

Health Assessment and Physical Examination



உற்றான் அளவும் பிணியளவும் காலமும்
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- திருக்குறள்

English Couplet 949:

The habitudes of patient and disease, the crises of the ill
These must the learned leech think over well, then use his skill.

LEARNING OBJECTIVES

The student will be able to:

-  define the term health assessment, temperature, pulse ,respiration and blood pressure
-  explain the techniques of health assessment
-  describe the factors affecting the body temperature, pulse, respiration and blood pressure
-  identify the types of thermometers
-  narrate the procedure for recording temperature , pulse , respiration and blood pressure
-  locate the sites for assessing pulse
-  describe pulse oxymeter
-  discuss the level of consciousness and Glasgow Coma Scale

5.1 Introduction

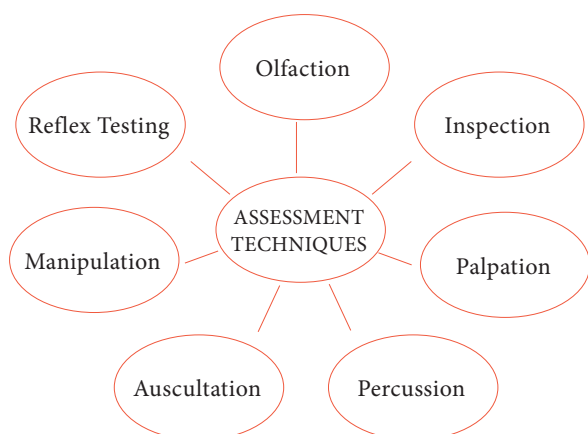
Successful treatment of the sick depends on correct diagnosis and correct diagnosis depends on a great deal of an accurate observations. It is therefore most important that the Health Worker develops skill in making accurate observations on patients. She must also be able to record her observations correctly, clearly and neatly.

5.2 Definition

Health assessment is an important component in health care for proper diagnosis and effective treatment. Health assessment includes the following

1. Anthropometric measurement includes height, weight, and circumference of head, chest, mid-arm.
 - Systemwise examination
 - Recording height and weight
1. Mental status examination
2. Laboratory investigation
3. Special investigation

5.3 Assessment Techniques



1. Inspection: It means looking with eyes it reveals any rash scar, colour, size, shape, contour and symmetry of the body parts.
2. Palpation: It means feeling using sense of touch. It reveals any swelling, coldness, hotness, stiffness, hardness, smoothness roughness, pain, vibration, firmness and flaccidity



3. Percussion: It means striking or tapping with fingers. It elicits sounds which indicate whether the underlined tissue is solid or filled with fluid.



The sounds may vary

- a) Resonant: A loud sound over the normal lung tissue
- b) Tympanic: A drum like sound over the air filled tissues such as gastric air bubble
- c) Dull: A medium pitched sound with medium duration without resonance, heard over the solid tissues, such as heart, liver.
- d) Flat: A pitched sound with short duration without resonance, heard over the complete solid tissues, such as bones.

4. **Auscultation:** It means listen with stethoscope (or) placing the ear against the body. It reveals sounds produced within the body and the blood vessels such as heart beat, bowel sounds



5. **Manipulation:** It means moving with the body parts. It reveals rigidity, difficulty (or) discomfort in moving the body parts.
6. **Reflex testing:** Means automatic response to a given stimulus. It reveals reflex is present, or not present, strength and movements of hands and legs.
7. **Olfaction:** It means sense of smell (Odour). It reveals the nature of disease condition of the patient.

5.4 Head to foot examination

5.4.1 Measurement of Weight

Quantitative expression of body mass, which indicates state of growth and health, is measured in kilograms or pounds using adult or infant weighing scale.

Checking Weight of an Infant



[Infantometer]

Purposes:

- To check whether an infant has adequate weight for age
- To calculate food requirements
- To calculate intravenous fluids and medications
- To monitor whether an infant gaining or losing weight depending on disease condition

Required articles

- Infant weighing scale-infantometer
- Draw sheet
- Duster
- Paper and pencil for calculation

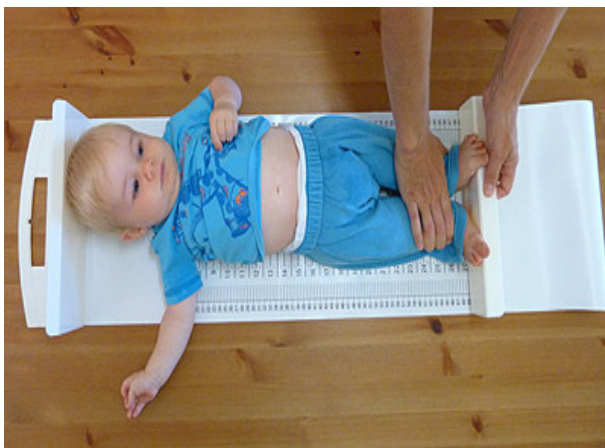
Procedure:

1. Clean the weighing scale with wet duster
2. Place draw sheet on the scale
3. Balance the scale to read zero
4. Place the weighing scale close to the wall to prevent the child from falling
5. Instruct mother to stand beside the scale
6. Undress the child before weighing
7. Mummify the infant with the same draw sheet and place the infant on the scale
8. Place the left hand over the infant without touching
9. Note the weight
10. Lift the infant from the scale and help the mother to dress the infant
11. Check and compare previous weight
12. Difference of more than 100 gms, needs to be clarified by rechecking the infants weight immediately

13. If the difference is still the same, it should be informed to the doctor concerned.
14. If the weight is in pounds and it must be converted to kilograms using conversion table.
15. Document the weight

$$1 \text{ Kg} = 2.2 \text{ lbs}$$

5.4.2 Measuring the Length of an Infant



Measurement of length by placing the child on a paper covered surface. Making the end points of the top of head and heels of the feet, and measuring between the two given points gives the length of the child.

Length of the baby can be measured in weighing scale by marking with scale between head and heel points.

5.4.3 Measurement of Head Circumference

1. Place light drape or paper on flat surface
2. Place infant in supine position or seated on paper drape



3. Place tape measure over the most prominent point of the occiput, around the head just above the eyebrows and pinna. This point is should be taken as head circumference.

5.4.4 Measurement of Chest Circumference

Place tape measure underneath the back of baby and bring it to front measured at nipple line gives the chest circumference.



5.4.5 Measurement of Mid-Arm Circumference



1. Place the tape vertically, along the posterior aspect of the upper arm to the acromian process and the olecranon process.
2. Half measured is the mid point
3. Place the inch tape at the midpoint and measure around the arm. It gives the mid arm circumference.

5.4.6 Measurement of Height & Weight of Adult



Measurement of Height:

Height is a measurement from head to toe that indicates the state of growth and health. It is measured in feet, inches or centimeters.

Purpose:

To measure accurate height of the patients

Required articles:

1. Measuring scale attached to the wall
2. A straight object or scale
3. Paper and pencil
4. Newspaper

Guidelines:

1. Have the patients shoes / slippers removed while taking height to avoid any variations in the reading
2. If thick object or scale is placed on the top of the head at right angle to the scale indicating the reading, note the bottom reading of the object.

Procedure:

1. Gather the equipment
2. Explain the purpose and procedure to the patient



3. Wash your hands
4. Tell the patient to remove the slippers or shoes.
5. Assist the patient to stand on a lean newspaper kept on the floor
6. Tell the patient to stand with the buttocks and the back of head against the scale on wall, feet flat, heels together and eyes looking straight ahead.
7. Place the straight object on the top of the head at right angles to the scale on the wall, touching the scale calibration. Note the reading where the said object touches the scale.
8. Tell the patient to put on slippers
9. Place the patient in a comfortable position
10. Replace the equipment
11. Wash your hands
12. Record the date and time of the procedure and height in the nurse's notes or graphic sheet.

Measurement of weight:

Weight is the quantitative expression of a body that indicates the state of growth and health. It is measured in kilograms, pounds and grams.

Purposes:

1. To obtain accurate weight of the patient
2. To help in accurate diagnosis of the patient
3. To evaluate patient's response to treatment

Required articles:

1. Weighing scale
2. Newspaper

Guidelines:

1. Weigh on weighing scale when the patient is ambulatory
2. Daily weigh the patient at the same time with the same scale and with same clothing
3. Weigh before meals and after voiding
4. Weigh on admission to provide base line information to subsequent daily weight recording and assess any significant increase or decrease in the patient's weight.
5. The weighing scale must be accurate, hence the balance scale, be prepared before weighing the patient.

Procedure:

1. Collect the equipments
2. Explain the procedure to the patient
3. Wash your hands
4. Assist the patient to void or empty the bladder
5. Check the commonly used flat weighing machines reading is set at zero level
6. Tell the patient to remove the slippers or shoes and extra cloths
7. Assist the patient to step on the centre of the scale platform
8. Assist the patient to step off the scale platform
9. Assist the patient to return to the bed
10. Wash your hands
11. Record the weight in the graphic sheet or nurse's notes.



5.4.7 Body Mass Index

BMI is an attempt to quantify the amount of tissue mass (muscle, fat and bone) in



an individual, and then categorize that person as underweight, normal weight, overweight, or obese based on that value.

The body mass index is a value derived from the mass (weight) and height of an individual. The BMI is defined as the body mass divided by the square of the body height and is universally expressed in units of Kg/m² resulting from mass in kilograms and height in metres.

$$BMI = \frac{mass_{kg}}{height_m^2}$$

Students Activity

Every student has to calculate their BMI and to be categorized

WHO regards a BMI of less than 18.5 as underweight and may indicate malnutrition. While a BMI equal to or greater than 25% considered overweight and above 30 is considered obese.

CATEGORY	BMI (KG/M2)	
	FROM	TO
Low		18.5
Normal	18.5	25
Obese (level 1)	25	30
Obese (level 2)	30	35
Obese (level 3)	35	40
Obese (level 4)	40	

BMI ranges are based on the relationship between body weight and disease and death.

Overweight and obese individuals are at an increased risk for the following diseases

- Coronary artery disease
- Dyslipidemia
- Type 2 diabetes
- Gall bladder disease
- Hypertension
- Osteoarthritis
- Stroke

5.5 Procedure and Recording of Temperature

Body temperature is its degree of heat. Normally the degree at which balance between heat production and heat loss is maintained is called the “Normal Body Temperature”. It is also called as “Normothermia or Euthermia”.



Adult Normal Temperature
is 37°C (98.4°F)

5.5.1 Factors affecting body temperature

1) Age, 2) Exercise, 3) Hormone level, 4) circadian rhythm 5) Stress, 6) Environment, 7) Temperature attraction, 8) Fever, 9) Hyperpyrexia, 10) Heat stroke, 11) Hypothermia

1) Age: Temperature regulation is unstable until children reach puberty. Older adults are sensitive to temperature extremes because of deterioration in control mechanisms, reduced sweat gland activity, reduced amounts of subcutaneous fat and reduced metabolism

2) Exercise: Muscle activity causes increased metabolism by increasing carbohydrate and fat breakdown.

Any form of exercise can increase heat production and the body temperature because of increased metabolism.

- 3) **Hormone level:** Women generally experience greater fluctuations in body temperature than men. Hormonal variations during menstrual cycles cause body temperature fluctuation.

Temperature changes occur in women during menopause (cessation of menstruation).

- 4) **Circadian rhythm:** Body temperature normally changes from 0.5° to 1°C during 24 hours period. The temperature is usually lowest between 1.00 AM and 4.00 AM

- 5) **Stress:** Physical and emotional stress increases body temperature through hormonal and neural stimulation. Those physiological changes increase metabolism, which increases heat production.

- 6) **Environment:** Environment influences body temperature because of extensive radiant and conductive heat loss.

- 7) **Temperature attraction:** Changes in body temperature can be related to excess heat loss, minimal heat production, minimal heat loss or any combination of these.

- 8) **Fever:** Hyperpyrexia or fever occurs because heat loss mechanisms are unable to keep pace with excess heat. Production, resulting in an abnormal rise in body temperature.

- 9) **Hyperpyrexia:** An elevated body temperature related to the body's inability to promote heat loss or reduce heat production is hyperthermia. Any disease or trauma to the hypothalamus can impair heat loss mechanisms.

- 10) **Heat stroke:** Prolonged exposure to the sun or high environmental temperature can overwhelm the body's heat loss mechanisms. Heat also depresses hypothalamic function. These conditions cause heat stroke, a dangerous emergency condition with a high mortality rate. Patients at risk for heat stroke are the very young, very old, cardiovascular condition, diabetes and alcoholics.

- 11) **Hypothermia:** Heat loss during prolonged exposure to cold overwhelms the body ability to produce heat causing hypothermia.

Hypothermia is classified as follows:

	CELSIUS	FAHRENHEIT
Mild	33-36°C	91.4° - 96.8°F
Moderate	30-33°C	86.0° - 91.4°F
Severe	27-30°C	80.6° - 86.0°F
Profound	<36°C	<80.6° F

5.5.2 Sites for assessing temperature:

- 1) Oral
- 2) Rectal
- 3) auxiliary
- 4) Groin
- 5) Ear (Tympanic membrane)



The Mouth (oral Temperature)

This is a convenient, reliable and commonly used method, but should not be used if the patient is;

- a) A child under 6 years of age
- b) Unconscious, mentally confused or very nervous condition
- c) Very weak, so that the mouth may full open
- d) Having breathing difficulty or frequent cough
- e) Having an injured or inflamed mouth.

Contra Indications

1. Oral temperature: Temperature should also not be taken by mouth soon after a hot drink (or) hot bath
2. Rectal: Rectal temperature is used for very ill patients, for infants and children.

The reading is a little higher than oral when the temperature is taken by rectum

3. The Axilla: This is convenient when the temperature cannot be taken by mouth. It is less accurate and the reading will be a little lower than when taking by mouth. The axilla must be dried and the thermometer is placed. So that the bulb is in contact with both skin surfaces the arm should be held close to the chest.
4. Groin: This is a convenient site in children. The groin must be wiped dry and the thigh well flexed over the abdomen and held there.
5. Ear: It is also a convenient site for mentally disturbed patients. For assessment, digital thermometers are used.

Electronic Thermometer
Temporal Artery Thermometer
Chemical Dot Thermometer
Temperature sites:
Oral, rectal, axillary and
tympanic membrane



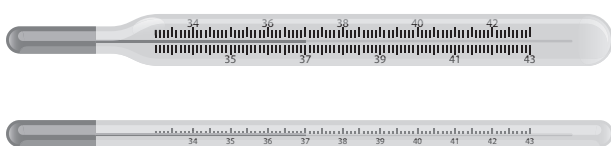
5.5.3 Types of Thermometers

- 1) Mercury thermometers (Clinical thermometer)
- 2) Electronic thermometer
- 3) Temporal artery thermometer
- 4) Disposable thermometer
- 1) **Mercury thermometers (Clinical thermometer):** Clinical thermometers are meant for clinical purposes. It is developed for measuring the human body temperature. It is a long narrow



glass tube with a bulb containing mercury at the end.

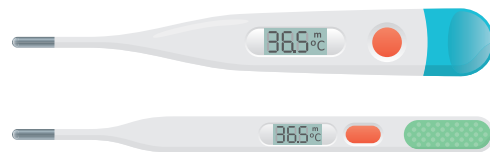
The normal human body temperature is 37°C. It can fluctuate between the ranges 35°C. The level of mercury tells our body temperature in °C. Since mercury is toxic element has been eliminated from health care facilities because of the environmental hazards of mercury. When you find a mercury – in – glass thermometer in the home



Teach the patient about safer temperature devices and encourage the disposal of mercury products at appropriate neighbourhood hazardous disposal locations.

- 2) Electronic thermometer:** The electronic thermometer consists of a rechargeable battery – powered display unit, a thin wire cord and a temperature – processing probe covered by a disposable probe cover. Separate unbreakable probes are available

For oral and rectal use. You can also use the oral probe for auxiliary temperature measurement. Electronic thermometers provide two modes of operation; a 4-second predictive temperature and a 3-minute standard temperature. A sound signals, and a ... Readings appears on the display unit when the Peak temperature readings has been measured.

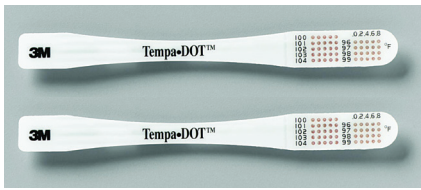


- 3) Temporal artery thermometer:** Measures the temperature of the superficial temporal artery. A handheld scanner with an infrared sensor tip detects the temperature of Cutaneous blood flow by sweeping the sensor across the forehead and just behind the ear. After scanning is complete, a reading appears on the display unit. Temporal artery temperature is reliable non-invasive measure of core temperature.



- 4) Disposable thermometer:** Single use (or) reusable chemical dot thermometers are thin strips of plastic with dots on the surface that have been impregnated with temperature – sensitive chemicals. The strips are sticker on the armpit and prevent slippage.

The dots change colour at different temperatures (within 60 seconds) as the chemicals in them respond to body heat. In the Celsius version there are 50 dots, each representing a temperature increment of 0.1°C, over a range of 35.5 – 40.4°C.



The Fahrenheit version has 45 dots with increments of 0.2°F and a range of 96-104.8°F. Disposable thermometers are usually for oral temperatures. You also use them at auxiliary with a placement time of minutes. Chemical dot thermometers are useful for screening temperatures, especially in infants and young children and patients who are incubated.

Purpose of Taking Temperature

- 1) To aid in diagnosis or the patient's condition
- 2) To find out the progress of the patient.

5.5.4 Taking Temperature By Mouth

General Instructions

- 1) Oral temperature should not be taken immediately after the patient has had a hot or a cold drink or food.
- 2) Oral temperature should not be taken for the following patients.
 1. Children below the age of five years
 2. Patients receiving oxygen
 3. Patients with nasal obstruction, dyspnoea or sore throat
 4. Patient who are delirious, unconscious and not cooperating, hysterical
 5. Restless or mentally ill
 6. Patients with oral surgeries.

Recording temperature – oral Equipment

Tray Containing

- 1) 3 or 4 test tubes or bottles with antiseptic lotions (Savlon 2%) and a little cotton underneath
- 2) A glass tumbler with clean water and little cotton underneath
- 3) A bowl containing a bit soapy white wipers
- 4) A small piece of clean cloth
- 5) A Kidney tray
- 6) A Paper bag
- 7) Watch with second hand
- 8) Red lead pen

Procedure

- 1) Explain the procedure and take the patients cooperation
- 2) Let the patient be sitting or lying down
- 3) Remove thermometer from the lotion, wash with clean water and dry with clean piece of cloth from the bulb upwards to prevent bacteria from setting down on the lower part which goes into the mouth of the patient.
- 4) Shake down the mercury by 95°F. Place the bulb of the thermometer under the tongue and tell the patient not to bite the thermometer but to hold it with his lips.
- 5) Leave the thermometer in the mouth for 2 minutes (during this time take his pulse and respiration)
- 6) Remove the thermometer, note the temperature clean with the soapy





wiper from above downwards towards the bulb (to prevent bacteria from spreading all over the thermometer)

- 7) Collect the dirty soapy water in the kidney tray and place the dirty wiper in the paper bag.
- 8) Replace thermometer in the test tube of bottle with the lotion
- 9) Record the temperature in the chart

After care of the equipment

- 1) Clean all the articles used
- 2) Wash the thermometer with soap and cold water
- 3) Keep the thermometer in the antiseptic lotion for 2 to minutes
- 4) Reset the tray and keep it ready for the next use.

Conversion of Scales

To convert centigrade to Fahrenheit, multiply by 9, divide by 5 and add 32.

To convert Fahrenheit to centigrade, deduct 32, multiply by 5 and divide by 9

$$C = (F - 32) \times 5/9$$

$$F = 9/5 \times C + 32$$

Abnormal temperature

- 1) Subnormal - 35° to 36.1°C (95° to 97°F)
- 2) Collapse – below 35°C (95°F)
- 3) Fever or pyrexia

Low pyrexia – 37.2° to 38.3°C (99° to 101°F)

Moderate Pyrexia – 38.3° to 39.4°C (101° to 103°F)

High Pyrexia – 39.5° to 40.5°C (103° to 105°F)

Hyper Pyrexia – 40.5°C (105°F) and above



Galileo Galilei was the inventor of Primitive thermometer.

5.6 Pulse

Pulse is the expansion felt in an artery where it can be pressed against a bone

Sites

Radial: It is felt with two or three fingers lightly placed on the thumb side of the wrist, anterior surface.

Carotid: This is felt in the neck beside the larynx.

Temporal: It is felt in front of the ear.

Facial: Near the angle of the lower jaw.

Femoral: Felt in the groin

Anterior Fontanel: An infant's pulse may be felt at the 'soft spot' on his head

Observation of the pulse

1. Rate – Number of pulse beat per minute
2. Rhythm or Regularity
3. Strength

Pulse rate

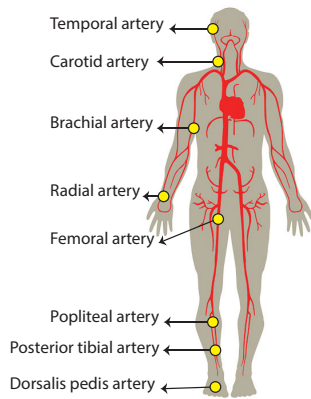
The normal pulse rates for persons at rest are

Adults : 60 to 80 beats/minute

Children : 80 to 100 beats /minute

Infants : 100 to 140 beats /minute





Pulse points on the body

5.6.1 Factors That Affect the Pulse Rate are

1. Sex: The pulse rate of women is little higher than men
2. Exercise: The rate increases with exercise and is slower when at rest
3. Emotion: Anger, fear, joy can increase the pulse rate
4. Hunger and fatigue: decreases the pulse rate
5. Drugs : some drugs increase, while others decrease the pulse rate
6. Acute pain causes an increase in pulse rate
7. Low blood volume as in dehydration haemorrhage and shock, causes an increase in pulse rate
8. Heart and thyroid diseases affect the pulse rate.

Tachycardia: Above 100 beats / minute
Bradycardia: Below 60 beats /minute

5.6.2 Taking And Recording The Pulse

The pulse is usually taken along with the temperature. In some cases like after surgery

accidents and heart diseases the pulse rate has to be taken and recorded every 15 minutes.

Method

1. See that the patient is in rest
2. See that the patient's arm is well supported
3. Place the tips of three fingers (never the thumb) gently over the radial artery at the wrist.
4. Feel the pulsation carefully before starting the count note the strength and regularity of the beats
5. Using a watch with seconds hand or a pulse oxymeter, count the number of beats for one minute. If necessary count longer to be sure and accurate
6. Record the pulse rate and note any abnormality in strength or regularity on a JPR chart the pulse rate is often marked in red.



Hand placement for pulse check

5.7 Respiration

Respiration is the act of inhalation and exhalation of air

Respiration derived from a Latin word respire

The surface area of a lung is roughly the same as a size of a tennis court



The usual ratio of respiration rate and pulse rate is 1 to 4

The normal respiration rates are

Age	Rate breaths/min
New born	35-40
Infant	30-50
Toddler	25-32
Child	20-30
Adolescent	16-20
Adult	12-20

5.7.1 Besides Age, Factors Affecting Respiration Rate:

1. Sex: respirations are generally more rapid in females than in males
2. Exercise: increases the rate
3. Emotions: such as fear influence respiration
4. Heat: such as hot water or hot both causes increase in rate and decrease in depth of breathing
5. Cold makes the breathing full and deep
6. Drugs: Like sedatives, slow the respirations
7. Respiratory illness: increase the rate especially pneumonia
8. Pain, fever, anaemia, haemorrhage and shock increase the rate
9. Coma and brain injuries – cause decrease in respiration rate.

Procedure:- (counting respiration)

1. The patient must be at rest and unaware that respiration is being taken. It is therefore wise to take

while keeping fingers on the pulse

2. Feel or watch the rise and fall of the patient's chest
3. Count each rise and fall as on respiration count for a full minute
4. While counting the rate, note also
 - a) Rhythm - Regular or irregular
 - b) Depth - Shallow, normal or deep
 - c) Sound - quiet and noisy
 - d) Any discomfort or difficulty in breathing

5.7.2 Alteration in Breathing Pattern

Bradypnoea	- Abnormal slow respiration less than 10/min
Tachypnoea	- Abnormal high respiration greater than 30-min
Apnoea	- Absence of respiration for several seconds
Hyperventilation	- Rate and depth of respiration increases
Hypoventilation	- Rate and depth of respiration is very low

Cheyne – Strokes respiration - Respiratory cycle begins with slow, shallow breaths that gradually increase to abnormal rate and depth. This pattern reverses: Breathing slows and become shallow climaxing in apnoea before respiration resumes.

Pulse oximeter

Pulse oximeter is a device useful to measure the oxygen level (oxygen saturation of the blood). It is an easy painless measure of how well oxygen is being sent to parts of the body. At the same time it measures the pulse rate also.



5.8 Blood Pressure

Blood pressure is the force or pressure of blood against the walls of blood vessels as it flows through them.



Hypertension is a silent killer disease

It depends on the following factors:

1. Force of the heart beat
2. Elasticity of the blood vessel wall
3. Volume of blood in circulation
4. Dilatation on concentration of the small arteries and capillaries.

Systolic pressure – Highest pressure in the arteries due to contraction of the heart

Diastolic pressure – Lowest pressure. It occurs between the heart beats

Pulse pressure in the difference between the systolic and diastolic pressures. It is normally about 35 and is a measure of the heart's strength

Variation in Blood pressure:

Rise of blood pressure due to

- _____ Fear
- _____ Worry
- _____ Emotions
- _____ Exercise

Hyper tension – high blood pressure
140/90 mmHg

Hypo tension – low blood pressure
90/60 mmHg

Normal Range is 120/80 mmHg

5.8.1 Types of Blood pressure Monitoring Equipment

1. Sphygmomanometer: It includes a pressure manometer, unifying cuff, inflatable rubber bladder and a pressure bulb with a release valve that inflates the bladder.



2. Electronic Blood pressure device: Many different types of electronic BP machines are available to determine BP automatically. They rely on an electronic sensor to detect the vibrations caused by the rush of blood through an artery.



3. Self-measurement of blood pressure: Electronic monitoring device allows individuals to measure their own BPs in their home with the push of a button.



4. Dial type of BP apparatus: It is lighter and useful for home visits. There is no mercury or glass. But this type may be not as accurate as the sphygmomanometer.



A stethoscope should be used with the BP apparatus in order to listen to the sounds of the brachial pulse and determine the BP reading.

5.8.2 Method of taking the Blood Pressure

1. Explain the procedure to the patient and have him seated by a table or lying with the arm supported and relaxed.
2. Place the centre of the cuff of the BP apparatus over the brachial artery and wrap it smoothly and firmly around the patient's arm 5cm just above elbow. Tuck the end neatly.

3. Find the brachial pulse with the fingers and place the stethoscope over it.
4. Close the sinew valve and inflate the cuff until the pulse disappears and above that about 20 mm mercury
5. Open the valve slowly and listen for the first sound while watching the manometer reading. The first sound given is the systolic reading. As air escapes, the sounds become louder and clearer.
6. Continue to let air out slowly. As you listen the sounds suddenly become dull and at this point take the Diastolic reading.
7. Allow all the air to escape and the mercury to fall to zero
8. Repeat the procedure, if there is any doubt about the reading
9. Record the reading the systolic pressure is always written over the Diastolic pressure eg. 120/80 mmHg
10. Remove the cuff from the patient's arm, roll and replace in the box.

5.9 Level of Consciousness

Loss of consciousness means that there is some interference with the normal working of the brain. The person who is unconscious is not aware of what is happening around him.



Human brain has the capacity to generate approximately 23 watts of power when awake.

Level of Consciousness

The level of consciousness is determined by the activity of the brain. It can be categorized as follows:

1. Alert (a):- Sound and clear mind responding normally an answering questions swiftly.
2. Response to voice (v):- feels tired and sleepy. Wakes up easily and able to do as told or answers simple questions. The patient is in a state of confusion nevertheless and is easily agitated.
3. Response to pain (p):- Difficult to wake up but will respond to pain. The patient cannot answer questions properly.
4. Unresponsive (u):- Impossible to be woken up with no response to external stimulation.

NOTE:

Anything below alert is unconscious. From there we need to determine how unconscious the patient is. A patient can be unconscious with response to stimuli or unresponsive.

Glasgow Coma Scale

The Glasgow Coma Scale is an assessment based on numeric scoring of the patient's responses.

5.9.1 Glasgow Coma Scale

Best Eye opening	1. No response
Response	2. To pain
	3. To speech
	4. Spontaneously

Best	1. No response
Motor	2. Extension – abnormal
Response	3. Flexion – abnormal
	4. Flexion – with drawl
	5. Localizes pain
	6. Obeys verbal commands

Best	1. No response
Verbal	2. Sounds – incomprehensible
Response	3. Speech – inappropriate
	4. Conversation – confused
	5. Oriented

1. Eye opening : (1-4 points)

- a)** Spontaneous: 4. Eyes are opened and focused. The patient can recognise you and follow eye movements.

Lower the score is 3 – coma

Less then – 8 – severe injury

9-12 - moderate injury

13- 14 - minor injury

- b)** To voice (E 3):

The patient opens his eyes when spoken to or when directed to do so. c) To pain: (E2):

The patient opens his eyes when given some sort of painful stimuli.

- c)** To pain: (E2)

- d)** None (E1)

2. Motor Response (1-6 points)

- a)** Obeys commands(M 6)

- b)** Localize pain (M5)

- c)** Withdraws to pain (M4)

- d)** Flexion (M3)

- e)** Extension (M2)

- f)** None (M1)

3. Verbal Response (1-5 POINTS)

a) Oriented (v5);

The patient can talk and answer questions about his location, time,

and who he is. This scale is used to measure the level of consciousness traumatically injured persons and all chronically ill patients.



SUMMARY

Health assessment is an important component in health care for proper diagnosis and effective treatment. Health assessment includes physical assessment, mental status examination, laboratory investigation and special investigation. Assessment techniques are inspection, palpation, percussion, auscultation, manipulation, reflex testing and olfaction.

The balance between heat production and heat loss is called as “normal body temperature”. Adult normal body temperature is 37°C or 98.4 °F. Sites to assess the temperature are oral, rectal, axillary, temporal artery and the groin.

Types of thermometers are mercury thermometer, electronic thermometer, temporal artery thermometers and disposable thermometers. Pulse is the expansion felt in an artery where it can be pressed against a bone site. The normal pulse rate of the adult is 60- 80 /minute. Respiration is the act of inhalation and exhalation of air.

Pulse oxymeter is a device to measure the oxygen saturation of the blood and pulse rate.

Blood pressure is the force or pressure of blood against the walls of blood vessels as it flows through them. Types of blood pressure monitors are sphygmomanometer, electronic blood pressure device, measurement device and dial type of BP apparatus.

There are four types of consciousness .They are alert, response to voice, response to pain and unresponsive.

The Glasgow coma scale is an assessment based on numeric scoring of the patient's responses.



EVALUATION

1. Choose the correct answer

1. Striking and tapping with fingers are called

- a) auscultation
- b) manipulation
- c) olfaction
- d) percussion

2. Assessment by the sense of touch is called

- a) percussion
- b) manipulation
- c) palpation
- d) inspection



3. Adult normal body temperature is

- a) 98.4°F
- b) 94.8°F
- c) 94.4°F
- d) 99.4°F

4. Prolonged exposure to cold causes
 - a) hyper pyrexia b) heat stroke
 - c) hypothermia d) fever
5. Preferable time of keeping thermometer in the axilla is
 - a) 2 minutes b) 3 minutes
 - c) one minutes d) 5minutes
6. Normal pulse rate of an adult is
 - a) 60-80 minutes
 - b) 80-100 minutes
 - c) 100=140minutes
 - d) 40- 60minutes
7. The device used to measure the oxygen saturation of blood is called
 - a) pulseoxymeter
 - b) pulsometer
 - c) sphygmomano meter
 - d) electronicthermometer.
8. Rate and depth of respiration increases means
 - a) apnoea
 - b) hyperventilation
 - c) hypoventilation
 - d) tachypnoea.
9. Absence of respiration for several seconds are called
 - a) apnoea
 - b) brdypnoea
 - c) tachypnoea
 - d) cheyne stroke respiration
10. Hypotension means the blood pressure is lower then
 - a) 120/80 mmHg
 - b) 90/60 mmHg
 - c) 140/90mmHg
 - d) 110/70mmHg

II. Answer the following questions in one (or) two lines.

11. What is percussion ?
12. What is auscultation?
13. What are the types of thermometers?
14. What are the sites for assessing the body temperature?
15. How do you convert centigrade to Fahrenheit?
16. What is pulse?
17. Define - respiration.
18. Define – pulse pressure.
19. Define – cheyne- strokes respiration.
20. What is meant by un consciousness?

III. Write short notes

21. What are the conditions to avoid checking oral temperature?
22. What are the pulse points on the body?
23. Write briefly about pulse oxymeter?
24. What are the factors influencing respiratory rate?
25. Write briefly about the monitors of blood pressure?

IV. Write in detail

26. How will you assess the health?
27. What are the factors affecting the body temperature?
28. Write about temporal artery thermometers?
29. What are the level of consciousness? Explain.
30. Write about hypothermia.
31. Write about Glasgow coma.

A-Z GLOSSARY

1. Apnoea (மூச்சுத்திணறல் / சுவாசம் நின்றுவிடுதல்) – cessation of breathing
2. Auscultation (ஒலிச்சோதனை) – examination of the body by listening to sounds
3. Bradycardia (குறை இதயத் துடிப்பு) – abnormally decreased heart rate
4. Chynestoke respiration (சுவாசத்தின் அசாதாரண வகை) – an abnormal pattern of respiration
5. Diastole (இதயவிரிவு) – a period of relaxation of heart
6. Hyper ventilation (சுவாசத்தன்மை அதிகம்) – very deep rapid respiration
7. Hypo ventilation (சுவாசத்தன்மை குறைவு) – very shallow respiration
8. Hyperthermia (அதிக வெப்பநிலை) – increased body temperature
9. Hypothermia (தாழ் வெப்பநிலை) – decreased body temperature
10. Olfaction (நுகர்தல்) – ability to perceive and disintegrate smell
11. Oxymeter (மிராணவாயு அளப்பான்) – a device that measures the oxygen saturation
12. Tachycardia (இதயத் துடிப்பு மிகைப்பு) – increased heart rate



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