

# THE PHYSICAL EXAMINATION

## INTRODUCTION TO THE PHYSICAL EXAMINATION

**Objective:** To understand and be able to interpret relevant physical findings documented on a patient's chart as they relate to the disease in question, and where indicated, to correlate these findings with the patient's response to therapy.

The history and physical examination undertaken by physicians follow a predictable and logical order.

**Chief Complaint (CC):** The major problem for which the patient has sought medical attention

**History of Present Illness (HPI):** Characterization of the details of the patient's current problem(s). This will probably elicit all/some of the following information:

- Chronology (beginning and course of problem)
- Body location
- Quality/quantity
- Circumstances under which it occurs
- Aggravating and alleviating factors

## THE PHYSICAL EXAMINATION

### GENERAL

- General appearance
- Weight
- Height
- Vital signs

### VITAL SIGNS

- Temperature: N = 37° C  
Infection is the most frequent and important cause of fever.
- Pulse: N = 60-100/minute and regular
  - If < 60 - bradycardia?
  - If > 100 = tachycardia?
  - If irregular = premature ectopic beats?
- Respirations: N = 16-20/minute, regular rate and depth
  - Overventilation may be due to congestive heart failure, pneumonia.
  - Deep and rapid respiration may be due to metabolic acidosis.
  - Underventilation may be due to chronic retention of CO<sub>2</sub> secondary to intrinsic pulmonary disease.
- Blood Pressure: N = 90-140 mmHg systolic / 60-90 mmHg diastolic
  - In acute situations, BP is a major index of physiologic disturbances of the circulation
  - Assessed in conjunction with pulse rate, CVP, optic fundus, urine output, appearance of patient (i.e., pallor, presence or absence of sweating)

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

- Head:
  - Cranial or orbital bruits, resulting from increased flow or obstruction to flow in the intracranial or extracranial vessels, may be heard with a stethoscope.
  - The major causes are: atherosclerosis, arteriovenous malformations, vascular tumours, berry aneurysms.
- Ears:

- Inflammation of the external ear and ear canal can be diagnosed.
- Otitis media due to eustachian tube obstruction can be diagnosed.
- Eyes:
  - Visual acuity: Snellen chart
  - Visual fields: Good screening test for peripheral vision
  - PERLA: Pupils equal and reactive to light and accommodation
  - EOM: Extra-ocular muscles (extreme of gaze following H pattern tests primary action of one muscle from each eye)
  - Fundus: Using ophthalmoscope, retinal vessels can be visualized (hemorrhages, exudate, neovascularization); optic disc (papilledema).
- Throat:
  - Pharynx will appear inflamed if bacterial or viral infection.
  - Enlargement of lymph nodes in neck and under angle of mandible may indicate infection.

## NECK

- ⊥Trachea midline (may give information regarding pathology in the chest)
- Palpation for thyroid enlargement
- Palpation for lymphadenopathy (enlargement of nodes may be due to infections, metastatic CA, hypersensitive reactions, connective tissue diseases)

## CHEST

- Visible use of scalene and abdominal musculature is abnormal, and is usually secondary to airway obstruction or decreased elastic recoil of lung.
- Auscultation:
  - Rales: discontinuous, crackling, or bubbling sounds of inspiration, due to opening up of previously occluded airways
  - Rhonchi: polyphonic, continuous sounds, varying in pitch and intensity, caused by turbulent airflow through narrow lumina
  - A/E (air entry): decreased intensity of breath sounds; may indicate fluid between lungs and chest wall or areas of consolidation, e.g., pneumonia, pleural edema, pneumothorax
  - Percussion: of chest wall elicits frequency response depending on force used, chest wall thickness, underlying structures; will detect large areas of consolidation or pleural effusion

## CARDIOVASCULAR SYSTEM (CVS)

- **Jugular venous pressure (JVP):** N < 3 cm of distention of internal jugular vein above sternal angle
  - Used to estimate central venous pressure (right atrial pressure)
  - If elevated, usually indicates right ventricle failure
- **Heart sounds:**
  - S1:
    - Has two components:
      - Ventricular systole causing initial acceleration of blood, then sudden deceleration, → tensing of entire valve structures (mitral valve)
      - Same including closure of tricuspid valve
    - May be loud in thyrotoxicosis, mitral stenosis, systemic hypertension, ventricular septal defect.
    - May be softer secondary to thick chest wall, pulmonary emphysema, pericardial effusion, shock, MI.
  - S2:
    - Follows closure of semilunar aortic (A2) and pulmonic valves (P2).
    - Defines end of systole.
    - A2 occurs slightly earlier than P2 and is called respiratory (physiologic) splitting of the second sound.
    - Abnormally wide splitting of second sound may be due to delay in pulmonic valve closure or early closure of aortic valve.

- S3:
  - Audible vibration heard in early diastole, and related to the rapid filling phase of the ventricle.
  - Often called “gallop” since it gives the impression of a galloping horse.
  - Normal in subjects < 30 years of age.
  - Pathological in subjects > 40 years of age.
  - May reflect heart block, cardiac dilatation.
- S4:
  - Rarely audible in subjects under 50 years of age.
  - Sometimes referred to as atrial gallop (presystolic).
  - May occur with or without clinical evidence of cardiac decompensation.
  - Is frequent finding in arterial hypertension, severe aortic stenosis, cardiomyopathy, angina.
- **Systolic and diastolic murmurs** (SEM - systolic ejection murmur):
  - Graded according to maximum intensity - I to VI.
  - May reflect increased:
    - ventricular stroke volume, i.e., fever, aortic insufficiency
    - ventricular outflow obstruction (valvular stenosis)
    - mitral valve abnormality
    - atrioventricular valve incompetence
- **Pulses** (PP):
  - Assessment of arteries of the peripheral vascular system
    - carotid
    - brachial
    - radial
    - abdominal aorta
    - femoral
    - popliteal
    - posterior tibial artery
    - dorsalis pedis
  - Diminished or absent pulses may indicate impaired blood flow due to intrinsic arterial disease, vasospastic disorders.

## ABDOMEN

- Distension - may represent obesity, gaseous distention, ascitic fluid accumulation, intra-abdominal masses.
- Normal bowel sounds - indicate peristalsis.
- Absence of sounds - indicates ileus or peritonitis.
- Bruits - may relate to vascular pulsations in large vessels which are partially obstructed.
- Liver:
  - Size and consistency is determined by palpation.
  - Normally not palpable below the costal margin.
  - Hepatic enlargement will be detected as palpation of the lower edge below the costal margin, and could be due to heart failure, hepatic vein thrombosis, alcoholic hepatitis.
- Spleen:
  - Not usually palpable.
  - If splenomegaly is present, may be secondary to myeloproliferative diseases, infections, portal hypertension.

## MUSCULOSKELETAL SYSTEM

- Information sought on examination:
  - Colour change - ecchymoses, redness
  - Heat and swelling
  - Atrophy or dystrophy
  - Tenderness to palpation and pain on motion

- Deformity and limitation of motion
- Abnormalities may indicate arthritis, degenerative joint disease, trauma, primary muscle disease.

## NEUROLOGICAL SYSTEM

- Cranial nerve assessment:
  - C I - Olfactory assessment
  - C II - Optic nerve (visual acuity, visual field)
  - C III, IV, VI - Dysfunction is recognized by identifying paralysis of individual eye muscles
  - C V - Trigeminal (sensory and motor to face) - can be peripheral or central lesion
  - C VIII - Facial nerve - supplies facial musculature
  - C VIII - Acoustic nerve
  - C IX, X - Glossopharyngeal and vagal dysfunction leads to dysphagia and dysarthria, laryngeal nerve paralysis.
  - C XI - Spinal accessory nerve. Dysfunction causes paralysis or atrophy of supplied sternocleidomastoid and trapezius muscles. Causes include trauma or meningitis.
  - C XII - Hypoglossal nerve. Controls tongue movements. Lesions may be due to neoplasms, fractures, trauma, infections or degenerative diseases.
- Sensation: The degree of sensory nerve impairment and the distribution of impairment is assessed.
  - Sensory assessment involves the following:
    - Tactile sensation
    - Pain sensation
    - Temperature sensation
    - Proprioceptive sensation
  - Impairment may be secondary to peripheral neuropathy, either mononeuropathy or polyneuropathy, with involvement of small nerve fibres or large sensory fibres, e.g., neurosyphilis.
- Motor System: Muscle tone and strength are assessed.
  - Terms used:
    - Hypotonia - decreased muscle tone
    - Flaccidity - absent muscle tone
    - Hypertonia - increased muscle tone
    - Atrophy
    - Fasciculations
- Reflexes: To test integrity of the reflex arc.
  - By convention they are graded as follows:
    - 0 = no response; always abnormal
    - 1+ = slight but definitely present response; may or may not be normal
    - 2+ = brisk response; normal
    - 3+ = very brisk response; may or may not be normal
    - 4+ = tap elicits repeating reflex (clonus); always abnormal
  - Whether 1+ or 3+ responses are normal depends on previous history, other reflexes, asymmetry.
  - Reflexes tested are:
    - Jaw jerk
    - Biceps
    - Triceps
    - Brachioradialis
    - Knee
    - Ankle
    - Plantar