OBSERVATION OF VITAL SIGNS

Definition: It is the process of measuring the body temperature, pulse rate (heart beats), respiration rate (breathing rate) and blood pressure of a client in order to detect any deviations.

Purpose:

- To detect hyper/hypothermia and provide clinical data on cardiac function and oxygen saturation.
- To aid diagnosis, treatment and monitoring patient progress.

Indications:

- Patients with changes/alteration in body temperature.
- Clients seeking treatment in a health care facility.
- All in patients
- Patients with pulmonary dysfunctions and/or cardiovascular diseases.

Temperature

It involves measuring the balance between heat production and heat loss by the body. This may be taken:

- Orally - Take temperature orally when client is awake, oriented and cooperative.
  Wait for 15min if client has just smoked or swallowed liquids (changes in temperature hence wrong recordings).
  Place the thermometer under client's tongue and instruct him/her to keep lips closed: leave in place for 3-5 min if using a glass thermometer. Do not take temperature of the following clients orally:
  Confused, disoriented or comatose clients
  Clients with NGT
  Clients receiving oxygen
  Clients with endotracheal tubes
  Clients with seizures and those with wired jaws or facial fractures.

- **Axillary** - Take Axillary temperature only if the other methods are not possible, as it is unreliable method. Yet it is the commonest method in our setting. (HIV limits us from sharing many things including oral or rectal thermometers).
  Wait for 15min if client has just finished washing axilla. Leave glass thermometer in place for 5-8min. We normally wait for 3min in practice
  Normal axilla temperature is 35.4oC – 37.4oC
- **Rectally** - Do not take rectal temperature on clients who have had peritoneal or rectal surgery.

After lubricating it, insert the thermometer in place 1 ½ inch into the rectum Leave glass thermometer in place 2-3min and stay with the client as you do this.
The normal rectal temperature is approximately 98.7-100.5degrees F (37.5-38.5degrees cent.

The normal range of body temperature in the resting person is 36 – 37.5oC (96.8o – 99.5oF) orally. Axillary temperature registers approximately 1 degree lower than the average oral temperature, that is 35.4oC – 37.4oC. On the other hand, rectal temperature is about 1 degree higher than the oral body temperature 36.7oC – 38oC. Rectal temperature readings are most taken with children and adult clients who are mouth breathers, who are confused, or who are receiving oxygen therapy. It is also necessary to use this method with clients who are unconscious, who have experienced severe trauma (lacerations of the mouth), or who have undergone facial-mandibular surgery (wired fractured jaw or glossectomy).

Each individual has a personal temperature variation. Most commonly, a client's early morning temperature will register 2+ degrees lower than his normal temperature, and his temperature in the late afternoon or early in the evening will register 0.5 to 1 degree higher.

Infants and young children do not have as well-controlled body temperature as adults. The toddler's average rectal temperature is usually 37.2oC - 37.8oC (98.96-100.04F) or higher. Even with minor infections, the infant or young child's temperature rises even higher yet, with a severe infection the infant's temperature may actually be normal or subnormal depending on the causative agent of the infection.

Pulse

Is the measurement of pressure pulsation created when the heart contracts and ejects blood into the aorta.

The pulse recorded with the TPR is the radial pulse in the child and the adult and the temporal on apical pulse in the newborn of infant. Pulse is assessed according to rate, rhythm, and quality. The pulse can be measured at areas where an artery passes close to the skin. These areas include the:

- Back of the knees
- Groin
- Neck
- Temple
- Top or inner side of the foot
- Wrist

To measure the pulse at the wrist, place the index and middle finger over the underside of the opposite wrist, below the base of the thumb. Press with flat fingers until you feel the pulse.

To measure the pulse on the neck, place the index and middle fingers just to the side of the Adam's apple, in the soft, hollow area. Press gently until you locate the pulse.

You routinely examine the apical pulse in the adult and child during the cardiac portion of the physical assessment. You assess the carotid or femoral pulse in cardiac arrest to determine perfusion.

As you are aware the pulse rate varies with age, sex, physical exertion, and emotional status.

In children it is best to take the pulse for a full minute because there is a greater variation in the pulse rate of the infants and children.

In adults you can take the pulse for 30 seconds and multiply the results by 2. If you note any irregularity, take the pulse for the entire minute.

The normal pulse rate in an adult at rest is 60 - 100 beats/min. It is slightly faster in women than in men. Because of the arteriosclerosis tendencies with age, the pulse in the elderly client may feel hard and cordlike and may be of a faster rate.

The normal pulse rate is of regular rhythm. The commonly used pulses include; central pulses (carotid and femoral) and peripheral pulses (brachial, radial, popliteal, posterior tibial, and dorsalis pedis).

- Newborns 0 to 1 month old: 70 to 190 beats per minute
- Infants 1 to 11 months old: 80 to 160 beats per minute
- Children 1 to 2 years old: 80 to 130 beats per minute
- Children 3 to 4 years old: 80 to 120 beats per minute
- Children 5 to 6 years old: 75 to 115 beats per minute
- Children 7 to 9 years old: 70 to 110 beats per minute
- Children 10 years and older, and adults (including seniors): 60 to 100 beats per minute
- Well-trained athletes: 40 to 60 beats per minute

Illustration of the sites for assessing pulse

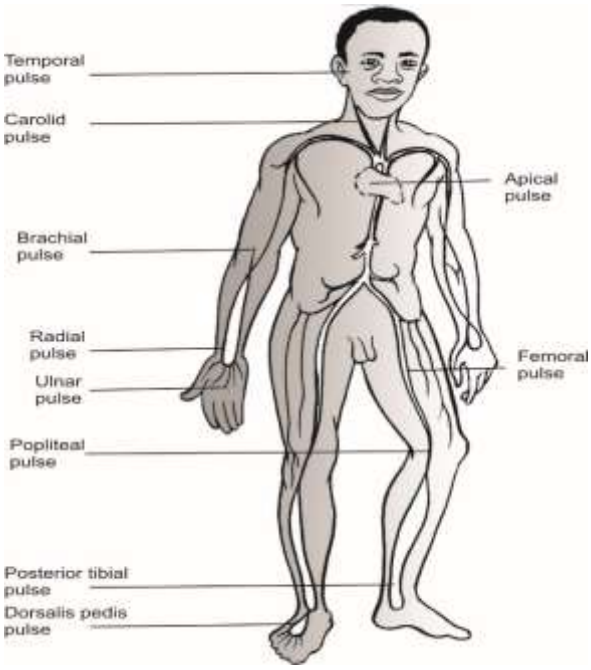

Figure 1: The pulse sites

Respiration

Is the measurement of breathing patterns/rate.

Normal respirations are effortless, regular, and smooth. The average respirations per minute vary with age. The Table 2 gives a summary of the ranges.

Table 1: Average respiratory Rate per minute for Age

Age	**Respiratory Rate/ minute**
Infants to children of two years	24 - 34
Children to puberty	20 – 26
Adults	12 – 18

Infant 0-12 months 30-60 per minute
Toddler 1-3 years 24-40 per minute
Preschooler 4-5 years 22-34 per minute
School Age 6-12 years 18-30 per minute
Adolescent 13-18 years 12-16 per minute.

You realize that clients with increased need for oxygenation of the blood, as with exercise or fever, will show an increased rate of respirations.

You should look for signs of respiratory obstruction as you note the rate and depth of respirations. Carefully note whether:

- The chest movement is symmetrical (equal and bilateral) with respirations
- Intercostals or sternal retraction is present
- There is nasal flaring

Blood pressure (BP)

Is the measurement of pressure exerted by blood on the walls of its vessels.

BP test measures vascular pressures. During cardiac systole (contraction of the ventricles of the heart), the maximum pressure of the blood is exerted against the arterial walls by the left ventricles. This is called the systolic pressure. The diastolic pressure on the walls of the arteries is continuously present and reflects blood vessel resistance.

BP is lowest in the newborn and increases with age. It also increases with exercise, emotional stress and a gain in weight. Ordinarily, it is at its lowest in the early morning after a night sleep. A client's BP is also lowered when measured in a supine position as compared to a sitting standing position. **Method:** The cuff used should cover at least half of the portion of extremity used and not more than two-thirds of the area. Use appropriate cuff size; 12-14cm for average adult arm, 18-20cm for obese arm and use pediatric cuff for infants, children and adults with thin arms.

Apply cuff 2cm above the antecubital space.

Place center of bladder over brachial artery.. Release inflated cuff slowly.

If it is necessary to recheck B/P , allow the cuff to completely deflate before reinflating.

When doing initial client assessment, check B/P in both arms.

Normal difference is usually 5mmHg or less.

Normal B/P in the average adult is **100/60- 140/90mmHg.**

Hypertension, as defined by the World Health Organization (WHO), is a persistent elevation of blood pressure above 140mm systolic and 90mm diastolic (140/90).

A pressure below 95/60 is generally considered to be hypotension. However, a hypertensive client may be hypertensive at 150/90.

An increased systolic pressure as a result of an increase in cardiac output with a stable diastolic pressure can be found in older clients with atherosclerosis and in clients with anemia, arteriovenous fistula, aortic regurgitation or hyperthyroidism.