Assessment and Early Management of the Unwell Child

**CONTEXT**

Aboriginal children in northern and central Australia experience disproportionately high rates of disease from serious infection, particularly invasive pneumococcal disease. An audit of mortality in children under the age of 5 years in the Kimberley from 2005 to 2013 documented a neonatal mortality rate of 7 times greater than the WA state average. This protocol aims to assist the early identification of children in the Kimberley with a serious bacterial infection and/or illness and expedite the implementation of essential and appropriate treatment.

For a list of common serious diagnoses to consider in the Kimberley, see the separate document The Common Serious Diseases and Local Illnesses: Children under Five in the Kimberley Region.

**HOW TO USE THIS FLOWCHART**

Start at Box 1: Assess the child including the observations listed.

Proceed immediately to Basic Life Support if the child is immediately recognised as seriously unwell.

**RETURNING HOME AND FOLLOW UP**

- SAFETY NET - Parent education & review is an important part of care:
  - How to contact the local health service if concerned
  - When to return for planned review/assessment
  - Signs and symptoms to look out for to prompt earlier review
- Keep in mind social and environmental safety factors (see “Caution” box on flowchart) when making decisions about whether a child can be sent home from a clinic or ED.
- The parent or carer must be able to check on the child during the night and for the duration of the illness.
- If unable to satisfy any of these requirements then admit the child.

**SOME NOTES ON FEVER**

- In most cases a febrile illness (temperature >37.5°C) is due to a self-limiting viral infection; however it may be an early feature in the course of a serious bacterial infection such as meningitis or pneumonia.
- Children without apparent source of infection are a particular concern because it is difficult to distinguish between a simple vs. life threatening infection.
- Temperature alone is not a good predictor of serious bacterial infection. The degree of temperature, its rapidity of onset, response to anti-pyretics (eg paracetamol) and febrile convulsions do not correlate with severity of illness.
- The behaviour and appearance of the child and localising symptoms are the best indication of the degree of illness and the potential for serious infection. Children without a fever can still have a serious infection or illness.
Assessment and Early Management of the Unwell Child

1. **Investigation** - If no focus identified, must have urinalysis +/- urine MC&S (clean catch). Other investigations as clinically indicated.

2. **Medication** - Antibiotics or other medication as clinically indicated.

3. **Observation** - Repeat vital signs, CRT and oximetry at least once prior to discharge.

4. **Plan** - Low threshold for admission, especially remote. If not admitted then parent education & GP/clinic review within 12 hours.

5. **Consultation** - Paediatric or surgical consults as required.

**Beware of the Kimberley Child with Febrile Illness who appears well on initial assessment.**

**CAUTION**
- Less than 3 months of age (< 1 month: phone on-call paediatrician)
- Second presentation to hospital or clinic with same illness or within 72 hours
- Parental/carer concern
- Known developmental/disability or behavioural problem
- Underlying medical condition
- Socially disadvantaged family
- Unimmunised child
- Remote location
- History of prematurity and age less than 2 years

**MUST HAVE:** Low threshold for admission AND Early consult with doctor and paediatrician.

**LOW RISK**
- Any symptom/sign in amber column, none in red.
- Identified FOCUS of infection or serious illness?

**LOW RISK MANAGEMENT PLAN**
- Any symptom/sign in amber column, none in red.
- Identified FOCUS of infection or serious illness?

**INTERMEDIATE RISK**
- Any symptom/sign in amber column, none in red.
- Identified FOCUS of infection or serious illness?

**INTERMEDIATE RISK MANAGEMENT PLAN**
- Any symptom/sign in amber column, none in red.
- Identified FOCUS of infection or serious illness?

**HIGH RISK**
- Any symptom/sign in amber column, none in red.
- Identified FOCUS of infection or serious illness?

**HIGH RISK MANAGEMENT PLAN**
- Any symptom/sign in amber column, none in red.
- Identified FOCUS of infection or serious illness?

**LOW RISK MANAGEMENT PLAN**
No symptoms/signs in amber or red columns.

Must reassess within 2 hours. Respond to parental concern.

**INTERMEDIATE RISK MANAGEMENT PLAN**
Any symptom/sign in amber column, none in red.

Commence within 1 hour. Must be discussed with the doctor responsible for your service. Consider evacuation.

**HIGH RISK MANAGEMENT PLAN**
Any symptom/sign in red column.

Consult On-Call Paediatrician Urgently at Broome Hospital on 9194 2222

Consider Emergency evacuation:
- Call RFDS: 1800 625 800
- Arrang evacuation as per local policy.

**DO NOT DELAY ANTIBIOTICS**
1. **Investigation**
   - Must have: BSL & Partial septic workup: Blood cultures, FBP, CRP, U&E, urine MC&S (in/out catheter).
   - Consider: CXR, LP, blood gas.

2. **Medication:**
   - ≤ 3 months: Call paediatrician to discuss required antibiotics
   - >3 months: Ceftriaxone IV/IO/IM 50 mg/kg and consider Gentamicin IV/IM 7.5mg/kg

**DO NOT DELAY ANTIBIOTICS**
1. **Investigation**
   - Must have: BSL & Partial septic workup: Blood cultures, FBP, CRP, U&E, urine MC&S (in/out catheter).
   - Consider: CXR, LP, blood gas, coagulation studies, throat swab MC&S.

2. **Medication:**
   - ≤ 3 months: Call paediatrician to discuss required antibiotics
   - >3 months: Ceftriaxone IV/IO/IM 50 mg/kg and consider Gentamicin IV/IM 7.5mg/kg

3. **Observation**
   - Continuous monitoring and respond to changes to vital signs, oximetry, CRT and signs of deterioration. Record accurate fluid balance.

4. **Plan**
   - Arrange evacuation as per local policy.

5. **Consultation**
   - On-call paediatrician and doctor responsible for your service ASAP
### Assessment and Early Management of the Unwell Child

#### Normal Vital Signs According to Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Heart Rate (beats/min)</th>
<th>Systolic BP* (mmHg)</th>
<th>Respiratory Rate (breaths/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 3m</td>
<td>100-150</td>
<td>65-85</td>
<td>35-55</td>
</tr>
<tr>
<td>3 – 6m</td>
<td>90-120</td>
<td>70-90</td>
<td>30-45</td>
</tr>
<tr>
<td>6 – 12m</td>
<td>80-120</td>
<td>80-100</td>
<td>25-40</td>
</tr>
<tr>
<td>1 – 3y</td>
<td>70-110</td>
<td>90-105</td>
<td>20-30</td>
</tr>
<tr>
<td>3 – 6y</td>
<td>65-110</td>
<td>95-110</td>
<td>20-25</td>
</tr>
<tr>
<td>6 – 12y</td>
<td>60-95</td>
<td>100-120</td>
<td>14-22</td>
</tr>
<tr>
<td>12+y</td>
<td>55-85</td>
<td>110-135</td>
<td>12-18</td>
</tr>
</tbody>
</table>

* BP cuff should cover approximately 2/3 of the arm; inappropriate size will give an inaccurate reading.

#### Assessment of Dehydration

If recent accurate weight loss is not available as a guide, then estimate using clinical signs.

- **Mild dehydration** (<4%)
  - No clinical signs. May have increased thirst.

- **Moderate dehydration** (4-6%)
  - CRT > 2 sec.
  - Increased respiratory rate.
  - Mild decreased tissue turgor.

- **Severe dehydration** (≥7%)
  - CRT > 3 sec.
  - Mottled skin.
  - Other signs of shock (tachycardia, irritable or reduced conscious level, hypotension).
  - Deep, acidic breathing.
  - Decreased tissue turgor.

Other ‘signs of dehydration’ (such as sunken eyes, lethargy, dry mucous membranes) may be considered in the assessment of dehydration, although significance has not been validated in studies and they are less reliable than signs listed above.

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**Colour (skin & lips)**
- **Normal colour**
- **Paleness of skin reported by parent/carer**
- **Pale/ mottled/ ashen/ blue**

**Activity**
- **Responding normally to social cues**
- **Content / smiles**
- **Stays awake or awakens quickly**
- **Strong normal cry / not crying**
- **Appears ill to a health care professional**
- **No response to social cues**
- **Does not wake if roused does not stay awake**
- **Weak, high pitched or continuous cry**

**Respiratory**
- **Nasal Flaring**
- **Tachypnoea (RR):**
  - Age 6 – 12 months: RR>50
  - Age > 12 months: RR> 40
- **Oxygen saturation ≤95% in air**
- **Grunting**
- **Tachypnoea: RR> 60**
- **Moderate to severe chest in-drawing**

**Circulation and Hydration**
- **Normal skin and eyes**
- **Moist mucous membranes**
- **Tachycardia (HR):**
  - Age <12 months: HR >160
  - Age 12 -24 months: HR >150
  - Age2 -5 years: HR > 140
- **CRT ≥ 3 seconds**
- **Dry mucous membranes**
- **Poor feeding in infants**
- **Reduced feeding in infants** (breastmilk/bottle)
- **Reduced urine output**
- **Reduced skin turgor**

**Other**
- **None of the amber or red symptoms**
- **Age**
- **3 -12 months: temp ≥39°C**
- **Fever for ≥ 5 days**
- **Rigor**
- **Swelling of limb or joint**
- **Non weight bearing limb not using extremity**
- **Limb pain**
- **Age < 3 months: temp ≥38°C**
- **Non blanching rash**
- **Bulging fontanelle**
- **Neck Stiffness**
- **Status epilepticus**
- **Focal neurological signs**
- **Focal seizures**

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**CRT** = capillary refill time: Apply pressure over sternum for 5 seconds then measure time until capillary refill, whilst observing carefully

**RR** = respiratory rate: Breaths / minute, **HR = Heart Rate**: Beats per minute

Adapted from: Feverish Illness in Children Clinical Guideline National Institute for Health and Care Excellence (May 2013)


Royal Children’s Hospital, Melbourne, Australia, Clinical Practice Guideline on Dehydration, last updated: 1/9/12, cited: 22/12/13, Available from http://www.rch.org.au/clinicalguide/index.cfm