

Blood Pressure

An Objective Observation

by

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SYSTEMATIC and close observation of patients, and reporting the cardinal signs, form one of the fundamental responsibilities of the nurse. The objective symptoms which can be perceived by the use of instruments such as thermometer and sphygmomanometer signify a state of normalcy or otherwise of body functions. Careful observation of the pulse, respiration temperature and blood pressure assist in early diagnosis. Though much emphasis is laid on the technical procedure and interpretation of temperature, pulse and respiration, a scientific observation is incomplete without an adequate knowledge of reading the blood pressure recordings.

With accelerated advancement in the field of medical science, it has become absolutely essential for a nurse to be thoroughly conversant with the technique of recording the blood pressure, especially following major surgery, or the administration of vasopressors, spinal and epidural anaesthetics, and after induced hypotension or hypothermia. The relative value of reading the blood pressure is to be recognised. Normalcy in blood pressure is an indication of the factors responsible for maintaining the state of balance and equanimity with competency in performance, and that an adequate supply of blood is maintained to the vital centres. Spontaneous fall or rise, accompanied with distressing clinical signs, cast a shadow of impending catastrophe. In the post-operative phase of major abdominal surgery, for example, when the patient is still under the influence of narcotics, the peritonium seldom reacts to the stimulation of an internal haemorrhage and may

mask the signs of a disaster. Instances are not uncommon when patients have gradually sunk without exhibiting any signs of abdominal rigidity, shock or pain. It is only the reading of blood pressure, under such conditions that can be a dependable index of the state of the patient.

The blood pressure depends upon the force of the ventricular contraction, the elastic recoil of the aorta, elasticity of the musculature of the blood vessels, peripheral resistance, volume of blood in the circulation, and the viscosity of blood. Arterial pressure is higher than the venous and capillary pressure. Due to gravitation, blood pressure is higher in the arteries below the level of the heart than those above the level of the heart. Variations in reading can be noticed in states of emotional stress, muscular activity, sleep, rest, position, age, sex and cold.

Blood pressure is the force which is exerted by the circulating blood on the walls of the vessels through which it passes. Pressure is at its peak in the arteries during the ventricular systole, that is during the contraction of the ventricles; this is *systolic* pressure. During the phase of ventricular diastole, that is during the dilatation of the ventricles, the blood pressure gradually regresses and strikes a minimum just before the beginning of the successive systole, this minimum is the *diastolic* pressure.

Estimation of the blood pressure can be done with the help of a mercurial manometer, graduated in millimetres, with a small reservoir for mercury at the bottom. This is

connected to an elastic bag contained in a fabric cuff, and this in turn is connected to rubber bellows with a metallic valve for adjusting the pressure. This apparatus is called the Sphygmomanometer. There are other types of instruments with a spring scale called the aneroid manometer which function on similar principles.

The surface over the brachial artery is a convenient spot for recording blood pressure. The subject should be at absolute rest, preferably in a recumbent position. The fabric cuff is wrapped around the left arm over the brachial artery about two inches above the elbow. Air is inflated into the air bag by successively squeezing the bellows and adjusting the valve. In the auscultation method, a stethoscope is used and recordings are taken over the brachial artery in the bend of the elbow. Air is then slowly deflated by unscrewing the valve, until a clean, sharp tapping sound is heard through the stethoscope. Then the reading on the manometer is the systolic pressure. Therefore the pressure of air in the elastic bag on the brachial artery from outside, is equal to the pressure which the circulating blood is exerting on the walls of the artery from within. As air is gradually deflated the sound becomes louder, and then softer and muffled, until at last the sound disappears completely. This point as indicated by the reading on the instrument, denotes the diastolic pressure. This is the lowest pressure which the blood exerts on the artery during the cardiac diastole. By palpation method, only the systolic pressure can be determined on the brachial

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Nursing Marches on . . .

Nursing in India has reached another milestone with the conferring of a Masters in Nursing Degree by the University of Delhi on November 25, 1961, to six nurses who successfully completed their study

at the College of Nursing Delhi, from October 1959 to July 1961.

This step forward is one of which the nurses of India might well be proud.

While we offer our warmest congratulations to these nurses, we also would record our indebtedness to those Nursing Leaders who have toiled to bring nursing in India to this professional level.



WE ARE PROUD TO PRESENT . . .

(L to R) Miss Joyotsana Sengupta, Mrs. Achamma Thomas, Miss Kanta Gupta, and Miss Shuva Das Gupta.
Seated (L to R) Miss Urmil Nagrath, Dr. Edith Buchanan, Professor of Nursing, and Mrs. A. Gupta, Principal of the College of Nursing. Absent—Mrs. Sulochana Krishnan

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or radial artery in the same method as described above. The result of the reading of the blood pressure is always expressed as

Systolic pressure in millimetres
Diastolic pressure of mercury.

The difference between the

systolic pressure and the diastolic pressure is the pulse pressure, and is an indication of the efforts of the heart to overcome the resistance, supply of blood to the periphery, and the condition of the arteries.

The normal blood pressure of an adult is 100 to 130 millimetres

of mercury systolic, and 65 to 80 millimetres of mercury diastolic. Individual variations are common. Normal systolic pressure in women is slightly lower than in men. With basic knowledge and constant practice, this technique of recording the blood pressure can be perfected by the nurse.