

جامعة ساوة الاهلية
كلية التقنيات الصحية والطبية
قسم التخدير - اللجنة العلمية



BLOOD PRESSURE

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المرحلة الثانية

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BLOOD PRESSURE

A sphygmomanometer, a device used for measuring arterial pressure. Blood pressure (BP) is the pressure (force per unit area) exerted by circulating blood on the walls of blood vessels, and constitutes one of the principal vital signs. The pressure of the circulating blood decreases as it moves away from the heart through arteries and capillaries, and toward the heart through veins.

BLOOD PRESSURE

When unqualified, the term blood pressure usually refers to brachial arterial pressure: that is, in the major blood vessel of the upper left or right arm that takes blood away from the heart. Blood pressure may, however, sometimes be measured at other sites in the body, for instance at the ankle. The ratio of the blood pressure measured in the main artery at the ankle to the brachial blood pressure gives the Ankle Brachial Pressure Index (ABPI).

MEASUREMENT



Arterial pressure is most commonly measured via a sphygmomanometer, which historically used the height of a column of mercury to reflect the circulating pressure. Today blood pressure values are still reported in millimetres of mercury (mmHg), though aneroid and electronic devices do not use mercury.

MEASUREMENT

For each heartbeat, blood pressure varies between systolic and diastolic pressures. Systolic pressure is peak pressure in the arteries, which occurs near the beginning of the cardiac cycle when the ventricles are contracting. Diastolic pressure is minimum pressure in the arteries, which occurs near the end of the cardiac cycle when the ventricles are filled with blood. An example of normal measured values for a resting, healthy adult human is 115 mmHg systolic and 75 mmHg diastolic (written as 115/75 mmHg, and spoken (in the US) as "one fifteen over seventy-five"). Pulse pressure is the difference between systolic and diastolic pressures.

SYSTOLIC AND DIASTOLIC

Systolic and diastolic arterial blood pressures are not static but undergo natural variations from one heartbeat to another and throughout the day (in a circadian rhythm). They also change in response to stress, nutritional factors, drugs, disease, exercise, and momentarily from standing up. Sometimes the variations are large. Hypertension refers to arterial pressure being abnormally high, as opposed to hypotension, when it is abnormally low.

UNITS

The predominantly used unit for blood pressure measurement is mmHg (millimeter of mercury). For example, normal pressure can be stated as 120 over 80.

PALPATION METHODS

A minimum systolic value can be roughly estimated without any equipment by palpation, most often used in emergency situations. Palpation of a radial pulse indicates a minimum blood pressure of 80 mmHg, a femoral pulse indicates at least 70 mmHg, and a carotid pulse indicates a minimum of 60 mmHg. However, one study indicated that this method was not accurate enough and often overestimated patients' systolic blood pressure. A more accurate value of systolic blood pressure can be obtained with a sphygmomanometer and palpating for when a radial pulse returns. The diastolic blood pressure can not be estimated by this method.

AUSCULTATORY METHODS



Auscultatory method aneroid sphygmomanometer with stethoscope

AUSCULTATORY METHODS

The auscultatory method uses a stethoscope and a sphygmomanometer. This comprises an inflatable (Riva-Rocci) cuff placed around the upper arm at roughly the same vertical height as the heart, attached to a mercury or aneroid manometer. The mercury manometer, considered to be the gold standard for arterial pressure measurement[citation needed], measures the height of a column of mercury, giving an absolute result without need for calibration, and consequently not subject to the errors and drift of calibration which affect other methods. The use of mercury manometers is often required in clinical trials and for the clinical measurement of hypertension in high risk patients, such as pregnant women.

AUSCULTATORY METHODS

A cuff of appropriate size is fitted smoothly and snugly, then inflated manually by repeatedly squeezing a rubber bulb until the artery is completely occluded. Listening with the stethoscope to the brachial artery at the elbow, the examiner slowly releases the pressure in the cuff. When blood just starts to flow in the artery, the turbulent flow creates a "whooshing" or pounding (first Korotkoff sound). The pressure at which this sound is first heard is the systolic blood pressure. The cuff pressure is further released until no sound can be heard (fifth Korotkoff sound), at the diastolic arterial pressure. Sometimes, the pressure is palpated (felt by hand) to get an estimate before auscultation.

CLASSIFICATION

Hypotension < 90 or < 60 Normal $90 - 119$ and $60 - 79$

Prehypertension $120 - 139$ or $80 - 89$

Stage 1 Hypertension $140 - 159$ or $90 - 99$

Stage 2 Hypertension ≥ 160 or ≥ 100



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