BarCharts, Inc.® WORLD'S #1 ACADEMIC OUTLINE

Quick Study® ACADEMIC

Nursing Assessment

Patient intro, physical, cardiovascular, HEENT, integumentary, respiratory, breasts, GI, GU, musculoskeletal & neurologic systems including post-assessment

INTRODUCTION

Performing an **accurate physical assessment** and being able to differentiate **normal** from **abnormal findings** is one of the most important roles for today's health-care practitioner. If an accurate physical assessment cannot be performed, whether for **baseline data** or when the client's **condition changes,** then the client is **NOT receiving** the level of **competent care** he/she deserves.

Assessment

This is the process by which a nurse investigates the body of a client for **signs of disease** or **disorders.** It generally follows the taking of the **history**—an account of the **symptoms** as experienced by the client. Using critical thinking and professional knowledge, the nurse analyzes the **person-specific history** and **physical assessment** in order to *determine the client's nursing care needs and to design appropriate nursing responses.* This data then becomes part of the client's **health record.**

- Nursing assessment is the **first stage** of the nursing process
- It includes the **gathering of information** about a client's physiological, psychological, sociological and spiritual status
- The purpose of assessment is to **identify** the client's nursing **problems** and nursing **care needs**

Collection of Symptoms & Signs

- **Symptom:** A subjective experience by the client
- **Sign:** An objective finding by the examiner/practitioner

Nurses use assessment to:

- Obtain baseline data and expand the database from which subsequent phases of the nursing process can evolve
- Identify and manage a variety of client problems
- Evaluate the effectiveness of nursing care
- Provide data for planning interventions
- Enhance the nurse/client relationship
- Make clinical judgments

Assessment Preparation

Before you begin: Being prepared and helping the client establish a trusting relationship is important to conducting a comprehensive and accurate assessment.

Review the Chart

- Note the client's name, age, address, race, occupation and religion
- The chart provides a starting point for coming to know the client as a person
- Information on the chart gives you an idea of the client's lifestyle
- Chart data may identify risk factors

Establish Rapport

- Greet the client in a friendly, non-threatening manner
- Explain your role in client care—your first impression can earn the client's trust and confidence
- Share with the client the purpose of the assessment: "*the assessment will provide a baseline picture of your health status*"

Control Environment

- Give privacy by drawing the curtain, closing the door
- Excuse family members so the client can talk candidly with you

Position Client

- Clothe client in a loose-fitting gown, providing easy access for inspection and palpation of body
- *Respect personal space:* Stay three feet away from the client to avoid invading personal space; for some portions of the examination closer proximity is needed, but personal space needs to be respected
- *Ask permission when touching the person,* especially private or sensitive areas of the body

Techniques of Assessment

Observation

Critical scrutiny using the senses is called observation.

- **Looking**
  - overall appearance, signs of distress or discomfort
  - color of skin, nails and hair
  - skeletal deformities or use of assistive aids
- **Listening**
  - interactions with provider and others
  - congruence of verbal and non-verbal actions
- **Smelling**
  - the presence of any peculiar odors from the body
  - the presence of odors from substances ingested or applied to the body

Interview

The use of therapeutic communication to obtain subjective data is called an interview.

- Identifies strengths, actual or potential health problems, support systems, teaching needs and referral needs from the **client's perspective**

Nursing History

A structured interview prior to the physical examination is known as a nursing history.

- A comprehensive nursing history is obtained at the first visit
- History is updated at subsequent visits
- Elements of the history include:
  - reason for seeking care/**health status**
  - course of present illness, including **symptoms**
  - current management of illness
  - **past medical history**
  - family history
  - social history
  - perception of illness
  - review of systems
    - a series of questions about current and past health, including health-promoting practices
    - ask about **signs** and **symptoms,** as well as **diseases** related to each body system
  - functional assessment (activities of **daily living**)
  - perception of health

THE NURSE KNOWS

Collecting a nursing history requires careful listening and use of therapeutic questions to hear the client's concerns

Analysis of a Symptom

Provokes: What makes symptoms better or worse?

Quality: What does it feel like?

Radiation: Where is the symptom and where does it go?

Severity: How bad does it feel on a scale of 1 to 10?

Time: When does it occur, how often, and how long does it last?

PHYSICAL EXAMINATION

This is the process by which a health-care provider investigates the body of a client for **signs of disease.**

Physical Examination Techniques

Four assessment techniques are used in a physical examination: **inspection, palpation, percussion** and **auscultation.**

Inspection

This is the *close, careful* and *unhurried visualization* of the client as a whole and also of each body system.

- It involves **critical observation** that:
  - requires good lighting, to visually inspect the body without distortion or shadows
  - looks at the color, shape, symmetry and position of body parts

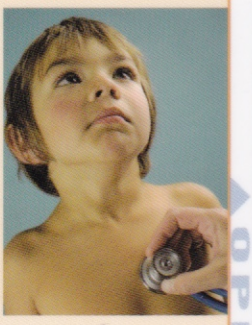
Palpation

This is the *purposeful* and *careful feeling with the hands* during a physical examination. The health-care provider touches and feels the client's body to examine the **size, consistency, texture, location** and **tenderness** of an organ or body part.

- Palm of hand or fingertips assess:
  - consistency of tissue
  - alignment and intactness of structures
  - symmetry of body parts or movements
  - transmission of sound and fine vibrations
- Back of the hand assesses skin temperature
- Ulnar surface of fingers assesses texture, moisture, masses, organ position and area of tenderness

Percussion

This is a method of tapping on a surface to *assess* the *underlying structure's* **location, size** or **density.** The sound changes as the practitioner moves from one area to the next.



- Done with the middle finger of the right hand tapping on the middle finger of the left hand, while the left palm is on the body
- There are **two types** of percussion:
  - *direct,* which uses only one or two fingers
  - *indirect,* which uses the middle/flexor finger
- There are **four types** of percussion sounds:
  - tympanic
  - resonant
  - flat
  - dull
- A **flat/dull sound** indicates the presence of a *solid mass* under the surface
- A **tympanic/resonant sound** indicates *hollow, air-containing structures*

THE NURSE KNOWS

Auscultation is a skill that requires substantial clinical experience, a fine stethoscope and good listening skills: **high-pitched tones** are best heard with the ***diaphragm*** *of the stethoscope* **low-pitched tones** are best heard with the ***bell*** *of the stethoscope*

Percussion Sound	Description	Example of Cause
tympanic	drum-like high-pitched, loud	gastric bubble
resonant	hollow low-pitched, loud	healthy lungs
flat	dull/muted high-pitched, soft	bone
dull	thud-like medium-pitched, soft	liver

Auscultation

This is the technique for *listening* to the **internal sounds** of the body, usually using a **stethoscope.**

- Identifying sounds produced by the body
- Sounds must be isolated for proper identification and evaluation
- Health-care providers routinely listen to a client's lungs, heart and intestines to evaluate the frequency, intensity, duration, number and quality of sounds
- Performed for the purposes of examining the circulatory system, respiratory system and gastrointestinal (GI) system

CARDIOVASCULAR SYSTEM

The primary purpose of the **cardiovascular system** is to move *nutrients, gases* and *wastes* to and from cells. It encompasses the **neck vessels, heart** and **peripheral vascular system.**

Blood Pressure (BP)

BP is recorded as two numbers.

- The higher number, which is the **systolic pressure,** is the *maximal contraction of the heart*
- The lower number, which is the **diastolic pressure,** is the *resting pressure in the heart's ventricles*
  - the *difference between the systolic and diastolic pressure,* called the **pulse pressure,** represents the *force* that the *heart* generates each time it *contracts*
  - there is no natural "normal" value for BP; rather, there is a range of values, which, upon increasing, are associated with greater risks

Neck Vessel Assessment

Assessment of neck veins provides information about a client's volume and pressure in the cardiovascular system.

Inspection

The *right internal jugular vein* is typically the best neck vein to inspect.

- Position the client at a 45-degree angle and turn head slightly away
- Using tangential light, observe the *physical appearance* and the *venous pulsation* of the *external jugular vein,* where it passes over the sternomastoid muscle

Palpation

Palpate the carotid arteries low in the neck to avoid the carotid sinus. Do one side at a time to prevent compromising blood flow to the head.

- Locate the *internal jugular pulsation* and mark the highest point of pulsation
- Find the "*angle of Louis*" and use two straight lines to mark the *intersection* and measure the *distance* above the *sternal angle* (2 cm or less is normal)

Auscultation

Auscultate the carotid arteries using the *bell* of the *stethoscope.*

- Listen at *angle of jaw, midcervical area* and *base of neck,* then ask the client to hold the breath momentarily
- Carotid **bruits** are a *blowing* or *rushing sound* over the carotid artery; usually the result of a **stenosis** of the *carotid artery*

Heart & Pericardium Assessment

This involves assessing the "pump" and surrounding sac.

Inspection

In a supine position, inspect the **chest wall** and **epigastrum,** looking for *pulsations, heaves* or *lifts.*

- Pulsations, or the **apical impulse,** may be visible in the 4th or 5th ICS (*intercostal space*) at the left midclavicular line known as the PMI (*point of maximal impulse*)

Palpation

Methodically palpate the **pericardium** using the palms and fingers. Begin at the *apex* and move to the *left sternal border,* and then to the *base of the heart.*

- **Apical pulsation** (PMI) can be *felt on palpation*
  - PMI is normally 2–3 cm in diameter
  - a *large, laterally displaced* or *diffuse* PMI may indicate some form of **cardiomegaly**
- **No palpable pulsations** over the *aortic, pulmonic* and *mitral valves*
- There should be no *palpable heaves* or *thrills* over the **apex**
  - **thrill:** *palpable murmur* that feels similar to a cat purring; tips of the fingers may be more sensitive to this vibration; ***thrills are always associated with murmurs***
  - **heave:** *upward displacement* of the chest against the hand; heaves are best felt with the heel of the hand at the sternal border; ***heaves have various associations***

Percussion

Although used to determine cardiac borders, percussion is of ***limited usefulness in assessment of the heart.***

Auscultation

This is the *systemic listening* to **cardiac activity**—specifically, ***blood flow through the cardiac structures.***

- Right 2nd ICS sternal border – **aortic valve**
- Left 2nd ICS sternal border – **pulmonic valve**
- Left 5th ICS sternal border – **triscupid valve**
- Left 5th ICS midclavicular line – **mitral valve**
- If heart sounds are faint or undetectable, have the client lean forward or lay on the left side to bring the heart closer to the surface of the anterior chest wall
- Listen for **S1** (closure of the *AV [atrioventricular] valves*) and **S2** (closure of the *semilunar valves*) sounds
  - **S1** is best heard over the *mitral valve*
  - ***S2*** is best heard over the *aortic valve*
- Using the **diaphragm** of **stethoscope,** note the following at each area:
  - rate and rhythm
  - S1 and S2
    - S1 is the "lub" sound; S2 is the "dub" sound
    - S1 is louder than S2 at the apex; S2 is louder than S1 at the base
    - S1 coincides with carotid pulsation
  - extra heart sounds or murmurs
    - **S3** is caused by *increased blood volume within the ventricle* and is best heard with the bell of the stethoscope; known as a **ventricular gallop**
    - **S4** is caused by *blood being forced into a hypertrophic ventricle;* known as an **atrial gallop**
    - **murmurs** are turbulence, or a *gentle blowing* or *swooshing sound,* caused by:
      - > a change in the velocity of blood flow
      - > a structural defect in the valves
      - > an unusual opening in the cardiac chambers
- Repeat the auscultation process, using the **bell** of the **stethoscope**

Grading of Murmurs

I – barely audible
II – clearly audible, but faint
III – moderately loud; easy to hear with stethoscope
IV – loud; associated with a thrill palpable on the chest wall
V – very loud; heard with stethoscope partially lifted off the chest wall
VI – loudest; heard with entire stethoscope lifted off the chest wall

THE NURSE KNOWS

The cardiac cycle has two phases: **systole,** when the *ventricles contract* and *eject blood,* and **diastole,** when the *ventricles relax* and *blood fills* the ventricles and the coronary arteries

Peripheral Vascular System

A system of intertwining **veins** and **arteries,** which *carry blood to and from* the **heart** and **lungs.**

Artery Assessment

Arteries assessed in cephalocausal position.

Carotid (***See*** Neck Vessel Assessment)

Upper Extremity – Radial & Brachial Pulses

- Palpate both **radial pulses** simultaneously
  - note the *rate, rhythm, character* and *amplitude;* compare both pulses
  - feel the pulse with one finger
  - raise the client's forearm and feel for a bounding pulse by feeling with the flat of your palm
- **Normal radial pulse** is *symmetrical, regular,* and between *60–90 per minute*

Femoral Pulse

Palpation

- Press deeply, below the *inguinal ligament* and about midway between *symphysis pubis* and *anterior superior iliac spine*
- Use two hands, one on top of the other, to feel the **femoral pulse**
  - note the adequacy of the pulse volume
  - rate the strength of the pulse as:
    - 0 (absent)
    - 1+ (decreased)
    - 2+ (normal)
  - repeat the procedure on the opposite side
  - *compare timing* of **femoral** and **radial pulses** by *simultaneous palpation*
- **Normal femoral pulse** has *same characteristics as radial pulse* and is ***simultaneous in timing***

Auscultation

- Use the *diaphragm of stethoscope* to listen over the femoral artery for a **bruit**
- A **pulsation** is normally heard, *but without additional sounds during systole*

Lower Extremity – Popliteal, Posterior Tibial & Dorsalis Pedis Pulses

- Inspect for *color changes, skin lesions, stasis ulcers* or *lack of hair growth* and *Homans' sign*
- Palpate the **pulse symmetry** and **amplitude** of *each leg vessel*
  - gently flex the knee and feel for the **popliteal pulse** by deep palpation in midline in *popliteal fossa*
  - the **posterior tibial pulse** can be felt behind and below the *medial malleolus*
  - the **dorsalis pedis pulse** is palpable on the dorsum of the foot in the *first intermetatarsal space* just lateral to the extensor tendon of the great toe
- Palpate the *feet* to assess **vascularity:**
  - warmth
  - capillary refill
  - elevation pallor
  - dependent rubor
- Special attention is given to signs of **chronic arterial** or **venous insufficiency**
- Examine along the course of *superficial veins*

HEAD, EYES, EARS, NOSE, THROAT (HEENT)

HEENT Assessment

Head

- Inspect and palpate for *size, shape* and *symmetry*
  - **normocephalic**
    - **hair:** growth, distribution, texture
    - **masses:** use fingertips to palpate for masses of the *scalp, ears, face, throat* and *neck*
    - **sinuses:** palpate *maxillary sinuses* and *frontal sinuses* for tenderness or masses; transilluminate to assess whether or not the sinuses are clear

Face

- Observe for *symmetry* of facial features; assess CN V and VII

Neck

- Observe movement of *cervical spine:*
  - have client rotate head, shrug shoulders against resistance (CN XI–spinal accessory)
- Palpate *carotid pulses* (one at a time)
- Auscultate carotids (with stethoscope) for *bruits* and/or *turbulent blood flow*
- Palpate *trachea* for midline position
- Palpate *thyroid* for masses
- Palpate *lymph nodes* (pre-/post-auricular, occipital, cervical and submental nodes) for tenderness and swelling

Eyes

- Inspect and palpate *lids, lashes, position* and *symmetry* of *eyes*, and *symmetry* and *size* of *pupils*
  - palpate **lacrimal sacs** for abnormal *tearing* or *purulent material* excretion from the *inner canthus* area
  - **sclera:** normally white to buff colored
  - **conjunctiva:** clear to pink colored, with shiny appearance
  - **pupils:** approximately ¼ the size of the iris; constrict with light and dilate in the absence of light; observe for *symmetrical reactions*
  - **iris:** both irises should be same *color, size* and *shape*
  - assess CN III (oculomotor), IV (trochlear) and VI (abducens)
    - **convergence:** as eyes shift from a far object to a near object, pupils constrict
  - **confrontation:** have client cover one eye and look straight ahead, while you hold your fingers in the peripheral fields; then, ask client to tell you where he/she sees your fingers: "upper left, lower right," etc.
  - **visual acuity**
    - Snellen chart for *distance*
    - Rosenbaum chart for *near vision*
    - **extraocular movements (EOMs):** six movements of the eye, which test CN III, IV and VI
    - **pupil response:** pupils equal, round, reactive to light and accommodation (PERRLA):
      - > pupils *constrict* in response to *light*
      - > pupils *accommodate* (constrict) for *near vision*
      - > pupils *dilate* (open) for *dimness* and *distance*
    - **fundoscopic exam:** use of **ophthalmoscope** to visualize the *retina* and *inner eye* structures

Ears

- Inspect and palpate:
  - *size, shape, position, discharge* or *lesion*
    - tops of ears should line up with the outer corners of eyes
  - **hearing acuity:** normal voice, whisper test, Weber test, Rinne test
  - **otoscopic exam:** visualization of the *tympanic membrane* (TM)
    - normal eardrum/TM is pearly gray in color
    - inflamed TM is reddish pink
  - assess CN VIII

Nose

- Observe external structures for *shape, size, color* and presence of nasal *discharge* (note color, amount and consistency)
  - palpate for *masses* or *deviations;* occlude one naris (nostril) and assess for *obstructions*

Mouth & Throat

(***See*** Gastrointestinal [GI] System)

INTEGUMENTARY SYSTEM

This system includes **skin, hair** and **nails.** The skin provides **protection** by preventing fluid loss, regulating body temperature, providing sensory perception, excreting impurities, and protecting against infection, exposure and trauma. The skin is the largest organ in the body, and the average adult has over 20 square feet of skin.

- The skin responds to external changes and reflects internal changes
- Skin consists of three layers: *epidermis, dermis* and *subcutaneous tissue*
- Skin carries out seven major functions:
  - maintaining an internal environment by acting as a **barrier** to loss of water and electrolytes
    - **protection** from external agents that could injure the internal environment
    - **regulation** of body heat
    - acting as a sense organ for **touch, temperature** and **pain**
    - self-maintenance and **wound repair**
    - production of **vitamin D**
    - delayed hypersensitivity reaction to foreign substances

Skin Assessment

- Begin with a general inspection, followed by detailed examination
- Wear gloves if the client has any lesions, complains of itching or if mucous membranes are to be examined
- Inspect for **color, texture, tone, presence** and **distribution of lesions**
  - **normal findings:** color varies by person, but should be *uniform, smooth* and *toned*
  - **abnormal findings:** *pale, shiny skin of lower extremities, mole with irregular borders or color changes, localized hemorrhages*
- Inspect for **scars** or **masses:** note *location, size* and *appearance*

THE NURSE KNOWS
Careful assessment of the skin can alert the nurse to cutaneous problems, as well as to systemic diseases

Finding	Possible Meaning
jaundice: yellow discoloration, including sclera	liver problem, biliary tract disease
pale yellow skin tone	renal problem
flushed, red face	excessive ETOH (alcohol) intake, fever, localized inflammation, embarrassment
pale	circulatory problem

- Palpate, using back of the hand, to assess for *temperature, moisture, texture*
  - **normal finding:** cool to warm, dry and smooth
  - **unexpected finding:** *lesions, temperature elevation or depression, pedunculation, exudates*

Hair Assessment

Hair: Inspect *distribution* on head and body

Scalp: Inspect *condition* and presence of "critters"

Nails: Inspect for *color, contour, texture, configuration symmetry* and *cleanliness*

- normal findings: smooth nail plate, nail base angle 160 degrees, uniform color
- unexpected findings: *color change, white spots, cuticle trauma*

- **Blanch test** or **capillary refill:** A delay indicates *poor arterial circulation*
  - press down on nail until it blanches
  - release nail and observe for return of pink color
  - color should return in less than 3 seconds
    - room and body temperature, *vasoconstriction* from smoking or peripheral edema can affect CRT
    - **clubbing:** loss of normal angle between nail and nail bed due to *chronic oxygen deprivation*

PRIMARY LESION	APPEARANCE	ASSOCIATED CONDITIONS
macule	flat and small (1 cm or less) with color change	rubeola, rubella, scarlet fever, roseola infantum
papule	elevated, well circumscribed, small (1 cm) and colored	ringworm, psoriasis
vesicle or *blister*	bulging, small (1 cm or less), sharply defined, filled with clear, free fluid	herpes simplex, varicella, poison ivy, herpes zoster
bullae	large (greater than 1 cm) vesicles	scarlet fever, sunburn
pustula	elevated, well circumscribed, small (less than 1 cm), filled with pus	impetigo, acne, staphylococcus infection
wheal	elevated, white to pink edematous lesion that is unstable and associated with itching; evanescent—they appear/disappear quickly	mosquito bites, hives
petechiae	tiny, reddish-purple, well-circumscribed spots of hemorrhage in the superficial layers of the epidermis	severe systemic disease, such as: meningococcemia, bacterial endocarditis, or non-thrombocytopenic purpura
SECONDARY LESION	**APPEARANCE**	**ASSOCIATED CONDITIONS**
scales	dried fragments of sloughed dead epidermis	seborrhea, tinea capitis
crusts	dried blood, serum, scales and pus from corrosive lesions	infectious dermatitis
excoriation	mechanical removal of epidermis, leaving dermis exposed	scratch or scrape of original lesion
erosion	loss of some or all of epidermis, leaving a denuded surface	
ulcer	destruction and loss of the epidermis, dermis and possible subcutaneous layers	causes include: trauma, exposure to heat or cold, problems with blood circulation, irritation from exposure to corrosive material
fissure	a vertical, linear crack through epidermis and dermis	caused by candidiasis or dermatitis
scar	formation of dense connective tissue	result of skin injury
lichenification	pronounced thickening of the epidermis and dermis	from chronic scratching or rubbing

RESPIRATORY SYSTEM

The primary purpose of the **respiratory system** is twofold: (1) gas exchange, or the *transfer* of **oxygen** and **carbon dioxide** between the atmosphere and the blood, and (2) the *maintenance* of **acid–base balance.**

Respiratory Assessment

Inspection

Inspect for *ability to breathe, respiratory rate, contour* and *movement of chest* and presence of *retractions.*

- Evaluate state of **oxygenation** by inspecting *skin color,* level of *consciousness* and *emotional state*
- Observe position of **trachea**
- Assess *size* and *shape* of **chest:** lateral diameter > anterior/posterior diameter
- Determine *uniform/equal expansion* of the **chest**
- Inspect for **chest wall deformities**
  - **kyphosis:** curvature of the spine – anterior-posterior
  - **scoliosis:** curvature of the spine – lateral
  - **barrel chest:** chest wall increased anterior-posterior; normal in children; typical of hyperinflation seen in COPD
  - **pectus excavatum:** sternum sunken into the chest
  - **pectus carinatum:** sternum protruding from the chest
- Evaluate for signs of **respiratory distress**
  - **cyanosis:** bluish discoloration of skin and mucous membranes due to excessive concentration of reduced hemoglobin in the blood
  - **pursed-lip breathing:** used to increase end expiratory pressure
  - **accessory muscle use:** raising shoulders, intercostal retractions with inspiration
  - **diaphragmatic paradox:** the diaphragm moves opposite of the normal direction on inspiration; suspect flail segment in trauma
  - **intercostal retractions:** retraction of the intercostal spaces from abnormally high negative pressure generated during inspiration
- Evaluate **breathing patterns**
  - **rate:**
    - *eupnea* – normal (12–20 breaths per minute)
    - *tachypnea* – increased rate
    - *bradypnea* – decreased rate
  - **depth:**
    - *hyperpnea* – increased depth, no change in rate
    - *hyperventilation* – increased depth and rate
    - *hypoventilation* – decreased depth and rate
    - *apneustic* – prolonged gasping
  - **rhythm:**
    - *apnea* – not breathing
    - *Cheyne-Stokes* – varying depth followed by apnea
    - *Biot's* – increased depth and rate with abrupt pauses

Palpation

Palpate the posterior aspect of the chest for *masses, bulges, crepitus* and areas of *tenderness.*

- Feel for **tracheal deviation**
- Feel the posterior, anterior and lateral **thorax** for *tenderness, masses* or *lesions*
- Palpate for **crepitus:** *air leaks* into the subcutaneous tissue
- Evaluate **tactile fremitus** (*palpable vibration*); with the ulnar surface of the hand on the chest, ask the client to say *blue moon, boy-oh-boy* or *ninety-nine*
  - **vibration should be equal** *on right and left side at any location*
  - **decreased fremitus** occurs with conditions that obstruct transmission of vibrations; for example, *pneumonia* or *pleural effusion*
  - **increased fremitus** occurs with consolidation or compression of lung tissue
- **Respiratory expansion:** To check if thoracic expansion is equal, place your palms on the client's chest with your thumbs parallel to each other near the midline; then, lightly pinch the skin between your thumbs and ask the client to take a deep breath; observe for *equal, bilateral expansion*

Percussion

Percuss to determine if underlying tissue is filled with air or other substance.

- Compare left side to right side
- Begin percussing at the apex of the **left lung,** move hands *symmetrically comparing left to right side* as you move toward the bases

Percussion Sound	Results	
resonance	normal	healthily air-filled lung
hyperresonance	too much air	emphysema
flatness	presence of fluid or solid mass	pleural effusion, pneumonia, tumor

Auscultation

Auscultate to assess **air flow** through the *bronchial tree.*

- Work superior to inferior and compare right to left
- Auscultate posterior chest, then anterior chest
  - auscultate the **trachea** using the *diaphragm of the stethoscope;* sound heard is ***bronchial***
  - auscultate the **primary bronchi** (from T-3 to T-5) using the *diaphragm of the stethoscope;* sound heard is ***bronchovesicular***
  - auscultate the **lungs**; begin at the apex of each lung (C-7) and zigzag downward between intercostal spaces to the bases (about T-10), using the *diaphragm of the stethoscope;* sounds heard are ***vesicular breath sounds***
- Compare the sound being heard with the expected sound at that location in order to **identify adventitious sounds**
- **Breath sounds:** The patterns of normal breath sounds are created by the effect of body structures on air moving through airways; in addition to their location, breath sounds are described by:
  - **duration** (how long the sound lasts)
  - **intensity** (how loud the sound is)
  - **pitch** (how high or low the sound is)
  - **timing** (when the sound occurs in the respiratory cycle)
- **Tracheal breath sounds** are heard over the *trachea*; they are ***harsh sounds,*** *like air being blown through a pipe; expiratory sounds are equal in length to inspiratory sounds*
- **Bronchial sounds** are present over the *large airways* in the anterior chest near the 2nd and 3rd intercostal spaces; these sounds are more tubular and ***hollow-sounding*** than vesicular sounds, but not as harsh as tracheal breath sounds; bronchial sounds are ***loud*** and ***high-pitched,*** with a short pause between inspiration and expiration; *expiratory sounds last longer than inspiratory sounds*
- **Bronchovesicular sounds** are heard in the *posterior chest between the scapulae* and in the *center part of the anterior chest;* these sounds are ***softer*** than bronchial sounds, but have a ***tubular*** quality; they are about *equal during inspiration and expiration,* but differences in pitch and intensity are often more easily detected during expiration
- **Vesicular sounds** are ***soft, blowing/rustling*** sounds normally heard throughout most of the *lung fields*; these sounds are normally heard *throughout inspiration, continue without pause through expiration, and then fade away about one-third of the way through expiration*
- **Abnormal breath sounds** include the ***absence of sound*** and/or the ***presence of "normal" sounds*** *in areas where they are normally* **not heard**
  - **adventitious breath sounds** refer to *extra, or additional, sounds that are heard over normal breath sounds*
  - detection of adventitious sounds is an important part of the **respiratory examination,** often leading to **diagnosis** of *cardiac and pulmonary conditions*
  - **crackles** (or **rales**) are caused by *fluid* in the *small airways,* or ***atelectasis***
    - crackles are referred to as *discontinuous sounds*; they are ***intermittent, non-musical*** and ***brief***
    - crackles may be heard on *inspiration or expiration*
    - the ***popping sounds*** they produce are created when air is forced through respiratory passages that are narrowed by *fluid, mucus* or *pus*
    - crackles are often associated with **inflammation** or **infection** of the small *bronchi, bronchioles* and *alveoli*
    - **crackles that don't clear after a cough** may indicate **pulmonary edema** or fluid in the alveoli due to **heart failure** or **adult respiratory distress syndrome** (ARDS)
    - crackles are often described as *fine, medium* and *coarse*
      - > **fine crackles** are *soft, high-pitched* and *very brief* (simulate this sound by rolling a strand of hair between your fingers near your ear, or by moistening your thumb and index finger and separating them near your ear)
      - > **coarse crackles** are somewhat *louder, lower in pitch* and *longer-lasting* than fine crackles; they have been described as sounding like opening a Velcro fastener
      - > **medium crackles** are between fine and coarse in sound and duration
  - **wheezes** are caused by *air moving through airways narrowed by constriction or swelling of airway or by partial airway obstruction*
    - wheezes are sounds that are **heard continuously** during *inspiration* **or** *expiration,* **or during both** *inspiration* **and** *expiration*
    - wheezes that are relatively high-pitched and have a *shrill* or *squeaking* quality may be referred to as **sibilant rhonchi**; these sounds are often **heard continuously** through both *inspiration* **and** *expiration,* and have a ***musical quality;*** these wheezes occur when *airways are narrowed,* such as may occur during an **acute asthmatic attack**
    - wheezes that are lower-pitched sounds, with a *snoring* or *moaning quality,* may be referred to as **sonorous rhonchi**; *secretions* in large airways, such as occur with **bronchitis,** may produce these sounds, which may clear somewhat with coughing
  - **pleural friction rubs** are *low-pitched, grating* or *creaking* sounds that occur when ***inflamed pleural surfaces rub together during respiration***; *more often heard on inspiration than expiration*
    - the pleural friction rub is **easy to confuse with** a *pericardial friction rub;* to determine whether the sound is a pleural friction rub or a pericardial friction rub, ask the client to hold his/her breath briefly; if the *rubbing sound continues,* it's a **pericardial friction rub** because the inflamed pericardial layers continue rubbing together with each heartbeat—a **pleural friction rub stops when breathing stops**
  - **stridor** refers to a *high-pitched, harsh* sound heard during *inspiration*
    - stridor is caused by **obstruction** of the *upper airway;* it is a sign of **respiratory distress,** and thus, requires **immediate attention**

BREASTS

The breast examination is a critical part of the assessment.

- Inspect for *smoothness, dimpling* and *color*
- Observe for *edema* and *symmetry of size*
- Observe for *nipple inversion* or *discharge*
- Palpate in concentric circles, noting *tissue consistency* (soft, firm, hard)
- Palpate *areola* and *nipple,* then gently compress nipple and observe for *discharge*
- Palpate *axillary lymph nodes*

GASTROINTESTINAL (GI) SYSTEM

The **GI system** performs the functions of *ingestion, digestion* and *elimination.* **Interruptions** of any of these functions can quickly affect the client's *nutritional intake* and cause **acid–base imbalances.** When performing the GI assessment, remember that much of the population has **pre-existing problems** and that these problems can be *exacerbated or that new conditions can develop when illness in other systems occurs.*

Mouth & Throat Assessment

- Inspect for *sores,* condition of **teeth** and **gums,** *irritation* or other conditions that could affect the intake of food and liquid
- Look under the **tongue** for *tumors or lesions*
- Assess for *unusual breath odors*
- Inspect **oropharynx** for presence/absence of **tonsils,** and for *color, swelling* and *movement* of **uvula,** and presence of **gag reflex**

Abdomen Assessment

Inspection

Inspect **all four quadrants** of the abdomen for *contour, symmetry, abdominal aorta pulsation* and *distension.*

- A **lower quadrant bulge** may indicate a *distended bladder*
- A **midline bulge** may be an *umbilical hernia*
- Wave-like movements are normal, especially in thin individuals, but **visible rippling waves** may indicate an *obstruction*
- Abdominal distension can be caused by 3 factors:
  - **obesity:** soft and rounded, with sunken umbilicus
  - **ascites:** skin is shiny and glistening, with an everted umbilicus and dilated, prominent veins
  - **obstruction:** visible, marked peristalsis, restlessness, lying with knees flexed, grimacing facial expression and uneven respirations

WARNING! **Do not touch abdomen during inspection** *as peristalsis can be stimulated*

Auscultation

Auscultate **before** palpations and percussion to avoid increasing the frequency of bowel sounds.

- **Bowel sounds:** Best heard with *diaphragm of the stethoscope*
  - begin in the **right lower quadrant,** near the *ileocecal valve,* and listen to each quadrant in a clockwise pattern for at least 2 minutes
  - note the **frequency** of bowel sounds
  - bowel sounds are classified as:
    - **hypoactive:** infrequent
    - **normal:** intermittently at 5–15 times per minute
    - **hyperactive:** more frequent than normal
  - note the **character/quality** of the sounds: *high-pitched, gurgling, clicking*
- **Vascular sounds:** Best heard with the *bell of the stethoscope*
  - listen over the *iliac, aortic, renal* and *femoral arteries* for vascular sounds, such as **bruits, venous hums** and **friction rubs**

Percussion

Percuss **all four quadrants** of the abdomen.

- Identify *location* and *size* of **internal organs**
  - **tympany** is the normally predominate sound as *air rises* to the surface of the abdominal cavity (for example, empty stomach or bowel)
  - **hyperresonance** is heard with *gaseous distention*
  - **dullness** is heard over a *distended bladder, liver, adipose tissue, fluid, feces-filled bowel* or *mass* in the abdomen

WARNING! **Do not percuss** *if an* **abdominal aortic aneurysm** *is suspected*

Palpation

To palpate, have client bend knees to *relax the abdominal muscles* and identify localized areas of pain or tenderness; **palpate these areas last.**

- Palpate by quadrant and note any muscle *guarding, rigidity, tenderness* or *masses*
  - **light palpation:** detects *superficial masses* and *fluid* accumulating in an abdomen that is soft and non-tender
  - **deep palpation:** detects *masses, tenderness, pulsations, organ enlargement*
- Palpate for *rebound tenderness*
- Palpate **groin** for *femoral pulse* and *inguinal nodes*

GENITOURINARY (GU) SYSTEM

Genitalia and Rectum: The purpose of the **genitalia** is to provide a route for *reproduction* and *excretion.* The **rectum** plays a role in *excretion,* particularly of solid waste.

Male Genitalia Assessment

Inspection

Inspect *hair distribution* in pubic region, as well as *penis* and *scrotum.*

- **Penis:** Observe presence of dorsal vein
  - note whether or not client is *circumcised*; if not, observe if *foreskin retracts* completely
  - observe for *smegma* (whitish substance under the foreskin)
  - note appearance of *urethral meatus* (normally slit-like), and whether or not there is a discharge
  - look for *bumps, blisters, redness* and *masses*; assess skin underlying pubic hair
- **Scrotum:** Observe condition of pigmented pouch, which may appear asymmetrical

Palpation

Palpate *scrotal sac;* check for *pain, masses* and presence of *testicles.*

Female Genitalia Assessment

Inspection

Inspect *external genitalia.*

- Spread *labia* to visualize: urinary meatus; vaginal orifice; labia majora, labia minora and clitoris
- Look for *discharge, ulcerations, warts* on perineal floor and labia

Palpation

Palpate *external genitalia.*

- Palpation should examine: Skene's glands; Bartholin's glands; perineum and perineal muscle strength; vaginal bulging

[**NOTE:** Internal examination is conducted by an *advanced practice nurse, nurse midwife* or *physician.*]

Rectum Assessment

Inspection

Inspect *rectal area* (in male or female client); inspect for: hemorrhoids, blood, fissures, scars, lesions, rectal prolapse, discharge.

Palpation

Palpate using a *lubricated, gloved index finger* (in some settings, only performed by an advanced practice nurse).

- Have client take a deep breath while you feel for *masses* and obtain a *stool specimen* to test for blood
- Gently insert finger and smoothly follow *posterior wall* of **rectum**
- Rotate finger to follow curve of **rectal wall,** which should be *smooth* and *soft*
- Withdraw finger and look for **stool** on glove, noting *color, consistency* and *presence of blood*

MUSCULOSKELETAL SYSTEM

The primary function of this system is to produce **skeletal movement.** This system consists of **muscles, tendons, ligaments, bones** and **cartilage,** together with the **joints.**

Musculoskeletal Assessment

Consists of *inspection, palpation* and tests for *range of motion* (ROM), *muscle strength* and *pain.*

THE NURSE KNOWS

"GALS"—gait, arms, legs and spine—are the major components of the musculoskeletal assessment

Inspection

- Inspect by *comparing* one side of body to the other side
- Evaluate client's ability to "*get up and go*"
- Inspect **each extremity bilaterally** for *symmetry, skin characteristics* and *distribution of hair*
- Inspect **each joint** for *size, contour, masses* and *deformities*
- Inspect and measure any *discrepancies* in **extremities**

Palpation

- Palpate the length of **each extremity**; check skin for *pretibial* (or other) *edema*
- Palpate **each joint** for *musculature, bony articulation* and *crepitation*
- Palpate for *heat, swelling* or *tenderness*
- Palpate the length of the **spine** for *musculature, bony articulation, heat, swelling* or *tenderness*

Range of Motion (ROM)

Perform all **ROM tests** of the extremities *bilaterally.*

- Test for ROM of the **upper extremities:** shoulders, elbows, wrists, fingers
- Test for ROM of the **lower extremities:** hips, knees, ankles, toes
- Test ROM of the **spine** by asking the client to bend forward and touch his/her toes

Areas & Types of Pain

Musculoskeletal pain is usually *classified* as **bone, muscle** or **joint pain. ROM tests** assist in ***identifying type of pain.***

- **Bone pain**
  - *deep, aching* and *constant*
  - unrelated to movement unless fracture is present
- **Muscle pain**
  - *cramps* or *spasms,* with possible relationship to posture of movement
  - tremors, twitches or weakness may be manifested
  - muscle tension may produce referred pain
- **Joint pain**
  - *tender to palpation*
  - referred pain can be present
  - nerve root irritation may produce distal pain
  - mechanical joint pain is worse with movement and worsens throughout the day

Major Muscle Groups

Note the *size, tone* and any *involuntary movement* of **major muscle groups**; compare bilaterally.

- Test strength of major muscle groups using a **grading scale:**
  - **grade 5:** full ROM against gravity and full resistance (**100% of normal**)
  - **grade 4:** full ROM against gravity and some resistance (**75% of normal**)
  - **grade 3:** full ROM with gravity (**50% of normal**)
  - **grade 2:** full ROM with gravity eliminated or passive ROM (**25% of normal**)
  - **grade 1:** slight contraction (**10% of normal**)
  - **grade 0:** no contraction (**0% of normal**)

NEUROLOGIC SYSTEM

This system consists of the **central nervous system** (CNS), the **peripheral nervous system** (PNS), and the **autonomic nervous system** (ANS). Together, these three components integrate all *physical, emotional* and *intellectual* activities.

Central Nervous System (CNS)

The CNS is the part of the nervous system that functions to **coordinate** the **activity** of all parts of the bodies of multicellular organisms.

- The CNS includes the **brain** and **spinal cord**
  - **brain:** *collects, integrates* and *interprets* all **stimuli**; it also *initiates* ***voluntary*** and ***involuntary*** **motor activity**
  - **spinal cord:** primary *pathway* for *messages* traveling between the peripheral areas of the body and the brain; it also houses the **reflex arc** for actions such as the *knee-jerk reflex*

Autonomic Nervous System (ANS)

This is the part of the PNS that acts as a **control system,** functioning largely *below the level of consciousness.* It controls **visceral functions** and is divided into two subsystems:

- **Sympathetic nervous system:** Promotes a "*fight or flight*" response; corresponds with *arousal* and *energy* generation; *inhibits digestion*
- **Parasympathetic nervous system:** Promotes a "*rest and digest*" response; promotes *calming* of the nerves and return to regular function; *enhances digestion*

Neurological Assessment

This assessment is completed by performing tests on **five areas:** *mental status, cranial nerve, reflex, motor, sensory.*

Mental Status Exam

Assesses **cerebral function** (control of sophisticated mental functions, such as *speech, memory* and *problem solving*).

- **Appearance:** Client's *outward characteristics,* including apparent age, height, weight, and manner of dress and grooming
- **Attitude:** Client's *approach* to the interview process and *interaction* with the examiner
- **Behavior:** Observations of *specific abnormal movements,* as well as more general observations of the client's *level of activity* and *arousal,* and observations of the client's *eye contact* and *gait*
- **Mood and affect:** ***Mood*** is the *current subjective state* as described by the client; ***affect*** is the *examiner's inferences* of the quality of the **client's emotional state** based on objective observation
- **Speech:** Observing the client's *spontaneous speech,* the interviewer will note and comment on paralinguistic features, such as the loudness, rhythm, prosody, intonation, pitch, phonation, articulation, quantity, rate, spontaneity and latency of speech
- **Thought process:** The *quantity, tempo* (rate of flow) and *form* (or logical coherence) of thought
- **Thought content:** Describes a client's *delusions, overvalued ideas, obsessions, phobias* and *preoccupations*
- **Perception:** In this context, any *sensory experience*; the three broad types of perceptual disturbance are **hallucinations, pseudohallucinations** and **illusions**
- **Cognition:** Client's level of *alertness, orientation, attention, memory, visual-spatial functioning,* and *language* and *executive* functions
- **Insight:** Client's *understanding of his/her mental illness* is evaluated by exploring his/her *explanatory account* of the problem and understanding of the treatment options
- **Judgment:** Refers to the client's *capacity* to make *sound, reasoned* and *responsible decisions*

Cranial Nerve Assessment

Evaluate **cranial nerves.**

- **CN I – Olfactory:** Use easily identifiable substances (i.e., coffee, orange, soap, toothpaste) to assess *unilateral sense of smell*
- **CN II – Optic:** Check *visual acuity*; near vision by having the client read newspaper print and far vision with a Snellen chart
- **CN III – Oculomotor:** Assess *pupil size* and *light reflex*
- **CN IV – Trochlear** and **CN VI – Abducens:** Check *eye movement* by having client turn eyes downward, temporally and nasally
- **CN V – Trigeminal:** Assess *motor function* by palpating jaw and temples while having client clench teeth; assess *sensory function* by touching cotton ball to areas of face
- **CN VII – Facial:** Check *symmetry* and *mobility* of face by having client frown, close eyes, lift eyebrows and puff out cheeks; check client's ability to *identify tastes* (i.e., sugar, salt and lemon)
- **CN VIII – Acoustic:** Check *hearing acuity*
- **CN IX – Glossopharyngeal** and **CN X – Vagus:** Evaluate *movement of uvula* and *soft palate*; also check *gag reflex*
- **CN XI – Spinal Accessory:** Check *movement of head* and *neck*
- **CN XII – Hypoglossal:** Assess *tongue control*

Reflex Testing

Evaluate **bilateral reflexes.**

- Using a *reflex hammer,* strike a slightly stretched **tendon** and a simple **muscle contraction** occurs: biceps, triceps, brachioradialis, patellar, Achilles
- Compare **reflexes,** side to side
  - **hyperactive (4+):** ***often pathologic***; may be associated with **disease** of the *cerebral cortex, brain stem* and *spinal cord*
  - **brisker than normal (3+):** *not necessarily abnormal*
  - **normal (2+)**
  - **diminished (1+):** *may be normal*
  - **absent (0):** ***pathologic***; associated with *upper* and *lower motor neuron* **disease** or **injury**

Motor Assessment

Evaluate bilateral **muscle strength** and **balance** and **coordination.**

- Look for *atrophy* and *abnormal movement* or *tremors*
  - **perform passive ROM:** note any resistance
  - **test bicep strength:** ask client to bend forearm by flexing the elbow while you hold the wrists with slight downward pressure
  - **test tricep strength:** have client extend arm while you push against the wrist
  - **test upper leg muscle strength:** have **bedridden client** *flex hip* and *knee* so that the knee is about 8 inches off the bed
  - **test lower leg and foot muscle strength:** have **bedridden client** *push foot* against your hand, then *pull foot* against your hand
- Test *balance* and *coordination:*
  - **coordination:** have client *close eyes* and *touch finger to nose*; OR, have client *perform rapid alternating movements,* such as patting the upper thigh, alternating with the palm and top side of the hand
  - **balance:** use the **Romberg test** – have client stand, with *feet together* and *arms to the sides* as if standing at attention; client must **maintain** this position for about **30 seconds** with the **eyes open,** then **another 30 seconds** with **eyes closed**

Sensory System Assessment

Evaluate **sense perception.**

- Compare one side with the other to identify if *sensory perception* is *bilateral*
- Have client **close eyes** *and tell you when you are touching his/her skin*; use different stimuli, such as cotton ball for *light touch* and fingertips for *pressure*

POST-ASSESSMENT

After the assessment, the collected **information** must be **analyzed** and **evaluated,** and the **findings documented.**

Critical Synthesis & Documentation

Conclude Assessment with Client

- Ask client, "Is there anything else you think it would be important for me to know?"
- Use **nursing instincts** to explore intriguing findings in greater depth
- Remove drapes, equipment and assist/allow the client to get dressed
- **Thank the client for his/her cooperation**
- Provide client with **health education**
- Arrange **follow-up care** or **referrals** with client

Analyze Collected Data

- Identify **abnormal findings** and **changes** since *prior assessment*
- *Cluster findings* into **logical groups** *and localize findings* **anatomically**

Consider Quality of Information Gathered

- **Reliability:** If an assessment parameter were repeated, would it give the same result?
- **Validity:** Close agreement between an observation and the best possible measure of reality
- **Sensitivity:** Proportion of people with a disease/condition who are positive for that disease on a given test
- **Specificity:** Proportion of people without the disease/condition who are negative on a given test

Document Collected Data

- Record the collected assessment data
- Record the client's *health status* and *treatment*
- Record any client *health education* and/or *follow-up care*

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