

Non-invasive blood pressure monitoring (pediatrics)

For the measurement of **non-invasive monitoring of blood pressure**, we have a classical auscultation method with mercury tonometer, Doppler technique and oscillometric determination.

The **Auscultation method** has a disadvantage for the youngest children, for the non-cooperating and, if necessary, for frequent measurements.

Doppler technique is suitable for young children and for conditions with impaired perfusion. A small Doppler probe is located above the radial or brachial artery. Blood movement is excellently sensed by sensitive ultrasound. The cuff placed on the upper arm is inflated until the Doppler signal disappears completely. It is then slowly released. Systolic pressure is subtracted when the first Doppler signal appears, diastolic pressure is subtracted when signal length and quality decrease. The correlation with the pressure measured directly intraarterially is good, but the method is not suitable for continuous measurement.

The oscillometric method is easy to implement. The principle is that when the cuff is inflated, the blood flow in the artery causes oscillations. If the cuff pressure begins to drop, the device registers systolic and diastolic blood pressure and mean arterial pressure.

It always depends on the adequate width of the cuff: too narrow a cuff leads to the measurement of falsely high values, too wide cuff to measure falsely low values of BP (in this case, however, the significance of the error is only small).

All techniques have limitations in conditions with a significant decrease in cardiac output, in severe hypotension or systemic vasoconstriction, in conditions with generalized edema, in extreme obesity.