any color changes?	• Pallor → syncope • Cyanosis → Seizures

During the attack	
How long did the attack last?	• Seconds: syncope. • Minutes: seizures.
Has anyone seen the episode noticed jerking movements (tonic-clonic movements)?	If the answer is yes, it is most likely seizure.
Have you bitten your tongue?	
Have you pass urine or faeces during the attack?	
Have you injured yourself?	

After the attack	
Did you wake up feeling normal or drowsy? Or how long did it take for full recovery?	• Normal or immediate recovery → syncope. • Drowsy or delayed recovery → seizures.
Did you have confusion, headache and loss of memory after the attack, muscle pain?	Indication of seizure.

Associated symptoms:

- Constitutional symptoms.
- Cardiac and CNS system symptoms.
- Vasovagal syncope: Episodes occur in hot crowded environments, with prolonged standing? After experiencing intense pain, fear, or emotion? Preceded by a prodrome of symptoms such as dizziness, nausea, and diaphoresis? Pale during or after the episodes?
- Aortic stenosis: angina, dyspnea on exertion? -Hypertrophic cardiomyopathy: family + young age + hx of sudden cardiac death + syncope after exertion?
- ACS: family hx of CAD, angina, etc…?
- Aortic dissection: abdominal and back pain?
- TIA: double vision, difficulty speaking, dysarthria or weakness or numbness on one side of the body?
- Vertigo: sensation that room spinning.

Risk Factors:

- Medical hx:
    - History of Epilepsy, Stroke, TIA, Cardiac diseases, Parkinson's disease (autonomic neuropathy) any chronic disease as HTN (syncope due to antihypertensive drugs), diabetes and CKD (syncope due to hypoglycemia).
    - Autonomic insufficiency, Addison's disease, pheochromocytoma (orthostatic hypotension).
- Drugs:
    - Cardiovascular: B-blockers, Vasodilators (alpha-blockers, CCB, hydralazine, Nitrate, ACEI), Diuretics, centrally acting antihypertensives? clonidine, methyldopa, cardiac antiarrhythmic.
    - CNS: Antidepressants (tricyclics, monoamine oxidase inhibitors), Antipsychotics (phenothiazines), Sedatives (barbiturates, ethanol), Antiparkinsonian agents, Anxiolytic agents (benzodiazepines), Antiepileptics.
- Surgical hx:
    - Hx of cardiac surgery or head trauma.
- Social hx:
    - Smoking.
- Family hx:
    - Same episode, Hx of tumors.
    - Cardiac disease or sudden death.

Altered mental status (AMS)

DDx:

- Cerebrovascular (Stroke, TIA, Epidural hematoma, subdural hematoma, subarachnoid hemorrhage)
- Traumatic (head trauma, pelvic fracture)
- Neurologic (dementia, delirium, postictal)
- Cardiac (MI, arrhythmia, CHF)
- Pulmonary (PE, hypoxia, carbon monoxide poisoning)
- Metabolic (Hyperglycemia, Hypoglycemia, Hypernatremia, Hyponatremia, Dehydration -volume depletion-, Hypothermia, Hypercalcemia, Hypocalcemia, Hypercapnia, Hepatic encephalopathy, Uremia, Hyperthermia, DKA)
- External (Alcohol withdrawal, Alcohol toxicity, Drug toxicity, Drug withdrawal)

Associated symptoms:

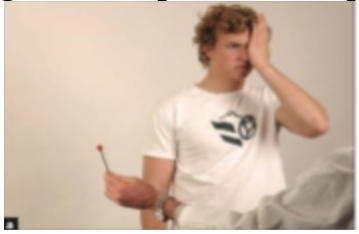
- Constitutional symptoms.
- CNS symptoms: Seizures, syncope, dizziness, vertigo, confusion, lethargy, Facial, Headache neck, back pain, neck stiffness, Problem in the special senses: vision, smelling, tasting, hearing, speech and swallowing. Numbness, paraesthesia, loss or altered sensation, weakness, Involuntary movement
- Uremic symptoms: Oliguria, nocturia, or polyuria. Anorexia, metallic taste, vomiting, fatigue, hiccups, and insomnia. Edema, itch, bruising, pallor, pigmentation.

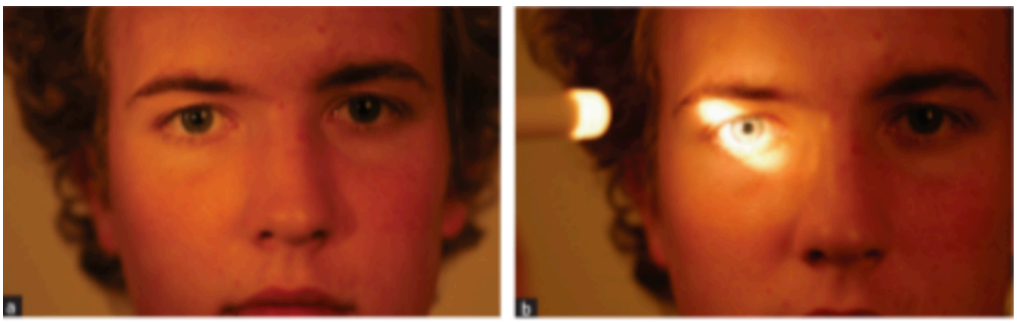
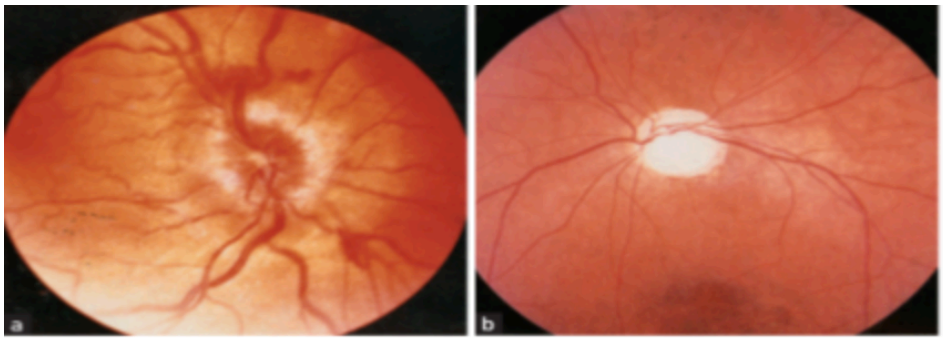
Risk Factors related to DDx:

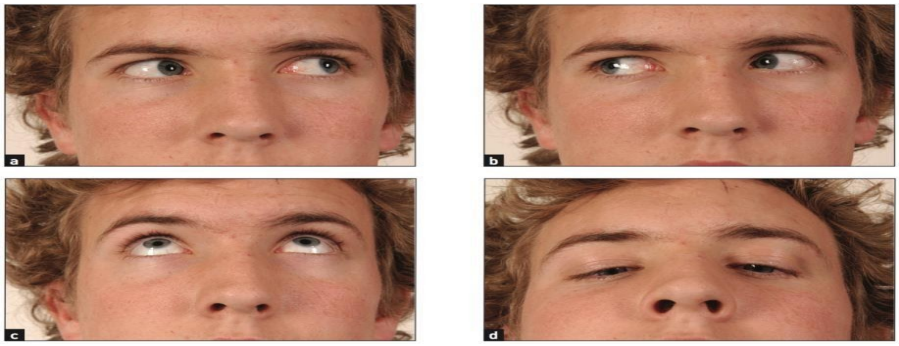
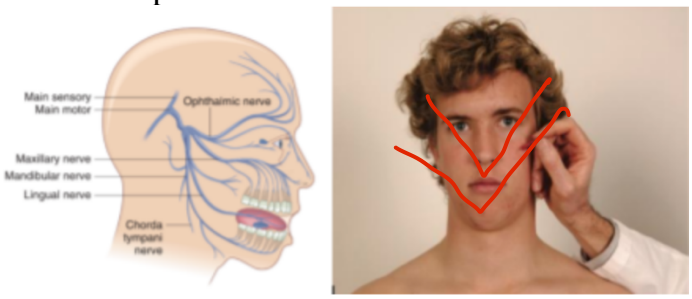
- Medical history:
    - Previous history of Confusion.
    - Have you been diagnosed with DM, HTN, HL.
    - History of TIA and stroke.
    - History of Renal failure.
    - History of liver failure (liver cirrhosis + Hepatitis).
    - History of CNS Malignancy or mass.
    - History of encephalitis.
    - Have you been diagnosed with Alzheimer.
- Medication: Morphine
- Allergy
- Any previous surgery
- History of blood transfusion
- History of head trauma
- Social history: drug abuse , alcohol
- Family history of confusion and stroke

Cranial Nerves Examination

WIP3E: Wash your Hands, Introduce yourself, Permission/Privacy/Position, Exposure.

Cranial Nerve	The Examination Steps
1st-Olfactory (Sensory)	1. Inspect the nostrils (external appearance + vestibule) using a torch. 2. Ask the patient to smell: a) Ask to identify items with specific odors (e.g. soap, coffee, alcohol wipes) b) Each nostril is tested separately by asking the patient to close the other.
2nd-Optic (Sensory)	AFRO → with 3 steps in each. 1- Examine *visual acuity* A. Distant vision using ⇒ Snell's Chart; a) With the patient wearing his\her glasses, test each eye separately. b) If he couldn't recognize the largest letter on the chart → ask him to count your fingers → if fail; then perception of hand movement is tested → if this failed → test for light perception with a torch. B. Colour vision using ishihara plates. --- 2- Examine *Visual fields by* ⇒confrontation method A. Visual Inattention: With both eyes open; ask the patient to focus on you (ex: tell them to look at your forehead or nose), hold your fists out laterally to each side and ask them to point at the fist which is opening and closing. B. Visual Fields: 1. Remove the patients' glasses. 2. Patient's head should be at the level of your head, and the distance must be approximately 50cm. 3. Examine each eye separately using a white or red tipped pin or pen. 4. Close the patient's left eye and ask him\her to look at your right eye and vice versa. You should also close your opposite eye. 5. Hold the pin at arm's length, halfway between you and the patient, start just outside your peripheral vision then bring it medially until the patient can see it. 6. Check the 4 quadrants and the middle field and make sure the patient is looking at your eye and seeing the pin from his/he peripheral vision. C. Blind spot: 1. The blind spot can be mapped out by asking about the disappearance of the pin around the center of the field vision of each eye. 2. Enlarged blind-spot indicates papilledema.  

2nd-Optic (Sensory)	3- Pupillary Reflex (*Optic is the afferent AND the efferent is the Oculomotor*) a) *Direct*: the pupil constrict in the examined eye. b) *Indirect (consensual)*: the pupil constricts in the other eye. 1. Ask the patient to look forward and bring the torch from the side, look for the direct and indirect response. 2. Make sure to test both eyes for direct and indirect.  (a) The pupils: inspect for size and symmetry (b) Testing the pupillary reflex c) *Swinging light test* or *Marcus Gunn papillary sign:* 1. Move the torch in an arc from pupil to pupil. 2. If there is abnormality, the affected pupil will dilate paradoxically after a short time when the torch moved from the normal eye to the abnormal one. This is called afferent pupillary defect. d) Accommodation reflex: Ask the patient to look at a far object then put a pin in front of his\her eye (the distance approximately 30cm) and observe the pupil. Normally there is constriction of both pupils. --- 4- Optic disc: *examine the eye fundus using ophthalmoscope* Assess optic disc (for any papilledema, atrophy), retinal vessels, macula, and retina (for any changes, ex: hemorrhages or exudates, especially diabetic and hypertensive).  (a) Papilloedema (b) Optic atrophy

3rd-Oculomotor (Motor) 4th-Trochlear (Motor) 6th-Abducens (Motor)	1. Inspect for: a. Pupil size, shape, symmetry b. Ptosis c. Abnormal eye movement d. Eye deviation 2. Eye Movement a) Ask the patient to follow your finger without moving his/her head: test the 6 cardinal points in (H) pattern. b) Move your finger in (X) shape to check for superior and inferior oblique muscles. c) Asses if there is failure in eye movement, diplopia, or nystagmus in any direction. 
5th-Trigeminal (Mixed)	1. Inspect temporalis, masseter, and pterygoid for muscle wasting. 2. Sensory: Has three divisions: Ophthalmic, Maxillary and Mandibular. a) Ask the patient to close his/ her eyes. b) Examine it by using a piece of cotton to assess light touch, and pinhead to assess pain and compare each side with the other.  3. Motor: Muscle of mastication: temporalis, masseter, and pterygoid. a) Ask the patient to clench the teeth and palpate the masseter. You can assess the strength by asking the patient to bite forcefully on to a wooden tongue depressor with the molar teeth, and the depth on each side gives indication of relative strength of muscle. b) Ask the patient to open the mouth (pterygoid) and hold it open while the examiner attempts to force it shut, and note any deviation (toward the side of the lesion).  Figure (5): Clench your jaw'—feel the masseter muscles

5th-Trigeminal (Mixed)	4. Reflexes: 1. Corneal reflex: a) Lightly touch the cornea with a wisp of cotton brought to the eye from the side. b) The normal response is blinking of both eyes. c) Ask the patient whether he\she feels the touch or not. d) Afferent: ophthalmic division of trigeminal. e) Efferent: facial nerve. 2. Jaw reflex (masseter reflex): a) Ask the patient to let the mouth fall open slightly. b) Place your index on the tip of the jaw and tap it lightly with a hammer. c) Normally there will be a slight closure of the mouth or no reaction at all. 
7th-Facial (Mixed)	1. Inspect for facial asymmetry by looking for drooping at the corner of the mouth, smoothing of the wrinkled forehead, and the nasolabial fold. 2. Test muscle power: a) Ask the patient to look up so as to wrinkle the forehead. b) Ask the patient to puff out the cheeks. c) Ask the patient to shut eyes tightly and try to force open each eye. d) Ask the patient to smile and show you their teeth.  3. Examining the taste is not usually require but if necessary can be done by asking the patient to protrude the tongue and placing sugar, vinegar, slate, and quinine (sweet, sour, saline, and bitter) one at a time on each side of the tongue. The mouth is rinsed with water between each sample.

Laterization indicate
Ipsillateral conductive loss
Contralateral sensorineural loss

Weber

8th-Vestibulo-cochlear (Sensory)

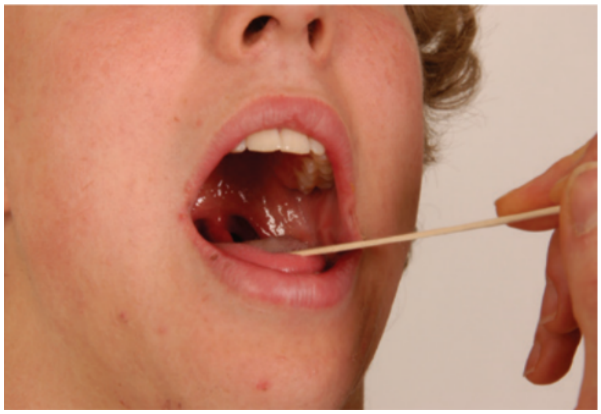
1. Look to see if the patient is wearing a hearing aid; if so, remove it.
2. Examine the pinna and look for scars behind the ear.
3. Feel for nodes (pre- and post-auricular).
4. Inspect the external auditory meatus and pull the auricle up and backwards before inserting the otoscope to examine the tympanic membrane (eardrum) for inflammation or perforation and look for wax or other obstructions.
5. Test for hearing by covering one ear and whispering a number in the other ear; "68" for high tone and "100" for low tone.
6. Perform Rinnes and Weber's test:

	Weber's test	Rinne's test
Technique	Hold the base of a vibrating tuning fork against the vertex.	Hold the base of a vibrating tuning fork against the mastoid process.
Conductive deafness	Sound is louder in the affected ear, since distraction from external sounds is reduced in that ear.	Bone conduction is better than air conduction.
Nerve deafness	Sound is louder in the normal ear.	Both bone and air conduction are impaired.

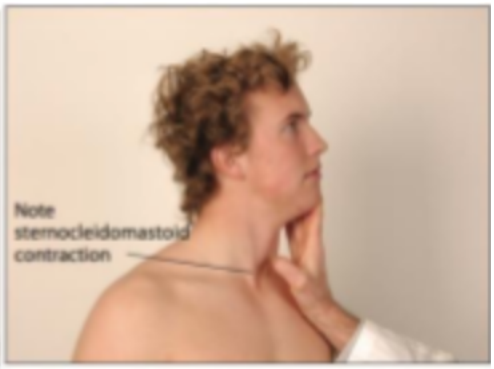
9th Glosso-pharyngeal (Mixed)

10th-Vagus (Mixed)

1. Inspection:
   a) Ask the patient to open his/her mouth to inspect the palate, then say "AAH" to observe the soft palate with a torch (should be symmetrical if there is a lesion the soft palate is pulled to the normal side).
   b) Ask the patient to cough and look for any bovine cough.
   c) Ask the patient to speak to assess hoarseness.
   d) Ask the patient to take a sip of water and swallow it, and look for any coughing or regurgitation into the nose.



2. Reflexes
   a) Gag reflex (ninth is the sensory component and tenth is the motor): by depressing the patient's tongue and touching his\her palate, pharynx or nostril.
   b) Compare with the other side.

11th-Accessory (Motor)	1. Muscle power: a) Sternocleidomastoid: a) Ask the patient to rotate his/her head to the side against resistance. b) Compare the power on each side. b) Trapezius: a) Ask the patient to shrug shoulders and hold them in position against resistance. b) Compare the power on each side.  Figure (12)  Figure (13)
12th-Hypoglossal (Motor)	1. Inspection a) Ask the patient to open his/her mouth, and inspect the tongue for: – Atrophy: increase folds or wasting. – Fibrillation: fine, irregular, non-rhythmic muscle fiber contractions). b) Ask the patient to protrude tongue, note any difficulty or deviation (the tongue deviates toward the weaker/affected side). c) Place your finger on the patient's cheek and ask to push their tongue against it.  Figure (14)

Cranial Nerves Lesions

Problems with smell:

Damage to the olfactory pathway will cause diminished sense of smell (Anosmia):

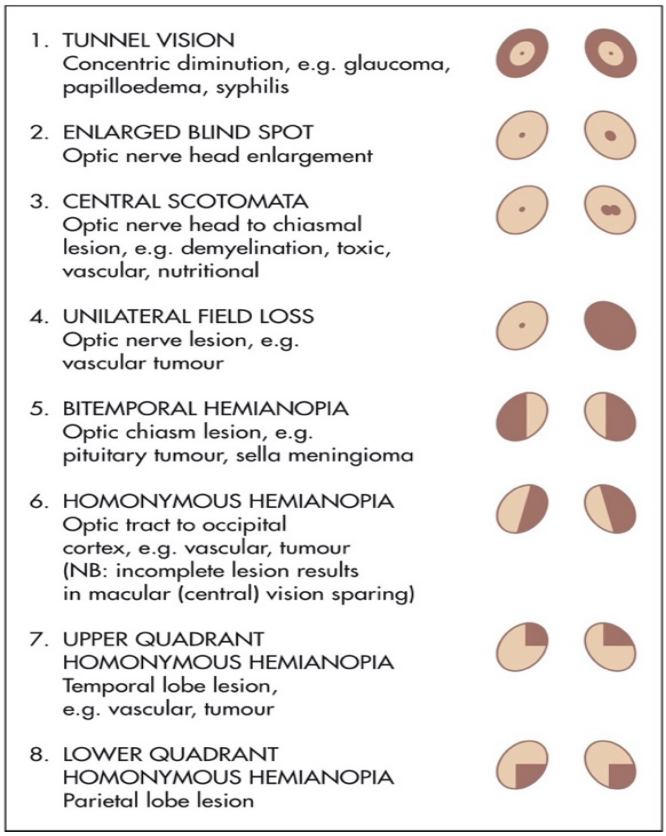
- Transient (non-neural): upper respiratory tract infection.
- Trauma i.e. basal skull fracture.
- Tumor (e.g. Olfactory groove meningiomas).

Problems with vision: Caused by damage to CN II, CN III, CN IV or CN VI.

Acuity:

Sudden blindness in one eye	Gradual onset bilateral blindness	Rapid onset bilateral blindness
1. Retinal artery or vein occlusion. 2. Temporal arteritis. 3. Non-arteritic ischaemic optic neuropathy. 4. Optic neuritis or migraine.	1. Cataracts. 2. Acute glaucoma. 3. Macular degeneration. 4. Bilateral optic nerve or chiasmal compression.	1. Occipital lobe: bilateral infarction or trauma. 2. Optic nerve: bilateral damage with methyl alcohol poisoning. 3. Hysteria.

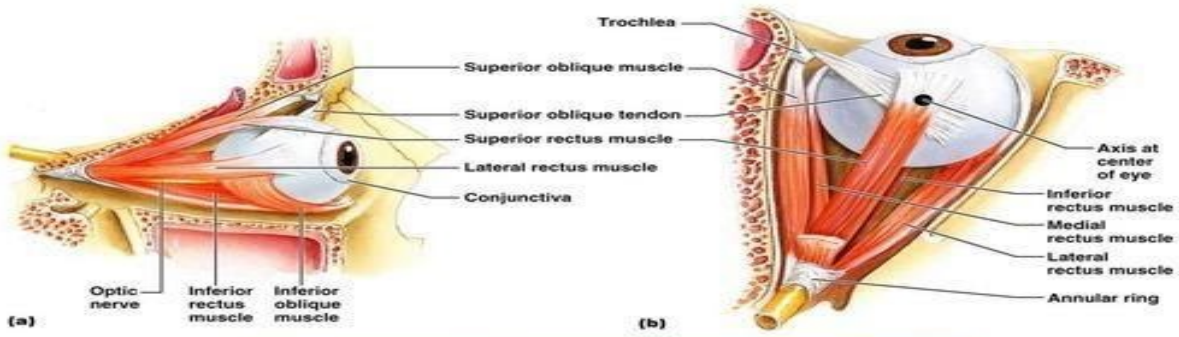
Fields:



Reflexes:

1. *If afferent defect (i.e. Optic nerve lesion):* pupils are symmetrical but when the light is shined in affected eye => neither pupils constrict.
2. *If efferent defect (i.e. Oculomotor lesion):* affected pupil is persistently dilated, while the normal one is reactive to light being shined in either eye.

Movement:

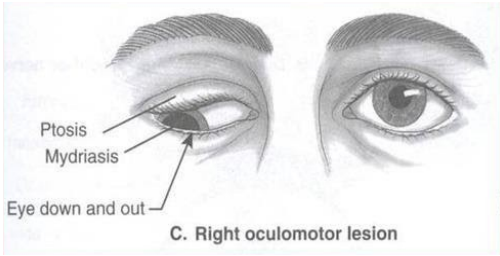


(c)

Name	Action	Controlling cranial nerve
Lateral rectus	Moves eye laterally	VI (abducens)
Medial rectus	Moves eye medially	III (oculomotor)
Superior rectus	Elevates eye and turns it medially	III (oculomotor)
Inferior rectus	Depresses eye and turns it medially	III (oculomotor)
Inferior oblique	Elevates eye and turns it laterally	III (oculomotor)
Superior oblique	Depresses eye and turns it laterally	IV (trochlear)

1. Oculomotor lesion:

- No levator palpebrae superioris >> *ptosis*
- No parasympathetic innervation >> *dilated, fixed pupil* (loss of light reflex) and *paralysis of accommodation*.
- No extraocular muscles, except: lateral rectus is intact >> *eye goes lateral* + superior oblique is intact >> *eye down*.

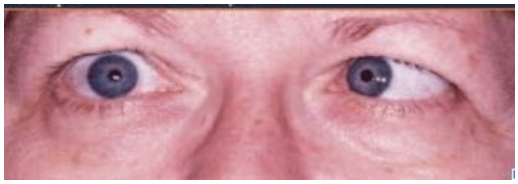


2. Trochlear lesion:

- No superior oblique → eye deviate *upward and medially*.
- Weakness of downward gaze → *double vision when looking down*.
- A compensatory *contralateral head tilt* (head tilted away from lesion).

3. Abducens lesion:

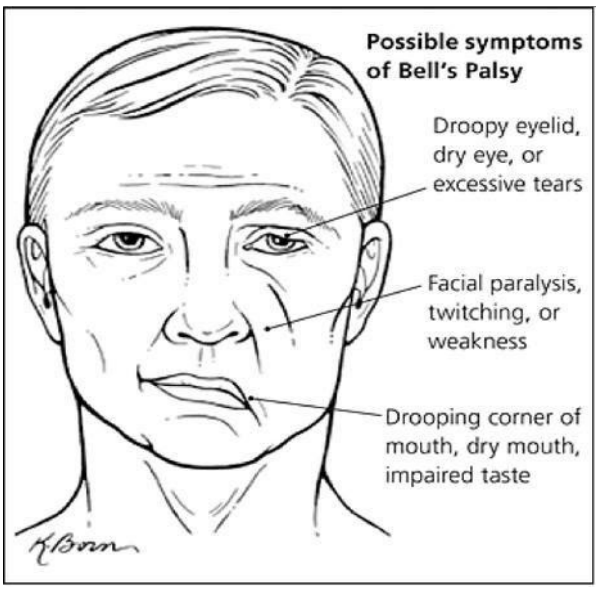
- No lateral rectus → eye goes *medially*.



Facial palsy:

- **Causes of facial palsy:**
  - Bell's palsy (idiopathic or HSV1 infection)
  - Ramsay Hunt syndrome.
  - Trauma
  - Tumor e.g. acoustic neuroma

- **Key points in hx:**
  - Difficulty with *speaking*?
  - Abnormal *hearing*? Hyperacusis
  - Change of the *taste*? Anterior 2/3 of the tongue.
  - *Dryness* of the eye and mouth?
  - Painful vesicular rash of the pinna and the ear canal? Ramsay hunt syndrome
  - Any *trauma (esp temporal bone), brain tumor, surgery*?
  - Hx of *otitis media*.



Motor System Examination

WIP3E: Wash your Hands, Introduce yourself, Permission/Privacy/Position, Exposure. Position: Sitting (UL exam), laying down (LL exam).

1.Inspection

- Ask the patient to stand and assess the posture (abnormal ex: hemiplegia).
- Look for muscle wasting, fasciculations, deformities, abnormal movements (ex: tremor).
- Ask the patient to close his/her eyes and hold out both hands with palms facing upwards then look for pronator drift.
- Inspect the skin for scars, striae or evidence of neurofibromatosis, herpes zoster.

2. Tone

The resistance felt by the examiner when moving a joint passively through its range of movement.

1. Ask the patient to relax to allow you to move his\her joint freely (choose the big joints).
2. Start from the distal then proximal or vice versa.
3. Note the group of muscle affected.
   - Normally, there is smooth minimal passive resistance.
   - Hypotonia occur with LMN lesions.
   - Whenever there is resistance to movement (hypertonia), think of the two most common issues: spasticity and rigidity.
     - ✓ Spasticity: More resistance in one direction than the other, velocity dependent (i.e. more noticeable with fast movements).
     - ✓ Rigidity: Same resistance in all directions, not velocity dependent.

3. Power

The ability to make a resistance.

1. Tested by measuring the examiner's ability to overcome the patient's full voluntary muscle resistance and always compare right to left.
2. For every joint, you have to move it in all its directions of movement.
   - If there is weakness then → Decide if it is symmetrical or asymmetrical + group of muscles or general + with pain or not?
   - Use **MRC scale** to grade the power:
     - Grade 0: No movement.
     - Grade 1: Flicker of contraction.
     - Grade 2: Active movement possible with gravity.
     - Grade 3: Active movement possible against gravity.
     - Grade 4: Active movement against gravity and resistance.
     - Grade 5: Normal power.

Raise the patient's hand up and leave it. If it falls, the power is less than 3, but if not, apply resistance on it.

Lower Limbs	Upper Limbs
1. Hip: a. Flexion (L2&3) by psoas and iliacus. b. Extension (L5,S1&2) by gluteus maximus c. Abduction (L4,5&S1) by gluteus medius, minimus, sartorius and tensor fasciae latae. d. Adduction (L2,3&4) by abductor longus, brevis, and magnus. 2. Knee: a. Flexion (L5&S1) by hamstrings. b. Extension (L3&4) by quadriceps. 3. Ankle: a. Plantar flexion (S1&2) b. Dorsiflexion (L4) 4. Tarsal joint: a. Big toe extension (L5) b. Eversion and inversion (L5&S1) Quick tests: • Stand on toes (S1). • Stand on heels (L4 &5). • Squat and stand again (L3&4).	1. Shoulder: a. adduction (C6, 7and 8) mostly by pectoralis major and latissimus dorsi. b. Abduction (C5and 6) mostly by deltoid and supraspinatus. 2. Elbow: a. Flexion (C5&6) by the biceps and brachialis. b. Extension (C7&8) by the triceps. 3.Wrist: a. Flexion (C6&7) by flexor carpi ulnaris and radialis. b. Extension (C7&8) by extensor carpi group. 4. Fingers: a. Flexion and extension (C7&8) b. Abduction and adduction (C8&T1). c. Thumb opposition

4. Reflexes

Sudden stretching of a muscle usually evokes brisk contraction of that muscle or muscle group.

- The patient must be relaxed and properly positioned.
- Make sure that you expose the targeted muscle "If a gross movement can't be noticed, focus on muscle contraction".
- If the reflex did not appear properly, apply reinforcement maneuvers:
  - Ask patient to close his eyes or teeth firmly.
  - Ask patient to pull one hand against the other.

✓ Grades of muscle reflex:

- 0 absent
- +1 reduced (hyporeflexia)
- +2 normal
- +3 exaggerated (hyperreflexia)
- +4 exaggerated with clonus (brisk)

Lower Limbs reflexes	Upper Limbs reflexes
1. Knee reflex (patellar reflex L3&4): a. Hold the knee by your forearm. b. Tap on the patellar ligament (between patella and tibial tuberosity). c. Normally the quadriceps will contract, resulting in knee extension. 2. Ankle reflex (S1&2): a. Both the knee and ankle are flexed 90° and the thigh is externally rotated. b. Tap on the Achilles tendon. c. Normally there will be contraction of gastrocnemius muscle causing plantar flexion. 3. Plantar reflex(Babinski sign): a. Tell the patient what you will do. b. Stroke up the lateral side of the sole with a sharp instrument such as a key. c. Curve medially before reaching the toes (i.e. toward the big toe) d. Normally there will be a plantar flexion of the big toe (downwards). e. Abnormal response (i.e.positive test) if there is dorsiflexion (extension or upward flexion) of the big toe, and fanning of other toes. Seen in UMN lesion (pyramidal) and in infants. f. Bilateral up going toes occurs after generalized seizure, and with a patient in coma. 4. Test for clonus: a. Done if any of the reflexes appeared hyperactive. b. Hold the relaxed lower leg in your hand, and sharply dorsiflex the foot and hold it dorsiflexed → Normally nothing is felt. c. Positive if you felt oscillations between flexion and extension of the foot.	1. Biceps jerk (C5&6): a. Angle of the elbow: 120°. b. Place your thumb on the biceps tendon and tap your thumb with the hammer. c. Normally: • Brisk contraction of the biceps. • Flexion of the forearm at the elbow, followed by prompt relaxation. 2. Triceps jerk (C7&8): a. Angle of the elbow 90°. b. Triceps jerk with one arm flexed. c. Support the elbow with one hand and tap over the triceps tendon (do not place your finger). d. Normally there will be triceps contraction that results in forearm extension. 3. Brachioradialis (supinator) jerk (C5&6): a. Strike the lower end of the radius just above the wrist. b. Normally there will be contraction of brachioradialis, and flexion of the elbow. 4. Finger jerk (C5): a. The patient rests the hand with the palm upwards and fingers slightly flexed. b. Place you hand over the patients and strike the hammer over your fingers. c. Normally a slight flexion of all the patient's fingers occurs. 3. Hoffman response: a. Place your right index finger under the distal interphalangeal joint of the patient's middle finger. b. Use your right thumb to flick the patient's finger downwards. c. Look for any reflex flexion of the patient's thumb.

Difference between upper and lower motor neuron lesion:

	Upper motor Neuron	Lower motor Neuron
Type of paralysis	Spastic paralysis	Flaccid paralysis
Location	Opposite to the side of the lesion	Same side of the lesion
Deep tendon reflexes	Exaggerated	Diminished or Absent
Muscle wasting	Not marked (disuse atrophy)	Marked
Fasciculations	Absent	Present
Colonus	Present	Absent
Babinski sign	Present	Absent

Sensory System Examination

- Always start distally and go proximally.
- Compare left to right.
- The patient's eyes should be closed throughout the sensory examination and the stimuli should routinely be applied lightly so that minor abnormalities can be detected.
- Always use a control point “i.e. a normal area, such as the anterior chest wall” before you start testing for each sensory type.

1. **Pain**
   - Using a new pen, a sterile needle or broken tongue depressor.
   - First: Demonstrate to the patient that this induces a relatively sharp sensation by touching lightly a normal area, such as the anterior chest wall (sternum).
   - Then ask the patient to close his eyes and say whether the pinprick is sharp or dull.

2. **Temperature**
   - This test performed only in special circumstances, e.g. syringomyelia(a chronic progressive disease of the spinal cord associated with sensory disturbances, muscle atrophy, and spasticity).
   - Use a cold tuning fork.
   - Ask the patient to close his eyes. Touch the patient with it and ask if he/she perceives the vibration fork as cold.

3. **Vibration**
   - Using a tuning fork (128-Hz) strike it on your palm.
   - Place the vibrating fork on the patient sternum, so the patient can appreciate the vibration.
   - Ask the patient to close the eyes, and place the vibrating tuning fork on bony prominence starting from distal and moving to proximal if vibration is not felt (big toe->medial malleolus->patella, distal interphalangeal joint of the fore finger->metacarpophalangeal-> wrist…)
   - The patient should be able to describe a feeling of vibration.
   - Ask the patient to report whether they feel vibration sense and then to report when it stops (to assess the minimal threshold) and compare with your own.
   - Golden base: do not go to proximal sites unless distal sites are abnormal.

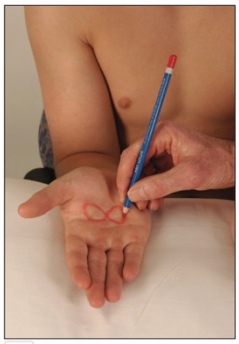
4. **Proprioception** (Joints)
   - Use the distal interphalangeal joint of the little finger or the big toe.
   - Demonstrate to the patient initially with eyes open that you will be moving their digit up (towards their head) or down (towards their feet).
   - Ask the patient to close his eyes → then make minimal movements upwards or downwards and ask the patient to report after each movement the direction of movement.

5. Light touch

- Use a wisp of cotton and apply a gentle touch (do not drag the stimulus). while the patient's eyes are closed, and let him tell you when he feels the touch

6. Graphesthesia

- Ask the patient to close their eyes.
- With a pencil draw a number or a letter on the patient's palm and ask him to identify the figure.



7. Stereognosis

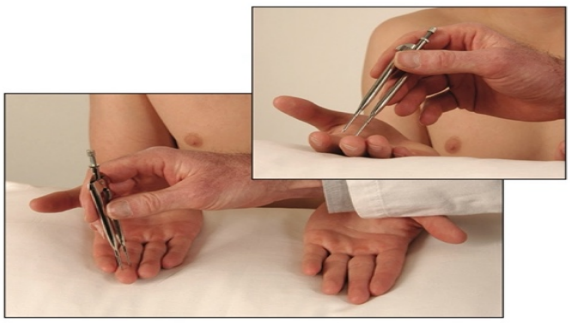
- Ask the patient to close their eyes.
- Place an object (e.g coin or key) in the patient's hand and ask him to identify it.

8. Sensory attention

- Ask the patient to shut their eyes.
- Touch each side of the lower and upper limbs in turn and ask them to tell you which side was touched (right or left?).
- Then touch both sides at the same time and ask them to tell whether they felt the touch in the left or right side or both?

9. Two point discrimination:

- Ask the patient to close their eyes.
- Using a compass (فرجار) seperate the two points (the minimal separation that can be distinguished on hands and feet is 3 cm while on fingertips it is 0.6 cm) and touch the patient's hand and ask them if he/she feels one point or two.
- Alternate between one point and two and note the narrowest tip width at which the patient can distinguish two points from one.



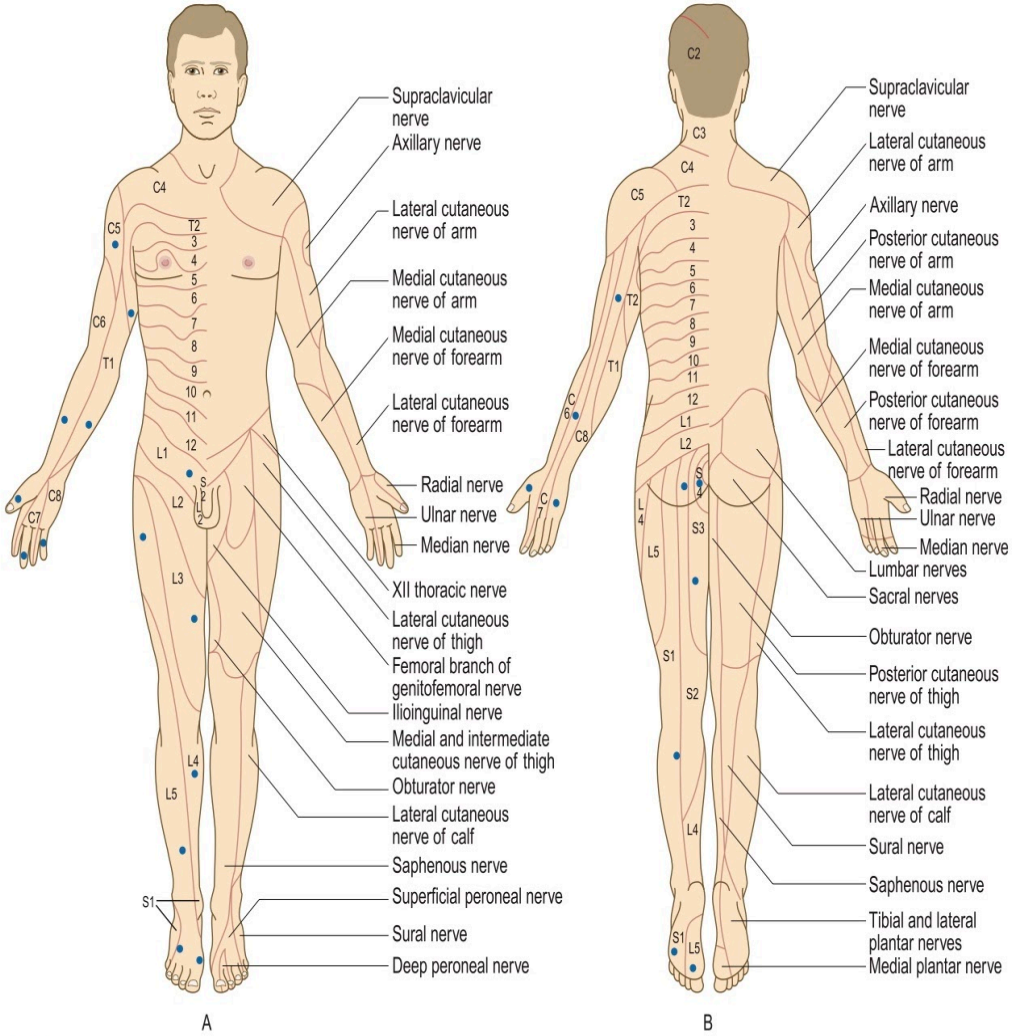


Fig. 7.26 **Dermatomal and sensory peripheral map innervation.** Points (shown in blue) for testing cutaneous sensation of the limbs. By applying stimuli at the points marked, both the dermatomal and main peripheral nerve distributions are tested simultaneously. A Anterior view. B Posterior view.

Cerebellar and Gait Examination

Exam	Technique
1. General inspection:	
a. Patient posture	Looking for Truncal ataxia. Ask the patient to fold his/her arms and set up.
b. Eyes (looking for any Nystagmus)	Ask the patient to keep their head still and follow your finger with their eyes, then move your finger right, left, up and down and look for any nystagmus (H shapes).
c. Speech	Speak with the patient to assess dysarthria.
2. Upper Limbs:	
a. Inspection	• Resting tremor: place a piece of paper on the patient's outstretched hand, then inspect for tremors. • Pronator drift: ask the patient to place arms outstretched forwards with palms upwards and close their eyes, then observe the arm for pronation movement. • Rebound phenomenon: with their eyes closed, ask the patient to resist your pulling of their arm, then suddenly remove your hand. Make sure you protect the patient's face as they might hit it.
b. Coordination	• Finger to nose test: Ask the patient to touch their nose with the tip of their index finger, then touch your finger tip as fast as they can and move your finger just before the patient leaves their nose. Looking for Dysmetria or intention tremor. • Rapid alternating movement: Ask the patient to clap by alternating the palmar and dorsal surfaces of the hand, ask them to do this as fast as possible and repeat the test with the other hand, demonstrate this to the patient first. looking for Dysdiadochokinesia.
c. Tone	• Try to shake patients hands with pronating and supinating the hand slightly then suddenly supinate or pronate the hand strongly (Assessing for spastic catch/clonus, hypotonia). • Perform the ranges of motion fully of the joints. start proximal to distal or opposite: Shoulder, elbow and wrist.
3. Lower Limbs:	
a. Coordination	• Heel to shin test: Ask the patient to run the heel of one foot down the shin of the other leg and repeat the test with the other leg. • Toe to finger test: Ask the patient to lift the big toe up to touch your finger. Looking for Dysmetria or intention tremors. • Foot tapping test (Rapid alternating movements of the feet): Ask the patient to tap the sole of foot quickly on your hand or tap the heel on the opposite shin.

b. Tone	• Pull the leg up then down at the knee joint (while the patient is sitting over the edge of the bed) to assess knee/leg tone.
c. Reflexes	• With the help of a hammer, tap the knee to induce knee reflex. Looking for Pendular knee reflex due to hypotonia.
4. Gait Examination:	
a. Inspect walking	Ask the patient to walk normally a few meters, then turn around quickly & walk back. Pay attention to arms swings, stride length, limping and steadiness. (gait abnormalities in the image below)
b. Tandem (Heel to toe) walking	Ask the patient to walk in a straight line with their heels to their toes (it will be difficult for pt with cerebellar dz).
c. Romberg Test	It's done to differentiate cerebellar ataxia from sensory ataxia. It's positive only in sensory ataxia. Ask the patient to stand still with their heels together, then to remain still and close their eyes. If the patient loses their balance, the test is positive.

5. Coordination:

Lower Limbs	Upper Limbs
Heel –shin test: • Ask the patient to run the heel of one foot up and down the opposite shin at moderate pace and as accurately as possible, then repeat it with closed eyes. • Inability to perform this is a sign of cerebellar disease, or posterior column loss. **Toe-finger test:** Ask the patient to lift the foot and touch your finger by his big toe. **Foot-tapping test:** • It tests rapid alternating movement of the lower limb. • Ask the patient to tape the sole of the foot quickly on your hand or tap the heel on the opposite shin. • Look for loss of rhythmicity.	**Finger-nose test**: • Ask the patient to touch his nose, then rotate his finger and touch your finger (you should move his finger from one position to another, backward and forward as well as from side to side). • Note any: o Intentional tremor. o Past pointing (dysmetria). o Both. **Rapid alternating movement**: • Ask the patient to pronate and supinate his\her hand on the dorsum of the other hand as rapid as possible. • Inability to perform this movement smoothly is called dysdiadochokinesis (slow and clumsy movement). **Rebound phenomenon**: • Ask the patient to flex the arm at the elbow joint against your resistance. • When you suddenly let go, violent flexion may occur and, unless prevented, the patient may strike him\herself in the face. • Hypotonia due to cerebellar disease causes delay in stopping the arm.

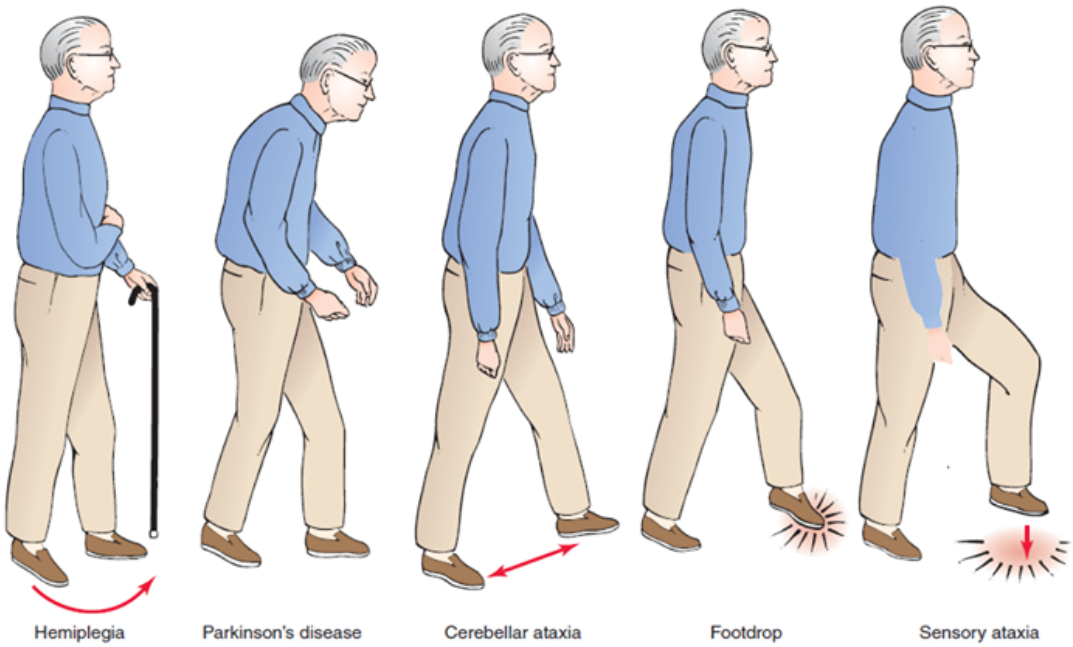
Signs of cerebellar disease (SIN 3Ds 2As):

1. Scanning speech.
2. Intention tremor
3. Nystagmus.
4. Dysdiadochokinesia
5. Dysmetria
6. Drunken gait
7. truncal Ataxia
8. Atonia/hypotonia

Causes of cerebellar disease:

1. Vascular (Stroke)
2. Inflammatory (encephalitis)
3. Traumatic
4. Tumor (posterior fossa tumors)
5. Autoimmune (Multiple sclerosis)
6. Degenerative
7. Intoxication (alcohol, drugs
8. congenital (Dandy-Walker)
9. Inherited (friedreich's ataxia)

Gait abnormalities:



1- Hemiplegic Gait:
The patient drags his or her affected leg in a semicircle (circumduction) with the arm flexed, adducted and internally rotated.

2- Parkinsonian Gait:
Small shuffling (festinating) gait and a general slowness of movement (hypokinesia), reduced stride length and walking speed with the trunk flexed forward + Both upper limbs are also flexed.

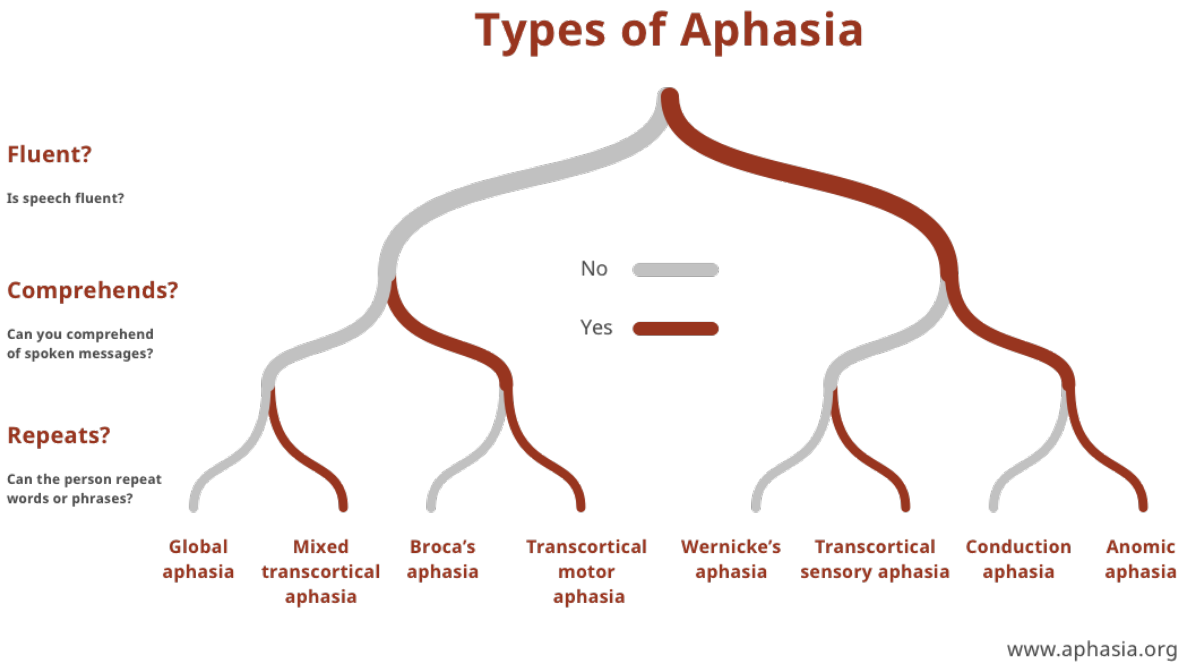
3- Ataxia (cerebellar) gait:
A wide base stand with staggering uncoordinated walk. the patient will not be able to walk from heel to toe or in a straight line. Patients tend to fall to the side of the lesion.

4- Steppage (Foot drop) Gait:
The patient lifts the leg high enough during walking so that the foot does not drag on the floor.

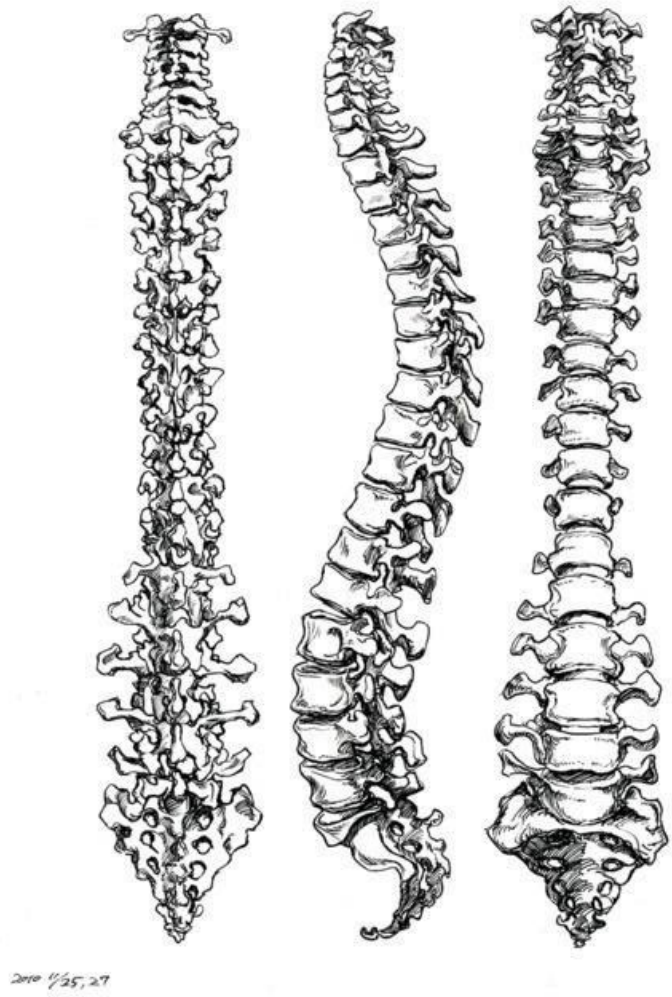
5- Sensory ataxic gait:
There is a loss of proprioceptive input. Sometimes referred to as a stomping gait since the patient may lift his leg very high to hit the ground hard in order to sense it. This is exacerbated when the patient cannot see his feet (i.e. in the dark) and is associated with a positive Romberg's test.

Speech Disturbances:

- ❏ Dysarthria: a *motor speech disorder*. It results from *impaired movement of the muscles* used *for speech production*. It is characterized by slurred or slow speech that can be difficult to understand.
- ❏ Aphasia: an inability to comprehend and formulate *language* because of *damage to specific brain regions*.



- **Fluent:** Person is able to produce connected speech. Sentence structure is relatively intact but lacks meaning, Exs:
  - Anomic Aphasia: *word finding difficulties*, repetition of words/phrases good.
  - Conduction Aphasia: damage to the arcuate fasciculus, the person will have *difficulty repeating phrases*.
  - Receptive (Wernicke's) aphasia: has *great difficulty understanding the speech* of both themselves and others, So they are often *unaware of their mistakes. repetition is poor*.
- **Non-fluent:** Speech production is halting and effortful, Exs:
  - Expressive (Broca's) aphasia: person knows what he or she wants to say but they *can't express* it. They speak *short, meaningful phrases* that are *produced with great effort. repetition is poor*.
  - Global Aphasia: *severe expressive and receptive language impairment, may be totally nonverbal, and/or use only facial expressions and gestures to communicate*.



Rheumatological System

Joint pain:

DDx:

	Monoarthritis	Polyarthritis
Acute inflammation	1. Septic arthritis 2. Haematogenous (e.g. 3. staphylococcal or gonococcal) 4. Secondary to penetrating injury 5. Traumatic 6. Gout, pseudogout or hydroxyapatite arthritis 7. Haemarthrosis (e.g. haemophilia) 8. Seronegative spondyloarthritis	1. Infection 2. Onset of chronic polyarthritis
Chronic inflammation	1. Chronic infection (e.g. atypical mycobacterial infection) 2. Seronegative spondyloarthritis	1. Rheumatoid arthritis 2. Seronegative spondyloarthritis 3. Osteoarthritis 4. Gout, pseudogout or hydroxyapatite arthritis 5. Connective tissue disease (e.g. SLE) 6. Infection (rare)
Painful joint with no inflammation	Osteoarthritis	-

Personal Data:

- Age (elderly → Osteoarthritis).

History of Presenting Illness: (SOCRATES)

- **Site**

Mono- Arthritis	Oligo-Arthritis	Poly- Arthritis
One Joint	Equal or less than 4	More than 4
Infection (TB, Brucella), Osteoarthritis, Chronic malignancy, Gout.	Ankylosing spondylitis, reactive arthritis	Rheumatoid arthritis (RA), SLE

- **Onset:**
  - Sudden? → Gout.
  - Gradual? → Osteoarthritis.
  - Continuous or in separate attacks? → Reactive arthritis.

- **Character:**
  - Additive: affects one joint then affects another one in addition to the formal one → Reactive arthritis.
  - Intermittent: affects the same joint but comes and goes → osteoarthritis.
  - Migratory: affects one joint, and then leaves it to another one → Rheumatic fever.
  - Time of the day which is worst:
    - Worse in the morning? (large joint → osteoarthritis), (small joint → spondyloarthritis).
- **Exacerbating\ relieving factors**
- **Associated symptoms:**
  - Constitutional symptoms
  - system involved (MSS) e.g. Deformity, Instability, Morning stiffness, Joint swelling, skin rash, dry eyes/mouth , nail changes , raynaud phenomena?
  - GIT (for reactive arthritis): change in bowel habit, abdominal pain, bloody diarrhea
- **Severity:** score the pain, ask if it is affecting his daily activity?

Risk factors related to DX:

- **Past Medical history:**
  - Childhood arthritis.
  - RA, SLE, scleroderma, vasculitis.
  - Recent infection.
  - IBD (can result in arthritis).
  - Psoriasis (psoriatic arthropathy).
- **Dugs history:**
  - Antiarthritics, e.g. aspirin, NSAID, gold, methotrexate (MTX), penicillamine, chloroquine, steroid.
  - Side effects: gastric ulcer or hemorrhage from aspirin.
  - Allergies.
- **Surgery/trauma:**
  - History of joint trauma/surgery? or Arthroscopy (examination of a joint with an arthroscope which is an endoscope that is inserted through an incision near a joint).
- **Social History:**
  - Alcohol → can cause trauma.
  - IV drug abuse (septic arthritis).
- **Family History:**
  - RA and OA.
  - Hemochromatosis: can result in arthritis due to calcium pyrophosphate deposition.
  - Seronegative spondyloarthropathies (e,g: Ankylosing Spondylitis, Reiter's Syndrome, Psoriatic Arthritis, Arthritis of Inflammatory Bowel Disease).
  - Bleeding disorders: Hemophilia may lead to swollen tender joints.

Skin Rash:

DDx: SLE, vasculitis, dermatomyositis, Sjögren syndrome, Psoriatic arthritis, RA, infectious disease.

Personal:
Name? age?

HPI:

- **Site:**
  - Unilateral or bilateral?
  - On the cheeks? (malar rash in SLE)
  - On the lower legs? (vasculitis or Sjogren syndrome, RA)
  - Around eyes (heliotrope rash) or on the back of the hand (gottron papule)? (dermatomyositis)
- **Onset:**
  - Sudden?
  - Gradual?
- **Duration?**
- **Course:**
  - Progressive or constant?
  - Continuous or intermittent?
- **Character:**
  - Morphology (shape of lesion): Butterfly? annular? Papular? discoid?
  - Painful or painless?
  - Itchy?
- **Aggravating factors:** Sun exposure? (SLE)
- **Relieving factors?**
- **Timing:** Worse at certain times of the day?
- **Severity?**
- **Associated symptoms:**
  - Joint pain? Joint stiffness? Joint deformity or instability? Ryanaud's phenomenon? Back pain? Dry eye and mouth? mouth ulcers? proximal muscle weakness? (dermatomyositis), Nail changes? (psoriatic arthritis)
- **Constitutional symptoms:** fever, fatigue, loss of weight/ appetite, night sweat, N\V?
- **Other systems related to the CC (systems related to SLE or vasculitis):**
  - Cardio\Respiratory: chest pain, dyspnea, PND, orthopnea, LL edema cough, hemoptysis, wheezing.
  - Renal: frothy urine, hematuria.
  - CNS: psychosis, headache, numbness, seizures.
  - Hematology: hemolytic anemia? bleeding?
  - GIT (for vasculitis, dermatomyositis): dysphagia, odynophagia, GERD, abdominal pain, change in bowel habit.

Past medical history:

- Chronic disease?
- Any rheumatological or autoimmune disease? (SLE, RA, vasculitis, dermatomyositis… ect).
- Resent infection?
- Dermatological disease.

- Hematological disease?
- Malignancy?

Drugs history:

- Ask about taking any medication? (for drug induced lupus e.g: hydralazine, procainamide, a-methyldopa, INH).
- Allergy?

Social history:

- Ask about STD (for rash caused by infection).
- IV drugs abuse/ smoking alcohol.

Family history:

- Family history of the same problem?
- Chronic disease?
- Rheumatological or hematological disease?
- Malignancy?

Back pain

DDx:

Mechanical	Systemic	Referred pain
• Herniated disk. • Degenerative disk or facet. • Spondylolisthesis or spondylolysis. • Spinal stenosis. • Compression fracture.	• Malignancy (1ry or 2ry). • Infections (osteomyelitis of spine, discitis, Spinal epidural abscess (fever, back or neck pain, and neurological deficits). • Inflammatory spondyloarthropathy (ankylosing spondylitis, psoriatic spondylitis, Reiter's syndrome, IBD). • Metabolic: Paget's disease of bone, osteoporosis, osteomalacia, hyperparathyroidism).	• Acute aneurysm (AAA). • Pelvic disease (prostatitis, endometriosis, pelvic inflammatory disease). • Renal disease (stones, pyelonephritis, perinephric abscess). • Gastrointestinal disease (pancreatitis, cholecystitis, penetrating ulcer).

Personal Data:

Age (<40 ankylosing spondylitis, >50 malignancy, >65 AAA in a male smoker, >70 compression fracture), Occupation, Residence.

History of presenting Illness:

- Site: where?
  - Upper (Muscle strain, injury)
  - Middle/Central (Abdominal aortic aneurysm)
  - Lower (mechanical, systemic)?
- Onset: When?
  - Sudden? (fracture/injury)
  - Gradual?
  - Continuous or in separate attacks?
  - Cyclical? (Endometriosis)
- Character: (What is the pain like?)
  - Electrical or shock like? > disc herniation
  - Colicky? > visceral pain
  - Tearing? > aortic dissection
  - Constant and nocturnal? > Malignancy when worse with rest, mechanical when improved with rest
- Radiation: (Does it Radiate anywhere?)
  - Pain with lumbosacral radiculopathy travels from the buttock down to the posterior or posterolateral leg to the ankle or foot.
- Alleviating factors/Exacerbating factors
  - Lumbar Flexion (e.g. bending forward): relieve spinal stenosis, and aggravates herniated disk (disc prolapse (plus neurological signs) and annular tear)
  - Lumbar extension/rotation: worsens Lumbar extension/rotation: worsens pain of facet joint disorder, Spondylolysis, Localised buttock pain, Sacroiliac disorder
  - Sitting straight: Aggravates spinal stenosis

    - Activity: relieves Ankylosing spondylitis
    - Improve with exercise: Ankylosing spondylitis
    - Sitting, coughing, or sneezing: exacerbate the pain with lumbosacral radiculopathy.
    - change in pain intensity when eating: improvement (peptic ulcer), worsening (pancreatitis, gallbladder disease…)
- Time of the day which is worse:
    - Worse in the morning? (inflammatory back pain, fibromyalgia)
    - Stiffness after inactivity, pain worse in the morning and associated with morning stiffness? (ankylosing spondylitis)
- Severity:
    - How bad is the pain from 1 to 10?
    - Does the pain wake the patient from sleep?
    - Affect daily activity?
    - Evidence of neurological compression?
    - Urinary retention? (Pyelonephritis, renal stones)
    - Sciatic (with or without weakness)?
    - Weakness? (Compression)
    - Paresthesia? loss of sensation?

Associated symptoms

Alarm symptoms:

- Pain onset at age of <20, or >55.
- Cancer Hx.
- Unexplained weight loss.
- Constant or progressive pain.
- Claudication symptoms, signs of peripheral ischaemia or abdominal mass.
- pain on waking from sleep (morning stiffness).
- Pain during/awakening from sleep.
- Current or recent infection.
- Pain for longer than 1 month.
- Fever (Infection, malignancy).
- Hx of drug use by injection? to exclude osteomyelitis and paraspinal abscess.
- Osteoporosis Hx.
- Bowel or bladder dysfunction, saddle anesthesia.
- Hx of trauma or abrasion/contusion over spine.

Constitutional symptoms

- Fever (most important) and then.. (N/V/W loss/Night sweats**)**

The systems related

- If the back pain associated with..
- Abdominal pain? > visceral etiology
- Nausea and vomiting> pancreatitis, peptic ulcer, appendicitis

Risk Factors related to DDx:

Medical history:

- Trauma Hx, Cancer Hx, Immunodeficiency (HIV).

Medications Hx:

- Drugs (infection causing osteomyelitis), Steroids, allergies.

Surgical Hx

- Trauma, Blood transfusion, Rehabilitation.

Social Hx:

- Alcohol, smoking, occupation, sports.

Family Hx:

- Bleeding disorders or inherited diseases, malignancy?

Raynaud's phenomenon

DDx:

- **Primary Raynaud's**: Raynaud's disease (a female with familial raynaud's and have it when experience cold because of idiopathic digital artery vasospasm)
- **Secondary Raynaud's** (here we will focus only on rheumatological and arterial causes, you can find more click here):
    - Rheumatic/autoimmune/connective tissue disease:
    - Systemic sclerosis (diffuse or limited type i.e. CREST)
    - Mixed connective tissue disease
    - Systemic lupus erythematosus
    - Polyarteritis nodosa
    - Rheumatoid arthritis
    - Dermatomyositis
    - Sjögren syndrome
    - Systemic sclerosis
    - Vasculitis
    - Primary pulmonary hypertension
    - Arterial disease: embolism or thrombosis (Atherosclerosis), Buerger's disease (thromboangiitis obliterans) - smokers, trauma
    - others: carpal tunnel syndrome

Hx. of Raynaud's:

History of presenting illness: (SOCRATES)

- **Site:** fingers and toes.
- **Onset**: when did it start and how did it start?
- **Character:** change in color (white, blue, red), cold fingers? painful? numb? tight? Swollen painful areas when re-warmed? ulceration?
- **Exacerbating and relieving factors:** cold temperatures or emotional stress, relieved with rewarming.
- **Time**: persistent (ischemia) or intermittent symptoms?
- **Severity**: how painful is it out of ten?/ does it affect your daily life?
- **Associated symptoms:**
    - **Systemic sclerosis**: hair loss, lumps under the skin, dilated blood vessels under the skin's surface, joint pain, SOB, dry cough, diarrhea/constipation, difficulty swallowing, esophageal reflux, abdominal bloating after meals.
    - **CREST syndrome** (Calcium skin deposits, Esophageal dysmotility, Sclerodactyly and Telangiectasia).
    - **SLE**: fatigue, fever, joint pain, stiffness and swelling, butterfly-shaped rash on the face or rashes elsewhere on the body, skin lesions that appear or worsen with sun exposure (photosensitivity), chest pain, SOB, dry eyes, headaches, confusion and memory loss.
    - **Rheumatoid arthritis:** Tender/ warm/swollen joints, joint stiffness worse in the mornings and after inactivity.
    - **Dermatomyositis:** Red/purple rash on sun-exposed areas, red/purple swelling of the upper eyelids (heliotrope), spots on the knuckles, elbows, knees, and toes (Gottron's papules), proximal muscle weakness (difficulty getting up of standing).

    - **Sjögren syndrome:** dry sand feeling burning eyes (Xerophthalmia), dry mouth (Xerostomia) and difficulty speaking, swollen salivary glands, dry vagina, joint pain, dry cough.
    - **Mixed connective tissue disease:** Swollen fingers, Muscle pain, joint pain/deformity, reddish brown patches over the knuckles.
    - **Vasculitis**: Rash, numbness or weakness, constitutional Sx.
- **Past Medical history:** Hx. of same problem before, Hx of autoimmune or connective tissue disease (thyroid, SLE, systemic sclerosis/CREST…), diabetes, HTN (blurry vision, headache), atherosclerosis.
- **Medication**: beta-blockers, ergots, OCP, bromocriptine, Cyclosporine, Alfa-interferon.
- **Surgical history:** Surgeries related to autoimmune or vascular/atherosclerotic disease.
- **Trauma history:** Injuries to the hands or feet, such as fracture, surgery, or frostbite.
- **Family history**: Hx. of same problem before, Hx of autoimmune or connective tissue disease, diabetes, atherosclerosis.
- **Obstetric history:** Hx. of miscarriage (vasculitis,…)
- **Social history:** SMOKING, alcohol, living in cold area, occupations with use of vibrating tools, Industrial exposure to solvents (xylene, toluene, acetone, or chlorinated solvents).
- **Review of systems:**
    - GIT: heartburn or dysphagia, Diarrhea or constipation, Nausea or vomiting.
    - Cardiopulmonary: SOB, cough, Syncope, palpitation.
    - Renal: Urinary symptoms volume, color, dysuria, nocturia, frequency, urgency.
    - MSK: muscle weakness/pain, joint pain.
    - Neuro: memory loss.

Osteoarthritis

The patient may come with one of the following or more: joint pain that increases with movement, difficulty moving a joint.

Key points to ask suspected Osteoarthritis patient:

- Site (which joint) → osteoarthritis commonly affect the weight bearing joints (e.g. Hip, Knee or spine) + Primary Osteoarthritis is unlikely to involve the MCPs, Wrists, Elbows, Shoulders, Ankles.
- Onset, duration, relieving factors (e.g. rest), aggravating factors (movement), frequency?

Rule out other DDx of joint pain:

- Symmetrical small joints involvement, prolonged morning stiffness → RA.
- Systemic symptoms; fatigue? → RA, fever?→ septic arthritis.
- Other systems involved e.g. respiratory, cardiac→ RA.
- Acute onset joint pain in few hours → gout.
- Joint is red, hot and acutely tender → gout, septic arthritis, traumatic injury.

Ask about Associated symptoms:

- Functional difficulties? change in gait?
- Bony deformities? Bouchard or heberden deformity.
- Crepitus/ Clicking or cracking sound?
- Spinal stenosis? back/leg pain, paresthesia or numbness in the lower limb.

Risk Factors:

- Old age >50 years (the strongest).
- Occupation e.g. manual workers, repeated traumas to the joint.

Gout

The patient may come with one of the following or more: a sudden onset joint pain and swelling, difficulty moving a joint.

Key points to ask suspected Gout patient:

- Site which joint → commonly involved joints are 1st metatarsophalangeal, tarso-metatarsal or ankle joint.
- Onset (acute and sudden), duration, relieving factors (e.g: painkillers), aggravating factors (movement), frequency (usually he had previous self-limiting attacks before), Severity (the most severe he ever had)?

Rule out other DDx of joint pain:

- Symmetrical small joints involvement, prolonged morning stiffness → RA.
- Systemic symptoms; fatigue? →RA, fever? → septic arthritis.
- Other systems involved e.g. respiratory, cardiac → RA, recent chlamydia or GI infection Infection, conjunctivitis/urethritis → Reactive arthritis.
- Pain is not sudden → osteoarthritis.
- Joint is not red, hot and acutely tender → osteoarthritis, traumatic injury.

Ask about Associated symptoms:

- functional difficulties? change in gait?
- Renal disease (stones/insufficiency)?
- Gout tophi? noticed on the extensor surfaces e.g. elbows, knees and achilles tendon.

Risk Factors:

- Medical: Previous attack of gout or diagnosis of pseudogout. Use of gout-inducing medications e.g. aspirin, cyclosporine, diuretics (thiazide or loop diuretics). hx of conditions that cause high cell turnover e.g. myeloproliferative disorders, chemotherapy-induced cell death.
- Social: consumption of meat, seafood, alcohol.
- Family hx: family hx of gout.

Rheumatological Examination

WIP3E: Wash your Hands, Introduce yourself, Permission/Privacy/Position, Exposure

- Vital signs: temperature (fever?), respiratory rate, O2 sat., pulse rate, rhythm and quality and difference with raising hand
- General appearance look for: ABC2DE
  - Appearance: Well or ill, age, edema? mood (depression?), rashes upon photosensitive areas
  - Body built: normal, cachectic, cushingoid
  - Color: pale, hyperpigmentation, cyanosis or jaundice
  - Connections: medications or equipments or walking aid
  - Distress: pain, signs of difficult breathing
  - Else: consciousness, mental status

Posture and gait:

- **Ask** patient to stand from setting or squat (muscle power), ask patient to walk to inspect gait (antalgic? trendelenburg?...).
- **Head**
  - **Scalp:** lesions, alopecia.
  - **Face:**
    - **Shape:** moonlike facies > steroids.
    - **Eyes:** dry, watering, corneal opacification, uveitis, scleral injection, periorbital heliotrope/edema.
    - **Nose:** appearance (peaking in scleroderma).
    - **Facial skin:** rash (butterfly, discoid), skin tightening, darkening, steroid use acne.
    - **Mouth:** buccal mucosa (ulcers? dry?), teeth (caries), small tight mouth opening?
    - **Ask** patient to open and close and move lower jaw from side to side to assess TMJ.
    - **Ear lobe**: inspect for rashes, tophi (in gout, *also found on achilles tendon*).
- **Neck:** thyroid (autoimmune disease), using extra muscle for breathing difficulty, **ask** patient to bring right ear to right shoulder then left ear to left shoulder (lateral flexion is sensitive for cervical spine abnormality), palpate lymph nodes.
- **Axilla:** palpate lymph nodes.
- **Shoulder:**
  - **Look:** inspect for deltoid wasting, inspect back of shoulders for buffalo hump (steroid use) and shawl sign (dermatomyositis), use of trapezius in breathing difficulty.
  - **Feel:** compare shoulder temperature, and palpate bony prominences, apply pressure to the midpoint of each supraspinatus and undertake skin-fold rolling of the overlying skin looking for increased tenderness > fibromyalgia.

    - **Move:** check range of movement and limitation, ask for 'Hands behind head' (to assess glenohumeral joint). You can test the shoulder by asking patient to do compound movements actively and passively, if patient has pain or limitation then proceed to more specific tests (click here for explanation): external/internal rotation, active flexion/extension, active abduction/adduction, then do them to the patient passively.
    - **Special tests** (empty can, The painful arc (impingement syndrome) test, internal and external rotation with resistance,...)
- **Chest:** inspect for V-sign (dermatomyositis rash on chest), listen for heart sound, murmurs, pericardial rub (pericarditis), auscultate for lung sounds (may find bilateral decreased breath and Crackles).
- **Abdomen:** palpate for hepatosplenomegaly, auscultate for bowel sounds.
- **Arms:** inspect arms for muscle wasting and rashes, inspect elbow joint for subcutaneous calcinosis, lupus extensor surface rash, resist patient in flexion and extension to check muscle power.

Rheumatological Hand examination

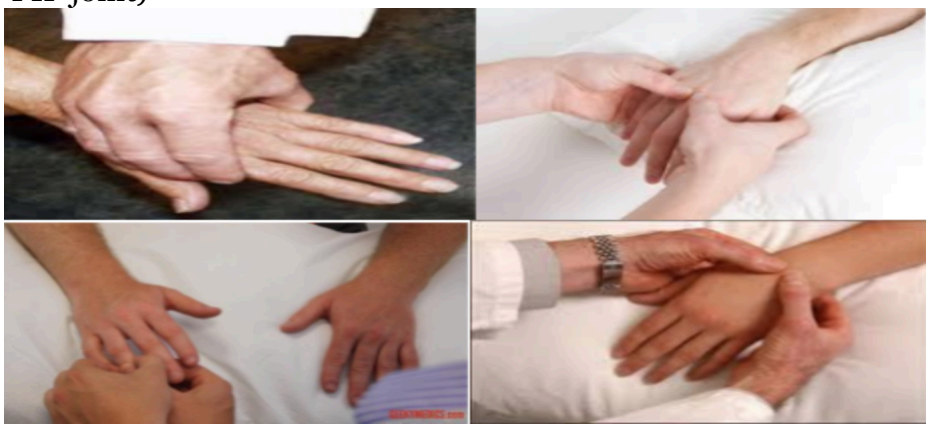
Position: sitting, patient's hands on a pillow.
Exposure: above the elbow.

i. Look:

- **Nails:** Pitting nails, onycholysis, hyperkeratosis, psoriasis, Discoloration (Raynaud's phenomenon), digital infarction, splinter hemorrhage.
- **Skin:** Atrophy, tightness, Erythema, rashes (psoriasis), guttorn papules, Discoloration and scars (fasciotomy, rheumatoid nodule scars).
- **Muscle:** Wasting.
- **Bone:** Subluxation / dislocation.
- **Joint:**
  - Swelling
  - Joint deformity:
    - Ulnar deviation.
    - Radial deviation.
    - Swan Neck: Hyperextension of the PIP joint and Fixed flexion of the DIP joint.
    - Boutonniere: Fixed flexion of the PIP joint and Extension of the DIP joint.
    - Jaccoud's arthropathy: reversible flexion of the PIP joint and Extension of the DIP joint.
    - Z-deformity of the thumb: Hyperextension of the IP joint with fixed flexion and subluxation of the MCP joint.
    - Sausage shape fingers: due to IP arthritis and flexor tendon sheath edema.
    - Telescoping finger: shorting of the fingers.
    - Resolution of fingertips (tapering fingers).

ii. Feel:

- Temperature
- Tenderness: Gently squeeze across the (MCP)
- Bimanually palpate the joints of the hand (MCP / PIP / DIP / CMC)
- Bimanually palpate the patient's wrists
- Swelling
  - Bony swelling: Heberden's node (at DIP joint), Bouchard's nodes (at the PIP joint)



iii. Move:

Assess each of the following movements actively first (patient does the movements independently). Then assess movements passively, feeling for crepitus and noting any pain.

- Finger extension: "open your fist and splay your fingers".
- Finger flexion: "make a fist".
- Wrist extension: "put palms of your hands together and extend wrists fully" – ROM 90°.
- Wrist flexion: "put backs of your hands together and flex wrists fully" – ROM 90°.

iv. Function:

- Power grip: ask the patient to squeeze your fingers with his/her hands.
- Pincer grip: Ask the patient to place His/her thumb and index finger together and don't let you separate them.
- Practical test: ask the patient to Pick up small object or undo a shirt button.

v. Special tests

- **Phalen's wrist flexion test**
  - Ask the patient to hold their wrist in complete and forced flexion (pushing the dorsal surfaces of both hands together) for 60 seconds
  - If the patient's symptoms of carpal tunnel syndrome are reproduced then the test is positive (*e.g burning, tingling or numb sensation over the thumb, index, middle and ring fingers).*
- **Tinel's test:**
  - Tap over the carpal tunnel If the patient develops tingling in the thumb and radial two and a half fingers this is suggestive of median nerve irritation and compression.

➽ ***End your examination with:***

Perform a full neurovascular examination of the upper limbs Examine the elbow joint.

Back examination

Position: standing then laying down
Exposure: in underwear only

A. Look:

- From behind: Posture, scoliosis, scars, hairy patch or lipoma.
- From side: normal cervical lordosis, thoracic Kyphosis and lumbar lordosis.
- Ask the patient to walk and inspect the gate and lower extremities.

B. Feel:

- Palpate the spinous processes and paraspinal tissues note the overall alignment and tenderness.
- The paravertebral muscles for tenderness and increased tone.

C. Move

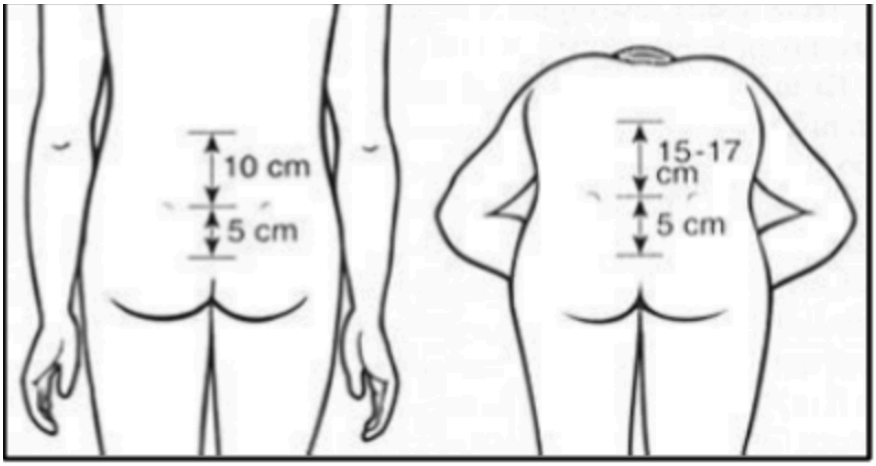
- It is assessed actively by bending movement at lumbar spine and rotational movement at thoracic spine.
- Range of movement is checked by observing and by using Schober's test
- Flexion: is tested by asking the patient to touch the toes with knees straight and look at the spine:
  - Normally there is a gentle curve
  - Patients with advanced ankylosing spondylitis have a flat ankylosed spine and all binding occurs at the hips.
- Extension: ask the patient to straighten up and lean back as far as possible (normal 10– 20° from neutral erect posture).
- patients with back pain will find this less uncomfortable than bending forward
- Lateral flexion: ask him to reach down to each side, touching the outside of the leg as down as possible while keeping the legs straight.
- Rotation is tested by asking the patient to rotate the head and shoulders as far as possible to each side (this is best viewed from above).

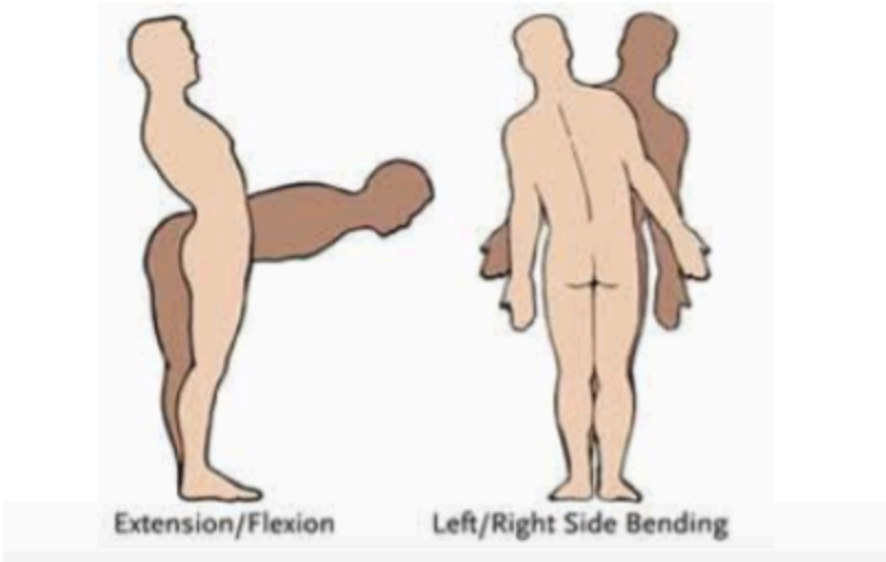
D. Special Tests:

- **Straight leg raising:**
  - Ask patient to lie down. Lift up a straight leg and dorsiflex the foot.
  - This may exacerbate pain from a nerve root entrapment or irritation e.g. Sciatica.
- **Schober's test:** (to assess the amount of lumbar flexion)
  - While the patient is in a standing position make a mark approximately at the level of L5.
  - Two points are then marked: 5 cm below and 10 cm above this point (for a total of 15 cm distance).
  - Then the patient is then instructed to touch his toes while keeping the knees straight.
  - The distance of the two points should increase by at least 5 cm (with the total distance greater than 20 cm). <20cm is a sign of restriction in the lumbar flexion.

- **Adams forward bending test:** (The examiner stands behind the patient to assess)
    - Full forward flexion until back is horizontal to the floor. (with complete knee extension and hands in the air not touching the knee).
    - If thoracic Scoliosis is present, then rib hump will become visible

➳ ***End your examination with:*** Neurological examination of the lower limbs





Knee examination

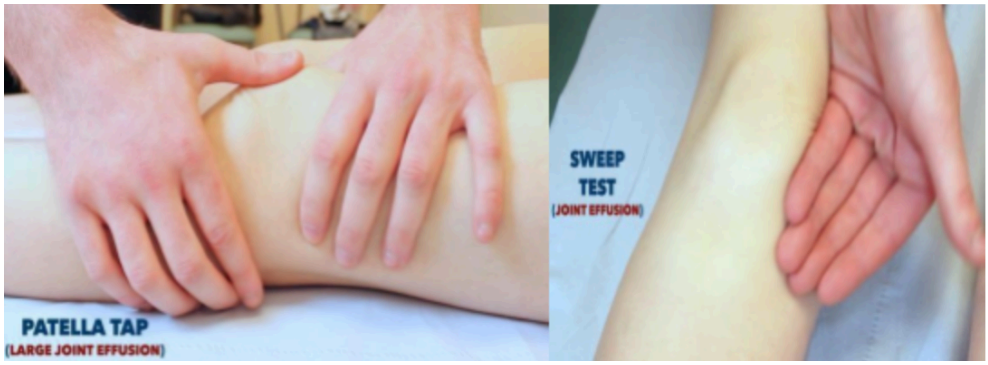
Position: lying down
Exposure: both knees and thighs are fully exposed

A. Look:

- Gait: ask the patient to walk a few steps and asses for asymmetry/deformities or pain during walking.
- then inspect Nails → Skin → Muscles → Joints → Bone.
- Nails: any changes of the toes' nails.
- Skin: Scars, discoloration, rashes, atrophy or tightness.
- Muscle: quadriceps wasting.
- Joint: swelling (Loss of the peripatellar grooves; an early sign of effusion) or deformities (valgus; deviation away from the midline occur in RA <=> Varus; toward the midline occur OA).
- Bone: Subluxation or dislocation.

B. Feel:

- Temperature; with the backs of the fingers.
- Tenderness.
- Palpate:
    - Patella – palpate the borders for tenderness / effusion
    - Tibial tuberosity – tenderness may suggest Osgood Schlatter disease
    - Head of the fibula
    - Collateral ligaments – both medial and lateral
    - Popliteal fossa – for swelling e.g. Baker's cyst or an aneurysm.
- **Effusions:**
    1. Patellar tap test: for huge effusion:
        - Empty the suprapatellar pouch by sliding your left hand down the thigh to the patella.
        - Keep your left hand there and use the fingertips of your right hand to press down briskly and firmly over the patella see if it flows (indicate the presence of fluid)
    2. Fluctuation (sweep)test: for moderate effusion
    3. Milking sign: for mild effusion
        - Empty the suprapatellar pouch with one hand whilst also emptying the medial side of the joint using an upwards wiping motion by the other.
        - Now release your hands and do a similar wiping motion downwards on the lateral side of the joint.
        - Watch for a bulge or ripple on the medial side of the joint the appearance of a bulge or ripple suggests the presence of an effusion



C. Move:

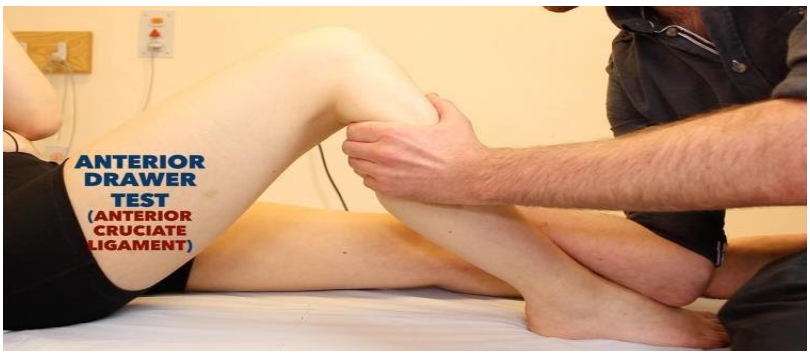
- Passive movement: (doctor performing the movement)
  - Flex and extend the knee using your both hands (one is resting on the knee cap while the other moves the leg up and down).
  - Flexion is normally possible to 140° and extension to 10° (above 10 is abnormal; hyper-extension).
  - Left the knee between your arm and chest → move it medially then laterally (more than 5 is considered abnormal).
- Active movement: This involves the patient performing the movements
  - Knee flexion: "Move your heel as close to your bottom as you can manage"
  - Knee extension: "Straighten your leg out as best as you are able to".

D. Measure:

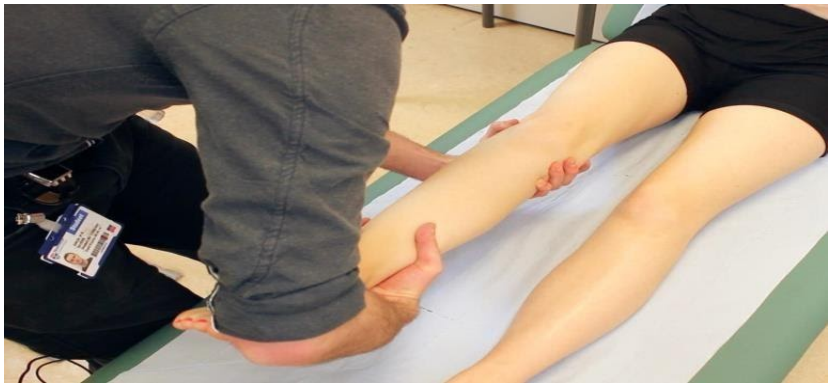
- Measure quadriceps circumference and compare (20cm above tibial tuberosity)

E. Special tests:

1. Anterior/Posterior drawer test:
   - Flex the patient's knee to 90°.
   - Wrap your hands around the proximal tibia with your fingers around the back of the knee.
   - Rest your forearm down the patient's lower leg to fix its position.
   - Position your thumbs over the tibial tuberosity.
   - Ask the patient to keep their legs as relaxed as possible.
   - Pull the tibia anteriorly: significant movement suggests anterior cruciate laxity /rupture.
   - Push the tibia posteriorly: significant movement suggests posterior cruciate laxity /rupture.



2. Collateral ligament (CL)
   - Extend the patient's knee fully.
   - Hold the patient's ankle between your elbow and side.
   - Place your right hand along the medial aspect of the knee.
   - Place your left hand on the lower limb (e.g. calf or ankle).
   - Push steadily outward with your right hand whilst applying an opposite force with the left.
   - Push steadily inward with your right hand whilst applying an opposite force with the left.
   - If after this assessment the knee appears stable you can further assess the collateral ligaments by repeating this test with the knee flexed.



3. Patellar apprehension test:
   - When recurrent dislocation or subluxation of the patella is suspected.
   - Pushing the patella laterally while flexing the knee slowly.
4. McMurray test:
   - To evaluate for tears in the meniscus.
   - Flex the knee and hip to 45 → the knee is brought from flexion to extension with **either** internal or external rotation using the ankle.
5. Apley's test:
   - Performed with the patient prone and the knee flex at 90.
   - Try to stabilise the thigh by kneeling lightly on it.
   - While pushing the foot downward → rotate the leg laterally and medially.

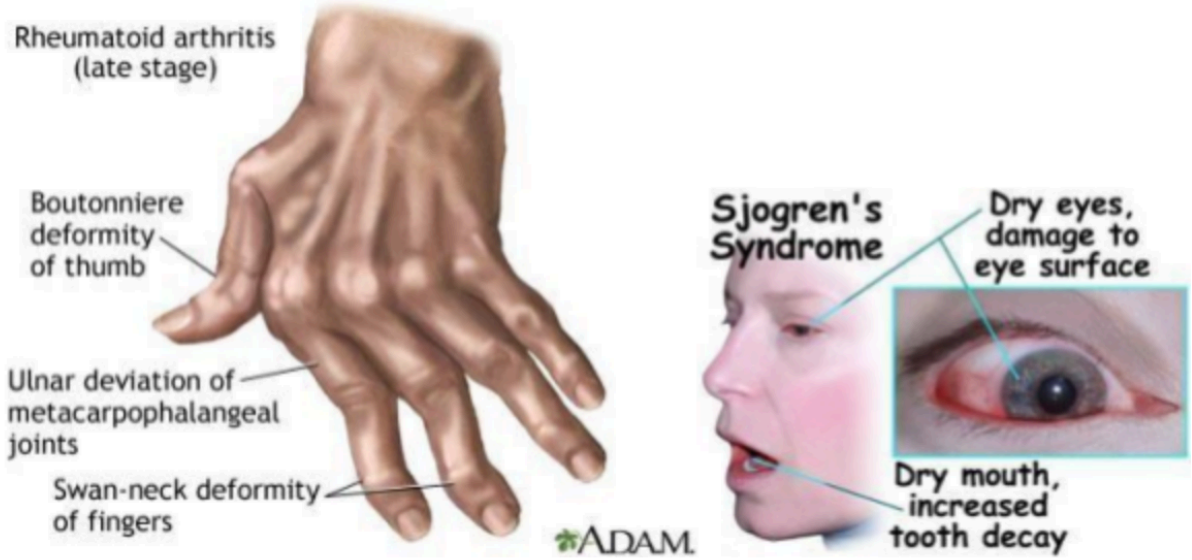
➽ ***End your examination with:***

- Neurovascular examination of both lower limbs
- Ankle & hip Examination (the joints above and below) Inspect soles.

Physical Signs of Rheumatological System

Rheumatoid Arthritis	
1. General inspection	• Cushingoid appearance (due to steroid treatment) • weight loss (active disease) • thin and easily bruised skin
2. Hands	• Perform hand examination looking for: symmetrical small joint synovitis, vasculitis. • Wrist: Radial deviation, Entrapment neuropathy (e.g. carpal tunnel) - perform Phalen's sign • MCPs: ulnar deviation. • PIPs: swan neck and boutonnière deformity. • Thumbs: Z deformity.
3. Arms and shoulder	• Elbow joint (examine for Subcutaneous nodules) • Shoulder joint (Examine for tenderness and limitation of movement) • Axillary nodes (enlarged nodes may indicate active disease of joints in the area that they drain)
4. Face	• Eyes—Red dry eyes (Sjögren's), scleritis/episcleritis, Conjunctival pallor (anaemia), cataracts (steroids, chloroquine), scleromalacia (scleral thinning). • Face—parotids (Sjögren's) • Mouth—dryness and dental caries (Sjögren's). • Temporo-mandibular joint (crepitus)
5. Neck	• Cervical spine (examine the cervical spine for tenderness, muscle spasm and reduction of rotational movement) • Cervical nodes
6. Chest	• Signs of pleural effusion, pulmonary fibrosis, pericarditis, valvular disease (esp aortic), (if present)
7. Abdomen	• Splenomegaly (e.g. Felty's syndrome) • Inguinal nodes
8. Hips & knees	• Movements limitations. • Quadriceps wasting (sign of knee joint involvement) • Baker's cysts in popliteal fossae.
9. Lower limbs	• Ulceration (vasculitis) • Calf swelling (ruptured synovial cyst) • Peripheral neuropathy • Mononeuritis multiplex in lower limb nerves • Signs of Cord compression.

10. Feet	• Metatarsophalangeal joints swelling and subluxation • Lateral deviation and clawing of the toes • Achilles tendon nodules
11. Other	• Urine: protein, blood (drugs, vasculitis, amyloidosis) • Rectal examination (blood)

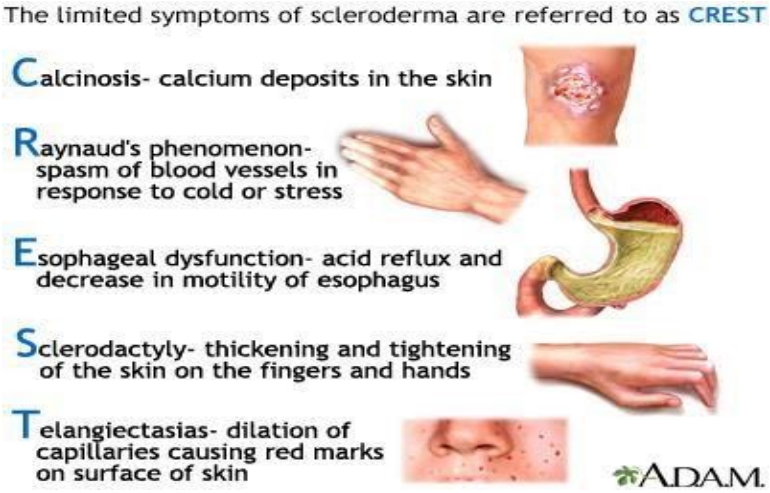


SLE	
1. General inspection	• Cushingoid appearance (due to steroid use). • Weight loss (due to chronic inflammation). • Abnormal mental state - psychosis.
2. Hands	• Telangiectasia and erythema. • Rash over the phalanges (photosensitivity). • Raynaud's phenomenon (may occur if the weather is cold). • Arthritis.
3. forearm and Arms	• Livedo reticularis. • Purpura (vasculitis). • Proximal myopathy (active disease or steroids).

4. Head	• Alopecia with/without scarring.
	• Lupus hairs: short, broken hairs above the forehead.
	• Eyes—scleritis, red and dry (Sjögren's syndrome), pallor of conjunctiva (anemia of chronic disease).
	• Mouth—ulcers.
	• Face:
	  ○ Butterfly rash: over the cheeks and bridge of the nose; sparing nasolabial folds).
	  ○ Discoid rash: red plaques with a central area of hyperkeratosis.

5. Chest	• Cardiovascular system—Pericardial rub (pericarditis). • Respiratory system—Pleural rub (pleuritic) or signs of pleural effusion, pulmonary fibrosis, collapse or pulmonary HTN.
6. Abdomen	• Hepatosplenomegaly.
7. Hips	• Pain on movement due to aseptic necrosis (due to ischemia of femoral head).
8. Legs	• Feet—red soles, small-joint synovitis. • Livedo reticularis & Rash. • Ulcers over the malleoli (due to vasculitis or anti-phospholipid syndrome). • Ankle edema (nephrotic syndrome). • Proximal myopathy and Neuropathy (sensory).
9. Other	• Urine analysis (proteinuria). • Blood pressure (hypertension). • Temperature chart/fever.

Scleroderma	
1. General inspection	• 'Bird-like' facies (pinched and expressionless). • Cachexia/Weight-loss (due to dysphagia or malabsorption). • Hair loss.
2. Hands	• Calcinosis, atrophy distal tissue pulp (ischemia from Raynaud's), telangiectasia. • Sclerodactyly: Fixed flexion deformity (due to thickening of skin of fingers); i.e. Hand function must be assessed. • Dilated capillary loops (nail folds). • Tendon friction rubs (palpable or audible). • Small-joint arthritis and tendon crepitus.
3. Arms	• Edema (early) or skin thickening and tightening. • Pigmentation. • Proximal myopathy (myositis). • Blood pressure (hypertension with renal involvement).
4. Head	• Loss of wrinkles and skin fold. • Alopecia. • Eyes—difficulty closing the eyes, loss of eyebrows, pale conjunctiva. • Mouth—puckered ('purse string mouth'), reduced opening. • Salt and pepper pigmentation. • Telangiectasia. • Neck muscles—wasting and weakness.
5. Chest	• Tight and thickened skin ('Roman breastplate'). • Heart—signs of pulmonary hypertension, pericarditis, cor pulmonale (secondary to pulmonary fibrosis), left ventricular failure. • Lungs—signs of fibrosis, reflux pneumonitis, pleural effusion.
6. Legs	• Skin lesions, ulcers. • Signs of vasculitis.
7. Other	• Urinalysis (proteinuria). • Temperature chart/fever (infection). • Stool examination (steatorrhoea).



Miscellaneous

Fever

Personal data:

- Age, Female, Residency and occupation.

HPI:

- Site: locus of infection or newly noticed mass (malignancy).
- Onset: sudden or gradual
- Character:
  - Continuous? (fluctuation <0.5 F) Suggests CNS infection or gram-positive rod.
  - Diurnal (a regular rise and fall in temperature, occurring between 4 pm and midnight). Absence of diurnal variation has been associated but doesn't establish a non-infectious cause.
  - Tertian (periodicity of 8 hrs) like in malaria due to plasmodium vivax or ovale.
  - Quartan? (periodicity of 48 hrs) malaria due to plasmodium malariae.
  - Cyclical: on and off (hodgkin).

DDX	Causes	Signs & symptoms	Risk Factor
Malignancy	lymphomas, leukemia, Renal cell carcinoma, hepatocellular carcinoma	• Low grade, constant fever. • Constitutional symptoms e.g. N/V, weight loss, fatigue. • Recurrent bleeding or infections, pallor, petechiae/ecchymoses (hematological malignancies) • Ask about the symptoms of the common malignancies.	• Familial • Occupation • Smoking • Alcohol or Diet • Radiation, chemo or sunlight. • Infections (e.g. hepatitis, H.pylori, HPV, AIDs). • Toxins e.g. Aflatoxin • Drugs e.g. OCP. • Diseases e.g. IBD, Barrett esophagus.
Infection	bacterial, viral, fungal, parasitic	• Specific locus of infection. • Other symptoms related to the system involved. • Continuous or intermittent fever. • Headache, weakness, profuse sweats, chills, joint pains, aches, weight loss, vomiting.	• Recent surgeries/procedure or visit to hospital. • Contact with sick person. • Unpasteurized dairy products. • Exposure to pets or cattle. • Consumption of camel milk. • Travel to endemic countries. • Blood transfusion, stick needle, unprotected sex, were in prison. • Immune compromised, prolonged steroid or antibiotic use.

Inflammatory/ autoimmune	SLE, Rheumatic fever, Giant cell arteritis, Rheumatoid arthritis, IBD	• Rash, Joint or bone pain, bone deformities. • Constitutional symptoms e.g. N/V, weight loss, fatigue.	• -Female gender • -Family hx • -Autoimmune diseases
Others	Pulmonary Embolism, drug, hyperthyroidism	• Agitated, anxious, palpitations, heat intolerance, weight loss, exophthalmos. • Leg pain, redness, itching.	• -Started a new medication. • -DVT, hypercoagulable state, bedridden.

Associated symptoms:

Cardiorespiratory:

- Do you have a dry cough, nasal congestion, sinus pain, or sore throat?
  - Acute pharyngitis (viral or bacterial), sinusitis, URTI.
- Do you have productive cough or SOB?
  - Pneumonia (viral, bacterial, fungal), bronchitis, TB?
- Do you have any blood in your sputum?
  - Pneumonia, bronchitis, TB, PE, lung cancer.
- Do you have chest pain?
  - PE, pneumonia, pericarditis, bacterial endocarditis

Urinary:

- Do you have Blood with urination?
  - UTI, Pyelonephritis, renal cell carcinoma, Wegener's granulomatosis, SLE and other vasculitis disease of the kidney.
- Do you have burning with urination?
  - UTI, pyelonephritis, renal cell carcinoma, urethritis, prostatitis.

Gastrointestinal:

- Have you ever had nausea and vomiting?
  - Gastroenteritis, cholecystitis, cholangitis, hepatitis, pancreatitis.
- Do you have diarrhea?
  - Gastroenteritis, infectious colitis, parasitic infections, IBD.
- Do you have abdominal pain?
  - Gastroenteritis, cholecystitis, cholangitis, hepatitis, pancreatic CA, pancreatitis, liver mets, polyarteritis nodosa, IBD.
- Have you noticed yellowing of your skin?
  - Cholecystitis, hepatitis, liver abscess, malignancy and involvement of the liver.

Constitutional symptoms

Neurological:

- Do you have headache?
  - Giant cell arteritis, meningitis, encephalitis, sinusitis.
- Difficulty with your speech, double vision, arm or leg weakness, seizure?
  - Meningitis, encephalitis, intracerebral hemorrhage, endocarditis with CNS emboli.
- Have you been confused?
  - Meningitis, encephalitis, bacterial infection with septic shock.

Others:

- Any redness of your skin.
  - Cellulitis, phlebitis, fungal infection, drug reaction.
- Have you had any stiffness or pain in you joints?
  - Septic arthritis, SLE, rheumatic fever, GCA, Wegener's granulomatosis, RA, polyarteritis nodosa.
- Have you had jaw claudication?
  - GCA.
- Do you have easy bruising or gum bleeding?
  - Leukemia, lymphoma.

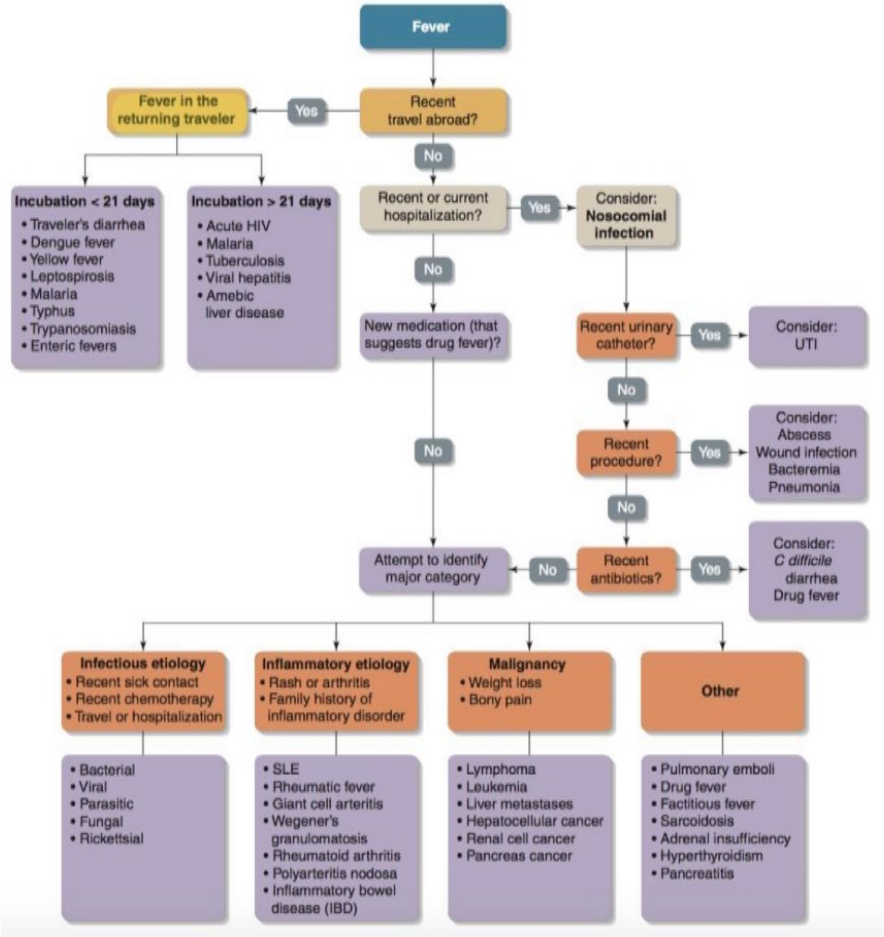
PMH and surgical:

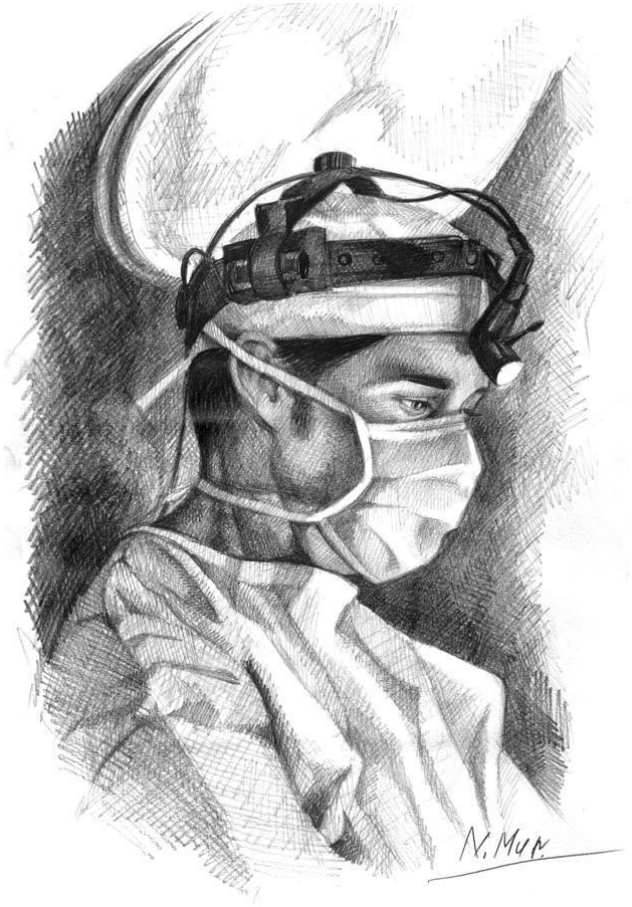
- Recent procedures (dental work) bacterial endocarditis.
- Started new medications? Drug fever.
- Started a psychiatric medication? Neuroleptic malignant syndrome.
- If you were recently hospitalized, did you have:
  - Surgery? Abscess, wound infection, malignant hyperthermia.
  - Catheter (urinary or IV).
  - New antibiotics? Colitis, drug fever.

If you traveled abroad?

- Did traveling require you to remain immobile for extended periods of time?
  - PE, DVT.
- Did you consume untreated water or milk products?
  - Brucellosis/salmonella/shegilla, hepatitis.
- Did you eat raw or uncooked meat?
  - Enteric infection.
- Were you exposed to mosquitos?
  - Malaria/dengue fever.
- Were you exposed to tics?
  - Lyme disease.
- Have you recently had unprotected sexual intercourse or used intravenous drugs?
  - Acute HIV, hepatitis B/C, syphilis, gonorrhea, endocarditis.
- Have you ever lived in a homeless shelter or a prison?
  - TB.
- Have you had recent exertion in the heat?
  - Heat stroke.
- Have you ever had heart valve surgery?
  - Endocarditis.

Differential Diagnosis:





General Surgery

Peripheral Vascular Examination

WIP3E: Wash your Hands, Introduce yourself, Permission/Privacy/Position, Exposure
Position: Laying
Exposure: Expose from the upper thighs to the feet

A. Inspection: (4 for losses > 3 lesions> 2 skin changes + 1 + don't forget 3 menavures "abc") -4 → the patient has both limbs with no missing toes, No apparent Hair loss or muscle atrophy.
-3 → No ulcers/scars/gangrene.
-2 → No Skin pigmentation/Discoloration.
-1→ the nails are (thickened in chronic ischemia, thinning in acute ischemia or discoloration,clubbing).

a. Inspect between the toes (to see if there's any ulcers or infections).
b. lift the leg up to see if there's an ulcer in the posterior side or in the heels.
c. Do burger's test: Ask the patient to stand and check the legs and calf for prominent veins (Varicose veins).

Burger's test:
1. lift the limb up to 90 degrees slowly.
2. Limb will become pale at any degree below 90% if it's abnormal. (it's called burger angle) - In ischemia at 15-30 degrees, in 30-60 seconds.
   - Vascular angle less than 20° indicates severe ischemia.
   - After elevating the leg ask patient to sit and dangle their leg, in ischemia leg will turn from white to pink to red-purple color.
   - Normally it will remain pink.

B. Palpation: *Do **TTCCP** and always compare left to right
- **T**enderness (look at the pt face)
- **T**emperature (Check both legs with the dorsum of the hand)
- **C**heck for edema (press both legs from medial malleolus; Press over the bony prominences)
- **C**apillary refill time (normal less than 2 sec)
- **P**ulses: *4* and always compere

1- Common femoral (half way between the symphysis pubis and the anterior sup. iliac spine).
2- Popliteal artery (flex the knee slightly using both hands to palpate)
3- Posterior tibial artery (lies 1/3 the way between medial malleolus and the tip of the heal) *4- Dorsalis pedis artery* (between the 1st and 2nd metatarsal bones).

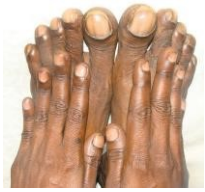
C. Auscultations: *Auscultate with the bell for any bruits over:

- Aortic bifurcation
- Femoral
- Popiltial

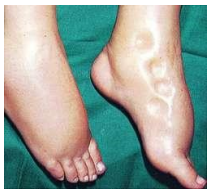
Measure the ankle-brachial index (ABI)	
False elevation; noncompressible artery	>1.3
Normal	1-1.3
Border-line	0.9-1
Intermittent claudication	0.4-0.9
Critical limb ischemia	<0.4

➽ ***End your examination with:***

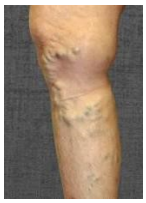
- Cardiovascular examination
- Neurological examination
- Rheumatological examination



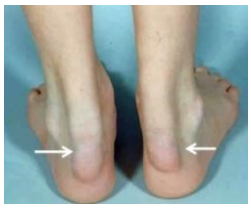
Toes clubbing



Pitting edema



Varicosities



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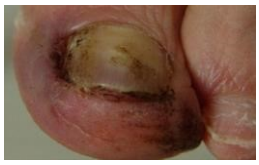
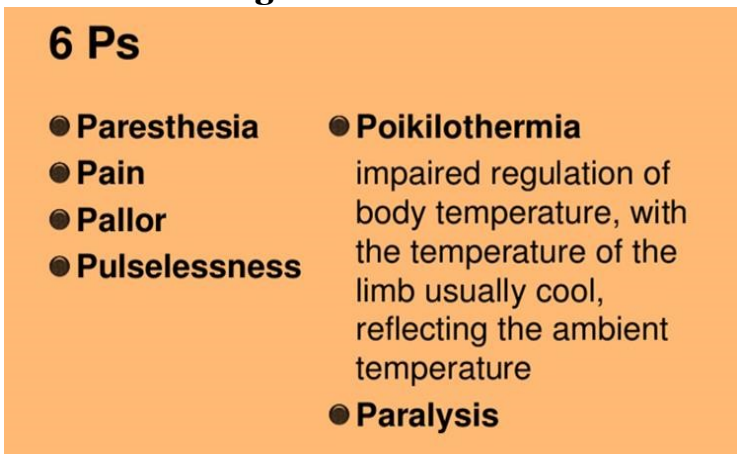


Thickened toe

Signs of ischemia



Relationships between pain location and site of occlusion:	
Buttock and Hip	Aortoiliac disease: leriche syndrome triad (claudication, absent femoral pulses, and erectile dysfunction)
Thigh	Aortoiliac or common femoral artery
Upper two-thirds of the calf	Superficial femoral artery
Lower one-third of the calf	Popliteal artery
Foot claudication	Tibial arteries

Urinary system

Flank pain

DDx:

- Renal → renal stone, pyelonephritis, or papillary necrosis.
- Non-Renal
  - MSK → muscle strains or contusion.
  - Vascular causes → abdominal aortic aneurysm, retroperitoneal hemorrhage. ○ Respiratory → lower lobe pneumonia, pleural effusion or PE.
  - GI → diverticulitis, appendicitis
  - Infectious → herpes zoster, psoas abscess.

History Taking:

HPI:

- Site: below the ribs and above the iliac crest.
- Onset: sudden ? (Renal stone), Gradual? (pyelonephritis)
- Characteristic: sharp ? colicky ?(renal stone), tingling or burning sensation? (herpes)
- Alleviating factors: movement?(renal stone) Rest, analgesics? MSK/pyelonephritis
- Exacerbating: movement? (MSK)[2]
- Timing: (progression? frequence ?) Hours to 1 week ?(pyelonephritis + renal stone) Months ? (Malignancy , renal cyst)
- Radiating: from loin to groin? (Renal stones)
- Severity: the worst pain in my life? (Renal stone), scale of pain from 10,

Associated symptoms:

- Constitutional symptoms? fever , vomiting and nausea? (pyelonephritis) ● Hematuria ? (renal stone, pyelonephritis) ● Lower urinary tract symptoms.
- Sudden flank, orthostatic dizziness (hemorrhage): AAA
- Pleuritic chest pain ? PE, pneumonia

Risk Factors:

- Medical history:
  - DM, UTI, urinary catheter? (pyelonephritis)
  - Hypercalciuria, hypercalcaemia, hyperoxaluria, gout, previous stone,homocystinuria, Crohn's disease? renal stone
  - Older man with HTN and peripheral vascular disease? AAA
  - Sickle cell anemia, DM? papillary necrosis
  - Drugs e.g. Thiazides (uric acid stones), Loop diuretics (Ca stones), NSAIDs? (Papillary necrosis).
- Surgical: Trauma, cesarean section, urinary tract surgery.

[2] Musculoskeletal

- Social: Cacao,caffeine (oxalate stone), Meat (uric acid stones), Smoke, Sexual contact (STD), high salt, protein intake ? low water intake?
- Family HX: homocystinuria, Family stones.

Scrotal pain

DDx:

Acute Scrotal Pain <12h,sharp, diffuse, severe	Non-acute Scrotal Pain (Dull/aching)
● Testicular torsion ● Epididymitis-orchitis ● Prostatitis ● Traumatic testicular rupture or hematoma	● Varicocele ● Hydrocele ● Epididymal cyst/spermatocele ● Inguinal herni ● Testicular cancer

History taking:

- Personal Data: Age (young → testicular torsion, older → epididymitis)

HPI

- Site: diffuse? Testicular torsion, Hydrocele, varicocele. Upper pole of testis? torsion of testicular appendage.Epididymitis: - Epididymitis - Epididymal cyst
- Onset: ACUTE? testicular torsion. SUBACUTE? Epididymitis, Torsion of testicular appendage, Orchitis.
- Character Sharp? Testicular torsion, torsion of testicular appendage, Dull? Hydrocele, Varicocele.
- Recurrent: recurrent episodes that resolv spontaneously? Testicular torsion ● Alleviating factor: Elevation of the scrotum ? epididymitis.
- Exacerbating factor: elevation of the scrotum? testicular torsion.
- Time:, After prolonged sitting ? Epididymitis (inflammation), Come during the day and disappear after lying down ? hydrocele.
- Severity: Moderate? Torsion of testicular appendage or Epididymitis.Very Severe or Awakening during the night or morning with severe pain or
- Pain unrelieved with elevation of scrotal contents ? Testicular torsion.

Associated symptoms:

- Renal symptoms: Dysuria? Epididymitis, Trauma ● Constitutional symptoms:
  - Fever? (Epididymitis, Testicular torsion)
  - Nausea/vomiting? (Testicular torsion, Trauma)
- Abdominal pain? Testicular torsion, torsion of testicular appendage, Fournier's gangrene.
- Gynecomastia? testicular cancer
- Scrotal swelling? Epididymitis, testicular torsion, hydrocele.
- Hematuria? Epididymitis.

Risk factors:

- Medical: Increase the size after upper respiratory viral infection? hydrocele,
- Surgical or trauma? After vasectomy? Epididymitis. After trauma? Testicular rupture/torsion. After urinary procedure? Epididymitis.
- Social: After sexual or physical activity ? Testicular torsion.

Hematuria

- Gross hematuria : The presence of blood in the urine in sufficient quantity to be visible to the naked eye. (> 3500 red blood cells per high-power field are present)
- Microscopic hematuria : 2–3 red blood cells per high-power field on urine microscopy.

DDx of Hematuria:

Prerenal	Renal	Postrenal
● SLE ● Hemolytic anemia such G6PDD and sickle cell anemia ● Anticoagulant ● rhabdomyolysis	● Renal papillary necrosis ● Renal colic ● Renal vein thrombosis ● Pyelonephritis ● Renal infarction ● SLE → 15 and 45 years, more common in female, malar rash, arthralgia, fatigue ● Wegener's Granulomatosis → Hemoptysis & hematuria ● Goodpasture → Hemoptysis & hematuria ● IgA Nephropathy → Recurrent macroscopic haematuria associated with upper respiratory tract infections ● Postinfection → Common from age 2 to 10 years, abrupt onset of oedema,gross haematuria,1 to 2 weeks post-pharyngitis	● ureteric stone ● cystitis ● bladder cancer ● prostate cancer ● prostatitis ● BPH ● urethritis

Time course:

- Is this the first episode ? Transient or self limiting condition?
- When did it start?
- Did you exercise vigorously prior to the hematuria ? (Exercise Induced Hematuria)
- Are you having your menstrual period? (Vaginal source or Endometriosis)

* if the hematuria starts after the symptoms by 1-3 days : most likely IgA nephropathy

* if After 1-3 weeks : Post infection GN

Character:

- Ask about pain:
  - Painless → malignancy, bleeding disorder, drugs related.
  - Painful → Renal stone, UTI , trauma <u>but does not r/o malignancy</u>.

- Ask about the timing of pain:
  - Before hematuria:stone (hx of pain for 1 weak then developed hematuria
  - After hematuria:clot colic due to malignancy or arteriovenous malformation
- Does the urine contain clots? Nonglomerular source
- If there are clots, what are the shape ?
  - Pipes like ? Bleeding from the ureter
  - Balls like ? Bleeding from the bladder
- When does the blood appear?
  - at the beginning ? Lesion from the urethra or distal to the bladder neck
  - at the end ? Lesion from the bladder neck, bladder trigone or posterior urethra
  - Throughout ? Hemorrhagic cystitis , renal or ureteral source, malignancy

Associated symptoms:

- Voiding and storage symptoms ? BPH
- Suprapubic pain ? Cystitis
- Sharp pain in your lower abdomen or above the groin ? Renal calculus
- Flank pain ? Pyelonephritis, Papillary necrosis, Renal calculi and renal infarction
- back pain? prostate cancer
- Swelling of the eyelids or feet ? GN
- Hemoptysis ? Wegener's, goodpasture
- Joint or skin rash ? GN secondary to SLE, polyarteritis nodosa
- Easy bruising, bleeding from other sites ? Bleeding disorder, anticoagulants use

Constitutional symptoms

- Fever, chills? Pyelonephritis, Acute prostatitis, Prostatic abscess and Renal cell carcinoma
- Weight, appetite loss and malaise ? Malignancy

Past medical:

- Are you taking

1: Anticoagulants ?
2: Cyclophosphamide ? Hemorrhagic cystitis , bladder cancer
3: Rifampin? discoloration of the urine

- Have you ever had Kidney stone ? Urinary calculus - Have you ever had gout ? Uric acid stone - Do you have sickle cell anemia?
- Have you recently had URT symptoms OR sore throat ?

Truma: Have you had a recent injury to you abdominal, back or flank ?

Past surgical:

- Have you recently had Urinary catheter, Urinary Procedure ? Iatrogenic or Recurrent UTI

Social hx:

- Smoking ? Bladder cancer
- Occupation ? Leather, dye, rubber, tire manufacturing? Bladder cancer
- Hx of traveling eg: egypt ? *Schistosoma haematobium → bladder cancer*

fx: family history of prostate or kidney cancer

Dysuria

Dysuria is pain, burning, or discomfort experienced during or immediately after urination it usually reflects irritation or inflammation of the external genitalia, the lower or upper GU tract.

DDx:

A. Infectious	★ UTI ★ Urethritis ★Prostatitis ★ Epididymitis ★ Cystitis
B. Inflammatory	★ Atrophic vaginitis ★ Behcet's syndrome ★ Reactive arthritis ★ Interstitial cystitis ★ Valvudenya ★ Drugs or radiation: dopamine
C. Mechanical	★ BPH ★ Urethral stricture /stenosis ★ Urolithiasis ★ Cystocele
D. Neoplasm	★ Prostate cancer ★ Bladder cancer ★ Urethral cancer ★ Penile cancer

Personal data:
occupation (Renal cell carcinoma) , Age , gender (BPH → male , pregnancy → Female) HPI

- Onset 1–2 days? → bacterial cystitis, Acute bacterial prostatitis Bacterial epididymitis , 2–7 days? Urethritis/epididymitis (gonorrhea, chlamydia, herpes simplex virus) - More than 14 days? Chlamydia infection (in women) - Weeks to months? Interstitial cystitis Chronic bacterial prostatitis, Vulvodynia
- Character : Cyclic ? Endometriosis, Pelvic Inflammatory Disease - The pain come After having sex ? Recurrent UTI - The pain at the beginning of urination ? Urethritis - At the end? Cystitis or prostatitis
- Aggravating factors : foods or drinks? Interstitial cystitis or painful bladder syndrome
- Relieving factors: bladder full and improve after urination?Interstitial cystitis or painful bladder syndrome

Associated symptoms :
Voiding and OBSTRUCTIVE SYMPTOMS

- Flank pain (stones , Pyelonephritis)
- Testicular pain and swelling (Epididymitis, prostates) Perianal pain ? prostates

is there any discharge (?Purulent or mucopurulent discharge characterizes urethritis or - cervicitis , discharge bloody → urethral cancer
Constitutional symptoms (malignancy and UTI , pyelonephritis)

Risk factors:

- Past Medical: History of UTI, stones , BPH , malignancy, steroid (increase risk of UTI) ● Past surgical: catheter (UTI)
- Social History: unprotected sex (STD) , smoking (renal cell carcinoma) using spermicide (increased risk of UTI).

Hand

DDx:

- Acute: Trauma, burns, laceration, fractures, dislocation, infection.
- Chronic: Lumps, Carpal tunnel syndrome and nerve compressions, arthritis.

Personal data

- Hand dominance
- Occupation

HPI

- Site?
- When did it happen?
- How did it happen?
- How was the posture of hand while it was injured?
- Can he moves it?
- Did it change in color since the injury happened? ● Is it associated with pain?

Past Medical history

- DM (for risk of infections and low blood supply in extremities)
- Vascular diseases
- Tetanus vaccine (any open wound have risk for tetanus infection) ● Neurological Diseases

Past Surgical History

- Any hand surgery?
- Trauma or injury?

Social History

- Smoking

Family History

- Same symptoms
- Tumors (if he presented with a lump)

Hand examination

A. Inspection:

- Nail changes
- symmetrical posture and flexor cascade
- Hand or joint deformity
- Swellings, scars, Color (cyanosis, pale)
- Skin changes (ulcers, lesions)
- Muscle wasting (thenar and hypothenar) *Always compare both hands + Dorsum and the palm.

B. Palpation:

- Temperature and Tenderness (Check for tenderness bimanually with both hands checking all hand joints)
- Capillary filling & radial and ulnar pulses
- Muscle wasting
- Sensation on the median, radial and ulnar myotome (is done only in surgery osce)

C. Movement:

- Passively: Move the wrist, MP, PIP, DIP, tendons as well (FDS,FDP) comment if there was any pain or crepitations.
- Actively:
    1- Ask him to move the wrist.
    2- Ask him to open and close his hand.
    3- Ask him to opposite every finger.

D. Power: (comment normal Radial, median, ulnar supply to muscles) - Radial: Examine the extension of the fingers and thumb.

- Ulnar: Examine abduction of the fingers.
- Median: Examine the thumb abduction/opposition
- Power grip: ask him to grip your finger or give him a pen and pull it from him.

E. Special Tests:

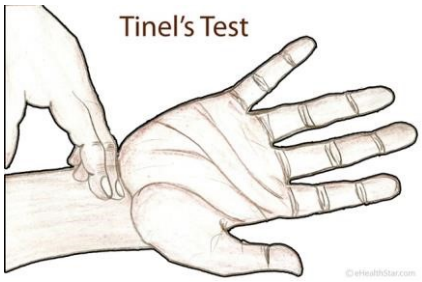
1- Tinel's Test: by tapping on the distal part of the forearm “couple of times” and ask if he feel any pain or numbness in the distribution of median nerve.

2- Phalen and reverse phalen Test: ask if he feel any pain or numbness in the distribution of median nerve.

*1 + 2 is done in Carpal tunnel syndrome to confirm the diagnosis.

3- Allen’s Test: by grabbing the distal forearm and compressing on both ulnar and radial arteries with both hands and ask him to open and close his hands quickly

then when you see its pale leave one side (ulnar side) and see how fast and redness in the palm of the hands, then do the same to the other side → then you comment if he is radial or ulnar dominant.



Lump

DDx:

- Mass (tumor benign or malignant)
- Goiter
- Cyst
- Hernia

Personal Data

- Age (old age is a risk for hernia), occupation (hernia)

HPI

- Site? bilateral, unilateral
- Onset? when did you notice it and how ?
- Course? increase, decrease or disappeared ● Characteristic? painful, discharge, color, shape?
- Etiology ? do you know the cause of it
- Reducible or not? hernia

Associated symptoms:

- according to the place of the lump?

If hernia:

- **symptoms of intestinal obstruction such as:** abdominal distention, vomiting, constipation, pain, irritated child, fever, discoloration of the skin
- **Risk factors factors for the hernia as:** (Lifting heavy object, Chronic cough, Chronic constipation, Abdominal distention 'ascites or mass', Obesity, multiparous, Difficulty in passing urine ?

If in the breast:

- Is there any discharge ? is at associated with the menstrual cycle? is it painful?

If in the thyroid:

- hyper/hypothyroidism signs + compressive symptoms e.g. difficulty swallowing, breathing, hoarseness

Constitutional symptoms:

- Compression symptoms: interfere with swallowing, respiration, movement.
- Specific Symptoms: Discharge? (if yes ask about the amount, frequency, color,consistency, smell, by itself or by pressing on it?)
- Constipation, chronic cough. (risk factor for hernia)

Lump Examination

A. Inspection: (6S)

- Single or multiple?
- Site: right or left? organ? medial or lateral? or nearest anatomical landmark?
- Size: three dimensions (width, height and depth)
- Shape & mention the edges: Spherical, hemispheric, or asymmetrical with defined or diffused edges.
- Skin color & surrounding: any discoloration, ulcer, red/inflamed,bloody, scar, necrosis. - Surface: smooth, irregular or nodular. *Not always applicable.

If Goiter (lump in the neck):

➔ Ask the patient to swallow and protrude the tongue.

If Hernia

➔ Cough and inspect the orifices.

➔ Position: while the patient is lying ask him to sit without using his hands and look at the lump (it disappear → intraabdominal, increase → superficial, No change → intramuscular)

B. Palpation: (ask about the pain first)

- 2t's: Tenderness (always feel the nontender area first and don't forget to watch the patient's face) and Temperature (Feel with back of your fingers on surface of the lump and surrounding area and compare)
- 4S's:(Size,Shape,Surface,Single or multiple?) + Edges (well defined or ill defined).
- Consistency: Soft, firm, rubbery and hard
- Pulsatile: rest a finger of each hand on opposite side of the lump for few sec and then watch your fingers
  - Transmitted pulsation: Fingers will be pushed in the same direction
  - Expansile: both fingers will be pushed apart - Compressibility Vs. reducibility:
  - Compressible: mass decreases with pressure, but reappears immediately upon release.
  - Reducible: lump reappear only on application of another force e.g. Cough - Tests:

1- Fluctuation:

- Place 2 fingers at the opposite sides of the lump and press the middle of the lump with your index of your other hand.
- Very large masses can be assessed by a fluid thrill

2- Mobility: Move the lump in two directions, right-angled to each other. Then repeat exam when muscle contracted:

- Bone: immobile.
- Muscle: contraction reduces lump mobility.
- Subcutaneous: skin can move over lump. ● Skin: moves with skin.

3- Thrills: Detected by tapping one side of the lump and feeling the transmitted vibration when it reaches the other side.

4- Transillumination: We point a bright light at one pole of the lump in a dark room if the content of a lump is clear fluid you will see the light comes from other pole.

If goiter (lump in the neck):

- Perform tracheal deviation & neck lymph nodes.

If hernia

- Perform cough impulse: expansile or not.

C. Percussion:

- Resonant (gas filled lump) Dull (solids or fluid filled lump)

D. Auscultation:

- For arterial bruit, venous hum and bowel sounds

➽ ***End your examination with:***

- Examine the regional lymph node
- Distal neurovascular exam: distal pulses and veins ,distal sensory and motor exam
- Movement of the nearest joint if the lump is in a limb
- General examination

Hernia : PR/PV and expose genitalia.
Goiter: Murmurs, Pretibial myxedema, Reflexes.

Ulcer examination

A. Inspect:

- 5Ss:
  1. Site: describe in anatomical terms or measure the distance from the nearest bony prominence.
  2. Single or multiple; if multiple describe all.
  3. Size
  4. Shape; spherical, oval, asymmetrical.
  5. Surrounding skin; discolored, scaly, dry. ● Margins: regularity,color changes.
- Edge: sloping, punched out, undermined, rolled, or everted.
- Floor of ulcer:
  - Color: red, pale, black
  - The base of the ulcer can be covered by: granulation tissue, scab, eschar, or expose a deep tissue like tendon or bone.
- Discharge (color, amount, and odor): e.g. bloody, serous or purulent
- Depth: in mm or by the structure that has been reached e.g. bone

B. Palpate: (Ask about pain first)

1. Tenderness
2. Temperature of the surrounding area
3. Margins of the ulcer
   a. if a small ulcer then hold with index and thumb and move it horizontally
   b. if huge then stick your fingers inside . you are looking for consistency (soft, firm, or hard)
4. Edge of the ulcer.
5. Floor Tenderness/Discharge (bleeds on touch?)

- Assess the fixation to deep structures

➽ ***End your examination with:***

- Examine the regional lymph node
- Distal neurovascular exam: distal pulses and veins ,distal sensory and motor exam
- Movement of the nearest joint if the ulcer is in a limb

Types of ulcer edges:

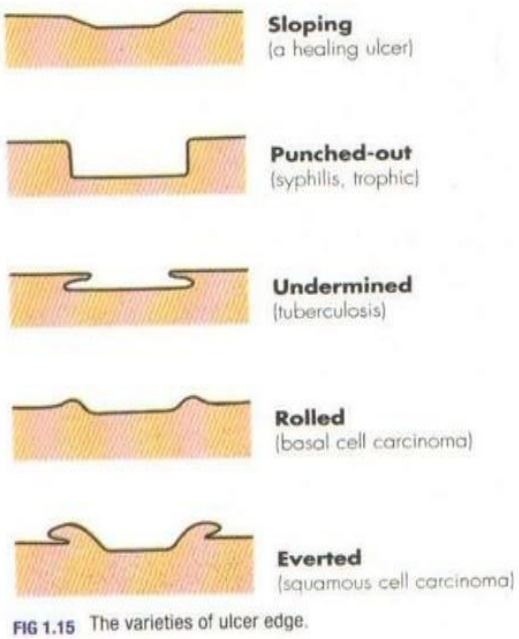


FIG 1.15 The varieties of ulcer edge.

Breast

Risk Factors for breast cancer:

1. old age
2. Previous personal or family history of breast or ovarian cancer (and age affected)?
3. A personal history of atypical hyperplasia (ductal or lobular) increases the risk of breast cancer 3 to 5 times.
4. Causes of high estrogen e.g. Early Menarche and late menopause, Late first pregnancy, obesity, OCPs.
5. Alcohol

Essential Questions to ask include:

- The length of time any mass has been noticed? Any change in size?
- Relationship to the menstrual cycle.
- The presence of pain/nipple discharge?
- previous cyst aspirations.

Breast Examination

WIP3E: Wash your Hands**, I**ntroduce yourself, **P**ermission/**P**rivacy/**P**osition, **E**xposure.
Position: Supine , sitting and 45 degree **Exposure:** whole upper half of the body from the waist up

General appearance look for: ABC2DE ● Appearance:

- Body built: Cachectic? Obese?
- Color: Cyncoed? Pale? (Anemia)
- Connections: to any devices: Holter monitor? Pacemaker? or intracardiac defibrillator?
- Distress: in pain, respiratory or neurological distress
- Else: orientation, consciousness, alertness

Inspection:

- Look at both breast from in front and assess the following:
  - Size , Symmetry and contour
  - Skin (Scars - laceration -discoloration - peau d'orange appearance - nodule)
  - Masses (Describe it)
- Look at the nipples and areola:
  - Presence or absence , Colour , Asymmetry, retraction
  - Discharge (look at the mammary line from the axilla till the groin) ● Ask the patient to slowly raise her arms above her head and look for :
  - Any change in the shape of the breast or any masses
  - See the inframammary fold
  - Inspect the axilla
- Ask the patient to press her hands against her hips (to tense pectoralis muscle) → This accentuates area of dumpling or fixation

Palpation: (Ask the patient if there is any pain?)

- Divide the breast to 4 areas :Upper inner/ outer, lower inner /outer
- Always begin with the normal breast and compare

● Ask the patient to lie down and place her hand behind her head. Palpate gently with your Middle 3 finger pads from in to out make sure to cover all 4 quadrants and the tail
● Comment on any lump: Site. size, shape, surface, overlying skin, single or multiple, edge, temperature, tenderness, consistence, fluctuation, mobility

- To assess the mobility: Ask the patient to rest her hands on her hips with the arms relaxed and then Hold the lump between your thumb and index and try to move it in 2 directions. Now ask the patient to press her hands agonist her hips and reassess the mobility

(less movement = more likely the lump is fixed) ● Nipples:

- If the nipple retracted press gently to each side to see if it will evert or not
- Ask the patient to squeeze her nipple to check for any discharge or use your index and middle finger to palpate (if there is discharge comment on it) ● Check the axillary lymph node:
- Have the patient sit on the edge of the bed facing you.
- Support the patient's arm on the side being examined with your forearm.
- If you're examining the right axilla, use your right arm to support the patient's *(vice versa for left).*
- Palpate the axilla with your free hand, ensuring to cover all areas of the axilla: Medial / lateral / anterior / posterior walls and Apex of the axilla
- Check for the other lymph node (Cervical – supraclavicular – infraclavicular)

➽ ***End your examination with:***

● looking to any evidence of metastasis

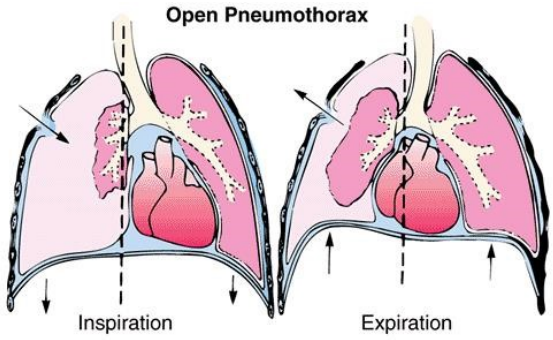
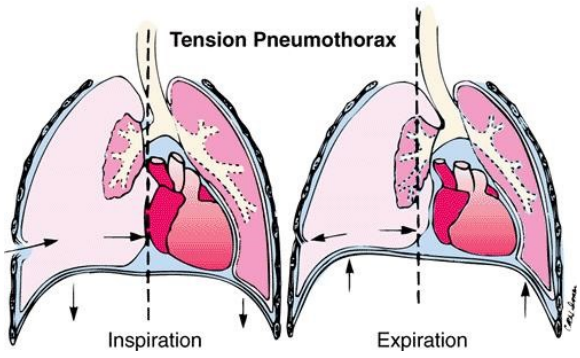
- Chest: Percuss over the base of the lungs for any evidence of pleural effusion
- Abdomen: look for hepatomegaly and ascites
- Lumbar spine: Look for tenderness and limitation of the movement (press it with your thumb).

Trauma

In any case of trauma you should first perform the primary survey for the patient.

Primary survey	
First step to do is to protect the cervical spine by a collar in any trauma patient	
A (Airway)	Basic Airway Techniques: - Chin lift (not done in trauma patients) - Jaw thrust Advanced Airway Techniques: - Naso-tracheal intubation (usually not done in trauma patients) - Oro-tracheal intubation - Cricothyroidotomy (indicated in case of maxillofacial injury) - Emergent tracheostomy (indicated in case of extensive laryngeal injury)
B (Breathing)	Assess and ensure adequate oxygenation and ventilation ● Oxygen saturation ● Respiratory rate ● Chest movement ● Air entry by stethoscope Make sure that the patient is not having any of the following fatal conditions: ● Tension pneumothorax. ● Open pneumothorax ● Massive hemothorax
C (Circulation)	Focus on: ● Level of consciousness ● Skin color and temperature ● Pulse rate and character ● Look for active bleeding

D (Disability)	● Glasgow coma score. ● Pupillary reflex. **TABLE 38-2** **Glasgow Coma Scale** **BEHAVIOR** / **RESPONSE** / **SCORE** Eye opening response: Spontaneously 4; To speech 3; To pain 2; No response 1 Best verbal response: Oriented to time, place, and person 5; Confused 4; Inappropriate words 3; Incomprehensible sounds 2; No response 1 Best motor response: Obeys commands 6; Moves to localized pain 5; Flexion withdrawal from pain 4; Abnormal flexion (decorticate) 3; Abnormal extension (decerebrate) 2; No response 1 Total score: *Best response* 15; *Comatose client* 8 or less; *Totally unresponsive* 3
E (Exposure)	Completely undress the patient to identify any missed injuries, while at the same time preventing hypothermia.which exacerbates coagulopathy and acidosis.

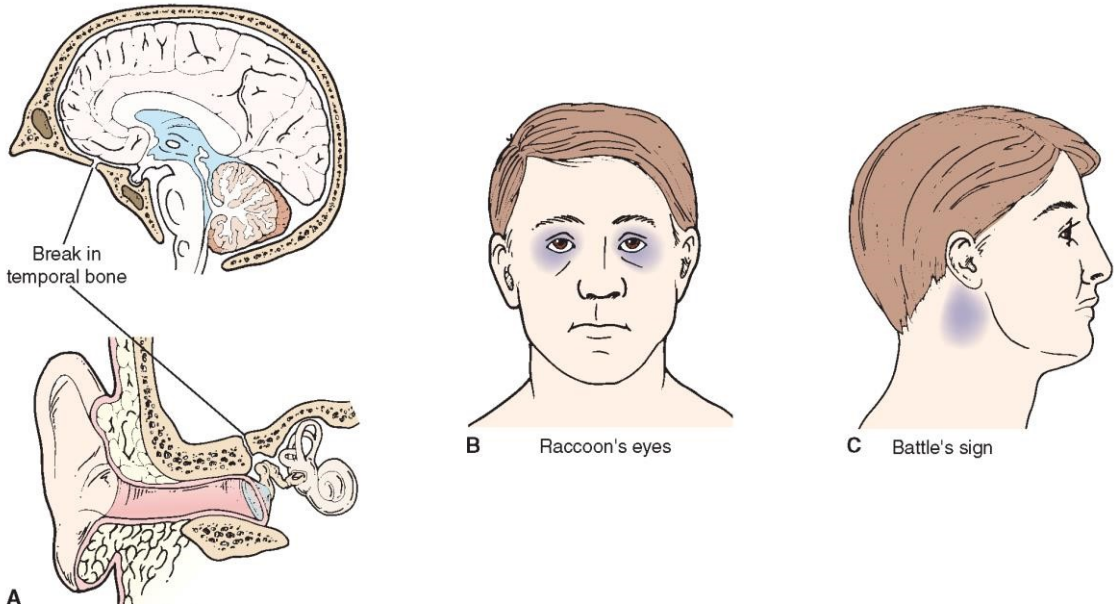
Pneumothorax	
Open	Tension
	
Treatment: Closure of the chest wall defect and tube thoracostomy.	Treatment: Immediate needle thoracostomy decompression with a 14 gauge angiocatheter in the second intercostal space in the midclavicular line followed by: Tube thoracostomy in the fifth intercostal space in the mid-axillary line

Head Trauma Examination

1. Pupil size and reaction
2. CSF leaks from nose, mouth, or ears
3. Survey of the scalp for penetrating injuries
4. Assess maxillofacial skeleton
5. Peripheral neurological exam

Basal skull fracture specific signs:

- Battle's sign (mastoid ecchymosis)
- Raccoon eyes (periorbital ecchymosis)



Burns

	1st	2nd superficial	2nd deep	3rd	4th
Injury	Epidermis only	Epidermis and superficial dermis; skin appendages intact	Epidermis and most dermis; most skin appendages destroyed	Epidermis and all pf dermis; destruction of all skin appendages	Reaches bones & muscles
Appearance	Erythema; blanches with pressure	Erythema, blister, moist, elastic; blanches with pressure	white appearing with erythematous areas, dry waxy, less elastic; doe not blanch to pressure	white, charred, tan, thrombosed vessels; dry and leathery; does not blanch	
sensation	intac; mild to moderate pain	intact; severe pain	Decreased; may be less painful	Anesthetic; not painful (although surrounding areas of second-degree burns are painful)	
Healing	3-6 days without scarring	1-2 weeks; scarring unusual	>3 weeks; often with scarring and contractures	Does not heal; severe scarring and contractures	-
Example	Sunburn	Hot water and soup		Flame burn	-

Manage	Painkiller + fucidin cream NO admission.	Topical dressing + ointment NO surgery	surgery	Surgical debridement & skin grafting

IV Fluid Content & Electrolytes

	Na	K	Ca	Chloride	HCO3	Glucose	Osmo
Normal saline 0.9%	154	154	0	0	0	0	308
Dextrose 5%	0	0	0	0	0	50gm	278
Ringer lactate	130	4	1	109	29	0	273

Sodium Disorders.

Hyponatremia ○ Causes:

■ Hyperglycemia
■ Excessive IV sodium-free fluid administration
■ CHF
■ Nephrotic syndrome
■ Cirrhosis

○ Treatment:

Clinical Manifestations of Hyponatremia by Severity		
Degree of hyponatremia	**Specific manifestation**	**Management**
Mild hyponatremia	No symptoms	Restrict fluids
Moderate	Minimal confusion	Saline and loop diuretic
Severe	Lethargy, seizures, coma	Hypertonic saline, conivaptan, tolvaptan

Hypernatremia ○ Causes:

■ Sweating
■ Burns
■ Fever
■ Pneumonia: from insensible losses from hyperventilation
■ Diarrhea
■ Diuretics
● Treatment:
■ Fluid loss: Correct the underlying cause of fluid loss.

Potassium Disorders.

Hyperkalemia ○ Causes:

■ Hemolysis
■ Renal failure
■ Aldosterone decrease ■ Decreased insulin ■ Acidosis:
■ Tissue destruction

- Treatment:
  - Calcium chloride or calcium gluconate
  - Insulin and glucose
  - Bicarbonate

Hypokalemia ○ Causes:

- Decreased intake
- Shift into cells: Alkalosis, Increased insulin, Beta adrenergic stimulation
- Renal loss: Loop diuretics, Increased aldosterone
- GI loss: vomiting

- Treatment:
  - Intravenous potassium replacement

Calcium Disorders.

Hypercalcemia ○ Causes:

- Hyperparathyroidism
- Malignancy

○ Treatment

- normal saline infusion
- Calcitonin
- Diuretics

Hypocalcemia ○ Causes:

- Low parathyroid hormone
- Low vitamin D
- Pseudohypocalcemia
- Pancreatitis

- Treatment
  - Calcium supplementation
  - Vitamin D

Clinical skills

Vital Signs

★Pulse Rate and Respiratory Rate:

Materials: Watch or clock with displaying seconds.

Preparation	
1	Introduce yourself to the patient and confirm patient's ID.
2	Explain the procedure and get patient' s consent.
3	Wash hands.
4	Prepare the necessary materials.
Give him/her 10 minutes to rest before measuring.	
5	patient in a sitting Position and uncover his/her arms
Procedure for Pulse Rate (PR)	
6	Gently place your (index, middle and ring fingers) on the selected artery. (Do not use your thumb because it has its own pulse that you may feel).
7	Count the beats for one full minute.
Procedure for Respiratory Rate (RR)	
8	Proceed with taking the Respiratory rate (RR) while your hand is still on the patient's radial artery (Do not inform your patient that you are taking the RR).
9	Observe the rise and fall of the patient's chest and count the number of respirations for another one full minute. (One respiration consists of one complete rise and fall of the chest, or the inhalation and exhalation of air).
After the Procedure	
10	Ensure that the patient is comfortable.
11	Document the procedure.
Rate Limits	
✓ Pulse Rate (PR): - Normal - Bradycardia - Tachycardia	60-100 Beats per minute < 60 bpm > 100 bpm
✓ Respiratory Rate (RR) - Normal - Bradypnea - Tachypnea	12-20 Breaths per minute < 12 bpm > 20 bpm

★ Blood pressure:

Objectives: To accurately measure the blood pressure using the manual sphygmomanometer. Systolic pressure: peak pressure in the artery during ventricular contraction.Diastolic pressure: minimum pressure exerted against the artery wall during ventricular diastole.
Materials: Stethoscope and a manual sphygmomanometer.

	Preparation
1	Introduce yourself to the patient and confirm patient's ID.
2	Explain the procedure and get patient' s consent.
3	Wash hands.
4	Prepare the necessary materials.
	Give him/her 10 minutes to rest before measuring.
5	Position the patient in a sitting Position and uncover one of his/her arms.
	Procedure
6	Turn on the mercury valve.
7	Place an appropriately sized cuff on the upper arm. *(The center of the cuff bladder must be over brachial artery site and lower edge 2.5cm above the antecubital fossa).*
8	Inflating the cuff till the point where radial pulsation disappears and keep inflating the cuff 20-30 mmHg more.
9	Slowly deflate the cuff, noting the pressure at which the pulse reappears. *(This is the approximate level of the systolic blood pressure)*
10	Deflate the cuff completely.
11	Place the stethoscope over the brachial artery pulse.
12	Re-inflate cuff to 20-30 mmHg above palpated systolic pressure.
13	Slowly Deflate the Cuff
14	The first sound indicates the systolic blood pressure *(continue deflation).*
15	Point of disappearance of the sound indicates the diastolic blood pressure.
16	Deflate the cuff completely.
17	Turn off the mercury valve.
18	Document the procedure (systolic/diastolic).

Classes of BP readings	Systolic (mmHg)	Diastolic (mmHg)
Optimal	<120	<80
Normal	120-129	80-84

High Normal	130-139	85-89
Mild HTN (Grade1)	140-159	90-99
Moderate HTN (Grade2)	160-179	100-109
Severe HTN (Grade3)	>180	>110

★Temperature:

Objectives: To accurately measure body temperature (In the mouth) using a digital thermometer.

Materials: Digital thermometer, disposable probe, cotton gauze, disinfectant solution.

	Preparation
1	Introduce yourself and confirm patient's ID.
2	Explain the procedure and get patient' s consent.
3	Wash hands.
4	Prepare the necessary materials.
5	patient in a sitting Position
6	Put on clean gloves
	Procedures
7	Take the digital thermometer.
8	Withdraw probe and observe for test display (a digital human icon will appear on the screen).
9	State audible tone will sound, then display of probe type:
10	Load appropriate probe into probe cover.
11	Change modes *(oral, axillary or rectal)* by pressing the Human Icon button.
12	Place probe under the tongue reaching the sublingual pocket.
13	When final temperature is reached, a tone will sound and temperature will be displayed.
14	Remove probe by pressing "ejection button" and dispose cover according to infection control standards.
15	Insert probe in storage channel to clear display.
16	Wipe all surfaces with damp *(not wet)* cloth with mild detergent, alcohol or nonstaining disinfectant *(Do not scratch LCD screen. Never autoclave digital thermometer)*
17	Put thermometer back in its case.
	After The Procedure
19	Wash your hands.

20	Document the procedure

Average temperature values		
Site	Normal	Fever
Mouth	36.8°C	>37.3°C
Axilla	36.4°C	>36.9°C
Rectum	37.3°C	>37.7°C

Per-rectal examination

Video: Click here (Important and helpful) **, here** & **here**
Materials: Examination Table, Non-sterile Gloves, Good Illumination Source

D: Appropriately Done Pd: Partially Done Nd: Not Done/Incorrectly Done

1.	Step/Task
2.	**Preparation Of The Patient**
1	Introduce Yourself To The Patient And Confirm His Id.
2	Explain The Procedure To The Patient Emphasizing That The Examination May Be Uncomfortable But Should Not Be Painful, A Chaperone Should Be Offered.
3	Get The Patient Consent And Ask Him To Be Exposed From The Waist Down.
4	Position The Patient Comfortably In The Left Lateral Position. Flex Hips And Knees And Position The Buttocks At The Edge Of The Couch, And Put On A Pair Of Gloves
	The Procedure
5	Gently Separate The Buttocks And Inspect The Anus And Surrounding Skin For Any Abnormality Like; Skin Tags, Ulcers, Fissures, Hemorrhoids..Etc,
6	Lubricate The Index Finger Of Your Right Hand And Make Complete Fist With Pointing Index, Position The Finger Over The Anus As If Pointing To The Genitalia.
7	Gently Insert The Finger Into The Anus, Through The Anal Canal And Into The Rectum, Test Anal Tone By Asking The Patient To Squeeze Your Finger.
8	Rotate The Finger So As To Palpate The Entire Circumference Of The Anal Canal And Rectum. Feel For Any Masses, Ulcers,…etc.
9	In Males Comment On The: Size, Surface, Sulcus, Consistency And Tenderness Of The Prostate Gland.
10	Remove The Finger And Examine The Glove And Look For: The Color Of Any Stool And For Any Mucous Or Blood.
	After The Procedure
11	Clean Off Any Lubricant Or Feces On The Anus Or Anal Margin. Remove The Gloves And Dispose It.
12	Give The Patient Time To Put His Clothes Back On, Ensure That He Is Comfortable.
13	Address Any Questions Or Concerns That He May Have, Then Present Your Findings To The Examiner, And Offer A Differential Diagnosis

Indications:

- Hemorrhoids
- Prostatitis
- Prostate cancer
- Benign prostatic hyperplasia
- Anal and rectal cancers
- Anal condyloma
- Constipation
- Fecal incontinence
- Anal fissures

Urinary Catheterization

MATERIALS: Well illuminated examination room, examination table, clean glove, sterile glove, foam body cleanser or cleanse wipes, Foley catheter, sterile tray, sterile underpad, sterile fenestrated drape, antiseptic solution (*povidone iodine etc.*), betadine swabs, sterile cotton balls/sterile gauze, forceps, sterile lubricant, sterile lidocaine, syringe, sterile water, drainage bag, dressing tape.

(Male)

	Step/Task
2.	**Preparation**
1	Introduce Yourself To The Patient.
2.	Confirm Patient's Id.
3.	Explain The Procedure And Reassure The Patient.
4.	Get Patient's Consent.
5.	Wash Hands.
6.	Prepare The Necessary Materials In A Tray *(Check And Ensure The Integrity And The Sterility)*.
7.	Position The Patient In A Lying Position; Uncover His Lower Body With Legs Apart And Groin Exposed *(Maintain The Patient's Privacy And Dignity).*
(Consider Washing The Patient's Genital Area Before The Procedure If Visibly Soiled. After Putting On Clean Gloves, Wash Patient's Genital Area Thoroughly With Foam Body Cleanser Or Cleanse Wipes. Remove Gloves And Wash Hands).	
	Procedure
8.	Put On Sterile Gloves And Use Strict Sterile Technique For The Foley Insertion Procedure. **How to wear a sterile gloves??? Click here**
9.	Take The Sterile Underpad And Place It *(Plastic Side Down)* Beneath The Patient.
10.	Take The Sterile Fenestrated Drape And Position It Around The Patient's Genitalia.
11.	Draw Up 5 Ml Sterile Water Into A Syringe *(If Pre-filled Syringe Is Not Provided With The Pack).* *(Draw Up 5 Ml. Sterile Lidocaine If You Consider To Use Such As Patients With Enlarge Prostates).*
12.	Dispense The Lubricating Gel Into The Tray, Pour Antiseptic Solution Over Three Cotton Balls.
13.	Remove The Plastic Sleeve From The Catheter, Lock The Sterile Water Syringe Into The Port And Check The Integrity Of The Retention Balloon. Place The Catheter On The Sterile Site.
14.	Retract The Foreskin, If Present, Hold The Shaft Of The Penis With The Non-dominant Hand. *(You May Inject 3-5 Ml. Sterile Lidocaine Into The Urethra And Firmly Pinch The End Of The Penis For 1-2 Minutes To Retain The Lidocaine With In The Urethra.)*

Do Not Touch Any Sterile Material With This Hand For The Rest Of The Procedure.	
15.	Using A Circular Motion, Wipe The Glans From The Meatus Outward Three Times With Three Different Cotton Balls/Swabs.
16.	Using The Dominant (Sterile) Hand, Handle The Catheter, Cover The Tip Of The Catheter With Lubricant.
17.	Grasp The Penis In An Upright Position And Insert The Lubricated Catheter Firmly Into The Meatus And Gently Advance It Until You See The Urine In The Catheter/Drainage Bag.
18.	Once A Stream Of Urine Is Obtained, Advance Catheter 3-4 Cm. More And Inject 5 Ml Of Sterile Water To Inflate The Catheter's Balloon *(Ensure That This Does Not Cause The Patient Any Pain).*
19.	Gently Retract The Catheter Until A Resistance Is Felt.
20.	Attach The Catheter Bag And Hang It To The Bed.
21.	If The Foreskin Was Retracted, Reposition It After Placement.
22.	Remove The Gloves.
23.	Tape The Catheter To The Thigh.
	After The Procedure
24.	Ensure That The Patient Is Comfortable.
25.	Make Explanations To The Patient, Answer His Questions And Discuss Management Plan.
26.	Dispose Of Sharps And Waste Material According To Infection Control Standards.
27.	Wash Hands.
28.	Document The Procedure.

(Female)

1	**Step/Task**
2.	**Preparation**
1	Introduce Yourself To The Patient.
2.	Confirm Patient's Id.
3.	Explain The Procedure And Reassure The Patient.
4.	Get Patient's Consent.
5.	Wash Hands.
6.	Prepare The Necessary Materials In A Tray *(Check And Ensure The Integrity And The Sterility)*.
7.	Position The Patient In A Lying Position; Uncover Her Lower Body With Legs Apart- Knees Bending And Groin Exposed *(Maintain The Patient's Privacy And Dignity).*
	Procedure
8.	Put On Sterile Gloves And Use Strict Sterile Technique For The Foley Insertion Procedure. **How to wear a sterile gloves??? Click here**
9.	Take The Sterile Underpad And Place It *(Plastic Side Down)* Beneath The Patient.

10.	Take The Sterile Fenestrated Drape And Position It Around The Patient's Genitalia.
11.	Draw Up 5 Ml Sterile Water Into A Syringe *(If Pre-filled Syringe Is Not Provided With The Pack).*
12.	Dispense The Lubricating Gel Into The Tray, Pour Antiseptic Solution Over Three Cotton Balls.
13.	Remove The Plastic Sleeve From The Catheter, Lock The Sterile Water Syringe Into The Port And Check The Integrity Of The Retention Balloon. Place The Catheter On The Sterile Site.
14.	Separate The Labia Using The Non-dominant Hand And Visualize The Meatus.
15.	Grasp One Cotton Ball With The Forceps, Wipe One Side Of The Labia From Top To Bottom And Discard The Cotton Ball Away From The Sterile Field. Repeat On The Opposite Side And Then Wipe Down The Middle Using The Third Cotton Ball.
16.	Using The Dominant (Sterile) Hand, Handle The Catheter, Cover The Tip Of The Catheter With Lubricant.
17.	Insert The Lubricated Catheter Firmly Into The Meatus And Gently Advance It Until You See The Urine In The Catheter/Drainage Bag.
18.	Once A Stream Of Urine Is Obtained, Advance Catheter 3-4 Cm. More And Inject 5 Ml Of Sterile Water To Inflate The Catheter's Balloon *(Ensure That This Does Not Cause The Patient Any Pain).*
19.	Gently Retract The Catheter Until A Resistance Is Felt.
20.	Attach The Catheter Bag And Hang It To The Bed.
21.	Remove The Gloves.
22.	Tape The Catheter To The Thigh.
	After The Procedure
23.	Ensure That The Patient Is Comfortable.
24.	Make Explanations To The Patient, Answer His Questions And Discuss Management Plan.
25.	Dispose Of Sharps And Waste Material According To Infection Control Standards.
26.	Wash Hands.
27.	Document The Procedure.

A. Indications Of Inserting Catheter:

- Urinary Obstruction
- Delivery
- During Surgeries
- For 24h Monitoring To Detect Creatinine, Protein

B. Contraindications:

- Absolute (Never): 1- Trauma To The Urethra 2- Urethral Strictures
- Relative (Depends): Infection

Alternatives For The Contraindications: Suprapubic Catheter

C. Complications:

- Infection
- Urethral Trauma
- Bladder Spasm

D. Types Of Catheter:

- indwelling:(Stays In The Body And Should Be Sterilized)
    - foley Catheter
    - straight Catheter
- condom Catheter

Trick: Sometimes They Put The Foley And Straight Catheters, Don't Get Confused Take The One With Y-end-shaped

E. Unit Used:

French Unit(Fr): Fr = Diameter X 3

Or If Already Have The Fr And You Want The Diameter,,

Diameter = Fr/3

Nasogastric Tubing

Video: Click here!

Materials: Well Illuminated Examination Room, Examination Table, Clean Gloves, Naso Gastric Tube, Local Anaesthetic Spray (Lidocaine, Xylocain), Lubricating Jelly, Syringe, Pen Light/ Othoscope, Sterile Tray, A Glass Of Water, Drainage Bag, Emesis Basin, Dressing Tape, Stethoscope.

	Step/Task
2.	**Preparation**
1.	Introduce Yourself To The Patient.
2.	Confirm Patient's Id.
3.	Explain The Procedure And Reassure The Patient.
4.	Get Patient's Consent.
5.	Wash Hands.
6.	Prepare The Necessary Materials In A Tray *(Check And Ensure The Integrity And The Sterility)*.
7.	Position The Patient In A Upright (*Sitting*) Position.
	Procedure
8.	Put On Clean Gloves.
9.	Ask The Patient: • Nostril Preference. • Blow And Clean The Nose. • Any Nasal Injury Trauma, Surgery Or Difficulty In Breathing His/Her Nostrils, deviated septum
10.	Examine Each Nasal Passage And Check For Abnormalities. Check with a torch.
11.	Take the NG tube and measure the length of NG tube to be inserted by placing the tip of the tube at the tip of nostril (tip to the tip) and extending the tube behind the ear and stop 2 fingers above the umbilicus. Check the number and put a mark on it.
12.	Lubricate The Tip Of The Ng Tube With Lubricating Jelly.
13.	Apply Local Anaesthesia By Spraying The Back Of The Throat (*With **Lidocaine** Or Xylocain*). Mention Waiting For 5 Minutes
14.	Ask the patient to hold the glass of water.
15.	Insert The Ng Tube Slowly Into The Preferred Nostril And Slide It Along The Floor Of The Nose Into The Nasopharynx. If They Say The Right Nostril U Do It From Patients Perspective (Right Nostril Of The Patient)
16.	Ask The Patient To Swallow Some Water As You Continue To Advance The Tube Through The Pharynx And Esophagus And Into The Stomach. *(If The Patient Coughs Or Gags, Slightly Withdraw The Ng Tube And Leave Him Some Time To Recover)*. "If patient coughs: Stop, and ask patient to relax"

17.	Insert The Ng Tube To The Required Length. Stop when you reach the number you marked.
18.	Ensure That The Tip Of The Tube Is In The Stomach. Always check after feeding the patient (If misplaced in the lung could cause aspiration pneumonia) • most common way to check: Inject 20 Ml Of Air Into The Tube As You Listen Over The Epigastrium With Your Stethoscope. "You hear a gush of air" • Pull Back On The Plunger To Aspirate Stomach Contents. Test The aspirate with **Ph Paper** To Confirm Its Acidity [Ph <6] *(If A Fine Bore Tube Has Been Inserted, It May Not Be Possible To Aspirate Stomach Contents).* • *(If Needed)* Request A Chest X-ray.
19.	Tape The Ng Tube To The Nose And To The Side Of The Face.
20.	Attach A Drainage Bag To The Ng Tube. (Place bag below patient's abdomen) Close The Tube
	After The Procedure
21.	Ensure That The Patient Is Comfortable.
22.	Make Explanations To The Patient, Answer His Questions And Discuss Management Plan.
23.	Dispose Of Sharps And Waste Material According To Infection Control Standards.
24.	Wash Hands.
25.	Document The Procedure.

A. Indications Of Ngt:

1. Diagnostic:

- Evaluation Of Upper Git
- Aspiration And Assessment Of Gastric Content
- Radiographic Assessment

2. Therapeutic:

- Gastric Decompression
- Gastric Lavage
- Postsurgical Bowel Rest
- Feeding

B. Contraindications Of Ngt:

1. Absolute Contraindications:
   - recent Nasal Surgery.
   - naso-facial Fracture.
   - base Of Skull Fracture
2. Not Contraindicated But Has To Be Done Safely And With Care:
   - nasal Polyps
   - nasal Septal Deviation
   - minimal Nasal Surgery

C. Complications:

- coughing
- epistaxis
- signs Of Cyanosis

Intravenous Cannulation

Indications:

1. Repeated blood sampling
2. Administration of blood, nutritions, medications and radiologic contrasts

MATERIALS: IV solution or drug, IV set, IV catheter or cannula, clean gloves, alcohol swab, transparent dressing or tape, tourniquet.

STEP/TASK
Preparation
Introduce yourself to the patient.
Confirm patient's ID.
Explain the procedure and reassure the patient.
Get patient's consent.
Wash hands.
Prepare the necessary materials.
Check the doctor's order and the reason for cannulation.
Put on a pair of clean gloves.
Position the patient in a lying or sitting position and uncover arm completely.
The procedure
Apply tourniquet 10 cm above injection site. *(Make sure it is not too loose or too tight. When necessary, check if pulse is still present.)*
Select the site and appropriate vein for injection.
Visualize and palpate the vein using the pads of the fingertips. *If veins are not visible ask patient : i) to close and open the hand ii) apply gentle taps iii) apply warm/hot pad to selected site to help dilate the veins.)*
Clean the site with an alcohol swab using an expanding circular motion or a single wiping from distal to proximal. Do it for 3 times with different swabs. Let it air dry.
Prepare and inspect the catheter. Slightly pull the needle from the cannula, turn, and inspect for any defects.
Stabilize the vein and apply counter tension to the skin.
Insert the stylet through the skin at an angle of 30-45 degrees and make sure the bevel is up.
Observe for "flash back" of blood in the chamber of the stylet to confirm a successful entry.
Reduce the angle of the needle and advance approximately 1 cm further into the vein.
Slowly advance the catheter over the needle and into the vein while keeping tension on the vein and skin.
Release the tourniquet and quickly remove the needle over the catheter while pressing at least 0.5 cm above the insertion site to prevent backflow of blood. Connect the intravenous tubing immediately and open the regulator.
After the procedure
Anchor the catheter firmly in place by the use of transparent dressing or tape. *DO NOT interrupt the flow rate.*

	Regulate the rate of flow according to the doctor’s order.
	Ensure that the patient is comfortable.
	Dispose of sharps and waste material according to infection control standards.
	Remove the gloves and wash hands.
	Document the procedure.

Long Case Form

Who gave you the history of the patient?

Demographics:

Name		**Age**	
Gender		Nationality	
Occupation		Religion	
Residency		**Marital states**	
How many children?		Age of elder one	

Chief Complaint:

- **Time of admission?**
- **Route of admission? (ER - Clinic-Referral)**
- Did you go to the doctor? What was the diagnosis?
- Hospital course? Investigations and imaging & their results?
- **What are you complaining of?**

S (SITE) OR **F** (FREQUENCY)	• **Localised?** • **diffuse?**
O (ONSET)	**When?** **For how long?** **Previous episodes? When? Progression?**
C (Character & Severity)	**Type? Stabbing - Crashing - Burning - Throbbing** • **Interfere daily life?** **Scale of 1-10?**
R	**Radiation?** **Migrating pain?**
A	**Relieving factors:** **Aggravating factors:**
T (Timing)/ progression	**Suddenly/Rapidly/gradually?** **Day/night or both?** **Continuous/intermittent?**

E (Exacerbating Factors)	Risk factors?
S (Social aspects)	social problems?

Constitutional Symptoms: to exclude infections and cancers

- Appetite change?
- Weight change?
- Fever?
- Fatigue?
- Night sweats?

Ask about related systems?

History:

Chronic diseases? (detailed)	
Childhood problems?	
Any other diseases?	
Past surgery?	
Hos. admission?	
Accident/trauma?	
Medication?	When? Frequency? Dose? Complications?
Blood trans?	
Allergies? What type?	If patient says no: write no known allergy

Habits:

Smoking?	How many packs?
Drinking? Drugs?	
Travel abroad?	
Leisure activity?	
Eating habits?	

Family History:

Chronic diseases? How old?	
Causes of death? How old?	
Genetic diseases?	
Blood diseases SCD? Anemia?	
Cancer? Breast, prostate?	

Systematic review:

(a) Alimentary system and abdomen (AS): Appetite. Diet Weight. Nausea. Dysphagia.
Regurgitation. Flatulence. Heartburn. Vomiting. Haematemesis. Indigestion pain. Abdominal pain. Abdominal distension. Bowel habit. Nature of stool. Rectal bleeding. Mucus. Slime. Prolapse. Incontinence. Tenesmus. Jaundice.

(b) Respiratory system (RS): Cough. Sputum. Haemoptysis. Dyspnoea. Hoarseness. Wheezing. Chest pain. Exercise tolerance.

(c) Cardiovascular system (CVS): Dyspnoea. Paroxysmal nocturnal dyspnoea. Orthopnoea. Chest pain. Palpitations. Dizziness. Ankle swelling. Limb pain. Walking distance. Colour changes in hands and feet.

(d) Urogenital system (UGS): Loin pain. Frequency of micturition including nocturnal frequency.
Poor stream. Dribbling. Hesitancy. Dysuria. Urgency. Precipitancy. Painful micturition. Polyuria.
Thirst. Haematuria. Incontinence.
In men Problems with sexual intercourse and impotence.
In women Date of menarche or menopause. Frequency. Quantity and duration of menstruation.
Vaginal discharge. Dysmenorrhoea. Dyspareunia. Previous pregnancies and their complications. Prolapse. Urinary incontinence. Breast pain. Nipple discharge. Lumps. Skin changes.

(e) Nervous system (NS, CNS): Changes of behaviour or psyche Depression. Memory loss.
Delusions. Anxiety. Tremor. Syncopal attacks. Loss of consciousness. Fits. Muscle weakness. Paralysis.
Sensory disturbances. Paresthesia. Dizziness. Changes of smell, vision or hearing. Tinnitus. Headaches.

(f) Musculoskeletal system (MSkS): Aches or pains in muscles, bones or joints. Swelling joints.
Limitation of joint movements. Locking. Weakness. Disturbances of gait.

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