



Examination sheets for internal medicine

Prepared by :



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❖ CONTENTS :-

- ① Abdominal Examination
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- ⑧ Back Examination



Abdominal Examination

Preparation Of The Patient :

1. Greet the patient respectfully and with kindness.
 2. Introduce yourself
 3. Take a permission
 4. Insure privacy
 5. Wash your hands
- **Exposure:** you should say to examiner that ideally I should expose from nipple to mid thigh but for social reasons I will expose from the xiphisternum to the symphysis pubis OR (keeping patient modesty)
 - **position:** ensure the patient is comfortable, centralized, and ask the patient to lying flat or on just one pillow. Arms at side & legs straight .

General examination (ABCDE)

General inspection: from the END OF THE BED

Comment on ABCDE:

1. **Appearance:** looks well/ Unwell? Comfortable/ uncomfortable? Conscious or No .
** **The patient looks** well , comfortable , cooperative with me and not in pain .
2. **Body built** (cachectic, average weight , underweight, Overweight, obese)
** **The patient looks** and I would like to check BMI
3. **Color** (pallor, jaundice, pigmentation...)
** **As : no obvious** jaundice / There is obvious jaundice But I would like to confirm it in the right side of the pt.
4. **Distress** (dyspnic tachypnic)
5. **Environment** (IV lines, NG tube, stoma, drains, oxygen O2 mask , urine catheter)
** **There is no medical devices around the pt.**

إذا المريض متصل ب آيفي لاین لازم نروح نشوف شو نوع الدواء الي بياخدو هل هو مضاد حيوي او نورمال سلاين او غيرو وإذا مش متصل بلاين بنحكي انه مش متصل ب آي في لاین

From the right side

1. **Hands:** بنمسك اليدين وبنفحصهم سوا

Dorsum :

- **Nails:** koilonychia, leuconychia, clubbing .
- muscle wasting , telangiectasia , spider nevi .
- Flapping tremor (asterixis) & fine tremor.

Palms : hydrosis , tempreture , texture of skin (coarse or thin) , Dupuytren's Contracture , Palmar erythema , pallor crease , muscle wasting .

(لازم ننزل ع مستوى العيان ونطلع ع الكلابينج ونعمل الشامروث تيسيت)

- 2- **Arms:** scratch marks, spider naevi, ecchymoses, Tattoo, Needles marks, muscle wasting .

Sinuppler arm

بعد الايديين مباشرة بنقول بدنا نفحص الفايتل ساين ولازم يكون معنا ساعة وبنحسب الهارت ريت واحنا بنطلع ع الشيسيت ونشوف الريسبايرتوري ريت

Take a vital signs of the patient (HR & rhythm , RR, BP , Temp.)

- 3- **Axilla:** lymph nodes , hair loss , acanthosis negricans (DM2 , gastric cancer , obesity)

- 4- **Face:** * General look as : no plethoric or moon or mask face .

❖ If there wasted **temporalis muscles** / **frontal prominence** .

❖ **Eyebrows & eye:** Jaundice, pallor, Iritis, Kayser Fleisher rings(Wilson), corneal arcus(lipid), Xanthelasma (in PBC) , parotid enlargement .

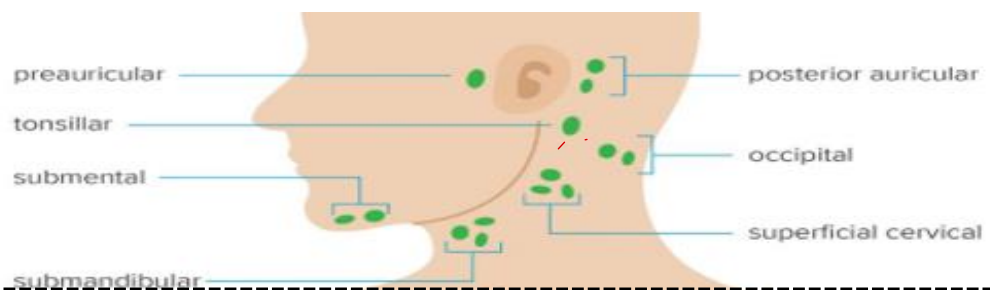
❖ **Mouth:** central cyanosis, ulcers, angular stomatitis (malnutrition) , candidiasis, oral hygiene , smell: **fetor hepaticus (Halitosis)**

- 5- **Neck:** The pt. should be at 45 angle position to examine JVP if elevated or not ,
acanthosis negricans (back neck)

cervical lymph nodes (submental , submandibular , deep cervical " upper & middle & lower " , superficial cervical , supraclavicular " left > Virchow's node")

- large left supraclavicular node (**Virchow's node**) + **Gastric Cancer** = **Troisier's sign**

- 6- **Chest:** Spider naevi - >6 is significant, Gynaecomastia (apparent or not and feel it), loss of hair



Gynaecomastia : Painful breast enlargement in the males with disk sensation around the nipple .

Local abdominal exam

❖ **INSPECTION:**

Look from both ends of the bed

1. **Contour** (flat, scaphoid, distended, protuberant) : **in ascites say** : abdomen distended throughout **with flank plugging** .
2. **Symmetry**
3. **Type of breathing**: men abdominothoracic, women thoracoabdominal

د. خالد بحب من نفس المكان نحكي عن الهير ديستريوشن واي سكارز او شغلات شايفنها من اخر السرير واخر شي بنقله ارفع حالك عشان نشوف الريكتس ماسلز (اکتف انسبيکشن)

Look from RT side

Comment upon:

1. **Distension**: 5Fs (fat, fluid, feces, flatus, fetus)
2. **Scars** (describe: name, site, length, old or new, healed by 1 or 2)
 - ❖ if new > discoloration, discharge, signs of inflammation
 - ❖ if old > keloid, hypertrophoid

3. **Stria** .. causes :

- a. Recent weight gain. "wrinkled and pink"
- b. Pregnancy. "wrinkled and pink"
- c. Ascites. "wrinkled and pink"
- d. Cushing's syndrome. "wide and purple"

4. **Scratch marks, Skin pigmentation, Bruising, stoma**

5. **Umbilicus**: Position (centralized or shifted), Shape (inverted, everted) inflamed or not , discharge or not , **sister joseph nodes around it (metastatic cancer)** .

- **If I see shifted umbilicus I would to measure the distance bt. xiphoid process and symphysis pubis by meter .**
 - a. Normally inverted
 - b. In obese patient, it's buried

فامبورتس
Sign
کینواپس
رکریجی

Skin: 6 S's

- ✓ Scars. " Site, Name, Length, Old or New"
- ✓ Striae. " Site, Color"
- ✓ Skin Rash or Pigmentation
- ✓ Scratch Marks
- ✓ Superficial Dilated Veins
- ✓ Stoma

* Subcostal Angle + Bulging flanks

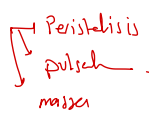
* US

* Divercation of recti

* hernial orifices

* Umbilicus + hair distribution

* Dilated Veins

* visible  Peristalsis
pulsus
masses

- c. In ascites, it is everted and facing downward
- d. In pregnancy, it is everted and pushed up by the gravid uterus
- 6. **Distended veins** : do filling test (milking test) on superficial palpation time .
- 7. **Visible Pulsations** (expansile or transmitted) .
- 8. **Visible peristalsis** It can be observed normally in slim people / Obstructed bowel
- 9. **visible Mass** (describe it), Bulging flanks, Hair distribution .
- 10. Any **nevi** and **campbell de morgan spots** (with age / non bleachable)

✧ **Active inspection:** = *Cherry hemangioma*

To asses :

1. Hernia orifices (Ask the PT to cough while inspecting the hernia orifices)
2. Divarication of recti (raising test)

❖ **PALPATION:**

Rules :

- ❖ Inform the patient what you are going to do
 - ❖ Make sure that your **hand is warm**
 - ❖ **Ask the patient whether there is a painful area**
 - ❖ In palpation kneel down to be at the level of abdomen
- لازم لما نيجي نعمل بالبيشن نقعد وتكون ايدينا موازية لبطن المريض
- ❖ **Maintain eye contact with palpation**
 - ❖ Always start palpation in the region diagonally opposite to any lesion or pain, and proceed systematically to other regions approaching the affected area last of all.
 - ❖ Proceed with palpation in a predetermined sequence (S or G sequence); so as not to miss any of the nine abdominal quadrants.
 - ❖ Keep the palmar surface of the hand flat in contact with the abdominal wall. All the movements of the hand should occur at the **metacarpophalangeal joints** and the hand should take the shape of the abdominal wall.

A. Superficial Palpation

1. to **Gain confidence**
2. Superficial **Tenderness**:
3. Superficial **mass**:
4. Rigidity & guarding (involuntary and voluntary)
5. **Direction of flow if dilated veins: (milking test)**

Determine the direction of the flow by placing two fingers on the vein, sliding one finger along the vein to empty it and then releasing one finger and watching to see which way the empty segment fills.

B. Deep Palpation

Deeply palpate all quadrants in a systemic way to comment on deep tenderness, deep masses & description any superficial mass .

Note: two hands, one on top of the other, may be required if obesity or muscular resistance occurs.

The Organs:

The Liver

1. Palpation

- Place your right hand on the right iliac fossa . **why ? due to direction of organ enlargement** (MCL), resting transversely parallel to the costal margin (Index parallel to right costal margin)
- Compress deep and Keep your hand stationary at this position.
- Ask patient to take deep breath and try to feel the liver edge as it descend with inspiration.
- As the patient to expire, slide the hand a little nearer to the right costal margin till you palpate lower border of the right lobe of the liver
- **If the liver is enlarged, put one hand on the liver anteriorly and the other hand at the back. Ask the patient to hold his breath and feel for pulsation**

If the liver is enlarged I would like to comment upon:

- The **size** of enlargement (fingerbreadths below the costal margin in ^{midclavicular line} MCL)
- The character of the **edge** (sharp or rounded). Rounded in cirrhosis .
- The **surface** (smooth or nodular) nodular in cirrhosis & abscess & cysts
- The **consistency** (soft, firm, hard or heterogeneous)
- The presence of **pulsations**
- The presence of **tenderness**

Normal liver edge: soft, sharp, regular with smooth surface.

- **Cirrhosis with enlarged liver can be seen in :** ① liver cirrhosis complicated by HCC
② alcoholic liver ③ early stage liver cirrhosis .

Tender liver
Hepatitis
Rapid liver enlargement (e.g. right heart failure, Budd-Chiari* syndrome [hepatic vein thrombosis])
Hepatocellular cancer
Hepatic abscess
Biliary obstruction cholangitis
<i>Complicated liver due to HF</i>
Pulsatile liver
Tricuspid regurgitation
Hepatocellular cancer
Vascular abnormalities

6.10 Causes of hepatomegaly	
Chronic parenchymal liver disease	
• Alcoholic liver disease	• Viral hepatitis
• Hepatic steatosis	• Primary biliary cirrhosis
• Autoimmune hepatitis	
Malignancy	
• Primary hepatocellular cancer	• Secondary metastatic cancer
Right heart failure	
Haematological disorders	
• Lymphoma	• Myelofibrosis
• Leukaemia	• Polycythaemia
Rarities	
• Amyloidosis	• Sarcoidosis
• Budd-Chiari syndrome	• Glycogen storage disorders

2. Percussion of the liver (span of the liver):

- Determine the lower border of the liver by percussion starting from RIF
- Determine the upper border of the liver by heavy percussion starting from the 2nd intercostal space **opposite the sternocostal junction**
- Percuss down along each inter-costal space in the MCL and when you reach the dullness ask the patient to take a deep breath and hold it
- **Percuss again, (tidal percussion)**
- Measure the distance between the upper border and lower border in the right midclavicular line, this is the span of the liver.

The Spleen

No edge in spleen but Tip .

The standard method (one hand) or bimanual examination(recommended):

- Start palpation from the right iliac fossa with the tips of the examining hand directed towards the Lt costal margin
- The left hand is placed over the lateral aspect of the left costal margin, exerting a certain amount of compression.
- Follow the rules of palpation moving toward the left hypochondrium until you feel the spleen.

إذا الطحال متضخم لازم نحسب المسافة بالمتر بين الكوستل مارجين والتيب

The right lateral position method: If the spleen is not palpable when the patient is flat

- Ask the patient to turn to the right side
- Insinuate the hand below the costal margin
- Ask the patient to take a deep breath
- Press till you feel the lower edge of the spleen

Dipping method

for palpate the enlarged organs in case of massive ascites

❖ PERCUSSION:

Percussion of the **Traube's area**:

DDx

5 / 9
8 / 11

- Area defined by left sixth rib superiorly, the left midaxillary line laterally, and the left costal margin inferiorly.
- If Traube's space is dull, the spleen is enlarged or pleural effusion or full stomach .

Splenic percussion sign (Castell's method): → resonant

منطقة راسية / راسية
(Bowel) / راسية راسية

- Percuss the lowest intercostals space in the left anterior axillary line
- Then ask the patient to take a deep breath, and percuss again.
- When spleen size is normal, the percussion note usually remains tympanic.

Traube's Pr. (-ve) Castell

The kidneys

To feel the right kidney: (ballotment)

- Put your left hand behind the patient's right loin in the renal angle (between the last rib and the iliac crest)
- Put the right hand on the right lumbar region (RUQ)
- press Lt hand forwards and Rt hand backward
- ask the patient to take a deep breath
- During expiration push your right hand deeply but gently and keep it still during inspiration
- Repeat as the patient takes his breath.

To feel the left kidney:

- Repeat the same procedure by leaning across the patient from RT side
- If difficult or your arms are short go to the patient's left side and do it

☒ **Large kidneys with :** PCK , hydronephrosis , RCC and very thin pt.

لما الكلية تتضخم بتضل المنطقة اللي فوقها ريزوننت لأنها ريتروبيروتونيل وفوقها موجود القولون

Ascites examination

✧ **Fluid thrill : severe ascites**

- Instruct the patient to lie in the supine position
- Place one hand flat over the lumbar region on one side
- Get the patient to put the hand in the midline of the abdomen
- Tap or flick the opposite lumbar region
- A thrill will be felt in the other hand

- **Ascites :** is pathological (abnormal) accumulation of fluid in peritoneal cavity .

✧ **Shifting dullness: moderate ascites**

بنبدا من زايڤويد بروسيس للسيمفيزيز بيوييس وبنرجع تاني لعند الامباليكس وبعدها بنروح شمال ومن ثم بنقلب المريض ع جنب وبنستنى شوي وبنبدا نعمل بيركشن وبنفحص الساكرل ايديمة وبنعمل انسينيوت للطحال عشان نتأكد انو مش متضخم (د.خالد)

الاسايتس بظهر كلينيكا اذا كان اكثر من 1500 وراديولوجيكل اذا كان اكثر من 500

- Instruct the patient to lie in the supine position
- start percussion form epigastrium with your hand horizontally until reach the umbilicus
- Then percuss the region of the umbilicus with the finger pointing towards the feet;
- Move laterally towards the flank, the percussion note is tested out towards the flanks.
- When dullness is reached, ask the patient to turn to the opposite side, while keeping the examining hand over the exact site of dullness
- Ideally 30 seconds to 1 minute should then pass so that fluid can move inside the abdominal cavity and then percussion is repeated over the marked point.
- Shifting dullness is present if the area of dullness has changed to become resonant >> indicates the presence of moderate free ascites.

6.14 Causes of ascites
Diagnosis
Common Hepatic cirrhosis with portal hypertension Intra-abdominal malignancy with peritoneal spread
Uncommon Hepatic vein occlusion (Budd—Chiari syndrome) Constrictive pericarditis and right heart failure Hypoproteinaemia (nephrotic syndrome, protein-losing enteropathy) Tuberculous peritonitis Pancreatitis, pancreatic duct disruption

❖ **AUSCULTAION:**

Some prefer to perform before percussion or palpation as they may disturb the intestines, altering their activity and thus bowel sounds.

1-Bowel sounds (normal 5-8/min) / diaphragm on Rt. Iliac fossa

- **For small intestine:** put the diaphragm of the stethoscope below &RT to umbilicus, below < to umbilicus, above umbilicus
- **For large intestine:** laterally: listening in one spot, such as the right lower quadrant, is usually sufficient.
- When bowel sounds are not present, one should listen for a full 3 minutes before determining that bowel sounds are, in fact, absent.

2-Bruits

Aorta : at midline just above umbilicus,

renal arteries : 2 cm superior and lateral to umbilicus, (bill of stethoscope)

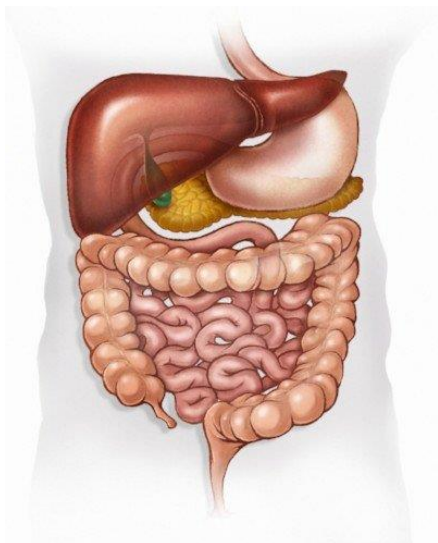
iliac : 1cm inferior and lateral to umbilicus

أي عضو متضخم لازم نسمع فوقه مثلاً بنسمع

Liver bruit in case of HCC

✂ finally I should complete my examination by :

- Perform a digital rectal examination (PR)
- Examine the external genitalia
- Examine Inguinal Nodes
- Examine Lower limb (Nails , edema , hair loss)
- Examine Back (sacral edema by thumb)



❖ Causes of dupuytren's contracture:

- 1- Diabetes mellitus
- 2- Liver cirrhosis
- 3- Smoking
- 4- Rheumatoid arthritis
- 5- Occupational
- 6- Alcohol
- 7- Trauma
- 8- Drugs (phenytoin)

❖ Causes of palmar erythema :

- 1- Pregnancy
- 2- Liver cirrhosis
- 3- Elderly
- 4- Rheumatoid arthritis
- 5- Thyrotoxicosis

3.4 The nails in systemic disease

Nail changes	Description of nail	Differential diagnosis
Beau's lines	Transverse grooves (see Fig. 3.7B)	Sequella of any severe systemic illness that affects growth of the nail matrix
Clubbing	Loss of angle between nail fold and nail plate (see Fig. 3.8)	Serious cardiac, respiratory or gastrointestinal disease (see Box 3.5)
Leuconychia	White spots, ridges or complete discoloration of nail (see Fig. 3.7C)	Trauma, infection, poisoning, chemotherapy, vitamin deficiency
Lindsay's nails	White/brown 'half-and-half' nails (see Fig. 12.7)	Chronic kidney disease
Koilonychia	Spoon-shaped depression of nail plate (see Fig. 3.7D)	Iron deficiency anaemia, lichen planus, repeated exposure to detergents
Muehrcke's lines	Narrow, white transverse lines (see Fig. 12.6)	Decreased protein synthesis or protein loss
Nail-fold telangiectasia	Dilated capillaries and erythema at nail fold (see Fig. 14.13B)	Connective tissue disorders, including systemic sclerosis, systemic lupus erythematosus, dermatomyositis
Onycholysis	Nail separates from nail bed (see Fig. 3.7A)	Psoriasis, fungal infection, trauma, thyrotoxicosis, tetracyclines (photo-onycholysis)
Onychomycosis	Thickening of nail plate with white, yellow or brown discoloration	Fungal infection
Pitting	Fine or coarse pits in nail (see Fig. 3.7A)	Psoriasis (onycholysis, thickening and ridging may also be present), eczema, alopecia areata, lichen planus
Splinter haemorrhages	Small red streaks that lie longitudinally in nail plate (see Fig. 4.5B)	Trauma, infective endocarditis
Yellow nails	Yellow discoloration and thickening (see Fig. 14.13C)	Yellow nail syndrome

6.12 Differentiating a palpable spleen from the left kidney

Distinguishing feature	Spleen	Kidney
Mass is smooth and regular in shape	More likely	Polycystic kidneys are bilateral irregular masses
Mass descends in inspiration	Yes, travels superficially and diagonally	Yes, moves deeply and vertically
Ability to feel deep to the mass	Yes	No
Palpable notch on the medial surface	Yes	No
Bilateral masses palpable	No	Sometimes, e.g. polycystic kidneys
Percussion resonant over the mass	No	Sometimes <i>(retroperitoneal)</i>
Mass extends beyond the midline	Sometimes	No (except with horseshoe kidney)
Line of enlargement	Diagonally	Vertically
Insinuation	Can not	Can

Palpable x

notch

✓

x

CAUSES OF SPLENOMEGALY

Massive

More than 8 cm below the costal margin or reaching to the umbilicus.

- Chronic malaria, kalazar
- Chronic myeloid leukemia (CML)
- Myelofibrosis
- Primary lymphoma of spleen
- Rarely in portal hypertension also

Gucher's dz.

Moderate

About 4-8 cm below costal margin or large but not reaching to umbilicus.

- All causes of massive splenomegaly (obviously it is moderate before massive)
- Portal hypertension
- Leukemia, lymphoma
- Thalassemia
- Gaucher's disease

Small

Just palpable or 2-4 cm

- The causes listed above
- Polycythemia, hemolytic anemia
- Malaria, infective endocarditis, hepatitis, infectious mononucleosis.
- SLE, RA, polyarteritis nodosa

3.5 Causes of clubbing

Congenital or familial (5-10%)

Acquired

- Thoracic (~70%):
 - Lung cancer
 - Chronic suppurative conditions: pulmonary tuberculosis, bronchiectasis, lung abscess, empyema, cystic fibrosis
 - Mesothelioma
 - Fibroma
 - Pulmonary fibrosis
- Cardiovascular:
 - Cyanotic congenital heart disease
 - Infective endocarditis
 - Arteriovenous shunts and aneurysms
- Gastrointestinal:
 - Cirrhosis
 - Inflammatory bowel disease
 - Coeliac disease
- Others:
 - Thyrotoxicosis (thyroid acropachy)
 - Primary hypertrophic osteoarthropathy

myxomas

+ HCC

Grading Of Clubbing 1 to 5

بدن تغییر

1. Fluctuation and softening of the nail bed (increased ballotability)
2. Loss of the normal $<165^\circ$ angle (Lovibond angle) between the nailbed and the fold (cuticula)
3. Increased convexity of the nail fold
4. Thickening of the whole distal (end part of the) finger (resembling a drumstick)
5. Swelling in the wrist and ankle due to hypertrophic pulmonary osteoarthropathy (HPO)

LIST 14.1 Causes of parotid enlargement

Bilateral

1. Mumps (can be unilateral)
2. Sarcoidosis or lymphoma, which may cause painless bilateral enlargement
3. Mikulicz* syndrome: bilateral painless enlargement of all three salivary glands; this disease is probably an early stage of Sjögren's syndrome
4. Alcohol-associated parotiditis
5. Malnutrition
6. Severe dehydration: as occurs in renal failure, terminal carcinomatosis and severe infections

Unilateral

1. Mixed parotid tumour (occasionally bilateral)
2. Tumour infiltration, which usually causes painless unilateral enlargement and may cause facial nerve palsy
3. Duct blockage (e.g. salivary calculus)

GOOD LUCK

Respiratory Examination

Preparation Of The Patient :

1. Greet the patient respectfully and with kindness.
2. Introduce yourself
3. Take a permission
4. Insure privacy
5. Wash your hands
6. Exposure : From waist and upward .
7. Examine the chest >> anterior + posterior.
8. Anterior chest >> position : Supine, 45°
9. Posterior chest >> position : setting

General examination (ABCDE)

General inspection: from the END OF THE BED

Comment on **ABBCDE**:

- **Appearance** : well/ill - Comfortable/uncomfortable - conscious, oriented. Describe the position of the patient.
- **Body built** : cachectic, underweight, average, Overweight, obese. (I would like to check BMI) .
 - Cachexia or weight loss may be caused by lung cancer or any chronic lung disease as COPD or ILD.
 - On other hand obesity is a risk factor for sleep apnea.
- **Breathing** : Audible stridor, wheeze, specific type of breathing , signs of respiratory distress: use of accessory muscles, flared nostrils, pursed lips.
- **Color** (pallor, jaundice, cyanosed)
- **Distress** (dyspnic , tachypnic) , but you have to confirm by RR.
- **Environment (Surroundings)** :
 - Monitors: ECG, Pulse Oximeter .
 - Treatments: oxygen, inhalers, nebulizers, IV access, antibiotics, chest drain.
 - Others: cigarettes, sputum pots ?, mobility equipment.

إذا المريض متصل ب آيفي لاین لازم نروح نشوف شو نوع الدواء الي بياخدو هل هو مضاد حيوي او نورمال سلاين او غيرو واذا مش متصل بلاين بنحكي انه مش متصل ب آي في لاین

❖ Cyanosis when :

- 1- absolute concentration of deoxygenated haemoglobin is 50 g/L
- 2- arterial oxygen saturation falls below 90% in a person with a normal haemoglobin level.
- 3- PaO₂ on ABG less than 60

❖ Pallor:

- May be a sign of tension pneumothorax.
- Anemia in lung cancer.
- Anemia of chronic disease in COPD ILD.

❖ Jaundice:

- Liver cirrhosis complicated by hydrothorax or hepatopulmonary syndrome.
- Alfa 1 antitrypsin deficiency.

From the right side

1. Hands :

Dorsum :

- **Nails** : clubbing .
- Tar stain , muscle wasting (pancost tumor compressing T1) .
- Flapping tremor (asterixis) & fine tremor (with use of B agonist) .

Palms : hydrosis , temperture , texture of skin (coarse or thin) , Dupuytren's Contracture , Palmar erythema , pallor crease , peripheral cyanosis , muscle wasting .

Take a **vital signs** of the patient (HR & rhythm , RR, BP , Temp.)

2- **Face**: * General look as : no plethoric or moon or mask face .

- ❖ If there wasted temporalis muscles / frontal prominence .
 - ❖ **Eye** : Jaundice, pallor, Chemosis (with sever cough) , Conjunctivitis (with sarcoidosis) , Partial ptosis & meiosis & enophthalmos (Hornor syndrome in pancost tumor)
 - ❖ **Nose** : lupus pernio (sarcoidosis) , nasal polyps (Samter's Triad) , saddle nose (with granulomatosis with polyangitis)
 - ❖ **Mouth** : central cyanosis, Dentition (poor dentition may be a source for lung abscess)
- 3- **Neck**: LN, Distended neck veins, JVP (Elevated JVP in pulmonary Hypertension , cor pulmounale , tension pneumothorax , pulmonary embolism and superior vena cava obstruction) .

4- **Lower Limbs**: Bilateral edema (In cor pulmounale) , Unilateral edema (DVT.. PE)
Erythema nodosum (In Sarcoidosis and TB)

❖ Blood pressure : Hypotension

- Tension pneumothorax.
- Massive hemoptysis.
- Massive PE.
- Severe asthma attack.
- Severe pneumonia

CURB 65 (C: confusion, U: BUN >20, R: RR>30, B: blood pressure <90/60, 65: age > 65

❖ pulsus paradoxus:

- Exaggerated decrease in blood pressure during inspiration.
- Occur in severe asthma.

❖ Superior vena cava syndrome

- Due to malignancy.
- May be more evident with bemperton sign.

❖ Samter's Triad :

- 1- asthma .
- 2- sinus inflammation with recurring nasal polyps .
- 3- aspirin sensitivity .

Local chest exam : A. anterior chest :-

❖ INSPECTION :

Look from both ends of the bed

1. **Chest movement** : symmetrical or Not, using accessory muscle or Not .
(ask pt. to take a breath)
2. **Type of breathing** : men abdomin thoracic, women thoracoabdominal

Look from RT side

Comment upon:

- ✓ **Shape and symmetry of the chest** : Barrel chest , Pigeon chest (pectus carinatum) , Funnel chest (pectus excavatum) , Harrison sulcus (with hyper inflated lungs as in COPD and Asthma) , Kyphosis .
- ✓ **Lesions of the chest wall** : scars , chest tube insertion , Prominent veins , skin discoloration or pigmentation , visible pulsation , Rash , Gynecomastia (with large cell carcinoma of the lungs)
 - Normally the ratio of anteroposterior to transverse diameter is less than $\frac{1}{2}$
 - In Barrel chest ration more than $\frac{1}{2}$

❖ PALPATION:

1- Trachea .

- **Tracheal deviation:** (be gentle and explain what you are doing . slight displacement to the right is common in healthy people).
- **Cricosternal distance:** Measure the distance between the suprasternal notch and cricoid cartilage while the patient in sitting position, normally 3–4 finger breadths; any less suggests lung hyperinflation.
- **Inspiratory tracheal tug:** when fingers resting on the trachea move inferiorly with each inspiration. (positive in obstructive lung disease).

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

Apex beat :

* If it isn't felt either >>> 5 main Causes (COPD or Behind the rib):

1. C >>> COPD
2. O >>> Obesity
3. P >>> Pleural or pericardial effusion
4. D >>> Dextrocardia or Death
5. It could be behind the Rib

2- Superficial palpation:

- Warm your hands & Ask for any area of pain in the chest.
- Keep looking to the pt. during palpation & Do not miss the lateral side.
- **Temperature** .
- **Tenderness:** spontaneous fracture from tumor invasion or severe cough, Tenderness over the costochondral junctions suggests the diagnosis of costochondritis of Tietze's syndrome.
- **Masses** .
- **Subcutaneous (surgical) emphysema** : may be seen in severe acute asthma, pneumothorax, or rupture of the oesophagus .

3- Apex beat.

4- Chest expansion:

- Place your hands firmly on the patient's chest wall with your fingers extending around the sides of the chest. Your thumbs should almost meet in the middle line and should be lifted slightly off the chest so that they are free to move with respiration. As the patient takes a big breath in, your thumbs should move symmetrically apart
- Three levels : Apical , Supramamary , Inframamary .
- Comment on : normal, decreased bilateral, or decreased in one side.
- Bilateral reduction in chest wall movement is common in severe COPD and Asthma and diffuse pulmonary fibrosis.
- Unilateral reduction in chest wall movement is common in pneumonia , pneumothorax , pleural effusion , PE .

- **Lower lobe predominant: RASIO**

R heumatoid arthritis, other collagen vascular diseases

A sbestosis, acute allergic alveolitis, acute eosinophilic pneumonitis

S cleroderma (systemic sclerosis)

I diopathic interstitial fibrosis

O ther (drugs, e.g. busulfan, bleomycin, nitrofurantoin, hydralazine, methotrexate, amiodarone).

- **Upper lobe predominant: SCART**

S ilicosis (progressive massive fibrosis), sarcoidosis

C oal workers' pneumoconiosis (progressive massive fibrosis), cystic fibrosis, chronic allergic alveolitis, chronic eosinophilic pneumonitis

A nkylosing spondylitis, allergic bronchopulmonary aspergillosis, alveolar haemorrhage syndromes

R adiation

T uberculosis.

5- Tactile Vocal Fremitus (TVF):

- Definition : Palpable vibrations transmitted through the bronchopulmonary tree to the chest wall when the patient speaks.
- Increased in **3Cs**: consolidation , Collapse (partial collapse) , cavity (superficial pulmonary abscess)
- Comment on : symmetrical, or RT more than LT, or vice versa
- Tell the patient to say 44 .

❖ **kartagener syndrome :**

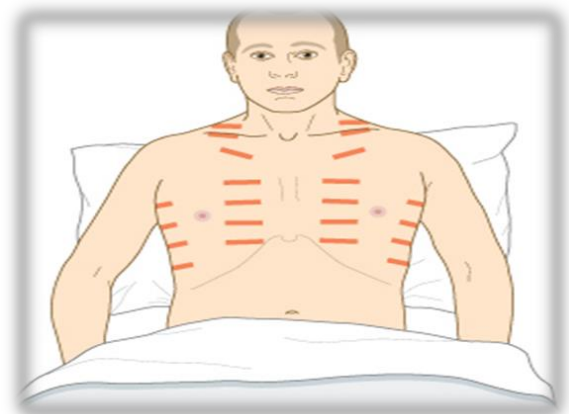
- Bronchiectasis
- Chronic Rhinosinusitis
- Situs inversus with dextrocardia

طريقة د.محمود الشيخ علي في الباليشن كالتالي : ابدأ ف التراكية باختباراتها الثلاثة ثم اسأل المريض في أي منطقة بتألمك ف صدرك ؟ ثم ابدأ اعمل سوير فيشيل بالبليشن وبما انه يدك ما زالت على صدر المريض انتقل لفحص الالبيكس بيت ثم من منطقة تحديد الالبيكس بيت ابدأ بالشيسيت اكسانشين على ال 3 لاينز ثم ضع يدك واطلب من المريض قول 44 .. الترتيب هاد أسهل ف الحفظ وعشان ما تنسى أي خطوة في الباليشن

❖ PERCUSSION :

- With your left hand on the patient's chest wall and fingers slightly separated and aligned with the patient's ribs, press your middle finger firmly against the patient's chest.
- Use the pad of your right middle finger to strike firmly the middle phalanx of the middle finger of your left hand.
- Remove the percussing finger quickly so that the note generated is not dampened.
- The percussing finger must be held partly flexed and a loose swinging movement should come from the wrist and not from the forearm.
- Should be symmetrical.
- Do not miss the lateral side.
- Start with the apices of the lung. Then Clavicle: directly within its medial third . Then Level..5-7-9
- Move in "S" shape to compare side to side.
- Normally, bilateral resonant note.
- Hearing dull note in the chest examination is abnormal, **except** in: 4th Left intercostal space (Bare area of the heart) and 5th Right rib (Upper border of the liver, ask the patient to take deep breath and to hold his breath and then percuss again to make sure it is the liver " Tidal percussion").
- Comment on : type, side, level .

7.21 Percussion note	
Type	Detected over
Resonant	Normal lung
Hyperresonant	Pneumothorax
Dull	Pulmonary consolidation
	Pulmonary collapse
	Severe pulmonary fibrosis
Stony dull	Pleural effusion
	Haemothorax

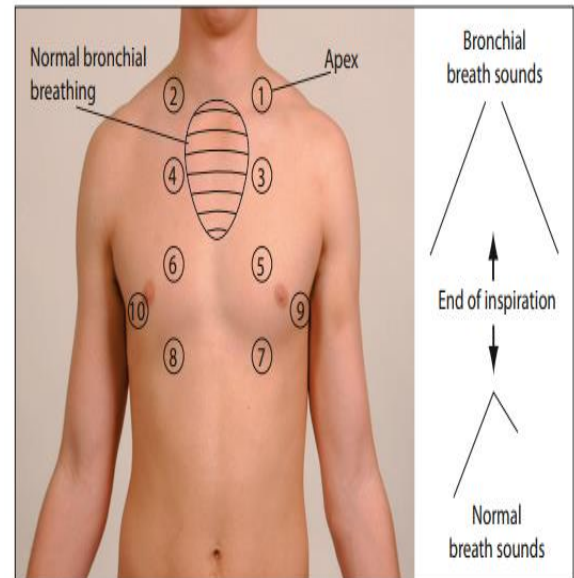


❖ AUSCULTATION:

- Warm the stethoscope
- Should be symmetrical.
- Listen with diaphragm in the same areas percussed (also do not forget the lung apex at supraclavicular fossa)
- Do not miss the lateral side.
- Avoid auscultation within 3 cm of the midline anteriorly or posteriorly as these areas may transmit sounds directly from the trachea or main bronchi.

✂ Comment on :

- **Increased or decreased breath sounds**
- **Type of breathing** : vesicular or bronchial
- **Side & level**
- **Added sounds** :
 - Wheezes
 - Crackles >> ask pt. to cough
 - Friction rub
- **Vocal resonance**
 - **Bronchophony** : 44
 - **Egophony** : E to A
 - **Whispered pectoriloquy** : one-two-three



7.22 Causes of diminished vesicular breathing

Reduced conduction

- Obesity/thick chest wall
- Pleural effusion or thickening
- Pneumothorax

Reduced airflow

- Generalised, e.g. COPD
- Localised, e.g. collapsed lung due to occluding lung cancer



7.27 Causes of bronchial breath sounds

Common

- Lung consolidation (pneumonia)

Uncommon

- Localised pulmonary fibrosis
- At the top of a pleural effusion
- Collapsed lung (where the underlying major bronchus is patent)



7.25 Causes of crackles

Phase of inspiration	Cause
Early	Small airways disease, as in bronchiolitis
Middle	Pulmonary oedema
Late	Pulmonary fibrosis (fine) Pulmonary oedema (medium) Bronchial secretions in COPD, pneumonia, lung abscess, tubercular lung cavities (coarse)
Biphasic	Bronchiectasis (coarse)

Heart auscultation:

- Cardiac examination is an essential part of the respiratory assessment and vice versa. These two systems are intimately related.
- It is important to pay close attention to the pulmonary component of the second heart sound (P2). If the **P2 is louder** (and especially if it is palpable), **pulmonary hypertension should be strongly suspected**.
- Pulmonary hypertensive heart disease (cor pulmonale) may be due to COPD, ILD, pulmonary thromboembolism, marked obesity, sleep apnoea or severe kyphoscoliosis.

Types of breathing

The patient should be asked to breathe in and out through the mouth so that added sounds from the nasopharynx do not interfere.

❖ Normal (vesicular) breath sounds :

Are louder and longer on inspiration than on expiration and there is no gap between the inspiratory and expiratory sounds.



❖ Bronchial breath sounds :

- Have a hollow, blowing quality. There is often a gap between inspiration and expiration. The breath sounds are of similar length and intensity in inspiration and expiration .
- Are present when turbulence in the large airways is heard without being filtered by the alveoli.
- They are heard over areas of consolidation, as solid lung conducts the sound of turbulence in main airways to peripheral areas without filtering.
- They are audible in normal people over the trachea and larynx

Added Sounds

Wheeze

- **Continuous sounds** is caused by continuous oscillation of opposing airway walls and **has a musical quality**.
- This is because the airways normally dilate during inspiration and are narrower during expiration. An inspiratory wheeze implies severe airway narrowing.
- The wheezes must be timed in relation to the respiratory cycle. They may be heard in expiration or inspiration, or both.
- **Heard in airway obstruction** such as bronchial asthma and COPD. High-pitched wheeze arises from smaller airways and has a whistling quality. Low pitched wheeze originates from larger bronchi.

Pleural friction rub

- When thickened, roughened pleural surfaces rub together as the lungs expand and contract, a continuous or intermittent grating sound may be audible.
- A pleural rub **indicates pleurisy**, which may be secondary to pulmonary infarction or pneumonia.

Crackles

- **Interrupted non-musical sounds**.
- Crackles are probably the result of loss of stability of peripheral airways that collapse on expiration. With high inspiratory pressures, there is rapid air entry into the distal airways. This causes the abrupt opening of alveoli and of small or medium sized bronchi containing secretions in regions of the lung deflated to residual volume.
- Fine and medium pitched crackles are not caused by air moving through secretions as was once thought, but by the opening and closing of small airways.
- Coarse crackles are caused by passage of air through secretions.
- **Fine crackles** : They are typically caused by interstitial lung disease (pulmonary fibrosis).
- **Medium crackles** : are usually due to left ventricular failure. Here the presence of alveolar fluid disrupts the function of the normally secreted surfactant.
- **Coarse crackles** : are tend to change with coughing, which also has an unpleasant gurgling quality. Bronchiectasis is a common cause, but any disease that leads to retention of secretions may produce these features.

B. Posterior chest :-

❖ INSPECTION :

- Chest shape : normal or kyphosis, scoliosis, kyphoscoliosis, barrel chest .
- Scars, swellings, skin pigmentation
- Dilated veins
- Chest movement >> symmetrical or not

❖ PALPATION :

1- Superficial palpation:

✓ Temperature , Tenderness , Masses , Subcutaneous emphysema .

2- Chest expansion

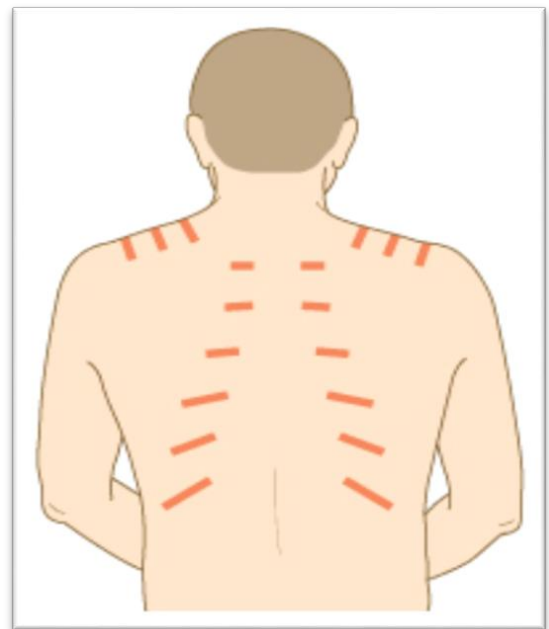
3- TVF

❖ PERCUSSION :

- Should be symmetrical.
- Do not miss the lateral side.
- Start with the apices of the lung.
- Comment on : type, side, level.

❖ AUSCULTATION :

- As anterior ☺

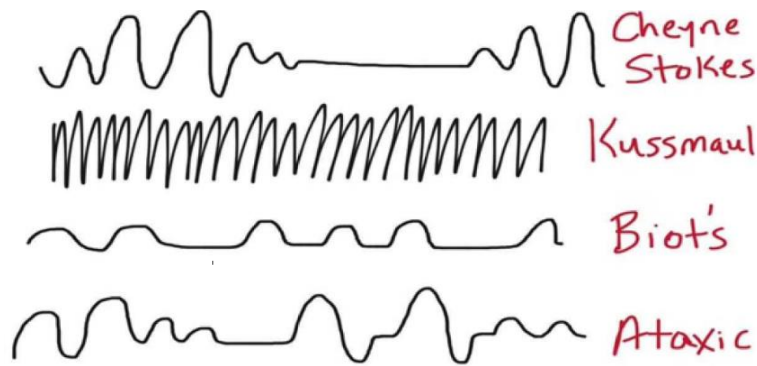


❖ Finally : to complete my examination :

- Sputum sample (for culture).
- Peak flow (consider spirometry as well).
- Oximetry.
- Chest X-ray.
- Cover the patient. ✓
- Thank the patient. ✓

RR chart
O₂ sat
temp
peak flow meter

Types of breathing :



كلام د. رامي السلوت

Rapid shallow breathing then period of apnea with HF or pneumonia

Irregular breathing with medullary brain injury

Cheyne-Stokes breathing , is an abnormal pattern of breathing. It consists of cycles of breathing, which become increasingly deeper, followed by periods where respiration becomes gradually shallower. There may then be a period of apnea, where breathing briefly ceases, before the cycle begins again. On average, each cycle lasts between 30 seconds and 2 minutes.

Pathological process	Chest wall movement (reduced)	Mediastinal displacement	Percussion note	Breath sounds	Vocal resonance	Added sounds
Asthma	Both sides	None	Normal	Vesicular Prolonged expiration	Normal	Expiratory polyphonic wheeze
Chronic obstructive pulmonary disease	Both sides	None	Normal	Vesicular Prolonged expiration	Normal	Expiratory polyphonic wheeze and coarse crackles
Large pneumothorax	Affected side	Away from lesion	Normal or hyperresonant	Reduced or absent	Reduced or absent	None
Pleural effusion (>500 mL)	Affected side	Away from lesion (in massive effusion)	Stony dull	Vesicular reduced or absent	Reduced or absent	None
Consolidation (i.e. lobar pneumonia)	Affected side	None	Dull	Bronchial	Increased	Fine crackles
Collapse						
Major bronchus	Affected side	Towards lesion	Dull	Diminished or absent	Reduced or absent	None
Peripheral bronchus	Affected side	Towards lesion	Dull	Bronchial	Increased	Fine crackles
Fibrosis						
Localized	Affected side	Towards lesion	Dull	Bronchial	Increased	Coarse crackles
Generalized (e.g. idiopathic lung fibrosis)	Both sides	None	Normal	Vesicular	Increased	Fine crackles

GOOD LUCK

Cardiovascular Examination

Preparation Of The Patient

1. Greeting
2. Introduce yourself
3. Take permission
4. Insure privacy
5. Wash your hand
6. **Exposure:** “ to waist- from waist and upward ”
7. **Position:** “ supine at 45 degree/ on one pillow ”

Local Examination >> Precordium

1. Inspection
2. Palpation
3. Auscultation

General examination (ABCDE)

Comment on ABCDE:

From the foot of the bed: ABCDE

1. Appearance: looks well/ Unwell? Comfortable/ uncomfortable? Conscious or No .

**** The patient looks well , comfortable , cooperative with me and not in pain .**

2. Body Habitus: Cachectic, Average, Overweight, Underweight, tall

3. Color: Pall, Jaundice (due to hemolytic anemia after metallic valve replacement / seen in sclera , mucosal surface as soft palate, uvula), Cyanosis (out surface of tongue , peripheral)

4. Distress: Dyspnea, Tachypnea .

5. Environment: IV lines, O2 Mask, Monitors, ECG, Pulse oximeter.

6. Any features of Down, Turner, Marfan .

✂ Vital signs (P, BP, RR, T)

- كل وحدة يتم فحصها عند الاقتراب من منطقتها وذلك للحفاظ على تتابع الفحص فمثلاً لمن تصل hand
بتفحص ال , pulse+RR لمن تصل ال arm بتحكي انه لازم تفحص ال BP ولمن تصل ال axilla بتحكي عن
temp.ال

طريقة الدكتور محمود في فحص البلس والريسبيراتوي ريت، هيا بتجيب الساعة بتشلمها من ايدك وبتحطها
على Xiphoid area وبتعد ال. pulse and respiration

1. Pulse :

- ❖ **Rate:** normal rate 60-100 BPM
- ❖ **Rhythm:** regular or irregular
- ❖ **Volume:** average(normal), large or small volume
- ❖ **Character.**
- ❖ **Delay:** radio-radial delay & radio-femoral delay

تستطيع تحديد الفيومرال ارتيري عن طريق وضع اصبع الابهام على Iliac crest والاصبع middle على symphysis pubis و بالأصبع الثاني بمنتصف المسافة يمكنك الشعور بالارتري.

- ✓ **Radioradial delay** due to : cervical rib, subclavian tumors, supraclavicular narrowing.

- ✓ **Radiofemoral delay** due to: aortic stenosis, cortication of aorta

- ✓ Volume and character best assessed **from BRACHIAL/CAROTID pulses**

يعني عشان أقدر احدهم لازم يكون من central artery as carotid الا شغلة وحدة بقدر أحدها من peripheral as radial which is collapsing pulse.

2. Blood Pressure : N. >120/80

3. Respiratory Rate : N. 12-20 . if >20 tachypnea, <12 brady,

4. Temperature : N. 36.8-37.2 at morning, 37.8 at evening.

- BP dec. in inspiration and HR. inc. in inspiration

- collapsing, water hummer pulse, bounding :

* لمن تيجي عمله بتسأل المريض هل في عنده أي ألم أو مشكله بكتفه، بتروح حاطط أيد على ال radial والثانية على brachial وبترفع ايد المريض مرة وحدة كلها لفوق، اذا موجودة حتلاحظ اختفاء ال pulse وثم shooting of pulse

زي الصورة هاي:



❖ **Pulsus Paradoxus:** exaggeration of the normal variability of pulse volume with breathing .

- مع ال inspiration, يقل ضغط الدم SBP
ال expiration بمقدار أقل من 10 ، لو أكثر من
10 فهذا abnormal/pulsus paradoxsus

❖ **Causes :**

1. Cardiac tamponade
2. Pericardial constriction
3. Acute severe asthma

❖ **Pulse character :** reflect the form of the aortic pressure wave.

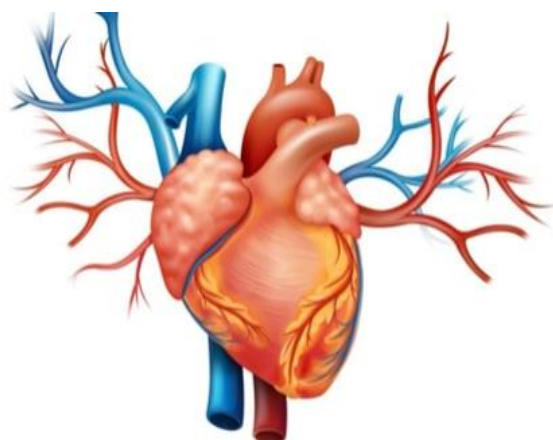
Character	Seen in
Collapsing Pulse	Aortic Regurgitation
Slow Rising/ Slow Upstroke/ plateau	Aortic Stenosis
Pulses Bisferiens	Aortic Stenosis with Regurgitation
Pulses Alternans	Advance Left Heart Failure

Collapsing pulse: rapid fall in P.

Bisfernes: double systolic peak

Alternas: نبضة قوية وبعديها وحدة ضعيفة

Boundinf pulse at excersise



❖ **Pulse volume :** reflects the stroke volume and pulse pressure .

- ✓ **Small volume** is seen in:
Aortic stenosis, Mitral stenosis, LVF, cardiac tamponade, hypovolemia.
- ✓ **Large volume** is seen in:

4.12 Causes of increased pulse volume

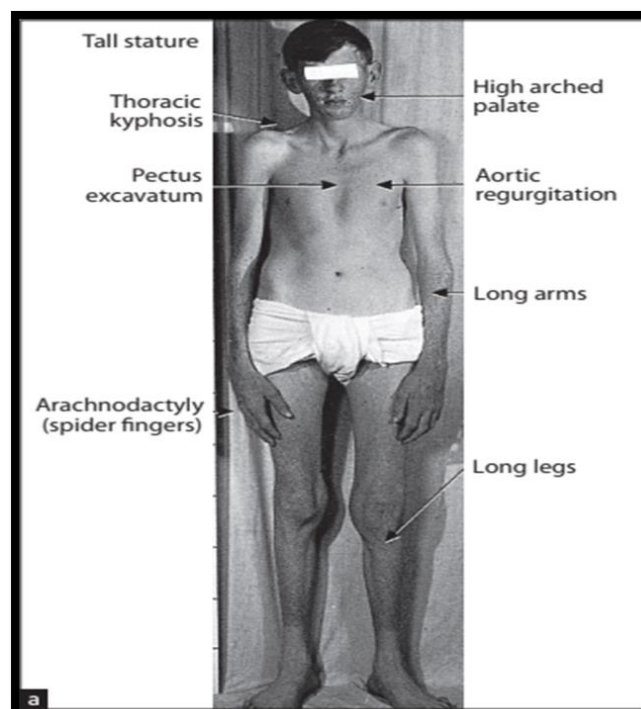
Physiological

- Exercise
- Pregnancy
- Advanced age
- Increased environmental temperature

Pathological

- Hypertension
- Fever
- Thyrotoxicosis
- Anaemia
- Aortic regurgitation
- Paget's disease of bone
- Peripheral atrioventricular shunt

❖ **Mafan features:**



Hands & Arms

- **Palm:** Pallor , hyperemic , cyanosis , **Janeway lesions** , **Osler nodes** , Muscle wasting .
- **Extensor Surface:** **Tendon xanthomata**
- **Nails:** Clubbing , **Splinter hemorrhage** (MCC is traumatic) , Tobacco staining , **Capillary refill test** .
- **Arm:** Tattoo , Needle marks .

For eye you should do fundoscopy , you might see :

- **Roth spot --- IE**
- **Diabetic effect on retinal a.**

Face, Eyes & mouth

- **Face:** Malar rash “ **mitral face**” purple swallon face .

DDX: mitral stenosis , SLE , IE .

- **Eyes:** **Xanthelasmata** (Hyperlipidemia , on medial aspect of eye), **Jaundice** (can be seen on mucosal surface of mouth, sclera of eye, soft palate and uvula), **Pallor**, **Corneal arcus** (in dyslipidemia , elderly pt.) , **Petechial hemorrhage** (IE / in mucosal surface + Conjunctiva of eye, skin) ## mechanism: microemboli in periphery-Damage BV wall- hemorrhage as splinter hemorrhage)
- **Mouth:** Cyanosis, Petechial hemorrhage, Oral hygiene , **High arch palate (in marfan syndrome)**
- Look at lips for cyanosis: if bluish discoloration is on Outer surface—peripheral cyanosis **BUT** if on inner Surface it is central.

Neck

❖ Carotid Pulse :

- Used to assess Volume and Character wave form of aortic pulse.
- Never palpate both carotids simultaneously(to not cause Syncope Due vagal stimulation by carotid receptors.

❖ Internal jugular venous pressure:

- Tells us about the function of right atrium and right ventricle.
- **Position :**The patient must be lying down at 45° to the horizontal with his or her head on pillows and in good lighting conditions.
- Normal **JVP < 9 cm H₂O / 7 mm Hg**
(5cm at sternal angle “ zero point”)

✂ **Janeway lesions, Osler nodes , Splinter hemorrhage :**

For inf. Endocarditis

Janway : painless , on palms .

Osler : painful , on tip of finger .

Splinter H. in IE : single , on base of nail .

Traumatic splinter H. : multiple , tip of nail.

✂ **Tendon xanthomata :**
for hyperlipidemia, risk for HTN, atherosclerosis.

✂ **Capillary refill :**
normal ≤ 2sec, test it by pressing tip of finger, if more than 2, mean:
Hypovolemia, stenosis, hypotension, dehydration.

✂ **Needle marks :** risk for inf. Endocarditis . most common **lt. side** affected, **but drug abuser Rt. Side** .

لازم بالأول تميز ما بين Jugular vein and carotid a.

- بتخلي المريض على وضع 45 درجة، ويميل راسه على الجهة الأخرى قليلاً، بتحدد الحافة العلوية لل vein وبتجيب مسطرتين وحدة بتحطها عمودية على sternal angle-2nd ICS والثانية بتحطها على الحافة العلوية للوريد، بحيث تكون عمودية على المسطرة الأولى، وبتتشوف الارتفاع المحدد عندك، وبتضيف عليه 5سم وهذا هو JVP.
- ممكن علشان تخليه بيرز أكثر تعمل حاجة اسمها Hepatojugular reflex، بتضغط على أي مكان في abdomen وبالاخص عند ال liver or midline، بالانسان الطبيعي حيظهر وبعدين حيختفي ثاني، الشخص الى عنده مشكلة حيضل مابين

JVP= 5cm H2o + vertical distance above sternal angle

4.15 Differences between carotid artery and jugular venous pulsation

Carotid	Jugular
Rapid outward movement	Rapid inward movement
One peak per heart beat	Two peaks per heart beat (in sinus rhythm)
Palpable	Impalpable
Pulsation unaffected by pressure at the root of the neck	Pulsation diminished by pressure at the root of the neck
Independent of respiration	Height of pulsation varies with respiration
Independent of the position of the patient	Varies with the position of the patient
Independent of abdominal pressure	Rises with abdominal pressure

❖ Lower limb

- Look for **lower limb edema** (for HF, cardiogenic cirrhosis)
- بتجي عند ال shin of tibia وبتضغط لمدة 10 ث، وبعدين بظهر ايدك بتحس مكان م ضغطت، وبتحدد هلي pitting or not، ممكن تمشي كذا ليفل لفوق وتحدد مكانها بالزبط.
- **Scars** : saphenous vein harvesting (for CABG operation)

LOCAL EXAMINATION “PRECORDIUM”

❖ From the foot of the bed:

1. **Symmetry of the chest**
2. **Type of breathing**: abdominothoracic in men and thoracoabdominal in women and children

❖ From the right side:

❖ INSPICTION :-

1. **Scars.**
 - Comment on : site, length, old-new, is there keloid or hypertrophy, sings of complication as infection ,(redness, tenderness)
2. **Skeletal deformities**: Pectus excavatum, Pectus carinatum (may seen in rickets) , Kyphoscoliosis.
3. **Dilated veins** (due SVC obstruction)

4. Apical pulsation,

- look also at epigastric area for aortic aneurysm

5. Devices: pacemaker or cardioverter-defibrillator .

6. Gynecomastia: due to spironolactone in HF pt.

❖ **PALPATION:-**

❖ Superficial palpation:

- ✓ To gain confidence
- ✓ For temperature
- ✓ For superficial tenderness

❖ Apex beat

- ✓ **Position:** (at which ICS, distance from sternum)--- usually in the **fifth** intercostal space at or medial to the midclavicular line

- It is felt with the **tips of fingers** .

- ✓ **Character : Abnormal apex beat:**

1. **Pressure overload" heaving":** Forceful and sustained impulse in **AS & HTN**
2. **Volume overload" thrusting":** Displaced, diffuse, non-sustained impulse in **MR & DCM** (Dilated cardiomyopathy)
3. **Double impulse:** In **HOCM** (Hypertrophic obstructive cardiomyopathy)
4. **Tapping impulse:** In **MS**

- كيف تحددوها، بتحدد ICS 2nd، وبتنزل تعد لل 5th في MCL وعندها بتبدأ تحسها بال tips تحت الأصابع،
بعدين بتحدد قديش بعيدة عن الsternum،

- اذا لم تشعر بها، بتطلب من المريض يلف حاله شوي على Lt side.

- لو مقدرتش تحسسها، حاول تحسها يمين/يسار الMCL لو محسستهاش برضه، حسها بالجهة اليمين as it

- may be situs invertus/dextro-cardia condition

- اذاً لما نعلق ع الabkس لازم نحدد موقعها ونعلق ع الكاركتير

❖ Causes of absent apex beat: **"DR. POPE"**

- ✓ **D:** Dextrocardi
- ✓ **R:** Rib
- ✓ **P:** Pericardial effusion
- ✓ **O:** Obesity
- ✓ **P:** Pleural effusion
- ✓ **E:** Emphysema

- **Median sternotomy:**

CABG , valve replacement.

- **Right/left lateral thoracotomy:**

lung , valve surgery

- **Left submammary scar:**

mitral stenosis

- **Infraclavicular scar:**

peacemaker , defibrillator
implantation

❖ Parasternal Heave:

- ✓ **Pathological finding** , feel a pulse that lift your hand .
- ✓ occurs **in right ventricular hypertrophy & enlargement + severe left atrial enlargement** .
- ✓ Felt with **the heel of hand over the left parasternal area**
اما ايدك موازية، عمودية على ستيرنم
- ✓ Ask the patient to **breath out and hold the breathe**

❖ Thrill:

- ❖ Palpable Murmurs: **grade 4 or above murmur.**
- ❖ Palpate **over the areas of auscultation**(Apex & Both sides of 2nd ICS) with the **flat fingers**(by pads of fingers)
- ❖ If there is a thrill over : Rt. (Aortic stenosis) Lt. (VSD)

❖ **AUSCULTATION:-**

Looking for:

- **S1 & S2**
- **S3 & S4**
- **Added sound:** clicks & snaps
- **Murmurs**
- **Friction rub:** for pericarditis

Its scratch sound, not confined by systole
Or diastole , loud when pt. is sitting up and
breath out.

❖ Auscultation sequence

10 areas:

1. **Mitral Area “ apex”:** fifth intercostal space at mid-clavicular line.
2. **Tricuspid Area:** fifth intercostal space at left sternal border.
3. **Pulmonary Area:** second intercostal space at left sternal border.
4. **Aortic Area:** second intercostal space at right sternal border.
5. **Erbs area (second aortic area) :** at Lt. 3rd ICS for AR .

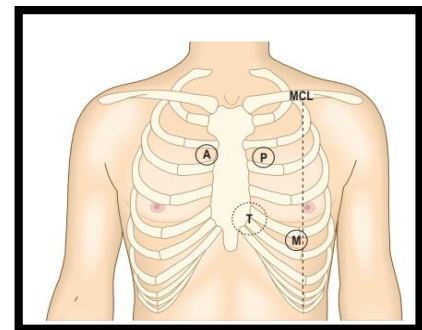
The diaphragm for higher-pitched sounds, as:

- systolic murmur of mitral regurgitation,
- early diastolic murmur of aortic regurgitation
- first and second heart sounds.

The bell for low-pitched sounds, as

- diastolic murmur of mitral stenosis
- third and fourth heart sound.

- لمن تستخدمه، ما تعص بالحامي على الجلد، لانه حينشد على تجويف السماعه ويعمل زي diaphragm وبهيك م استفدت اشني

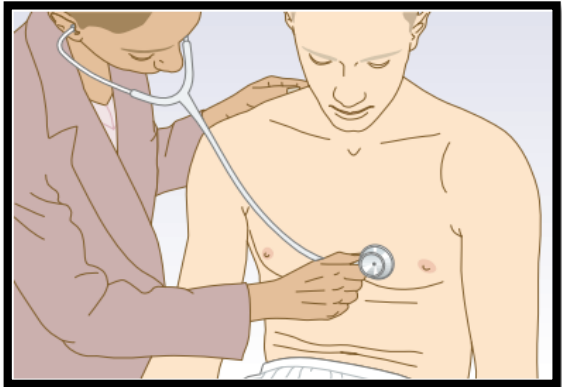


6. **Carotid**: to detect the AS murmur .
7. **Left axilla**: for radiation of MR .
8. **between Scapulae for coarctation of aorta.**
9. **Base of lung from back**
10. **Below Lt. clavicle** : (machinery murmur)

- Do first row with diaphragm then another set with the bell

Special maneuvers:

- ① Roll to the **left side** and use the **bell** at the apex to detect **MS**
- ② Sit up, lean forward, hold breath in expiration and use the **diaphragm** at the aortic area to detect **AR**.
 - When you set the patient up, **auscultate the lung bases and examine for sacral edema** .



❖ Palpation of the carotid pulse will indicate the timing of systole and enable the heart sounds (S1 & S2) to be more easily distinguished.

❖ If there is murmur, you should comment on:

1. Site
2. Timing :
 - (systolic or diastolic) (early, mid, late)
3. Grade
4. Radiation

You will complete your ex. by :

- 1- Examine Peripheral vascular system (as peripheral pulses)
- 2- Fundoscopy
- 3- Look for sacral edema
- 4- Abdomen to look for liver congestion and ascites/ splenomegaly
- 5- Do ECG.

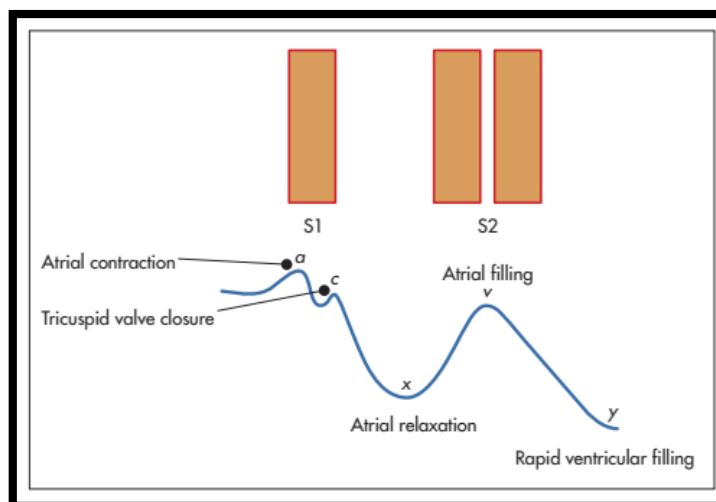
4.17 Cardiac auscultation: the best sites for hearing an abnormality

Site	Sound
Cardiac apex	First heart sound Third and fourth heart sounds Mid-diastolic murmur of mitral stenosis
Lower left sternal border	Early diastolic murmurs of aortic and tricuspid regurgitation Opening snap of mitral stenosis Pansystolic murmur of ventricular septal defect
Upper left sternal border	Second heart sound Pulmonary valve murmurs
Upper right sternal border	Systolic ejection (outflow) murmurs, e.g. aortic stenosis, hypertrophic cardiomyopathy
Left axilla	Radiation of the pansystolic murmur of mitral regurgitation
Below left clavicle	Continuous 'machinery' murmur of a persistent patent ductus arteriosus

4.20 Grades of intensity of murmur

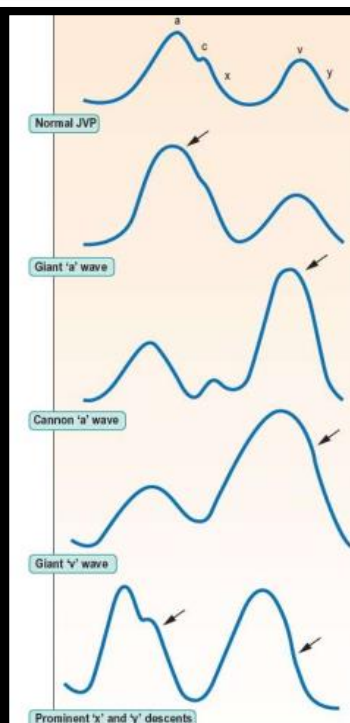
Grade	Description
1	Heard by an expert in optimum conditions
2	Heard by a non-expert in optimum conditions
3	Easily heard; no thrill
4	A loud murmur, with a thrill
5	Very loud, often heard over a wide area, with thrill
6	Extremely loud, heard without a stethoscope

Jugular venous waveform :



4.16 Abnormalities of the jugular venous pulse

Condition	Abnormalities
Heart failure	Elevation, sustained abdominojugular reflux >10 seconds
Pulmonary embolism	Elevation
Pericardial effusion	Elevation, prominent 'y' descent
Pericardial constriction	Elevation, Kussmaul's sign
Superior vena cava obstruction	Elevation, loss of pulsation
Atrial fibrillation	Absent 'a' waves
Tricuspid stenosis	Giant 'a' waves
Tricuspid regurgitation	Giant 'v' or 'cv' waves
Complete heart block	'Cannon' waves



❖ First Heart Sound:

- **S1** or **Lub** is best heard at the apex
- Caused by closure of Mitral and Tricuspid valves at the beginning of systole

❖ Second Heart Sound:

- **S2** or **Dub** is best heard at the pulmonary area.
- Caused by closure of Aortic and Pulmonary valves at the end of systole.
- Has 2 components: Aortic "A2" & Pulmonary "P2"

❖ Third heart sound:

- **S3** best heard with the bell at the apex during early diastole " after S2"
- Lub-Dub-Dum or Ken-tuck-y
- Caused by rapid ventricular filling
- **Physiological S3:** Children , Pregnancy , Febrile patient , Thyrotoxicosis .
- **Pathological S3:** left ventricular failure , MR .

❖ Fourth Heart Sound:

- **S4** best heard with the bell at the apex during late diastole " before S1"
- Da-Lub-Dub or Ten-nes-see
- Caused by atrial contraction against stiffened ventricle
- **Always pathological:** Left ventricular hypertrophy . "HTN, AS, HOCH"
, Angina & ACS .

Oslar node



Janway lesion



splinter hemorrhage



GOOD LUCK

Neurological Examination

Lower limb examination

First : don't forget those steps :

1. Introduce yourself.
2. Reassure the patient.
3. Take permission and explain what you are going to do.
4. Wash your hand.
5. Insure privacy.
6. Position your patient.
7. Exposure of the patient.
8. Position yourself.
9. Ask the patient whether he/ she has any pain, comfortable or not?
10. For neurological exam : ask about dominant hand ((to determine dominant hemisphere)) .

Position of patient:

For lower limbs : supine –flat in the center of the bed.

For upper limbs : 45 degree in bed or on sitting position.

Exposure of patient:

For lower limbs: all lower limbs should be exposed with covering genitalia + exposure of upper limbs (for comparison between UL & LL)

For upper limbs: from waist and upward with exposure of lower limbs.

SEQUENCE :

General look for patient (ABCDE) ➡ inspection ➡ Tone ➡ power ➡ Reflex ➡ Sensation ➡ coordination ➡ gait + Romberg's test.

❖ General look for patient (ABCDE):

- **Appearance of patient (A):** well/ill – comfortable/not - conscious/ not – cooperative/ not – oriented /not (to time* person* place)
- **Body build(B):** average/over/under- weight (here you should say " I would confirm that by BMI").
- **Abnormal color complex (C):** jaundice, pallor ... etc. (here you should say " form my position there is/ no abnormal coloration").
- **Signs of distress(D):** as pursed lips, accessory respiratory muscle usage ...etc.
- **Environment(E):** medical devices, wheel chairs, Etc.

❖ **Inspection:** < comment on the following whether present or absent >

1. Atrophy of muscles. >>> إذا موجود لازم تحدد بأي عضلة
2. Fasciculation. >>>> appear mostly in quadriceps muscle.
3. Symmetry.
4. Scars or any skin changes.
5. Contracture.
6. Atrophic changes (loss of hair, ulcers, brittle nail, thinning of skin....etc.)>>> found in neuropathy.
7. Skeletal deformities as foot drop.
8. Abnormal movements as chorea.
9. Tremor.

** If there is no muscle atrophy,...> so is "normal muscle state/bulk"

**if there is abnormality -> determine whether its proximal/distal- upper limbs/lower limbs, symmetrical or not.

❖ **Tone:**

بتسأل المريض هل في عندك ألم --> وبطلب منه يرخي عضلاته <--patient should be relaxed
وبتعمل ال 3 حركات التالية :

- ① حركة العجيين : بتحط ايدك على رجل المريض وبحركة سريعة بتلفها مرتين وبتقارن مع الجهة الاخرى.
- ② بترفع الركبة وبتخليها تقع بوزنها (بتعملها مرتين).
- ③ بتشد ركبة المريض بوضعية flexion وبتعمل flickering movement for foot وبتستنى 10 ثواني (assess planter clonus)

بنعمل كل اختبار للرجلتين وبعدها بتنتقل ع الاختبار التالي

بعد الثلاث حركات <-----comment <----- Normal tone/ hypertonia(UMNL)/ hypotonia (LMNL)

❖ **Grading of tone:**

0: atonia

+1: hypotonia.

+2: normal tone

+3: normal tone- may be hyper.

+4: hypertonia + clonus

- Sustained
- Non sustained

❖ **Clonus :**

rhythmic series contraction in response to sudden stretch of muscle.

1. **Organic :** UMNL.

2. **Psychiatric.**

❖ **Muscle hypertrophy:**

1. **True :** inc. muscle fiber.

2. **Pseudo :** dec. muscle fiber/ inc. fat tissue...Duchene muscular dystrophy

❖ **Muscle fasciculation :** spontaneous contraction of muscle group.

1. **Physiological :** anxiety/ coffee / smoking/ fatigue.
2. **Pathological :** irritation to AHC as ALS/ poliomyelitis/ syringomyelia.

❖ Power:

- Ask the patient to perform action of each muscle group against your resistance.
- Always do in comparison between both limbs in each movement.
- Give final comment after each movement as : full strength in both side.

Action	Muscle	Nerve supply
Hip flexion	Iliopsoas muscle	Femoral n. (L2-L4)
Hip extension	Gluteus maximus muscle	Inferior gluteal n.(L5-S2)
Hip adduction	Adductor muscle group Gracilis muscle	Obturator n. (L2-L4)
Hip abduction	Gluteus medius Gluteus minimus	Superior gluteal n. (L4-S1)
Knee flexion	Hamstring muscle	Sciatic n.(L5-S2)
Knee extension	Quadriceps muscle	Femoral n.(L2-L4)
Ankle dorsiflexion	Ant. Compartment of leg	Deep peroneal n.(L4-L5)
Ankle flexion (planter flexion)	Gastrocnemius muscle Soleus muscle	Tibial n. (S1-S2)
Big toe dorsiflexion	Extensor hallucis longus	Deep peroneal n.(L4-L5)

❖ Grading:

- 0:** no muscle movement (paralysis)
- 1:** muscle contract but no joint movement.
- 2:** joint move with elimination of gravity.
- 3:** joint movement against gravity but not against resistance.
- 4:** movement occur against gravity and weak resistance.
- 5:** full strength.

❖ Reflexes:

❖ **Involuntary action of muscle in response to stimulus.**

❖ **بيلزم تعرف كيفية القيام بالريفليكس وكيفية استخدام الهامر ومكان النقر وكما لازم تكون عامل**
good exposure to muscles to see contraction

reflex	Reflex center	Response	Site
Knee jerk	L3-L4	Quadriceps muscle contraction	Above tibial tuberosity
Ankle reflex	S1-S2	Calf muscle contraction	At achillis tendon

✓ **Reflex arch: muscle stretching type.**

Sensory receptor(tendon of muscle) → peripheral sensory n. → post. Horn of spinal cord at reflex center → ant. Horn of same segment of SC → ant. Horn → peripheral motor n. → response.

• **Grading of reflex:**

0: absent : to definitely say the reflex is absent you should ask patient to do Jenderssik maneuver ((بتطلب من المريض يشد على ايديه وانتا))
(بتحاول تعمل الريفليكس)

- 1: hyporeflexia
- 2: normal reflex
- 3: hyperreflexia
- 4: clonus

❖ **Jenderssik maneuver** : for reinforcement of reflex.

❖ **Do Babinski reflex.** (at planter surface of foot → go from lateral to medial).

- **+ reflex:** dorsiflexion in big toe with planter flexion of other toes with fanning.
- **- reflex:** planter flexion of toes.

❖ **Sensation:**

- Two types of sensation:

❖ **Superficial sensation:** fine touch and pain.

• **طريقة القيام بالفحص :**

بتعلم المريض عن طريق وضع قطنة ناعمة (ريشة المطرقة) على رقبة المريض وبتقله حاسس او لاء بتروح على رجلين المريض وبتبدأ تمشي عليها من فوق لتحت وبتقارن في كل مرة بين اليمين واليسار وبتسال المريض هل يتغير الإحساس أو هل يختفي
بعدين بدك تحدد sensory level ، فبتمشي رجل رجل وتبدأ من تحت لفوق (لغاية م يحكي المريض بطلت حاسس)
بالنسبة لل pain بنفس الطريقة (استخدم الدبوس الى بالمطرقة)
البعض ممكن يطلب temperature وهي بنفس الطريقة باستخدام أشياء ساخنة، وأشياء باردة .

Fine touch and deep sensation :

Post. Root ganglion → gracile and cuneate tract in post. Column → G&C nucleus → medial lemniscus → PLVN of thalamus → sensory area in post central gyrus (1,2,3)

Pain and temp. :

Post. Root ganglion → substantia gelatinosa of rolandi → G&C nucleus → lat. Spinothalamic tract (crude touch in ventral spinothalamic tract) → PLVN of thalamus → sensory area in post central gyrus (1,2,3)

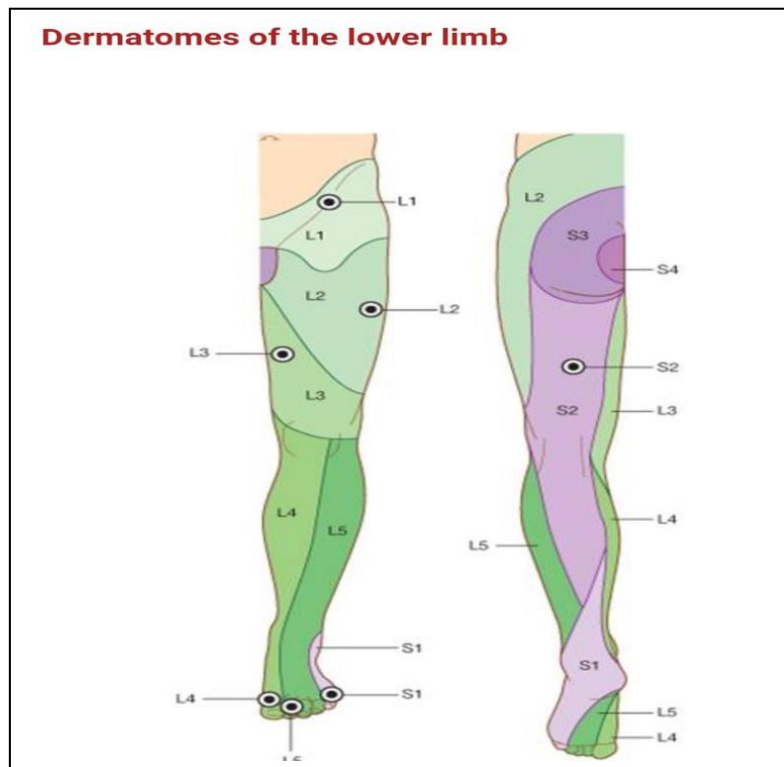
❖ **Deep sensation:**

- **Joint proprioception:**

بتمسك أصبع قدم المريض الكبير وتعلمه (لهيك بكون أصبعك تحرك لفوق مثلاً)، وبعدين بتطلب منه يغمض عينيه او يطلع بالسقف، وبتحرك الأصبع وبتسأله بأي اتجاه؟؟ وبتكرر بالجهة الثانية في حال أخطأ مرة واحدة فهذا مقبول، لو أخطأ في كل المرات بتطلع على مستوى ankle وهكذا علشان تفحص sensory level ووين صار الفقد

- **Vibration:**

باستخدام الشوكة الرنانة بتحدد bony prominence وبتحط الشوكة عليها وبتسأل المريض هل يشعر بالاهتزاز وبتوقفها بإيدك وبتسأله هل ما يزال يشعر فيه؟ في حال لم يشعر ، تنتقل لمستوى أعلى كما تم توضيحه سابقاً. في حال كان + والمريض كان يشعر ،، خلص م بتكمل لمستويات أعلى لأنه حيكون intact.



❖ **Coordination:**

- ❖ **Dysdiadokokinesia** : ask patient to rapidly clapping your palm
- ❖ **Heel to shin** .

❖ **Gait assessment:**

- Ask patient whether he is able to walk, need help, use any medical aids – if answer yes you should provide them to patient.
- Assess patient gait, how initiate it, turns, arm swing with gait

Abnormal types :
Ataxic gait
Steppage gait
Spastic gait
Shuffling gait
Circumduction/hemiplegic gait
Waddling gait
Senile gait
Hysterical gait

❖ **Rombergs test:**

بتطلب من المريض وهو واقف يقرب قدميه الاثنتين على بعض ويغمض عينيه، وشوف اذا ترنح المريض أو لا—اذا ترنح فهذا يعني وجود Posterior column lesion

❖ **Cover the patient and thank him.**

❖ **To complete Examination :**

I would like to perform

1. Upper limb neurological examination
2. Cranial nerve examination
3. Fundoscope
4. Spine examination
5. Higher cortical assessment

	U.M.N. LESION	L.M.N. LESION
1. Location of lesion	From area 4 until AHCs	From AHCs until muscles
2. Location of paralysis	Below the level of lesion: Contralateral (above decussation) and ipsilateral (below decussation)	Ipsilateral at the level of lesion
3. Paralysis	Spastic or central	Flaccid or peripheral
I. MUSCLES		
1. State of the muscles	Wasting occurs very late due to disuse	Wasting occurs early (hypotrophy)
2. Muscle tone	Hypertonia (spasticity)	Hypotonia (flaccidity)
3. Muscle fasciculation (spontaneous contraction of muscles group).	Absent	May be present in the irritative lesions of AHCs
II. REFLEXES		
1. Deep reflexes	Hyperreflexia	Hyporeflexia or areflexia
2. Clonus (Rhythmical series of contraction in response to sudden stretch of muscle tendon).	May be present	Absent
3. Pathological reflexes (Babinski reflex)	+ve (dorsiflexion of big toe + fanning of other toes)	Absent
4. Superficial reflexes	Lost if the lesion is above segmental supply of the reflex	Lost if lesion involve the segmental supply of the reflex

Upper limb examination

Please back to lower limb examination and revise the first section .

SEQUENCE :

General look for patient (ABCDE) ➡ inspection ➡ Tone ➡ power ➡ Reflex ➡
Sensation ➡ coordination ➡ gait.

❖ General look for patient (ABCDE) +inspection: same as Lower limb, back to it 😊

❖ Tone: بتطلب من المريض يرخي عضلاته ويتحرك بحركات عشوائية وبتقارن

❖ Power:

1. Test for the strength of the deltoid muscles:

The deltoid muscle is innervated by the C5 nerve root via **the axillary nerve**



2. Next, ask the patient to extend and raise both arms in front of them (Barry's test):

Ask the patient to keep their arms in place while they close their eyes and count to 10.



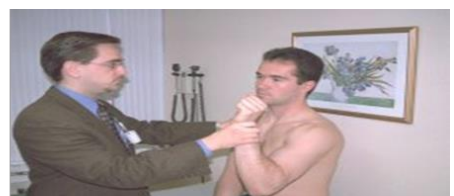
3. Test for the elbow flexion:

This test for the biceps muscle (by the C5-C6 nerve roots via **the musculocutaneous nerve**)



4. Test for the elbow extension:

This test for the triceps muscle (by the C6-C8 nerve roots via **the radial nerve**)



5. Test for the strength of wrist extension:

This test for the forearm extensors (by the C6-C7 nerve roots via **the radial nerve**)



6. Test for the strength of wrist flexion:

This test for the forearm flexors and the intrinsic hand muscles (by the C8 nerve root via **the median nerve**)



7. Test for the fingers abduction or "fanning":

This tests the intrinsic hand muscles. Finger abduction or "fanning" is innervated by the C8-T1 nerve root via **the ulnar nerve**.



8. Test for the strength of the thumb:

Thumb opposition is innervated by the C8-T1 nerve roots via **the median nerve**.



❖ Reflex:

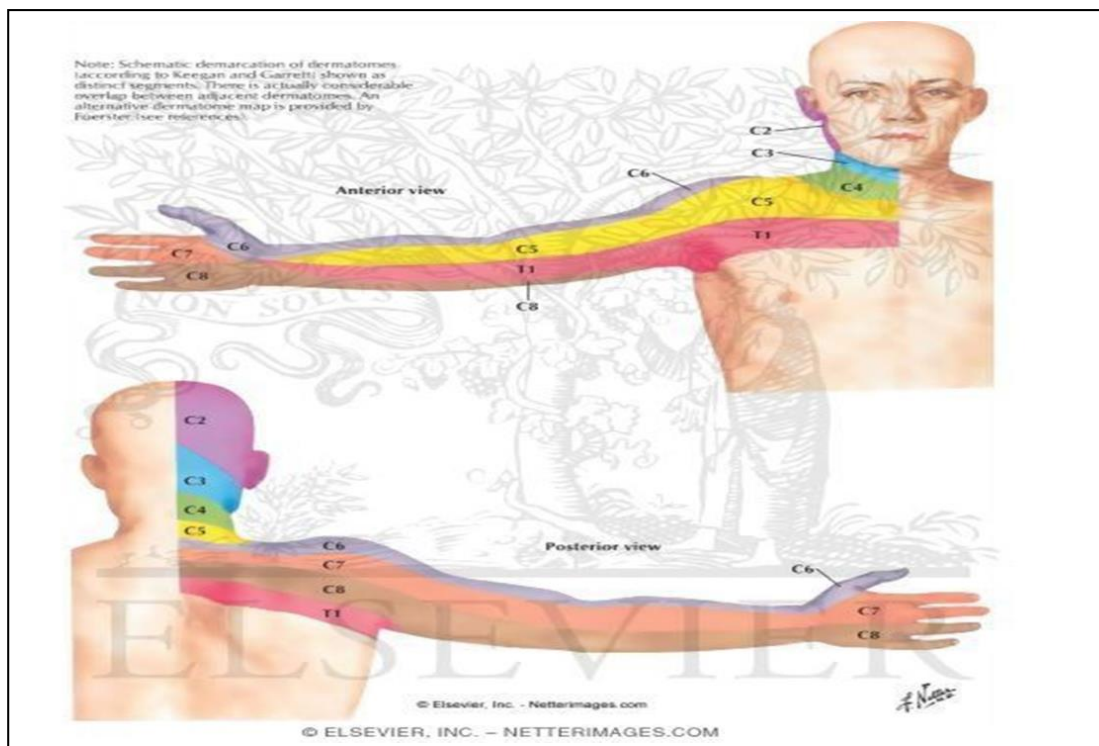
reflex	Reflex center	response	Site
Supinator	C5-C6	Brachioradialis m	5-10cm above styloid process
biceps	C5-C6	Biceps contraction	At biceps tendon
triceps	C6-C7	Triceps contraction	At triceps tendon

❖ **Jenderssik maneuver:** clenching of teeth : for reinforcement of reflex.

❖ **Hoffman syndrome:** for UMNL ➡ flex and suddenly release distal phalanx of middle finger ➡ abnormal response flexion of other finger.

❖ Sensation:

- same as Lower limb



❖ **Coordination:**

1. Dysdiadokinesia.

2. Finger to nose.

❖ **Thank patient and cover him**

❖ **To complete Examination ::**

I would like to perform

1. Lower limb neurological examination
2. Cranial nerve examination
3. Fundoscope
4. Spine examination
5. Higher cortical assessment.

Cranial nerve examination

Please back to lower limb examination and revise the first section.

Position of patient: on a chair at eye level.

Position of yourself: opposite to patient.

Exposure of patient: patient head and neck

✓ Each nerve will be examined according to its function → look at this table:

№	Name	Function
1	Olfactory	Smell
2	Optic	Vision
3	Oculomotor	Motor
4	Trochlear	Motor
5	Trigeminal: Ophthalmic Maxillary Mandibular	Sensory Sensory Mixed
6	Abducent	Motor
7	Facial	Mixed

8	Vestibulo-cochlear	Hearing and balance
9	Glossopharyngeal	Mixed
10	Vagus	Mixed
11	Accessory	Motor
12	Hypoglossal	Motor

❖ Inspection:

❖ General look:

1. General appearance of patient (well/ill- comfortable/not- in distress/ not- abnormal color/not).
2. Body built(you will confirm it by BMI).
3. Environment: medical aids(glasses- hearing aids- wheel chair or any other devices attached or in the surrounding of patient).

• Specific look:

1. **Facial asymmetry** { may be stroke/ parotid gland tumor(damaging CN VII)}.
2. **Ptosis** (complete/ partial for CN III palsy/ Horner syndrome respectively).
3. **Convergence/ divergence.**
4. **Fasciculation**- also look at tongue (LMNL).
5. **Muscle wasting** (LMNL/UMNL).
6. **Abnormal movements.**
7. **Eye blinking**(normal 3-8 time/min).
8. **Speech abnormality.**
9. **Scars :**
 - Ant. To ear: CN VII damage- ipsilateral.
 - Behind ear: CN VIII damage.
10. Tracheostomy/ NGT- lower CN damage- affect on swallowing / breath.

❖ Specific exam. To each CN. :-

❖ CN I (olfactory n.) :

- ❖ Each nostril should be examined separately.
- ❖ Eyes of patient should be closed(to prevent visual identification).
- ❖ Test done using odorous substance that is familiar/ not irritant.
- ❖ Ask patient whether he/ she noticed any change in smell sensation.
- ❖ Compare between both nostrils.
- ❖ Ask the patient whether he/ she smell/
is there change in smell between both nostrils.

❖ CN II (Optic nerve) :

- **Inspect pupils** for size (similar- different)/ shape (round/regular- not)/ symmetry(not).
- **Visual acuity:** use Snellen chart- normal 6/6 or 6/9.
- **Visual field (confrontation test):**

- بتطلب من المريض يثبت نظره على نقطة معينة على مستوى نظره وما يحرك عينيه أو رأسه.
- بتطلب من المريض يغطي عينه بايده الى على نفس جهة العين الي بدكاش تفحصها، وانت بتغطي العين المعاكسة للعين الي بتفحصها (مثلاً العين اليمين التي يتم فحصها، بتخليه يغطي اليسار وانت بتغطي اليسار).
- وبتطلب من المريض يحدد النقطة الى شايف فيها أصبعك وانتا بتحركه في الجهات الأربعة.
- يتم تحديد المنطقة التي لا يستطيع المريض الرؤية فيها عن طريق رسم دائرة وتظليل الجزء الذي لم يراه.
- كرر الفحص للعين الثانية.

- Golden standard is: perimeter.

- **Pupillary reflexes :**

- **Direct and indirect pupillary reflexes:**

- بتضوي بعين المريض وبتلاحظ حدوث meiosis in both eyes بنفس اللحظة، العين المسلط عليها الضوء تمثل direct والعين الأخرى تمثل indirect.

- **Accommodation reflex:**

- بتخلي المريض يركز نظره على نقطة معينة على مستواه، وبتحرك اصبعك من مسافة بعيدة باتجاه انف المريض، الطبيعى يحصل meiosis and convergent.

- **Swinging light test:**

- بتحرك الضوء بسرعة بين عيني المريض بحيث كل عين بتخلي الضوء عليها لمدة 3 ثواني ، وبتلاحظ حدوث meiosis/ mydriasis وذلك لمن يكون الضوء مسلط على العين/ لمن تبعده عن العين.

- **Color examination:** ishihara charts.

- **Fundoscope:** Just mention

- **Ophthalmoscope:** Just mention

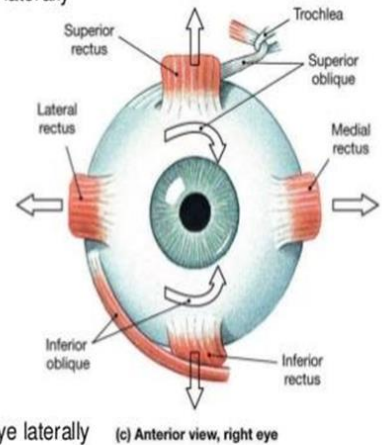
❖ CN III, IV, VI (oculomotor- trochlear- abducent) :

- **Ptosis/ no?**
- **Eye movement** (ask patient to fix head and move only eye, test each eye separately): do H shape test → symmetry/ restriction/ nystagmus/ diplopia
- **Squint** (convergence/ divergence- unilateral/ bilateral)
- Look for exophthalmos?

Extrinsic Eye Muscles – Innervation & Movement

The six (6) extrinsic eye muscles, innervation, and movement of the eye:

1. **Inferior Oblique**
 - (CNIII) elevates and turns eye laterally
2. **Inferior Rectus**
 - (CNIII) pulls eye inferiorly
3. **Superior Rectus**
 - (CNIII) pulls eye superiorly
4. **Medial Rectus**
 - (CNIII) pulls eye medially
5. **Lateral Rectus**
 - (CNVI) pulls eye laterally
6. **Superior Oblique**
 - (CNIV) depresses and turns eye laterally



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❖ CN V (Trigeminal n.):

- 3 branches : **ophthalmic V1/ maxillary V2 / mandibular V3.**
- 1- **Sensory assessment:** assess for fine touch & pain sensation
 - Assess forehead area (V1)- cheek area (V2)- mandible area/ jaw (V3).
 - Compare between both sides.
 - Ask patient whether sensation is present or not/ dose it change?
 - بتعلم المريض زي في UL/LL علشان يكون عارف شو بدو يحس.
- 2- **Motor assessment :** mastication muscle examination → ask patient to open mouth → if unable to open mouth : bilateral damage.
 - If jaw deviated : unilateral damage.
 - Ask patient to clinch teeth.
 - Palpate maseater muscle
- 3- **Reflexes:**
 - **Superficial reflexes:**
 - Corneal and conjunctival reflex:
 - **Afferent:** ophthalmic n.
 - **Efferent:** fascial n.
 - بتطلب من المريض يثبت نظره على نقطة، وباستخدام قطنة معقمة بتلمس عين المريض--< الطبيعي يصير blinking of both eyes

- Palatal reflex:
 - **Afferent:** (maxillary n.)
 - **Efferent:** (vagus n.).

→ **Deep reflexes :**

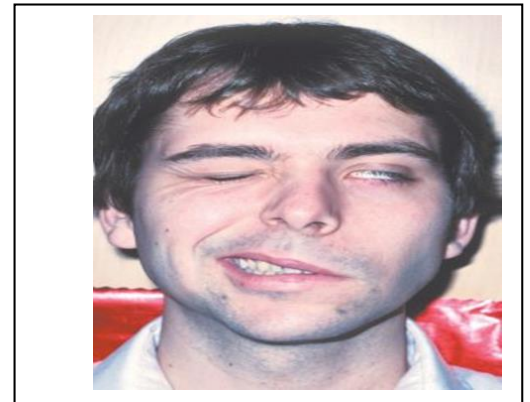
- JAW JERK: **afferent and efferent** is mandibular n.
- باستخدام المطرقة وبنقرة بسيطة على mental n. والمريض ففتح فمه، الطبيعي no jaw closure or mild closure ولكن الغير طبيعي complete closure.

❖ CN VII (Fascial n.) :

- 1- **Inspection+ motor :** asymmetry- look for forehead wrinkles- nasolabial folds- ask patient to show teeth/ to smile- ask patient to raise eye brows- close eye against resistance- pursed lips against resistance+ other fascial expression.
- 2- **Sensory:** taste sensation for ant. 2/3 of tongue by chorda tympani branch.
- 3- **Reflex:** corneal reflex.

→ Bell's palsy :

- Loss of forehead wrinkles.
- Incomplete eye closure.
- Loss of nasolabial fold.
- Drop angle of mouth.



❖ CN VIII (Vestibulo-cochlear Nerve) :

• Test cochlear part :

- Test by whispering numbers into one ear.
- بتتجى عند أذن المريض وبتهمس برقم بينما بتفرق بأصبعك عند الأذن الأخرى.
- Weber's test: place tuning fork in middle of the head. Normally vibration are heard in the middle of the head.
- Rinne's test: using the vibration tuning fork, compare conduction air (in front of ear) with bone conduction (on mastoid process).
- Audiometry (I would perform it.)

	Weber's Test	Rinne's Test
Normal	Vibration are heard in the middle of the head	Air conduction is better than bone conduction
Conductive deafness	Vibration are heard in affected ear	Bone is better than air
Nerve deafness	Vibration are heard in normal ear	Both air and bone are diminished

➤ Test vestibular part :

- **Oculovestibular reflex (caloric testing):** mention it (I would like to perform)
- nystagmus towards the irrigated ear is seen when ice-cold water is run into the external auditory meatus . This indicates an intact vestibular nerve and brainstem. The test is used in the diagnosis of brainstem death.

❖ CN XI & X (glossopharyngeal and vagus) :

- **Examin uvula :** Normal (central)
- Ask patient to say Ahhh- deviated to opposite side of lesion (intact side) if there is lesion.
- Ask patient to swallow/ to speak/ to cough (bovine cough in CN 9+10 lesion).
- **Sensation :** taste sensation in post. 1/3 of tongue.
- **Reflexes:**
 - 1- **Palatal reflex:** stimulation to soft palate → elevation of soft palate
 - **Afferent:** maxillary n.
 - **Efferent:** CN 10.
 - 2- **Gag reflex:**
 - Stimulation to post. Pharyngeal wall → gag sensation.
 - **Afferent:** CN 9.
 - **Efferent:** CN10.
- Isolated CN X damage – thyroid surgery.

❖ CN XI (accessory nerve) :

- ➔ It has 2 parts, **cranial part** which examined with CN X & **spinal part** which will be examined by the following tests :
 - 1- Ask patient to shrug shoulder against resistance (**trapezius muscle**).
 - 2- Ask patient to turn head to one side against resistance (**SCM muscle**).
 - 3- Look for asymmetry.

❖ CN XII (hypoglossal n.) :

- ➔ Visualize tongue at rest for fasciculation/ wasting/ ulcer.
- ➔ Ask patient to protrude tongue and look for deviation.
- ➔ Ask patient to press tongue against your finger .

❖ To complete examination:

- 1- Do UL/ LL neurological examination.
- 2- Order CT / MRI for head.

❖ Thank patient.

❖ Wash your hand.

Examination of Meningeal Irritation Signs

- a. **Neck rigidity (stiffness):** Passive flexion of neck leads to neck rigidity.
- b. **Positive Lasseque's sign:** Raise the leg of supine patient by flexion of the hip (while the knee is extended). Normally it can be raised to 90° without discomfort. Here it is painful and limited.
- c. **Positive Kernig's sign:** Passive flexion of the hip at 90° and flexion of the knee in a supine patient. Trial to extend slowly is limited and painful.
- d. **Positive Brudzinski's sign:**
 - **Neck Brudzinski's sign (upper Brudzinski's sign):** Passive flexion of neck leads to flexion of both knees and hips.
 - **Leg Brudzinski's sign (lower Brudzinski's sign):** Passive flexion of one hip and extension the knee leads to flexion of the other hip.

GOOD LUCK

Thyroid Examination

Preparation Of The Patient

1. Greet the patient respectfully and with kindness.
2. Introduce yourself
3. Take a permission
4. Insure privacy
5. Wash your hands
6. **Exposure** : above nipple with upper limb exposed
7. **Position** : patient sit in upright position
8. Ask the patient whether he is comfortable or not.

بتجلس على الكرسي مقابل المريض وبتعلق عن الآتي

General examination (ABCDE)

Comment on ABCDE:

1. **Appearance**: looks well/ Unwell? Comfortable/ uncomfortable? Conscious/not?
Agitated or depressed , pt. clothes suitable with the weather or not ?
2. **Body built** (cachectic, average weight , underweight, Overweight, obese)
** **The patient looks** and I would like to check BMI
3. **Color** (pallor, jaundice, pigmentation...)
4. **Distress** (dyspnic tachypnic)
5. **Environment** (IV lines, NG tube, stoma, drains, oxygen O2 mask , urine catheter)

❖ **The hands :-**

- **Dorsum** : Nails (brittle nail – onycholysis – thyroid acropathy) all seen in Graves disease.
- skin texture – muscle wasting – fine tremor .
- A fine tremor may be demonstrated when they stretch out their hands with their fingers spread. you can use a paper .
- thyroid acropathy : consists digital clubbing, swelling of digits and toes, and periosteal reaction of extremity bones .
- **Palms** : temperature – sweat/dry – skin texture (coarse or thin or normal) – palmar erythema – pallor creases – pigmentation – muscle wasting .

- **Arms** : pulse (rate – rhythm – volume – character) and other vital signs and describe any findings .
- Pulse rate increase with Hyper and may be irregular rhythm in case of AF .
- Pulse rate decrease in Hypo .

❖ Lower limbs :

1- Examine for proximal myopathy :

- Ask the patient to stand from his chair

2- Inspect the lower limbs for :

- **pretibial myxoedema** : in Graves' disease, skin red, blotchy, raised areas may be seen over the shins. caused by deposits of myxoid tissue within the skin .
- It does not pit after prolonged pressure .

3- Achilles tendon reflex :

- Hyporeflexia in hypo : The reflexes are sluggish and their relaxation period prolonged .
- Hyperreflexia in hyper .

❖ Face :

- **General look as** : The face looks well with no puffy or mask or plethoric face .
Puffy face and periorbital edema in Hypo .
- **Hair** : in hypo- hair looks thin, ragged and falls out .
- **Forehead** : Over sweating or No – Present of wrinkles or No (absent with exophthalmos)
- **Loss of lateral third of eyebrows or No .**
- **Eyes** : pallor (hypo) – chemosis (hyper)
- **Eyes : 3 Passive inspection** : 1- For exophthalmos from above and lateral
2- For lid retraction
3- Blinking (3-8 / min) increase with exophthalmos

خلال هذه الفحوصات نطلب من المريض انه يطلع ع نقطة معينة وراك ويثبت عينه عليها

خلال فحص جحوظ العين يجب أن تنتظر لعين المريض من الأمام والخلف والجانب، ومن الممكن أن تجعل المريض يعمل neck extention شوية عشان تشوف كويس ، وممكن تستخدم ورقة عشان تشوف هل بارزة فعلاً وهل هي موجودة على الجهتين ولا لا

3 Active inspection : 1- Lid lag : Ask the patient to follow your finger as you move it slowly from above, downwards. If the upper eyelid does not keep pace with the eye, the patient has lid lag .

2- Ophthalmoplegia : using H-test

3- Examine for convergence

- **Mouth :** Enlarged tongue & Deep Voice or hoarseness (with hypo)

✧ Local thyroid examination :

□ **INSPECTION :**

- Inspect the neck from the front **5s** :

1- **Skin color** (hyperemic in suppurative thyroiditis)

2- **Scars** (site, length, old or new)

3- Superficial dilated veins .

4- **Swelling** (Site , Shape , Size, Surface, overlying skin)

5- **Special tests :** A. swallow sip of water

B. open mouth and put out tongue

c. Pemberton's sign

- All thyroid swellings ascend during swallowing.
- If lump moves up as the tongue comes out, it must be attached to the hyoid bone > thyroglossal cyst

خلال فحص الثايرويد لو بس بتفحص كل واحد لحال وم بتفحص الاثنين مع بعض بلاش يصير عند المريض syncope due to pressure on both carotids .

□ PALPATION :

A. From front :

- 1- **3 Ts** : **Temperature & Tenderness & tracheal position** .
- 2- Palpate the gland : place your hand on any visible swelling, to confirm its size, shape and surface .

B. From the back :

- Stand behind the patient. Tilt the head slightly forwards to relax the anterior neck muscles .

بتيجي تقف من ورا المريض بتحدد الثايرويد كارتلج (تفاحة ادم) ثم تحدد الكريكوئيد ميمبرين ثم تحدد الكريكويد كارتلج ثم بتنزّل 3 سم بتلاقي نفسك وصلت للغدة

- Thyroid cartilage then Cricothyroid membrane then Cricoid cartilage then after 3 cm can put your hand on the isthmus .
- 1- Ask the patient to **swallow** while you are palpating the gland to confirm that any swelling moves with swallowing and is actually part of the thyroid.
 - 2- Ask patient to protrude tongue (if mass move this is thyroglossal cyst)
 - 3- Palpation of Lymph nodes : whole of the neck for any cervical and supraclavicular lymphadenopathy.

□ PERCUSSION

Percuss the manubrium to assess for dullness due to retrosternal extension of goiter.

□ AUSCLTATION

Listen over the swelling : A thyroid bruit (sometimes associated with a palpable thrill) indicates abnormally high blood flow and is most commonly associated with Graves' disease

To complete examination

- ✓ Do TSH/FT4
- ✓ Thank the patient
- ✓ Wash your hand

Lid retraction & lid lag :

- This sign is caused by overactivity of the **involuntary (smooth muscle)** part of the levator palpebrae superioris muscle.
- If the upper eyelid is higher than normal and the lower lid is in its correct position, the patient **has lid retraction**.

Exophthalmos (Proptosis) :

- If the eyeball is pushed forwards by an increase in **retro-orbital fat, oedema and cellular infiltration**, the normal relationship of the eyelids to the iris is changed.
- The sclera becomes visible below the lower edge of the iris (the inferior limbus).

Pemberton's sign :

- The development of facial flushing, neck distension, engorged neck veins and raised JVP when a patient raises and holds the arms above the head.
- Condition/s associated with :
 - **Retrosternal/substernal goitre** – common
 - **anterior mediastinal Tumour**

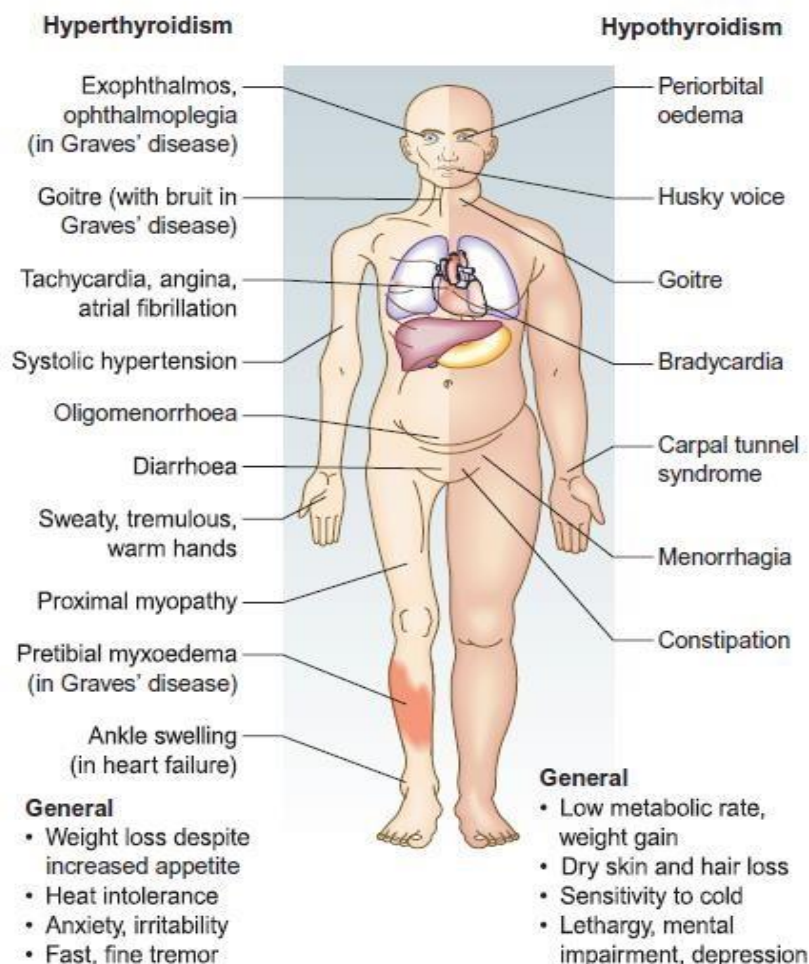


Fig. 10.4 Features of hyper- and hypothyroidism.

GOOD LUCK

Hand Examination

Preparation Of The Patient

1. Greet the patient respectfully and with kindness.
2. Introduce yourself
3. Take a permission
4. Insure privacy
5. Wash your hands
6. **Exposure** : the patient's hands, wrists and elbows (exposure till the elbow) .
- 7- **Position** : patient sit in upright position with their hands on a pillow
- 8- Ask the patient whether he is comfortable or not.

□ **Explain the examination** ان شاء الله أنا بدي أفحص ايديك ومفصل الايد تبعتك، هذا الفحص يتضمن أولاً: النظر الى اليدين وثم الاحساس بالمفصل وقد يتطلب الأمر قيامك ببعض الحركات خلال الفحص، هل هذا مفهوم بالنسبة لك - عندك سؤال ما- عندك مشكلة معينة، هل تشعر بالراحة وتسمح لي باكمال الفحص ؟

LOOK → FEEL → MOVE

A. LOOK

❖ **Dorsum (palms down)**

1. **Hand posture** : Inspect hand posture and note any abnormal posture (e.g. contracture – drop hand)
2. **Nail changes** :
 - **Nail pitting and onycholysis** are associated with **psoriasis** (and psoriatic arthritis)
 - **Clubbing**
3. **Skin changes** :
 - **Skin thinning or bruising** can be associated **with long-term steroid use** (e.g. common in patients with active inflammatory arthritis)
 - **Psoriatic plaques** (salmon coloured plaques with silvery scale) are important to recognise as psoriasis and psoriatic arthritis are closely associated
4. **Scars or swelling** : Inspect for evidence of scars ---- previous surgery.
□ Note any obvious areas of swelling, comparing the hands and wrists
5. **Skin color** :
 - **Erythema** of the soft tissue may indicate cellulitis or joint sepsis
 - **Pallor of the hands** may indicate the presence of peripheral vascular disease and/or anaemia

6. Muscle wasting :

- Muscle wasting can occur secondary to chronic joint pathology
- Consider lower motor neurone lesions (e.g. carpal tunnel syndrome)

7. Deformities :

✗ ✓ **Bouchard's nodes**: Occur at the proximal interphalangeal joints (PIPJ), And associated with osteoarthritis (OA)

✗ ✓ **Heberden's nodes**: Occur at the distal interphalangeal joints (DIPJ), Associated with OA

✓ **Swan neck deformity**:

- Occur at the distal interphalangeal joint (**DIPJ**)
- Features include DIPJ flexion with PIPJ hyperextension ☐

Associated with **rheumatoid arthritis**

✓ **Z-thumb**:

☐ Hyperextension of the interphalangeal joint, in addition to fixed flexion and subluxation of the metacarpophalangeal joint (MCPJ) ☐ Associated with **rheumatoid arthritis**

✓ **Boutonnières deformity**:

- PIPJ flexion with DIPJ hyperextension
- Associated with **rheumatoid arthritis**

✂ **As you identify any clinical signs, note if they are symmetrical (e.g. affecting both limbs or not)**

❖ **Palms up**

1. Inspect hand posture :

- Note any asymmetry of the hands
- Note any evidence of abnormal hand posture (e.g. clawed hand secondary to Dupuytren's contracture)

2. Scars or swelling :

- Inspect for evidence of scars suggestive of previous surgery
- Note any obvious areas of swelling, comparing the hands and wrists

3. Skin color :

- Erythema of the soft tissue may indicate cellulitis or joint sepsis
- Pallor of the hands may indicate the presence of peripheral vascular disease and/or anaemia .

4. **Deformities :**

- **Dupuytren's contracture**

presents as a thickening or painless nodule in the palm The most common finger to be affected is the ring finger(4th and 5th); the thumb and index finger are much less often affected In advanced disease, there is a loss of range of motion in the affected fingers

- **Thenar/hypothenar wasting**

Isolated wasting of the thenar eminence is suggestive of carpal tunnel syndrome -
- may be due to bancost tumor

❖ **Elbows**

Inspect for evidence **of psoriatic plaques** or **rheumatoid nodules**

B. FEEL

❖ **Palms up**

1. Temperature: بقفا إيدك بتحس درجة الحرارة

- Assess and compare the temperature of the wrists and small joints of the hand
- Increased warmth in a joint is suggestive of inflammatory arthritis or joint sepsis

2. Radial and ulnar pulse

- Palpate the radial and ulnar pulse to confirm there is adequate blood supply to the hand

3. Thenar/hypothenar eminence bulk

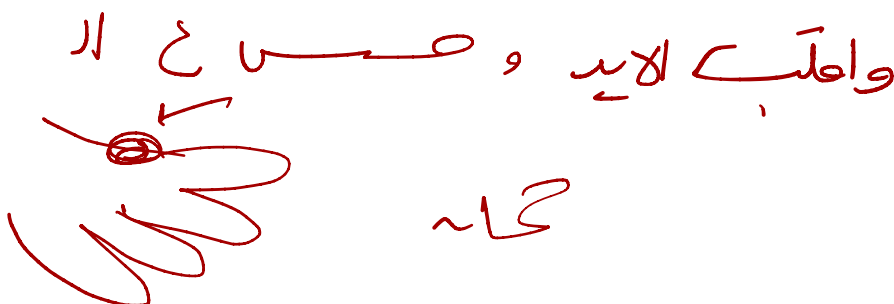
- Assess the muscle bulk of the thenar and hypothenar eminences
- Wasting of these areas is often noted in ulnar/median nerve lesions

4. Palmar thickening

- Palpate the palms for evidence of palmar thickening
- Palmar thickening can be caused by Dupuytren's contracture

5. Assess median and ulnar nerve sensation

- Assess median nerve sensation over the thenar eminence and index finger
- Assess ulnar nerve sensation over the hypothenar eminence and little finger



❖ Dorsum (palms down)

1. Assess radial nerve sensation .

2. Assess and compare temperature using the back of your hand
at : Forearm/ Wrist/ MCP joints

3. Gently squeeze across the metacarpophalangeal (MCP) joints

- Observe for non-verbal signs of discomfort
- **Tenderness** may indicate **active inflammatory arthropathy**

4. Bimanually palpate the joints of the hand (MCPJ/PIPJ/DIPJ/CMCJ)

- Assess and compare joints for tenderness, irregularities and warmth:

Joints to assess :

- Metacarpophalangeal joint (MCPJ)
- Proximal interphalangeal joint (PIPJ)
- Distal interphalangeal joint (DIPJ)
- Carpometacarpal joint (CMCJ) of the thumb (squaring of the joint is associated with OA)

+ the wrist joints

5. Palpate the anatomical snuffbox

- **Tenderness** may suggest **scaphoid fracture**

6. Bimanually palpate the patient's wrists

- Palpate the wrists for evidence of joint line irregularities or tenderness

❖ Elbows

- Palpate the elbow
- Palpate the patient's arm along the ulnar border to the elbow
- Note any rheumatoid nodules or psoriatic plaques (extensor surface)

C. MOVE

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

1. Finger extension – “Open your fist and splay your fingers من فضلك قم بفرد أصابع يديك”

2. Finger flexion – “Make a fist من فضلك قم بعمل قبضة بيدك”

3. Wrist extension – “Put the palms of your hands together and extend your wrists fully” – ROM 90°

4. Wrist flexion – “Put the backs of your hands together and flex your wrists fully” – ROM 90°

❖ Motor assessment

✓ The following screening test will allow you to quickly assess the motor function of the radial, ulnar and median nerve.

✓ Ask the patient to carry out the following movements against resistance:

1. **Wrist/finger extension** – radial nerve
2. **Finger Abduction of the index finger** – ulnar nerve
3. **Thumb Abduction** – median nerve ❖ Function

✓ Assess the patient's hand function using the following screening tests:

1. **Power grip** – “Squeeze my fingers with your hands هل بإمكانك تشد على ايدي وبتمد ايدك كانك بدك تسلم على المريض وبتخليه يشد عليها”
2. **Pincer grip** – “Squeeze my finger between your thumb and index finger” هل بإمكانك
3. **Pick up a small object or undo a shirt button** – “Can you pick up this small coin out of my hand ? ”

D. SPECIAL TESTS

❖ Tinel's test

عزبات حارجة من الـ C.T.S

- Tinel's test is used **to identify nerve irritation** and can be useful in the diagnosis of **carpal tunnel syndrome**.
- The test involves the following:
 1. Tap over the carpal tunnel with your finger
 2. If the patient develops tingling in the thumb and radial two and a half fingers this is suggestive of median nerve irritation and compression

❖ Phalen's test



- ✓ If the **history or examination findings** are suggestive of **carpal tunnel syndrome**, Phalen's test may be used to further support the diagnosis:
- ✓ 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 in the thumb, index, middle and ring fingers**)

E. TO COMPLETE THE EXAMINATION

→ complete neurovascular ex. of the UL & elbow

1. Thank the patient
2. Wash your hands
3. Summarise your findings

❖ **Hand bones :**

1- Carpal :

- Some – Scaphoid
- Lovers – Lunate
- Try – Triquetrum
- Positions – Pisiform
- That – Trapezium
- They – Trapezoid
- Can't – Capitate
- Handle – Hamate

2- Metacarpus : 5 metacarpal bones.

3- The phalanges : 14 phalangeal bones.

GOOD LUCK

Knee & LL Examination

Preparation Of The Patient

1. Greet the patient respectfully and with kindness.
2. Introduce yourself
3. Take a permission
4. Insure privacy
5. Wash your hands
6. **Exposure** : to med thigh .
- 7- **Position** : patient initially in standing position to inspect, then in supine to feel and move
- 8- Ask the patient whether he is comfortable or not.
- 9- Insure good light to area .

✓ Examination sequence :

LOOK (inspect)→ FEEL (palpate)→ MOVE.

1- LOOK (inspection): look for →

- ✓ General look to patient (appearance- body weight- abnormal color).
- ✓ Surrounding of patient whether there is medical aids as walking sticks, wheel chair ... etc).
- ✓ Local look : (should be from ant. and lateral and post. sides of legs .
 - **Skin**: color change (redness- inflammation), rash, bruising (trauma, bleeding), scars (trauma, surgery) , atrophic changes (loss of hair , bright skin , ulcers , nail changes) , dilated veins .
 - **Joint**: erythema – swelling.
 - **Muscle wasting** (esp. quadriceps muscle).
 - **Posture of knee** → may be deformities
 - **Popliteal fossa** → swelling/ nodules (baker cyst, aneurysm).

- **Look for crescent shape on medial malleolus .** (with popliteal muscle rupture)
- **Always look for asymmetry.**

2- FEEL (palpate):

- ✓ **Temperature :** by dorsum of your hand, compare between proximal and distal.
- ✓ **Tenderness**
- ✓ **Swelling:** in case there is swelling, you should describe it as follows → (site, size, shape, surface, skin around it, symmetry, consistency).
- ✓ Palpate knee joint: medial and lateral aspect while knee slightly flexed.
- ✓ Palpate patella bimanually (by one thumb fix one side and by other thumb palpate other side- as in thyroid).
- ✓ Palpate tibial tuberosity, quadriceps tendon, patellotibial ligament.
- ✓ Palpate popliteal fossa for baker cyst.
- ✓ Palpate for joint effusion (if it large effusion→ patellar tap (milking test), BUT if small effusion→ (sweep test).
- ✓ Pulses (dorsalis pedis , post. tibial , popliteal)
- ✓ Assess muscle bulk around joints→ measure quadriceps **circumference** and calf muscles **circumference** and compare between both sides→
- ✓ بتحدد ال tibial tuberosity وباستخدام المتر بتحدد نقطة على بعد 20 سم باتجاه الفخذ، وبتقيس اليمين والشمال وبتقارن بينهم ، اذا الفرق أكثر من 3 سم فهو significant
- ✓ بتحدد ال tibial tuberosity وباستخدام المتر بتحدد نقطة على بعد 10سم distally، وبتقيس اليمين والشمال وبتقارن بينهم ، اذا الفرق أكثر من 3 سم فهو significant
- ✓ **Patellar tap:** بتيجي على medial aspect وبتضغط كانك بتعصر المفصل، لو فيه swelling حيظهر لك bulge من الجهة الأخرى.
- ✓ **Sweep test:** نفس الفكرة ولكن هنا بتعصر المفصل باستخدام الايديين بحيث لو في swelling حيظهر. (يفضل رؤية فيديو لآلية التطبيق).
- ✓ اذا الفحص كان لـ **lower limb swelling(DVT)** بنعمل **inspection** و **feel** للحرارة والألم وال **pulses** وال **circumference** بشكل أساسي .

3- Move:

- ✓ Assess knee for flexion/ extension and note any pain, limitation of movement, crepitus by active (ask patient to do the action) and passive (ask patient to relax and you do it).

4- Ask patient to walk→ for gait assessment.

5- Special test:

✓ هاي الجزئية تهدف لفحص المفصل كمفصل (عظام)، أحاط التيستين الى انذكروا، عدا ذلك في تيسات ثانية (الى حاب يدور ممكن يلاقين على موقع geeky medics).

✓ Anterior/ posterior drawer test:

- ❖ Sequence: flex pt. knee at 90→wrap hand around proximal tibia and fingers around back of knee→ by your forearm fix patient leg→ your thumb over tibial tuberosity and ask patient to keep his leg relax as possible→ pull tibia anteriorly (if you feel any movement anteriorly this mean – ant cruciate ligament . Laxity/ rupture.)→ pull it post. (for post. Cruciate ligament). (NORMALLY no movement can be felt).

- ✓ **Lachman test:** same as above but patient position at 30 degree and used for ant. cruciate ligament .

6- To complete my examination I would like to do hip and ankle joint examination, do neurovascular examination, order X- ray/ MRI.

- **To complete my examination for lower limb swelling (DVT)** I would like to examine popliteal fossa bilaterally and check inguinal lymph nodes and do neurological examination to LL and CVS/Respiratory systems examination and do Doppler U/S.

7- Thank the patient and cover the patient.

8- Wash your hand.

Causes of joint effusion:

- 1- Ligament rupture.
- 2- Septic/ inflammatory arthritis.
- 3- Osteoarthritis.

Causes for unilateral / bilateral limb swelling :

- **Unilateral** : DVT/ backer cyst rupture/ calf muscle rupture/ trauma / cellulitis
- **Bilateral** : cardiac causes, hypoproteinemia due to GI/ renal diseases / Hypothyroidism .

Back Examination

1. Greet the patient respectfully and with kindness.
2. Introduce yourself
3. Take a permission
4. Insure privacy
5. Wash your hands
6. **Exposure** : waist and above.
7. **Position** : patient in standing position.
8. Ask the patient whether he is comfortable or not.
9. Insure good light to area .

✓ **Examination sequence :**

LOOK (inspect)→ FEEL (palpate)→ MOVE.

1- LOOK : from anterior, lateral, posterior.

- ❖ **From ANTERIOR** : symmetry of shoulders/ posture of head and neck (symmetry / abnormal position)
- ❖ **From LATERAL**: kyphosis / lordosis.
- ❖ **From POSTERIOR**:
 - Scar: surgical / trauma.
 - Muscle wasting→ para spinal muscles.
 - Scoliosis.
 - Abnormal hair growth / spina bifida.

2- FEEL: don't forget to notice non verbal expression for pain as you feel patient.

- ❖ Temperature.
- ❖ Palpate spinal process for tenderness.
- ❖ Palpate para spinal muscles for tenderness / muscle wasting/ spasm.
- ❖ Palpate sacroiliac joint→ squeezing test (press joint by both hand bilaterally)

3- MOVE: each area will be moved to assess any pain, limitation, stiffness... etc.

a- Cervical spine:

- Neck flexion / extension / lateral flexion (ask patient to touch shoulder by ear) / rotation .

b- Thoracic spine:

- Rotation: ask patient to cross arms on chest and set in chair then try to rotate trunk.

c- Lumbar spine:

- Flexion (ask patient to touch toes with straight lower limb) / extension / lateral flexion (ask patient to move right hand on outer side of right leg and left for left).

→ Special tests :

❖ **Schober test:** to assess range of movement of lumbar spine/ useful for detecting conditions as ankylosing spondylitis.

- While the patient is in a standing position the examiner makes a mark approximately at the level of L5. Two points are marked: 5 cm below and 10 cm above this point (for a total of 15 cm distance). Then the patient is asked to touch his/her toes while keeping the knees straight. If the distance of the two points do not increase by at least 5 cm (with the total distance greater than 20 cm), then this is a sign of restriction in the lumbar flexion.

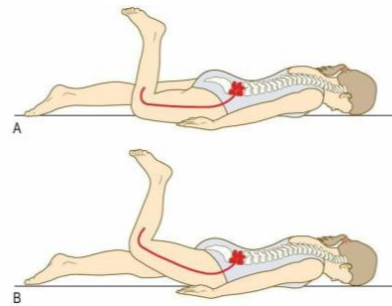


❖ **sciatic stretch test :**

- pt. supine in the bed .
- Hip flexion & knee extension (straight leg)
- Dorsiflex the ankle
- If there is pain in post. (buttock – thigh) → positive test (suggests sciatica)

❖ **Femoral nerve stretch test :**

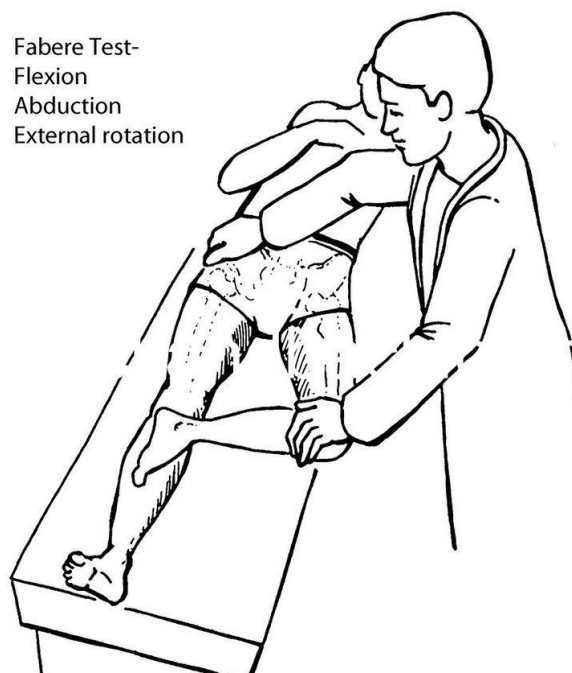
- Pt. prone in the bed .
- Flex knee & Extend hip .
- Planter flex of foot
- Positive result : pain felt in thigh / inguinal region → indicate femoral nerve impingement



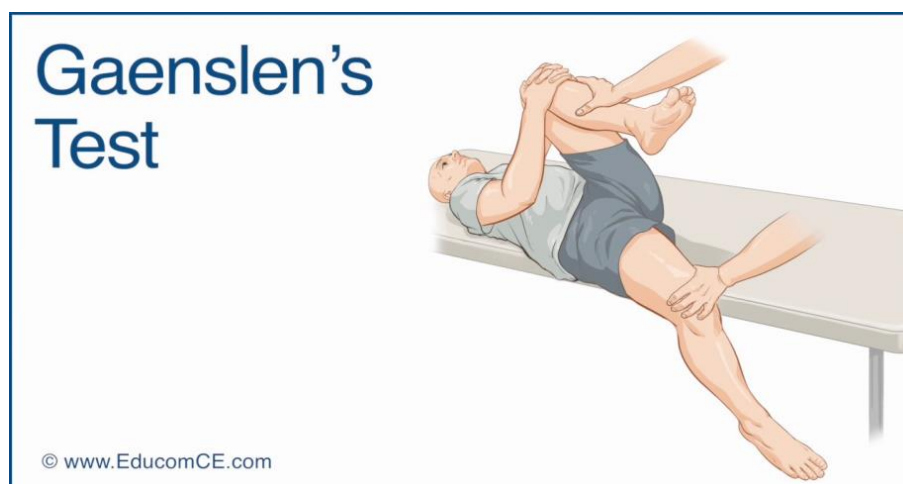
❖ **Patrick's test or Faber test :** is performed to evaluate pathology of the hip joint or the sacroiliac joint.

- The test is performed by having the tested leg flexed and the thigh abducted and externally rotated. If pain is elicited on the ipsilateral side anteriorly, it is suggestive of a hip joint disorder on the same side.

If pain is elicited on the contralateral side posteriorly around the sacroiliac joint, it is suggestive of pain mediated by dysfunction in that joint .



- ❖ **Gaenslen's test:** can be used to detect musculoskeletal abnormalities and primary-chronic inflammation of the lumbar vertebrae and Sacroiliac joint (SIJ) .
 - The patient begins positioned in supine with the painful leg resting on the edge of the treatment table. The examiner sagittally flexes the non symptomatic hip, while the knee also flexed (up to 90 degrees). The patient should hold the non-tested (asymptomatic) leg with both arms while the therapist stabilizes the pelvis and applies passive pressure to the leg being tested (symptomatic) to hold it in a hyperextended position. A downward force is applied to the lower leg (symptomatic side) putting it into hyperextension at the hip, while a flexion based counterforce is applied to the flexed leg pushing it in the cephalad direction causing torque to the pelvis.
 - If the patient's normal pain is reproduced, the test is considered positive for a SIJ lesion, hip pathology, pubic synthesis instability, or an L4 nerve root lesion. Meanwhile the femoral nerve may also be stressed by this test



4- Assess patient gait.

5- Thank the patient

6- Wash your hands

GOOD LUCK

The End



❖ استعينوا بالله وأكثروا من الصلاة على رسول الله ❖