Blood pressure

Blood pressure is the force or pressure that the blood exerts on the walls of the blood vessels. Systemic arterial blood pressure maintains the essential flow of blood into and out of the organs of the body. Keeping blood pressure within normal limits is very important. If it becomes too high, blood vessels can be damaged, causing clots or bleeding from sites of blood vessel rupture.If it falls too low, then blood flow through tissue beds may be inadequate. This is particularly dangerous for such essential organs as the heart, brain or kidneys.

Systolic and diastolic pressure

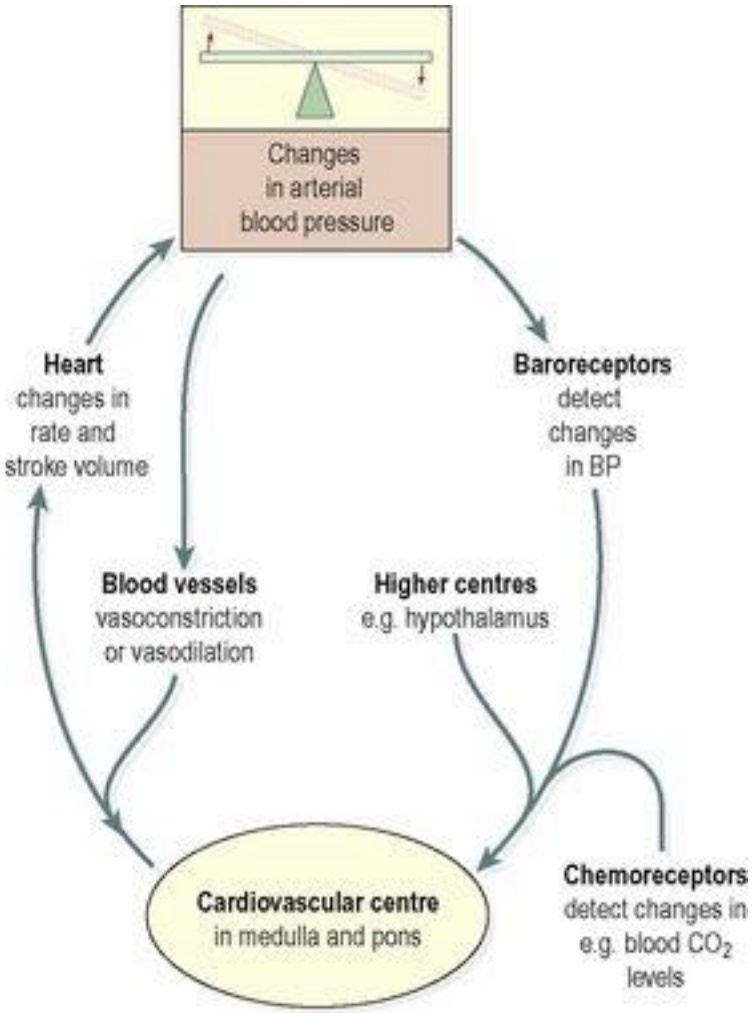
When the left ventricle contracts and pushes blood into the aorta, the pressure produced within the arterial system is called the *systolic blood pressure*. In adults it is about 120 mmHg or 16 kPa.

When *complete cardiac diastole* occurs and the heart is resting following the ejection of blood, the pressure within the arteries is much lower and is called *diastolic blood pressure*. In an adult this is about 80 mmHg or 11 kPa. The difference between systolic and diastolic blood pressures is the *pulse pressure*.

Control of blood pressure (BP)

The cardiovascular centre (CVC) is a collection of interconnected neurones in the medulla and pons of the brain stem.

The CVC sends autonomic nerves (both sympathetic and parasympathetic) to the heart and blood vessels. It controls BP by slowing down or speeding up the heart rate and by dilating or constricting blood vessels. The two divisions of the autonomic nervous system, the sympathetic and the parasympathetic divisions,


Changes in arterial blood pressure
Heart changes in rate and stroke volume
Baroreceptors detect changes in BP
Blood vessels vasoconstriction or vasodilation
Higher centres e.g. hypothalamus
Cardiovascular centre in medulla and pons
Chemoreceptors detect changes in e.g. blood CO_2 levels