

Physical Assessment: An Overview

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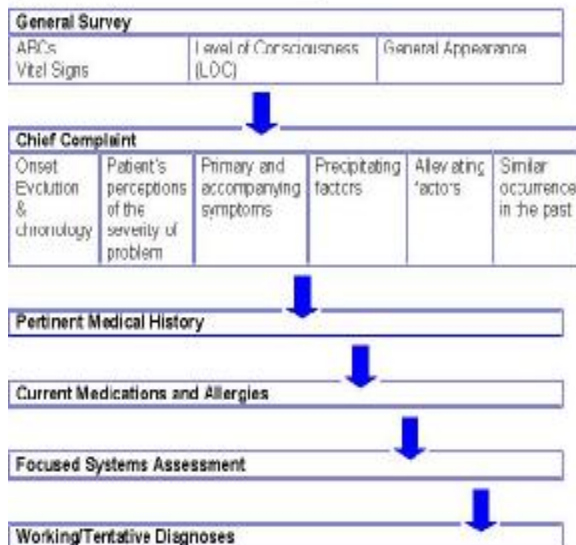
Learning Objectives

At the end of this article, nurses will be able to:
Discuss the characteristics of a symptom. Describe a sequenced approach to physical assessment. Identify the components of a general assessment survey.

Introduction

History taking and physical assessment yield crucial information about the patient's initial and ongoing physical status. Along with a general survey and focused history, the primary tools used for physical assessment are inspection, palpation and auscultation. In this article, emphasis will be placed on the practices and principles encompassing patient assessment by; describing a systematic framework, identifying the key components of a general survey, assessment of the patient's chief complaint and pertinent medical/medication history, developing strategies to provide focused assessments of body systems.

History and Physical Assessment Guide



An Overview of Physical Assessment

History taking and physical assessment yield crucial information about the patient's initial and ongoing status. Along with a general survey and focused history, emphasis is placed on the primary tools used for physical assessment: inspection, palpation and auscultation.

General Survey

So much knowledge can be gained by simply looking at the patient. Facial expression or droop, level of consciousness, colour, respiratory rate, position, movements and comfort level are all critical cues that will focus the assessment. While performing your general survey, take a set of baseline vital signs. Some initial questions that must be answered quickly are:

Can the patient maintain his/her own airway, breathing and circulation (ABCs)?

Does the patient have an altered level of consciousness?

What does the patient look like? Is (s)he anxious, distressed, tired, lethargic? How is (s)he dressed and groomed? Is one side of the body neglected?

Does the patient have a particular odour or smell?

Look at the patient's overall skin colour. Is it pale, dusky, pasty, grey, yellow, pink or blue? Observe the patient's face for subtle clues. Begin with the eyes. Do the lids have small yellow plaques, known as xanthelasma? This is a sign of hyperlipidemia. Do the eyeballs protrude? If so, this raises the question of hyperthyroidism and/or potential heart failure. Has there been a sudden change in vision? Is there a facial droop? Does the patient have a headache? Is his/her speech abnormal? Affirmative answers to these questions may point to migraine or stroke. Is the patient cyanotic around the lips or ears (central cyanosis)? This finding is consistent with serious hypoxia. However, remember that patients with severe anemia are rarely cyanotic, even when they are severely hypoxic.

Look at the patient's trunk and limbs. Is the patient leaning to one side? This could be linked to a neurologic event. Is the patient working "hard" to breathe? Does (s)he have to maintain a sitting position to breathe? Is (s)he using accessory muscles to breathe? All of these signs can be linked to acute respiratory failure, myocardial infarction and heart failure. Is the patient clutching his/her chest because of the pain? Does the patient have central obesity (excessive fat tissue in the abdominal region)? This body type is associated with heart disease. Is the patient nauseated? Along with other signs, nausea can occur in hypoglycemia, hepatitis, influenza, acute myocardial infarction or stroke. Are the hands and feet cold to touch, cyanotic or edematous? Any of these findings require further investigation.

History Taking

There may be times when you cannot obtain a complete history from a patient due to various factors such as patient anxiety, confusion, limited intelligence, language barriers and condition. The patient's family may be able to help in some of these situations.

Unless you speak fluent in the language the patient speaks (i.e. Arabic, Urdu etc...), it is best to use the skills of an interpreter. The following guide may be helpful. Choose a trained interpreter when possible, in preference to a volunteer or family member. Orient the interpreter to how you want the interview to proceed. Remind the Interpreter to translate the literal meanings and avoid interpretations or advice to the patient. Arrange the room so that you and the patient have eye contact and you can read nonverbal cues. Seating the interpreter next to you works well. Allow the interpreter and patient to establish rapport. Address the patient directly ("How long have you been sick?" rather than "How long has he been sick?"). Use your body position to reinforce your rapport with the patient. Keep statements short and simple. Think about the most important concepts to communicate. Use the interpreter as a resource for cultural information.

Verify mutual understanding by asking the patient to report back what has been communicated. Be patient. The interview will take more time and may provide less information than expected.

Chief Complaint

The patient's presenting or chief complaint sets the stage for a focused history. To guide your assessment of the patient's chief complaint consider the following questions:

When did this start? What were you doing at that time?

On a scale of 1 – 10 rate your pain (or 1-5 depending on your facility), shortness of breath, etc.? If the chief complaint is pain then ask other questions related to: location, quality, intensity, radiation and so on.

Besides (the chief complaint), is there anything else that you have noticed?

What do you think brought this on?

Have you tried anything that helps?

Has this happened to you before? If yes, have you sought professional help? Where? What did they do to help you?

Pertinent Medical History

Investigation into past medical history assists in identifying contributing factors that may be at the root of the patient's current problem. Focus on pertinent medical history – possible medical conditions that relate to the patient's chief complaint. If the patient has chest pain, ask about cardiac risk factors, diabetes, angina, myocardial infarction, heart failure, vascular surgery and so on. If the patient has a facial droop, ask about head injury, headaches, seizures and stroke.

Current Medications and Allergies

The patient's medication profile will provide some hints about his/her overall health and disease status. Such medications as nitrates, beta blockers, ACE inhibitors, calcium channel blockers, diuretics, antiplatelet agents and anticoagulants all point to a cardiovascular history. Also, it is important to ask about vitamins or herbal remedies. And lastly, patient allergy identification (e.g. food, inhalant, drugs and latex) is central to establishing a safe environment.

Introduction to Basic Physical Assessment of the Adult

What exactly is an assessment? **Assessment is the collection of data that relate to the individual's health state.** Data maybe grouped into **three types**:

- **Subjective data**, what the person says about himself or herself during the history taking.
- **Objective data**, what the health professional observes during the physical examination/assessment.
- **Data base**, information obtained from the patients' records, i.e. vital signs, laboratory results, test results, Intake & Output (I &O), and other measurements.

From the data gathered, the health professional can make judgments and nursing diagnoses to help plan the care of the patient. Because nurses must be able to communicate with one another from shift to shift, they must be able to “speak the same language” in relation to the patients. This means a common foundation of knowledge must be shared with each other. This is the reason why each patient has a complete assessment, and should be asked similar questions about their health/illness.

In the following, the principles of Physical Assessment will be discussed; the evaluation components for each body system is included. These factors **should always** be included when doing daily assessments on your patients.

A focused assessment of the patient’s chief complaint requires baseline vital signs and examination of primary and secondary systems. Although emphasis may be placed on the likely or primary system involved, cursory reviews of other systems must be performed. This approach assumes that no system works in isolation, and prevents the omission of signs/symptoms critical to supporting or rejecting a tentative diagnosis.

“Allow the patient to tell you what is wrong”

The Attributes of a Symptom

Location? - Where is the pain? swelling?, lump?, etc...

Quality? - What does it feel like? Sharp? Dull? Aching?

Severity? - Where does it fall in the Pain Scale?

Timing? - How long does it last? Constant? Intermittent?

Setting? - What were you doing when the pain started?

Factors? - Is there anything you do to make it better? Worse?

Associated Manifestations?

An Approach to Physical Assessment	
Date	
Identifying Data	
Source of History or Referral	
Present Illness	
Past History	
Family History	
Current Health Status:	
<input type="checkbox"/> Allergies	<input type="checkbox"/> Food <input type="checkbox"/> Medications
<input type="checkbox"/> Current Medications	
<input type="checkbox"/> Activities of Daily Living	
<input type="checkbox"/> Tobacco	
<input type="checkbox"/> Alcohol, Drugs and Related Substances	
<input type="checkbox"/> Exercise and Diet	
<input type="checkbox"/> Immunizations	
<input type="checkbox"/> Screening Tools	
<input type="checkbox"/> Safety Measures	

Eyes, Ears, Nose and Throat

Physical Assessment of eyes, ears, nose and throat is mainly accomplished by inspection and palpation. Much of the information about the patient is obtained during history taking and examination. Pain and any discharge observed must be examined in more detail and changes in vision, hearing, smell and taste need further investigation.

Eyes: Components	Evaluation
General Appearance History of: Infection, Injury, Surgery Tearing/Lack of Tearing	symmetrical obtain a history is there a problem with the lacrimal gland? itching? allergies?
Pruritis Sclera/Conjunctiva:	sclera – white or may buff colour is redness peripheral or central? is sclera a deep yellow?
Red Eye	
Jaundice	
Pupils: Size/Shape	between 2 – 6mm/ mostly round brisk/sluggish
Reaction to Light	
Cornea: Clear	normal opacity of lens – cataract corneal Arcus – circle at edge of cornea
Opacity	
Eyelids: Periorbital Area Ptosis	may cover top of iris but not the pupil any swelling, one or both lids? drooping of eyelid
Vision Changes: Blurring	may be due to ↑ glucose, conjunctivitis
Double Vision Photophobia	inquire sensitivity to light – med/migraine done on pts with injuries or change in vision
Visual Acuity	inquire
Use of Glasses/Contact Lenses	
Ears: Components	Evaluation
Symmetry	usually but not always
Discharge/Odour/Pain	inspect/smell/ pain around tragus (otitis externa) pain behind ear (otitis media)
Nose: Components	Evaluation
Shape/Symmetry Patency	inspect press on one side, ask patient to breathe in to assess for patency
Discharge	describe

Examination of the eyes, ears, nose and throat is an essential component of physical assessment and may help confirm health problems in other parts of the body.

Nervous System and its Components

In general, the nervous system controls motor, sensory and autonomic functions of the body. The nervous system is divided into a hierarchy with three major units:

The neurological exam is conducted in a systematic approach, that proceeds from the highest level of function (cerebral cortex) to the lowest (reflexes) and from the general integrated functions of an area to very specific functions. The assessment includes level of consciousness, cranial nerves, motor function, sensory function, cerebellar function, reflexes and vital signs.

Level of Consciousness

The single most important observation in patients with neurological impairment of the brain is the **level of consciousness (LOC)**. As consciousness cannot be measured directly, it is estimated by observing behavioural indicators in response to stimuli. Consciousness is the most sensitive indicator of neurological change. As such, a change in the level of consciousness can occur rapidly (within minutes) or very slowly, over a period of hours, days, or weeks. The **Glasgow Coma Scale** is an assessment tool used to describe consciousness.

Components	Evaluation	
	Coma Score	Response
Eye Opening		<ol style="list-style-type: none"> 4. Opens eyes spontaneously when approached 3. Opens eyes in response to speech (normal or shout) 2. Opens eyes only to painful stimuli (e.g. squeezing of nail beds) 1. Does not open eyes to painful stimuli
Best Motor Response		<ol style="list-style-type: none"> 6. Can obey a simple command, such as "Lift your left hand off the bed" 5. Localizes to painful stimuli and attempts to remove source 4. Purposeless movement in response to pain 3. Flexes elbows and wrists while extending lower legs to pain (decorticate) 2. Extends upper and lower extremities to pain (decerebrate) 1. No motor response to pain on any limb
Best Verbal Response		<ol style="list-style-type: none"> 5. Oriented to time, place, and person 4. Converses, although confused 3. Speaks only in words or phrases that make little or no sense 2. Responds with incomprehensible sounds 1. No verbal response

As you are assessing the level of consciousness, an evaluation of the following components are made:

Note: Make sure you are testing a limb that is not weak or paralysed. You are testing the person's mental ability to understand and obey your command, not his strength.

Possible Glasgow Coma Score: 3 - 15, less than 7 indicates a coma

As the level of consciousness decreases, a stronger stimulus is required to bring about a response.

Important point: An alteration in level of consciousness may provide the first indication of neurological pathology. Always report any changes in LOC immediately!

Decortication and Decerebration:

Noxious stimuli, such as pain, can initiate rigidity and abnormal posture if the motor tracts connecting the brain and the periphery are interrupted at specific cerebral levels. These abnormal postures are called decortication and decerebration. In some

instances, either posture may be apparent without the application of noxious stimuli. Of the two abnormal postures, decerebration is considered a sign of greater cerebral dysfunction than decortication. Presence of either position should be reported at once. Also, a change from decorticate to decerebrate position must be reported immediately because this is an ominous sign of extension of the lesion into the brain stem.

Cranial Nerves - Assessing Pupils - Evaluating pupils is an extremely important part of assessment that provides vital information about the brain. The pupillary response tests cranial nerves II and III.

Components	Evaluation
Pupil Size	Normal size: 2-6 mm. Average diameter: 3.5 mm. Diameter should be equal, but about 20% of the population has unequal pupil size in the absence of a pathological condition (anisocoria)
Pupil Shape	Normal: round After a cataract surgery: keyhole Ovoid: indicates papillary dysfunction, e.g. seen in early cerebral herniation
Reaction to Light Direct light reflex	Direct Light Reflex: Constriction of the pupil when the light is shone into that pupil brisk (very rapid constriction when the light is introduced). Normal reaction, sluggish (constriction occurs but is slower than expected) nonreactive or fixed (no constriction is noted)
Consensual light reflex	Consensual light reflex: Constriction of the nonstimulated pupil, when the light is introduced into the other eye. This response is somewhat weaker than the direct light reflex. A useful testing method in unilateral blindness (the blind eye does not have a direct light reflex, but would have a consensual light reflex)

Motor Function

When assessing motor function, test and compare both sides of the body for movement and strength. Also, take a moment to look at the following for each limb: muscle size, muscle tone, involuntary movement, posture and gait.

Muscle strength:

Components	Evaluation
Conscious Patient - Upper extremities: Handgrips Movement of wrists, biceps, and triceps against resistance Pronator drift	Handgrips: Extend your index and middle fingers to the patients with instructions, "Squeeze my fingers as hard as you can." Compare both the right and the left grip for strength and equality To check for mild weakness: ask the patient to close his eyes and extend his arms straight out in front of him, palms up, for 20-30 seconds. Downward drifting of an arm or pronation of the palm on one side suggests mild hemiparesis, termed pronator drift
Conscious Patient - Lower extremities: Flexion and extension of hips and knees Dorsiflexion Plantar Flexion	Plantar flexion and dorsiflexion of the foot are tested by instructing the patient first to push down and then up against the examiner's hand, which is positioned on the foot. Compare both the right and the left foot for strength and equality
Unconscious Patient - Movement:	<ol style="list-style-type: none"> 1. Observe patient for spontaneous movement. 2. Apply a noxious stimulus to elicit a motor response. 3. Guide extremities through passive range of motion to assess muscle tone. Patients with interrupted motor tracts will exhibit inappropriate motor responses (e.g. decorticate posture) or abnormal tone.

Involuntary Movement: note any involuntary movements. Common abnormalities of movement include; tremors, choreiform movements (irregular, jerky contractions and abnormal posture), myoclonus (sudden, brief jerky contraction), athetosis (snakelike movements), tics, spasms, ballism (continuous, gross, abrupt contractions of the proximal muscles, violent and flail-like movements)

Sensory Function

The patient should be tested with his eyes closed. Each side of the body is compared to the other, as are sensory perceptions in the distal and proximal portions of each extremity.

The usual body areas tested include hands, forearms, upper arms, trunk, thighs, lower legs, feet and perineal and perianal areas.

Sensory function is rated as a) normal, b) present, but abnormal, and c) absent.

Superficial Sensation:

- Touch - Use a wisp of cotton to stroke various parts of the skin lightly.
- Pain - Use a paper clip. Occasionally substitute the blunt end for the point, and ask, "Is this sharp or dull?"
- Sensitivity to Cold and Heat - A tube of hot water and one of cold water are applied in succession. If pain is intact, testing for temperature sensation is often omitted.

Cerebellar Function

The patient's balance and coordination are assessed. A staggering gait,

uncoordinated movements, and tremors are abnormal findings. Ataxia is defined as failure of voluntary muscle coordination, particularly in activities such as walking or reaching for objects. Assessment of cerebellar function can be performed by having the patient walk heel to toe along a line (tandem gait).

Reflexes

Reflexes are classified into three categories:

Muscle-stretch reflex: occurs in response to a sudden stimulus, such as the percussion hammer, which causes the muscle to stretch. The briskness of the response is noted.

Superficial (cutaneous) reflexes: elicited by light, rapid stroking or scratching of a particular area of the skin, cornea, or mucous membrane.

Pathological reflexes

Babinski reflex - with a moderately sharp object, stroke the lateral aspect of the sole from the heel to the ball of the foot, curving medially across the ball. Note movement of the toes, normally flexion. Dorsiflexion of the great toe, with fanning of other toes, is abnormal.

Vital Signs

Changes in vital signs are related to increased intracranial pressure and occur only in the late stages. The frequency of assessing vital signs will depend on the stability of the patient condition. Cushing's Response (a compensatory response designed to provide adequate cerebral perfusion pressure in the presence of rising ICP) is a late finding and the nurse should not wait for these changes before intervening.

Components	Evaluation
Blood Pressure	An elevated BP is usually associated with a rising ICP. A widening pulse pressure is seen in the later stages of increased ICP.
Pulse	Bradycardia can occur in the later stages of progressive increased ICP.
Respirations	Observe the patient for his respiratory rate, depth and rhythm. Bradypnea (and often an irregular respiratory rate) are attributable to an increasing ICP.

It is crucial to detect neurological deterioration as early as possible, before decompensation occurs. Therefore, pay very close attention to the level of consciousness!

Dermatomes

A knowledge of dermatomes aids in localizing neurologic lesions. A dermatome is the band of skin innervated by the sensory root of a single spinal nerve. Dermatome patterns are mapped in the following figures. Their levels are considerably more variable than the diagrams suggest, and dermatomes overlap each other. Do not try to memorize all the dermatomes. It is useful, however, to remember the locations of some of the more common ones.

Integumentary System and its Components

The Integumentary System (skin, hair, and nails) is the body's largest organ system - it covers 20 square feet of surface area in the average adult. The skin is the organ that guards the body from environmental stresses (e.g. trauma, pathogens, and dirt) and adapts it to other environmental influences (e.g. heat, cold)

For the purposes of assessment, the following components of the Integumentary System are inspected; Skin, Nails and Hair.

As you are assessing the above components, the evaluation of these components is made. Ensure that inspection is performed in natural light or artificial light that resembles it.

Components	Evaluation
Skin Colour Turgor Integrity Temperature	skin and mucous membranes – redness, pallor, cyanosis, yellowing lift a fold of skin and note the speed with which it returns into place (decreased turnout – dehydration) Integrity: Lesions: a) generalized / localized b) linear / clustered / dermatomal / annular c) type: macule / papule / vesicle color of lesion Pressure Sores: Stage 1-4 Temperature: Assesses any red areas / assess generalized warmth / coolness Use the back of your fingers
Nails Colour Shape Lesions	Inspect and palpate the fingernails and the toenails. Nail plate: pink Lunula: whitish Longitudinal bands of pigment may be seen in the nails of normal people who have darker skin Clubbing: the distal phalanx is rounded and bulbous. The nail plate is more convex and the angle between the plate and the proximal nail fold increases to 180 degrees e.g. transverse depressions (associated with acute severe illness); small pits in the nail (psoriasis); white spots (trauma to the nail)
Hair Amount Distribution Texture	Inspect and palpate the hair. Amount: Alopecia refers to hair loss – diffuse, patchy, or total Sparse hair in hypothyroidism, fine silky hair in hyperthyroidism

Cardiovascular System And its Components

The Cardiovascular System consists of the heart, a muscular pump, and the blood vessels. The blood vessels are arranged in two continuous loops, the pulmonary circulation and the systemic circulation. When the heart contracts, it pumps blood simultaneously into and through both loops. Knowing how the heart is beating (pumping blood) is essential in a basic physical assessment. The cardiac cycle is the rhythmic movement of blood through the heart. The basic way to measure this is through measurement of blood pressure. Although in basic cardiac assessment, heart sounds are not essential to auscultate, knowing what a murmur sounds like, or how to palpate an irregular rhythm is essential. Assessment of the Cardiovascular System is done through **palpation**, and **auscultation**. In a basic Cardiovascular Assessment, the following system components are evaluated; heart rate, blood Pressure, peripheral pulses, skin temperature, oedema and capillary refill.

Note that this is a basic assessment for any patient, on any unit or ward in the hospital. If you are working in a Critical Care Area, a more complete assessment will always be required.

The following chart identifies the components of the Cardiovascular System, and the Evaluation of each component:

Components	Evaluation
Heart Rate Radial – rate, rhythm, volume Apical	Compare right and left radial pulses. Count pulse for 15 seconds and x 4. Count for a full minute if irregular pulse Auscultate heart sounds S1 S2 (lub dub). Normal Sounds are audible and clear. Describe any abnormal sounds: click swooshing, rub Note: the 4 listening points indicate valve locations Normal Adult Range: Average [Normal Limits] 74 -76 bpm [60 – 100 bpm]
Blood Pressure Right Arm Left Arm	Ensure correct cuff size BP should be taken on both arms upon admission, if there is more than a 10 mmHg difference, use the arm with the higher reading for subsequent measurements
Peripheral Pulses Dorsalis Pedis – rate, rhythm, equality Posterior Tibial – rate, rhythm, equality	Compare right and left leg pulses
Skin Temperature Extremities	Compare bilaterally Note if clubbing of fingers Note if peripheral cyanosis
Oedema Peripheral Sacral Generalized	Palpate and compare location, pitting, and degree: see diagram
Capillary Refill Nail Bed (Newborn or Paediatrics in ICU, use thigh or heel)	Normal capillary refill is less than 2- 3 seconds

Peripherical Causes of Oedema

PROCESS	Edema from prolonged sitting or standing	Lymphatic obstruction	Fatty deposition in legs (not true edema)	Chronic obstruction or valvular incompetence of the deep veins
NATURE OF OEDEMA	Mild pitting on pressure	Mild early, becomes hard and nonpitting	Minimal, if any	Mild pitting on pressure: later may become hardened
SKIN THICKENING	Absent	Marked	Absent	Occasional
ULCERATION	Absent	Rare	Absent	Common
PIGMENTATION	Absent	Absent	Absent	Absent
FOOT INVOLVEMENT	Present	Present	Present	Present
BILATERALITY	Always	Often	Always	Occasionally

From: Bates' L.S. Bates' Guide to Physical Examination and History Taking 7th Ed. Lippincott

Respiratory System and its Components

The purpose of a basic Respiratory Assessment is to ensure that homeostasis of arterial blood is maintained through normal respiratory effort. By sup-

plying oxygen to the blood and eliminating excess carbon dioxide, respiration maintains the pH or the acid-base balance of the blood. The body tissues are supplied by blood that normally has a narrow acceptable range of pH. Although a number of compensatory mechanisms regulate the pH, the lungs help maintain the balance by adjusting the level of carbon dioxide through respiration. That is slow, shallow breathing (**hypoventilation**) causes carbon dioxide to build up in the blood and rapid, deep breathing (**hyperventilation**) causes carbon dioxide to be blown off.

Respiration is the physical act of breathing; air rushes into the lungs as the chest size increases (**inspiration**) and is expelled from the lungs as the chest recoils (**expiration**). This is why a “hands-on” approach to measuring chest symmetry is so important. The Respiratory System components you are to assess are listed; Breathing Pattern, Chest Contour and Expansion, Effort of Breathing and Breath Sounds. The assessment technique used for the Respiratory System is **auscultation**, and the evaluative components are listed in the following chart:

Components	Evaluation
Breathing Pattern Rate Rhythm	Normal rate 14-20/minute Normal effort during inspiration and passive expiration is minimal Observe patient effort prior to auscultation If possible, respiratory system should be assessed with patient sitting upright Warm stethoscope diaphragm, if possible and provide privacy
Chest Contour and Expansion Shape Expansion/Relaxation	Assess for equal /symmetrical expansion and deformity Inspect trachea: normal is midline
Effort of Breathing Position Assumed Use of Accessory Muscles	Observe patient position (COPD patient's prop themselves up to aid breathing) Assess trachea, intercostal, subcostal and substernal areas for abnormal retraction with respirations
Breath Sounds (Normal or Abnormal) Right/Left Side Apex Mid Base	Auscultate comparing bilaterally (side-side from top to bottom) all lung fields: anterior and posterior: see diagram Auscultate lungs as patient breathes slowly and deeply through the mouth Listen to one full breath in each location Normal Bronchial breath sounds: loud tubular sound over trachea: higher pitched sound Bronchovesicular: soft breezy sounds between the scapula or upper half of sternum Vesicular: quieter soft swishy sounds in lung periphery. Abnormal: see chart
Secretions Type Colour Amount	Assess for effective cough/ ability to clear secretions suction or encourage expectoration of secretions

Clinical Signs & Symptoms of Respiratory Distress

Include: Dyspnea, Cyanosis, Tracheal Tug (Deviation), Nasal Flaring, Use of Abdominal Muscles, Use of Neck Muscles, Intercostal Retractions and Sternal Retractions

Abnormal Breath Sounds

Breath Sounds	Description	Mechanism	Clinical Example
Crackles Fine (fine rales)	Short, popping sounds on inspiration not cleared by coughing. Sounds like hair rubbed between 2 fingers.	Inhaled air collides with previously deflated airways suddenly pop open, creating crackling sound.	Late inspiratory crackles: restrictive disease such as pneumonia, congestive heart failure. Early inspiratory crackles: obstructive disease such as chronic bronchitis, asthma, and emphysema.
Crackles – Course (course rales)	Loud, low-pitched, bubbling and gurgling sounds that start in early inspiration and may be present in expiration; may decrease somewhat with suctioning or coughing, but will recur shortly after; sounds like opening a Velcro fastener.	Inhaled air collides with secretions in the trachea and large bronchi.	Pulmonary edema, pneumonia, pulmonary fibrosis and the terminally ill who have a depressed cough reflex.
Rub (pleural friction rub)	Superficial sound that is course and low pitched; it has a grating quality as if two pieces of leather are being rubbed together; sound is inspiratory and expiratory .	Caused when pleurae become inflamed and lose their normal lubricating fluid; their opposing roughened pleural surfaces rub together during respiration.	Pleuritis, accompanied by pain with breathing (rub disappears after a few days if pleural fluid accumulates and separates pleura).
Wheeze	High-pitched, musical squeaking sounds that sound polyphonic; predominate in expiration but may occur in expiration and inspiration.	Air squeezed or compressed through passageways narrowed almost to closure by collapsing, swelling, secretions, or	Diffuse airway obstruction from acute asthma or chronic emphysema.

Gastrointestinal System and its Components

The gastrointestinal system of the body lies within the abdomen. The abdomen is a large oval cavity extending from the diaphragm down to the brim of the pelvis. It is bordered in back by the vertebral column, and paravertebral muscles, and at the sides and front by the lower rib cage and abdominal muscles.

Inside the abdominal cavity all the internal organs are called viscera. It is important you know the locations of these organs so well that you could draw a map of them on the skin. You **must be able** to visualise each organ that you auscultate or palpate.

Solid viscera are those organs that maintain a characteristic shape, including the following; Liver, Spleen, Pancreas, Adrenal Glands, Kidneys, Ovaries and Uterus. The shape of the **hollow** viscera are such that they are normally not palpable unless distended. These hollow viscera include the following; Gallbladder, Stomach, Small Intestine, Colon and Bladder

For convenience in assessing the Gastrointestinal

System, the abdominal wall is divided into four (4) quadrants by a vertical and horizontal line, bisecting the umbilicus.

Gastrointestinal Assessment Components and their Evaluation

Right Upper Quadrant (RUQ) Liver – edge may be palpable Gallbladder Duodenum Head of Pancreas Right Kidney and Adrenal Gland Hepatic Flexure of Colon Part of Ascending and Transverse Colon	Left Upper Quadrant (LUQ) Stomach Spleen – palpable in small % Left Lobe of Liver Body of Pancreas – not normally palpable Left Kidney and Adrenal Gland Splenic Flexure of Colon Part of Transverse and Descending Colon
Right Lower Quadrant (RLQ) Cecum – soft, wide tube Appendix – rebound tenderness Right Ovary and Tube Right Ureter Right Spermatic Cord	Left Lower Quadrant (LLQ) Part of Descending Colon Sigmoid Colon Left Ovary and Tube Left Ureter Left Spermatic Cord
MIDLINE	
Aorta Uterus (if enlarged) Bladder (if distended)	

The assessment of the Gastrointestinal System is done through **inspection, palpation, auscultation, and percussion**. When performing your assessment of the Gastrointestinal System, you must also assess; Oral Intake, Tube Feeding Intake, Emesis or Nasogastric Tube Drainage, Bowel Sounds, Abdomen and Bowel

Components	Evaluation
Oral Intake (GI Intake) Volume Diet Tolerance	
Tube Feeding Intake Volume Residual or Tolerance Check for Tube Placement each time	Aspirate/instill 20 cc air
Emesis/Nasogastric Tube Drainage Colour Consistency Volume	
Auscultate for Bowel Sounds (Take minimum of 5 minutes) Use all 4 quadrants: - Present - Diminished - Absent	Clicks & gurgles 5 – 34/min May be altered: Diarrhea ↑ Intestinal obstruction, early ↑ Paralytic ileus, peritonitis ↓ or A
Abdomen (Palpation) Palpate Four (4) Quadrants Shape, Symmetry, Skin Turgor (Pain, Rebound, Tenderness, Guarding, Masses, Soft/Distended/Rigid)	May be able to palpate kidney in thin individual with relaxed abdominal muscles.
Bowel Pattern Movement	Same time every day? Every few days? Consistency

Accurate intake and output is very important.

If percussion is used, **TYMPANIC SOUND** – organ is empty.

If percussion is used, **DULL SOUND** – organ is full.

Assessment of the Abdomen

- Empty bladder.
- Ask patient to keep arms at the side.
- Expose from xyphoid process to symphysis pubis only.
- Need good lighting, warm hands and warm stethoscope.
- Inspect if there is any pain before palpation.
- Palpate with light, gentle, dipping motion. Watch for voluntary guarding vs. rigidity.
- Deep palpation, use 2 hands.

Genitourinary System and its Components

The Genitourinary System consists of bladder, kidneys, uterus, fallopian tubes, and ovaries in the female, and both male and female genitalia. Normally palpable organs or structures are the bladder and uterus (if full). During the Genitourinary System assessment, the four components which will be evaluated are; Voiding, Urinary Output, Bladder and Genitalia

Components	Evaluation
Voiding Pattern Type of Catheter	Any pain on micturition/burning? Frequency/urgency
Urinary Output Characteristics Volume	Influenced by foods/meds Concentrated, dilute, colour blood? Bilirubin? Usually about 3L in 24 hrs.
Bladder (Palpation) Volume Size and Location (how many fingers below the umbilicus?)	Urge to void at 150 mls. Feeling of fullness at 400 mls. Midline. Distended bladder may rise above symphysis pubis. Dull sound on percussion.
Genitalia Colour Appearance (swelling, lesions, etc.)	Inspect.

Musculoskeletal System and its Components

The musculoskeletal system provides mobility and stability through the integration of muscles, bones and joints. It provides; Support for the body, Protection of internal organs, Mobility to engage in physical activities, Production of RBCs and Storage of minerals

For the purpose of assessment, the following components of the musculoskeletal system are inspected; Spine and shoulders, Head (neck and thorax), Arms and Legs. As you are assessing the above components, the evaluation of these components is made.

Components	Evaluation
Spine and Shoulders Posture Position (abn. flexion, extension, rotation) Deformity (size, swelling) Symmetry Sensation (parasthesia, pain) Surrounding tissue (oedema, colour, temp)	Provide privacy and avoid prolonged exposure of patient Assess bilaterally: top to bottom, side to side
Head, Neck and Thorax Position (abn. flexion, extension, rotation) Tone Deformity (size, swelling) Range of motion Sensation (parasthesia, pain) Surrounding tissue (oedema, colour, temp)	Assess and compare bilaterally
Arms Position (abn. flexion, extension, rotation) Deformity (size, swelling) Symmetry between limbs Strength (equality between limbs) Tone Sensation (parasthesia, pain) Pulses Range of motion Surrounding tissue (oedema, colour, temp)	Assess and compare bilaterally
Legs Position (abn. flexion, extension, rotation) Deformity (size, swelling) Symmetry between limbs Strength (equality between limbs) Tone Sensation (parasthesia, pain) Pulses Range of motion Surrounding tissue (colour, oedema, temp)	Assess and compare bilaterally

Final Word

Physical Assessment is a skill that must be applied in practice. Depending on your facility policy and patient's diagnosis / health status, a more detailed physical assessment may be necessary.

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Practice Tip

**Don't have a name badge noose.
Wear it on a clip.**

Have you noticed the increasing number of clinical staff who wear their name badges, pens, even forceps on a cord around their neck. This is a huge safety issue, as patients, especially those who are a little confused, love to grab things and can easily pull on the cord causing an injury.

Don't wear a noose around your neck in the clinical areas; you don't want someone to hang you.

