Health Assessment & Physical Examination

Guideline for Nursing Students

University of Baghdad
College of Nursing

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Adult Nursing Department
Practical Lab content

Health Assessment & Physical Examination Techniques

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Techniques of Examination & Assessment

Objectives:

At the end of this lab, the student will be able to:

1. Identify techniques of examination.

2. Discuss the safe & corrent method of using equipment in the assessment.

3. Describe the method for documenting findings in a complete & concise manner.

Preparation:

1. Prepare equipment needed for assessment (stethoscope, torch, disposable gloves, pin, ...)

2. Have good lightening (daylight or artificial).

3. Screen the bed to provide privacy.

4. Assure quit environment.

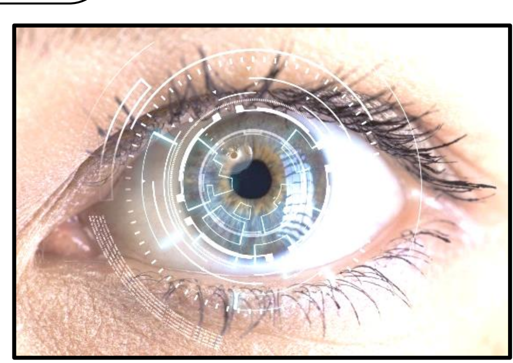
5. Wash hands.

6. Explain procedures for examination.

7. Instruct for appropriate seating

Use the following techniques of examination as appropriate for eliciting findings

INSPECTION



1. Enough exposure of the area.

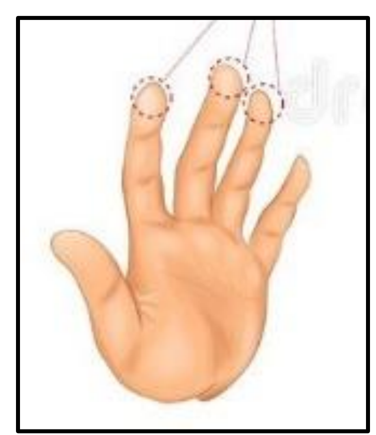
2. Inspect in an orderly sequence.

3. Compare the left and right side of the body.

4. Listen to any sound.

5. Smell any odor.

PALPATION



1. Involves touching the region or body part just observed and noting what the various structures feel like.

2. With experience comes the ability to distinguish variation of normal from abnormal.

3. Performed in an organized manner from region to region.

AUSCULTATION

1. This method uses the stethoscope to augment the sense of hearing.

2. The stethoscope must be constructed well and must fit the user. Earpieces should be comfortable, the length of the tubing should be 25 to 38 cm (10-15 inches), and the head should have a diaphragm and bell.

- The bell is used for low-pitched sounds such as certain heart murmurs.
- The diaphragm screens out high-pitched sound and is good for hearing high frequency sounds such as breathe sounds.
- Extraneous sounds can be produced by clothing, hair, and movement of the head of the stethoscope.

PERCUSSION

1. Warm your hands.

2. Perform percussion as follows:

a- Mediate percussion:-

- Hyperextend the middle finger of the left hand.
- Press the distal portion and join firmly against the surface to be percussed (other fingers touching the surface will damp the sound).
- Cock the right hand at the wrist, flex the middle finger upwards, and place the forearm close to the surface to be percussed. (The right hand and forearm should be as relaxed as possible).
- Strike with the tip of the right middle finger behind the nailed of the extended. Left middle finger.
- Lift the right middle finger rapidly to avoid damping the vibrations.

b-Identify percussion sounds as follows:-

- Flatness: percuss over the bone or thigh.
- Dullness: percuss over the liver.
- Resonance: percuss over the normal lung (Intercostal space).
- Tympany: percuss over the stomach.
- Hyper-resonance: percuss over the emphysema lung.

c- Immediate percussion:-

- Use one or more fingers of one hand.
- Strike the body surface.

d- Fist percussion:-

- Pace one hand flat against body surface
- Strike the back of hand with the other hand clenched in a fist.

Approach to the patient

1. When possible, begin with the client in a sitting position, so that both front and back can be examined.

2. Completely expose the part to be examined but drape the rest of the body appropriately.

3. Conduct the examination systematically from head to foot so as not to miss observing any system or body part.

4. While examining each region, consider the underlying anatomic structures, their function, and possible abnormalities.

5. Because the body is bilaterally symmetrical, for the most part, compare findings on one side with those on the other.

6. Explain all procedures to the patient while the examination is been conducted to avoid alarming or worrying the patient and to encourage cooperation.

General Appearance & Vital signs

Objectives:

At the end of this lab, the student will be able to:
1. Identify key history questions.
2. Demonstrate the ability for safely and accurately complete a comprehensive examination.
3. Demonstrate the ability for accurately complete a comprehensive examination.

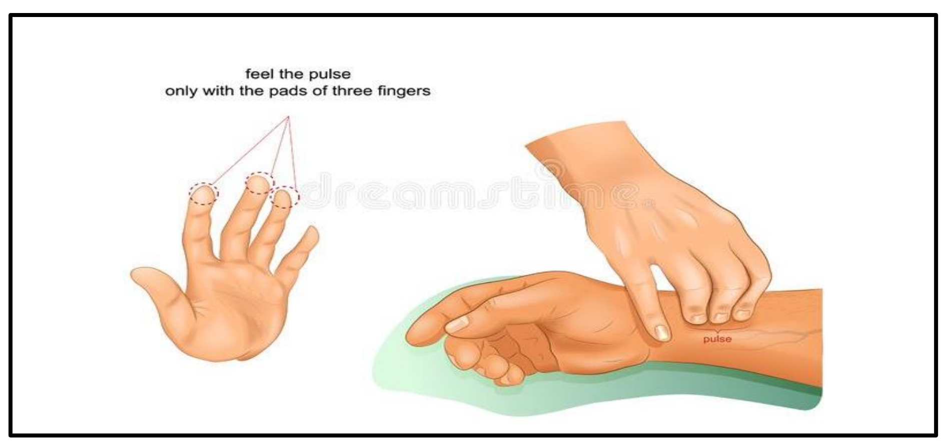
Equipment needed:
1. Thermometer **2.** Sphygmomanometer. **3.** Stethoscope.
Importance: Many major therapeutic decisions are based on the vital signs; therefore, accuracy is essential.

Preparation:

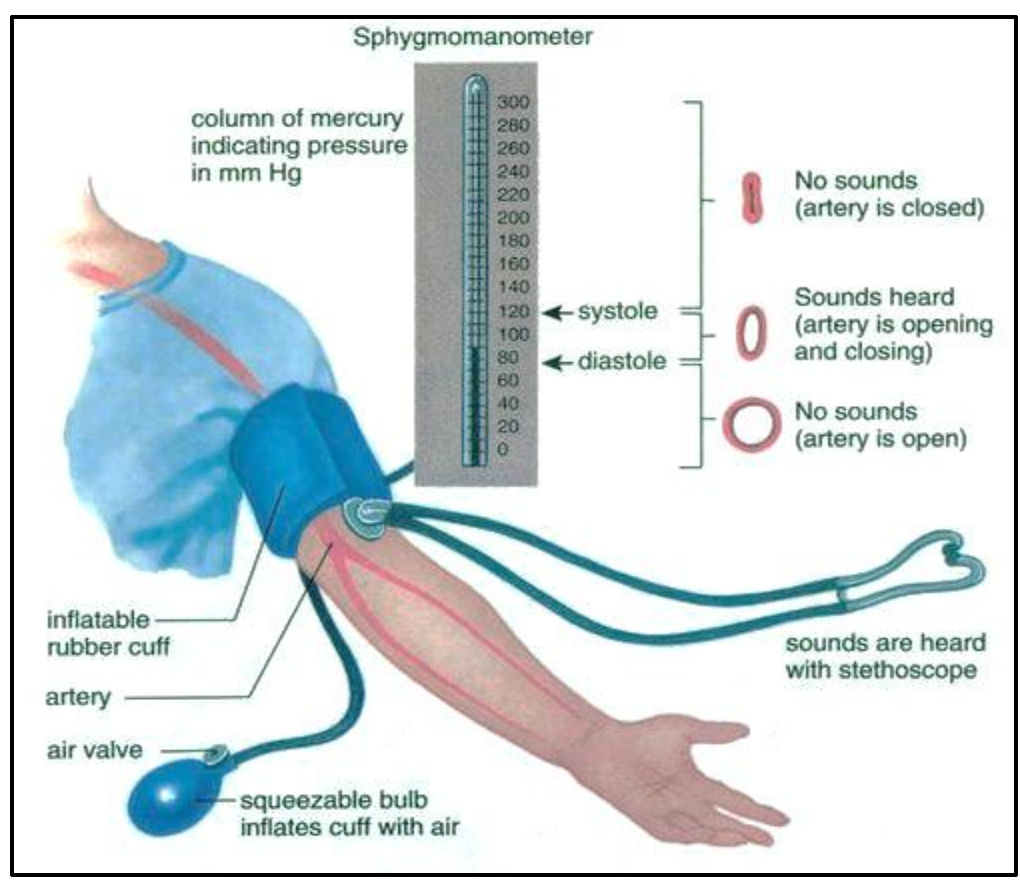
1. Have good lightening (daylight or artificial)
2. Provide privacy.
3. Instruct appropriate seating.
4. Use appropriate communication skills.

PROCEDURE	NORMAL FINDINGS
Begin observation on first contact with the patient (in the waiting room or while the patient is in bed); continue throughout the interview systematically as the first step in the examination of each body part.	
INSPECTION Observe for: race, sex, general physical development, nutritional state, mental alertness, evidence of pain, restlessness, body position, clothes, apparent age, hygiene, grooming.	Carful observation of the general state of the individual provides many clues about a person's body image and how he behaves and also some the idea of how well or ill he is.
- Behavior	- Cooperative attitude & behavior.
- Mood	- Mild anxiety or tenseness.
- Dress	- Dressed for occasion.
- Gait	- Erect posture; coordinate; smooth & steady gait.
- Body build	- Bilateral, firm, developed muscles.
Weight: client with light clothing & no shoes, measure height of client.	- Varies.

Monitor Temperature	Body temperature is usually lowest in early AM and highest in early PM. 96- 99.9°F (35.6-37°C)
• **Oral:** Place a clean thermometer under tongue near vascular bed with lips closed for 5 minutes.	• Hot fluids, smoking and gum chewing may elevate temperature while cold fluid may lower it.
• **Rectal:** lubricate a clean thermometer with water-soluble lubricant and insert 1-2 inches into Rectum for 3 minutes.	• 0.7-1.0°F (0.4-0.5°C) Higher than oral temperature.
• **Axillary:** insert thermometer under axilla with arm down and cross-chest for 5-10 minutes.	• 1.0°F(0.5°C) Lower than oral temperature. Environmental temperature may alter body temperature.
Monitor Pulse • **Radial:** use middle three finger to palpate radial Pulse for 15 seconds and multiply by four. Palpate for the following: • Rate • Rhythm • Equality of strength	 • 60-100 bpm. • Regular. • Equal bilaterally.
Monitor Respiration 1full minute for the following • Rate • Rhythm • Depth	 • 12-20 breaths/min. • Regular. • Equal bilateral chest expansion.



Monitor Blood Pressure - After client is seated or supine quietly for 10 minutes. - Repeat with client standing.	- Systolic: ≤ 139mmhg. - Diastolic: ≤89mmhg. - Varies with individuals.



Skin, Hair, & Nail Assessment

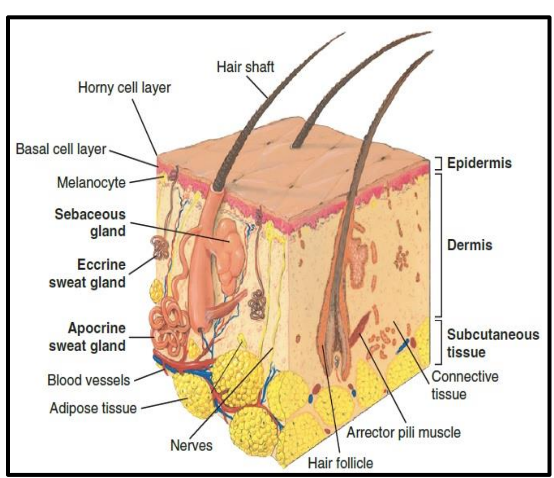
Objectives:-

At the end of this lab, the student will be able to:

1. Demonstrate the ability to safely & accurately complete a comprehensive examination of the skin.

2. Demonstrate the ability to accurately and comprehensively document skin assessment data in an organized manner.

3. Evaluate assessment data of the skin to determine problems and identify client's concerns.



Equipment Needed:

1. Adequate lighting.

2. Comfortable room temperature.

Preparation:-

1. Expose the body part to be inspected (cleanse skin if necessary).

2. Try to control external variables that may influence skin color & confuse your findings.

Subjective Data:-

1. Previous history of skin disease (Allergies, Hives, Psoriasis, & Eczema)

2. Change in pigmentation.

3. Change in mole (size or color).

4. Excessive dryness or moisture.

5. Pruritus.

6. Excessive bruising.

7. Rash or lesions.

8. Medications.

9. Hair loss.

10. Change in nails.

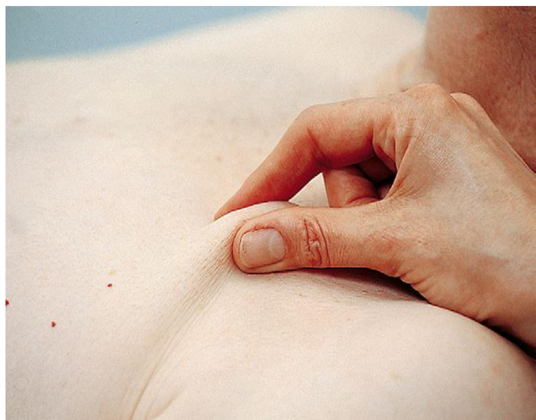
11. Self-care behaviors.

12. Environmental or occupational hazards.

PROCEDURE	NORMAL FINDINGS
Inspect the skin for the following:- - Generalized color. - Color variation in patches on body.	- In white skin: light to dark pink. - In dark skin: light to dark brown, olive. - **In white skin:** suntanned areas, white patches (vitiligo). - **In dark skin:** lighter-colored, palms, soles, nail beds and lips; Black/blue area over lower lumber area; freckle like pigmentation of nail beds and sclerae.
Palpate skin for the following:- - Texture. - Temperature and moisture (feel with back of hand). - Turgor: (pinch up on sternum or under clavicle bone). - Edema (press firmly for 5-10 seconds over tibia and ankle). - If the skin lesion is detected, inspect and palpate for size, location, mobility, and pattern (circular, clustered, or straight lined).	- Smooth and soft. - Warm and dry. - Pinched- up skin returns immediately to original position. - No swelling, pitting or edema. - Silver- pink stretched marks (striae), moles (nevi), freckles, and birthmarks.
Inspect and palpate hair for the following:- - Color. - Amount and distribution. - Texture. - Presence of parasite	- Varies. - Vary. - Fine to coarse and pliant. - None.
Inspect and palpate scalp for the following:- - Symmetry. - Texture. - Lesions.	- Symmetrical. - Smooth and firm. - None.

Inspect and palpate the nail for the following:-	
- Color.	- Pink nail bed. In dark skin: may have small or large pigmented deposits streaks freckles.
- Texture.	- Nail is round, hard, immobile. In dark skin may be thick.
- Shape.	- Rounded nail with 160-degree nail base.
- Condition of nail bed.	- Smooth, firm, and pink.

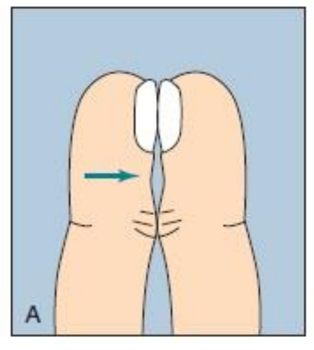
Assessment Skin Turgor

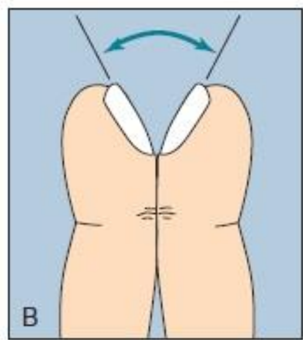


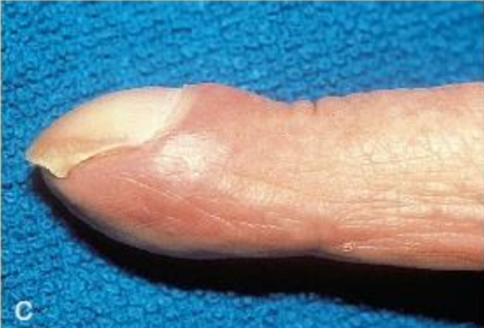
Elastic Skin Turgor

Poor Skin Turgor

Assessment for Nail Clubbing

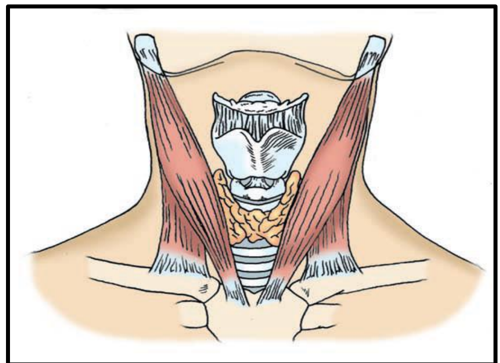






A. Normally when opposing fingers placed together, a small space is visible between the place where the fingers and the nail beds meet.
B. With finger clubbing, no space observed between the fingers, and the nail beds angle away from one another.
C. With finger clubbing, the base of the nail enlarged and curved.

Head, Neck & Cervical Lymph Nodes Assessment



Objectives:-

At the end of this lab, the student will be able to :-

1. Demonstrate the ability to safely and accurately complete a comprehensive examination of head, neck and lymph nodes.
2. Demonstrate the ability to accurately and comprehensively document assessment data in organized and legible manner.

3. Evaluate assessment data to determine problems & identify client`s concerns.

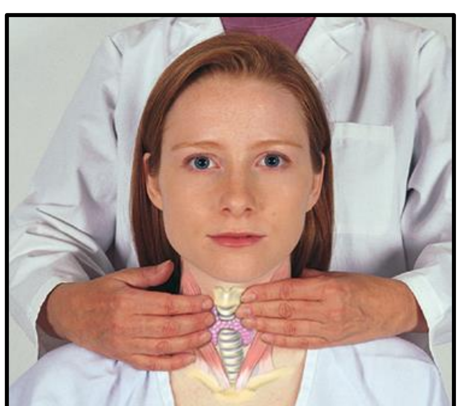
Equipment Needed:-
1. Clean gloves. **2.** Small cup of water for client during thyroid exam.

Subjective Data:-
1. Headache. **2.** Head injury.
3. Dizziness & spinning. **4.** Neck pain limitation of motion.
5. Lumps or swelling. **6.** History of head or neck surgery

PROCEDURE	NORMAL FINDINGS
Inspect and palpate scalp or the following:- - Size. - Shape. - Consistency.	 - Varies somewhat. - Symmetrical & round. - Hard & smooth.
Inspect face for the following:- - Symmetry. - Facial features.	 - Symmetrical. - Features vary.
Inspect neck for the following:- - Appearance. - Movement. - Cervical vertebra. - Inspect for range of motion (ROM).	 - Symmetrical, centered head position. - Smooth, controlled movements; - Range of motion (ROM) from upright position:- Flexion = 45 degree. Extension = 55 degree. Lateral abduction = 40 degree. Rotation = 70 degree.

Palpate trachea for position and landmarks (tracheal rings, cricoid & thyroid cartilage)	- Midline position; symmetrical; landmarks identifiable.
Palpate thyroid gland for the following:- - Position. - Characteristics, landmarks.	 - Midline. - Smooth, firm, and non-tender.

<u>Guidelines for palpating thyroid:-</u>

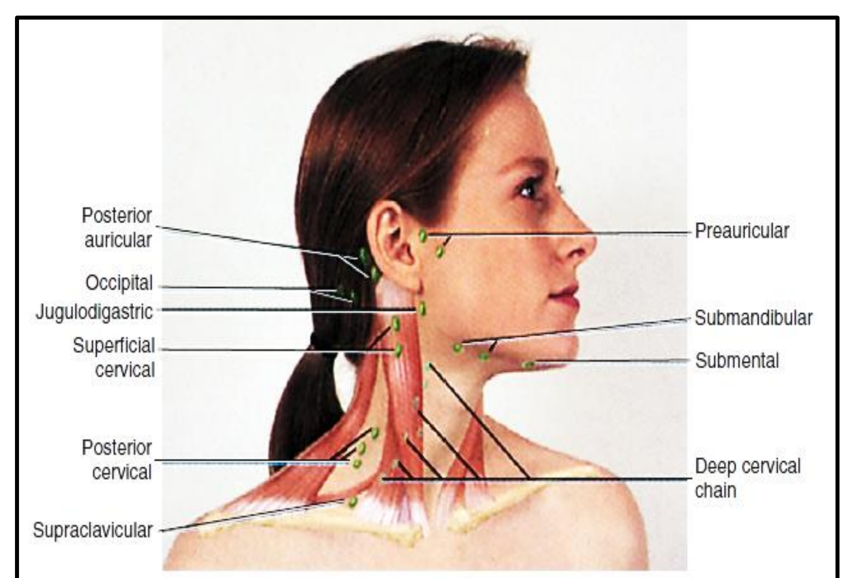


- Stand behind client and position your hands with thumbs on nape of client's neck.
- Ask client to flex neck forward and to the right and use fingers of your left hand to displace thyroid to the right.
- Palpate the right lobe using your right fingers while client swallows, offer small sips of water.
- Repeat procedure to examine the left lobe.

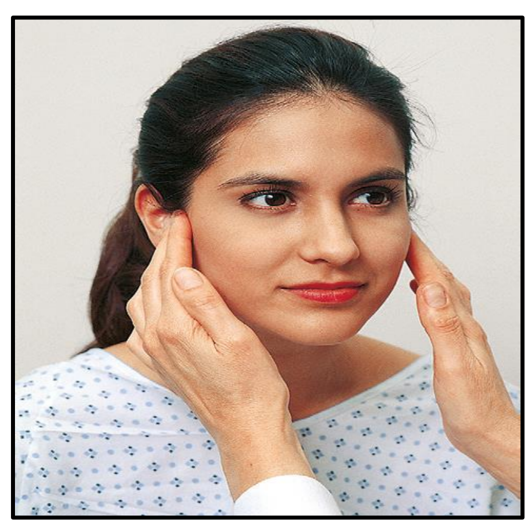
<u>Note</u>: - ability to see or palpate the thyroid varies considerably with client thyroid size & body build).

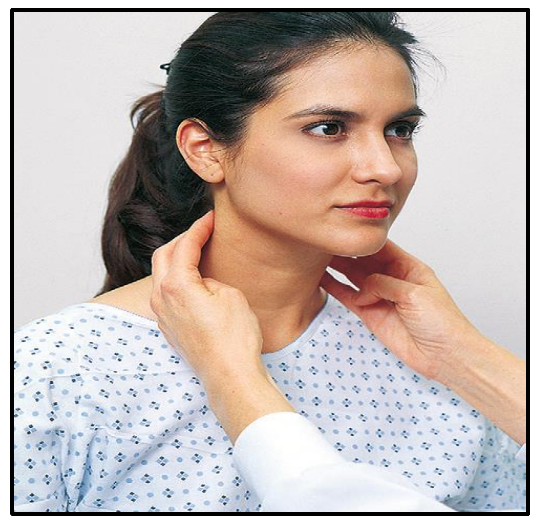
PROCEDURE	NORMAL FINDINGS
Palpate cervical lymph nodes for the following:- - Size and shape. - Delineation. - Mobility. - Consistency. - Tenderness.	 - Cervical lymph nodes are usually not palpable. If palpable, they should be 1 cm or less and round. - Discrete. - Mobile. - Soft. - Non-tender.

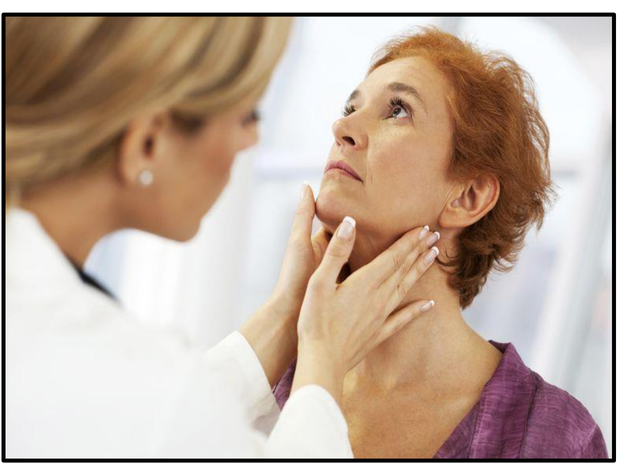
Locations of Neck lymph nodes



Palpation of Lymph Nodes





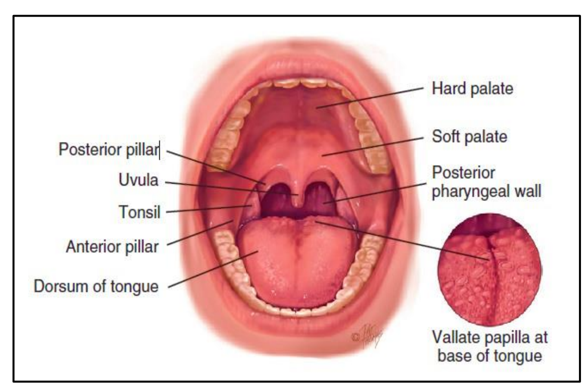


Mouth & Oropharynx

Objectives:

At the end of this lab the student will be able to:

1. Demonstrate the ability to safely and accurately complete a comprehensive examination of Mouth & Oropharynx.
2. Demonstrate the ability to accurately and comprehensively document assessment data organized & legible manner.
3. Evaluate assessment data to determine problem & identify client's concerns.



Equipment Needed:

1. Penlight. **2.** Tongue blade.
3. Small gauze (2*2). **4.** Clean gloves.

Preparation:-

1. Position the client sitting up straight with his/her head at your eye level.
2. Remove client's dentures if available.

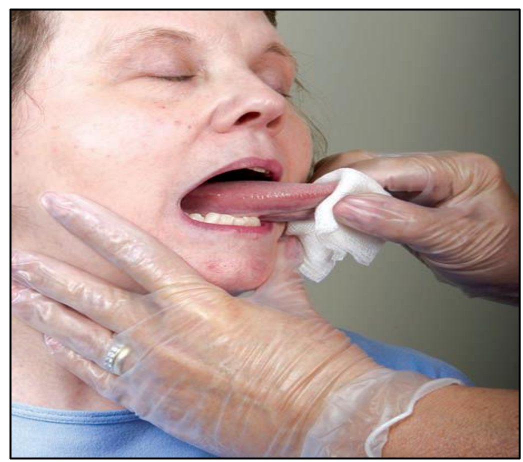
Subjective data:

1. Sores & Lesions. **2.** Sore Throat. **3.** Bleeding Gum.
4. Toothache. **5.** Hoarseness. **6.** Dysphagia.
7. Altered taste. **8.** Smoking Alcohol consumption.
9. Self - Care behaviours, dental Care pattern, dentures or appliances.

PROCEDURE	NORMAL FINDINGS
Inspect open and closed mouth for: symmetry & alignment	- Lips & surrounding tissue relatively symmetrical in net position and with smiling. - No lesions, swelling, drooping. - Upper teeth resting on top of lower teeth with upper incisors slightly overriding lower ones.
Wearing gloves, inspect and palpate lips for the following: - Color - Consistency	 - **In white skin:** Pink - **In dark skin:** may have bluish hue or freckle like pigmentation. - Moist, smooth with no lesions.

Note: ask client to remove any dentures or dental appliances prior continuing examination.	
Wearing gloves, inspect and palpate buccal mucosa for the following: - Color. - Consistency - Landmarks	 - Pink (increased pigmentation often noted in dark - skinned clients). - Smooth, moist, without lesions. - Parotid duct (stensen duct) opening are seen small papillal located near upper second molar.
Wearing gloves, retract clients lips to Inspect and palpate gums for the following: **-** Color - Consistency	 - Pink. - Moist, clearly defined margins.
Wearing gloves inspect and palpate teeth for the following: - Number - Position & condition - Color	 - 32 teeth. - Stable fixation, smooth surfaces and edges. - Pearly white and shin.
Inspect protruded tongue for the following: - Symmetry and texture - Movement - Color	 - Moist, papillae present ; Symmetrical appearance, midline fissure present. - Common variations: fissured, geographical tongue. - Smooth. -Pink.
Inspect ventral surface of the tongue and mouth floor for the following : - Color - Landmarks	 - Pink, slightly pale. - Submandibular duct openings (Wharton duct) are located on both sides of the frenulum. - Tongue is free of lesion or increased redness; frenulum is centered.

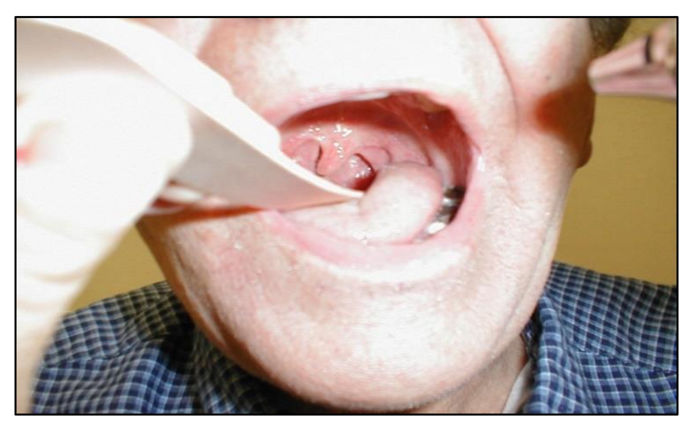
Inspect & palpate sides of tongue for: - Color & lesion.	 - Pink, smooth, moist; no lesion.
Inspect hard & soft palate for the following: - Color - Consistency	 - **Hard palate:** pale. **Soft palate:** pink. - **Hard palate:** firm with irregular transverse rugae common variation palatine torus (jump)on hard palate. - **Soft palate:** spongy texture with symmetrical elevation or phonation.
Inspect oropharynx for the following: - Color - Landmarks	 - Pink. - Tonsillar pillars symmetrical, tonsils present (unless surgically removed) & without exudates. - Uvula at midline and rises on phonation.



Tongue Assessment

Mouth Assessment

Throat Inspection



Nose and Sinus Assessment

Objectives:-

At the end of this lab, the students will be able to:

1. Identify & list history questions related to nose & sinus.
2. Choose appropriate assessment techniques for evaluating the nose & sinus.
3. Discuss the safe & correct method of using equipment in assessment of nose and sinus.
4. Document findings in a complete & concise manner.

Equipment needed:

1. Penlight.
2. Nasal speculum or otoscope with broad-tipped speculum.

Guidelines for using nasal speculum:-

1. Tilt client's head back to facilitate speculum insertion & visualization.
2. Hold speculum in hand & brace your index finger against the client nose.
3. Insert the speculum tip approximately 1 cm ad dilate the naris as much as possible.
4. Use the other hand to position client's head & hold penlight.

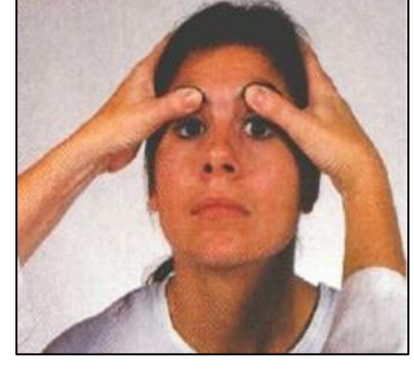
Subjective Data:-

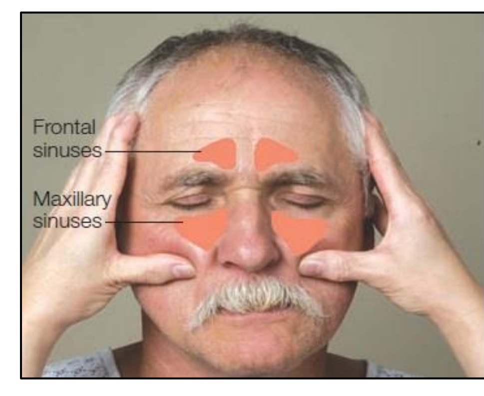
1. Discharge. **2.** Sinus pain. **3.** Trauma. **4.** Altered smell,
5. Epistaxis and allergies. **6.** Frequent colds (upper respiratory infections).

PROCEDURE	NORMAL FINDINGS
Observe external nose for the following:- - Skin appearance - Shape - Nares	 - Color same as face. - Consistency: smooth. - Symmetrical appearance. - Symmetrical appearance; no changes in nares with respiration; dry with no crusting; septum midline.
Inspect the internal nose for the following:- - Appearance - Landmarks: Turbinate, septum	 - Mucosa pink & moist with uniform color& no lesions. - Turbinate & middle meatus visible & same color as mucosa, moist & free of lesions; septum symmetrical & uniform without lesions.

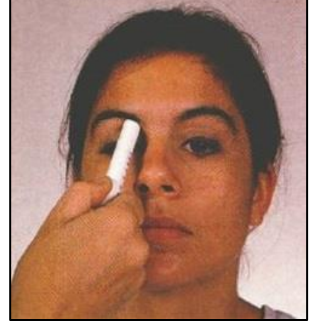
Assess function of nose for patency (with client's mouth closed & one nares occluded, feel for air)	- Air felt being exhaled through opposite naris; noiseless.
Palpate sternal nose for firmness	- Solid placement, no nodules, masses, or pain reported on palpation.
Palpate sinuses, both frontal & maxillary for tenderness	- Non tender on palpation
Percuss sinuses for resonance **Trans-illumination:-** **a) <u>Trans-illumination of frontal sinus</u>:-** - Darken the examination room. - Affix a strong narrow light to the end of the otoscope. - Hold it under the superior orbital ridge against the location of frontal sinus area. - Cover with your hand. **b) <u>Trans-illumination of maxillary sinus</u>:-** - Remove upper denature (if present). - Ask to tilt the head back & open mouth. - Shine the light on each check just under the inner corner of the eye.	- Hollow tone elicited. - A diffuse red glow, it comes from the light shining through the air in health sinus. - A dull glow inside the mouth on the hard palate.

Sinus Areas Palpation





Trans-illumination



Inspect the Nasal Mucosa

Eye Assessment

Objectives:-

At the end of this lab, the students will be able to:

1. Demonstrate the ability to safely & accurately complete a comprehensive examination of the eye.

2. Demonstrate the ability to accurately document eye assessment data in organized manner.

Equipment Needed:-

1. Snellen Chart
2. Near-vision chart
3. Cover card
4. Penlight
5. Ophthalmoscope
6. Ruler

Preparation:-

1. Position the client sitting up with head at your eye level.

2. The room should be well lighted, and could be darkened for ophthalmoscopic examination.

Guidelines for using the ophthalmoscope:-

1. Red numbers indicate a negative diopter & are used for nearsighted clients.
2. Black numbers indicate a positive diopter & are used for farsighted clients.
3. The zero lens is used if neither the examiner nor the client has a refractive error.
4. Turn Ophthalmoscope on & select the aperture with the large round beam of white light.
5. Ask the client to remove glasses, remove your glasses. Contact lenses can be left in the eyes of the client or the examiner.
6. Ask the client to fix gaze on an object that is straight ahead & slightly upward.
7. Darken the room to allow pupils to dilate:
8. Hold the ophthalmoscope in your right hand with your index finger on the lens wheel and place the instrument to your right eye, examine the client's right eye. Use your left hand and left eye to examine the client's left eye
9. Begin about 10-15 inches from the client at a 15 degree angle to client's side.
10. Keep focuses on the red reflex as you move in closer, and then rotate the diopter setting to see the optic disc.

Subjective Data:-

1. Vision difficulty (Decrease acuity, blurring, and blind spots).
2. Redness, swelling.
3. Glaucoma.
4. Pain.
5. Watering discharge.
6. Use of glasses or contact lenses.
7. Strabismus, diplopia.
8. Past history of ocular problems.
9. Self-care behaviors.

PROCEDURE	NORMAL FINDINGS
External eye examination:- **- Inspect eyelids & lashes for the following**:- - Position & appearance. - Blinking.	 - Lid margins moist & pink; lashes short. - Evenly spaced & curled outward; lower margins at bottom edge of iris; upper margins of lid cover approximately 2mm of iris. - Blinking symmetrical, involuntary at approximately (15blinks/min).
Inspect conjunctiva and sclera for clarity and appearance:- - Ask the person to look up. - Using your thumbs slide the lower lids down along the bony orbital rim. - Take care not to push against the eyeball. - Inspect the exposes area.	- Bulbar conjunctiva is clear with tiny vessels visible; palpebral conjunctiva is pink with no discharge sclera is blue-white.
Inspect cornea for appearance:- - Shine a light from side across the cornea.	- Transparent, Smooth, and moist.
Inspect iris and pupil for the following:- - Shape - Equality - Color (iris)	 - Round - Equal - Uniform color
- Inspect lens for clarity:-	- Clear

PROCEDURE	NORMAL FINDINGS
Inspect and palpate lacrimal apparatus:- - Ask the client to look down. - With your thumbs .slide the outer part of the upper lid up along the bony orbit. **Assess the following:-** - Appearance. - Response to pressure applied at nasal side of lower orbital rim.	- Puncta (small elevation on the nasal side of the upper & lower libs) mucosa pink. - No tenderness or discharge noted when pressure is applied.
Check visual acuity:- 1. **<u>Check distance vision with Snellen chart:-</u>** **-** Place snellen chart in a weel-spot at eye level. - Position snellen chart 20 feet from the client. - Hand the client an opaque card to shield one eye each at a time during the test. - If the client wears glasses or contact lenses leave them on. - Removing only reading glasses. - Ask the client to read to the smallest line of litters possible.	- 20/20 OD & OS with no hesitation frowning or squinting OD = Oculus Dixter (right eye) OS = Oculus Sinster (left eye)

PROCEDURE	NORMAL FINDINGS
2. <u>Check near vision with near vision chart:-</u> - Hold the chart in good light about 35cmi I 4inch) from the eye. - Test each eye separately, with glasses on.	- Client reads print at 14 inches without difficulty.
3. <u>Check peripheral vision:-</u> **a) Check accommodation:-** - Ask the client to focus on a distant object. - Then have the client shit the gaze to a near object, such as your finger 7- 8cm (3inches) from the nose. **b) Check extra-ocular movements** - Ask the client to hold the head steady. - Follow the movement of your finger, or pen with the eyes only. - Hold the target back about 12inches. - Move the target to catch of the six positions, progress clockwise.	- This will dilate the pupils. - Pupillary constriction and convergence of the axes of the eyes. - Both eyes move in a smooth, coordinated manner in all directions.

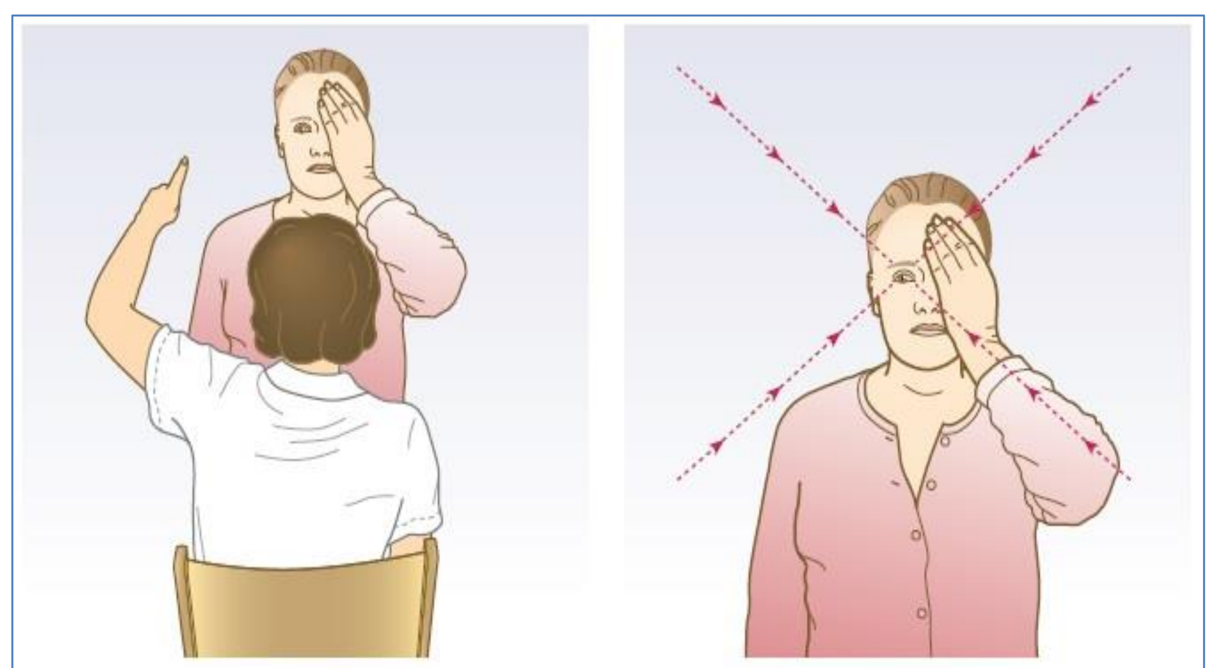
Near Vision Test

PROCEDURE	NORMAL FINDINGS
4. <u>Check response to light:</u>- **a) Check corneal light reflex:-** - Direct the person straight ahead. - Hold the light about 30 cm (12inches) away. - Note the reflection of the light on the corneas. **b) Check pupillary light reflex:-** - Darken the room. - Ask the client to gaze into the distance. - Advance a light in from the side & note the response.	- Reflection of light noted at same location on both eyes. - Illuminated pupils constrict
5. <u>Check for abnormal eye movement:-</u> - **Cover test** - Ask the client to stare straight ahead. - Cover one eye, with an opaque card. - Note the uncover eye. - Uncover the eye & observe it for movement.	- Uncovered eye does not move as opposite eye is covered. Covered eye does not move as cover is removed

Cover Test

PROCEDURE	NORMAL FINDINGS
By using ophthalmoscope assess the following:-	
a) Inspect red reflex for: - shape and color	- Red reflex is round, bright, with red orange glow.
b) Inspect the optic disc for the following:- - Shape	- Round or slightly oval disc with sharply defined margins.
- Color	- Creamy pink (lighter than retina).
- Size	- Approximately (1.5) mm in size, symmetrical in both eyes.
- Physiological cup	- Smaller area is noted as paler than disc, located just temporal of center of disc; occupies 4/10 to 5/10 of the diameter of the disc.
c) Inspect retinal vessels for the following:- - Appearance	- Arteries: - light red and smaller than veins.
- Distribution	- Veins: - darker in color and larger than arteries. - Vessels larger in shape and decreasing in size as they branch and move toward the periphery; crossing of arteries and veins show no changes in the diameter of the underling vessel.
d) Inspect retinal background for appearance.	- Fine texture with pink, uniform color.
e) Inspect macula for appearance.	- Darker than reminder of retina; fovea seen as a tiny bright light in the center of macula.

Testing visual field by confrontation test



Ear Assessment

Objectives:-

At the end of this lab the student will be able to:-

1. Demonstrate the ability to safely and accurately complete the ear assessment.

2. Demonstrate the ability to accurately document ear assessment in organized manner.

Equipment needed:-

1. Otoscope with bright light.

2. Tunning forks.

Preparation:-

1. Position the adult sitting up straight with his or her head at your eye level.

2. If ear canal is obstructed with cerumen, the preferred method for cleaning by softening cerumen with warmed solution of mineral oil hydrogen peroxide.

3. Irrigate the canal with warm water

4. Do not irrigate if the history or the examination suggests perforation or infection.

Subjective data:-

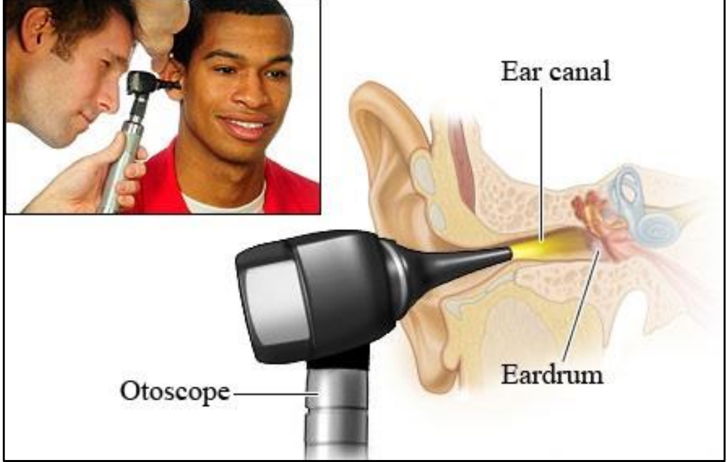
1. Earaches. **2.** Hearing loss. **3.** Vertigo.
4. Infections. **5.** Environmental noise. **6.** Self-care behaviors.
7. Discharges. **8.** Tinnitus.

PROCEDURE	NORMAL FINDINGS
Inspect external ear for the following:- • Size and shape • Position • Lesions and discoloration	- Ears of equal size and similar appearance. - Alignment of pinna with corner of eye and within 10 degree angle of vertical position. - Skin smooth and without nodules, color pink.
Palpate external ear:-	- Non tender auricle, tragus.
Palpate mastoid process for the following:- • Tenderness • Temperature • Edema	- No tender or pain when palpated. - Warm. - Mastoid process easily palpated.

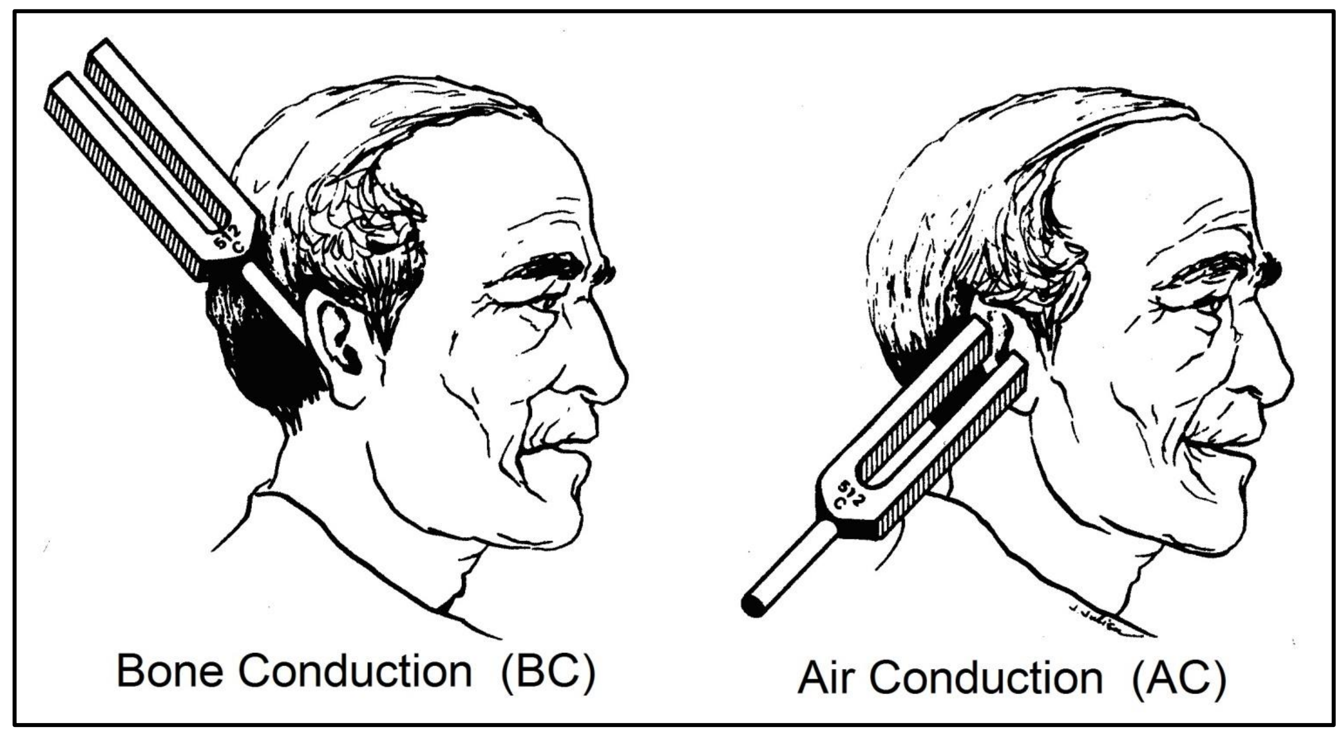
Inspect auditory canal using otoscope for the following:- • Cerumen • Appearance • Tenderness	- **Color**: black, dark red, gray, or brown. - **Consistency**: waxy, flaky, soft, or hard. - **Odor**: non. - Canal walls pink and uniform with tympanic membrane visible. - Little or no discomfort on manipulation of pinna; inner two third of canal very tender if touched with speculum.
Inspect tympanic membrane using otoscope for following:- • Color • Consistency • Landmark	- Pearly gray , shiny, & translucent - Intact: - may show movement when swallowing. - Cone of light, umbo, handle of malleus & short process of malleus easily visualized.
Assess auditory function for the following :- **a) Voice test** - Test one ear at a time while masking hearing in the other ear. - Shield your lips so the client cannot compensate for hearing loss by lip reading or using the good ear. - Stand 30 to 60cm (1-2ft) from the client's ear. - Exhale & whisper slowly some tow syllable words, such as, armchair, baseball. - Ask the client to repeat what you said.	The client is able to hear whispered word from 1-2 ft.

b) Lateralization of sound (weber test):- - Place a vibrating tuning fork in the middle of the client's skull. - Ask if the ton sounds the same in both ears or better in one.	- Vibration heard equally in both ears.
c) Comparison of air conduction (AC) to bone conduction (BC) (Rinne test):- - Place the stem of the vibrating tuning fork on the client's mastoid process. - Ask him to signal when the sound goes away. - Quickly invert the fork so the vibrating end is near canal. - Repeat with the other ear.	- AC >BC (AC is twice as long as BC).
Perform (Romberg test) for equilibrium:- - Let the client stand with feet together. - First, with eye opening. - Then With eyes closed. - Put your arms around client to prevent fail.	-Client stands straight with minimal swaying.

Inspection of Ear by



Weber Test



Rinne Test

Lung and Thorax Assessment

Objectives:-

At the end of this lab the student will be able to:

1. Demonstrate the ability to safely and accurately complete the lung and thorax assessment.

2. Demonstrate the ability to accurately document thorax and lung assessment in organized manner.

Equipment needed:-

1. Stethoscope.
2. Small ruler.
3. Marking pen.
4. Alcohol swab.

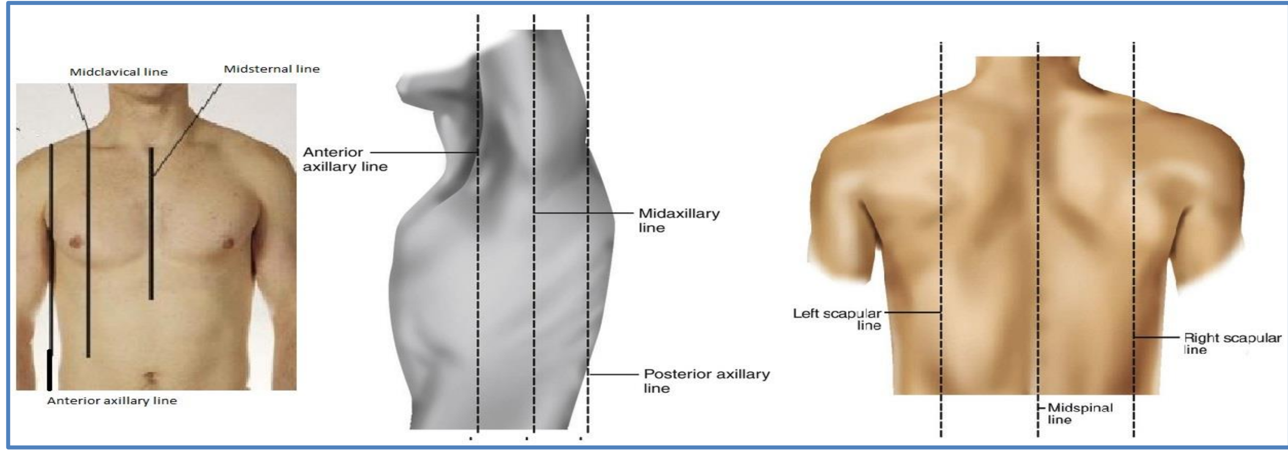
Preparation:-

1. Ask the client to sit upright & the male to disrobe to the waist.
2. For female, leave the gown on & open at the back.
3. When examining the anterior chest, lift up the gown & drape it on her shoulders than removing it completely.
4. For further comfort: a warm room, a warm diaphragm end piece.
5. Private examination time with no interruption.

Subjective data:

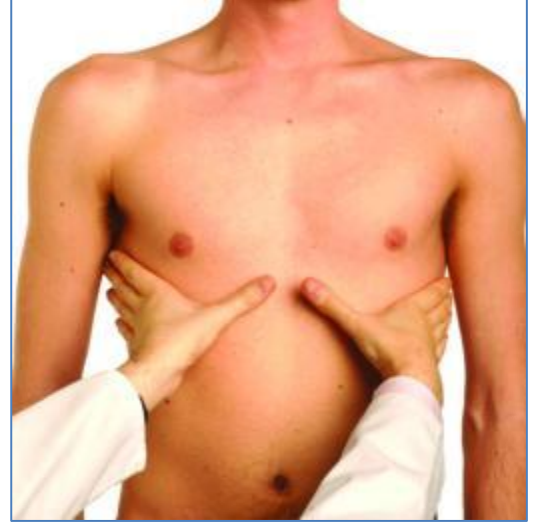
1. Cough**.**
2. Smoking history.
3. Past history of respiratory infections.
4. Chest pain with breathing.
5. Self-behaviors
6. Environmental exposure
7. Shortness of breath.

PROCEDURE	NORMAL FINDINGS
Inspect, anterior, posterior & lateral thorax for the following:- – Color – Intercostal spaces – Chest symmetry – Rib slope – Respiration (rate, depth, rhythm). – Anterior-posterior to lateral diameter. – Shape & position of sternum – Position of trachea	- Pink - Even & relaxed - Equal - Less than 90 degree downward - Even:- 12-20/ min, unlabored - 1 : 2 ratio - Level with ribs - Midline
Palpate thorax three levels for the following:- - Sensation - Vocal fremitus as client says "99" - Use either the palm base (the ball) of fingers, or the ulnar edge of one hand. - Touch the client's chest. - Ask the client to repeat a resonant phrases that generate strong vibration like 99. - Start over the lung apices & palpate from side to another. - Avoid palpating over the scapulae.	- No pain or tenderness. - Vibration decrease over periphery of lungs & increased over major airways.

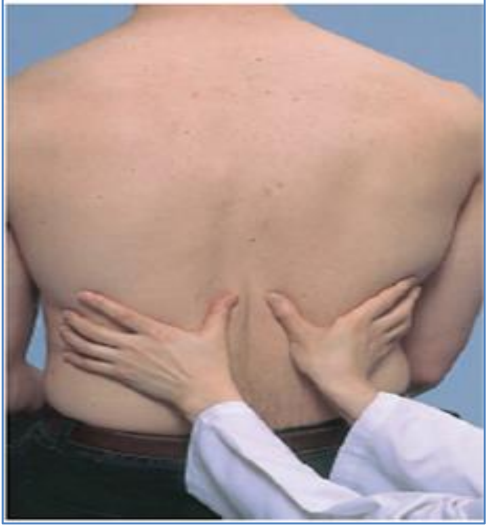


Respiratory Land marks

PROCEDURE	NORMAL FINDINGS
Palpate thorax for thoracic expansion by the using following methods:- **<u>Posteriorly:-</u>** - Placing your warmed hand on the poster lateral chest wall. - The thumbs should be at level of T9 to T10. - Slide your hands medially to pinch up a small fold between your thumbs. - Ask the client to take deep breath. - Your thumb should move with respiration. **<u>Anteriority</u>**:- - Placing your warmed hand on the anterolateral wall. - Thumbs should be a long the costal margins &pointing toward the xiphoid process. - Ask the client to take deep breath. - Watch your thumbs move with respiration.	- 2 to 3 –inch symmetrical thoracic expansion. - Symmetrical expansion (thumbs move apart equal distance in both directions). - Symmetrical expansion (thumbs move apart equal distance in both directions)



Anterior chest expansion



Posterior chest expansion

PROCEDURE	NORMAL FINDINGS
Percuss thorax to determine the following:- *** Lung Field Posteriorly:-** - Start at the apices. - Percuss across the tops of both shoulders. - Percuss in the interspaces. - Make side to side comparison all the way to lung region. - Avoid the damping effect of the scapulae & ribs. *** Lung Field Anteriorly:-** - Begin percussing the apices in the supraclavicular areas. - Then, percussing the interspaces. - Compare one side to the other. - Move down to the anterior chest. - Do not do percussion directly over female breast. - Shift the breast over slightly, using the edge of your stationary hand. **Diaphragmatic Excursion Posteriorly:-** - Ask the client to exhale & hold it. - Percuss down the scapular line until the sound changes form resonant to dull each side. - Mark the level where the sound changed to dull. - Ask the client to take deep breath & hold it. - Continue percussing form the mark down ward. - Mark the level the sound changed to dull on deep inspiration. - Measure the difference.	- Resonance predominates in healthy lung tissue. - Cardiac dullness normally found of the anterior chest. - It should be equal bilaterally & measure about 3-5 cm in adult, although it may be up to 7-8cm.

<table>
<tr><th>PROCEDURE</th><th>NORMAL FINDINGS</th></tr>
<tr><td>Auscultate the thorax posteriorly:-
- Put the client in sitting position, leaning forward slightly, with arms resting across the lab.
- Instruct the client to breathe through the mouth.
- The breath should be deeper than usual.
- Monitor the breathing through the examination.
- Use the diaphragm of the stethoscope.
- Hold the diaphragm firmly on the client’s chest wall.
- Listen at least to one full respiration in each location.
- Side to side comparison is most important.
- Do not confuse background noise with lung sounds.</td><td>- <u>Bronchial breath sounds</u>: - heard over trachea, it is loud; expiration longer than inspiration; short silence between inspiration & expiration.

- <u>Broncho-vesicular sounds</u>: - heard over main stem bronchi; below clavicles & between scapulae; inspiration equal to expiration.

- <u>Vesicular sounds</u>: - low; soft; heard over lung periphery: inspiration longer than expiration.</td></tr>
<tr><td colspan="2">Auscultate the thorax Anteriorly: -
- Auscultate from the apices in the supraclavicular areas down to the sixth rib.
- Progress from side to side as you move dawn ward.
- Do not use the stethoscope directly over the female breast.
- Displace the breast & listen directly over the chest wall.</td></tr>
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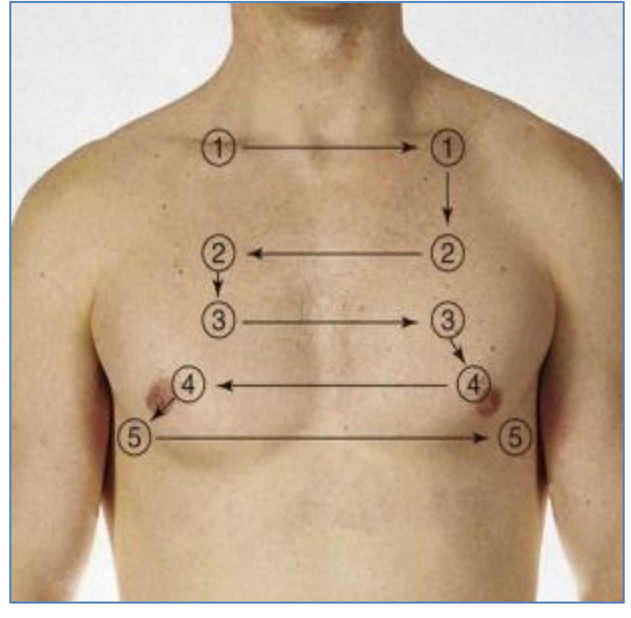
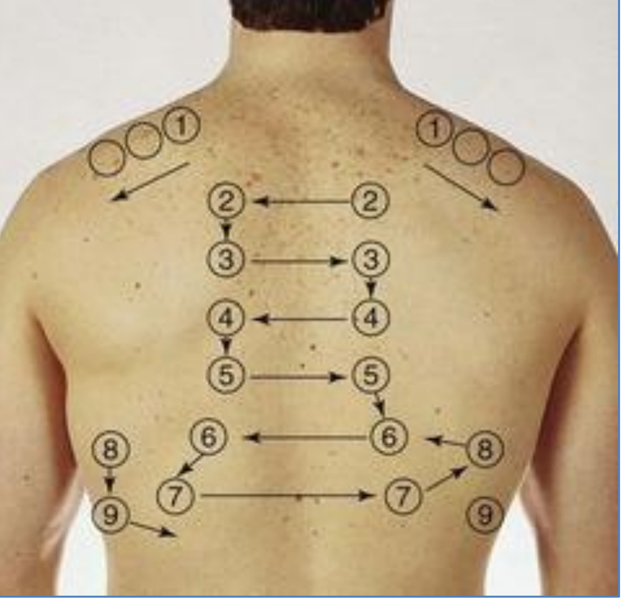
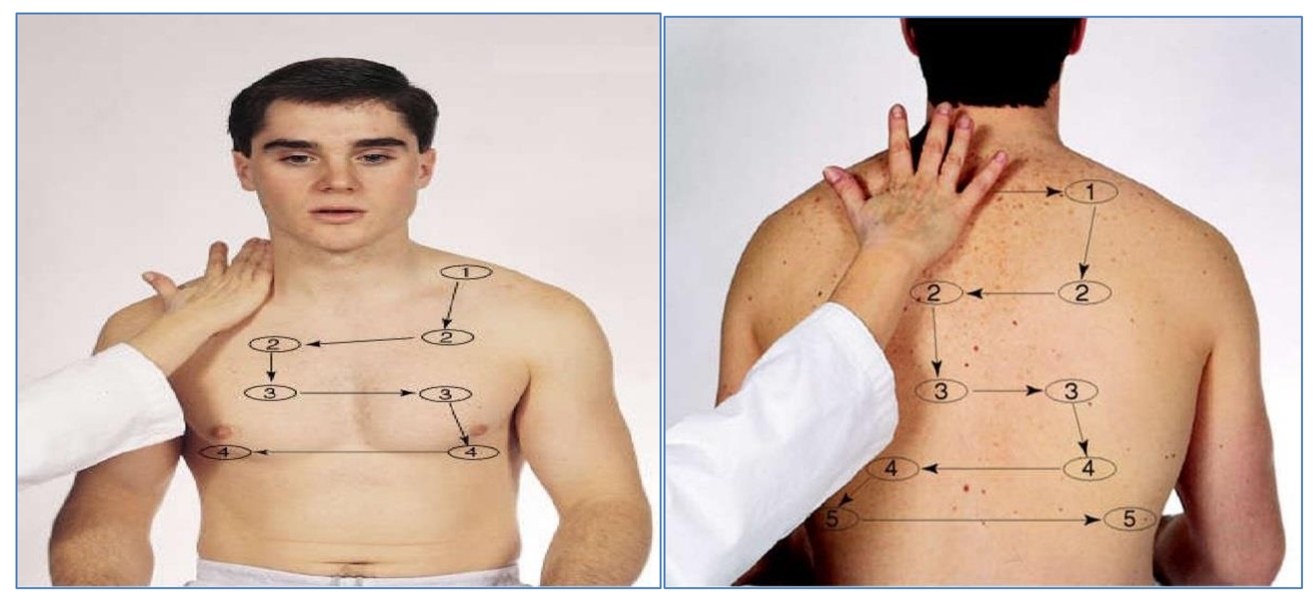
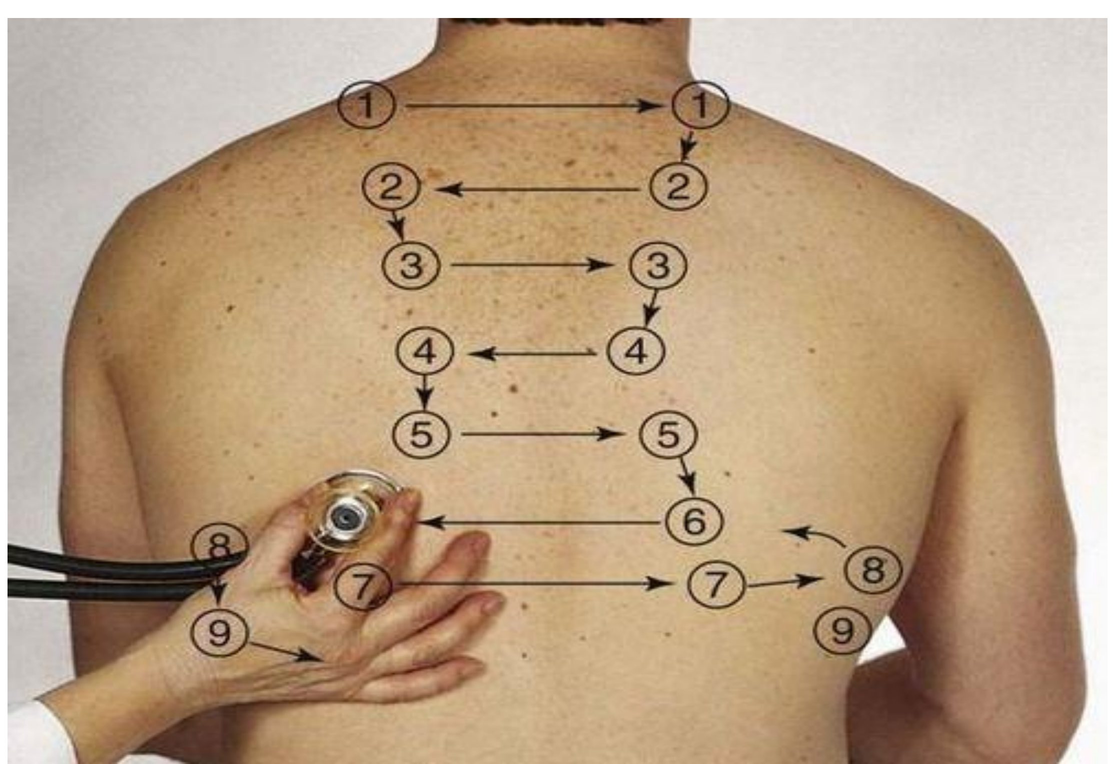




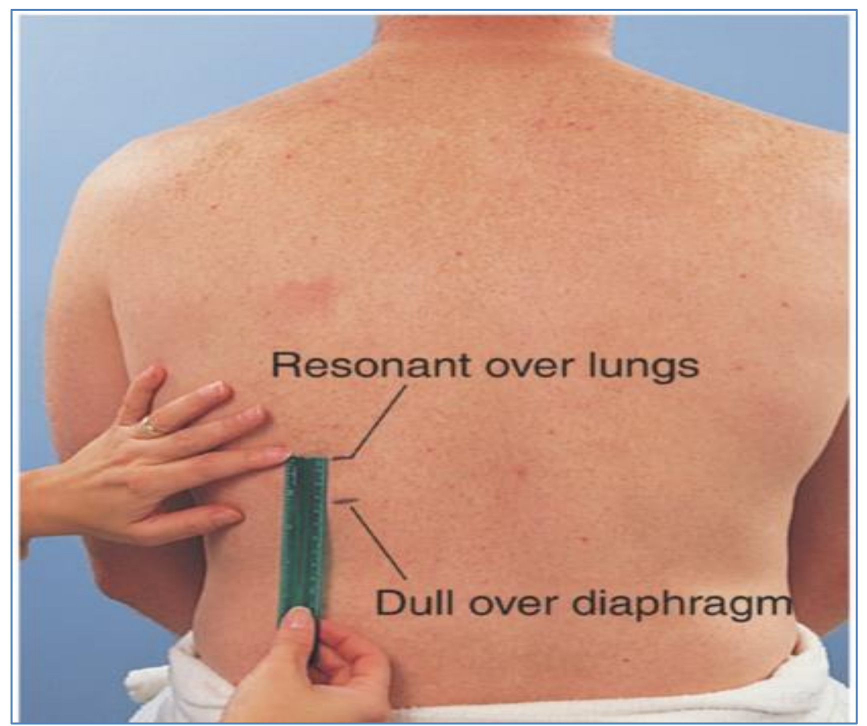
Anterior respiratory examination **Posterior respiratory examination**



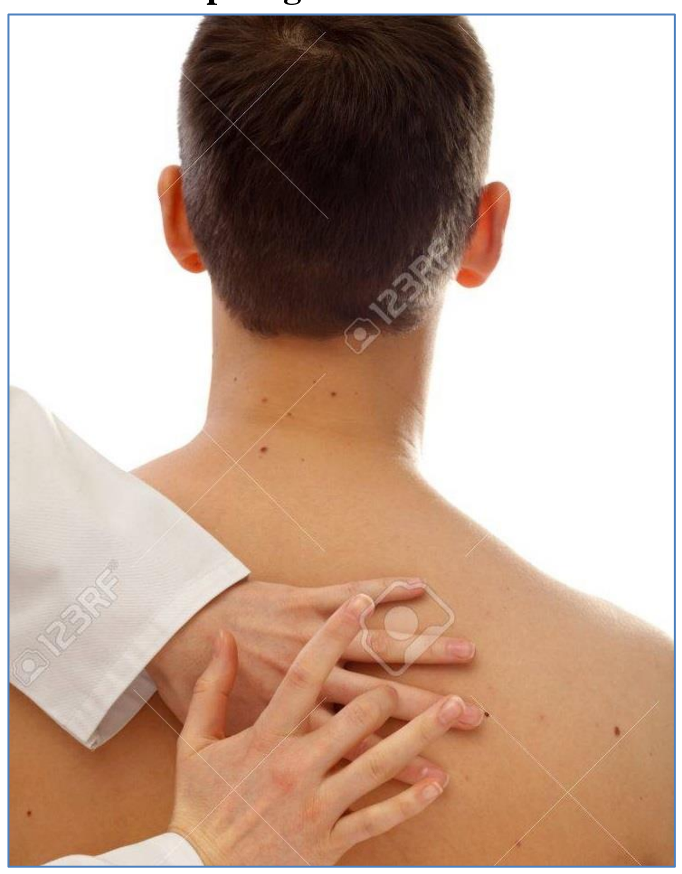
Tactile fremitus (Anterior, posterior)



Posterior respiratory auscultation



Diaphragmatic excursion



Posterior respiratory percussion

Heart and Neck Vessels Assessment

Objectives:-

At the end of this lab the student will be able to:-
1. Demonstrate the ability to safely and accurately complete the heart and neck vessels assessment.
2. Demonstrate the ability to accurately document heart and neck assessment in organized manner.

Equipment needed:-

1. Marking pen.
2. Small centimeter.
3. Stethoscope with diaphragm & bell end pieces.
4. Alcohol swab (to clean end piece).

Preparation:-

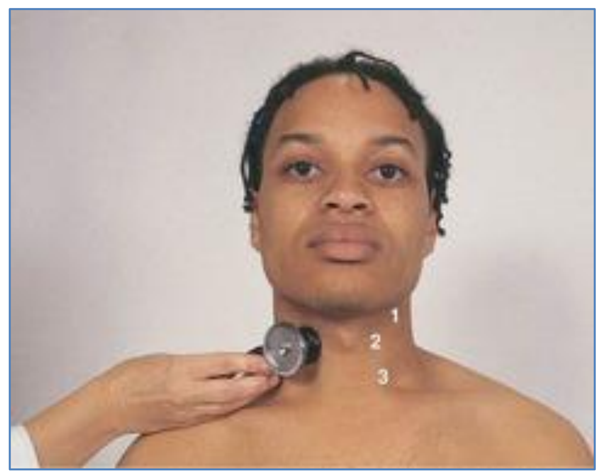
1. To evaluate the carotid arteries, the client can be sitting.
2. To assess the jugular vein & pericardium, the person should be supine with the head and chest slightly elevated.
3. Stand on the client right side.
4. The room should be warm.
5. Ensure the female's privacy by keeping her breast draped.
6. Gently displace the breast upward, or ask the client to hold it out of the way.

Subjective data:

1. Chest pain.
2. Cough.
3. Edema.
4. Family history.
5. Dyspnea.
6. Fatigue.
7. Nocturia.
8. Personal habits
9. Orthopnea.
10. Cyanosis.
11. Past cardiac history.

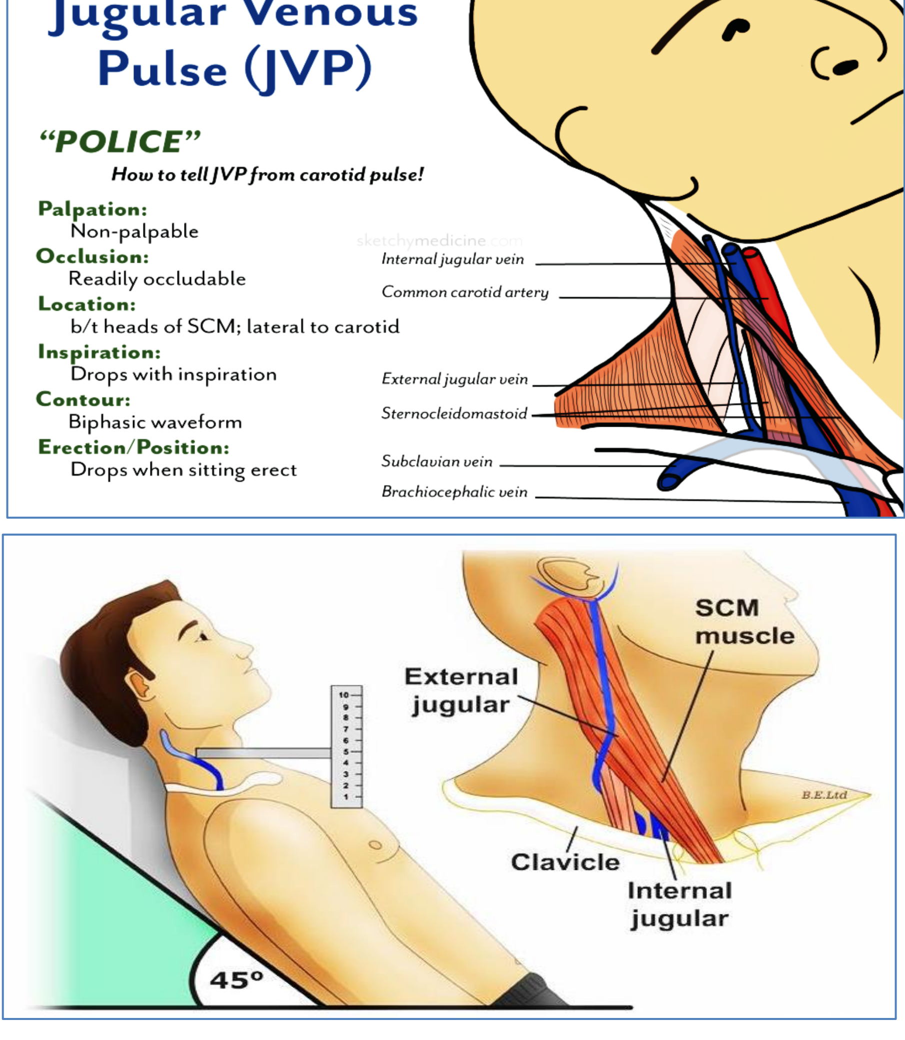
PROCEDURE	NORMAL FINDINGS
The neck vessels **1. Palpate the carotid artery:-** - Palpate each carotid artery medial to the sterno- mastoid muscle in the neck. - Avoid excessive pressure on the carotid sinus area. - Palpate, gently. - Palpate only one carotid artery at a time. - Feel the contour & amplitude of the pulse. - Compromise finding to the other side.	 - Contour is smooth with rapid upstroke & slower down stroke. Strength is 2+ or moderate. Findings should be same bilaterally.
2. Auscultate the carotid artery:- - Keep the neck in a natural position. - Lightly apply the bell of the Stethoscope over the carotid artery at three levels:- 1- Angle of jaw. 2- Mid-clavicular area. 3- Base of the neck. - Ask the client to take a breath. - Exhale & hold it briefly while you listen.	 - Normally non is present.

Carotid Artery palpation



Carotid Artery Auscultation

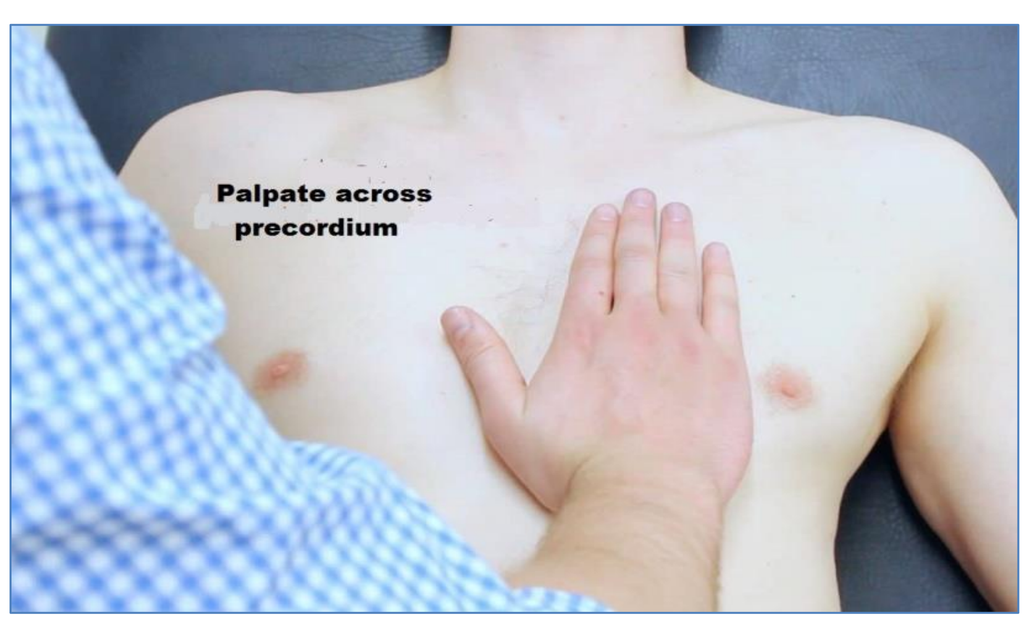
PROCEDURE	NORMAL FINDINGS
3. Inspect the jugular venous pulse: - Put the client in supine position anywhere from 30-40 degree angle. - Remove the pillow to avoid flexing of the neck. - Turn the client's head slightly away from the examined side. - Note the external jugular veins overlying the sterno-mastoid muscle. - Look for pulsation of internal jugular in the area of suprasternal notch.	- Internal jugular vein pulsation 3 cm above sterna angel.



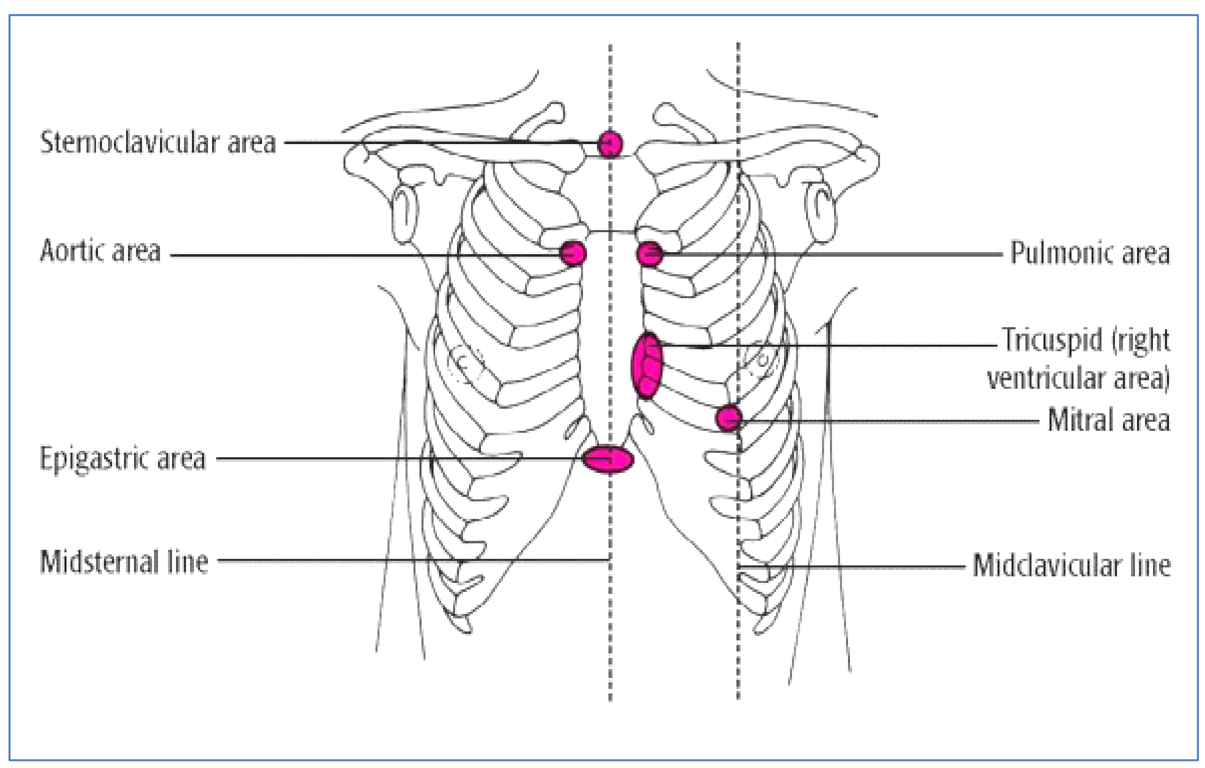
Estimate Jugular Venous Pressure

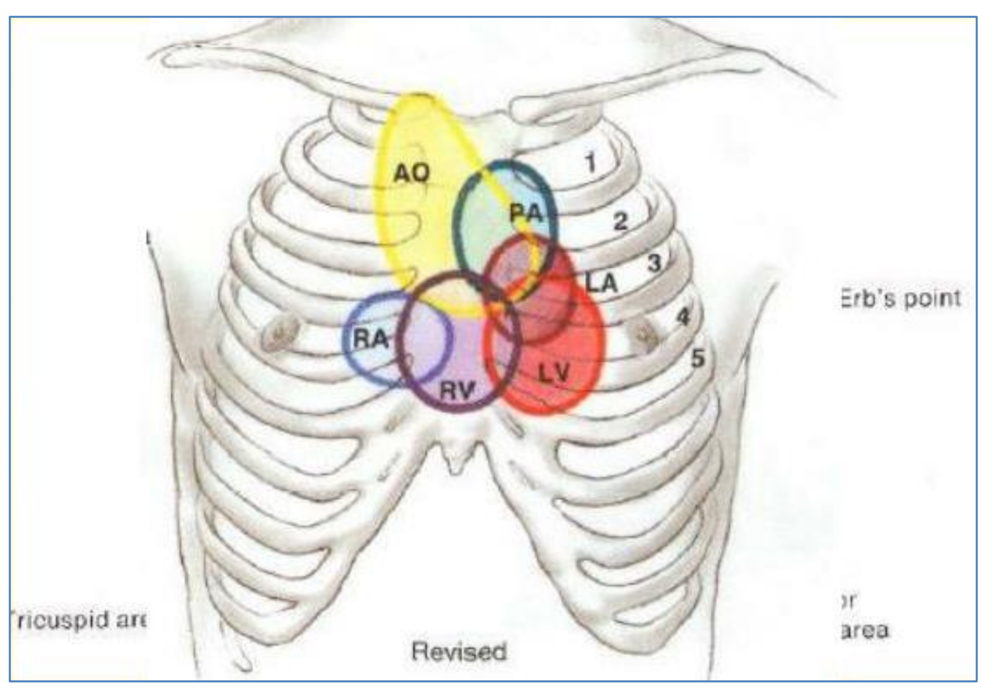
PROCEDURE	NORMAL FINDINGS
The pericardium	
1. Inspect the anterior chest for:-	
- Pulsation	- May or may not see the apical impulse. When visible it occupies the 4th or 5th inter-costals space.
2. Palpate the apical impulse:- - Localize the apical impulse using one finger pad. - Ask the client to "exhale & then hold" - Role the client mideay to the left. - Note the following:-	
• Location	- Apical impulse occupy only one interspace, the 4th or 5th, & be at or medial to the MCL.
• Size	- 1cm x 2cm.
• Amplitude	- Normally a short gentle tap.
• Duration	- Short, occupies only first half of systole. **<u>Note</u>:** - **apical impulse** is not palpable in obese or in clients with thick chest wall.
3. Palpate across the precordium:- - Using the palmar aspect of your four fingers, gently palpate the apex. - Search for any pulsation.	- Normally non occur.
4. Percussion:- - Place your stationary finger in the client's 5th ICS over on left side of chest near the anterior axillary line. - Slide your hand toward yourself, percussing as you go. - Note the change of sound.	- The left border of cardiac dullness is at the mid-clavicular line in the 5th interspace, & slopes toward the sternum as you progress upward, so that by the 2th interspace the border of dullness coincides with the left sternal border.

PROCEDURE	NORMAL FINDINGS
5. Auscultation:- - Clean the end pieces with alcohol swab. - After you place the stethoscope, try closing your eyes briefly to turn out any distraction. - Begin with the diaphragm end piece and note the following:- • <u>Rate and rhythm</u>	- Rate range from 60-100b/min and the rhythm is regular.
• <u>Identify S1 and S2</u>	- S1 is louder than S2 at the apex, and S2 is louder than S1 at the base.
• <u>Listen for murmurs:-</u> - After auscultation in supine position, role the client toward his/her left side. - Listen with the bell at the apex. - Ask the client to sit up, lean forward slightly & exhale. - Listen with diaphragm firmly pressed at the base, right & left side. - Check for the soft high-pitched sound.	- Should. not be heard



Auscultatory Areas





Peripheral Vascular & Lymphatic Systems Assessment

Objectives:-

At the end of this lab, the students will be able to:-

1. Demonstrate the ability to safely & accurately complete Peripheral Vascular System and Lymphatic System assessment.

2. Demonstrate the ability to accurately document Peripheral Vascular System and Lymphatic System assessment data in organized manner.

Equipment Needed:-

1. Occasionally need: paper tape measure.

2. Stethoscope.

3. Tourniquet or blood pressure cuff.

4. Doppler ultrasonic Stethoscope.

Preparation:-

1. Room temperature should be about 22 degree (72 degree F).

2. Use inspection & palpation.

<u>Compare your findings with the opposite extremity.</u>

Subjective Data:-

1. Leg Pain or cramps.

2. Skin Changes on arms or legs.

3. Lymph node enlargement.

4. Swelling.

5. Medications.

PROCEDURE	NORMAL FINDINGS
1. Inspect & palpate both arms from the shoulders for the following:-	
- Size & shape.	- Two arms should be symmetric in shape.
- Edema, discoloration, skin, hair distribution (see skin, hair & Nail).	
- **Palpate** both radial pulses. - **Palpate** both ulnar pulses.	- Bilateral pulses strong & equal. - Bilateral pulses strong & equal.
- Perform <u>Allen Test</u> to determine patency of radial & ulnar arteries:-	- Full palm of hand becomes pink when release of ulnar or radial artery.
- Place thumbs lightly over radial & ulnar arteries & ask the client to clench tightly. - Firmly compress arteries & ask open hand. - Release pressure on the ulnar artery while maintaining pressure on the radial artery.	
- Palpate the brachial pulses**.** **-Palpate** for presence of epitroclear node:- - Shake hands with the client. - Reaching your other hand under client's elbow to the groove between biceps & triceps muscles, above the medial epicondyle.	- Bilateral pulses strong & equal. - Normally not palpable.

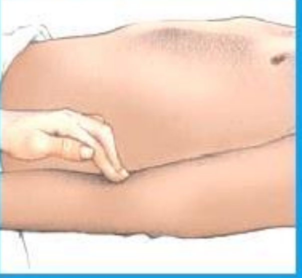
PROCEDURE	NORMAL FINDINGS
2. Inspect & palpate the legs:- - Uncover the leg while keeping the genitalia draped. - **Inspect** both legs together for shape & size. - Edema, discoloration, skin, hair distribution (see skin, hair & nail).	
- Inspect size of both legs:- - Measure the calf circumference with a no stretchable tape measure. - Measure at the widest point. - Measure the other leg in exactly same place, the same number of centimeters down from patella or land mark. - Record your findings in centimeters.	- Both legs should be symmetric in size.
3. Palpate superficial inguinal lymph nodes.	- Small in size 1cm less movable & non tender.
4. Palpate Femoral pulse by pressing below inguinal ligament.	- Bilateral pulses strong & equal.
5. Palpate Popliteal pulse: have the client knees or if on table roll on to flex leg 90 degree, press deeply.	- Bilateral pulses strong & equal.
6. Posterior Tibial pulse: Located on malleolus of ankle. **7. Dorsalis Pedis pulse:** Located on the foot, lateral to extensor tendon of big toe.	- Bilateral pulses strong & equal. (Congenitally absent in 5%-10% of population).

Carotid pulse

Lightly place your fingers just lateral to the trachea and below the jaw angle. Never palpate both carotid arteries at the same time.

Brachial pulse

Position your fingers medial to the biceps tendon.



Radial pulse

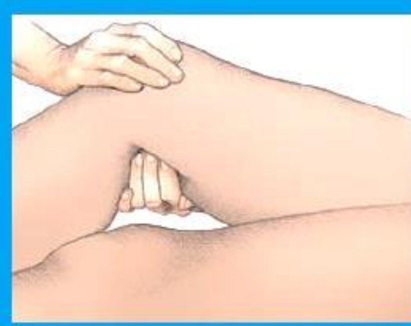
Apply gentle pressure to the medial and ventral side of the wrist, just below the base of the thumb.

Femoral pulse

Press relatively hard at a point inferior to the inguinal ligament. For an obese patient, palpate in the crease of the groin, halfway between the pubic bone and the hip bone.

Popliteal pulse

Press firmly in the popliteal fossa at the back of the knee.



Posterior tibial pulse

Apply pressure behind and slightly below the malleolus of the ankle.

Dorsalis pedis pulse

Place your fingers on the medial dorsum of the foot while the patient points his toes down. The pulse is difficult to palpate here and may seem to be absent in healthy patients.

Grading pulses

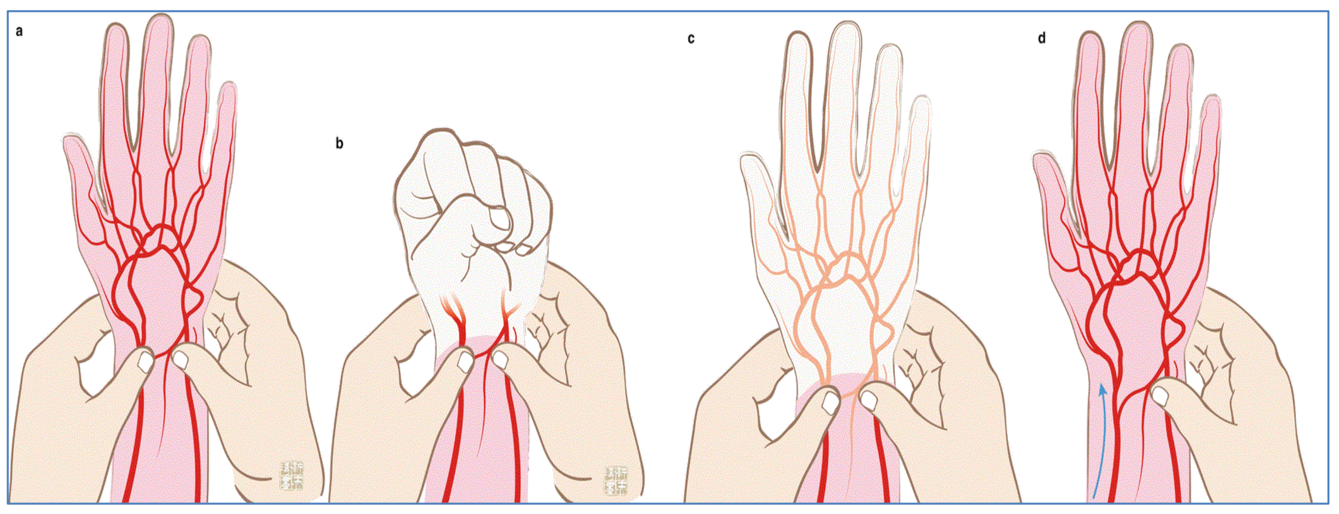
Pulses are graded on a fou point scale.

- 4+ = bounding
- 3+ = increased
- 2+ = normal
- 1+ = weak
- 0 = absent

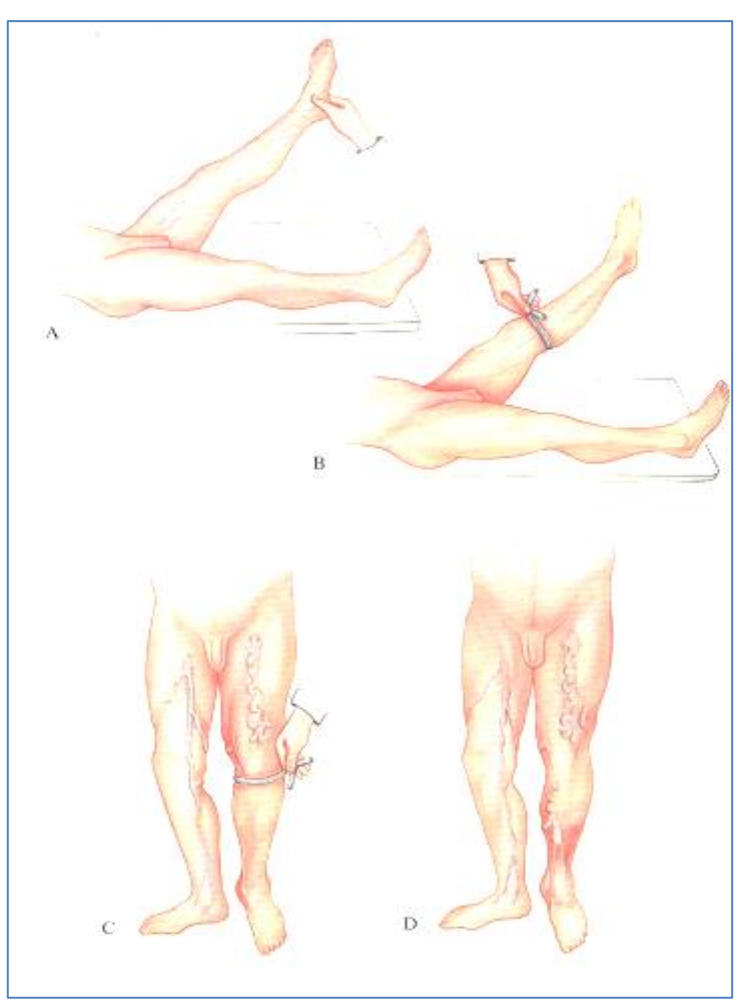
Auscultation

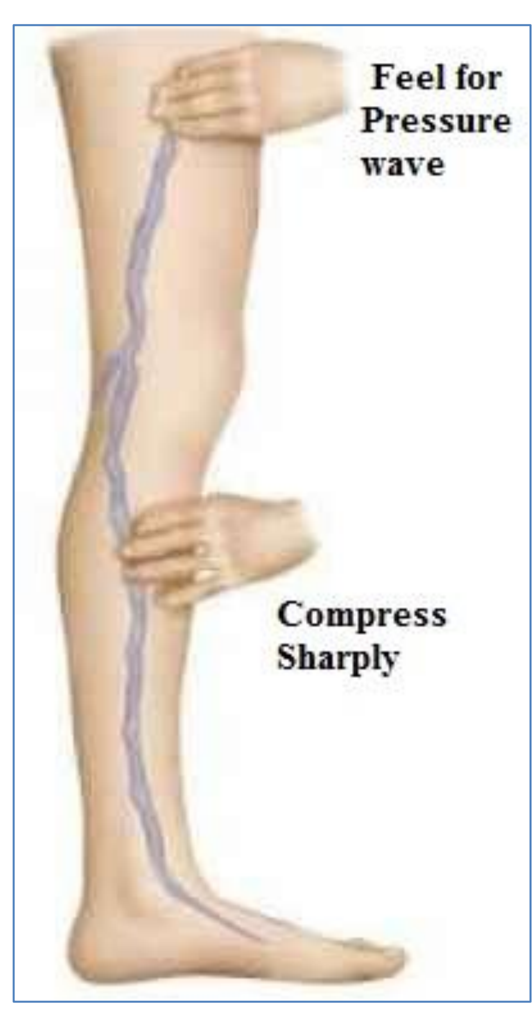
Using the bell of the stethoscope, follow the palpation sequence and auscultate over each artery. Assess the upper abdomen for abnormal pulsations, which could indicate the presence of an abdominal aortic aneurysm. Finally, auscultate for the femoral and popliteal pulses, checking for a bruit or other abnormal sounds.

PROCEDURE	NORMAL FINDINGS
8.Special maneuvers:-	
a) Check deep vein thrombosis:- - Check deep phlebitis by quickly squeezing calf muscles against tibia.	- Client verbalizes no calf pain.
b) Check Homan's sign:- By dorsiflexing the foot.	- Client verbalizes no calf soreness or pain.
c) Check for varicose veins.	
d) Manual compression test :- - Put your client in standing - Place one hand on the lower part of the varicose vein. - Compress the vein with your hand about 15 to 20 cm higher.	- Competent valves will prevent a transmission & your distal fingers will feel no change.
e) The Trendelenberg test:- - Put your client in spine position. - Elevate the involved leg until the veins empty. - place a tourniquet high on the thigh. - Help your client to stand up. - After 30 seconds, take the tourniquet off.	- The saphenous veins should fill slowly from below in about 30seconds. - No sudden filling occur.
f) For arterial insufficiency:- - Raise both legs about 30cm (12 inches) off the table. - Ask the client to wag the feet to drain off venous blood. - Note the color of both feet. - Have the client sit up with legs over the side of the table. - Compare the color of both feet. - Note the time it takes for color to back to feet. - Note also time it takes for veins around feet to fill.	- Feet normally look a little pale but still should be pink. - Normally pink color returns. - Normally 10 seconds or less. - Normally15 seconds.



Allen Test





Manual Compression test

The Trendelenberg test

PROCEDURE	NORMAL FINDINGS
g) <u>The Doppler ultrasonic stethoscope</u> - Position the client supine, with legs externally rotated. - Place a drop of coupling gel on the end of the handheld tranducer. **-** Place the tranducer over the pulse site swiveled at a 45-degree. **-** Apply very light pressure.	- Swishing, whooshing sound.

Abdominal Assessment

Objective:-

At the end of this lab, the students will be able to:

1. Demonstrate the ability to safely & accurately complete abdominal assessment.

2. Demonstrate the ability to accurately abdominal assessment date in organized manner.

Equipment needed:-

1. Stethoscope.

2. Small centimeter.

3. Skin-marking pen.

4. Alcohol swab (to clean end piece).

Preparation:-

1. Expose the abdomen so that it is fully visible.

2. Drape the genitalia & female breast.

3. Ask the client to empty the bladder.

4. Keep the room warm.

5. Position the client supine, with the head on a pillow, the knees bent or on pillow, the arm at the sides or cross the chest.

6. Warm the stethoscope end piece.

7. Warm your hand.

8. Inquire about any painful area, examine such area last to avoid any muscle guarding**.**

Note:- Assessment of abdomen differs from other assessments in that inspection & auscultation precede percussion & palpation.

Subjective date:-

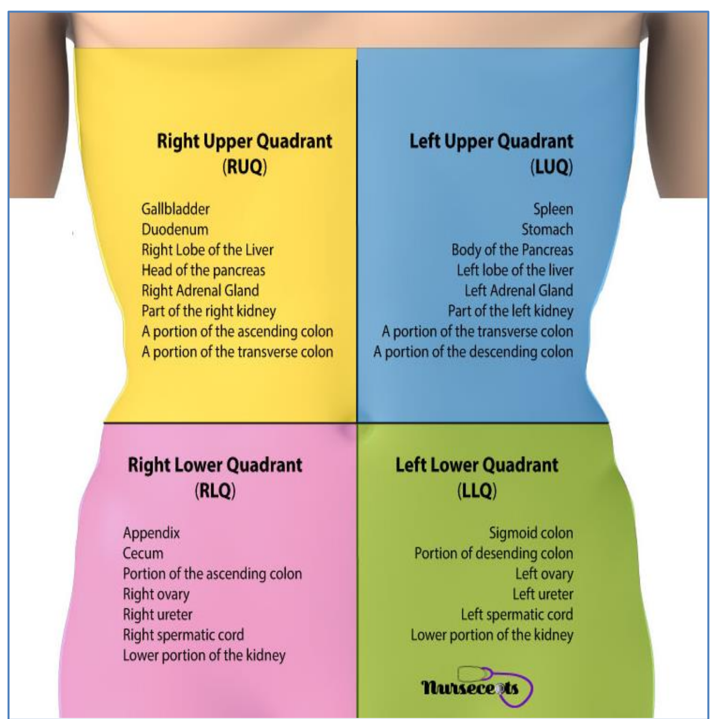
1. Appetite. **2.** Abdominal pain. **3.** Dysphagia.

4. Food intolerance. **5.** Past abdominal history. **6.** Medications.

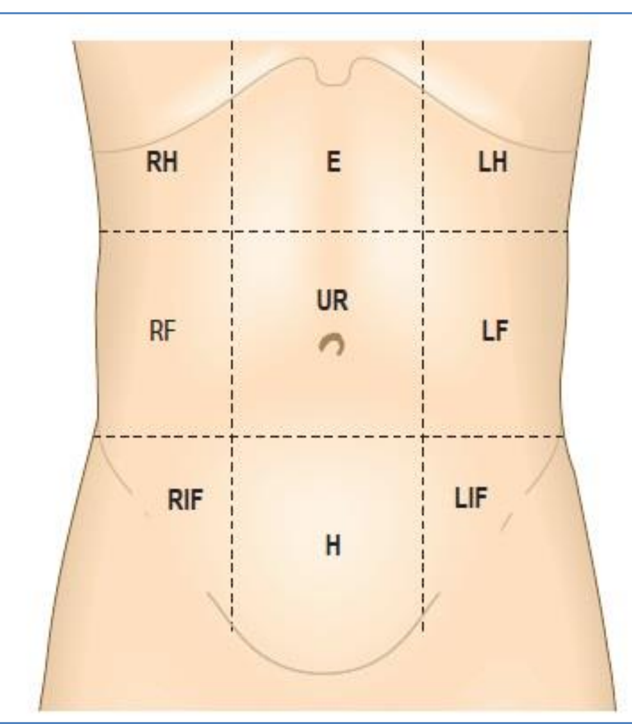
7. Bowel habits. **8.** Nutritional assessment. **9.** Weight gain or loss.

10. Nausea/vomiting.

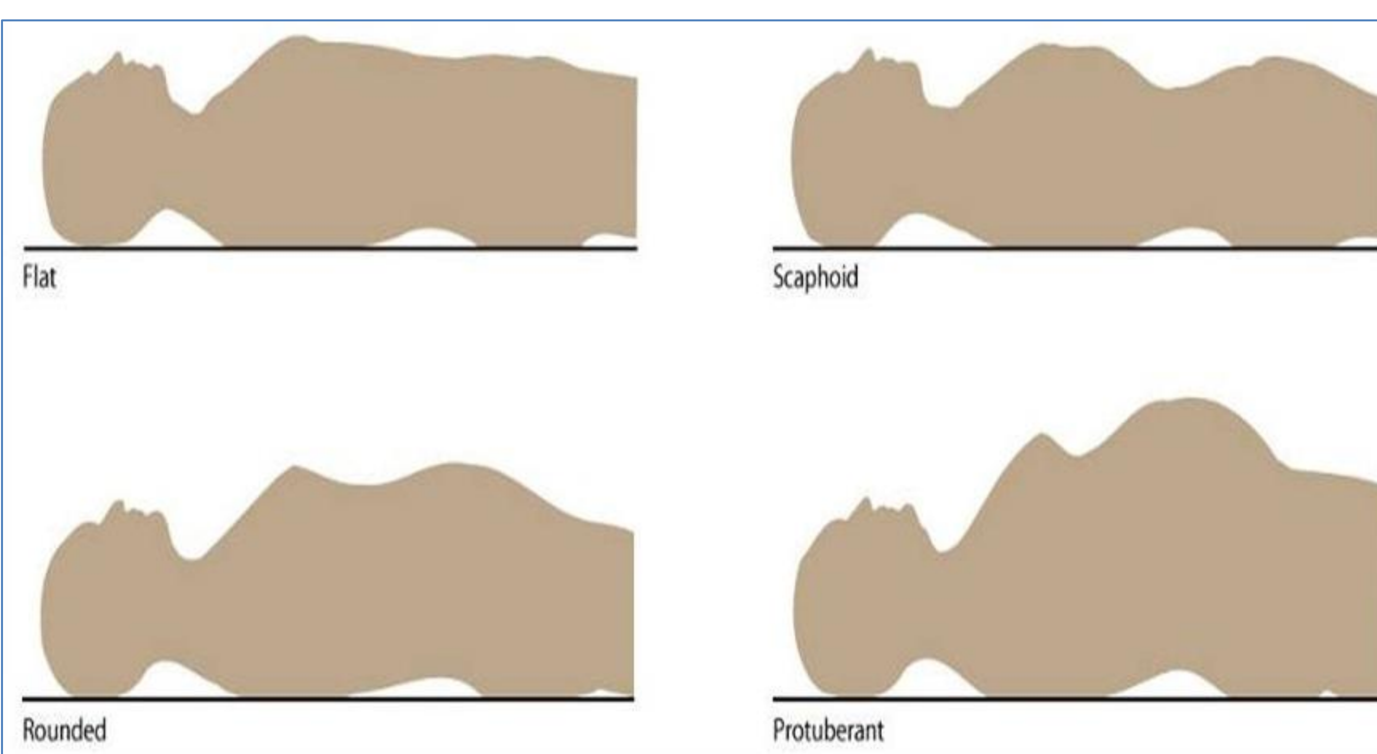
PROCEDURE	NORMAL FINDINGS
1) Inspect the skin for the following:- - Color - Venous pattern - Integrity	 **-** Normally paler, with white striae. - Fine veins observable. - No rashes or lesions.
Special maneuver for prominent abdominal veins:- 1. compress a section of vein with two fingers next to each other 2. Remove one finger. 3. Observe for filling. 4. Repeat procedure, removing the other finger.	- Blood fills from above to lower abdomen.
- **Inspect** the umbilicus for the following:- • Position • Color	 - Sunken, centrally located. - Pinkish.
- **Observe** the abdomen for the following:- • Contour Stand on the client is right side & look down on the abdomen. - Sit to gaze across the abdomen. - Your head should be slightly higher than the abdomen.	 - Range from flat to rounded.
• Symmetry - Shine a light across the abdomen toward you, or shine it lengthwise across the client. - Note any localized bulging, or asymmetry shape .	- The abdomen should be symmetric bilaterally
• Surface motion	- No movement or slight peristalsis visualized over aorta, respiratory movement also shows in the abdomen, particularly in males.



Four quadrants

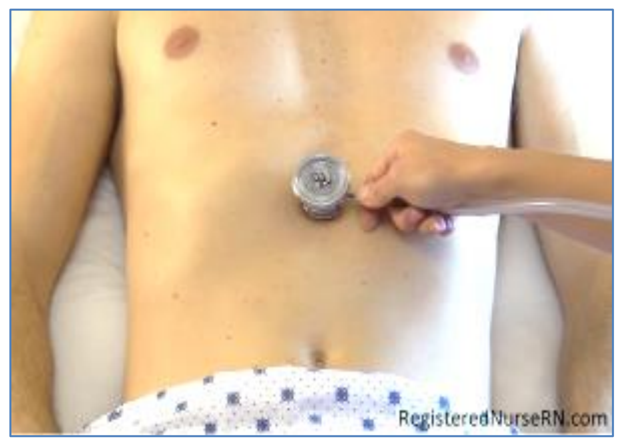


Nine quadrants

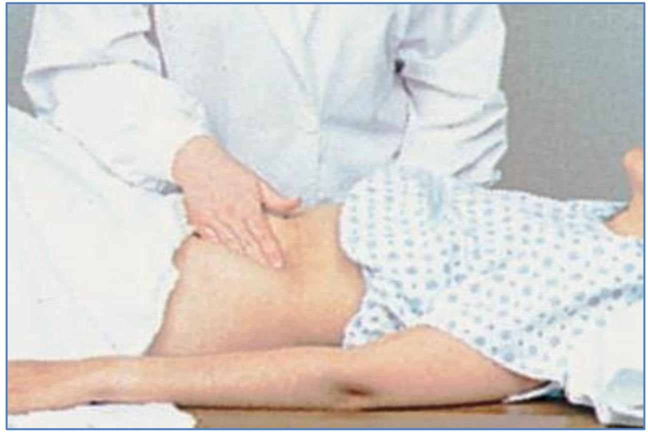


Contour of abdomen

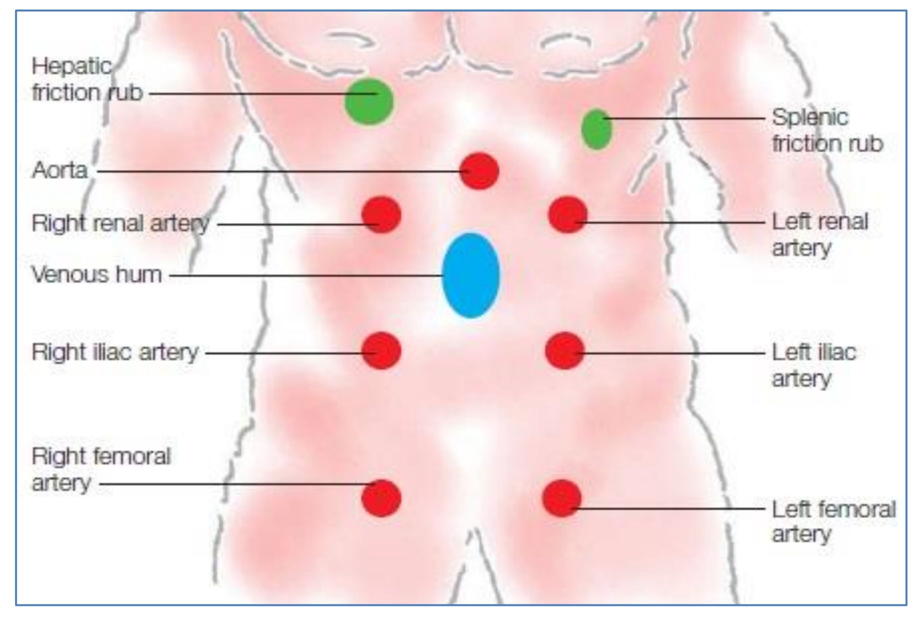
PROCEDURE	NORMAL FINDINGS
• Hair Distribution	- Pubic hair growth normally has a diamond shape in adult males, & inverted triangle shape in adult females.
• Demeanor	- Relaxed facial expression & slow, even respiration.
2) Auscultate abdomen for the following:	
▪ Bowel Sounds - Use the diaphragm of warm stethoscope. - Apply light pressure to auscultate for bowel sounds for up to 5 minutes in each quadrant. - Begin in the right lower quadrant (RLQ) a t the ileocecal valve area.	- High-pitched irregular gurgles4 (5-35) times/min, present equally in all four quadrants.
▪ Vascular sound - Use the bell to auscultate for vascular sounds.	- No bruits, no venous hums, no friction rubs.
3) Percuss the abdomen for the following:-	
▪ General tympany	- Tympany should predominate.
▪ **<u>Liver span</u>** - Percuss starting below umbilicus at clients right midclavicular line (MCL). - Percuss upward until you hear dullness, mark this point. - Percuss downward from the lung resonance in the right MCL to dullness & mark. - Repeat in mid-sternal line.	- Liver span is (6-12) cm in right MCL, greater in men. - Liver span 4-8cm in mid-sternal line.



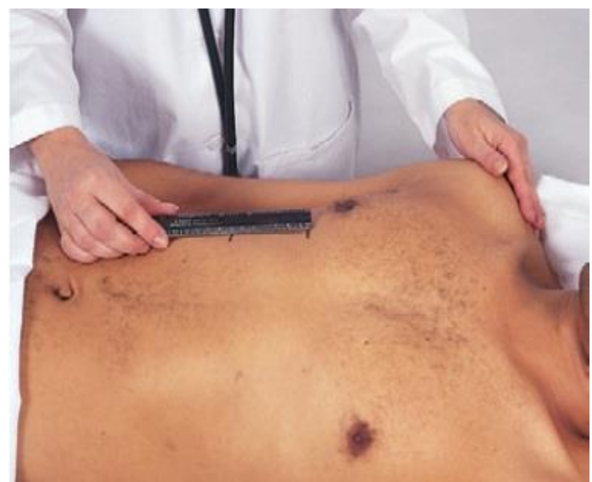
Bowel Sound Auscultation



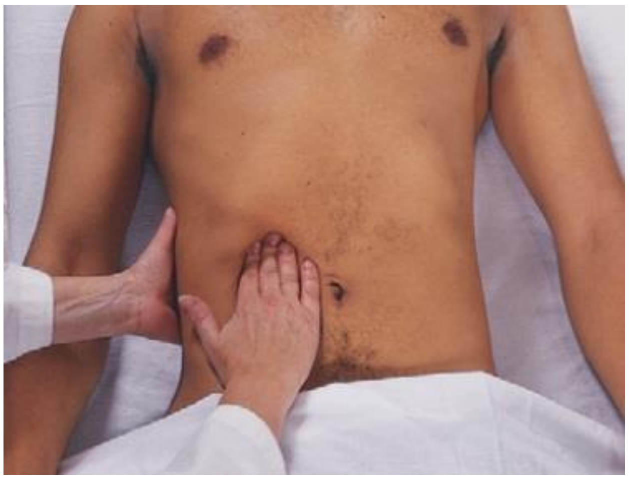
General Palpation



Vascular areas Auscultation

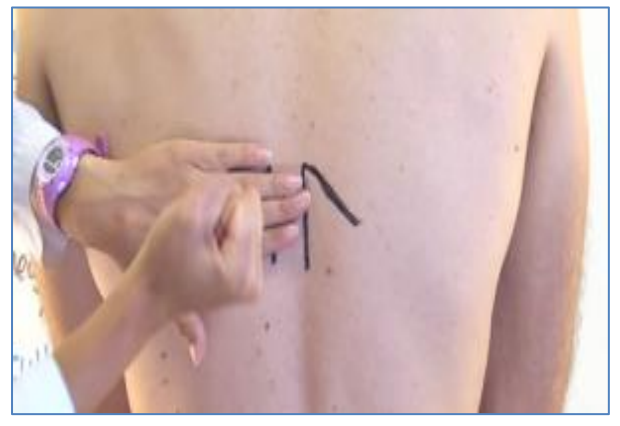


Liver Span

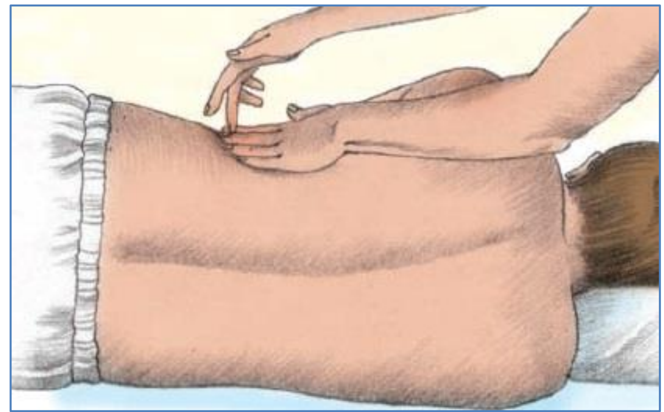


Palpate edge of Liver

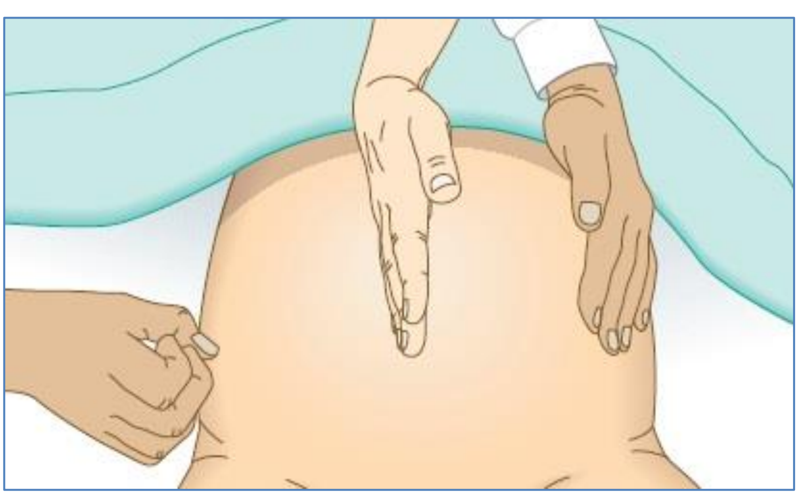
PROCEDURE	NORMAL FINDINGS
▪ **Spleen** - Percuss for dullness by percussing downward in left mid-axillary line. - Beginning with lung resonance until you hear splenic dullness.	- Note dullness from 9^{th}to11^{th} ICS, just behind the left mid-axillary line (MAL), not wider than 7cm.
<u>Splenic percussion sign</u>:- - Ask client to inhale deeply & hold breath - Percuss lowest interspaces at left anterior axillary line.	- Note remains tympanic on inhalation.
• **Costovertebral angle tenderness** - Put your client in sitting position. - Place one hand over the 12th rib at the Costovertebral angle on back. -Thump that hand with the ulnar edge of the other fist.	- Normally feels thud but no pain.
• **Special maneuvers for ascites:-**	
<u>a) Fluid wave test</u>:- -place palmer surface of fingers & hand firmly on one side of the abdomen. -Tap wi9th other hand on opposite wall side. -Have assistance put lateral side of lower arm firmly on center of abdomen.	- No fluid wave transmitted.
<u>b) Shifting Dullness</u>:- - Place client in supine position. - Percuss from midline to flank. - Note level of dullness. - Assist client to side position & percuss again for level of dullness.	- Level of dullness does not change.



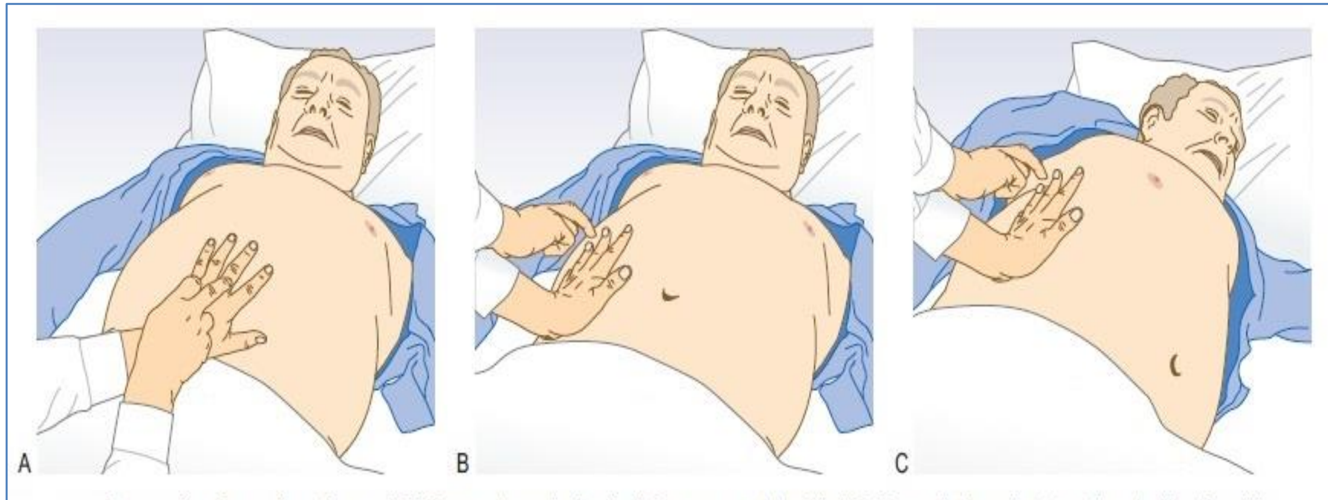
Costovertebral angle tenderness



Percuss Spleen



Fluid Wave test

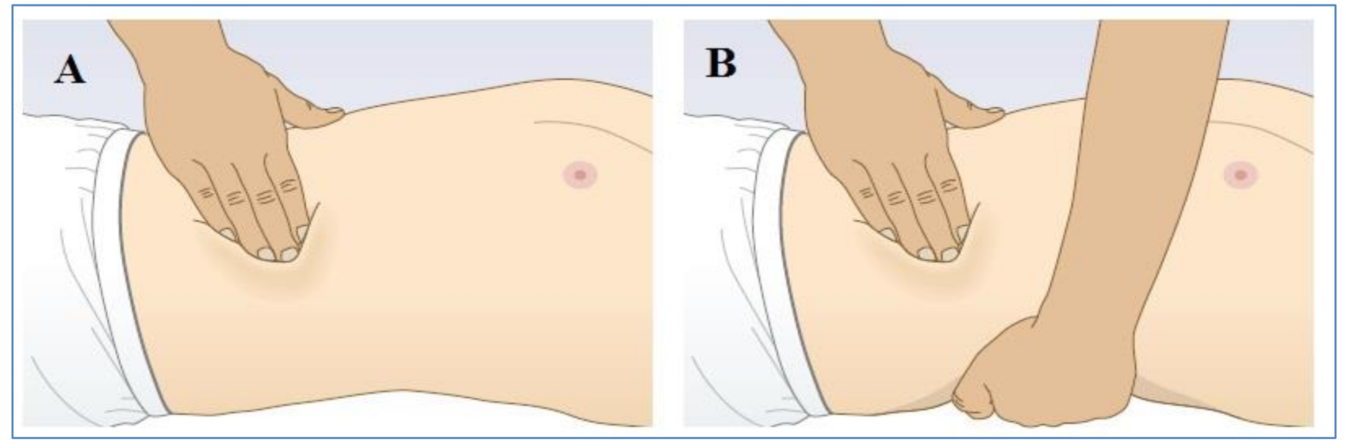


Percussing for ascites. (A and B) Percuss towards the flank from resonant to dull. **(C)** Then ask the patient to roll on to his other side. In ascites, the note then becomes resonant.

PROCEDURE	NORMAL FINDINGS
4) Palpate surface & deep areas as the following:- - Bend the client's knee. - Keep your palpating hand low & parallel to the abdomen. - Teach the client to breath slowly. - Keep the client's hand under your own with your fingers curled over his / her fingers.	
* **Lightly palpate all four quadrants for the following:-** - Tenderness - Consistency - Masses	 - Non tender. - Soft, non- tender. - No masses.
* **Deeply palpate all four quadrants for the following:-** - Tenderness - Guarding - Masses	 - Mild tenderness over midline at xiphoid, cecum, sigmoid colon. - Voluntary guarding. - No masses aorta, faces in colon.
* **Palpate deeply for liver border at right coastal margin as the following:-** - Stand at the client's side. - Place your left hand under client's back at the 11 & 12 ribs. - Place right hand parallel to right coastal margin. - Ask client to breathe deeply. - Press upward with your right fingers with each inhalation.	

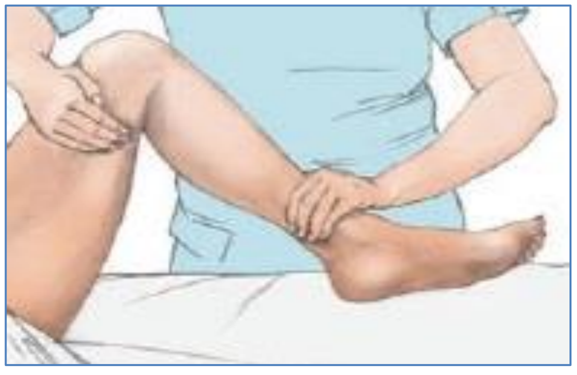
PROCEDURE	NORMAL FINDINGS
*** Palpate liver boarder for the following:-** - Tenderness - Consistency	 - Non- tender. - Smooth, firm sharp edge, no masses.
*** Palpate deeply for splenic broader**:- Using bimanual technique, as the following:- - Stand at client's right side - Reach across client to place your left hand under client's posterior lower ribs and push up - Place your right hand below rib margin. - Ask client to breathe deeply. - Press hands together to palpate spleen on inhalation. * **palpate splenic border for the following**:- - Size - Tenderness	 - Not normally palpable - Non tender
*** Palpate deeply for the kidneys by using bimanual techniques, as the following:-** - Place one of your hands behind lower side of rib cage and above iliac crest. - Place the other hand over corresponding anterior surface. - Instruct client to breathe deeply. - Lift up lower hand and push in with upper hand as client exhale. - Repeat on other side	
* **Palpate Kidney for the following:-** - Size - Tenderness - Masses	- Not normally palpable - Non tender - No masses

PROCEDURE	NORMAL FINDINGS
<u>Special Tests for appendicitis</u>:- **1) <u>Rebound tenderness</u>:-** - Palpate deeply in one of client's four - Abdominal quadrants - Quickly withdraw palpating hand - Do this at end of abdominal exam	- No pain present
<u>2) Psoas sign</u>:- - Ask client to lie supine and raise right leg. - Place pressure on client's thigh.	- No abdominal pain present.
<u>3) Obturator sign</u>:- - Ask client right leg at hip and knee. -Then rotate leg internally and externally.	- No abdominal pain present.
<u>Special Tests for Acute Cholecystitis</u>:- **<u>1) Murphy's sign</u>:-** - Place your thumb below right costal margin. - Ask the client to inhale deeply.	- Client has no increase in pain.
<u>2) Testing for asterisks classic sign of hepatic coma</u>:- -Dorsiflex client's wrist with fingers extended.	- No tremor noted>

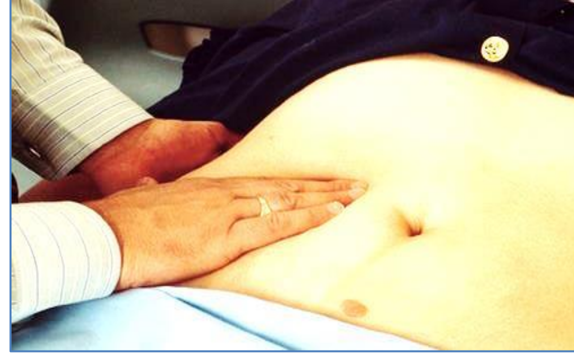


Palpate Spleen

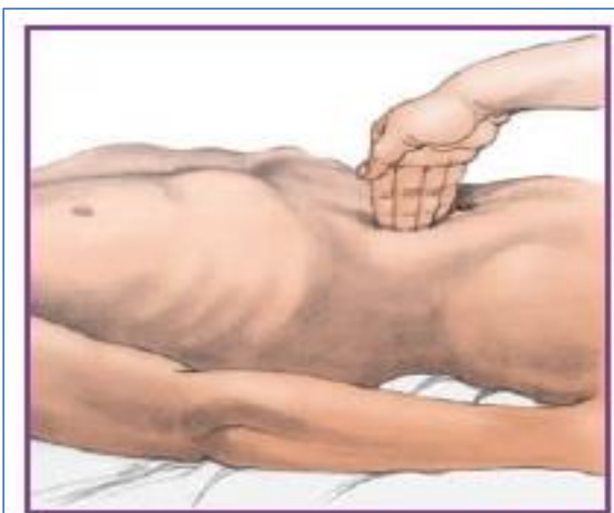
Psoas sign

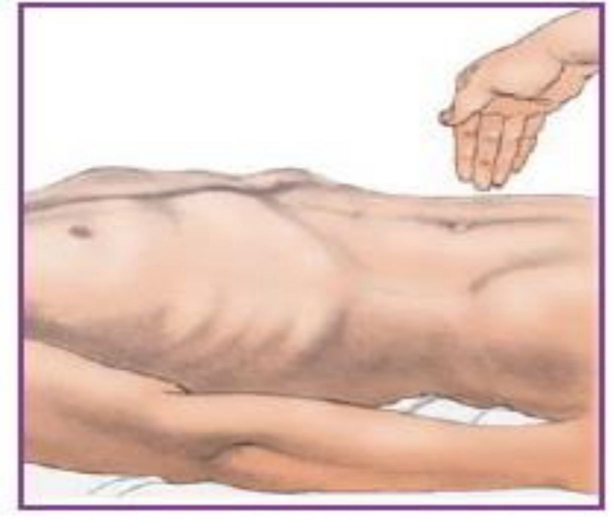


Obturator sign



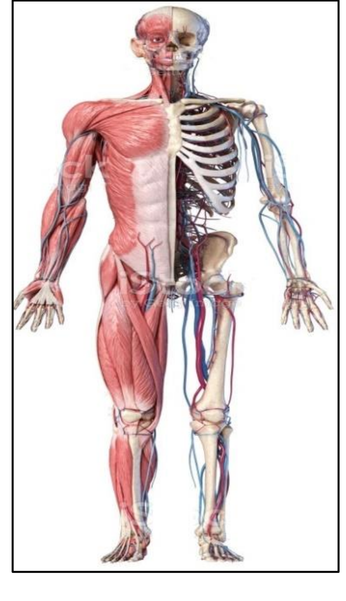
Murphy's sign





Rebound Sign

Musculoskeletal System Assessment



Objectives:-

At the end of this lab, the students will be able to:

1. Demonstrate the ability to safely accurately complete Musculoskeletal System & lymphatic System assessment.
2. Demonstrate the ability to accurately document Musculoskeletal System assessment data in organized manner.

Equipment Needed:-

1- Tape measurement.
2- Goniometer, to measure joint angles.
3- Skin marking pen.

Preparation:-

1. Make the client comfortable before & throughout the examination

2. Drape for full visualization of the body part you are examining without needlessly exposing the client.

3. Take an orderly approach-head to toe, proximal to distal.

4. The joint to be examined should be supported at rest

5. Compare corresponding paired joints.

Subjective data:

1- Joints
- Pain
- Stiffness
- Swelling and heat
- Redness
- Limitation of movement

2- Muscles
- Pain
- Weakness

3- Functional assessment (ADL)

4- Bones
- Pain
- Deformity
- Trauma (fracture, sprains, dislocations)

PROCEDURE	NORMAL FINDINGS
1) Inspection:-	
Inspect the stance- while the client walks around the room-for the following: - Base of support - Weight bearing stability - Posture	 - Weight evenly distributed. - Able to stand on right/left heels, toes. - Erect.
Inspect gait for the following: - Position of feet - Posture - Stride	 - Toes point straight ahead. - Erect. - Equal on both sides.
Inspect the spine for the following: - Curves - Posture - ROM – flexion, lateral bending, rotation, extension.	 - Cervical concave; thoracic convex; lumbar concave. - Erect. - Full ROM.
2) Palpate paravertebral, as the following:- - With client standing or sitting position. **a)** Palpate paravertebral muscles, using both moderate pressure & gentle sweeping motion. **b)** Ask the client to shrug shoulder against resistance. **c)** Palpate paravertebral, for the following: - Muscle strength & tone - Temperature - Sensation	 - Equally strong - Warm - Non tender

PROCEDURE	NORMAL FINDINGS
d) Palate the shoulder (trapezius muscle) for the following:-	
- Muscle strength & tone	- Able to shrug shoulders against resistance.
- Sensation	- Non tender
e) Palate the shoulder, scapula, & posterior hip for the following:-	
-Bony prominences.	- Smooth & Non tender, no swelling.
-Muscle size, strength & tone.	- Equal in size bilaterally, equally strong.
-Temperature	- Warm to cool.
f) Inspect & palpate head, thorax, neck, as the following:-	
-With client in sitting position facing you, inspect body parts.	
-Ask client to open & close mouth to assess temporo- mandibular join (TMJ) function.	
- Observe the head for the following:-	
-Facial structure & muscle development	- Symmetrical structure & development of muscles.
-TMJ function	- Can open mouth 2 inches.
- Observe the thorax for posture	- Erect, slightly kyphosis.
- Observe the neck for ROM: flexion, extension, rotation, lateral bending.	- Full ROM, no pain.
- Palpate the TMJ as the following:-	
- While inspecting the TMJ palpate it bilaterally anterior to the tragus of the ear as client open mouth & clenches teeth.	
- Ask client to turn head laterally against resistance.	

Types of joint motion

Retraction and protraction
Moving backward and forward

Flexion
Bending, decreasing the joint angle

Extension
Straightening, increasing the joint angle

Circumduction
Moving in a circular manner

Abduction
Moving away from midline

Adduction
Moving toward midline

Internal rotation
Turning toward midline

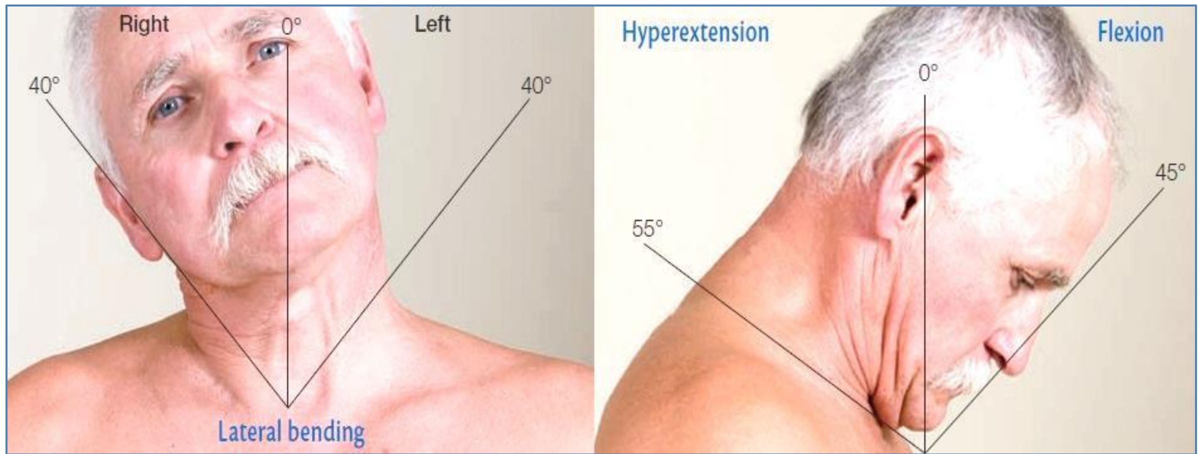
External rotation
Turning away from midline

Pronation
Turning downward

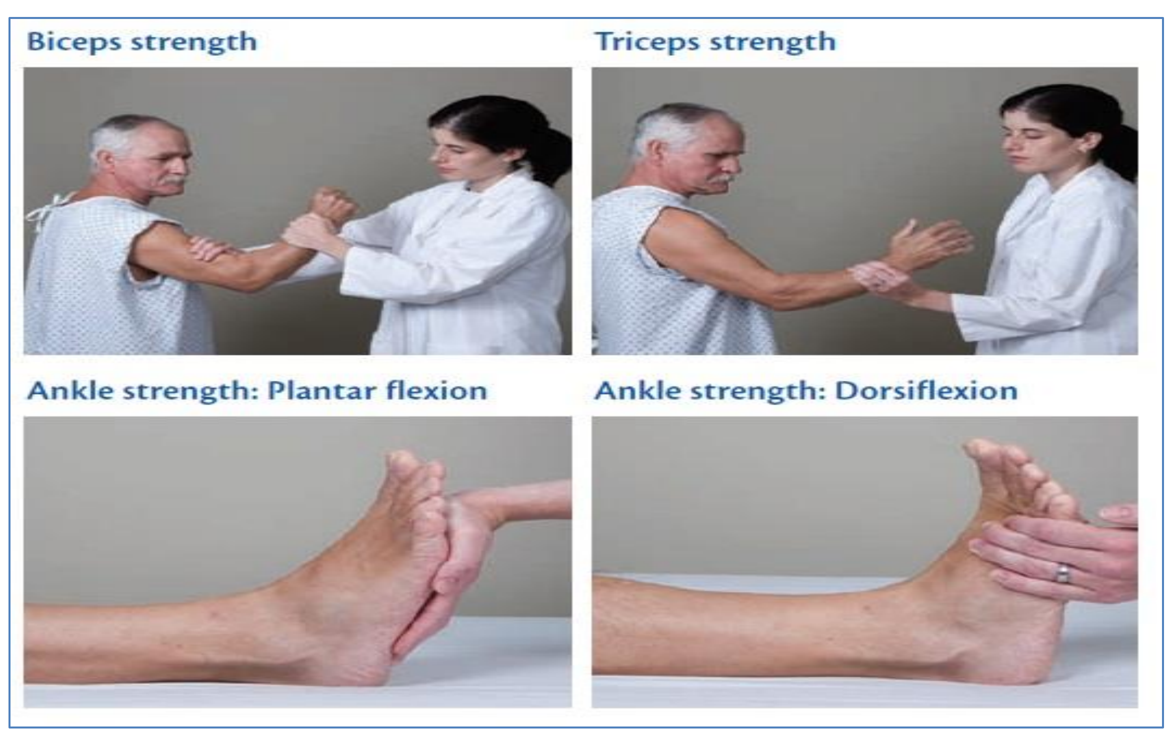
Supination
Turning upward

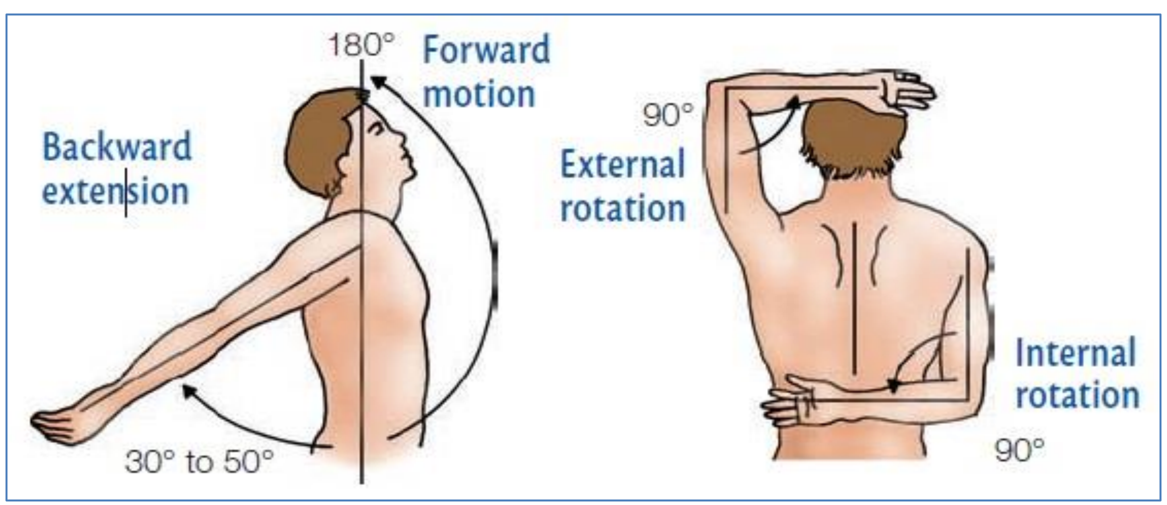
Eversion
Turning outward

Inversion
Turning inward



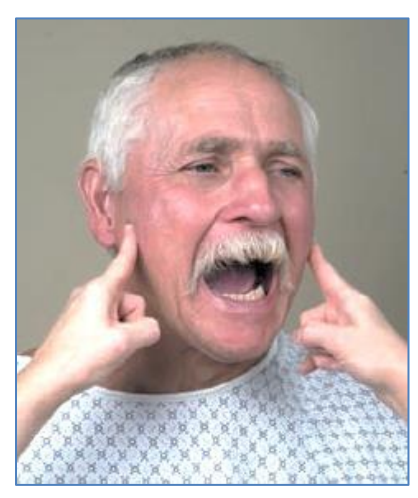
Normal Cervical Spine ROM





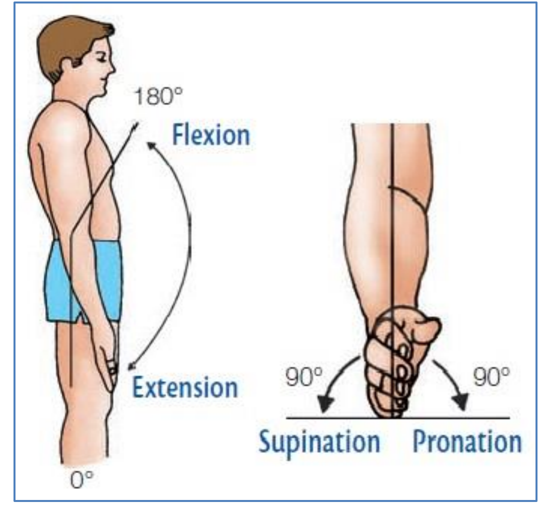
Normal Shoulders ROM

Assess Temporomandibular Joint (TMJ)



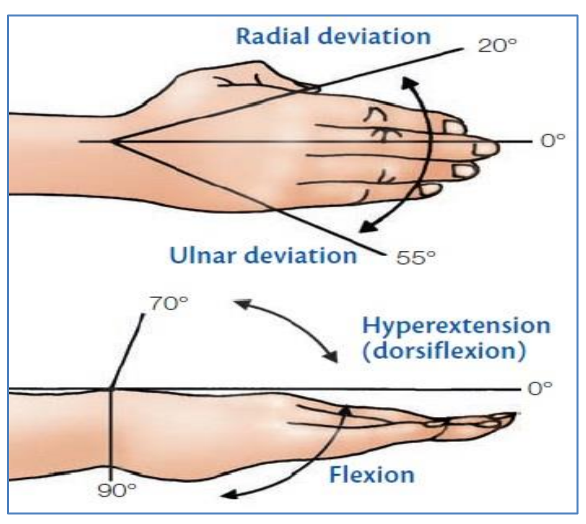
PROCEDURE	NORMAL FINDINGS
- Palpate the TMJ for the following -: - Joint function	- Smooth movement bilaterally on Opening, with no clicks or pain.
- Joint contour	- Symmetrical
- Temperature	- Warm
- Palpate the neck (sternocleidomastoid) for muscle strength & tone	- Can turn head laterally against resistance without pain
3) Inspect & palpate the upper extremities as the following- : - Put client in sitting position facing you With the upper extremities exposed . -Inspect each joint &determine ROM. - Both active & passive ROM may be assessed .	
- Observe the shoulder, elbow, wrist, hand & fingers for: Bone structure, bony prominences, muscle, joint structure & symmetry.	- Bilaterally symmetrical.
- Observe the shoulder, elbow, wrist & fingers for ROM.	- Full ROM.
- Palpate the arm (biceps, triceps) for : - Muscle Strength & tone. - Sensation.	- Can flex & extend arm against resistance. - Grip is firm & equal. - Non tender
- Palpate the elbow ,wrist, hand & fingers for the following:- - Bony landmark - Muscle size - Joint structure - Strength - Temperature - Sensation.	- Non tenderness, smooth. - Regular & equal bilaterally. - Symmetrical & Equal. - Equally strong. - Warm - Non tender.

PROCEDURE	NORMAL FINDINGS
4) Ask client to close eyes for 20- 30 seconds with arms extended in front of body with palms up:-	- Arms remain up with no drifting.
<u>Phalen's test</u>:- - The client to hold both hands back to back while flexing the wrist 90 for 60 second.	- No numbness or burning Sensation
<u>Tinel's sign</u>:- - Direct percussion at the area of the median nerve at the wrist.	- No burning or tingling sensation.
5) Inspect & palpate the lower extremities as the following:- - Put the client in standing or supine position to inspect the hips. - Put the client in sitting position with legs hanging freely to inspect the knees, ankles, feel & toes.	
<u>- Observe the hip, knee, ankle, foot, & toes for the following:-</u>	
- Bone structure & bony landmarks. - Muscle mass. - Joint structure. - Leg lengths.	-Bilaterally symmetrical & equal. -Symmetrical & equal. - Feet maintain straight position. - Bilateral legs length within 1 inch of each other.
<u>- Observe the hip, knee, ankle, foot, & toes for the ROM.</u>	- Full ROM.

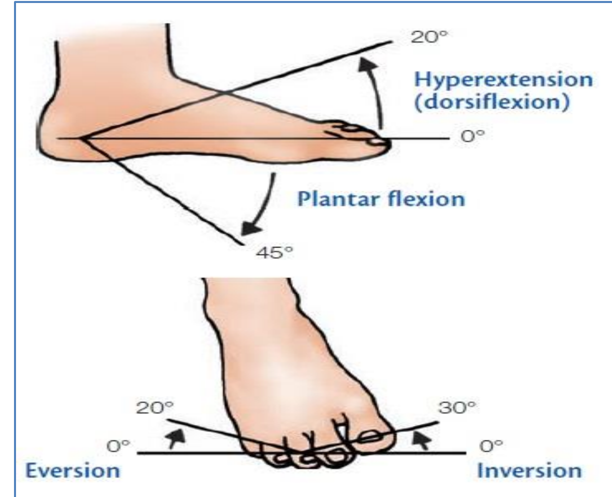


Normal Elbow ROM

Normal Finger ROM



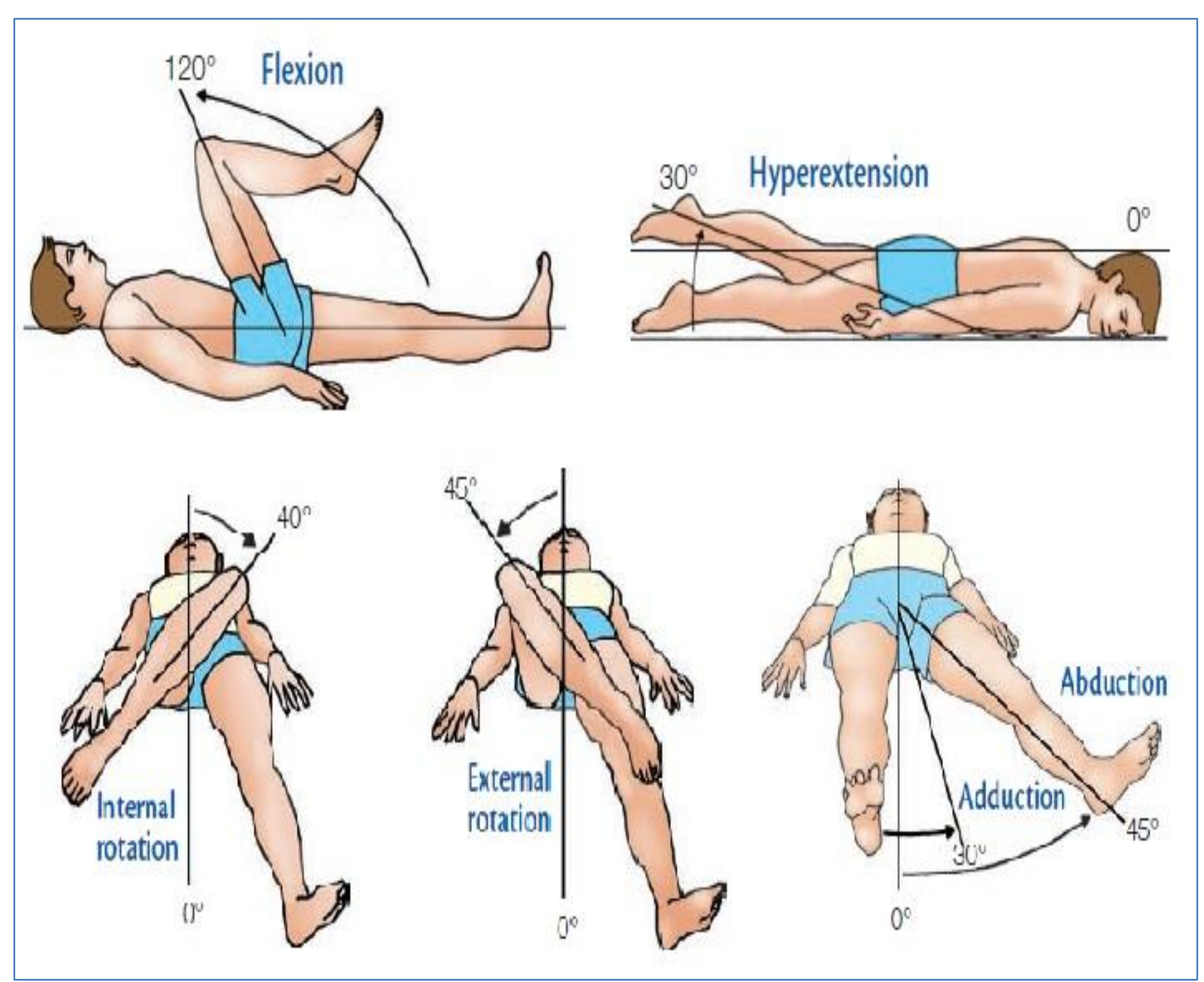
Normal Wrist ROM



Normal Ankle ROM

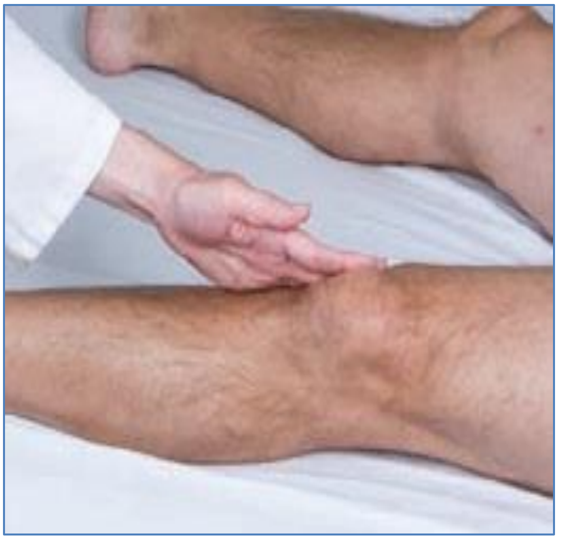
Phalen's Test

Tinel's Sign

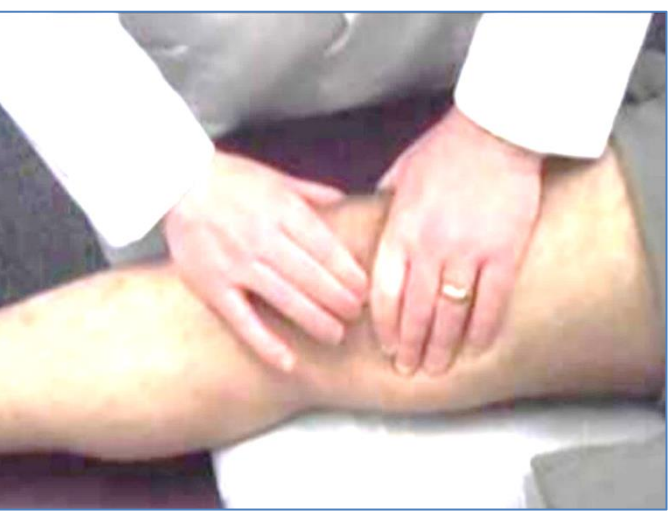


Normal Hips ROM

PROCEDURE	NORMAL FINDINGS
- Palpate the hip (quadriceps, gastrocnemius) for the following:-	
- Bony landmarks.	- Bilaterally symmetrical & equal.
- Muscle size & strength.	- Smooth, regular, strong.
- Joint structure.	- Bilaterally symmetrical; strong.
- Temperature.	- Warm.
- Sensation.	- Non tender.
- Ballottement of the patella:-	
- Use your left hand to compress the suprapatellar pouch.	- The patella snugs against the femur (no fluid present).
- With your right hand, push sharply against the femur.	- Normally, no fluid waves.
Bulge Sign:-	
- Firmly stroke up on the medial aspect of the knee two or three times to displace any fluid.	- Normally, no fluid waves.
- Tap the lateral aspect.	
- Watch the medial side in the hollow for a distinct bulge from fluid wave.	



Bulge Sign



Ballottement of the patella

Neurological System Assessment

Objectives:

1. Demonstrate the ability to safely and accurately complete neurological assessment.

2. Demonstrate the ability to accurately document neurological assessment data in organized manner.

Equipment Needed

1. Penlight **2.** Tongue blade **3.** Cotton swab

4. Cotton ball **5.** Tuning fork **6.** Percussion hammer

7. Familiar aromatic substances; coffee; vanilla; etc.…

Preparation:

1. Perform a screening neurological examination on seemingly well client who haven't significant subjective findings from the history.

2. Perform a complete neurological examination on client who shown sign of neurological dysfunction.

3. Perform a neurological recheck examination on a client with demonstrated neurological deficit who require periodic assessment.

4. Integrate the neurological examination steps of each particular part of the body.

5. Use the following sequence for the complete neurological examination; mental status; cranial nerves; sensory system; reflexes.

6. Position the client in sitting up with head at your eye level.

Subjective data:

1. Headache. **2.** Weakness. **3.** Head injury.
4. Incoordination. **5.** Dizziness/ vertigo. **6.** Numbness or tingling.
7. Seizures. **8.** Difficulty swallowing. **9.** Difficulty speaking.
10. Tremors. **11.** Significant past history.
12. Environmental/ occupational hazards.

PROCEDURE	NORMAL FINDINGS
1) Mental status **<u>Observe appearance and movement</u>**	
- Posture	- Relaxed with shoulders back and both feet stable.
- Gait	- Coordinated and smooth.
- Motor movement	- Smooth, coordinated movement; client alters position occasionally.
- Dress	- Clothes fit and appropriate for occasion and weather.
- Hygiene	- Skin clean, nails clean and trimmed.
- Facial expression	- Good eye contact, smile/ frowns appropriately.
- Speech	- Clear with moderate pace.
<u>Observe mood:-</u>	
- Feeling	- Respond appropriately to topic discussed; express feelings appropriate to situation.
- Expression	- Express good feelings about self, others and life; verbalized positive coping mechanisms (talking, support system, counseling, etc…).
<u>Observe thought process & perception:</u>	
- Clarity and content	- Express full and free- flowing thoughts during interview.
- perception	- Follows directions accurately; perceptions realistic and consistent with yours and others.
<u>Observe cognition:-</u>	
- Level of consciousness (examiner can deduce this from the interview)	- Aware of self, others, place and time; follows instructions.
If the client isn't responding verbally, do the following:- - ask the client to squeeze your hand - ask the client to nod head when touch him or her.	- Squeeze hand - Nods - Pulls finger away

EYE OPENING RESPONSE	
Spontaneous	4
To speech ("open your eyes")	3
To pain	2
No response	1
	SUB-TOTAL

MOTOR RESPONSE	
Obeys verbal command ("wiggle your fingers")	6
Localizes pain	5
Flexion - withdrawal	4
Flexion - abnormal	3
Extension - abnormal	2
No response	1
- - - → plus	SUB-TOTAL

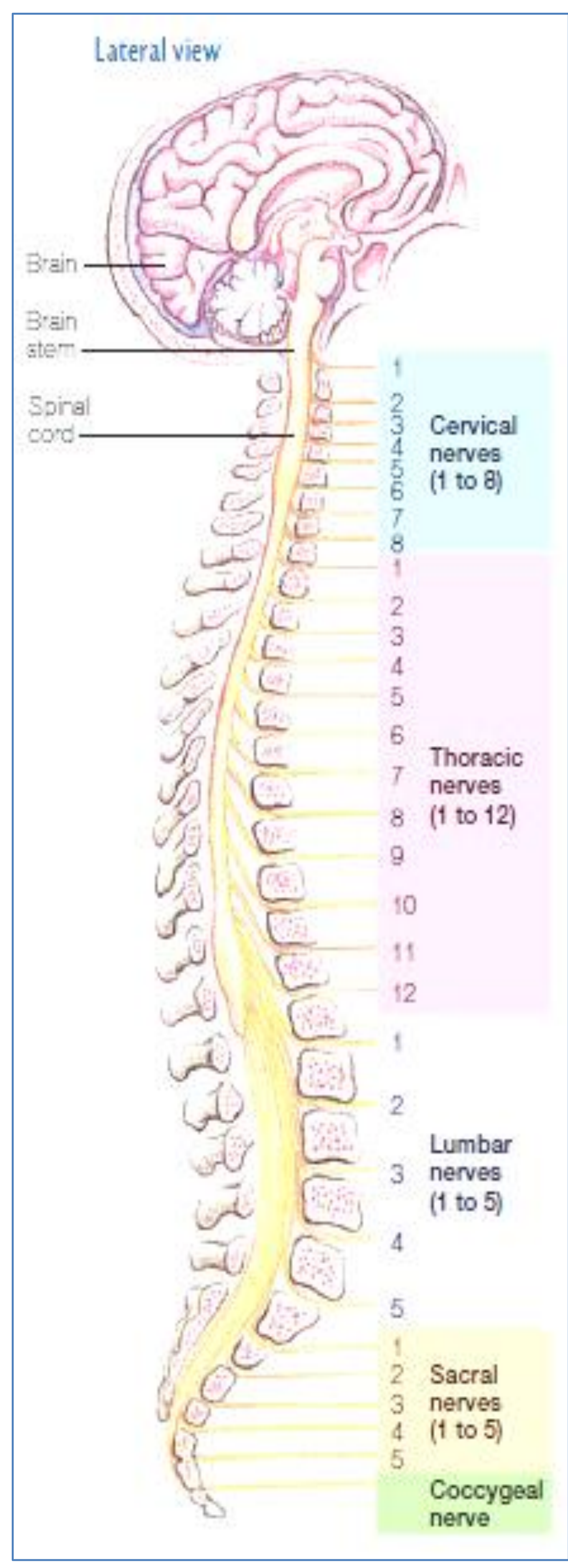
VERBAL RESPONSE		
Oriented X3 -appropriate ("what year is it?" / "[correct response]")	5	
Conversation confused ("what year is it?" / "1962")	4	
Speech inappropriate ("what year is it?" / "after lunch")	3	
Speech incomprehensible ("what year is it?" / "aawagga")	2	
No response	1	Normal total 15
- - - → plus	SUB-TOTAL	TOTAL SCORE

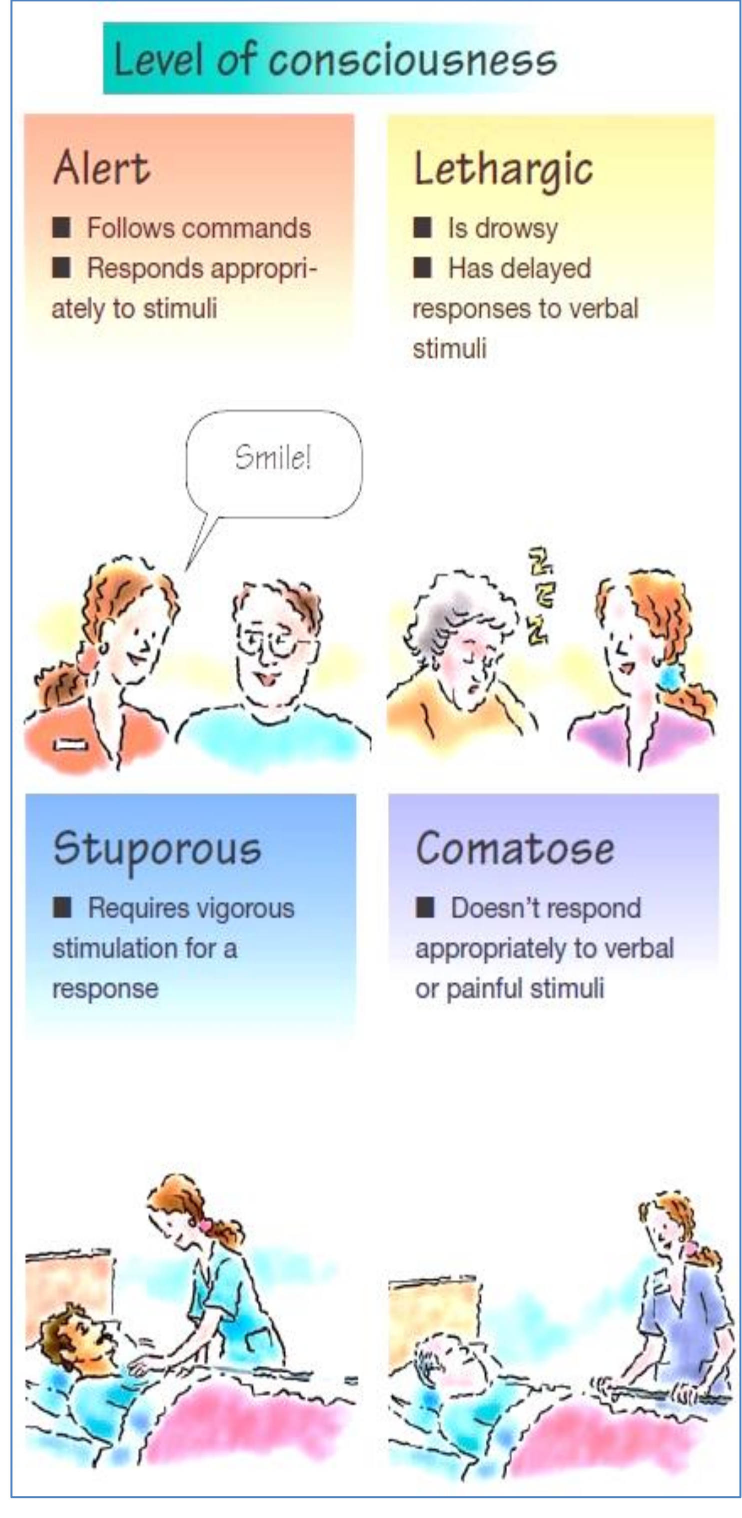
Glasgow Coma Scale

PROCEDURE	NORMAL FINDINGS
Length of concentration	- Listen to you and responds with full thoughts.
Memory	- Correctly answer questions about current days activities; recalls significant past events.
Abstract reasoning: - Ask the client to explain a proverb eg. "a stitch in time saves nine".	- Explains a proverb accurately.
Ability to make sound judgment: - Ask the client "why did you come to the hospital?" or "what do you do when you have pain?"	- Answer to questions based on sound rationale.
Ability to identify similarities: - Ask the client "how are birds and bees a like?"	- Identify similarity.
Sensory perception and coordination: - ask the client to write and draw circle	- Write name and draws circle accurately.
2) Cranial Nerve Assessment:	
CN1- Olfactory Hold scent (coffee) under one nostril with other occluded while client closes eyes repeat with other nostril.	- Identify scent correctly with each nostril.
CN2- Optic: Assess vision, visual fields.	**(see eye assessment).**
CN3- Oculomotor: Assess extra ocular Assess pupils.	**(see eye assessment).**
CN4- Trochlear	**(see eye assessment).**
CN6- Abducens: Assess extra ocular movements & pupils	**(see eye assessment).**

PROCEDURE	NORMAL FINDINGS
CN5-Trigeminal:	
a-Assess sensory function by:	
- Touching cornea lightly with wisp of cotton.	- Eye blink bilaterally.
- Testing client's ability to feel wisp of cotton light touch, dull, & sharp facial sensations.	- Identifies light touch, dull, & sharp sensations to forehead cheeks; & chin.
b- Assess motor function by:	
- Papain masseter & temporal muscles as client clenches teeth.	- Muscle contract bilaterally.
c- Assess jaw jerk.	- Mouth opens slightly.
CN7- Facial:	
a, Assess sensory function: The client to identify sugar lemon, salt, on the anterior two third of tongue with eyes closed & tongue protruded.	- Identify taste correctly.
b. assess motor function: by asking the client to do the following: - Smile - Frown - Show teeth - Blow out - Raise eyebrows & tightly close eyes	- Smiles - Frowns - Show teeth - Blows out cheeks - Raise eyebrows & closes eyes tightly as instructed; facial movements are symmetrical.
CN8- Acoustic	**(see ear assessment).**

PROCEDURE	NORMAL FINDINGS
CN9- Glossopharyngeal **CN10- Vagus:** **a.** Assess motor function: - Depress the tongue with tongue Blade. - Ask the client to say "ahhh". - Note pharyngeal movement. - Touch the posterior pharyngeal wall with a tongue blade. - Note the gag reflex. **b.** Assess sensory function: - Ask client to identify sugar, lemon juice, & salt tastes on posterior third of protruded tongue with eyes closed. **CN11- Spinal accessory:** - Palpate strength of trapezius muscles by asking the client to shrug shoulders against your hands. - Palpate strength of sternocleidomastoid muscles by asking client to turn head against your hand. **CN12- Hypoglossal:** - Ask client to protrude tongue & move it to each side against tongue blade.	- The uvula & soft palate should rise in the midline, & the tonsillar pillars should move medially. - Gag reflex present. - Identifies correct taste. - Symmetrical, strong contraction of trapezius muscles. - Strong concentration of sternocleido-mastoid muscle on opposite side that head is it turned. - Symmetrical tongue with smooth outward movement & bilateral strength.


Lateral view
Brain
Brain stem
Spinal cord
1
2
3
4
5
6
7
8
Cervical nerves (1 to 8)
1
2
3
4
5
6
7
8
9
10
11
12
Thoracic nerves (1 to 12)
1
2
3
4
5
Lumbar nerves (1 to 5)
1
2
3
4
5
Sacral nerves (1 to 5)
Coccygeal nerve


Level of consciousness
Alert
■ Follows commands
■ Responds appropriately to stimuli
Lethargic
■ Is drowsy
■ Has delayed responses to verbal stimuli
Smile!
Stuporous
■ Requires vigorous stimulation for a response
Comatose
■ Doesn't respond appropriately to verbal or painful stimuli

PROCEDURE	NORMAL FINDINGS
3) Sensory system assessment: **Test for primary sensation ask client to close his/her eyes:-** **a-** Test light touch sensation by touching a cotton wisp to the forehead; cheeks & chin:- - Ask the client to say "now" whenever touch his felt. **b-** Alternately with sharp tip & dull tip of paper clip. **c-** Vibrating tuning fork on major distal bony prominence of wrist sternum. **Test for cortical & discriminatory sensation:** Ask client to close his/her eyes to identify the following: **a-** Tow points discrimination: the number of points touching him/her while you touch client with two points simultaneously. **b-** Stereo genesis: put an object (coin) in the client's hand. **c-** Graphesthesia: write a number on clients palm with a tongue blade. **d-** kinesthesia: move the finger or the big toe up and down, and ask the client to tell you which way it move.	- Identifies area of light touch. - Identifies are touched and differentiates between sharp & dull sensation. - Identifies vibratory sensation. - Identifies tow points on, forearm at 40mm apart; back at 40-70mm apart; dorsal hands at 20-30mm apart; fingertips at 2-5mm apart. - Identifies correct object. - Identifies correct number. - Identifies correct direction body part is moved.

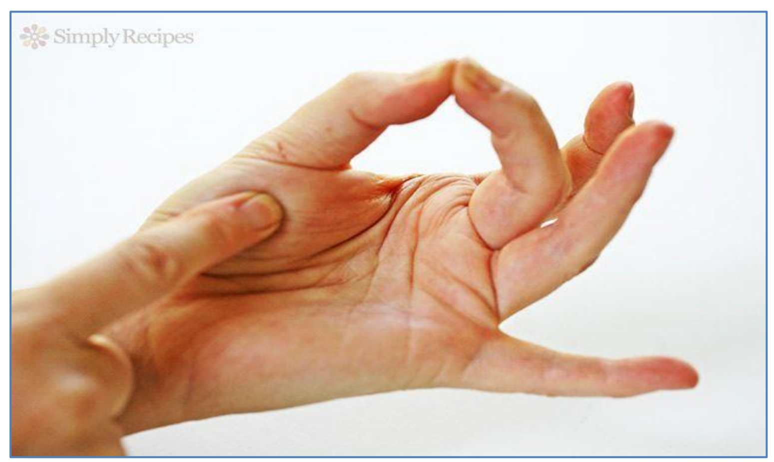
Stereognosis

Graphesthesia

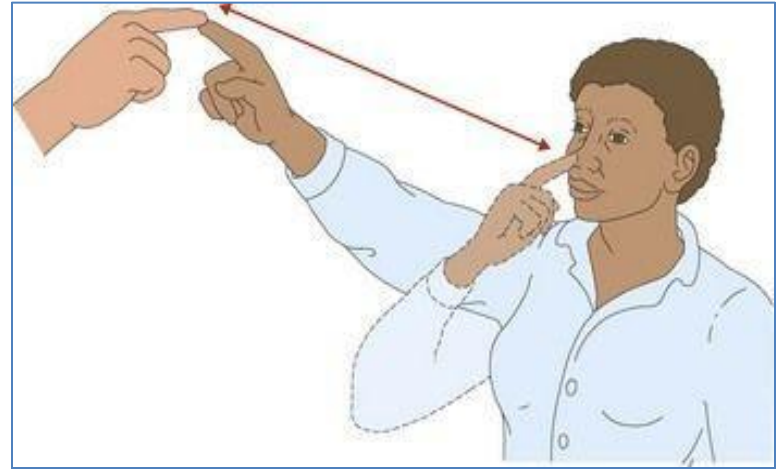
PROCEDURE	NORMAL FINDINGS
4) Motor assessment Ask the client to close eyes and do the following: **a-** Holds arms over the head and straight out in front.	- Hold arms steadily for 20 seconds.
b- Finger to nose: with arms extended to the sides, touch each forefinger alternatively to nose, first with eyes open then with eyes closed.	- Smooth accurate movements while touching finger to nose.
c- Finger to thumb: tape forefinger to thumb rapidly.	- Rapidly taps forefinger to thumb.
d- Touch each finger to thumb.	- Rapidly touches each finger to thumb.
e- Heel to shin: run each heel down opposite shine one at a time.	- Runs each heel smoothly down each shin.
f- Romberg test: ask the client to stand erect with feet together and arms at sides, first with eyes open, then with closed eyes.	- Stands straight with minimal swaying.
g- Walk naturally.	- Steady gait with opposite arm swing.
h- Tandem walk: walk in a heel- to- toe fashion.	- Maintain balance with tandem walk.
i- Stand on each foot (one at a time).	- Stand on one foot at a time.
j- Hope on each foot (one at a time).	- Hopes on each foot without losing balance.
k- Walk on heels, then toes.	- Walk on heels, then toes

Tandem Walk

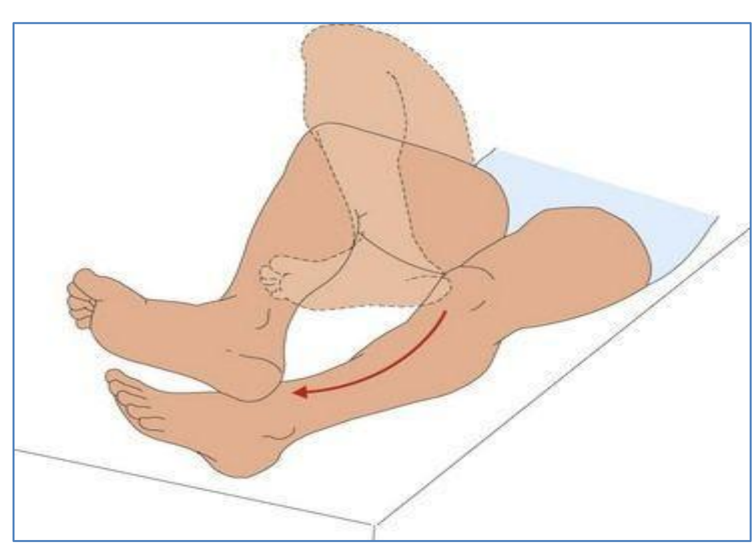
Romberg Test



Finger – Finger Test

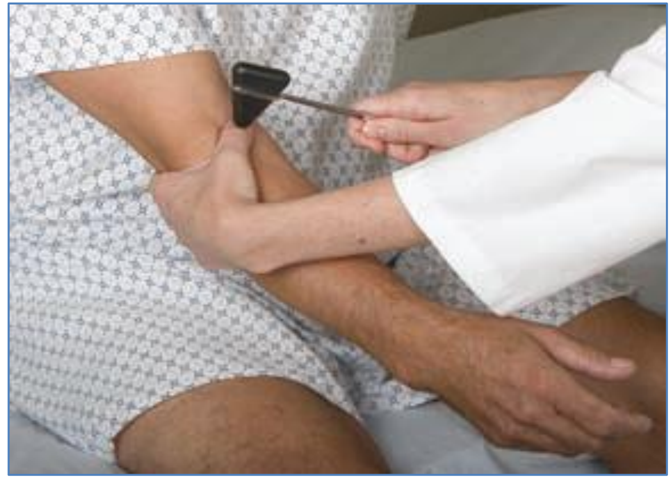


Finger – Nose Test

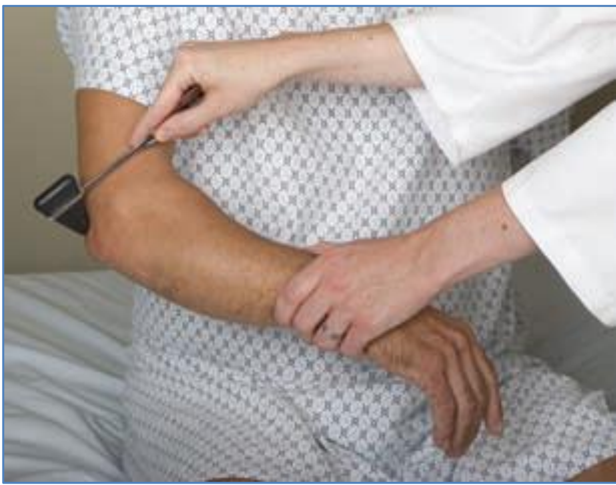


Shine – Heel Test

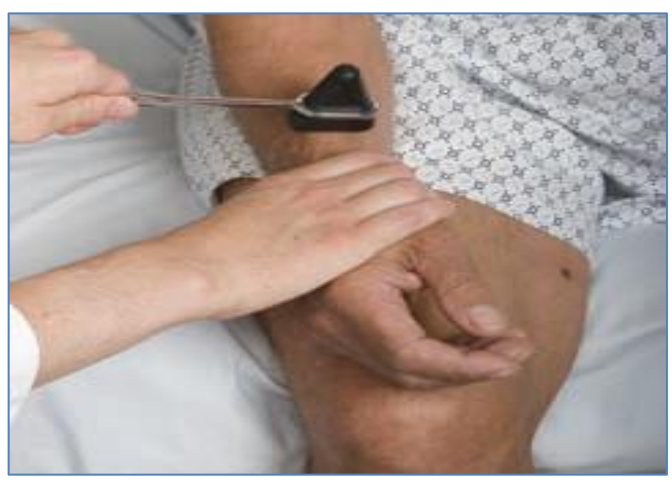
PROCEDURE	NORMAL FINDINGS
5) Reflexes assessment	
<u>Elicit deep tendon reflexes as following:</u>	
a- Biceps reflex: with reflex hammer, tap your thumb placed over biceps tendon with clients arm flexes.	- Biceps contract (1^+, 2^+, 3^+ biceps reflex).
b- Brachioradialis reflex: tape brachioradialis tendon just above wrist on radial side with clients arm resting midway between supination and pronation.	- Elbow flexed with pronation of forearm (1^+, 2^+, 3^+ brachioradialis reflex).
c- Triceps reflex: tap triceps tendon (just above elbow) with clients arm abducted and forearm hanging freely.	- Elbow extended (1^+, 2^+, 3^+ triceps reflex).
d- Patellar reflex: tap patellar tendon with client's knee flexed and thigh stabilized.	- Extension of knee (1^+, 2^+, 3^+ patellar reflex).
e- Achilles reflex: tap Achilles tendon with client's foot slightly dorsiflexed and stabilized.	- Plantar flexion of foot (1^+, 2^+, 3^+ Achilles reflex).
<u>Elicit superficial reflexes as follows:</u>	
Umbilicus reflex: lightly stroke each side of abdomen above and below umbilicus.	- Bilateral upward and downward movements of umbilicus toward stroke; abdomen contract.
<u>Assess for pathologic reflexes as follows:</u>	
a- Babinski reflex: use tongue blade to stroke lateral aspect of sole from heel to ball of foot.	- Flexion of all toes (plantar response negative reflex in adult).
b- Brudzinski reflex: have client lie flat and flex neck forward.	- No pain, resistance, or hip- knee flexion accompanies maneuver.
c- Kering sign: have client lie flat and flex one knee and hip on same side.	-No pain or resistance to maneuver.



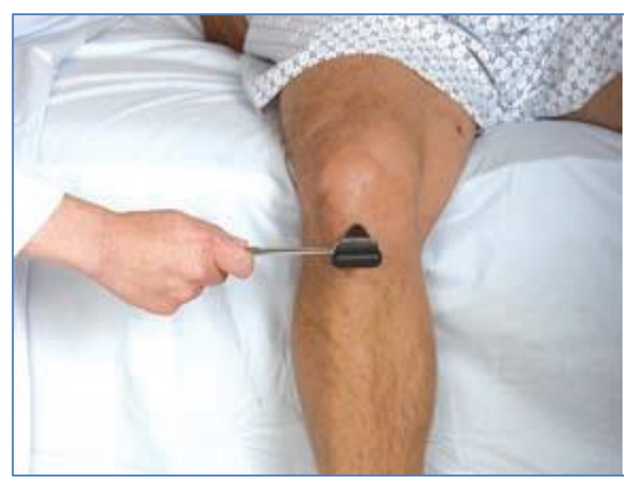
Biceps Reflex



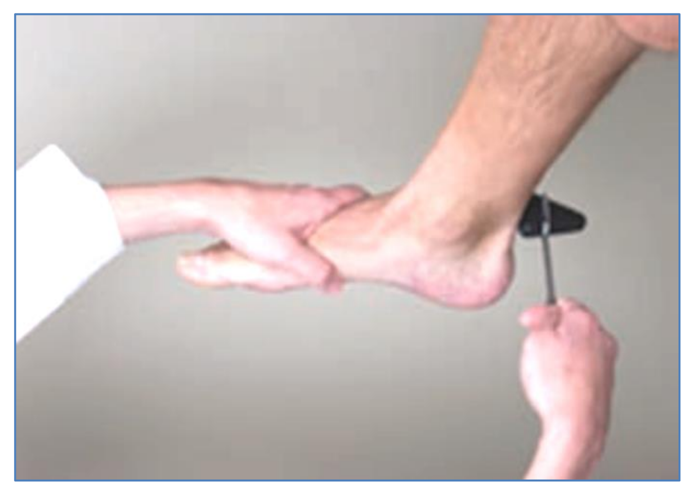
Triceps Reflex



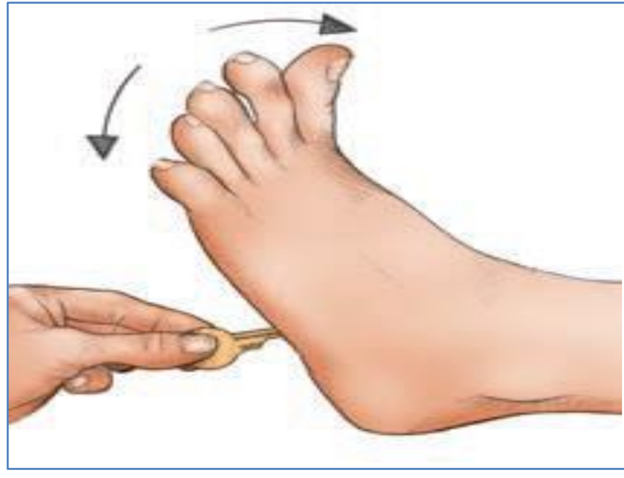
Brachioradialis Reflex



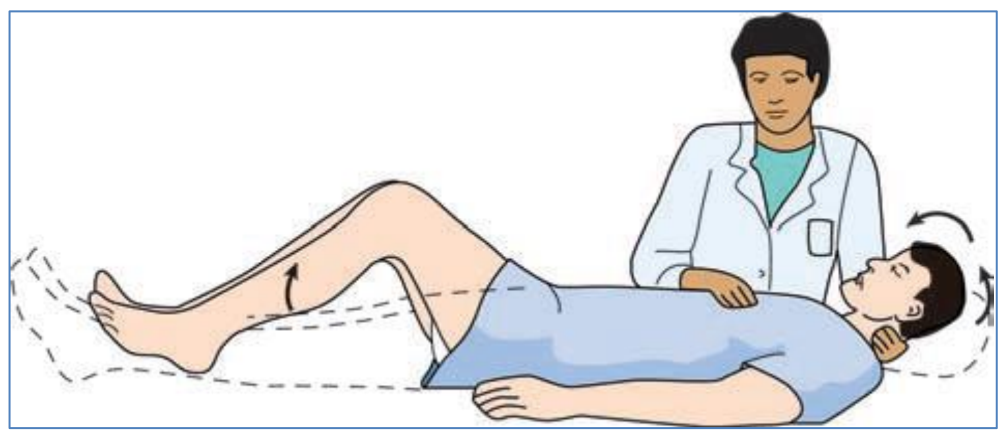
Patellar Reflex



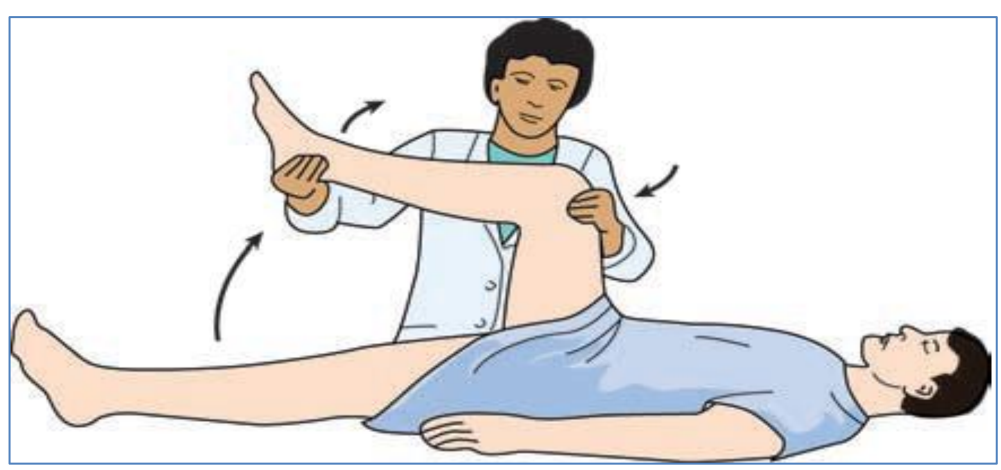
Achilles Reflex



Babinski Reflex



Brudzinski Sign



Kernig Sign

Decerebrate posture

In a decerebrate posture, the arms are adducted and extended, with the wrists pronated and the fingers flexed. The legs are stiffly extended, with plantar flexion of the feet. This posture results from damage to upper brain stem.

Decorticate posture

In a decorticate posture, the arms are adducted and flexed, with the wrists and fingers flexed on the chest. The legs are stiffly extended and internally rotated, with plantar flexion of the feet. This posture results from damage to one or both corticospinal tracts.