

Macleod's Clinical **Summary**

Done by:
Muneera Al-Bshara
Jumana Al-Baghli

General rules:

Always start with introducing yourself, washing your hands, asking for permission, exposing the patient, and correcting his position according to the examination you were asked to perform. These five things should be done regardless of the examination you will be doing.

Example: **while washing hands** Hello, my name is ... and I'm a fourth year medical student, is it okay if I examine your abdomen? Please remove your shirt and lay flat on the examination table.

Your examination should always include (inspection, palpation, percussion and auscultation) unless specified otherwise, for ex: auscultate the heart.

Always end your exam by covering the patient, thanking him, and washing your hand

Inspection: If it was a general examination of an entire system (for ex: examine the abdomen, examine the cardiovascular system, etc.) always start with GENERAL inspection at the tip of the bed. If the exam was specific (ex: examine the liver, examine the heart, etc.) inspect the area of exposure only.

Palpation: Always ask the patient if he has any pain before palpation, and look at the patient's face for tenderness while you palpate.

Percussion: Your entire palm of your non-dominant hand and all of your five fingers (spaced) should be on the patients skin. Percuss with your dominant hand's middle finger on the distal phalanx of your middle finger of your non-dominant hand.

Auscultation: Except for the mitral stenosis murmur, always use the diaphragm.

Don't forget to talk while you are examining! Say every single step out loud!

This summary is contributed by:
Hana Jafar and Sabika Al Ruwaieh

Height and Weight

Height

- 1- Have patient take off shoes and stand on scale with back to the ruler
- 2- Be sure patient is standing straight with head looking straight forward
- 3- Keep feet together and hands at sides
- 4- Slide down head piece until flat on head (pressed onto hair)
- 5- patient steps down and measurement may be recorded

Weight

- 1- Make sure the scale is set to 0 (top and bottom)
- 2- Have patient take off shoes and stand on scale facing the weight measurement
- 3- Move weights until the measuring arrow is balance in the middle

BMI

SI units

$$\text{BMI} = \frac{\text{weight (kg)}}{\text{height}^2(\text{m}^2)}$$

Category	BMI range - kg/m ²
Underweight	from 15 to 18.5
Normal	from 18.5 to 24.9
Overweight	from 25 to 29.9
Obese	from 30 to 39.9
Morbidly Obese	greater than 40

Waist circumference

- 1- Patient standing straight in front of you
- 2- place measuring tape around the abdomen at the midway point
- 3- measure was it after patient breaths out normally
- 4- Measure hip at level of iliac bone (widest part)

Abdominal (visceral) fat puts a patient at risk for diabetes among other diseases

Waist to Hip Ratio Chart

Male	Female	Health Risk Based Solely on WHR
0.95 or below	0.80 or below	Low Risk
0.96 to 1.0	0.81 to 0.85	Moderate Risk
1.0+	0.85+	High Risk

Liver

Introduce yourself, wash your hands, take permission, expose the patient's abdomen, make him lie down supine.

Inspection- Of abdomen for: scars, bulges, skin changes, visible pulsations

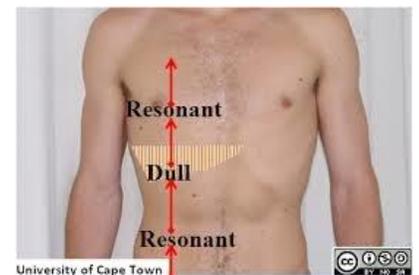
Palpation- Abdomen for lower border of liver

- Ask if the patient has any pain
- Place right hand flat on the skin on the lower right abdomen, well below the lower border of the liver. Point the fingers upwards so the fingertips are parallel to rectus abdomenus.
- Now you will palpate in a worm motion upwards 1cm at a time until you feel the lower border of the liver in the mid-clavicular line. But your hand should move according to the patients respiration. In expiration you move your hand and push, on inspiration you feel for the edge of the liver as it descends.
 - Push your hands and ask patient to take a deep breath. If you didn't feel anything move up as the patient expires and push again before the next inspiration. Do this until you can feel the lower border of the liver.
- If liver is found describe: its size, surface (smooth/irregular), consistency (soft/hard), and tenderness if present.



Percussion- Chest for upper border of liver

- During percussion the patient should hold his breath in expiration
- Find the sternal angle, and begin percussing down from the right second intercostal space in the mid-clavicular line and listen for dullness (indicating upper border of liver usually at the fifth intercostal space)
- Now percuss from below the umbilicus and proceed superiorly towards liver and mark the dullness
- Measure the distance below the costal margin in the mid-clavicular line or from the upper border of dullness to the palpable liver edge



Normal liver span
Males: 8 to 12cm
Women: 6 to 10cm

Liver can be normally found at:

Upper border: fifth right intercostal space on full expiration

Lower border: at costal margin in the mid-clavicular line on full inspiration

Spleen

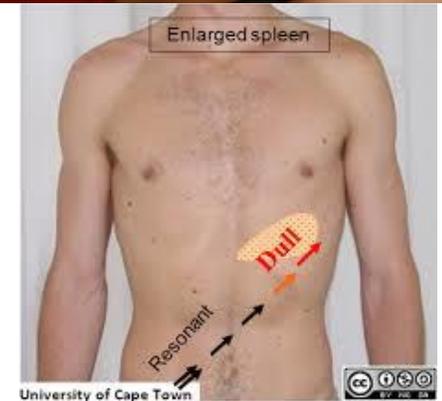
If done with the liver, skip introduction and inspection.

Introduce yourself, wash your hands, expose the patient's abdomen, make him lie down supine.

Inspection- Of abdomen for: scars, bulges, skin changes, visible pulsations

Palpation

- Place right hand next to the umbilicus (RLQ)
- Palpate in the same method for the liver, but move hand diagonally upwards towards the left hypochondrium 1cm at a time (worm movement) between each breath
- Feel for the spleen edge during inspiration
- Feel costal margin along the length all the way to lateral side (spleen tip present at edge)
- If spleen not felt, ask the patient to roll towards you on his right side, put your left hand below patients lower ribs and pull him forward. This brings the spleen closer to you.
- Now palpate again with you right hand.



Percussion

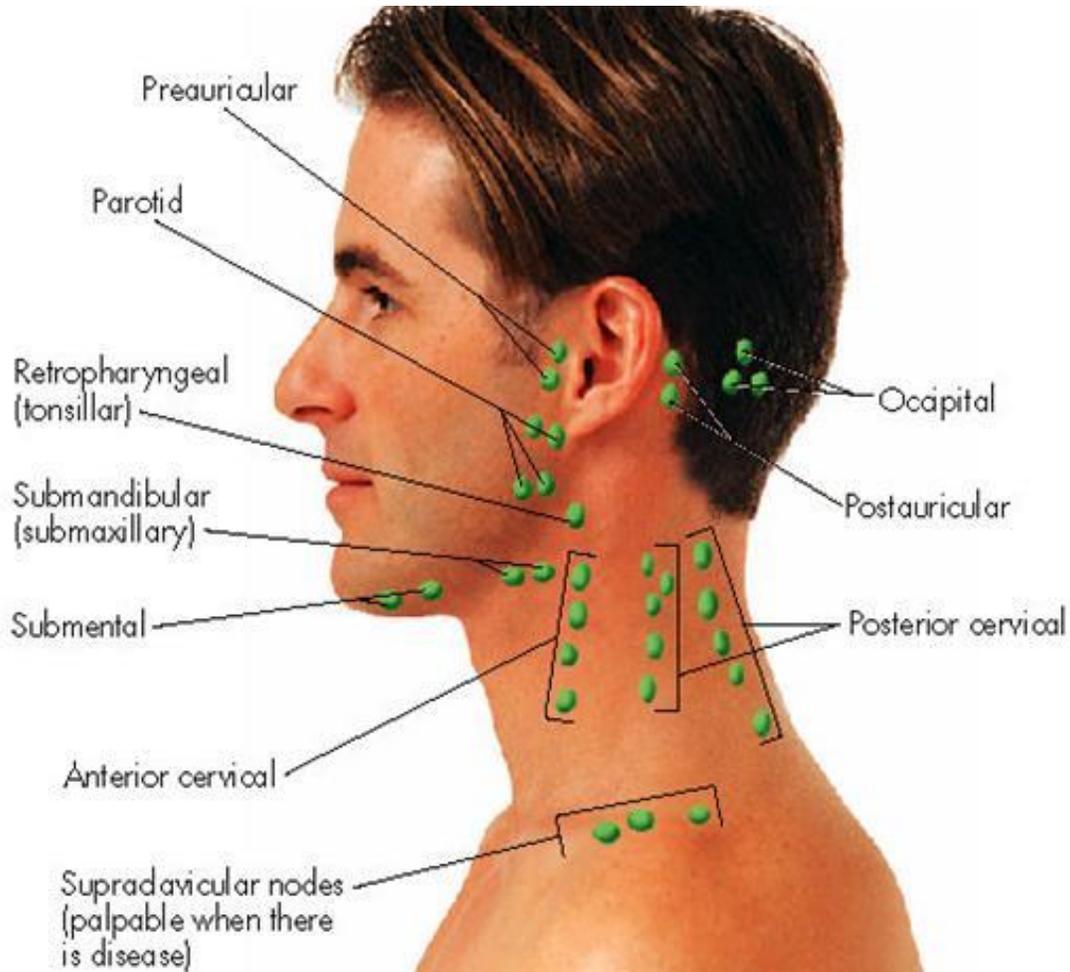
- Percuss over lateral chest wall in last intercostal space while asking patient to inhale and exhale to determine presence of splenic dullness.
- Spleen should be felt during inhalation if its enlarged.
 - Spleen follows 10th rib and has to grow 3 times its normal size to be felt. A normal liver can be felt in thin individuals but the spleen cannot be felt!



Differences between spleen and kidney?

Spleen extends diagonally, moves with inspiration, dull, has a notch, cannot be balloted and you can't put your hands above it. Kidney extends vertically, doesn't move with respiration, resonant, doesn't have a notch, ballotable, and you can put your hands above it .

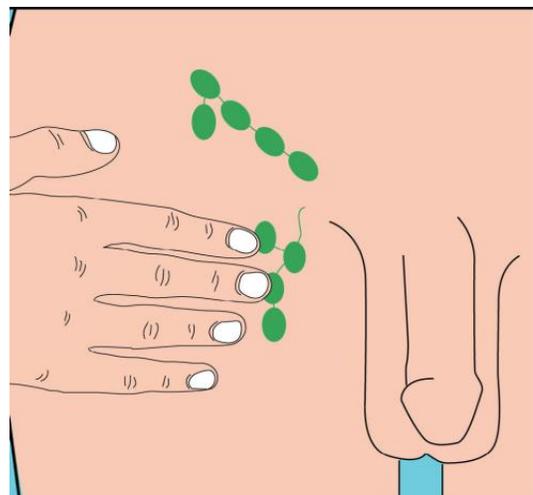
Lymph Nodes: Cervical



*In addition to: infraclavicular. Parotid is usually not part of the routine, tonsils needs to look inside the mouth.

Lymph Nodes: Groin Normal should not be felt (<1 cm)

- 1- Make sure patient is supine
- 2- Flex the patients knees slightly
- 3- palpate superior inguinal nodes over the inguinal canal
- 4- palpate inferior inguinal nodes



Lymph Nodes: Axillary

- 1- Make sure patient is sitting upright and ask if there is any pain
- 2- Support the patients arm at about 90 degrees with your same hand (right with right)
- 3- Gently palpate for the different lymph nodes
 - Lateral (brachial/humoral) 2
 - Medial (subclavicular) 4
 - Central 1 (deeper=apical)
 - Anterior (pectoral) 3
 - Posterior (subscapular) 5
- 4- Switch sides and repeat



Abnormal lymph nodes: check for tenderness, size, consistency, overlying skin
Enlarged LN: infection, metastasis, infiltration

Blood Pressure

Introduce yourself, wash your hands, expose the patient's arm, make him sit on a chair with his arm rested on a table.

Ask some questions while you get yourself ready:

- Do you have high bp?
- Are you taking bp medication?
- When was the last time someone took your bp?
- Any caffeinated beverages? Exercise?

Use appropriate cuff size

Place cuff above the elbow in about an inch

Arrow should be pointed over the brachial artery

Arm comfortably supported at heart level

Check that arm is free of tight clothing

Make sure the cap of the bp pump is turned to the closed position

Put three fingers over the radial artery

Inflate the cuff until you cannot feel the radial pulse, mark which mmHg this is at

- This gives you an idea about the systolic bp

Now inflate above this by about 30 mmHg

Place your stethoscope on the brachial artery (you should not hear anything). This is on the medial side of the cubital fossa

Slowly deflate by 2 or 3 mmHg per second

The tapping sound appearance marks the systolic bp (1st korotkoff)

When no more sounds are heard, this marks the diastolic bp (4th korotkoff)

Deflate the cuff completely and remove it.

Say the patients bp. Normal bp should be 120/80. Anything above 130/85 is high.

Say that ideally you would do it to both hands but for the sake of time you won't.

White coat effect: when patients bp is high because he is anxious being at a clinic

Causes of HTN: primary HTN, medications (NSAIDs, steroids) renal disease, endocrine diseases (such as cushings, etc.)

Complications: heart failure, stroke, renal failure

Treatment: Lifestyle first (decrease salt intake, exercise) Medications such as: Beta blockers, ace inhibitors, calcium channel inhibitors, etc.

Pulses

Introduce yourself, wash your hands, expose the area needed, usually patient is supine.

If not specified which arteries, do all of them. Start in the order listed below. If they specified the arteries, palpate them accordingly.

Assess: rate, rhythm, volume, character (usually only say this for the radial/first artery you palpate)

- Rate: tachycardia, bradycardia, or normal
- Rhythm: regular, regularly irregular, irregularly irregular
- Volume: large/low pulse volume
- Character: ex: collapsing pulse (large/exaggerated pulse pressure). Place your hand over the patients shoulder, and the other hand on the radial pulse, ask for pain, if there isn't any: lift the patient hand high up above heart level while still feeling for the pulse. Wait for five seconds then place the hand back.

Exaggerated pulse in: aortic regurgitation (ex:pulsus bisferiens, pulsus alterans)

Artery	Surface marking
Radial (hand in semi-pronation)	<ul style="list-style-type: none"> • Use index and middle fingers • Compare with other radial • Compare with femoral (radio-femoral delay in aortic coarctation)
Brachial	<ul style="list-style-type: none"> • MEDIAL to biceps, above antecubital fossa • Use index and middle fingers
Carotid	<ul style="list-style-type: none"> • Use the tips of your fingers • Listen for bruits
Femoral	<ul style="list-style-type: none"> • Lie the patient supine • Mid-inguinal point • Use index and middle fingers
Popliteal	<ul style="list-style-type: none"> • Bend patients knee to 30 degrees • With thumbs in front of the knee and fingers behind
Posterior tibial	<ul style="list-style-type: none"> • 2 cm behind and 2 cm below the buldging bone of the ankle (inner ankle)
Dorsalis pedis (only pulse you can feel on the surface of foot!)	<ul style="list-style-type: none"> • May be absent in 10% of people • Midway down the dorsum of the foot

Beurgers test: Lifting one leg while patient is supine for 3 minutes, then ask the patient to sit with leg hanging – look for reactive hyperemia

JVP

Introduce yourself, wash your hands, expose the patient's abdomen and chest, make him sit in 45 degrees with a pillow. Say that ideally you want natural sunlight.

Internal jugular vein is directly related to the right atrium. Any increase in pressure in the RA, such as in right sided heart failure, will raise the JVP



- Ask the patient to tilt his head to the left so right side is exposed
- Make sure that SCM is relaxed (if too strong, it will be tensed – won't see it)
- Look at the patients neck from the right side
 - JVP is at vertical height of the top of the pulsation above the sternal angle
- Observe and identify the jugular vein pulsation in the suprasternal notch or along the sternocleidomastoid muscle. If not sure it's the JVP, place hand on pulse unsure of, if felt it is the carotid
- Use the hepato-jugular reflux test to confirm the JVP
 - ask if patient has any abdominal pain
 - press down on abdomen below the liver while looking for JVP

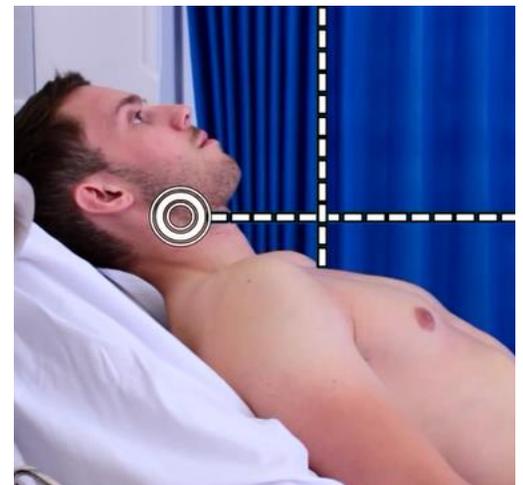
Measuring JVP:

- Using two rulers
 - One ruler perpendicular to sternal angle
 - One ruler horizontal to the level of the JVP
- It should not exceed 4cm (if > 4cm = high pressure in right atrium)



JVP: 2 wavelike pulses, non-palpable only visible, decreases with inspiration, changes with position, affected by hepato-jugular reflux

Carotid: pulsatile and palpable, has 1 peak and doesn't change with respiration or position.



Waveform of JVP

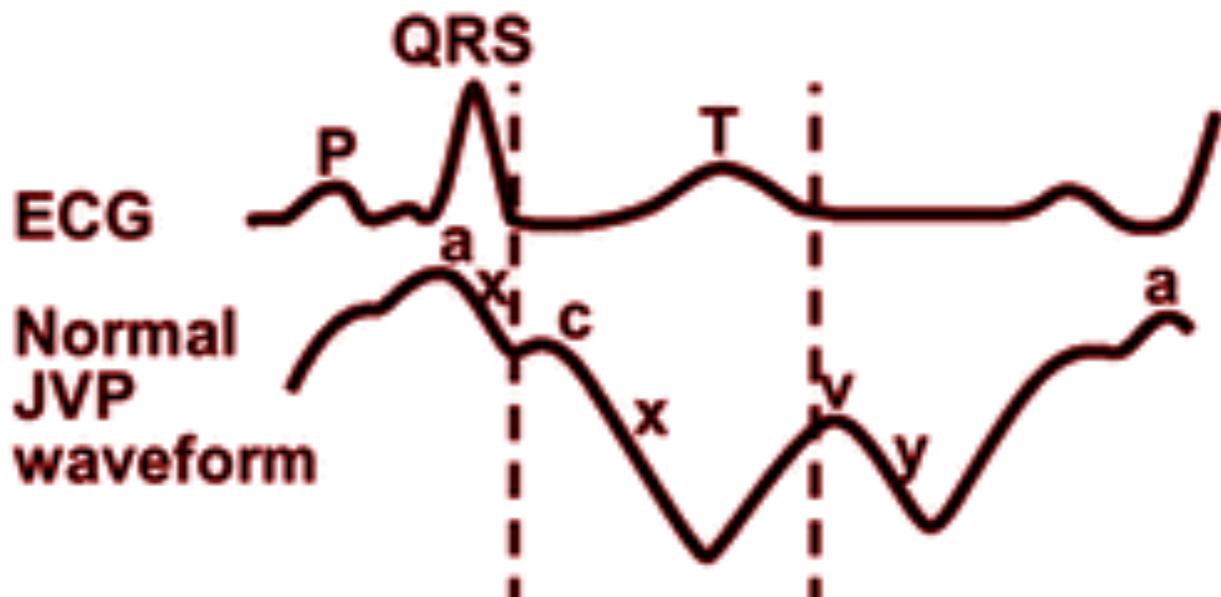
a = atrial contraction

c = closure of tricuspid/ventricular **C**ontraction

X = atrial relaxation

V = atrial **V**illing "filling"

Y = opening of tric**Y**spid (atrial emptying/ventricular filling)



The Cardiovascular System

General symptoms and their possible causes:

Symptom	CVS causes	Other causes
Chest discomfort	MI, angina, pericarditis, aortic dissection	Pneumothorax, MSK pain, esophageal spasm
Breathlessness	HF, pulm.embolism, pulm.HTN, angina	Resp disease, anemia, stress
Palpitation	Tachyarrhythmias, ectopic beats	Anxiety, hyperthyroidism, drugs
Syncope/dizziness	Arrhythmias, hypertrophic cardiomyopathy	Anxiety, epilepsy
Edema	Bilateral: HF Unilateral: lymphedema	Nephrotic syndrome, liver disease, drugs, immobility

PAIN = Socrates Site, onset, character, radiation, associated features, timing, exacerbating relieving factors, severity.

Ex of MI pain: retrosternal, rapid onset over a few minutes, constricting and heavy, radiates to the neck and jaw, associated with sweating nausea breathlessness, prolonged pain, triggered by strenuous activity, and is usually severe.

Chest pain

Angina pectoris – cardiac pain usually due to myocardial ischemia (also aortic stenosis and hypertrophic cardiomyopathy). It is relieved by rest and GTN.

- Stable angina grade 1-4. 1 occurs with ordinary physical activity and 4 with inability to carry on activities and may occur during rest

Unstable angina – abrupt onset, severe, may occur at rest, usually due to MI

Crescendo angina – occurs at increasing frequencies of lower workloads; not at rest

- MI: prolonged angina pectoris accompanied with restlessness and breathlessness
- Pericardial pain: sharp chest pain exacerbated by inspiration and leaning forward
- Aortic dissection: abrupt severe tearing chest pain radiating to the back

Dyspnea

Exertional, orthopnic, paroxysmal nocturnal, platypnea (on sitting upright)

Exam

Introduce yourself, wash your hands, expose the patient's chest, make the patient sit at 45 degrees.

Inspection

- Tip of the bed: Well/Unwell? Breathing well/Breathless/cyanosed? Frightened? Attached to any devices? Surrounding?
- Come to the right side and check the hands for:
 - Temperature
 - Tobacco staining
 - Splinter hemorrhages
 - Peripheral cyanosis
 - Finger clubbing (loss of nailbed angle) – ex: infective endocarditis, CHF
 - Palms for janeway lesions, osler nodes, palmar erythema
 - Xanthomata and petechiae
- Check the radial pulse and say ideally I would like to examine all the pulses
- Check the eye for jaundice (look down) and conjunctival pallor (look up)
- Check the mouth under the tongue for central cyanosis
- Say that you would like to check for JVP
- Chest inspection:
 - Scars:
 - Midline Sternotomy: CABG or valve replacement
 - Left submammary: mitral valve replacement
 - Infraclavicular: pacemaker
 - Chest deformities:
 - Pectus excavatum (caved-in chest)
 - Pectus Carinatum “pigeon chest” (protruding outward)
 - Rash
 - Hair distribution
 - Gynecomastia
 - Symmetrical movement during inspiration



Palpation

- Ask if there is any pain
- Lay your entire hand above the cardiac region to get a general impression of the heart
- Apex beat
 - Locate the apex beat (usually below the nipple)
 - Describe the position of the apex related to the clavicle and

the intercostal spaces (usually 5th intercostal space at the midclavicular line) – with your right hand still at the apex, with your left start at the 2nd intercostal space right next to and below the sternal angle and count down to check which intercostal space is the apex in

- Describe the character of the beat
- If you can't locate it, tell the patient to shift to the left, and try to locate. When you find it, don't move your hand and ask patient to shift back into position
- Right ventricular heave (in RV hypertrophy)
 - Place on your hand directly on the sternum and ask the patient to breathe in and out and hold
- Thrills: palpable vibration
 - At apex: place your fingertips at the apex position (raise your palm)
 - Left sternal edge
 - Right sternal edge



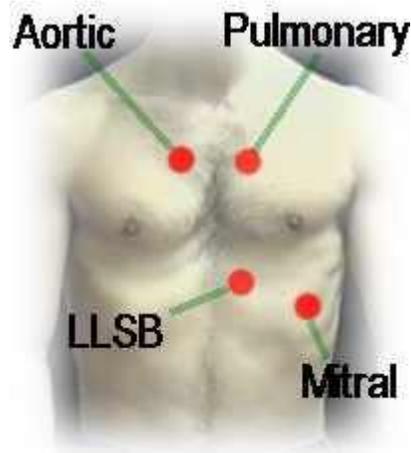
Auscultation

First you will auscultate the valves to assess S1 and S2 and any murmurs. Then you will do specific auscultations for murmurs

4 sites on the heart for auscultation + carotid. Start with the apex. Use the diaphragm.

- Apex (mitral valve), lower left sternal border (tricuspid), upper left sternal border (pulmonic), upper right sternal border (aortic)
- While you're auscultating put your thumb on the carotid/radial to assess any murmurs
- Comment on S1 and S2 (are they normal? Loud? Muffled?) and assess character and intensity
- Note any splitting of the second heart sound
 - Ex: I can hear S1 and S2 at the mitral area, they are normal and not split, with good intensity. Then move to the next area and comment.

- Carotid: ask the patient to breathe in and hold inspiration while you listen over the left carotid. Check for carotid bruits or aortic stenosis murmur.



After you finished checking the 4 valves and the carotid, now check specifically for four murmurs. Two diastolic (AR, MS), and two systolic (AS, MR)

- 1) MS: turn the patient laterally to the left and with the BELL check the mitral valve
- 2) MR: with the diaphragm check the axilla (murmur radiates to the axilla)
- 3) AS: with the diaphragm check the carotid with held expiration (murmur radiates to the carotid)
- 4) AR: patient leans forward, ask him to breath in, out, & hold and with the diaphragm hear the murmur in the left 3rd intercostal space.

- Note: Diastolic murmurs require maneuvers, systolic maneuvers radiate.

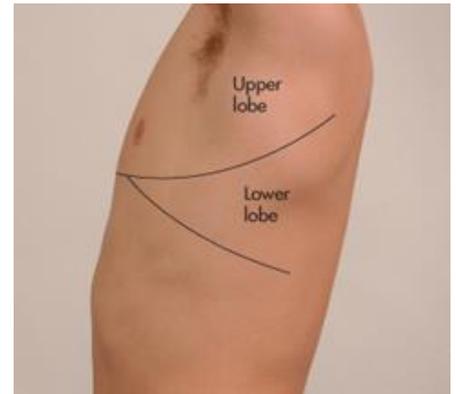
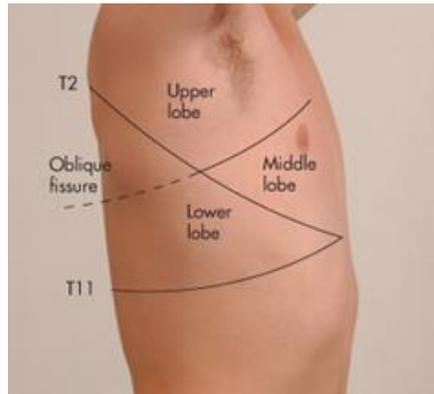
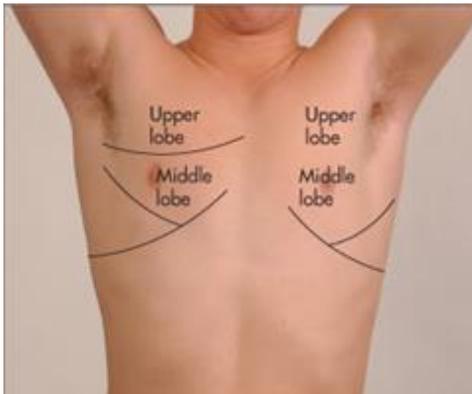
To differentiate between systolic regurgitation murmurs:

- Mitral regurge heard in axilla
- tricuspid regurge heard in parasternal area only
- VSD heart both in axilla and parasternal area

Say that you would like to conclude your examination by auscultating the base of the lungs for pulmonary edema, checking the sacrum for sacral edema, and the lower limbs for pitting edema.

The Respiratory system

Surface anatomy of the lung:



Diaphragmatic dullness: 5th/6th rib

Lower borders of the lung:

- T6 - mid-clavicular
- T8 - mid-axillary
- T10 - Posteriorly

Lower borders of pleura:

- T8 - mid-clavicular
- T10 - mid-axillary
- T12 - Posteriorly

Apices extend above the level of the medial third of clavicles

Fissures:

- Horizontal fissure: along the 4th rib
- Oblique fissure: from T2-6th rib

•Respiratory Pattern

- Normal= 12 to 16 breath/minute
- Tachypnea > 25 breath/minute
- Bradypnea <10 breath/minute

Cough

- Acute: <3 weeks viral (URT infections)
- Chronic: > 8 weeks (smokers, reflux, chronic sinus disease, ACE inhibitor)
- Asthma/COPD- wheezy cough and paroxysmal dry cough after a dry infection (lasts several months)
- Lung cancer- “bovine” explosive cough
- Laryngeal inflammation- harsh, barking, painful cough
- Bronchial infection- secretions from upper airways causing moist cough-smokers
- Interstitial lung disease- chronic dry cough

Dyspnea

- Orthopnea- laying flat
- Platypnea- sitting up right
- Trepopnea- laying on side
- Paroxysmal nocturnal dyspnea- during sleep

Sputum

Type	Appearance	Cause
Serous	Clear, watery, frothy, pink	Acute pulmonary edema Alveolar cell cancer
Mucoid	Clear, grey, white, viscid	Chronic bronchitis/ COPD Asthma
Purulent	Yellow Green	Acute bronchopulmonary infection Asthma (eosinophils) Longer infections (neutrophils) Pneumonia Bronchiectasis
Rusty	Rusty red	Pneumococcal pneumonia
Blood	Red (blood)	TB Cancer

Chest Pain

- Pleural pain- sharp stabbing pain that increases with inspiration or coughing (pneumonia, pneumothorax, PE)
 - Pleura of rib 1-6 - localized pain
 - Pleura over diaphragm (phrenic nerve)- pain spreads to neck and shoulder
 - Mediastinal pain - central, retrosternal, without cough

Exam

Introduce yourself, wash your hands, expose the patient's chest, make the patient sit at 45 degrees.

Inspection

First stand at edge of bed in front of the patient. Is the patient breathless, cyanosed, attached to devices?

Comment on the patients breathing: symmetry? use of accessory muscles or breathing through pursed lips (SCM, trapezius)?

- Calculate the respiratory rate. Either by inspecting the recoil of the lung or by directly placing your hand on the chest, count the respiratory rate in 30 seconds then multiply by two.

Say that you would like the patient to sit up and check the back

Check the hand:

- Clubbing (lung abscesses/interstitial lung disease/bronchiectasis)
- tar staining of fingers and nails
- flapping tremor (asterixis test by making patient put arms straight out with hands as if pushing wall and observe if there is a flapping tremor as a sign of CO₂ retention)

Check the face: inspect eyes for pallor and mouth for central cyanosis

Check the neck: raised JVP

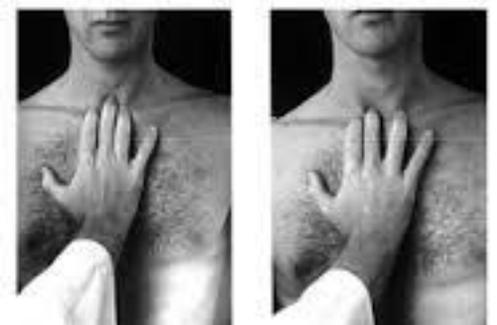
Move on to the chest:

- comment on symmetry
- look for deformities:
 - from front: barrel chest, pectus excavatum, pectus carinatum, scars, color change, rash
 - from behind: scoliosis
 - from side: kyphosis

check position of trachea

Palpation (ALWAYS COMPARE RIGHT TO LEFT)

- Check for pain first
- Trachea- check for deviations
 - place two fingers on head of clavicle and use middle finger to check for position of trachea
 - shift of trachea means lung on same side is collapsed (fibrosis/pneumonectomy) or lung on opposite side is filled with air or water (pneumothorax/hemothorax)



- Chest expansion (Normal= 3-5 cm)

- stand behind patient and place hands on back with thumbs just above the chest to allow movement during respiration
- ask the patient to take a breath and watch for even movement of the thumbs
- repeat on three levels on the back
- repeat on anterior side



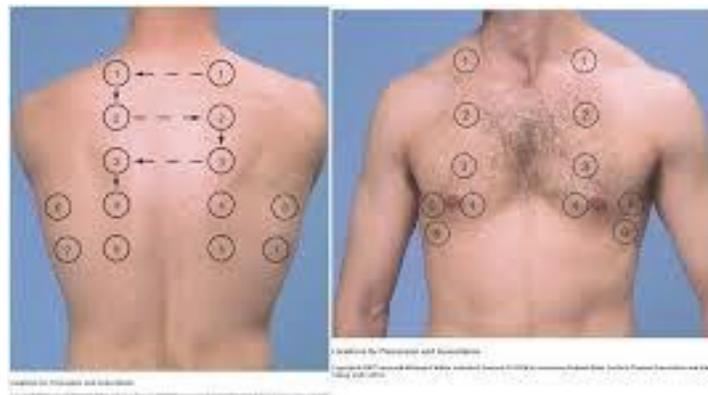
- Note: there may be tape on the table. If so, wrap the tape around the chest and ask the patient to take deep breaths. How much the tape changed in measurement from expired to inspired is the chest expansion.

- Tactile vocal fremitus (99)

- stand behind patient
- ask patient to hug pillow in order to move scapula laterally
- use ulnar side of hand (pinkie side)
- begin in apex and ask patient to say 99
- repeat on opposite side
- continue down back (avoiding the spine)
- repeat on lateral side and anterior side

Percussion (don't forget the axilla)

- Ask patient to hold pillow to move scapula laterally
- Percuss the clavicle for the apex of lung (this is the only bone percussed)
- Continue percussing the intercostal spaces
- Percuss both sides to compare
- Percuss lateral and posterior
- There should be resonance up until the 8th rib in front, 10th rib on the axillary side, and 12th rib on the back
- Area of heart should be resonant (if dull = emphysema)
- Sounds:
 - resonant- normal
 - hyper resonant- pneumothorax
 - stony dull- pleural effusion/pneumothorax



- dull: consolidation/fibrosis/collapse
- Generally:
 - increased: consolidation, fibrosis
 - decreased: fluid, collapsed

Auscultation

- Use the diaphragm (macleod says bell but all the doctors prefer diaphragm)
- Ask patient to breathe deeply through an open mouth
- Auscultate same areas percussed (anterior, lateral, posterior), don't forget the axilla
- Be sure to compare sides
- Comment
 - Equality on left and right sides
 - Duration of inspiration/expiration
 - Character and abnormal sounds (crepitation, rubs, etc.)

Vocal resonance

- Position stethoscope in same areas auscultated while asking patient to say 99
- High= consolidation
- Low= effusion/collapse

Thank patient and cover them.

Mention you would want to check for lower limb edema

Extra test:

Peak Flow Meter:

Patient's maximum speed of expiration. It is lowered in obstructive diseases such as asthma

1. Patient sits down
2. Scale the device to 0
3. Ask patient breath in then place device in mouth
 - Make sure patients tongue is not in the way of mouth piece
4. Ask the patient to breath out as hard as possible ("blow out a candle")
5. Repeat test 3 times and take best reading

The Endocrine System

Thyroid Anatomy

- 2 lobes connected by an isthmus located at the level C5 to T1
- Anterior to 2nd and 3rd tracheal ring
- Enclosed in pretracheal fascia and attached to cricoid cartilage
- Blood supply: External carotid artery → superior thyroid artery
Subclavian artery → inferior thyroid artery
- Recurrent laryngeal nerves

Causes of thyroid enlargement:

- Physiological: puberty/pregnancy
- Grave's
- Solitary edema
- Thyroiditis (subacute, viral)
- Hashimoto's
- Diffuse/multinodular goiter
- Cancer: papillary (most common), follicular, medullary, anaplastic, lymphoma

Differential of neck masses:

Anterior- bronchial cyst, lymph node

Midline: goiter, thyroglossal duct cyst

Posterior: cystic hygroma, lymph node

Lipoma and sebaceous cyst can occur anywhere

Diagnosis: 1st investigation you should order- thyroid function test (T3, T4, TSH)

Nuclear Medicine: thyroid uptake and scan

Thyroid Gland Examination

Introduce yourself, wash your hands, expose the patient's neck, make the patient sit on a chair.

Inspection

- Patient is conscious? Agitated? well dressed for the weather? connected to any IV?
- Bend down a little, look at neck from front and comment (scars, dilated veins, visible pulsations, skin changes, masses)
- give patient water and tell him not to swallow
 - gently tip head back, and ask to swallow while watching for movement of any swellings
 - a normal thyroid should move and distinguishes a thyroid mass from other masses
- Ask patient to protrude tongue (checking for thyroglossal cyst in the neck)

Palpation

- Ask the patient if he has any pain
- stand behind patient to palpate while looking at face for signs of pain
 - begin from isthmus and move outwards
 - Keep thumbs behind the neck
 - Comment on: tenderness, swellings, nodularity, pulsations
- while lightly touching neck, ask patient to swallow sip of water to feel movement of thyroid
- palpate cervical and clavicular lymph nodes
- Check for tracheal deviation from the front



Percussion

- percuss over the manubrium with one finger to check for retrosternal extension of the gland

Auscultation

- place stethoscope over each lobe to listen for bruits (increased blood flow) found in Grave's disease
 - ask patient to hold breath while auscultating

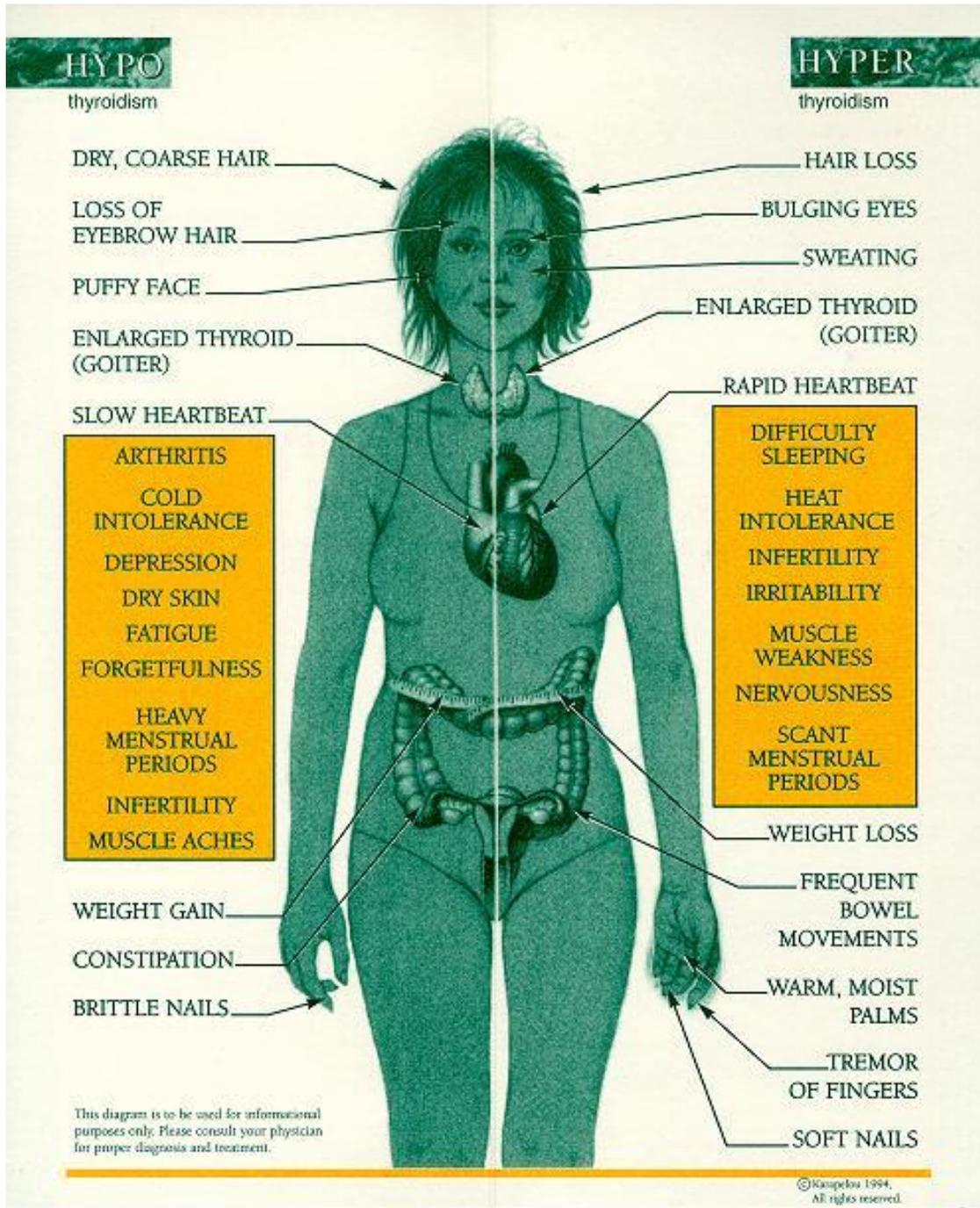
Extra Manifestations

“Since thyroid disease is a systemic disease, I will check for extra manifestations”

Hands: acropachy, palmar erythema, tremor (with paper test), pulse

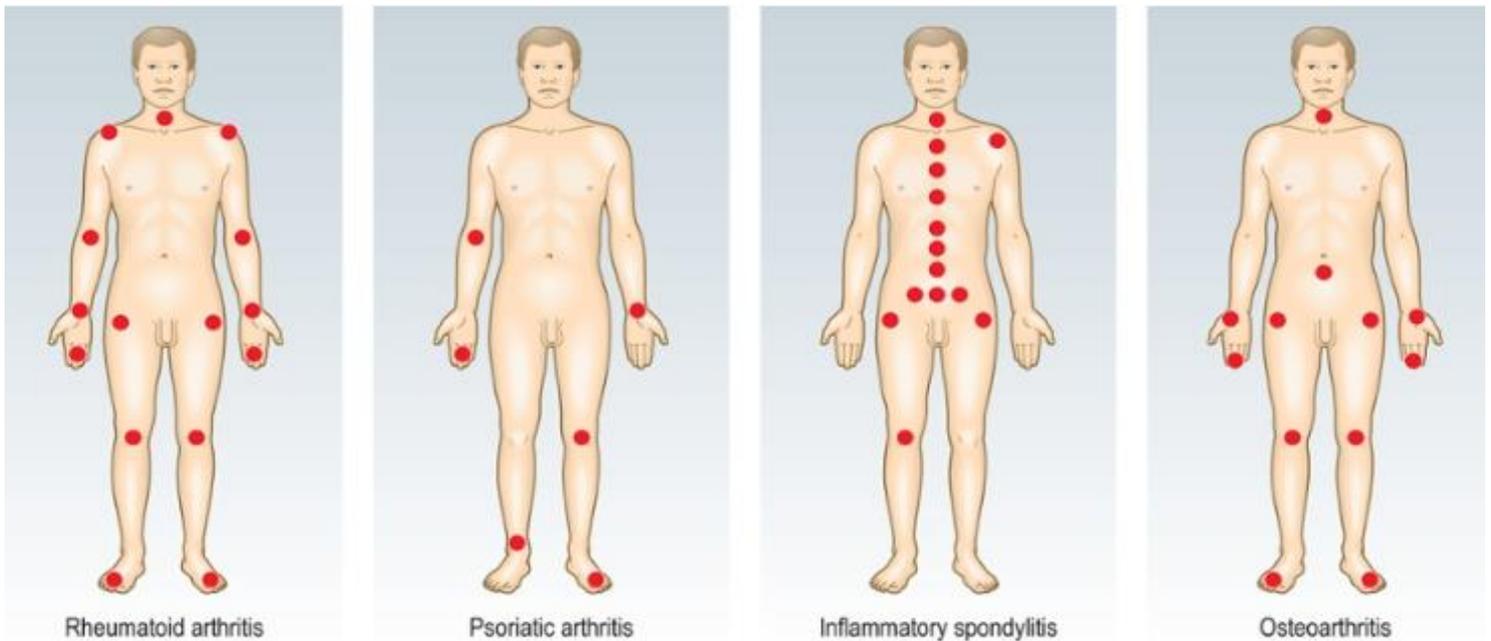
Face: hair, eyebrows, exophthalmos, ophthalmoplegia, lid lag, double vision

Limbs: carpal tunnel, proximal myopathy in upper and lower limbs, brisk or delayed reflexes, pretibial myxedema



The Musculoskeletal System

- most severe MSK pain is due to crystals and sepsis
- Polyarthritis (more than 5 joints) oligoarthritis (2-4 joints) monoarthritis (single joint)



14.4 Common patterns of referred and radicular musculoskeletal pain	
Site of pathology	Perceived at
Cervical spine	
C1/C2	Occiput
C3, 4	Interscapular region
C5	Tip of shoulder, upper outer aspect of arm
C6, 7	Interscapular region or the radial fingers and thumb
C8	Ulnar side of the forearm, ring and little fingers
Thoracic spine	Chest
Lumbar spine	Buttocks, knees, legs
Shoulder	Lateral aspect of upper arm
Elbow	Forearm
Hip	Anterior thigh, knee
Knee	Thigh, hip

Locking: incomplete range of movement at a joint because of anatomical block

Triggering: block to extension suddenly during movement (usually in fingers and is occupational)

Varus: distal part deviates towards the midline

Valgus: distal part deviates away from the midline

Shoulder Examination

Introduce yourself, wash your hands, expose the patient's shoulder, and make him stand up.

Look (inspection)

- Assess from the front, side, and back of the shoulder (including the axilla)
- Check for:
 - deformities
 - swelling
 - skin color changes
 - loss of shoulder contour/symmetry
 - muscle atrophy
 - winging of the scapula (ask patient to push against the wall)



Feel (palpation)

- 3) Palpate from sternoclavicular joint along clavicle to the acromioclavicular joint: comment on tenderness, step deformity (dislocation), and any swelling.
- 4) Palpate acromion and coracoid process (2cm inferior and medial to clavicle tip): comment on tenderness and stability
- 5) Palpate glenohumeral joint and biceps tendon in the bicep groove: comment on tenderness, stability, and if the biceps tendon is in place.
- 6) Palpate along medial border of the scapula and the greater tubercle (back of arm) and lesser tubercle (front of arm): comment on tenderness and swelling

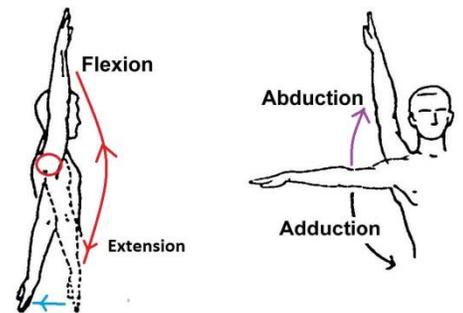
Move

First check range of motion:

- stand behind patient
- ask patient to put both hands behind head
- put the arms down and reach behind back to touch shoulder blades
- pain suggests limited movement

First assess active movement of shoulder then passive movement:
always feel joint for crepitation

- a. Abduction
- b. Adduction
- c. Flexion
- d. Extension
- e. Internal rotation: with patient's arm by his side and elbow flexed at 90 degrees, ask him to put hand behind back and reach as high as possible. Check where the highest position reached is (T4-T8 normal)



- f. External rotation: arm at side with elbow flexed at 90 degrees, ask patient to rotate hand out
- g. Deltoid- ask patient to abduct arm out from side parallel to floor and resist while you press down on their arm



Say that ideally you would test both sides but for the sake of time you will only check one side.

Special Tests:

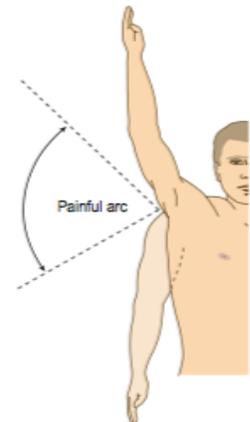
Rotator Cuff

- Supraspinatus: first 15 degrees of abduction
 - ask patient to start abducting arm from his side against resistance, look for pain
- Infraspinatus and teres minor: external rotation
 - 30 degrees extended , try to externally rotate shoulder against hand
- Subscapularis : internal rotation
 - lift off test: ask patient to put hand behind and try to push in



Painful arc / impingement test

- Passively abduct the patients arms fully (180 degrees)
- Ask him to slowly lower arm actively
 - If pain occurs between 60 - 120o of abduction = painful arc
 - Interpretations: greater tuberosity is impinging against the acromion



GH stability tests (**you only need to do one**)

- Apprehension test
 - Technique: lay the patient supine.
 - The test performed by bringing the arm in 90 degrees of abduction and full external rotation and patient experiences a sense of instability
 - Interpretation: anterior instability
- Relocation test
 - Technique: same position as above, but apply a posteriorly directed force to the anterior humeral head
 - Positive test: reduction of pain and feels more stable



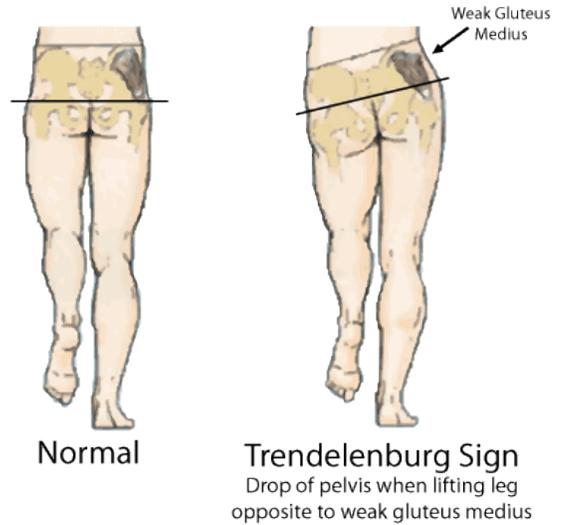
- Interpretation: anterior instability
- Sulcus sign/ Dimple sign
 - The sulcus sign is demonstrated by pulling downward on the neutrally positioned arm.
 - If a dimple is seen this suggests that there is an inferior component of the instability.
 - Interpretation: multidirectional instability or joint hyperlaxity

Hip Physical Exam

Gait analysis:

Trendelenburg's gait: When one foot is lifted up during normal gait, the gravity force tends to drop the lifted foot downward, however the strong abductor muscles of the contralateral hip are resisting this force and prevent the pelvis from dropping down. If there is weakening of the gluteus Maximus and minimus, there will be a drop of the pelvis on the contralateral side of the weakness (Trendelenburg's sign)

Note: if Trendelenburg's sign is repeated during gait cycle, this is called Trendelenburg's gait and constitutes a positive test. The Sound Side Sags! (if the patient falls when standing on his right leg, his left leg is affected).

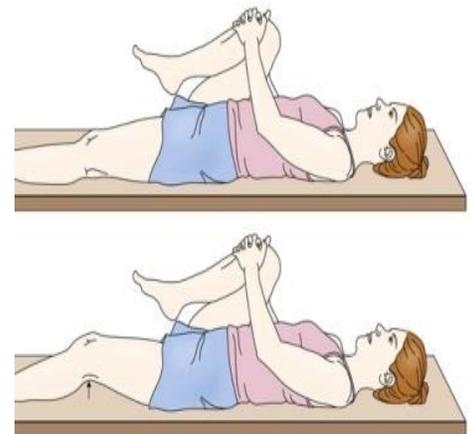


Stanford Medicine 25

Special tests:

Muscle contracture:

Thomas test: is a test used for flexion contracture (loss of extension). This test is performed with the patient lying supine and holding both his knees tightly to his chest (this will lock the pelvis in maximum flexion and eliminate the lumbar spine ability to extend). After that, the tested hip is released and allowed to be extended while the opposite hip remains tightly held to the patient's chest. Normally, the extending thigh should be able to touch the table (0 extension). If the patient is unable to touch the table then a flexion contracture is present and the amount of the contracture will be determined by an angle formed between the axis of the thigh and the examination table.



Pelvic stability- sacroiliac joint:

Patrick's test (FABER test):

Supine position, the maneuver is Flexion, Abduction, and External Rotation, while stabilizing the contralateral pelvis by pressing down on ASIS. If the patient develops pain in the back (SI joint), that means the test is positive.



Spine Examination

Introduction:

- The spine consists of 33 vertebrae (7 cervical, 12 thoracic, 5 lumbar, 5 sacral, and 4 coccygeal (fused usually))
- Provides axial stability. It connects the head to the thorax and the thorax to the pelvis
- Protects, contains and transmits the neural elements from the brain to the peripheral limbs and organs
- The cord ends as conus medullaris (L1-L2 level) then it becomes the cauda equina

Cervical Spine

Introduce yourself, wash your hands, expose the patient's shoulder, and make him stand up.

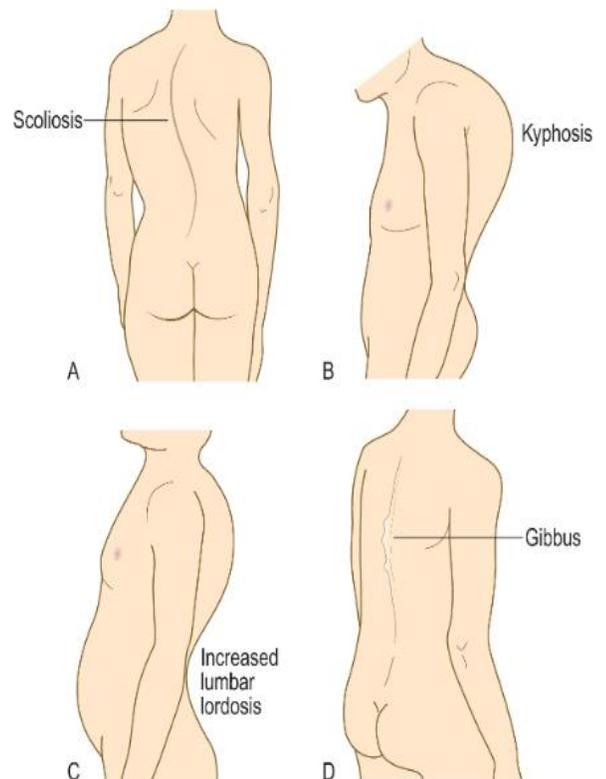
General Assessment

Look (inspection):

- 1) Start with gait, ask the patient to walk and comment: pain? limping? Deformities? Distance?
- 2) Front: Posture of head and neck. Notice scars, abnormal masses, visible carotid pulsation, torticollis (esp in pediatric group)
- 3) Side: lordosis
- 4) Back: Scoliosis. Notice scars, deformities, muscle wasting (prominent spinous processes), abnormal skin pigmentation (cafe au lait, hair)

Feel (palpation): ask for pain first

- 1) Stand behind the patient
- 2) Feel the midline spinous processes from occiput to T1 (T1 most prominent)
- 3) Palpate the bony processes for tenderness (fractures/infections/spasms) and step deformity
- 4) Palpate paraspinal soft tissues for tenderness or spasms
- 5) Feel the supraclavicular fossa for cervical ribs or enlarged lymph nodes



Move: Active

- 1) Flexion: ask patient to put his chin on chest (normal is anything between – 0-60degrees)
- 2) Extension: ask patient to look at ceiling (0-40)
- 3) Lateral flexion: ask him to put his ears on his shoulder (0-45)
- 4) Lateral rotation: ask him to look over his shoulders (0-90)
- 5) If active movement is reduced, perform passive movements

Lumbar spine

Introduce yourself, wash your hands, expose the patient's waist and hip, and make him stand up.

General assessment

Look (inspection)

- 1) Start with gait, ask the patient to walk and comment: pain? limping? Deformities? Distance?
- 2) From front- scars, abnormal masses, visible abdominal pulsation (aortic aneurysm)
- 3) From side- lordosis
- 4) From back- scars, deformities (scoliosis), pelvic obliquity, muscle wasting (prominent spinous processes), abnormal skin pigmentation. Lipomas or hairy patches such as in spina bifida

Feel (palpation)

- 1) Palpate soft tissues (paraspinal muscles for tenderness or spasms)
 - a. L4 and L5 interspinous space palpable at level of iliac crest
- 2) Palpate the bony processes for:
 - tenderness- may indicate fracture, infection, or spasms
 - step deformity- may indicate fracture dislocation or significant instability at this level
- 3) After warning the patient lightly percuss the spine with a closed fist and notice any tenderness

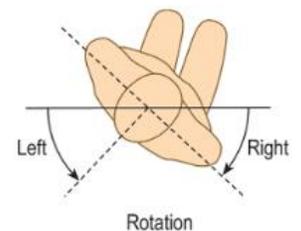
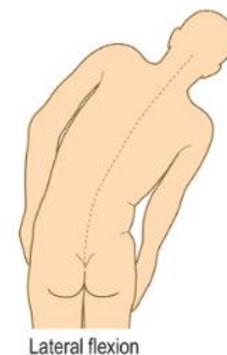
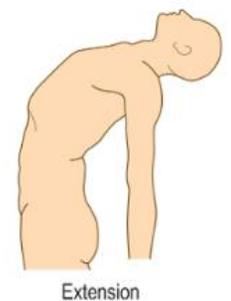


Move- 3 planes of motion

- 1) Flexion: ask patient to try and touch his toes (0-60)
- 2) Extension: ask patient to straighten up and lean back as far as possible (0-25)
- 3) Lateral flexion: ask patient to reach down to each side, with legs straight (0-25)
- 4) Side to side rotation (0-80)

Special tests

- Straight leg raise test: patient is lying supine on his or her back on an examination table. The examiner lifts the patients leg while the knee is held in extension. If the patient experiences sciatic pain when the straight leg is at an angle between 30 & 70 degrees, then the test is positive and a herniated disc is likely to be the cause of the pain.



Knee Examination

Introduce yourself, wash your hands, expose the patient's thigh and knee, and make him stand up.

Look (inspection)

- Begin with patient standing up with feet touching. Look for scars, sinuses, redness, or rashes. Notice any valgus/varus deformities. Comment on posture.
- Ask the patient to walk, bend down and watch him. Look for asymmetry and muscle wasting. Knee movement normal?
- Next patient should lie supine or with a 45 degree angle. Legs should be fully exposed
 - Comment on swelling both localized and diffuse (don't forget the popliteal fossa!)
 - Lift leg and look under the knee for baker's cyst in the popliteal fossa
 - Muscle atrophy: measure the circumference of both knees 20cm over the tibial tuberosity, measure both quads for muscle wasting (normal circumference-15cm)

Feel (palpate): BOTH LEGS

- Warmth: check on both sides
- Effusion
- Patellar tap/ballottement (for large effusion)
 - under supine position with knee fully extended, empty the suprapatellar pouch by sliding the left hand down the thigh until the upper edge of the patella is reached
 - keep you left hand there, and with your right fingers press down firmly over the patella
- Bulge or ripple test
 - Patient should have his knee extended and quadriceps relaxed
 - Place hand beneath the medial tibiofemoral joint line. Empty the medial side of the joint by milking/stroking the fluid to the suprapatellar pouch 2-3 times
 - Empty the suprapatellar pouch like the patellar tap
 - Stroke the lateral side of the joint
 - Watch the medial side for a bulge or a ripple



- Synovitis: Flex knee and feel sponginess of quadriceps tendon.
- Check articular surfaces for tenderness and stability
- Joint line tenderness: feel the tibial and femoral joint lines.
- Check patella: tenderness, crepitus, mobility, position



Move

Active movement:

- With patient supine, ask him to flex his knee up to chest (Normal range = 0-140)
 - o Keep your hand on patella while patient flexes to feel for crepitus
 - o Loss of flexion indicates effusion, joint contracture, or stiffness
- Ask patient to lift leg up while knee is straight,
 - o Extension N= 0 to 10 degrees
 - o If knee can't be kept at full extension = extensor lag present = quadriceps weakness or mechanical block (ex. Meniscus injury, joint stiffness)
- Thigh abduction and adduction



Passive movement:

- Lift both legs of the patient while knees are extended to check for hyperextension (genu recurvatum).
 - o Hyperextension may be associated with hyperlaxity syndromes
- You should repeat all active movement passively if he had trouble



Special Tests

Cruciate Ligaments

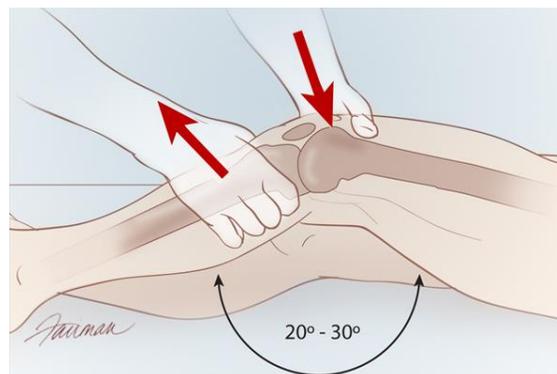
Flex patients knees to 90 degrees. Hamstring should be relaxed. Check for posterior sag (tibia on femur) → gives false + anterior drawer test

1) Anterior Cruciate Ligament Test

- *Anterior Drawer Test*: Sit on foot to stabilize it. Place your hands behind the upper tibia and both thumbs over the tibial tuberosity pull the tibia anteriorly. Significant movement indicates lax ACL.
- *Lachman test*: knees flexed to 20 or 30 degrees. Stand to the side of the patients leg with the patient's heel on the examination table. The femur is grasped with one hand just above the knee to stabilize it. The other hand grasps the proximal tibia. The lower leg is then given a brisk forward tug and a discrete end point should be felt. A positive test is one in which the end point is not discrete or there is increased anterior translation of the tibia.



Lachman's test →



2) Posterior Cruciate Ligament Test

- *Posterior Drawer Test*: push backwards on the tibia. Opposite of anterior drawer. Posterior movement = PCL instability

Collateral Ligaments:

1) Medial Collateral Ligament Tests

- *Valgus Stress Test*: With the patient supine, ask him to slightly flex the knee (20-30 degrees) to unlock the knee from full extension. Place one hand on the ankle and the other on the lateral side of the knee against the fibular head. While holding the ankle, push against the lateral aspect of the knee in an attempt to open the knee joint on the inside. Compare both sides. A gap in the medial collateral ligament may represent a deficiency in the ligament or joint space collapse.



2) Lateral Collateral Ligament Tests

- *Varus Stress Test*: With the patient supine, ask the patient to slightly flex the knee (20-30 degrees) to unlock the knee from full extension. Place one hand on the ankle and the other on the medial side on the knee. While holding the ankle, push against the medial aspect of the knee in an attempt to open the knee joint on the outside. Compare both sides. A gap in the lateral collateral ligament may represent a deficiency in the ligament or joint space collapse.



Menisci

- *McMurray Test*: Performed with the patient supine.
 - Passively flex the knee to its full extent.
 - Externally rotate the foot and abduct the upper leg at the hip, keeping the foot towards the midline (creating a varus stress at the knee)
 - Extend the knee smoothly. In medial meniscus tear you can hear or feel a click.
 - Repeat but this time with a valgus stress at the knee to test the lateral meniscus

Basically:

- Medially rotate tibia and extend knee → for lateral
- Laterally rotate tibia and extend knee → for medial



Patella

- 1) *Apprehension test*: Patient knee fully extended, push the patella laterally and flex the knee slowly. If patient actively resists flexion = indicates patellofemoral instability and possible lateral dislocation/subluxation.



- 2) *Patellar Grind Test*: Push down on the patella into the trochlear groove. Instruct the patient to tighten the quadriceps and note the movement of the patella for crepitus. In the same manner ask the patient to relax the quadriceps and firmly hold the patella in the groove from above. Ask the patient to now flex the quadriceps and note any pain produced by restricting the movement.



- 3) *J Sign*: Performed while the patient is sitting at the edge of the bed with knee 90 degrees flexed. Ask the patient to actively extend his knee, the patella will deviate laterally (J Sign). When the patient flexes, the patella reduces back to the center of the trochlear groove. This sign indicates patellar instability.

Squat test

Central Nervous System

	UMN lesion	LMN lesion
Inspection	Normal (wasting in long standing lesions)	Wasting, fasciculation
Tone	Increased, w/clonus	Normal or decreased
Weakness	Extensors in arm, flexors in leg	Focal, in distribution of the nerve affected
DTR	increased	Decreased, absent
Superficial reflexes	Diminished or decreased	Unaffected
Plantar response	Extensor	Flexor

Movement terms

- Hypotonia: usually associated with muscle weakness and hyporeflexia. Apparent in cerebellar disorders and initial spinal shock.
- Hypertonia: spasticity or rigidity
- Spasticity: velocity dependent resistance to passive movement, associated with hyperreflexia, extensor plantar response, and UMN lesion.
- Rigidity: sustained resistance throughout range of movement (lead pipe rigidity, and cog wheeling in parkinsonism)
- Fasciculation: twitches under skin of resting muscle (seen not felt)
- Tremor: physiological (anxiety, coffee), essential (action tremor), Parkinsons (reduced with movement, worse at rest) intentional tremor (worse when moving, cerebellar disorder)
- Ballism – violent movement
- Tics – repetitive stereotypical movements
- Chorea – brief purposeless movement

Meningitis – meningeal irritation tests

Meningism suggests infection within the subarachnoid space, but can occur with UTI's also. Usually there is a triad of fever, neck stiffness, and altered mental state. Absence of these signs eliminates meningitis as a diagnosis. The following tests are highly specific for meningitis.

The three most common organisms causing meningitis are: s.pneumoniae, n.meningitidis, and h.influenza in children. In infants: e.coli, listeria, and s.agalactiae.

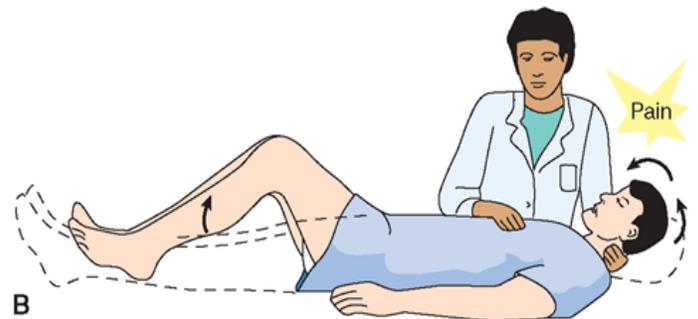
Treatment depends on the organism and age of the patient, but usually penicillin for strep and Neisseria. If resistant = vancomycin. H. influenza usually by ceftriaxone.

Neck stiffness

- Position patient supine without pillow
- Expose and fully extend the legs
 - 1) support head with fingers of your hand at the occiput and ulnar border of your hands against the paraspinal muscles of the patients neck
 - 2) flex the head gently until chin touches chest
 - 3) ask patient to hold for 10 seconds
 - stiffness is indicated with muscle spasm and neck cannot be passively flexed
- **Brudzinsk's sign**- flexion of the knees response to neck flexion

Kernig's Sign

- flex one of patients legs at hip and knee with left hand placed over medial hamstrings
- Use right hand to extend the knee while the hip is maintained in flexion
- look at other leg for any reflex flexion
- positive sign: extension resisted by spasm in the hamstrings (the other limb may flex at the hip and knee)
- absent sign: local causes of neck stiffness (ex. cervical spine disease)



Cranial Nerves

Introduce yourself, wash your hands, take permission, and ask patient to sit on a chair.

Optic nerve (2)

Inspection

Bend down so that you are at the level of the patient

Face symmetry/drooping?

Look for the position and symmetry of eyelids.

Any ptosis? Symmetry of pupils?

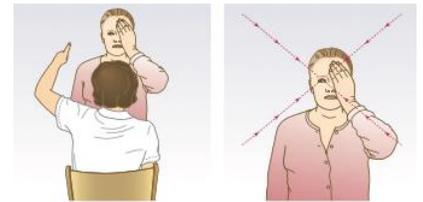
Visual acuity

- Ask patient to wear glasses if they use them
- Place Snellen chart 6 meters away from patient
- Cover one eye and ask patient to read from top to bottom until he cannot see any further
- Repeat on opposite eye

Color vision (special test uses a book with colored sheets)

Visual field defects

- Sit directly in front of patient about 1 meter away (same level)
- Ask patient to look at your eyes
 - Check for homonymous defect- without covering eyes wiggle finger in upper and lower quadrants and ask patient if he can see
 - Sensory inattention –without covering eyes wiggle one hand at a time then both asking if the patient can see the movements
- Peripheral fields
 - Ask patient to cover his right eye with his right hand
 - Cover your left eye with your left hand
 - Wiggle your right finger in your upper right and lower right quadrants while asking the patient if he can see
 - Then cover your left eye with your right hand
 - Wiggle your left finger in your upper left and lower left quadrants while asking the patient if he can see
 - Ask patient to cover his left eye with his left hand and repeat above steps accordingly



Pupils

Pupillary reflex: (afferent: optic, efferent: oculomotor)

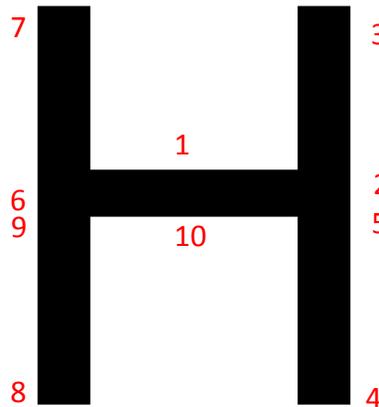
- Turn off the lights
- Ask patient to look straight ahead
- Bring torchlight from side to shine on the pupil
- Check for constriction of pupil
- Take away the light and repeat on the same eye looking for constriction of the other eye
- Repeat with opposite pupil

Convergence

- Ask patient to look at wall
- Bring your finger 15cm in front of patients eyes and ask him to look at it
- Look for convergence of eyes and accommodation of pupils

Nystagmus (*nerve 3, 4, 6*)

- With patient seated, hold your finger arm's length away at the level of patients eyes
- Ask patient to look at and follow finger
- *Slowly* move finger up, down, then side to side (H shape)
- Look at patients eyes for any oscillations and note:
 - If they are horizontal, vertical, or rotary
 - Which direction of gaze causes most marked nystagmus
 - Whether jerk nystagmus changes direction when the direction of gaze changes
 - If it is more obvious in one eye than the other



Trigeminal nerve (5)

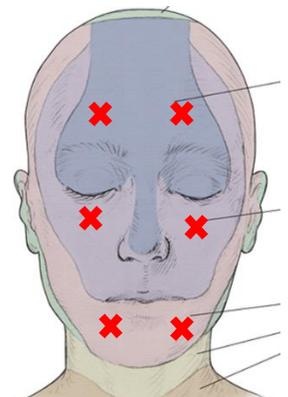
Has three branches: ophthalmic, maxillary and mandibular. The first two branches are purely sensory, and the third one has motor and sensory components. It is the main sensory nerve of the face

Introduce yourself, wash your hands, take permission, and ask patient to sit.

Inspection: check for facial symmetry, drooping, any abnormalities, or involuntary movements

Sensory

- Begin each test with the sternum as the reference point. "This is how it should feel like"
- Make sure patient closes his eyes.
- Touch areas V1, V2, V3 for each test



- *Light touch* - touch each area with a cotton ball very lightly. Touch don't rub.
- *Pain*- use a paper clip (something pointed)
- *Temp*- use a cold metal surface
- Make sure to test each side. One the first side ask do you feel it? The other side ask is it the same?
- Say that you want to do the *Nasal tickle test* - tickle each side of nose with tissue and compare

Motor signs

- Inspect wasting of muscles of mastication (temporalis most apparent)
- Clenching: Ask patient to clench teeth - feel masseter and temporalis and the bulk
- Resistance: Put your hand under his jaw to provide resistance. Now ask the patient to open his mouth fully against resistance- note any deviation (pterygoid)
- Jaw jerk:
 - Ask patient to let mouth hang loosely open
 - Place forefinger in midline between lower lip and chin
 - Percuss finger gently with tendon hammer in downwards direction
 - Note for reflex of closing jaw
 - Normal- absent or just present
 - Abnormal- brisk jaw jerk



Corneal reflex (afferent: trigeminal, efferent: facial)

- Explain to patient unpleasantness of test before continuing
- Gently depress lower lid while patient looks up
- Lightly touch lateral edge of cornea with corner of tissue
- Look for both direct and consensual blinking

Facial Nerve (7) – usually done with trigeminal

Facial nerve supplies the muscles of facial expression. Also supplies the lacrimal glands and provides taste sensation for the anterior 2/3 of the tongue.

Introduction and Inspection same as trigeminal

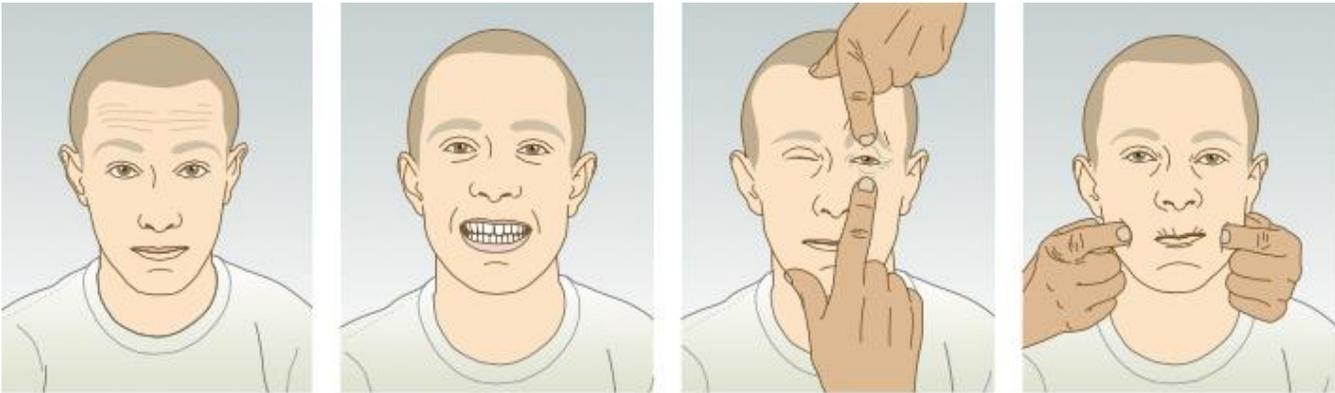
Motor

- Ask patient to raise eyebrows (look up) and observe for symmetrical wrinkling of forehead
- Test for power by asking patient to close eyes tightly - try to open them with two index fingers
- Ask patient to bare teeth (smile hard) and look for symmetry
- Ask patient to blow out cheeks - press on them
- Ask patient to whisper
- Ask patient to clench his lips and try to open them

Abnormality

- Unilateral UMN lesion: contralateral paralysis of lower facial muscles
- Unilateral LMN lesion: weakness of upper and lower facial muscle on the same side

- Bell's palsy- acute lower motor neuron paralysis
- Bells phenomenon- patient unable to close eye (rolls up and exposes conjunctiva)



Vestibulocochlear nerve (8)

Hearing/Cochlear Function

Cochlear nerve arises from the spiral ganglion in the cochlea of the inner ear. Conductive hearing loss indicates pathology in the middle/outer ear, corrected by a hearing device. Sensorineural hearing loss indicates pathology in the inner ear and cochlear nerve, corrected by a cochlear transplant. Injury to the cochlear nerve results in unilateral hearing loss; but once the nerve synapses in the cochlear nuclei, hearing loss afterwards is bilateral.

Introduce yourself, wash your hands, take permission, and ask patient to sit.

Whisper test

- Stand behind patient
- First test, stay about 15cm away from the patient ear. Mask hearing in other ear by rubbing tragus. Say a number. Ask patient to repeat the number you whisper. Repeat test at arm's length away from patient

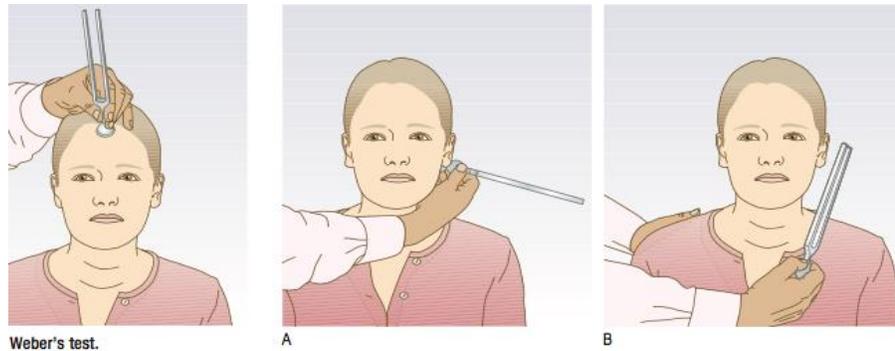
Weber's test

- TUNING FORK IS 256 (or 512)
- Hit tuning fork against padded surface (elbow, knee) to activate
- Place base of fork in center of patient's forehead
- Ask patient where they hear the sound?
 - Normal- noise heard in middle or equally in both ears
 - This can either be normal. Or it can indicate a bilateral hearing problem. SO: if patient says he hears the sound equally in both ears, this doesn't rule out hearing loss!
 - Noise heard louder (lateralized) to one ear
 - Contralateral sensorineural deafness or unilateral conductive deafness. To differentiate you need Rinne's test.

Rinne's test

- Place vibrating base on the mastoid process
- Ask patient if he can hear it. Once he says he cant hear it, place tuning fork while its still vibrating at patients external auditory meatus
- Ask if he can hear it louder in front or when it was placed behind the ear?

- Normal- sound heard louder at air conductance (not touching bone)
 - AC>BC (Rinne positive)
- Abnormal- sound heard louder at mastoid process (conductive deafness)
 - BC>AC (Rinne negative)



Vestibular function

Vestibular nerve receives information from the utricle and saccule in addition to the semicircular canals of the cochlea. Vestibular nuclei send information to many targets, including: cerebellum (bilateral), MLF, thalamus → cortex, and spinal cord (medial and lateral vestibulospinal tracts)

Test nystagmus

Dix-Hallpike positional test (not usually done):

- Warn patient about the test before beginning
- Ask patient to sit upright close to edge of bed
- Turn patients head to 45degrees on one side
- Rapidly lower patient so head is 30 degree below the horizontal plane and ask patient to keep eyes open even if dizzy
- Watch eyes for nystagmus
- Repeat with other side
 - Normal- no nystagmus or sensation of vertigo
 - Abnormal- vertigo and/or rotary nystagmus jerks towards lower ear

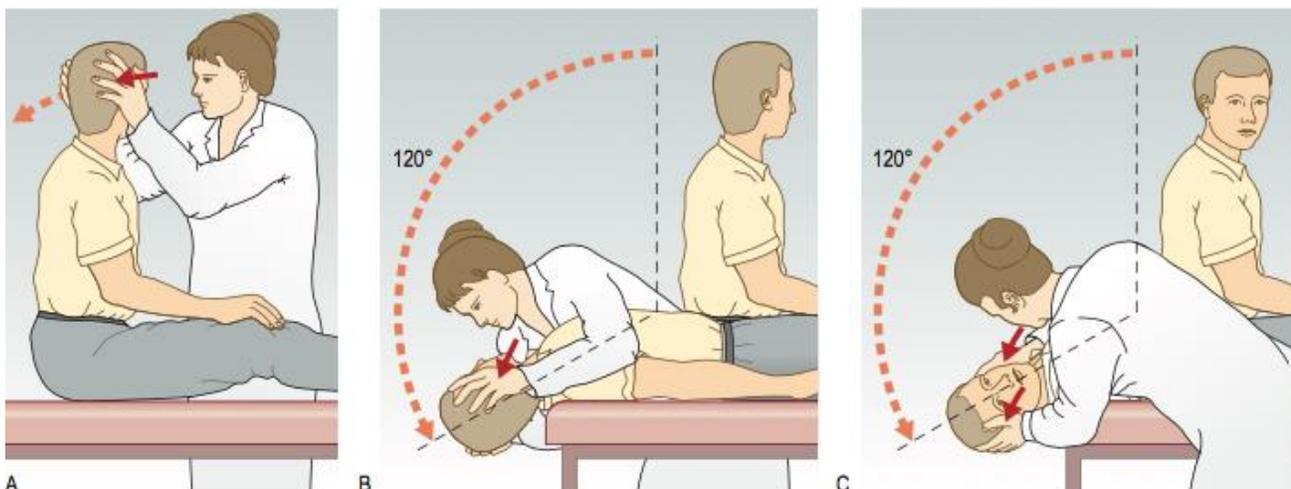


Fig. 13.10 Dix-Hallpike position test. The examiner looks for nystagmus (usually accompanied by vertigo). Both nystagmus and vertigo typically decrease (fatigue) on repeat testing.

Glossopharyngeal and Vagus Nerves (9+10)

CN 9 → Sensation from the pharynx and tonsils. Taste from posterior 1/3 of tongue. Usually tested with the 10th cranial nerve due to its close relation to it. Both of them are mixed nerves (sensory, motor, and autonomic). The vagus nerve innervates upper pharyngeal and laryngeal muscles. Both nerves in general have the following functions: swallowing, phonation/articulation, sensation for pharynx and larynx.

Introduce yourself, wash your hands, take permission, and ask patient to sit.

Examination:

- Asses dysarthria or dysphonia
- Ask patient to say “Ah”. Look at movement of palate and uvula using a torch
 - Uvula should remain in the midline and palate should be symmetrical
- Ask patient to puff out his cheeks with his lips sealed. Listen for air escaping through the nose indicating weak palatal movement
- Ask patient to cough to assess the strength of the cough
- Pharyngeal sensation is tested by the gag reflex. Usually it is not done, just mention it. Instead some dr’s ask the patient to swallow water.

Accessory Nerve (11)

Has two components. Cranial part associated with the 10th nerve, and a spinal part that innervates the trapezius and sternocleidomastoid.

Introduce yourself, wash your hands, take permission, and ask patient to sit.

Examination:

- Stand in front of patient and inspect the sternocleidomastoid for wasting.
- Palpate sternocleidomastoid and assess the bulk
- To test the power in the sternocleidomastoid, put your hand on the right side of the patients chin and ask him to turn his head to the right. Repeat with the left side.
- Stand behind the patient and assess the trapezius
- Ask patient to shrug his shoulder, then apply downward pressure to assess power.

Hypoglossal Nerve (12)

Innervates the tongue muscles

Introduce yourself, wash your hands, take permission, and ask patient to sit.

Examination:

- Ask patient to open his mouth. Inspect the tongue at rest. Look for fasciculation or wasting
- Ask patient to stick his tongue out. Look for deviation (if there is a LMN injury = deviation to the same side of injury)
- Ask patient to move tongue quickly from side to side
- To assess power, ask patient to push his tongue against each cheek while you press outside with your finger to provide resistance

- Assess speech and swallowing

Dermatome and Myotome Map

There are many ways to remember these, so there is more than 1 correct location/movement for each root. Here is an easy way to remember them:

Nerve Root	Sensory	Motor
C5	Shoulder	Shoulder abduction
C6	Thumb	Elbow flexion
C7	Middle finger	Elbow extension
C8	5 th finger	Finger flexion (ask him to grab your finger)
T1	Medial arm	Finger abduction/adduction
L2	Upper thigh	Hip flexion
L3	Low thigh and knee	Knee extension
L4	Medial leg	Dorsiflexion
L5	1 st toe	Toe extension
S1	Sole of foot	Plantar flexion and foot eversion

Sensory system

Introduce yourself, wash your hands, take permission, expose the area specified, and ask patient to lay down.

- The tests are the same for upper and lower limbs. Follow the dermatome map, be sure to start from the lowest point (toes/fingers) then work your way up.
- Repeat each test on both sides to compare!
- Begin each exam with a reference point (on sternum)
- Make sure patient is closing eyes during examination

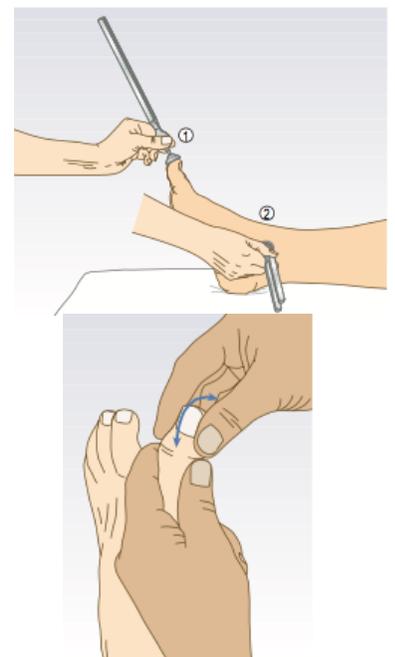
Light touch- With a cotton ball lightly touch (don't stroke) the patient and ask if he can feel it each time

Superficial pain- use pointed object (paper clip). Explain that this will poke him. Dispose pin in sharp needle bin afterwards

Temperature- touch patient with cold metal object (tuning fork or handle of tendon hammer)

Vibration:

- MAKE SURE TO USE 128Hz TUNING FORK
- ask if he can feel the vibration (do you feel it buzzing?)
- Start lower limb exam with tuning fork on patients big toe and compare both sides
- If there is no sensation loss then there is no need to continue further
- Repeat for the upper limbs by starting at the interphalangeal joint of the forefinger
- Do not continue if there is no loss in sensation



Joint position sense

- With the patients eyes open demonstrate what is "up and down" before he closes his eyes for the test
- Hold the distal phalanx of the patients big toe from the sides and lightly push the toe (or middle finger of hand) up or down
- Repeat with the patients eyes closed and ask him to identify where the joint is positioned

Stereogenesis / graphaesthesia

- Stereognosis: Place a familiar object in the patients hand (pencil) and ask him to identify it
- Graphaesthesia: Using the blunt end of a pen or tendon hammer trace a letter or number into the palm of the patients hand and ask him to identify it

Motor system

Coordination

Introduce yourself, wash your hands, take permission, expose the area specified, and ask patient to lay down.

1) Inspection:

Look for asymmetry, wasting, hypertrophy, fasciculation, involuntary movement

2)

3) Tone – resistance felt when moving a joint passively

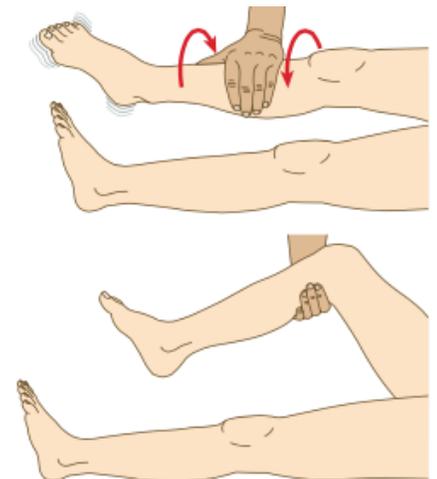
- Ask patient to lay supine on examination table and to relax
- Ask if he has any pain before proceeding
- You will passively move each joint in the specified limb in a full range of motion in all anatomical directions. Be unpredictable to prevent patients active movement
- Hypotonia= LMNL, hypertonia = UMNL

Upper limb

- hold patients hand like you're going to shake it, and use your other hand to hold the elbow
- assess the tone at the wrist and elbow

Lower limb

- roll the leg from side to side
- quickly lift the knee at the flexed position and watch movement of the foot



4) Movement and power

- Test upper limb while patient is sitting. Lower limb while patient is reclined
- To test truncal strength. Ask patient to sit up without using arms
- Ask about pain first
- There is a scale for muscle power which you need to know. For each limb you should identify the level of power. Always compare with the other limb.
- UMNL = weakness in a large group of muscles, LMNL = weakness in specific muscles

Scale for muscle power:

- 0 - no muscle contractions visible
- 1 - flicker of contracting muscle without movement
- 2 - Joint movement when the effect of gravity is eliminated
- 3 - movement against gravity but not against resistance

4 - movement against resistance by weaker than normal

5 - normal movement

- An easy way to do this: ask the patient to move first, check if he can lift the muscle above gravity. This is an automatic 3. Then apply resistance to determine if its 3, 4, or 5.
- If the patient cannot move his muscles, support his limb with something and ask him to try to move it sideways. If he can't, check flickering movement of muscle.

Upper movements	Nerve/root
Shoulder abduction	Axillary C5
Elbow flexion	Musculocutaneous, radial
Elbow extension	Radial
Wrist extension	Posterior interosseous
Finger extension	Posterior interosseous
Finger flexion	Anterior + posterior interosseous
Finger abduction	Ulnar
Thumb abduction	Median

Lower movements	Nerve/root
Hip flexion	Iliofemoral
Hip extension	Sciatic
Knee flexion	Sciatic
Knee extension	Femoral
Ankle dorsiflexion	Deep peroneal
Ankle plantar flexion	Tibial
Great toe dorsiflexion	Deep peroneal
Ankle eversion	Superficial peroneal
Ankle inversion	Tibial

5) Tendon reflexes

- Have patient lay comfortably on the examination table with his limbs exposed
- Make sure to strike tendon when doing examination not the bone
- Be sure that muscle being examined is completely relaxed
- Say that the response is: normal, increased, decreased, diminished, absent while looking at the MUSCLE. (ex: biceps reflex, look at the biceps not the movement of the hand)
- Compare each side
- For reinforcement, if reflexes fail to be elicited, ask patient to clench his teeth (if testing for upper limb reflexes) or to pull on his hands (for lower limb reflexes)

Deep Reflexes

Upper limbs

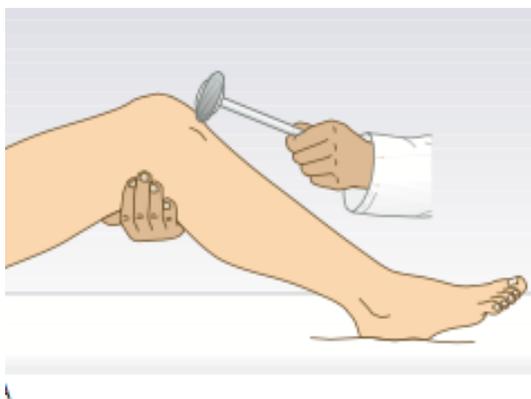
- Biceps- bend the elbow at about (125degrees), place forefinger on the inside of elbow and tap with tendon hammer (this is testing C5-C6, mainly C5)
- Triceps- bend elbow and tap tendon from the outside of elbow (this is testing C7)

- Supinator- place forefinger about 3cm from inner wrist and tap with hammer (this is testing C5-C6, mainly C6)



Lower limbs

- Knee jerk- lift leg up to about 45degrees with your left hand (or you can put your extended left arm under the patients knee to lift it up)
 - Feel for tendon (Above tibial tuberosity and below patella)
 - Watch the thigh for reflex
 - this is testing L3-L4
- Ankle jerk
 - Place one leg over the other with the knee almost at 90degrees
 - Pull foot up at 90degrees to tighten the Achilles' tendon
 - Tap on the tendon while watching for reflex of calf muscle
 - This is testing S1



Superficial Reflexes

Polysynaptic cutaneous innervation, UMNL

Plantar response (S1- S2):

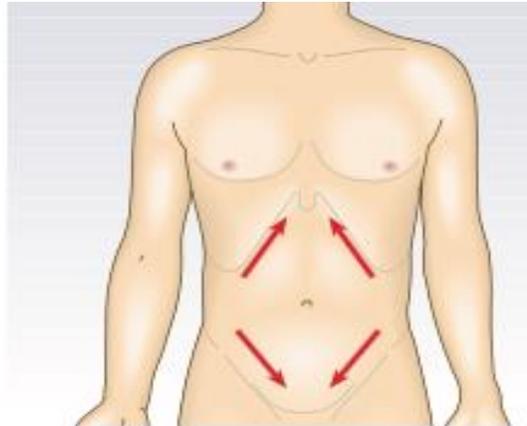
- Make sure to inform patient of the unpleasantness of the test
- Rub a blunt object (pointed end of reflex hammer) along the lateral border of the sole of foot to the little toe then in towards the toe
- Flexion of toes is normal



- Babinski: extension of large toe with fanning of other toes
 - Do NOT say negative Babinski. It is either positive Babinski or normal flexion of toes.

Abdominal reflex- (T8 - 12)

- Patient is supine, expose his abdomen
- Using blunt end of tendon hammer stroke the upper and lower quadrants of the abdomen in the medial direction
- Normally there should be contraction of the muscle with the umbilicus moving laterally up or down



Other tests reflecting UMNL:

Hoffmans sign

- Take patients middle finger and flick it. Positive reflex is flexion distal phalanx of the thumb



Ankle clonus

- support the patients leg with knee and ankle at 90 degrees flexion
- quickly dorsiflex and partially evert the foot
- if clonus is present the foot will beat back and forth against your hand



Coordination

Part of motor (sometimes tested for individually for cerebellar disorders)

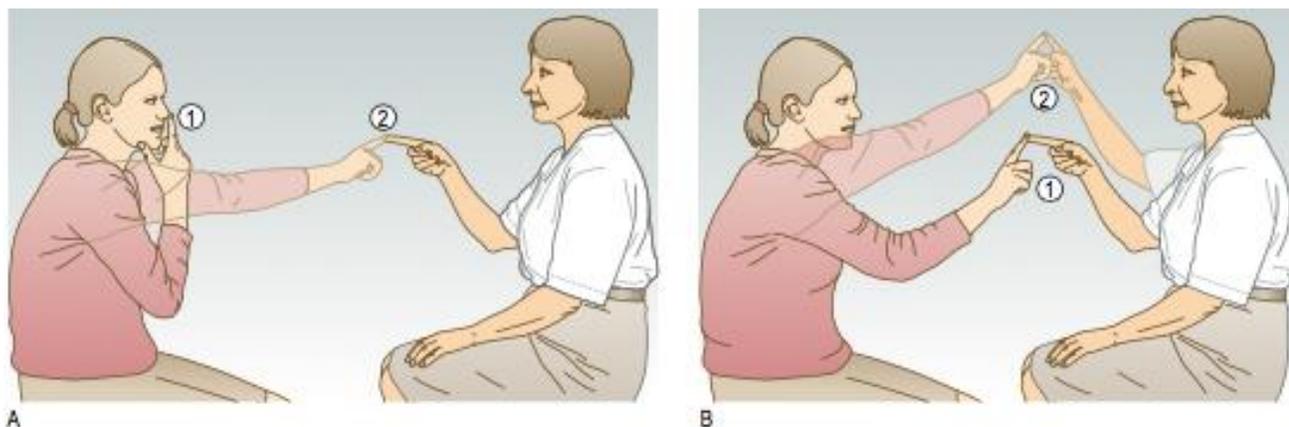
Limb coordination, Dysarthria, Nystagmus, Stance and gait

- Midline of cerebellum affected = truncal ataxia
- Drugs(phenytoin), infections(mumps), inflammation(MS), neoplasms can all affect the cerebellum

Introduce yourself, wash your hands, expose and fix the patients position as needed.

Finger nose test (for dysmetria and intentional tremor)

- Stand facing the patient at eye level at an arm's length away
- Ask the patient to touch his nose then touch your finger (patients arm should be outstretched)
- Repeat the movement as quickly as possible
- Repeat the test by changing the position of your finger (move your finger just when the patients finger leaves their nose)
- go faster once the patient understands



Repetitive hand movement (for dysdiadochokinesis)

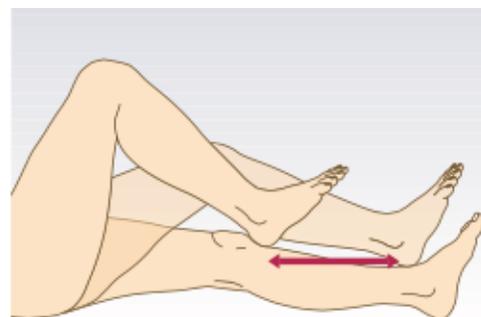
- Patient sitting upright
- Demonstrate fast back and forth hand movements in the palm of your right hand on the palm of your left hand and ask the patient to repeat them. Do the same for the left.

Rebound test (checks normal agonist/antagonist movement)

- Patient sitting upright
- Ask patient to lift arms straight in front of him
- Place one of your arms in front of the patients face to protect it from a rebounding arm
- Push the patients wrist down quickly with your free arm and watch the returning movement

Heel to shin test

- As patient lies supine, expose the lower limbs
- Ask patient to lift leg and place their heel on their opposite knee and run it down the length of their shin to the ankle
- Repeat the test a few times
- Repeat on other leg



Nystagmus

Stance

- 1) ask patient to stand with bare feet close together and eyes open
 - cerebellar ataxia- swaying, lurching, inability to stand
- 2) Romberg test- ask patient to close eyes. Be sure to put your hands behind and before the patient to catch if unsteady.
 - repeatedly falling is positive for proprioceptive sensory loss in feet (sensory ataxia)

Gait

- BEND while patient is walking
- note for stride length, arm swing, steadiness (and while turning), limping
- ask patient to walk on tip toes, then on heels
- gait ataxia- ask patient to walk heel to toe in straight line in tandem gait

Findings:

- bilateral upper neuron damage- scissor like gait due to spasticity
- cerebellar dysfunction- broad based unsteady gait making heel to toe impossible
- parkinsonism- initiation of walking delayed, short shuffling steps with loss of arm movement, pill-rolling tremor, impaired postural reflexes
- proximal muscle weakness- waddling gait with bilateral trendelenburg sign

Speech

- Listen to patients spontaneous speech and note volume, rhythm, clarity
 - 1) dysarthria- slurred speech due to articulation motor deficit
 - cerebellar dysarthria- slow, slurred
 - myasthenia gravis- fatiguing speech
 - parkinsonian- low volume monotonous voice with words running into each other
 - 2) dysphonia- loss of volume due to laryngeal disorder
 - 3) dysphasia- disturbance of language
 - brocas area - motor dysphasia (reduced verbal output)
 - wernicke's area - sensory dysphasia (meaningless speech)
 - Ask patient to cough and say Ah to observe the soft palate rising

The Renal System

- Retroperitoneal, level of T12-L3 (hilum at L1-L2)
- Renal angle is between 12th rib and spine
- Right kidney is 1.5 cm lower than the left because of the liver
- Liver and spleen lie anterior to kidney
- Kidney moves downward during inspiration when lungs expand
- Kidneys innervated by renal artery from AA
- Renal capsule and ureter innervated by T10-L1 nerve roots
- Bladder rises behind the umbilicus when full, behind anterior abdominal wall palpated above pubic symphysis
- Detrusor muscles contract during micturition under PNS affect
- Desire to urinate occurs when bladder is filled with 250-300 mL (full bladder=500mL)
- Minimum excretory volume = 400-500ml
- Internal urethral sphincter at bladder neck – involuntary, external urethral sphincter at membranous urethra innervated by peduncle (S2-S4) – voluntary

Pain

Loin pain = kidney

- Pain in renal angle
- Due to stretching of renal capsule
- Infection, inflammation, obstruction
- Constant w/ systemic upset = UTI
- Chronic and dull = something chronic (chronic renal infection, APKD)
- Dull = stones, IgA nephropathy

Ureteric colic = ureter

- Acute obstruction
- Unilateral, sudden, severe, spreads to iliac fossa/groin, associated with vomiting/nausea and relieved by NSAIDS
- Acute flank pain + loin tenderness + microscopic hematuria = STONE

Bladder/urethra pain

Term	Significance
Polyuria	High intake, diuretics, diabetes (osmotic diuresis), DI
Oliguria	Volume less than 500ml; Kidney failure
Anuria	Volume less than 50-100ml; Obstruction
Hematuria	UTI, stones, tumors, glomerular disease
Proteinuria	Orthostatic, exercise, fever, pregnancy Multiple myeloma, glomerular disease, diabetic neuropathy
Hydronephrosis	Dilation of kidney's collecting system

Exam

Usually part of abdominal examination. Introduce yourself, wash your hands, take permission, expose patients abdomen and ask him to lie supine.

Inspection

- General appearance and consciousness
- Fatigue, pallor, breathlessness (breath rate)
- Bruising
- Examine the nails for signs of hypoalbuminaemia looking for:
 - o brownish discoloration
 - o leukonychia
- Clubbing
- Note any bruising or excoriation in the hands
- Note any surgical arteriovenous fistulas in wrist or elbow for hemodialysis
- Ask patient to hold out arm and fully extend his hands
 - o Look for asterix (coarse flapping tremor)
- Check the eyes to look for:
 - o Anemia, jaundice, band keratopathy (across cornea), edge of cornea (limbic calcification)

Abdominal inspection

- Distention
- Scars of surgery (iliac fossa for transplant)
- Catheters
- Peritoneal dialysis scars in midline and hypochondrium
- Check the back area

Palpation of kidneys

- Ballotment: place your left hand behind the patients back below the ribs. Your right hand should be over the upper quadrant anteriorly to detect any enlargement in the kidneys
 - o Ask patient to breathe deeply
 - o Gently push your hands together as the patient breathes out
 - o Feel the lower pole of kidney
 - o If kidney is palpable, assess size, surface and consistency (skinny people)
 - o Pain = acute pyelonephritis or acute urinary retention
- Renal angle:
 - o Ask patient to sit up to examine the back
 - o Ask for any pain
 - o Hit the renal angle with your fist (but tell the patient first) – note any discomfort





- While patient is sitting up check for sacral pitting edema by applying pressure for 5 seconds then checking if there is any indentation left

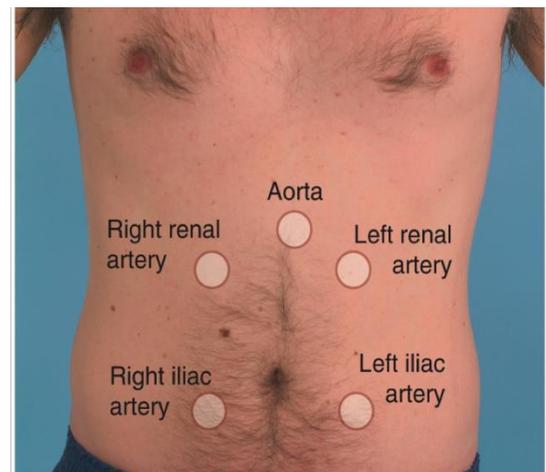


Percussion

- Percussion of kidney is unhelpful
- Percuss the bladder
 - o Start in the midline in the upper abdomen and move down until you notice a change to a dull percussion (upper border of bladder)

Auscultation

- Patient supine
- Above the umbilicus for aortic bruits
- 2-3 cm above and lateral to umbilicus to for renal artery stenosis



Obs/Gyne

Obstetrics:

The medical/surgical specialty concerned with the care of women from pregnancy until after delivery

Gynecology:

The medical/surgical specialty concerned with the diagnosis & treatment of disorders of the female reproductive tract

General anatomy

Uterus: pear-shaped; stabilized by broad ligament; between bladder and rectum; contains muscular myometrium lined by endometrium that responds to hormones

Fallopian tubes: ampulla is where fertilization occurs

Ovaries: increase in size during follicular phase

Cervix: has transition zone where simple columnar epi turns into stratified squamous = cancer site

Vagina: makes the 2 lateral 1 anterior and posterior fornices. Posterior fornix used to drain abdominal abscesses.

External female genitalia: vulva that consists of labia majora and minora → has urethral and vaginal orifices. Clitoris is usually obscured by a hood or prepuce.

Symptom (related to menstruation)	Definition
Perimenopause (climacteric)	- 2-5 years before menopause when period become irregular and flushes and sweats occur
Heavy bleeding	- 80+ ml lost (menorrhagia)
Intermenstrual bleeding	- Hormonal, endometrial, or cervical pathology
Post-coital bleeding	- Cervical pathology
Post-menopausal bleeding	- Bleeding more than 1 year after menopause - Suspect endometrial cancer

***rule out anatomical reasons of bleeding before proceeding to DUB**

Bleeding in pregnancy:

- Before 24 weeks: miscarriage, molar pregnancy
- After 24 weeks: DIC, placental problems

Ovulatory bleeding:

- Usually in reproductive years
- Progesterone is low for some reason

Anovulatory bleeding: (most common)

- Usually in women before or after menstrual age
- High estrogen levels (can lead to cancer)

Infertility

- Failure to achieve pregnancy after 1 year of unprotected sex
- Generally: check ovulation and egg status, tubal patency, sperm quality and quantity

Contraceptives:

- Condoms, OC, IUD, lactational, sterilization, etc.

For DUB, check for organic causes first. DUB is a diagnosis of exclusion. First go with non hormonal meds like NSAIDS → then hormonal (HRT) → then Progestin IUD (mirena) → then ablation → final choice is hysterectomy. If its an elderly woman, go with hysterectomy if endometrial cancer suspected.

Prolapse

- Associated with previous childbirth
- Pelvic contents bulge into vagina

Endometriosis/Adenomyosis

- Ectopic endometrial tissue
- If this endometrial tissue is deep within myometrium = adenomyosis
- Usually benign

Endometrial Cancer

- may be preceded by endometrial hypertrophy (which is caused by high estrogen levels)
- Type 1: young, obese, associated with estrogen imbalance. PTEN gene mutation
- Type 2: old, thin, associated with atrophy. P53 gene mutation

Cervical Cancer

- Preceded by carcinoma in situ
- Associated with HPV
- Cervical screening (pap smear spatula or liquid based) is important in sexually active women

Fibroids/Leiomyoma

- Pelvic mass; Smooth muscle masses that protrude into uterine space
- Range in size and can affect pregnancy/fertility

Vaginismus

- Pain on penetration
- Involuntary contractions of pelvic floor

Preeclampsia

- HTN post 20 weeks gestation; proteinuria; edema + seizure = eclampsia

History

Introduction

- Your name, Role, Permission
- Hand hygiene
- Patient's name, Age, Nationality, Occupation
- Marital status:
 - Previous marriages; pregnancies related to them
 - Duration of current marriage
 - Consanguinity

Presenting complaint:

- Possibility of pregnancy
 - Always ask when was LMP
- Obs/gyne history

Current Pregnancy: (if the patient is pregnant)

- LMP → EDD
- LMP → GA
- Spontaneous conception or following IOO (induction of ovulation) or ART (assisted reproductive techniques)
- Wanted or unwanted
- Planned or unplanned (following contraceptive failure)
- Confirmation of pregnancy & GA:
 - Pregnancy test
 - Ultrasound scan
- ANC (antenatal care):
 - Basic investigations
 - Any complications

Past Obstetrical History: (if the patient mentions she's had a child previously)

- Dates of previous pregnancies (when they ended; year ± month)
- Outcome:
 - Abortion
 - Ectopic pregnancy
 - Molar pregnancy
 - Delivery
- GA at end of pregnancy
- Treatment modality if any
- Complications:
 - Antenatal or antepartum: GDM, GHT, PE, APH
 - Intranatal or intrapartum
 - Postnatal or postpartum: PPH, PPP
- Pregnancy outcome:
 - Onset of labor: spontaneous or induction (IOL); indication of IOL

- Mode of delivery: spontaneous vaginal delivery (SVD), cesarean section (CS), vacuum extraction (VE) or forceps; indication if not SVD
- Gender, birth weight & condition of neonate
- Breastfeeding

Menstrual History

- Menarche:
 - First menstrual cycle, age in years
 - Median = 12.45 years
 - Precocious puberty: too early
 - < 8 years
 - Primary amenorrhea: too late
 - > 14 years without secondary sexual characteristics OR
 - > 16 years with secondary sexual characteristics
- Secondary amenorrhea:
 - Missed 3 consecutive menstrual cycles OR no periods for 6 months
 - Causes:
 - Physiological (commonest cause is pregnancy)
 - Pathological
 - Iatrogenic
- Menopause:
 - Permanent secondary amenorrhea
 - Final menstrual cycle; age in years
 - Average age = 51 years
 - Early or premature ovarian insufficiency: < 40 years
 - Late: > 55 years
- Frequency:
 - Average = 28 days (21 – 35 OR 28 ± 7)
 - Too frequent (< 21 days): polymenorrhea
 - Too few (> 35 days): oligomenorrhea
- Duration:
 - 5 – 7 days
- Regularity:
 - Difference of 20 days or less from cycle to another: metrorrhagia
 - IMB
- Volume: ask about pads + clots
 - 5 – 80 ml/cycle
 - Too heavy: menorrhagia
 - Too scanty: hypomenorrhea
 - Menometrorrhagia
- Pain with menses: dysmenorrhea
 - Primary or spasmodic (physiological)
 - Secondary or congestive (pathological)

Gynecological History: (if it's a gynecology case)

- Pap smear
- HPV vaccine
- PID
- STD
- Contraception
- For infertility:
 - Coital history:
 - Frequency
 - Timing
 - Female: PCB, dyspareunia (superficial or deep)
 - Male: problems with erection &/or ejaculation

Past history

- Cervical smears
- Abdominal surgery
- Pelvic infection or previous STD
- Pregnancies

Drugs

- Contraception
- HRT

Family

- DM, HTN
- Ovarian cancer/breast cancer
- PCOS
- Bleeding disorders

Social

- Obesity
- Smoking

Parity Code:

- G P(T+P+A+L)
- Gravidity:
 - Pregnancy
- Parity:
 - Delivery of an infant (alive or dead) weighing 500 g or more this translates to a GA of about 20/52 or more (WHO definition)
- Term:
 - Gestational age 37 - 42/52
 - Post-dates > 40/52
 - Post-term > 42/52
- Preterm:
 - GA 20 - 37/52
- Abortion/miscarriage:

- GA $\leq 20/52$
- Live births

Gestational Age:

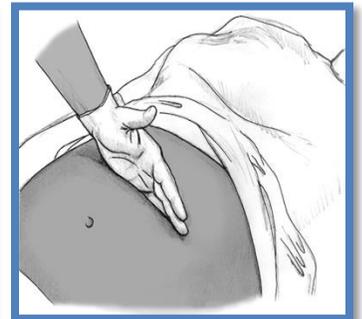
- LMP:
 - Date of the first day of the last normal menstrual period
- EDD:
 - Expected date of delivery = 40/52
- Naegele's rule:
 - Assuming that the duration of human gestation = 266 from conception
 - And that ovulation occurs on day 14 of a 28-day cycle
 - Add 7 to the days
 - Subtract 3 from the months (OR add 9)

Obstetrics Physical Examination

- Leopold's maneuvers:
 - Symphysis-fundal height (SFH)
 - 4 maneuvers/ grips

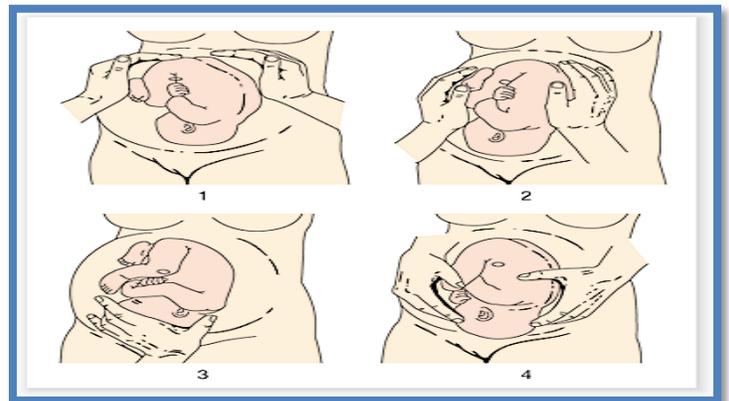
Symphysis-fundal height

- Start with using your hand to locate the fundus of the vagina
- With the tape scale facing downwards, measure from the fundus to the pubic symphysis
- The measurement will be smallest at 12 weeks and largest at 38 weeks
- Used to determine if the baby is too large or too small



Leopold's Maneuvers

- Place your hands cupping the top, middle, and bottom of the belly
- Feel for the circumference of the baby's head



Fetal lie (oblique, longitudinal, transverse)

Fetal Presentation

- Longitudinal:
 - Cephalic
 - Breech
- Transverse:

- Back up
- Back down
- Oblique
- Cephalic:
 - Vertex- occipital bone facing opening of pelvis
 - Face- face facing opening of pelvis
 - Brow – part face/part occipital bone facing opening of pelvis
- Breech:
 - Frank- buttocks first
 - Complete- feet first
 - Footling – feet dangling

Fetal Position

- Anterior (baby's back facing outside)
- Posterior (baby's face facing outside)

Breast

- Breasts extend from clavicle to upper abdomen, and from sternum to ant.border of latissimus
- Pigmented erectile skin covers the areola and nipple (Montgomery glands on areola)
- Nipple in 4th intercostal space in midclavicular line
- Nipple line: axilla to groin (accessory or ectopic nipples)
- Four quadrants and an axillary tail from the upper outer quadrant
- Size and shape of breasts depends on genetics, sexual maturity, parity, pregnancy, lactation, phase in menstrual cycle and nutritional status
- Size depends on stromal fat (fat increases with age and glandular tissue decreases)
- Respond to changes in E and P
- During lactation → glandular enlargement

Breast cancer RISKS

- Female
- Increasing age
- Family history (BRCA1 BRCA2) (early onset, other cancers in the family such as ovarian)
- Early menarche
- Nulliparity or late age of first child
- Late menopause
- HRT
- No breastfeeding
- Obesity

Presenting complaint

- How long, what changes
- Relationship to menstrual cycle
- Associated factors
- Evaluate potential risk factors

General notes:

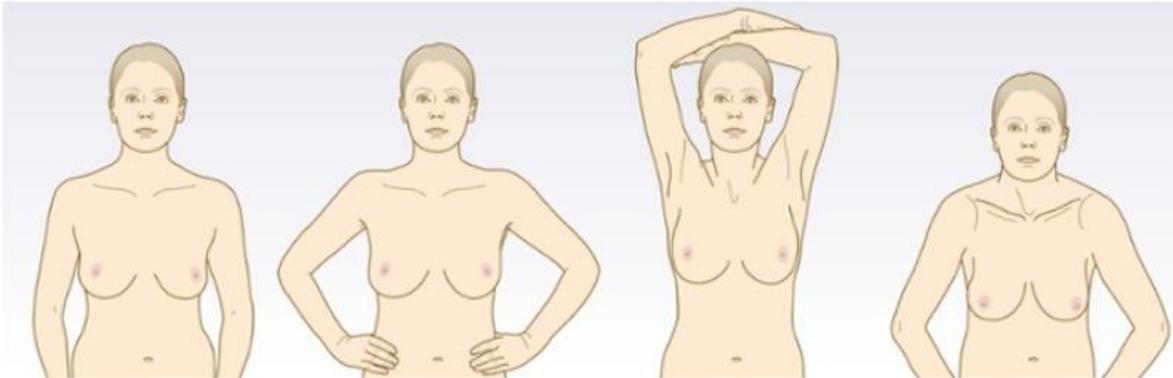
- **Mammograms usually for women aged 40 and older, younger patients go with ultrasound or aspiration**
- **Core biopsy differentiates invasive from in situ cancer**
- **Ultrasound method of choice for a lump**

Exam

Introduce yourself, wash your hands, take permission, expose breast and ask patient to sit upright. Male students, ask for a chaperone.

Inspection (4 positions)

- Ask patient to rest hands on thigh to relax the pectoral muscles
- Face patient and look at the breasts for:
 1. Asymmetry
 2. Local swelling
 3. Skin changes (ex: tethering, dimpling)
- Look at nipple areolar complex next for the same changes listed above as well as discoloration, eversion/inversion, and discharge.
- Check the supraclavicular region for any abnormalities
- Ask patient to raise hands above head and inspect
- Ask patient to press hands firmly on hips to contract the pectoral muscles and inspect again
- Ask patient then to lean forward to expose the breast and to exacerbate skin dimpling if any



Palpation (always ask the patient for pain, and look at her face while palpating)

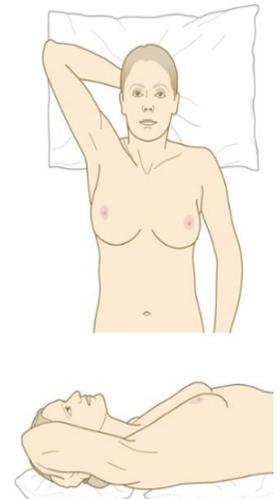
- Ask patient to lie head on pillow, with one hand under head (right hand for right breast exam)
- You will palpate the 1) breast 2) nipple areolar complex 3) axillary tail 4) lymph nodes. Do 1, 2, and 3 on one breast first then on the other. End exam with 4.
- Start with the normal breast first. If you're palpating affected breast, begin away from the abnormality.

Breast tissue:

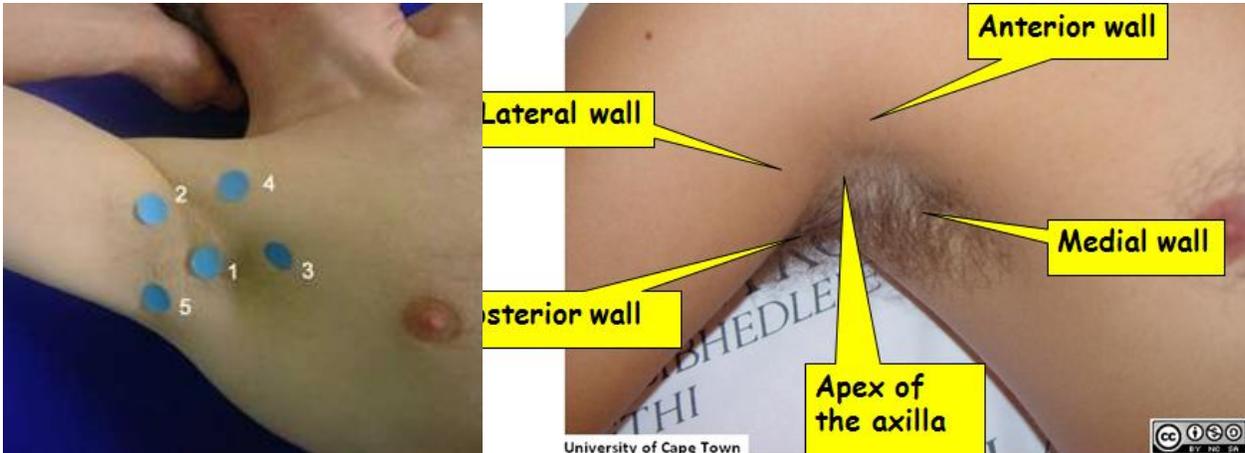
- Hold your hand flat to the skin and palpate the breast tissue using the palmar surface of your three middle fingers



- Compress breast tissue firmly against chest wall
- Palpate all areas of the breast (move systematically around in a circle)



- Quadrants include: upper outer and inner, and lower outer and inner
 - Once with superficial and once with deep
 - Note any masses and their characteristics
 - Site, size, tenderness, temperature, texture, surface, edges, consistency, mobility (with skin and muscle). If there is a mass = ask patient to contract pectoralis and note if the mass moves with it.
 - Elevate breast with your hand to uncover any dimpling
- Nipple areolar complex:
- Palpate the nipple in a systematic way
 - Ask patient if they noticed any discharge and to elicit it themselves
- Axillary tail
- Examine axillary tail with your finger and thumb towards the axilla
- Lymph nodes
- Palpate the axillary lymph nodes
 - Palpate the Supraclavicular/infraclavicular nodes



The Gastrointestinal System

Surface Markings

- Liver
 - Upper border= 5th intercostal space in expiration
 - Lower border= costal margin in mid-clavicular line in inspiration
- Spleen
 - Left ribs 9-11 posterior to mid-axillary line
- Gallbladder
 - Intersection of right lateral vertical plane and costal margin
 - Tip of 9th costal cartilage
- Pancreas
 - Neck= level of L1
 - Head lies below and left
 - Tail lies above and right
- Kidneys
 - Upper pole= 12th rib posteriorly
 - 7cm from midline
 - Right is 2-3cm lower than left

Exam

Introduce yourself, wash your hands, take permission, expose abdomen from the xiphisternum to the symphysis pubis. Ask patient to lie flat with no pillow and knees flexed with hands by his side to relax abdominal muscles.

Inspection

- Stand at the tip of the bed and check the patients general wellbeing and appearance
- Note if patient is connected to any lines
- Check asymmetry in abdomen during respiration (paradoxical movement)
 - inhalation = diaphragm move down and abdomen moves outwards
 - exhalation = diaphragm move up and abdomen moves inward
- Check hands for:
 - clubbing - liver cirrhosis, IBD, malabsorption
 - koilonychia - liver disease
 - leukonychia - hypoalbuminemia
 - palmer erythema - liver disease (normal in pregnancy)
 - Asterix/Flapping tremor - hepatic encephalopathy (also in resp/cardiac/renal failure)
- Check arms for needle punctures
- Check axilla for hair distribution
- Look for signs of jaundice on skin and in sclera using natural light
- Patients general weight status (obese or thin)
- Check mouth for:
 - angular chielitis - Vitamin B12 deficiency
 - beefy tongue - Vitamin B12 and folate deficiency
 - Aphthous ulcers - IBD

- Check the neck and face (SVC) for spider nevi (shouldn't be more than 5)
- Examine cervical, axillary, and inguinal lymph nodes for metastasis. Parotid glands for alcoholism
- Check the back

NOTE: you will not be asked to check all lymph nodes, examine the back, etc. Just say them.

Abdominal inspection:

- Scarring
- Abnormal discolorations
- Distention of the abdomen (flatus, feces, fetus, fat)
- Umbilicus (usually inverted)
- Hair distribution
- Visible pulsation
- Visible veins: portal hypertension → caput medusa (drain away from umbilicus)

Palpation

Superficial = tenderness/guarding Deep= masses / organomegaly

- Warm hands and ask patient if they have any pain before proceeding
 - If patient has pain start on opposite side of abdomen
- Use right hand to palpate with a “snake” motion
- Avoid using your fingertips. Let your entire hand be in contact with the abdominal wall
- ALWAYS WATCH PATIENTS FACE FOR DISCOMFORT
 - Voluntary guarding - contraction of muscle when palpation causes pain
 - Involuntary guarding - contraction caused by inflammation of peritoneal cavity

- Begin palpating superficially then deeply in each zone: (move in an ordered way)

- Right iliac fossa
- Right flank
- Right hypochondrium
- Epigastrium
- Left hypochondrium
- Left flank
- Left iliac fossa
- supra pubic
- umbilicus



- Describe any masses found (texture, consistency, shape, etc.)
 - Superficial mass: ask patient to lift his head causing the abdominal muscle to tense
 - an intraabdominal mass can't be felt over a tensed muscle but abdominal mass will be felt

Ideally, liver, spleen and renal examinations should be done in a full abdominal exam.

Percussion

Percuss from the beginning of the abdomen in the midline, and move downwards in the midline until the dullness of the bladder is reached.

Ascites

Shifting dullness

- With patient in supine position, percuss from the midline out to the flanks
- Note change from resonant to dull along with areas of dullness and resonance
- If dullness was noted, keep your finger on the site of dullness in the flank and ask the patient to turn to the opposite side
- Pause for 10 seconds to allow any ascites to gravitate then percuss again
- If the dull area is resonant again then shifting dullness is present = ascites



Fluid Thrill

- If the abdomen is tensely distended, feel for a fluid thrill
- ask the patient to place the edge of his hand on the midline of the abdomen to prevent the transmission of the impulse through the skin rather than the ascites
- Place palm of left hand flat on left side of the patients abdomen and flick a finger of your right hand against the right side of the abdomen
- If a ripple is still felt on you left hand a fluid thrill is present = gross ascites



Auscultation (after ascites is done)

- Bowel sounds- right of umbilicus for 2 minutes
- Aortic bruit- above umbilicus
- Renal artery stenosis- 2-3 cm above and lateral to umbilicus
- Liver bruit- over liver

State that you would like to end by examining the lymph nodes, groin, genitalia, and to perform a DRE.

Hernia

Surface markings:

ASIS and pubic tubercle. Any bulge above this line is most likely an inguinal hernia, and any lump below this line is most likely a femoral hernia. Midpoint of inguinal ligament is the surface marking of the deep inguinal ring. Surface marking of the femoral artery is the midinguinal point, medial to deep inguinal ring (b/w ASIS and pubic symphysis)



Introduce yourself, wash your hands, take permission, expose patient and make him stand up.

- Inspect the patient standing upright
 - Look for any bulges or lumps at the inguinal and femoral canal and scrotum
 - Look for any scars or skin changes on either side
- Ask patient to turn his head to the side and cough
 - look for visible cough impulse over the femoral or inguinal canal and scrotum
- Ask for pain. Palpate the external inguinal ring along the inguinal canal for muscle defects
 - Locate the ASIS and the pubic tubercle, the inguinal canal is between those 2
 - Repeat palpation while asking patient to cough while feeling
- Ask patient to lay down and determine if the mass reduces spontaneously
 - if bulge disappears press 2 fingers over internal/deep inguinal ring at mid-inguinal point and ask the patient to cough
 - if the bulge reappears while your hand is blocking the internal ring, then this is a direct hernia, If it doesn't then this is an indirect hernia
 - this is called the internal ring test
- Examine other side for asymptomatic hernia

