

PRINCIPLES OF MANAGEMENT OF THE SERIOUSLY ILL CHILD IN PELC

In order to recognise the child who is unwell it is important to know the normal physiological values for different age groups, signs of critical illness, and how children compensate for serious illness. It is important to be prepared to receive a critically ill child, to understand the principles of triage and the 'ABC' approach to assessment and treatment. The normal values of heart rate, respiratory rate and systolic blood pressure are shown in Table 1.

	Neonate	Infant	Small child	Adolescent
	< 1 month	< 2 years	2 - 5 years	5 - 12 years
Heart rate (min⁻¹)	110-160	100-150	80-120	60-100
Resp rate (min⁻¹)	30-40	25-35	25-30	15-20
Systolic BP (lower limit of normal, mmHg)	5-70	70-80	65 + age x2	90-120

Table 1. Normal heart rate, respiratory rate and blood pressure values for children

Emergency cases

Signs of a potential emergency case are identified from conducting a rapid primary survey of any child presenting for treatment. The child is assessed using the ABC approach in order to identify those abnormalities that are most rapidly lethal:

- 1. Airway.** Are there signs of airway obstruction?

Observe for:

- Talking or crying – the airway is open
- Noisy breathing. Is this due to stertor or stridor – i.e. Partial obstruction above or below the larynx respectively
- 'See-saw' chest and abdominal movements – respiratory effort is present, but potentially with complete airway obstruction.

- 2. Breathing.** Is the child having difficulty breathing? (e.g. increased work of breathing, using accessory muscle, cyanosis, abnormal noise such as stridor, wheeze, or silent chest.)

Signs of increased effort i.e. increased work of breathing	Signs of efficacy of breathing i.e. is the respiratory effort effective?
<ul style="list-style-type: none"> • Respiratory rate (compare to normal values) • Body position - sitting forward or adopting 'tripod' position • Recession - intercostal, subcostal and or sternal • Tracheal tug • Grunting • Wheeze • Use of accessory muscles (e.g. sternocleidomastoid in the neck) • Nostril flaring • Head bobbing 	<ul style="list-style-type: none"> • Colour - look for central cyanosis • Oxygen saturation • Breath sounds (a silent chest is a pre-terminal sign) • Chest expansion • Conscious level. Reduction on conscious level is a late sign.

Table 2 Assessment of breathing

3. **Circulation.** Does the child have signs of circulatory failure e.g. Cold peripheries, a rapid, weak pulse or capillary refill time >2 seconds?

Severe but compensated shock	Decompensated shock – pre-terminal
<ul style="list-style-type: none"> • Mottled, cold skin • Tachycardia • Weak peripheral pulses • Cold peripheries – to knees or elbows • Prolonged capillary refill (>2 seconds) • Increased respiratory rate 	<ul style="list-style-type: none"> • Hypotension • Bradycardia • Unconscious

Table 3 Indicators of cardiovascular insufficiency or shock

4. **Disability or Dehydration.**

Is the child Awake, or do they have a decreased level of consciousness

The three quick neurological assessments are:

- Pupils (size and reactivity to light) – always compare left and right
- Posture
- Conscious level assessed using the AVPU system:
 - A – Alert
 - V – responds to Voice
 - P – only responds to Painful stimuli
 - U – Unresponsive to painful stimuli.

Clinical sign	Mild	Moderate	Severe
Weight loss	Less than 5%	5-10%	Greater than 10%
Total fluid deficit	Less than 50 ml.kg	-1 50-100 ml.kg-1	>100 ml.kg-1
General appearance	Alert	Irritable, thirsty	Lethargic, drinks poorly
Mucous membranes	Normal	Dry	Dry
Eyes	Normal	Normal	Sunken
Respiration	Normal	Fast	Fast
Pulse	Normal	Fast	Fast, weak
Blood pressure	Normal	Normal	Low
Pinched skin* (Pinch skin between thumb and forefinger on abdomen or thigh)	Springs back	Slow – skin fold present less than 2 seconds	Very slow – skin fold

Table 4 Clinical assessment of dehydration in children

5. **Exposure.**

- Check for rashes, burns and bruises or other injuries
- Check temperature.
- Do not Ever Forget the Glucose.
- Does the child have hypoglycaemia?

These emergency signs must be treated IMMEDIATELY they are discovered, before moving on to the next step.