Assessment and initial management of feverish illness in children younger than 5 years: summary of NICE guidance

Martin Richardson, Monica Lakhanpaul and on behalf of the Guideline Development Group and the technical team

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**Assessment and initial management of feverish illness in children younger than 5 years: summary of NICE guidance**

Martin Richardson, Monica Lakhanpaul, on behalf of the Guideline Development Group and the technical team.

**Why read this summary?**

Infectious diseases remain a major cause of childhood mortality and morbidity in the United Kingdom (personal communication, R MacFaul, Department of Health) with some evidence that this is associated with deficiencies in health care. Fever in young children usually indicates an underlying infection, but identifying the cause can pose a diagnostic challenge. In the absence of national guidance, feverish illness is variably managed across the UK. There is thus a perceived need to improve its assessment and management. This article summarises the most recent guidance from the National Institute for Health and Clinical Excellence (NICE) on how to assess and initially manage feverish illness in children aged under 5 years.

**Recommendations**

NICE recommendations are based on systematic reviews of best available evidence. When minimal evidence is available, a range of consensus techniques is used to develop recommendations. In this summary, recommendations derived primarily from consensus techniques are indicated with an asterisk (*).

The recommendations are largely based around an evidence based traffic light system that is used to assess the risk of serious illness as low (green), intermediate (amber), or high (red), and to direct management accordingly (figs 1-3).

This guideline applies until the underlying condition is diagnosed, at which point the child should be treated according to guidance for that condition.

**Assessment and management according to the risk of serious illness**

Clinical assessment should consist of three stages:

- Identify life threatening features (airway, breathing, circulation, disability). If any are present, refer immediately for emergency medical care.
- Assess the risk of serious illness using the traffic light system (fig 1; based on prospective cohort studies and validated scoring systems).
- Attempt to identify a focus of infection or features of specific serious conditions (box). Measure and record temperature, heart rate, respiratory rate, and capillary refill time in all children with feverish illness.

Management in primary and specialist care is determined by the assessment of risk of serious illness (figs 2 and 3). Children who progress to the later stages of serious illness are managed according to guidance for that condition.

### Assessing the risk of serious illness in feverish children under 5 years

<table>
<thead>
<tr>
<th>Colour</th>
<th>Activity</th>
<th>Respiration</th>
<th>Hydration</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low risk</td>
<td>Palor reported by parent or carer</td>
<td>Normal</td>
<td>Normal skin and eyes</td>
<td>No amber or red features</td>
</tr>
<tr>
<td>Intermediate risk</td>
<td>Doesn’t respond normally to social cues</td>
<td>Nasal flaring</td>
<td>Dry mucous membranes</td>
<td>Palor reported by parent or carer</td>
</tr>
<tr>
<td>High risk</td>
<td>Temperature ≥38°C (age 0-3 months); ≥39°C (age 3-6 months)</td>
<td>Tachypnoea: respiratory rate ≥60 breaths/min (at any age)</td>
<td>Reduced skin turgor</td>
<td>Temperature ≥38°C (age 0-3 months); ≥39°C (age 3-6 months)</td>
</tr>
</tbody>
</table>

- Normal
- Moist mucous membranes
- Nasal flaring
- Tachypnoea: respiratory rate ≥50 breaths/min (age 6-12 months) or ≥60 breaths/min (age ≥12 months)
- Oxygen saturation ≤95% in air
- Crackles on auscultation
- Reduced urine output
- Capillary refill time ≥3 seconds
- Poor feeding in infants
- Capillary refill time ≥3 seconds
- Fever for ≥5 days
- Swelling of a limb or joint
- Not weight bearing or not using an extremity
- A new lump ≥2 cm
- No amber or red features
- Pallor reported by parent or carer
- Temperature ≥38°C (age 0-3 months); ≥39°C (age 3-6 months)
- Bulging fontanelle
- Neck stiffness
- Status epilepticus
- Focal neurological signs
- Focal seizures
- Bile stained vomiting

This is one of a series of BMJ summaries of new NICE guidelines, which are based on the best available evidence; they will highlight important recommendations for clinical practice, especially where uncertainty or controversy exists.
Managing feverish children under 5 years in primary care

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low risk</td>
<td>If no diagnosis has been reached: provide “safety net” or, if clinically indicated, refer to paediatric care. The safety net is verbal or written information on warning symptoms and how to access further health care, or liaison with other healthcare workers to ensure patient can access them directly for further assessment, or further follow-up at a prearranged time and place.</td>
</tr>
<tr>
<td>Intermediate risk</td>
<td>From remote assessment (eg telephone triage): refer urgently for face to face assessment within 2 hours* (this should usually take place in primary care).</td>
</tr>
<tr>
<td>High risk</td>
<td>From face to face assessment: refer urgently to paediatric care.</td>
</tr>
</tbody>
</table>

* Recommendation derived primarily from consensus technique

Managing feverish children under 5 years in paediatric care*

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low risk</td>
<td>Test urine for urinary tract infection and (unless deemed unnecessary by experienced paediatrician): - Full blood count, blood culture, C-reactive protein - Chest x ray if fever ≥39°C and white blood count ≥20x10⁹/l - Consider lumbar puncture if child is &lt;1 year old.</td>
</tr>
<tr>
<td>Intermediate risk</td>
<td>Test urine for urinary tract infection - Consider chest x ray, lumbar puncture, serum electrolytes, blood gas.</td>
</tr>
<tr>
<td>High risk</td>
<td>Full blood count, blood culture, C-reactive protein - Test urine for urinary tract infection - Consider chest x ray, lumbar puncture, serum electrolytes, blood gas.</td>
</tr>
</tbody>
</table>

* For an infant <3 months old and temperature ≥38°C: observe in hospital and monitor vital signs. For a child ≥3 months old: use this chart.

Clinical features of specific serious diseases in conjunction with fever

<table>
<thead>
<tr>
<th>Disease</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meningococcal disease</td>
<td>Non-blanching rash, particularly with one or more of: - An ill looking child - Lesions larger than 2 mm in diameter (purpura) - A capillary refill time of ≥3 seconds - Neck stiffness</td>
</tr>
<tr>
<td>Urinary tract infection</td>
<td>Vesiculate - Abnormal urinalysis - Lower abdominal pain or tenderness</td>
</tr>
<tr>
<td>Septic arthritis or osteomyelitis</td>
<td>Swelling of a limb or joint - Non using an extremity - Non-weight bearing</td>
</tr>
<tr>
<td>Kawasaki disease</td>
<td>Fever for more than five days and at least four of: - Bilateral conjunctival injection - Change in mucus membranes - Change in the extremities - Polymorphous rash - Cervical lymphadenopathy</td>
</tr>
</tbody>
</table>

Other key recommendations

- Parental perception of fever should be taken seriously.
- Measuring body temperature:
  1. Do not routinely use the oral and rectal routes in children aged 0-5 years.
  2. In infants under the age of 4 weeks, use an electronic thermometer in the axilla.
  3. In children aged 4 weeks to 5 years, use an electronic thermometer in the axilla, a chemical dot thermometer in the axilla, or an infrared tympanic thermometer.
- Do not routinely use antipyretic agents with the sole aim of reducing fever in children who are otherwise well.*
- Do not routinely administer paracetamol and ibuprofen either in combination or alternately; but consider using the alternative drug if the child does not respond to the first agent.
- Antipyretic agents do not prevent febrile convulsions and should not be used specifically for this purpose.
- Do not prescribe oral antibiotics to children with fever without apparent source.

Overcoming barriers

Unlike previous disease-focused guidelines, this problem-focused guidance is not accompanied by definite targets to be achieved. Instead, it requires health professionals to be aware of key clinical features for assessing the risk of serious illness in a child with fever and to record these features so that the child’s progress can be monitored.

Some recommendations may not be readily accepted as they are derived from formal consensus (through the Delphi technique) rather than published evidence. Such recommendations arose only where no relevant published evidence was available, and the Delphi panel reflected a wide range of opinion, from parents and carers as well as workers in primary and secondary care. Other children’s guidelines based on a combination of formal evidence and the Delphi process have reduced attendance times in emergency departments and the number of unnecessary investigations.

To support implementation, the Guideline Development Group has developed a leaflet (available from August 2007 at www.nice.org.uk/CG047) that can be given to parents and carers of children with feverish illness.

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