



Vital Parameters in Children

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Commentary

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Introduction

Vital sign is an objective dimension of crucial physiological functions of human beings. This dimension is first and essential step in clinical examination. Classification of patients in any emergency or disaster is grounded on bases of their vital signs [1]. It is very important that healthcare providers must understand the physiologic and pathologic processes affecting these assessments and their genuine analysis.

Temperature

Body temperature reflects the balance between the heat production and heat lost from the body. It is measured in degrees. Axillary temperature is taken in infants and younger children while in children older than 5 year's temperature should be taken via Oral cavity/groin or rectum [2]. The temperature in the axilla or the groin is about 0.5° C lower and the rectal temperature about 0.5° C higher than the oral temperature. The temperature measurement taken by the tympanic method is in the same range as the oral method. The normal temperature in children is between 36.5° C and 37.5° C. Temperature above 41° C is hyperpyrexia.

Pulse Rate

Heart ventricles contract to force the blood into the aorta, arterial walls in the vascular system. The pressure wave causing the expansion in vessels is called the pulse. Counting each pulsation of the arterial wall gives us the pulse rate [3-5]. The superficial temporal, carotid, brachial, radial, femoral, popliteal, posterior tibial and dorsalis pedis arteries are easily accessible. In infants and very young children, it may not be possible to palpate the peripheral vessels and in such situations, the heart rate must be counted by auscultation (Table 1).

Age groups	Normal heart rate (per minute)
Newborn	140 bpm
1 year	110 bpm
3 years	100 bpm
8 years	90 bpm
10 years	80 bpm

Table 1: The normal heart rates in children of different age groups.

Respiratory Rate

Respiration is defined as the exchange of oxygen and carbon dioxide in the lungs and tissues which is initiated by the act of breathing [6,7]. Respiration rate is important for diagnosing certain respiratory and non- respiratory diseases (Table 2).

Age groups	Normal respiratory rate (per minute)
Newborn	40 bpm
1 year	30 bpm
5 years	20 bpm
10 years	18 bpm

Table 2: Normal respiratory rate in children of different age groups.

Blood Pressure

Blood pressure is one of the important assessments in pediatric examination. In children Doppler technique of measuring blood pressure can be used as it is more accurate. In any child with a suspected cardiac illness, the pressure must be recorded in all four limbs and for pediatric examination, both the upper limb and lower limb pressures

must be recorded to detect coarctation of aorta [8]. The pressure recorded in the lower limbs is about 10 mm Hg higher than the upper limbs.

Age	Systolic Blood Pressure	Diastolic Blood Pressure
Birth (12 h)	60-85 mmHg	45-55 mmHg
Neonate (96 h)	67-84 mmHg	35-53 mmHg
Infant(1-12 mo)	80-100 mmHg	55-65 mmHg
Toddler (1-2 y)	90-105 mmHg	55-70 mmHg
Preschooler (3-5 y)	95-107 mmHg	60-71 mmHg
School-age (6-9 y)	95-110 mmHg	60-73 mmHg
Preadolescent (10-11 y)	100-119 mmHg	65-76 mmHg
Adolescent (12-15 y)	110-124 mmHg	70-79 mmHg

Table 3: Normal Blood Pressure by Age.

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