

## RECORDING OF BLOOD PRESSURE

### Background:

**Blood pressure is the lateral pressure exerted by blood on the vessel walls while flowing through it.**

The minimum pressure during systol is called the systolic pressure while the minimum pressure during diastole is called the diastolic pressure. In an adult, normal range of pressure is:

- Systolic Pressure : 120mm Hg
- Diastolic Pressure : 80mm Hg

The blood pressure physiological varies according to age, sex, build, exercise, posture, sleep, during emotion etc.

Recording Of Blood Pressure : There are three methods for the recordation of the blood pressure---**i) Oscillatory Method; ii) Palpatory Method iii) Auscultatory Method.**

The most common and convenient laboratory method is the auscultatory method. It is an indirect method. In the indirect method commonly the pressure of the brachial artery is measured. The instrument with which pressure is measured is known as Sphygmomanometer.

### Sphygmomanometer.

The sphygmomanometer consists of essentially the following parts:

- **A rubber bag** of standard dimensions for adults (at least 12 to 13 cm wide for measurement of brachial blood pressure) surrounded by a cloth cuff. The cuff and bag are wound snugly and smoothly around the upper arm so that its lower edge is just above the antecubital fossa. As pressure is built up in the cuff, pressure throughout the soft tissue in the limb beneath the center portion of the cuff will equal that in the cuff all the way through the limb if, and only if, the width of the bladder exceeds 1.2 times that diameter of the limb.
- **An inflating bulb** : A pressure control valve to control the rate of inflating and deflating the bag.
- **An aneroid manometer or mercury manometer** by which the pressure in the bag can be measured.

### **A. Application of Sphygmomanometer Cuff**

Seat the subject comfortably with the elbow slightly flexed, and support the whole forearm at heart level on a table. The patient should be allowed time to recover from any recent exercise

or anxiety. Apply the cuff to the arm above the elbow, taking care to have the inflatable portion on the medial and anterior edges, and keeping the cloth strip flat. This serves to furnish a firm and even external pressure for the bag when it is inflated. The lower edge should be about 1 inch above the antecubital space.

**B. Position and Method of Application of Stethoscope.** The stethoscope should be placed over the previously palpated brachial artery in the antecubital space, not in contact with the cuff.



**FIGURE: Showing a sphygmomanometer**

Significance: It is very essential to record blood pressure as both the systolic and diastolic pressure informs about the status of working of heart.

The **systolic pressure** undergoes considerable fluctuations. Excitement, exercise, meals etc increases the pressure whereas sleep and rest decreases the systolic pressure. The systolic pressure informs about the extent of work done by heart, the force with which the heart is working and the degree of pressure which the arterial walls have to withstand.

The **diastolic pressure** undergoes much less fluctuations. Increase in the diastolic pressure indicates that the heart is approaching towards pressure. It is of much importance as it is the measure of peripheral resistance. It indicates the constant load against which heart has to work.

The aim of the experiment is to record a patient's blood pressure using a sphygmomanometer.

## PROCEDURE :

### Auscultatory Method

Wrap the sphygmomanometer cuff around the bare arm, above the antecubital space, as directed. Place the bell of the stethoscope in the antecubital space below the cuff and over the brachial artery. No sounds should be heard. Inflate the cuff to a pressure about 30 mm above the palpatory systolic pressure just determined. The cuff should then be deflated at the rate of 2-3 mm per second. The level at which the first sound regularly appears is considered to be the auscultatory systolic blood pressure reading. It must be emphasized that these sounds are not heart sounds. Altogether there are four different phases and the sounds associated with these phases are called the sounds associated with these phases are called the sounds of Korotkow. They are as follows:

1. Phase I : The sudden onset of a clear, tapping sound which becomes louder during the first 10 mm fall in pressure. Its first appearance indicates the **systolic pressure**.
2. Phase II : The sound becomes softer, acquiring a murmured character, during the next 15 mm fall in pressure.
3. Phase III : The murmur sound again is replaced by louder sound during the next 15 mm fall in pressure.
4. Phase IV : The loud sound suddenly becomes softer and more muffled. This indicates **diastolic pressure**.
5. Phase V : When the bag pressure is lowered further, all the sounds disappear.

**REPORT:** The blood pressure of the subject is found to be \_\_\_\_\_ mm Hg.

**REFERENCE:**

1. Physiological Parameters, Practical Human Anatomy And Physiology, S.R. Kale et al., Nirali Prakashan, Eight Edition, 2002, pp. 36-38