Febrile illness - Emergency management in children

Purpose

This document provides clinical guidance for all staff involved in the care and management of a child presenting to an Emergency Department (ED) with the primary complaint of a febrile illness in Queensland.

This guideline aims to identify those infants and children at risk of serious bacterial infection or other significant illness who need timely treatment, while avoiding unnecessary investigations in the majority. The management of children with an unexplained fever for > 1 week or who have recently returned from overseas travel is beyond the scope of this guideline. For oncology patients refer to the Management of Fever in a Paediatric Oncology Patient Guideline.

This guideline has been developed by senior ED clinicians and Paediatricians across Queensland, with input from Infectious Disease specialist staff, Lady Cilento Children’s Hospital, Brisbane. It has been endorsed for use across Queensland by the Statewide Emergency Care of Children Working Group in partnership with the Queensland Emergency Department Strategic Advisory Panel and the Healthcare Improvement Unit, Clinical Excellence Division.

Key points

- Consider sepsis early in any patient with signs or symptoms that indicate possible infection.
- Fevers in most children under 5 years of age are caused by viral infections and extensive investigation is not required.
- Careful attention to history and examination will allow identification of a source in most patients.
- For febrile infants and children without an evident focus of infection, investigations and/or empiric treatment should be given according to their risk of serious bacterial infection.
- Certain groups are at high risk of serious bacterial infection including infants < 28 days and unimmunised or partially immunised children.
Introduction

Fever is one of the most common reasons for paediatric presentations to ED and provides diagnostic and management challenges to clinical staff. Infection remains the leading cause of death in children aged < 5 years.

Definition

Fever is defined as a temperature ≥ 38°C.

Pyrexia of unknown origin (PUO) refers to any fever lasting 10 - 21 days without cause identified on history, examination and basic investigations and is beyond the scope of this guideline. This guideline also does not consider the approach to fever in the returned traveller.

Measurement

<table>
<thead>
<tr>
<th>Age</th>
<th>Method of temperature measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 4 weeks</td>
<td>Electronic thermometer in the axilla</td>
</tr>
<tr>
<td>&gt; 4 weeks</td>
<td>Electronic thermometer in the axilla or infra-red tympanic thermometer</td>
</tr>
</tbody>
</table>

Forehead chemical thermometers are unreliable and should not be used. A parent’s touch has been shown to have high sensitivity and low specificity for discovering a fever, however parental concern should be taken seriously.

Pathophysiology

Fever is a physiological response most often caused by an infective process, when exogenous pyrogens induce endogenous pyrogens, resulting in an elevated body temperature. The thermoregulatory centre then raises and maintains the body temperature to the new set point. This gives most children a degree of malaise and may negatively stress children with pre-existing cardiac, respiratory or neurological diseases. Fever is a generally beneficial adaptive response that promotes the immune response and inhibits the invading pathogen, potentially reducing the duration of certain infections.

Epidemiology

Fever is one of the most common causes for parents to bring their child to an ED. In most children aged less than 5 years, fever is caused by a viral infection.\(^1\) Less common causes include serious bacterial infection (SBI) such as urinary tract infection (UTI), pneumonia, bacteraemia or meningitis, or conditions such as Kawasaki disease, vaccination reactions, arthritis, connective tissue disorders, malignancies, drug fever, or inflammatory bowel disease.

Teething does not cause fever > 38.5°C.
### Frequency of various sources of fever in children

<table>
<thead>
<tr>
<th>Possible source of fever</th>
<th>Estimated frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urinary tract infection</strong></td>
<td>Most common SBI in children &lt; 5 years&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>&lt; 1 year</td>
<td>6.5% girls, 1.2% circumcised boys, 8% uncircumcised boys</td>
</tr>
<tr>
<td>1 – 2 years</td>
<td>8.1% girls, 1.9% boys.</td>
</tr>
<tr>
<td>&gt; 2 years</td>
<td>Decreased frequency thereafter</td>
</tr>
<tr>
<td><strong>Pneumonia</strong></td>
<td>3 - 4% all febrile children &lt; 5 years&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Approximately 5% febrile children without localising signs have pneumonia</td>
</tr>
<tr>
<td><strong>Bacteraemia</strong></td>
<td>3 months – 3 years, vaccinated, no localising signs</td>
</tr>
<tr>
<td></td>
<td>&lt; 3 months or non-vaccinated and &gt;3 months</td>
</tr>
<tr>
<td><strong>Meningitis</strong></td>
<td>Generally rare,&lt;sup&gt;5&lt;/sup&gt; but more common in younger infants, who may present with subtle signs and symptoms. See Meningitis Guideline.</td>
</tr>
<tr>
<td><strong>Osteomyelitis</strong></td>
<td>Rare</td>
</tr>
<tr>
<td><strong>Septic arthritis</strong></td>
<td>Rare</td>
</tr>
<tr>
<td><strong>Skin and soft tissue infection</strong></td>
<td>Rare</td>
</tr>
<tr>
<td><strong>Bacterial enteritis</strong></td>
<td>Rare</td>
</tr>
<tr>
<td><strong>Vaccination</strong></td>
<td>Common</td>
</tr>
<tr>
<td></td>
<td>Post-vaccination fever usually begins within 24 hours of immunisation and lasts for 2-3 days.</td>
</tr>
</tbody>
</table>

### Assessment

The aim of the assessment (history and clinical examination) is to identify children who:
- have a focus of infection (to enable appropriate investigations and, if needed, treatment)
- do not have an infective focus but require further investigations and/or empirical treatment according to their risk of SBI
History

History should include specific information on:

- age
- immune status - incomplete immunisations, immune-compromise, co-morbidities
- current or recent use of antibiotics
- history of fever and use of anti-pyretics

Age

Febrile infants aged < 3 months have a higher risk of SBI, with this risk being greatest in the neonatal period. Young infants are more likely to present with non-specific features (they lack the hypothalamic and immune system maturity to localise the infection) and can deteriorate rapidly. Some infants < 3 months may not mount a fever in response to SBI, and hypothermia or temperature instability can also be signs of SBI.

In addition to the pathogens seen in older children, *Group B Streptococcus, E. Coli, Herpes Simplex virus, Listeria monocytogenes, Salmonella* and *Parechovirus* infections are more common in neonates. Detecting other viral infections in children aged < 3 months (most commonly RSV) lowers but does not remove the risk of SBI. The estimated incidence of a UTI amongst infants < 3 months with laboratory-confirmed RSV infection ranges from 3.3 to 5%.7,8

Children aged between 3 months and 3 years have their immunity boosted with vaccinations and are at a lower risk of SBI than those < 3 months. In this age group, the presence of a recognisable viral syndrome (including bronchiolitis) predicts a very low incidence of bacteraemia or SBI.

Older children (>3 years) have mature immune systems and are better able to verbalise and localise symptoms so are at lower risk of SBI.

Immunisations & immune status

The *Haemophilus influenzae type b* (Hib) and pneumococcal immunisations have dramatically reduced the risk of occult bacteraemia and SBI. Children who have received at least 2 doses of the 13-valent conjugate pneumococcal (13vPCV) and Hib vaccinations (3 dose course given as part of the National Immunisation Program at 2, 4 and 6 months of age) have > 95% protection.

Children with congenital immune deficiency syndrome, sickle cell disease, HIV, asplenia, cancer, nephrotic syndrome, intracranial shunt, cochlear implant, immunosuppressive therapy or who are of Indigenous or Torres Strait Islander origin are at a greater risk for SBI, independent of vaccination status.

History of fever, prior antibiotic use and use of anti-pyretics

The height of fever, duration of the fever and response to antipyretics have failed to show any ability to differentiate severe from mild illness, or bacterial from viral infection.9

While not addressed within this guideline, a diagnosis of Kawasaki disease should be considered for children with a fever lasting more than 5 days.

Antibiotic use around the time of fever can potentially mask symptoms and signs of bacterial illness.
Examination

The examination should identify a source for the fever if possible, and specifically assess for any signs of toxicity.

Signs of toxicity

Differentiating toxic and well-appearing infants is challenging especially in the very young. The younger the infant, the more important careful and repeated clinical examination is, with close attention to vital signs, quality of cry, level of alertness/social interaction, and perfusion.

<table>
<thead>
<tr>
<th>Age</th>
<th>Heart Rate (bpm)</th>
<th>Minimum Systolic BP (mmHg)</th>
<th>Respiratory Rate (bpm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term</td>
<td>100-180</td>
<td>60</td>
<td>40-60</td>
</tr>
<tr>
<td>6mth</td>
<td>100-180</td>
<td>70</td>
<td>30-50</td>
</tr>
<tr>
<td>1yr</td>
<td>100-170</td>
<td>70</td>
<td>20-40</td>
</tr>
<tr>
<td>2yr</td>
<td>100-160</td>
<td>70</td>
<td>20-30</td>
</tr>
<tr>
<td>4yr</td>
<td>80-130</td>
<td>75</td>
<td>20-30</td>
</tr>
<tr>
<td>8yr</td>
<td>70-110</td>
<td>80</td>
<td>16-25</td>
</tr>
<tr>
<td>12yr</td>
<td>60-110</td>
<td>90</td>
<td>16-25</td>
</tr>
<tr>
<td>16yr +</td>
<td>60-100</td>
<td>90</td>
<td>10-16</td>
</tr>
</tbody>
</table>

Consider seeking senior emergency/paediatric advice as per local escalation protocols for children at intermediate risk.

Seek urgent senior emergency/paediatric advice as per local escalation protocols for high risk children.

**ALERT** – Consider sepsis in any patient with signs or symptoms that indicate possible infection
# National Institute for Health and Clinical Excellence (NICE) risk classification for serious illness.

<table>
<thead>
<tr>
<th>Low risk (green)</th>
<th>Intermediate risk (amber)</th>
<th>High risk (red)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal colour of skin, lips and tongue</td>
<td>Pallor reported by parent/carer</td>
<td>Pale/mottled/ashen/blue</td>
</tr>
<tr>
<td>Responds normally to social cues</td>
<td>Not responding normally to social cues</td>
<td>No response to social cues</td>
</tr>
<tr>
<td>Content/smiles</td>
<td>No smile</td>
<td>Appears ill to a healthcare professional</td>
</tr>
<tr>
<td>Stays awake or awakens quickly</td>
<td>Wakes only with prolonged stimulation</td>
<td>Does not wake or if roused does not stay awake</td>
</tr>
<tr>
<td>Strong normal cry/not crying</td>
<td>Decreased activity</td>
<td>Weak, high pitched cry or continuous cry</td>
</tr>
<tr>
<td>Normal RR</td>
<td>Nasal flaring</td>
<td>Grunting</td>
</tr>
<tr>
<td>No respiratory distress</td>
<td>Tachypnoea:</td>
<td>Tachypnoea: RR &gt; 60 bpm</td>
</tr>
<tr>
<td></td>
<td>RR &gt; 50 bpm 6-12 months</td>
<td>Moderate or severe chest indrawing</td>
</tr>
<tr>
<td></td>
<td>RR &gt; 40 bpm &gt; 12 months</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SaO2 &lt; 95% in room air</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Crackles in the chest</td>
<td></td>
</tr>
<tr>
<td>Normal skin and eyes</td>
<td>Tachycardia:</td>
<td>Reduced skin turgor</td>
</tr>
<tr>
<td>Moist mucous membranes</td>
<td>HR &gt; 160 bpm &lt; 12 months</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HR &gt; 150 bpm 12-24 months</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HR &gt; 140 bpm age 2-5 years</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Capillary refill time &gt; 3 secs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dry mucous membranes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Poor feeding in infants</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reduced urine output</td>
<td></td>
</tr>
<tr>
<td>None of the amber or red symptoms or signs</td>
<td>Age 3-6 months, temp &gt; 39°C</td>
<td>Age &lt; 3 months, temp &gt; 38°C</td>
</tr>
<tr>
<td></td>
<td>Fever &gt; 5 days</td>
<td>Non-blanching rash</td>
</tr>
<tr>
<td></td>
<td>Rigors</td>
<td>Bulging fontanelle</td>
</tr>
<tr>
<td></td>
<td>Swelling of a limb or joint</td>
<td>Neck stiffness</td>
</tr>
<tr>
<td></td>
<td>Non-weight bearing limb/not using an extremity</td>
<td>Status epilepticus</td>
</tr>
<tr>
<td></td>
<td>Age &lt; 3 months, temp &gt; 38°C</td>
<td>Focal neurological signs</td>
</tr>
<tr>
<td></td>
<td>Non-blanching rash</td>
<td>Focal seizures</td>
</tr>
</tbody>
</table>

Table reproduced from NICE guideline: Feverish illness in children May 2013
Investigations

Investigations may assist with a diagnosis, determine antibiotic use and duration, or risk stratify certain patients when no focus of infection is found on history and examination. Most children aged ≥ 3 months who are fully immunised, have no comorbidity and appear well will not require extensive investigation. Refer to table below for a summary of investigations that may be useful.

Child ≥ 3 months

Refer to the flowchart in Appendix 1 for the approach to investigations in febrile children aged ≥ 3 months with no focus of infection. A child with PUO may require more specialised investigations not included here.

Child < 3 months

Refer to the flowchart in Appendix 2 for the approach to investigations in febrile infants aged < 3 months. Due to the higher risk of SBI and the challenges in reliable clinical assessment of toxicity in infants ≤ 28 days, a consistent approach to investigation is recommended, irrespective of clinical appearance.

Owing to the lower risk of SBI in invasive bacterial infection, infants aged 29 days to 3 months, can be managed in a step-by-step approach with sequential evaluation of general appearance, urinalysis, and results of bloodwork. With careful clinical assessment, this approach allows identification of a group of infants at low risk of SBI who can be safely managed as outpatients without requiring a lumbar puncture or empiric antibiotic treatment.

Full blood count

Despite being widely used by clinicians in investigation of fever, there is little evidence to support the utility of a FBC in risk stratification for well appearing, immunised infants and children. A systematic review found WCC of no value in ruling out SBI in vaccinated children and less valuable than CRP for ruling in SBI. A prospective cohort study found that total WCC and absolute neutrophil count were not sufficiently accurate to be used as screening tests for febrile children with possible SBI. For infants < 60 days, no parameters on the FBC have been found to accurately predict risk of a SBI. Meningococcal, salmonella & staphylococcal bacteraemias do not typically elevate the WCC.

The current NICE guidelines use a WCC<5 x 10^9/L or > 15 x 10^9/L as risk factors for SBI in the infant < 3 months. Using an absolute neutrophil count of < 10 x 10^9/L in these infants has been validated as a reliable method of identifying those at low risk of SBI. FBC may be useful for children over 3 months who are not fully immunised. WCC in this group may be a more reliable indicator of possible SBI.

C reactive protein

CRP is an acute phase reactant and concentrations start to rise 4 – 6 hours after the onset of inflammation and peak around 36 - 50 hours. CRP is better than the FBC for detecting SBI, especially if used after 12 hours of fever, however establishing a level of CRP which can reliably determine low risk of SBI is challenging. A systematic review found a CRP of > 80 mg/L was associated with a 72% risk of SBI, and a CRP or < 20 mg/L with a 5% risk of SBI. A more recent study suggested a CRP level of < 20 mg/L in infants between 22-90 days identified infants at low risk of SBI. In the absence of a definitive cut off value, CRP should be only be used for screening on advice from senior clinicians and according to local practice.
<table>
<thead>
<tr>
<th>Investigation type</th>
<th>Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urinalysis, microscopy and culture</td>
<td>Symptomatic children or in febrile children &lt;3 years.</td>
</tr>
<tr>
<td></td>
<td>See table below for method of collection.</td>
</tr>
<tr>
<td>Chest X-ray (CXR)</td>
<td>Considered for febrile children with cough and ANY of:</td>
</tr>
<tr>
<td></td>
<td>• tachypnoea</td>
</tr>
<tr>
<td></td>
<td>• SpO2 ≤ 93% in room air</td>
</tr>
<tr>
<td></td>
<td>• Increased work of breathing (chest recession, tracheal tug, use of accessory muscles)</td>
</tr>
<tr>
<td></td>
<td>• temp &gt;39°C and WBC &gt;20 x 10⁹ (as a screen for occult pneumonia)¹¹</td>
</tr>
<tr>
<td></td>
<td>CXR cannot reliably distinguish viral from bacterial pneumonia.¹²</td>
</tr>
<tr>
<td>Blood Culture</td>
<td>Febrile children when bacteraemia is suspected.</td>
</tr>
<tr>
<td></td>
<td>Use lower threshold in young infants and unimmunised children especially if appear otherwise well (due to higher bacteraemia rates and risk of septicemia).</td>
</tr>
<tr>
<td></td>
<td>Note contamination rate is often higher than true positive rate.</td>
</tr>
<tr>
<td></td>
<td>Culture sensitivity is proportional to the volume of blood taken</td>
</tr>
<tr>
<td></td>
<td>• minimum of 1 mL in neonatal aerobic culture bottle (yellow top)</td>
</tr>
<tr>
<td></td>
<td>• minimum of 4 mL in standard aerobic culture bottle (green top)</td>
</tr>
<tr>
<td>Full blood count (FBC)</td>
<td>Very young infants or unimmunised with possible SBI and must always be correlated with clinical findings.</td>
</tr>
<tr>
<td>C reactive protein (CRP)</td>
<td>Used in risk stratification for SBI - may be useful in select patients on advice from senior clinician.</td>
</tr>
<tr>
<td></td>
<td>May be a role for serial CRP measurements to guide management.</td>
</tr>
<tr>
<td>Serum electrolytes, glucose and venous blood gas</td>
<td>As guided by clinical assessment.</td>
</tr>
<tr>
<td></td>
<td>Lactate can be used as a marker of possible early sepsis (see Sepsis Guideline).</td>
</tr>
<tr>
<td>Lumbar Puncture (LP)</td>
<td>Considered in children with signs or symptoms of meningitis (see Meningitis Guideline), or in the young febrile infant with non-specific features such as vomiting, lethargy / drowsiness, irritability or poor feeding.</td>
</tr>
<tr>
<td>Viral diagnostic studies</td>
<td>Limited usefulness in ruling out SBI.</td>
</tr>
<tr>
<td>Stool microscopy and culture</td>
<td>May be indicated in very young infant or if mucoid, bloody or prolonged diarrhoea.</td>
</tr>
</tbody>
</table>

**Urinalysis**

UTI is the most common SBI in children under 5 years of age. Dipstick urinalysis or urine microscopy may be used to screen urine samples for UTI. A diagnosis of UTI is likely when:

- both the leucocyte esterase and nitrite tests are positive in children ≥ 2 years OR
- bacteria are seen on a Gram stain
Antibiotics can commence following a presumptive UTI diagnosis on dipstick testing while the sample is being cultured and tested for sensitivities.

For children ≥ 2 years, a UTI may be confidently excluded when both leucocyte esterase and nitrite are negative on dipstick testing. If a UTI is not able to be excluded on dipstick testing, a sample should be collected for microscopy and culture.

For children aged between 3 months and 2 years, dipstick testing is a useful screening test to guide initial management, with microscopy and culture required to provide definitive diagnosis. Below the age of 3 months, dipstick urinalysis for leucocytes and nitrates is less reliable and assessment should always include urine microscopy.

The most appropriate urine collection method varies depending on age and clinical presentation and is critically important.

### Urine collections methods in children

<table>
<thead>
<tr>
<th>Urine collection method</th>
<th>Utility</th>
<th>Notes</th>
</tr>
</thead>
</table>
| Supra-pubic bladder aspiration (SPA) | For a child:  
- <6 months who is toxic  
- with phimosis or labial adhesion | Invasive  
Lowest contamination rate  
Success rate 23 - 90% depending on operator, use of ultrasound and the presence of at least 20mL of urine.  
Ultrasound significantly increases success rate. |
| Urethral catheterisation | For a toxic child:  
- >6 months and not toilet-trained  
- <6 months where SPA failed | Invasive  
Highest success rates |
| Clean catch specimen | For non-toxic child who:  
- is unable to void on request  
- does not require urgent collection | The child’s perineum should be washed prior to collection and the inside of the clean/sterile container used for collection should not contaminated by touching the collector’s or the child’s skin (see [How to collect a clean urine specimen Factsheet](#)) |
| Midstream urine | For non-urgent collection in non-toxic toilet trained child | |
| Bag specimens | Not routinely recommended | High contamination rate (85 -90%) so **CANNOT** be used for culture or UTI diagnosis  
Less invasive (though can be uncomfortable)  
Potential delays in obtaining sample |
Management

Refer to the flowcharts for a summary of the recommended emergency management of febrile children < 3 months (Appendix 1) and ≥ 3 months (Appendix 2). Management is based on the risk of SBI.

Supportive

Remove excess layers of clothing from the child. Over-enthusiastic physical cooling can be counterproductive by stimulating shivering and other heat-retaining reflexes. Oral fluids, if tolerated, should be encouraged to maintain hydration.

Antipyretics

Antipyretics may be prescribed for an awake child to provide relief from discomfort caused by the fever or the underlying cause of the fever. Parents should be advised that fever is one of the body’s immune system responses to infection and that antipyretics do not treat or shorten the illness, and will not prevent febrile convulsions.

Aspirin should be avoided in children as the uncommon possibility of Reye’s syndrome increases with varicella or influenza-like illnesses.

### Antipyretic dosing for the treatment of fever in children

<table>
<thead>
<tr>
<th>Antipyretic</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paracetamol (PO)</td>
<td>15mg/kg up to 4 hourly, maximum 4 doses in 24 hours</td>
</tr>
<tr>
<td>Ibuprofen (PO)</td>
<td>10mg/kg (maximum 400 mg) up to 6 hourly, maximum 4 doses in 24 hours</td>
</tr>
<tr>
<td></td>
<td>Avoid in children &lt;6 months, if significantly dehydrated or history of hypersensitivity.</td>
</tr>
</tbody>
</table>

There is some evidence that ibuprofen reduces fever and discomfort more quickly than paracetamol. The popular dual therapy dosing regimens reduce the time with fever compared to monotherapy, however there is no significant difference in resolution of discomfort. Safety concerns have been raised over recommending 2 drugs with different dosing regimens for little gain, and parents should be made aware of this risk.

Fever and rash

Seek senior emergency/paediatric advice as per local escalation protocols for unwell child with purpuric rash not consistent with Henoch-Schonlein purpura.

If the child is unwell (abnormal vital signs, poorly perfused, or altered mental state) or if the rash is purpuric (>2mm lesions) and not consistent with typical Henoch-Schonlein purpura (HSP), then the child should be managed presumptively for meningococcal disease with resuscitation as required and a 3rd generation cephalosporin whilst investigations are carried out.

Well-appearing febrile children with petechiae caused by local pressure or only in the distribution of the superior vena cava (e.g. following coughing/vomiting) may be discharged with early review. In all other cases blood tests should be performed (FBC, CRP, blood culture). If the FBC and CRP are within normal limits and the child remains well during a 4-hour period of observation, then discharge with early review is again appropriate, otherwise admission with or without antibiotics should be undertaken. It should also be remembered that many viral infections can cause petechiae.
Fever and non-blanching rash flowchart

Antibiotics

Antibiotics (usually IV) may be indicated depending upon the perceived risk of SBI or the specific infection found. Refer to the CHQ Antibiocard or local guidelines for antibiotic choice and dosing.

When to escalate care

Follow your local facility escalation protocols for children of concern. Transfer is recommended if the child requires care beyond the level of comfort of the treating hospital. Clinicians can contact the services outlined below to escalate the care of a paediatric patient.

<table>
<thead>
<tr>
<th>Service</th>
<th>Reason for contact by clinician</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Paediatric service</td>
<td>For specialist paediatric advice and assistance with local transfers as per local arrangements.</td>
<td>As per local arrangements</td>
</tr>
<tr>
<td>Children’s Advice and Transport Coordination Hub (CATCH)</td>
<td>For access to specialist paediatric advice and assistance with inter-hospital transfer of non-critical patients into and out of Lady Cilento Children’s Hospital. For assistance with decision making regarding safe and appropriate inter-hospital transfer of children in Queensland. For QH staff, click here for the QH Inter-hospital transfer request form.</td>
<td>(07) 3068 4510 24 hours CATCH website</td>
</tr>
<tr>
<td>Telehealth Emergency Management Support Unit (TEMSU)</td>
<td>For access to generalist and specialist acute support and advice via videoconferencing, as per locally agreed pathways, in regional, rural and remote areas in Queensland.</td>
<td>TEMSU QHEPS website 24 hours</td>
</tr>
<tr>
<td>Retrieval Services Queensland (RSQ)</td>
<td>For access to telehealth support for, and to notify of, critically unwell patients requiring transfer in Queensland. For any patients requiring aeromedical transfer in Queensland.</td>
<td>RSQ QHEPS website 24 hours</td>
</tr>
</tbody>
</table>
When to consider discharge

Consider seeking senior emergency/paediatric advice prior to discharge for a febrile child aged ≥3 months as per local protocols.

Seek senior emergency/paediatric advice prior to discharge for all febrile children aged between 1 and 3 months.

Discharge may be considered for children who meet ALL of the following criteria:

- for children aged 1-3 months - only on advice from senior emergency/paediatric clinician and providing clinical review within the next 24-48 hours or earlier has been arranged
- for children ≥ 3 months with features of SBI who are not fully immunised – only on advice from senior emergency/paediatric clinician
- no toxic features
- no other investigations or IV treatment required
- no features of SBI
- able to maintain adequate oral intake to maintain hydration
- can be safely managed at home and return in the event of deterioration (consider time of day, parent/carer comprehension and compliance, access to transport and distance to local hospital)

On discharge, parent/caregiver should be provided with a Fever in children and advised to see a doctor earlier if they are concerned about their child prior to their scheduled appointment.

Follow-up

Follow-up should be arranged with General Practitioner within 24 – 48 hours to check progress and receive outstanding test results.

When to consider admission

All infants < 28 days with a febrile illness require admission to an inpatient service.

For febrile infants ≥ 28 days, consider admission for the following children:

- aged 1 - 3 months (even if appear well may require longer period of observation)
- any toxic features
- need for ongoing management
- features suggestive of SBI
- inability to maintain adequate oral intake to maintain hydration
- unplanned return within 24 hours of initial assessment
- social factors such as long distance to hospital and family/carers not able to cope with symptom management
Related documents

Guidelines
- Sepsis - Emergency management in children
- Meningitis - Emergency management in children
- Management of Fever in a Paediatric Oncology Patient

Factsheets
- Fever in children
- How to collect a clean urine specimen Factsheet

References
Guideline approval

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Keywords

Children; fever; febrile; temperature; emergency; management; paediatric; 00707; guideline, 60006

Accreditation references

NSQHS Standards (1-10): 1, 4, 9

Disclaimer

This guideline is intended as a guide and provided for information purposes only. The information has been prepared using a multidisciplinary approach with reference to the best information and evidence available at the time of preparation. No assurance is given that the information is entirely complete, current, or accurate in every respect.

The guideline is not a substitute for clinical judgement, knowledge and expertise, or medical advice. Variation from the guideline, taking into account individual circumstances may be appropriate.

This guideline does not address all elements of standard practice and accepts that individual clinicians are responsible for:

- 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

Queensland Health disclaims, to the maximum extent permitted by law, all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs incurred for any reason associated with the use of this guideline, including the materials within or referred to throughout this document being in any way inaccurate, out of context, incomplete or unavailable.
Febrile Illness - Emergency Management in Children < 3 months - Flowchart

Child < 3 months presents to ED with primary complaint of fever ≥ 38°C

Assess severity
(close attention to vital signs/CEWT and level of alertness)

Toxic features? (A)

Yes → Emergency management as per Sepsis Guideline

No

Is child aged ≤ 28 days?

Yes

Antibiotics as per CHQ Antibiocard* or local guidelines

• Urine MCS
• FBC
• CRP
• Blood culture
• LP (B) +/- CXR (C)

No

Child aged 29 days-3 months

Typical respiratory illness?

Yes → Consider urine MCS
• Management as per Bronchiolitis Guideline

No

Meets ALL of the following:
• Normal urine microscopy
• Absolute neutrophil count <10
• CRP <20
• Feeds well

• Seek senior advice
• Consider LP, +/- CXR

Yes

Refer to inpatient service

Consider discharge with early review

A. Toxic
• marked lethargy/decrease in activity
• altered mental status
• inconsolable irritability
• tachypnoea, increased work of breathing, grunting, weak cry
• cyanosis
• poor perfusion (mottled skin, pallor, mottled)
• marked/persistent tachycardia > 180
• moderate to severe dehydration
• infant feeding <50% normal
• < 4 wet nappies in 24 hours
• seizures
• petechial or purpuric rash
Do not underestimate parental concern

B. Lumbar puncture (LP)
Indications
• fever < 28 days old
• vomiting/ lethargy/
drowsiness/poor feeding

Contraindications
• focal neurological signs
• persistently reduced level of consciousness
• haemodynamic instability
• respiratory compromise

CSF interpretation: See Meningitis Guideline

C. Chest X-ray (CXR) indications
• increased work of breathing
• cough
• tachypnoea
• SpO2 ≤ 93% in room air
• T > 39°C & WCC > 20


For more information refer to the Statewide Paediatric Guideline: Febrile Illness - Emergency Management in Children

CHQ-GDL-60006 – Febrile illness – Emergency management in children

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Appendix 2

Children’s Health Queensland Hospital and Health Service

Febrile Illness - Emergency Management in Children ≥ 3 months - Flowchart

Child ≥ 3 months presents to ED with primary complaint of fever ≥ 38°C

Assess severity
(close attention to vital signs/CEWT and level of alertness)

Toxic features? (A)

Yes

Emergency management as per Sepsis Guideline

No

Focus of infection evident?
(including bronchiolitis)

Yes

≥ 2 doses of immunisations* and no other clinical concerns? (B)

Yes

No

≥ 2 doses of immunisations* and no other clinical concerns? (B)

Yes

No

Fever > 48 hours?

Yes

Any features suggesting SBI? (E)

No

Yes

Urinalysis +/- MCS
+/- CRP
Blood culture
+/– CXR (C)
+/– LP (D)

Consider antibiotics*
Seek senior advice re disposition

Meets discharge criteria?

No

Yes

Refer to inpatient service

Consider discharge

A. Toxic
• marked lethargy/decrease in activity
• altered mental status
• inconsolable irritability
• tachypnoea, increased work of breathing, grunting, weak cry
• cyanosis
• poor perfusion (mottled skin, pallor)
• marked/persistent tachycardia
• moderate to severe dehydration
• seizures
• petechial or purpuric rash

B. Clinical concerns
• potential partial treatment of infection (antibiotics prior to presentation)
• parental concern
• persistent tachycardia or irritability

C. Chest X-ray (CXR) indications
• increased work of breathing
• cough
• tachypnoea
• SpO2 ≤ 93% in room air
• T > 39°C & WCC > 20

D. Lumbar puncture (LP) Indications
• vomiting/lethargy/drowsiness/poor feeding

Contraindications
• focal neurological signs
• persistently reduced level of consciousness
• haemodynamic instability
• respiratory compromise

CSF interpretation: See Meningitis Guideline

E. Features suggestive of serious bacterial infection (SBI)
• persisting clinical concerns
• WCC > 15 if not fully immunised
• CXR focal changes
• urine microscopy suggestive of infection

*Haemophilus influenzae type b and 13-valent conjugate pneumococcal
(3 dose course given as part of The Australian National Immunisation Program at 2, 4 and 6 months of age)

For more information refer to the Statewide Paediatric Guideline: Febrile Illness - Emergency Management in Children

CHQ-GDL-60006 – Febrile illness – Emergency management in children

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