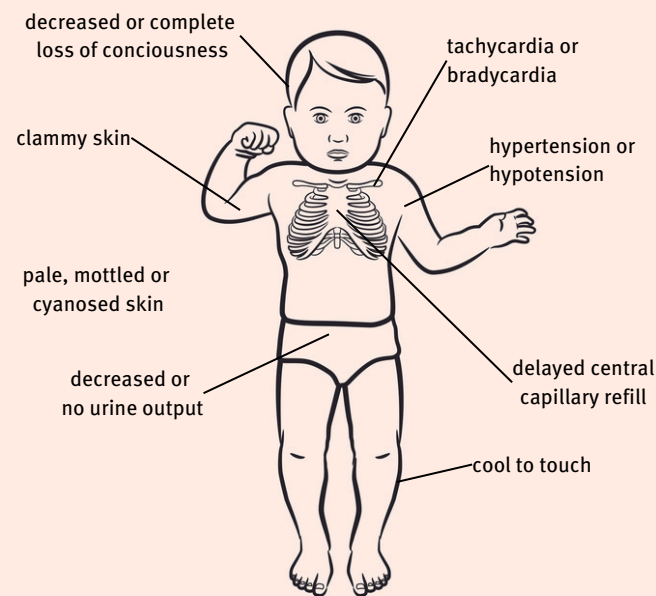


Cardiovascular Assessment

Cardiovascular function is intrinsically linked to other systems in the body. Thus, a paediatric CV assessment includes assessing both a primary cardiac assessment (heart rate & rhythm, blood pressure) and as well as a secondary multi-organ assessment (neurological assessment, urine output & skin colour and perfusion).

Common signs of cardiovascular compromise



NB: This list is not exhaustive.



ALERT

Early signs for circulatory compromise include tachycardia and a delayed central capillary refill. Later signs include hypotension and bradycardia and indicate that immediate senior medical review is needed.

Regularly obtaining vitals signs during an ED visit helps identify trends and early warning of the deteriorating patient.



Conducting a paediatric cardiovascular assessment:

The following information is a guide to assist your cardiovascular assessment of children. Not all abnormal findings may be listed. It is essential that any concerns promptly discuss them with the appropriate senior member of the nursing or medical teams.

1 Appearance

Activity Level

Observe the infant or child's activity level and tone. Be sure to involve caregivers in your assessment as they will be able to provide you with valuable information regarding their child's baseline status.

Normal

- ✓ Alert, calm, comfortable
- ✓ Consolable when upset
- ✓ Good muscle tone
- ✓ Vigorous movement

Abnormal

- ✗ Agitated, frequent crying
- ✗ Inconsolable
- ✗ Low muscle tone (floppy)
- ✗ Lethargic

Colour

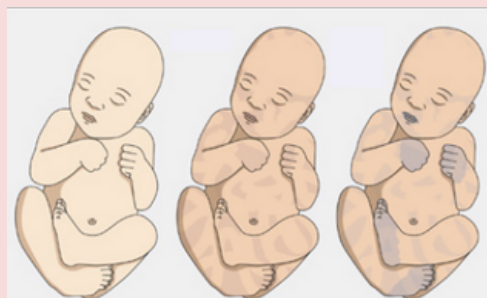
Observe the colour of the infant or child's skin and mucous membranes.

Normal

- ✓ 'Pink' skin
- ✓ 'Pink' mucous membranes

Abnormal

- ✗ Pallor - can indicate poor cardiac output or anaemia.
- ✗ Mottling - indicates impaired circulation to skin. This may indicate circulatory compromise and/or serious infection.
- ✗ Cyanosis - indicates deprivation of oxygen near the skin surface



Nutrition

Involving the caregivers, conduct an assessment of mucous membranes, oral intake and urine output.

Normal

- ✓ Feeding well (>50% of their usual oral intake)
- ✓ Moist mucous membranes
- ✓ No changes in urine output.
 - <2 years of age: 2-3ml/ kg/hr.
 - >2 years of age: 0.5-1ml/kg/hr

Abnormal

- ✗ Decreased feeding (<50% normal oral intake)
- ✗ Dry mucous membranes
- ✗ Reduced urine output (eg. concentrated urine and/or reduced wet nappies)
- ✗ Sunken eyes, dull eyes, dark under eyes
- ✗ Diarrhoea (difficult to assess fluid losses)



2 Physical Inspection

Skin Temperature

Using a bare hand feel the child's skin centrally (torso) and peripherally (hands and feet)

Normal

- ✓ Warm to touch
- ✓ Dry
- ✓ No or minimal discrepancy when comparing central and peripheral warmth

Abnormal

- ✗ Cool to touch
- ✗ Clammy skin
- ✗ Temperature discrepancy between central and peripheral skin temperature (warm centrally but cool peripherally)

Central Capillary Refill

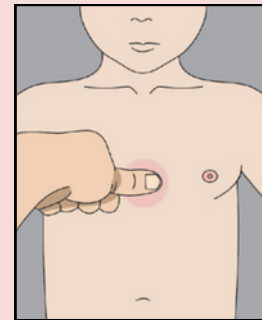
Use two fingers or a thumb to apply gentle pressure to the skin over the centre of the sternum. Hold for 5 seconds, release and count in seconds how long it takes for the blanching to resolve and the skin to return to its original colour.

Normal

- ✓ Less than 2 seconds

Abnormal

- ✗ Greater than 2 seconds. Prolonged central capillary refill may be an indication of systemic hypoperfusion as a result of low cardiac output. This should trigger urgent clinician review.



Palpate Pulse

Infants should have their pulse assessed brachial and femoral sites. Older children should have their pulse assessment at the radial site.

Normal

- ✓ Strong regular pulse
- ✓ Bilateral femoral pulses present

Abnormal

- ✗ Absent, weak, thready, bounding or irregular pulse



ALERT

Urgent escalation is required where a pulse is found to be weak, thready, irregular and/or bounding. Where unconscious and NO pulse is found, commence CPR immediately.



Oedema

Inspect both centrally and peripherally for the presence of oedema. Both feet and sacrum can be assessed for oedema by applying sustained pressure to these areas.

Normal

✓ No pit or dip should remain on removing pressure from skin.

Abnormal

✗ If a pit or dip remains on the child's skin on removing pressure, the child may have peripheral oedema.

3 Vital Signs

Obtain and document a full set of observations on the age appropriate Children's Early Warning Tool (CEWT). Abnormal findings should be actioned as per the CEWT. Refer to the [Obtaining Observations in Children Skill Sheets](#) for more specific details.

Guide to normal vital sign parameters

The table below describes the expected parameters for vital signs by age, according to CEWT.

Age	<1 year	1-4 years	5-11 years	>12 years
Respiratory Rate (RR) (breaths/minute)	21-45	16-35	16-30	15-25
Heart Rate (RR) (beats/minute)	100-159	90-139	80-129	60-119
Blood Pressure (systolic range)	75-119	80-124	85-129	90-149

4 Electrocardiogram (ECG)

Children who present with palpitations, chest pain, dizziness, an acute loss of consciousness or first presentation of seizure may require an ECG. Please see the relevant skill sheet for further details on obtaining an ECG from a paediatric patient.

Skill Sheet:

[Electrocardiogram \(ECG\) in Neonates](#)

Skill Sheet:

[Electrocardiogram \(ECG\) in Children](#)

The [ECG Checklist](#) is available to provide paediatric specific guidance for clinicians who interpret ECGs within their scope of practice.

For further information:

Skill Sheets:

[Vital Signs Assessment in Paediatrics](#)



References:

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- The International Federation of Red Cross. (n.d.). Measuring oedema (water retention) in children. Retrieved February 22, 2021, from <https://ifrcgo.org/ecv-toolkit/action/measuring-oedema-water-retention-in-children/>

**This Queensland Paediatric Emergency Skill Sheet was developed and revised
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- Providing care within the context of locally available resources, expertise, and scope of practice.
- Supporting consumer rights and informed decision making in partnership with healthcare practitioners including the right to decline intervention or ongoing management.

- Advising consumers of their choices in an environment that is culturally appropriate and which enables comfortable and confidential discussion. This includes the use of interpreter services where necessary.
- Ensuring informed consent is obtained prior to delivering care.
- Meeting all legislative requirements and professional standards.
- Applying standard precautions, and additional precautions as necessary, when delivering care.
- Documenting all care in accordance with mandatory and local requirements.

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