NICE National Institute for Health and Care Excellence

NICE guideline

Fever in under 5s: assessment and initial management

Clinical guideline

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Contents

This guideline replaces CG47.

This guideline is the basis of QS64.

Introduction

This guideline updates and replaces 'Feverish illness in children' (NICE clinical guideline 47). The recommendations are labelled according to when they were originally published (see About this guideline for details).

Feverish illness in young children usually indicates an underlying infection and is a cause of concern for parents and carers. Feverish illness is very common in young children, with between 20 and 40% of parents reporting such an illness each year. As a result, fever is probably the commonest reason for a child to be taken to the doctor. Feverish illness is also the second most common reason for a child being admitted to hospital. Despite advances in healthcare, infections remain the leading cause of death in children under the age of 5 years.

Fever in young children can be a diagnostic challenge for healthcare professionals because it is often difficult to identify the cause. In most cases, the illness is due to a self-limiting viral infection. However, fever may also be the presenting feature of serious bacterial infections such as meningitis or pneumonia. A significant number of children have no obvious cause of fever despite careful assessment. These children with fever without apparent source are of particular concern to healthcare professionals because it is especially difficult to distinguish between simple viral illnesses and life-threatening bacterial infections in this group. As a result, there is a perceived need to improve the recognition, assessment and immediate treatment of feverish illnesses in children.

The introduction of new vaccination programmes in the UK may have significantly reduced the level of admissions to hospital resulting from diseases covered by this guideline. For example, early analysis of the pneumococcal vaccination programme in England shows that the incidence of pneumococcal-related disease has fallen 98% in children younger than 2 years since vaccination was introduced. However, evidence suggests a 68% increase in the prevalence of disease caused by subtypes of bacteria not covered by vaccination programmes. Also, potentially serious cases of feverish illness are likely to be rare, so it is important that information is in place to help healthcare professionals distinguish these from mild cases.

This guideline is designed to assist healthcare professionals in the initial assessment and immediate treatment of young children with fever presenting to primary or secondary care.

The guideline will assume that prescribers will use a drug's summary of product characteristics to inform decisions made with individual patients.

For information on groups that are included and excluded in this guideline see Feverish illness in children: final scope.

Patient-centred care

This guideline offers best practice advice on the care of children younger than 5 years with feverish illness.

Patients and healthcare professionals have rights and responsibilities as set out in the NHS Constitution for England – all NICE guidance is written to reflect these. Treatment and care should take into account individual needs and preferences. Patients should have the opportunity to make informed decisions about their care and treatment, in partnership with their healthcare professionals. If someone does not have the capacity to make decisions, healthcare professionals should follow the Department of Health's advice on consent, the code of practice that accompanies the Mental Capacity Act and the supplementary code of practice on deprivation of liberty safeguards. In Wales, healthcare professionals should follow advice on consent from the Welsh Government.

If the patient is under 16, healthcare professionals should follow the guidelines in the Department of Health's Seeking consent: working with children. Families and carers should also be given the information and support they need to help the child or young person in making decisions about their treatment.

Key priorities for implementation

The following recommendations have been identified as priorities for implementation.

Thermometers and the detection of fever

- In children aged 4 weeks to 5 years, measure body temperature by one of the following methods:
  - electronic thermometer in the axilla
  - chemical dot thermometer in the axilla
  - infra-red tympanic thermometer. [2007]
- Reported parental perception of a fever should be considered valid and taken seriously by healthcare professionals. [2007]

Clinical assessment of the child with fever

- Assess children with feverish illness for the presence or absence of symptoms and signs that can be used to predict the risk of serious illness using the traffic light system (see table 1). [2013]
- Measure and record temperature, heart rate, respiratory rate and capillary refill time as part of the routine assessment of a child with fever. [2007]
- Recognise that children with tachycardia are in at least an intermediate-risk group for serious illness. Use the Advanced Paediatric Life Support (APLS)[1] criteria below to define tachycardia: [new 2013]

Age	Heart rate (bpm)
<12 months	>160
12–24 months	>150
2–5 years	>140

Management by remote assessment

- Children with any 'red' features but who are not considered to have an immediately life-threatening illness should be urgently assessed by a healthcare professional in a face-to-face setting within 2 hours. [2007]

Management by the non-paediatric practitioner

- If any 'amber' features are present and no diagnosis has been reached, provide parents or carers with a 'safety net' or refer to specialist paediatric care for further assessment. The safety net should be 1 or more of the following:
    - providing the parent or carer with verbal and/or written information on warning symptoms and how further healthcare can be accessed (see section 1.7.2)
    - arranging further follow-up at a specified time and place
    - liaising with other healthcare professionals, including out-of-hours providers, to ensure direct access for the child if further assessment is required. [2007]

Management by the paediatric specialist

- Perform the following investigations in infants younger than 3 months with fever:
    - full blood count
    - blood culture
    - C-reactive protein
    - urine testing for urinary tract infection[2]
    - chest X-ray only if respiratory signs are present
    - stool culture, if diarrhoea is present. [2013]

Antipyretic interventions

- Antipyretic agents do not prevent febrile convulsions and should not be used specifically for this purpose. [2007]
- When using paracetamol or ibuprofen in children with fever;

- continue only as long as the child appears distressed
- consider changing to the other agent if the child's distress is not alleviated
- do not give both agents simultaneously
- only consider alternating these agents if the distress persists or recurs before the next dose is due. **[new 2013]**

[1] Advanced Life Support Group (2004) advanced paediatric life support: the practical approach (4th edn). Wiley-Blackwell.

[2] See Urinary tract infection in children, NICE clinical guideline 54 (2007).

1 Recommendations

The following guidance is based on the best available evidence. The full guideline gives details of the methods and the evidence used to develop the guidance.

The wording used in the recommendations in this guideline denotes the certainty with which the recommendation is made (the strength of the recommendation). See About this guideline for details.

This guideline is intended for use by healthcare professionals for the assessment and initial management in young children with feverish illness. The guideline should be followed until a clinical diagnosis of the underlying condition has been made. Once a diagnosis has been made, the child should be treated according to national or local guidance for that condition.

Parents or carers of a child with fever may approach a range of different healthcare professionals as their first point of contact, for example, a GP, a pharmacist or an emergency care practitioner. The training and experience of the healthcare professionals involved in the child's care will vary and each should interpret the guidance according to the scope of their own practice.

For the purposes of this guideline, fever was defined as 'an elevation of body temperature above the normal daily variation'.

This guideline should be read in conjunction with:

- Bacterial meningitis and meningococcal septicaemia (NICE clinical guideline 102).
- Urinary tract infection in children (NICE clinical guideline 54).
- Diarrhoea and vomiting in children under 5 (NICE clinical guideline 84).

1.1 Thermometers and the detection of fever

1.1.1 Oral and rectal temperature measurements

1.1.1.1 Do not routinely use the oral and rectal routes to measure the body temperature of children aged 0–5 years. **[2007]**

1.1.2 Measurement of body temperature at other sites

1.1.2.1 In infants under the age of 4 weeks, measure body temperature with an electronic thermometer in the axilla. [2007]

1.1.2.2 In children aged 4 weeks to 5 years, measure body temperature by one of the following methods:

- electronic thermometer in the axilla
- chemical dot thermometer in the axilla
- infra-red tympanic thermometer. [2007]

1.1.2.3 Healthcare professionals who routinely use disposable chemical dot thermometers should consider using an alternative type of thermometer when multiple temperature measurements are required. [2007]

1.1.2.4 Forehead chemical thermometers are unreliable and should not be used by healthcare professionals. [2007]

1.1.3 Subjective detection of fever by parents and carers

1.1.3.1 Reported parental perception of a fever should be considered valid and taken seriously by healthcare professionals. [2007]

1.2 Clinical assessment of children with fever

1.2.1 Life-threatening features of illness in children

1.2.1.1 First, healthcare professionals should identify any immediately life-threatening features, including compromise of the airway, breathing or circulation, and decreased level of consciousness. [2007]

1.2.2 Assessment of risk of serious illness

1.2.2.1 Assess children with feverish illness for the presence or absence of symptoms and signs that can be used to predict the risk of serious illness using the traffic light system (see table 1). [2013]

1.2.2.2 When assessing children with learning disabilities, take the individual child's learning disability into account when interpreting the traffic light table. **[new 2013]**

1.2.2.3 Recognise that children with any of the following symptoms or signs are in a high-risk group for serious illness:

- pale/mottled/ashen/blue skin, lips or tongue
- no response to social cues[3]
- appearing ill to a healthcare professional
- does not wake or if roused does not stay awake
- weak, high-pitched or continuous cry
- grunting
- respiratory rate greater than 60 breaths per minute
- moderate or severe chest indrawing
- reduced skin turgor
- bulging fontanelle. **[new 2013]**

1.2.2.4 Recognise that children with any of the following symptoms or signs are in at least an intermediate-risk group for serious illness:

- pallor of skin, lips or tongue reported by parent or carer
- not responding normally to social cues[3]
- no smile
- wakes only with prolonged stimulation
- decreased activity
- nasal flaring
- dry mucous membranes

- poor feeding in infants
- reduced urine output
- rigors. **[new 2013]**

1.2.2.5 Recognise that children who have all of the following features, and none of the high- or intermediate-risk features, are in a low-risk group for serious illness:

- normal colour of skin, lips and tongue
- responds normally to social cues[3]
- content/smiles
- stays awake or awakens quickly
- strong normal cry or not crying
- normal skin and eyes
- moist mucous membranes. **[new 2013]**

1.2.2.6 Measure and record temperature, heart rate, respiratory rate and capillary refill time as part of the routine assessment of a child with fever. **[2007]**

1.2.2.7 Recognise that a capillary refill time of 3 seconds or longer is an intermediate-risk group marker for serious illness ('amber' sign). **[2013]**

1.2.2.8 Measure the blood pressure of children with fever if the heart rate or capillary refill time is abnormal and the facilities to measure blood pressure are available. **[2007]**

1.2.2.9 In children older than 6 months do not use height of body temperature alone to identify those with serious illness. **[2013]**

1.2.2.10 Recognise that children younger than 3 months with a temperature of 38°C or higher are in a high-risk group for serious illness. **[2013]**

1.2.2.11 Recognise that children aged 3–6 months with a temperature of 39°C or higher are in at least an intermediate-risk group for serious illness. **[new 2013]**

1.2.2.12 Do not use duration of fever to predict the likelihood of serious illness. However, children with a fever lasting more than 5 days should be assessed for Kawasaki disease (see recommendation 1.2.3.10). **[new 2013]**

1.2.2.13 Recognise that children with tachycardia are in at least an intermediate-risk group for serious illness. Use the Advanced Paediatric Life Support (APLS)[4] criteria below to define tachycardia: **[new 2013]**

Age	Heart rate (bpm)
<12 months	>160
12–24 months	>150
2–5 years	>140

1.2.2.14 Assess children with fever for signs of dehydration. Look for:

- prolonged capillary refill time
- abnormal skin turgor
- abnormal respiratory pattern
- weak pulse
- cool extremities. **[2007]**

1.2.3 Symptoms and signs of specific illnesses

1.2.3.1 Look for a source of fever and check for the presence of symptoms and signs that are associated with specific diseases (see table 2). **[2007]**

1.2.3.2 Consider meningococcal disease in any child with fever and a non-blanching rash, particularly if any of the following features are present[5]:

- an ill-looking child
- lesions larger than 2 mm in diameter (purpura)
- a capillary refill time of 3 seconds or longer

- neck stiffness. [2007]

1.2.3.3 Consider bacterial meningitis in a child with fever and any of the following features[5]:

- neck stiffness
- bulging fontanelle
- decreased level of consciousness
- convulsive status epilepticus. [2007, amended 2013]

1.2.3.4 Be aware that classic signs of meningitis (neck stiffness, bulging fontanelle, high-pitched cry) are often absent in infants with bacterial meningitis[5]. [2007]

1.2.3.5 Consider herpes simplex encephalitis in children with fever and any of the following features:

- focal neurological signs
- focal seizures
- decreased level of consciousness. [2007]

1.2.3.6 Consider pneumonia in children with fever and any of the following signs:

- tachypnoea (respiratory rate greater than 60 breaths per minute, age 0–5 months; greater than 50 breaths per minute, age 6–12 months; greater than 40 breaths per minute, age older than 12 months)
- crackles in the chest
- nasal flaring
- chest indrawing
- cyanosis
- oxygen saturation of 95% or less when breathing air. [2007]

1.2.3.7 Consider urinary tract infection in any child younger than 3 months with fever[6]. [2007]

1.2.3.8 Consider urinary tract infection in a child aged 3 months or older with fever and 1 or more of the following[6]:

- vomiting
- poor feeding
- lethargy
- irritability
- abdominal pain or tenderness
- urinary frequency or dysuria. **[new 2013]**

1.2.3.9 Consider septic arthritis/osteomyelitis in children with fever and any of the following signs:

- swelling of a limb or joint
- not using an extremity
- non-weight bearing. **[2007]**

1.2.3.10 Consider Kawasaki disease in children with fever that has lasted longer than 5 days and who have 4 of the following 5 features:

- bilateral conjunctival injection
- change in mucous membranes in the upper respiratory tract (for example, injected pharynx, dry cracked lips or strawberry tongue)
- change in the extremities (for example, oedema, erythema or desquamation)
- polymorphous rash
- cervical lymphadenopathy

  Be aware that, in rare cases, incomplete/atypical Kawasaki disease may be diagnosed with fewer features. **[2007]**

1.2.4 Imported infections

1.2.4.1 When assessing a child with feverish illness, enquire about recent travel abroad and consider the possibility of imported infections according to the region visited. [2007]

Table 1 Traffic light system for identifying risk of serious illness

[new 2013]

Children with fever and **any** of the symptoms or signs in the red column should be recognised as being at high risk. Similarly, children with fever and any of the symptoms or signs in the amber column and none in the red column should be recognised as being at intermediate risk. Children with symptoms and signs in the green column and none in the amber or red columns are at low risk. The management of children with fever should be directed by the level of risk.

This traffic light table should be used in conjunction with the recommendations in this guideline on investigations and initial management in children with fever.

A colour version of this table is available.

	Green – low risk	Amber – intermediate risk	Red – high risk
Colour (of skin, lips or tongue)	• Normal colour	• Pallor reported by parent/carer	• Pale/mottled/ashen/ blue
Activity	• Responds normally to social cues • Content/smiles • Stays awake or awakens quickly • Strong normal cry/ not crying	• Not responding normally to social cues • No smile • Wakes only with prolonged stimulation • Decreased activity	• No response to social cues • Appears ill to a healthcare professional • Does not wake or if roused does not stay awake • Weak, high-pitched or continuous cry

Respiratory		• Nasal flaring • Tachypnoea: respiratory rate – >50 breaths/ minute, age 6–12 months; – >40 breaths/ minute, age >12 months • Oxygen saturation ≤95% in air • Crackles in the chest	• Grunting • Tachypnoea: respiratory rate >60 breaths/minute • Moderate or severe chest indrawing
Circulation and hydration	• Normal skin and eyes • Moist mucous membranes	• Tachycardia: – >160 beats/ minute, age <12 months – >150 beats/ minute, age 12–24 months – >140 beats/ minute, age 2–5 years • Capillary refill time ≥3 seconds • Dry mucous membranes • Poor feeding in infants • Reduced urine output	• Reduced skin turgor

Other	• None of the amber or red symptoms or signs	• Age 3–6 months, temperature ≥39°C • Fever for ≥5 days • Rigors • Swelling of a limb or joint • Non-weight bearing limb/not using an extremity	• Age <3 months, temperature ≥38°C • Non-blanching rash • Bulging fontanelle • Neck stiffness • Status epilepticus • Focal neurological signs • Focal seizures

Table 2 Summary table for symptoms and signs suggestive of specific diseases

[2013]

Diagnosis to be considered	Symptoms and signs in conjunction with fever
Meningococcal disease	Non-blanching rash, particularly with 1 or more of the following: • an ill-looking child • lesions larger than 2 mm in diameter (purpura) • capillary refill time of ≥3 seconds • neck stiffness
Bacterial meningitis	Neck stiffness Bulging fontanelle Decreased level of consciousness Convulsive status epilepticus
Herpes simplex encephalitis	Focal neurological signs Focal seizures Decreased level of consciousness

Pneumonia	Tachypnoea (respiratory rate >60 breaths/minute, age 0–5 months; >50 breaths/minute, age 6–12 months; >40 breaths/minute, age >12 months) Crackles in the chest Nasal flaring Chest indrawing Cyanosis Oxygen saturation ≤95%
Urinary tract infection	Vomiting Poor feeding Lethargy Irritability Abdominal pain or tenderness Urinary frequency or dysuria
Septic arthritis	Swelling of a limb or joint Not using an extremity Non-weight bearing
Kawasaki disease	Fever for more than 5 days and at least 4 of the following: • bilateral conjunctival injection • change in mucous membranes • change in the extremities • polymorphous rash • cervical lymphadenopathy

1.3 Management by remote assessment

Remote assessment refers to situations in which a child is assessed by a healthcare professional who is unable to examine the child because the child is geographically remote from the assessor (for example, telephone calls to NHS Direct[7]). Therefore, assessment is largely an interpretation of symptoms rather than physical signs. The guidance in this section may also apply to healthcare professionals whose scope of practice does not include the physical examination of a young child (for example, community pharmacists).

1.3.1 Management according to risk of serious illness

1.3.1.1 Healthcare professionals performing a remote assessment of a child with fever should seek to identify symptoms and signs of serious illness and specific diseases as described in section 1.2 and summarised in tables 1 and 2. [2007]

1.3.1.2 Children whose symptoms or combination of symptoms suggest an immediately life-threatening illness (see recommendation 1.2.1.1) should be referred immediately for emergency medical care by the most appropriate means of transport (usually 999 ambulance). [2007]

1.3.1.3 Children with any 'red' features but who are not considered to have an immediately life-threatening illness should be urgently assessed by a healthcare professional in a face-to-face setting within 2 hours. [2007]

1.3.1.4 Children with 'amber' but no 'red' features should be assessed by a healthcare professional in a face-to-face setting. The urgency of this assessment should be determined by the clinical judgement of the healthcare professional carrying out the remote assessment. [2007]

1.3.1.5 Children with 'green' features and none of the 'amber' or 'red' features can be cared for at home with appropriate advice for parents and carers, including advice on when to seek further attention from the healthcare services (see section 1.7). [2007, amended 2013]

1.4 Management by the non-paediatric practitioner

In this guideline, a non-paediatric practitioner is defined as a healthcare professional who has not had specific training or who does not have expertise in the assessment and treatment of children and their illnesses. This term includes healthcare professionals working in primary care, but it may also apply to many healthcare professionals in general emergency departments.

1.4.1 Clinical assessment

1.4.1.1 Management by a non-paediatric practitioner should start with a clinical assessment as described in section 1.2. Healthcare practitioners should attempt to identify symptoms and signs of serious illness and specific diseases as summarised in tables 1 and 2. [2007]

1.4.2 Management according to risk of serious illness

1.4.2.1 Children whose symptoms or combination of symptoms and signs suggest an immediately life-threatening illness (see recommendation 1.2.1.1) should be referred immediately for emergency medical care by the most appropriate means of transport (usually 999 ambulance). **[2007]**

1.4.2.2 Children with any 'red' features but who are not considered to have an immediately life-threatening illness should be referred urgently to the care of a paediatric specialist. **[2007]**

1.4.2.3 If any 'amber' features are present and no diagnosis has been reached, provide parents or carers with a 'safety net' or refer to specialist paediatric care for further assessment. The safety net should be 1 or more of the following:

- providing the parent or carer with verbal and/or written information on warning symptoms and how further healthcare can be accessed (see section 1.7.2)
- arranging further follow-up at a specified time and place
- liaising with other healthcare professionals, including out-of-hours providers, to ensure direct access for the child if further assessment is required. **[2007]**

1.4.2.4 Children with 'green' features and none of the 'amber' or 'red' features can be cared for at home with appropriate advice for parents and carers, including advice on when to seek further attention from the healthcare services (see section 1.7). **[2007, amended 2013]**

1.4.3 Tests by the non-paediatric practitioner

1.4.3.1 Children with symptoms and signs suggesting pneumonia who are not admitted to hospital should not routinely have a chest X-ray. **[2007]**

1.4.3.2 Test urine in children with fever as recommended in Urinary tract infection in children (NICE clinical guideline 54). **[2007]**

1.4.4 Use of antibiotics by the non-paediatric practitioner

1.4.4.1 Do not prescribe oral antibiotics to children with fever without apparent source. **[2007]**

1.4.4.2 Give parenteral antibiotics to children with suspected meningococcal disease at the earliest opportunity (either benzylpenicillin or a third-generation cephalosporin)[5]. [2007]

1.5 Management by the paediatric specialist

In this guideline, the term paediatric specialist refers to a healthcare professional who has had specific training or has recognised expertise in the assessment and treatment of children and their illnesses. Examples include paediatricians, or healthcare professionals working in children's emergency departments.

1.5.1 Children younger than 5 years

1.5.1.1 Management by the paediatric specialist should start with a clinical assessment as described in section 1.2. The healthcare professional should attempt to identify symptoms and signs of serious illness and specific diseases as summarised in tables 1 and 2. [2007]

1.5.2 Children younger than 3 months

1.5.2.1 Infants younger than 3 months with fever should be observed and have the following vital signs measured and recorded:

- temperature
- heart rate
- respiratory rate. [2007]

1.5.2.2 Perform the following investigations in infants younger than 3 months with fever:

- full blood count
- blood culture
- C-reactive protein
- urine testing for urinary tract infection[6]
- chest X-ray only if respiratory signs are present

- stool culture, if diarrhoea is present. **[2013]**

1.5.2.3 Perform lumbar puncture in the following children with fever (unless contraindicated):

- infants younger than 1 month
- all infants aged 1–3 months who appear unwell
- infants aged 1–3 months with a white blood cell count (WBC) less than 5×10^9/litre or greater than 15×10^9/litre. **[2007, amended 2013]**

1.5.2.4 When indicated, perform a lumbar puncture without delay and, whenever possible, before the administration of antibiotics. **[2007]**

1.5.2.5 Give parenteral antibiotics to:

- infants younger than 1 month with fever
- all infants aged 1–3 months with fever who appear unwell
- infants aged 1–3 months with WBC less than 5×10^9/litre or greater than 15×10^9/litre. **[2007, amended 2013]**

1.5.2.6 When parenteral antibiotics are indicated for infants younger than 3 months of age, a third-generation cephalosporin (for example cefotaxime or ceftriaxone) should be given plus an antibiotic active against listeria (for example, ampicillin or amoxicillin). **[2007]**

1.5.3 Children aged 3 months or older

1.5.3.1 Perform the following investigations in children with fever without apparent source who present to paediatric specialists with 1 or more 'red' features:

- full blood count
- blood culture
- C-reactive protein
- urine testing for urinary tract infection[6]. **[2013]**

1.5.3.2 The following investigations should also be considered in children with 'red' features, as guided by the clinical assessment:

- lumbar puncture in children of all ages (if not contraindicated)
- chest X-ray irrespective of body temperature and WBC
- serum electrolytes and blood gas. [2007]

1.5.3.3 Children with fever without apparent source presenting to paediatric specialists who have 1 or more 'amber' features, should have the following investigations performed unless deemed unnecessary by an experienced paediatrician.

- urine should be collected and tested for urinary tract infection[6]
- blood tests: full blood count, C-reactive protein and blood cultures
- lumbar puncture should be considered for children younger than 1 year
- chest X-ray in a child with a fever greater than 39°C and WBC greater than 20 × 10^9/litre. [2007]

1.5.3.4 Children who have been referred to a paediatric specialist with fever without apparent source and who have no features of serious illness (that is, the 'green' group), should have urine tested for urinary tract infection[6] and be assessed for symptoms and signs of pneumonia (see table 2). [2007]

1.5.3.5 Do not routinely perform blood tests and chest X-rays in children with fever who have no features of serious illness (that is, the 'green' group). [2007]

1.5.4 Viral co-infection

1.5.4.1 Febrile children with proven respiratory syncytial virus or influenza infection should be assessed for features of serious illness. Consideration should be given to urine testing for urinary tract infection[6]. [2007]

1.5.5 Observation in hospital

1.5.5.1 In children aged 3 months or older with fever without apparent source, a period of observation in hospital (with or without investigations) should be considered

as part of the assessment to help differentiate non-serious from serious illness. [2007]

1.5.5.2 When a child has been given antipyretics, do not rely on a decrease or lack of decrease in temperature at 1–2 hours to differentiate between serious and non-serious illness. Nevertheless, in order to detect possible clinical deterioration, all children in hospital with 'amber' or 'red' features should still be reassessed after 1–2 hours. [new 2013]

1.5.6 Immediate treatment by the paediatric specialist (for children of all ages)

1.5.6.1 Children with fever and shock presenting to specialist paediatric care or an emergency department should be:

- given an immediate intravenous fluid bolus of 20 ml/kg; the initial fluid should normally be 0.9% sodium chloride
- actively monitored and given further fluid boluses as necessary. [2007]

1.5.6.2 Give immediate parenteral antibiotics to children with fever presenting to specialist paediatric care or an emergency department if they are:

- shocked
- unrousable
- showing signs of meningococcal disease. [2007]

1.5.6.3 Immediate parenteral antibiotics should be considered for children with fever and reduced levels of consciousness. In these cases symptoms and signs of meningitis and herpes simplex encephalitis should be sought (see table 2 and Bacterial meningitis and meningococcal septicaemia [NICE clinical guideline 102]). [2007]

1.5.6.4 When parenteral antibiotics are indicated, a third-generation cephalosporin (for example, cefotaxime or ceftriaxone) should be given, until culture results are available. For children younger than 3 months, an antibiotic active against listeria (for example, ampicillin or amoxicillin) should also be given. [2007]

1.5.6.5 Give intravenous aciclovir to children with fever and symptoms and signs suggestive of herpes simplex encephalitis (see recommendation 1.2.3.5). [2007]

1.5.6.6 Oxygen should be given to children with fever who have signs of shock or oxygen saturation (SpO_2) of less than 92% when breathing air. Treatment with oxygen should also be considered for children with an SpO_2 of greater than 92%, as clinically indicated. [2007]

1.5.7 Causes and incidence of serious bacterial infection

1.5.7.1 In a child presenting to hospital with a fever and suspected serious bacterial infection, requiring immediate treatment, antibiotics should be directed against *Neisseria meningitidis*, *Streptococcus pneumoniae*, *Escherichia coli*, *Staphylococcus aureus* and *Haemophilus influenzae* type b. A third-generation cephalosporin (for example, cefotaxime or ceftriaxone) is appropriate, until culture results are available. For infants younger than 3 months, an antibiotic active against listeria (for example, ampicillin or amoxicillin) should be added. [2007]

1.5.7.2 Refer to local treatment guidelines when rates of bacterial antibiotic resistance are significant. [2007]

1.5.8 Admission to and discharge from hospital

1.5.8.1 In addition to the child's clinical condition, consider the following factors when deciding whether to admit a child with fever to hospital:

- social and family circumstances
- other illnesses that affect the child or other family members
- parental anxiety and instinct (based on their knowledge of their child)
- contacts with other people who have serious infectious diseases
- recent travel abroad to tropical/subtropical areas, or areas with a high risk of endemic infectious disease
- when the parent or carer's concern for their child's current illness has caused them to seek healthcare advice repeatedly

- where the family has experienced a previous serious illness or death due to feverish illness which has increased their anxiety levels
- when a feverish illness has no obvious cause, but the child remains ill longer than expected for a self-limiting illness. [2007]

1.5.8.2 If it is decided that a child does not need to be admitted to hospital, but no diagnosis has been reached, provide a safety net for parents and carers if any 'red' or 'amber' features are present. The safety net should be 1 or more of the following:

- providing the parent or carer with verbal and/or written information on warning symptoms and how further healthcare can be accessed (see section 1.7.2)
- arranging further follow-up at a specified time and place
- liaising with other healthcare professionals, including out-of-hours providers, to ensure direct access for the child if further assessment is required. [2007]

1.5.8.3 Children with 'green' features and none of the 'amber' or 'red' features can be cared for at home with appropriate advice for parents and carers, including advice on when to seek further attention from the healthcare services (see section 1.7). [2007, amended 2013]

1.5.9 Referral to paediatric intensive care

1.5.9.1 Children with fever who are shocked, unrousable or showing signs of meningococcal disease should be urgently reviewed by an experienced paediatrician and consideration given to referral to paediatric intensive care. [2007]

1.5.9.2 Give parenteral antibiotics to children with suspected meningococcal disease at the earliest opportunity (either benzylpenicillin or a third-generation cephalosporin). [2007]

1.5.9.3 Children admitted to hospital with meningococcal disease should be under paediatric care, supervised by a consultant and have their need for inotropes assessed. [2007]

1.6 Antipyretic interventions

1.6.1 Effects of body temperature reduction

1.6.1.1 Antipyretic agents do not prevent febrile convulsions and should not be used specifically for this purpose. [2007]

1.6.2 Physical interventions to reduce body temperature

1.6.2.1 Tepid sponging is not recommended for the treatment of fever. [2007]

1.6.2.2 Children with fever should not be underdressed or over-wrapped. [2007]

1.6.3 Drug interventions to reduce body temperature

1.6.3.1 Consider using either paracetamol or ibuprofen in children with fever who appear distressed. [new 2013]

1.6.3.2 Do not use antipyretic agents with the sole aim of reducing body temperature in children with fever. [new 2013]

1.6.3.3 When using paracetamol or ibuprofen in children with fever:

- continue only as long as the child appears distressed
- consider changing to the other agent if the child's distress is not alleviated
- do not give both agents simultaneously
- only consider alternating these agents if the distress persists or recurs before the next dose is due. [new 2013]

1.7 Advice for home care

1.7.1 Care at home

1.7.1.1 Advise parents or carers to manage their child's temperature as described in section 1.6. [2007]

1.7.1.2 Advise parents or carers looking after a feverish child at home:

- to offer the child regular fluids (where a baby or child is breastfed the most appropriate fluid is breast milk)
- how to detect signs of dehydration by looking for the following features:
  - sunken fontanelle
  - dry mouth
  - sunken eyes
  - absence of tears
  - poor overall appearance
- to encourage their child to drink more fluids and consider seeking further advice if they detect signs of dehydration
- how to identify a non-blanching rash
- to check their child during the night
- to keep their child away from nursery or school while the child's fever persists but to notify the school or nursery of the illness. [2007]

1.7.2 When to seek further help

1.7.2.1 Following contact with a healthcare professional, parents and carers who are looking after their feverish child at home should seek further advice if:

- the child has a fit
- the child develops a non-blanching rash
- the parent or carer feels that the child is less well than when they previously sought advice
- the parent or carer is more worried than when they previously sought advice
- the fever lasts longer than 5 days
- the parent or carer is distressed, or concerned that they are unable to look after their child. [2007]

[3] A child's response to social interaction with a parent or healthcare professional, such as response to their name, smiling and/or giggling.

[4] Advanced Life Support Group (2004) Advanced paediatric life support: the practical approach (4th edn). Wiley-Blackwell

[5] See Bacterial meningitis and meningococcal septicaemia. NICE clinical guideline 102 (2010).

[6] See Urinary tract infection in children, NICE clinical guideline 54 (2007).

[7] Please note that this service will be replaced by NHS 111, which is due to be implemented nationally in 2013.

2 Research recommendations

The Guideline Development Group has made the following recommendations for research, based on its review of evidence, to improve NICE guidance and patient care in the future. The Guideline Development Group's full set of research recommendations is detailed in the full guideline.

2.1 Symptoms and signs of serious illness

The GDG recommends a UK-based epidemiological study on the symptoms and signs of serious illness. **[new 2013]**

Why this is important

The current recommendations on symptoms and signs in the NICE guideline are based on a series of heterogeneous studies (using different methods, populations, outcomes and of varying quality) and a degree of subjectivity was needed to bring these together in the guideline. Therefore, the GDG recommends that a large prospective UK-wide study (n=20,000 plus) should be undertaken comparing all of these symptoms and signs covered in the guideline. This would allow for a standardised comparison of each symptom and sign, and for validation of the existing 'traffic light' table.

The study should use a standardised data collection protocol. Where possible the study should link with routinely collected data sets, such as Hospital Episode Statistics. The study should include a variety of settings and locations – that is, wherever children present, including primary care. The primary outcome of the study should be the final diagnosis and results of treatment.

2.2 Management by remote assessment

The GDG recommends that a UK study is undertaken to determine the validity of symptoms reported on remote assessment for children with fever. **[2007]**

Why this is important

Traditionally, symptomatic patients have been assessed in a face-to-face setting but increasingly, remote assessment (for example, assessment over the telephone) determines the urgency of the patient's need, the level of care required and from that the most appropriate next step for the patient. This might include referral to emergency services, referral to acute or non-acute services or closing the call with self-care advice/support. Clinical and cost effectiveness will only be

achieved through remote assessment if perceived need equates to actual need. There is currently a lack of data available that demonstrate the validity of remote assessment.

2.3 Diagnosis

The GDG recommends that a UK study of the performance characteristics and cost-effectiveness of procalcitonin versus C-reactive protein in identifying serious bacterial infection in children with fever without apparent source be carried out. [2007]

Why this is important

Many young children with fever appear well with no symptoms or signs of serious illness. The vast majority of these children will have self-limiting illnesses. However, a few will have serious bacterial infections which may not be identifiable by clinical assessment alone. Investigations that help to identify these children with serious bacterial infections could lead to prompt antibiotic treatment, which may improve their outcome. These investigations need to be both sensitive and specific so that most serious bacterial infections are identified and so that antibiotics are not given to children who don't need them. The inflammatory markers C-reactive protein and procalcitonin have shown varying performance characteristics for identifying bacterial infection in a variety of populations. If either or both were found to be sensitive and specific for identifying serious bacterial infection in children with fever without apparent source, there would be evidence for their more widespread use. The cost effectiveness of this approach would need to be calculated.

2.4 Antipyretics

The GDG recommends that studies are conducted in primary care and secondary care to determine whether examination or re-examination after a dose of antipyretic medication is of benefit in differentiating children with serious illness from those with other conditions. [2007]

Why this is important

Antipyretic medications are widely used in primary and secondary settings by parents and healthcare professionals. Children may therefore present to healthcare facilities having had a dose of antipyretics. Furthermore, the child's response to antipyretic drugs may be used as an indication of severity of illness, the rationale being that those with milder illness will either show greater improvement in condition or a greater reduction in their fever than children with more serious illnesses. However, it is not clear if such changes in condition are a valid and reliable method of differentiating children with serious illness from those with less serious conditions.

2.5 Home-based antipyretic use

The GDG recommends studies on home-based antipyretic use and parental perception of distress caused by fever. **[new 2013]**

Why this is important

The current guideline recommends the use of antipyretics to relieve distress in children. However, the concept of 'distress' and how parents act on it is little understood. Therefore, the GDG recommends that a study is undertaken to investigate 'distress' in children with feverish illness. The study should include parents' and carers' interpretation of this, including: help-seeking behaviour, what triggers presentation to a healthcare professional, what triggers the decision to give a dose of antipyretic, and what triggers the decision to change from one antipyretic to another.

3 Other information

3.1 Scope and how this guideline was developed

NICE guidelines are developed in accordance with a scope that defines what the guideline will and will not cover.

How this guideline was developed

NICE commissioned the National Collaborating Centre for Women's and Children's Health to develop this guideline. The Centre established a Guideline Development Group (see section 4), which reviewed the evidence and developed the recommendations.

The methods and processes for developing NICE clinical guidelines are described in The guidelines manual.

3.2 Related NICE guidance

Further information is available on the NICE website.

General

- Medicines adherence. NICE clinical guidance 76 (2011).
- Reducing differences in the uptake of immunisations Public health guidance 21 (2009).

Condition-specific

- Bacterial meningitis and meningococcal septicaemia. NICE clinical guideline 102 (2010).
- Diarrhoea and vomiting in children under 5. NICE clinical guideline 84 (2009).
- Urinary tract infection in children, NICE clinical guideline 54 (2007).

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About this guideline

NICE clinical guidelines are recommendations about the treatment and care of people with specific diseases and conditions in the NHS in England and Wales.

NICE guidelines are developed in accordance with a scope that defines what the guideline will and will not cover.

This guideline was developed by the National Collaborating Centre for Women's and Children's Health, which is based at the Royal College of Obstetricians and Gynaecologists. The Collaborating Centre worked with a Guideline Development Group, comprising healthcare professionals (including consultants, GPs and nurses), patients and carers, and technical staff, which reviewed the evidence and drafted the recommendations. The recommendations were finalised after public consultation.

The methods and processes for developing NICE clinical guidelines are described in The guidelines manual.

Update information

This guideline updates and replaces NICE clinical guideline 47 (published May 2007).

Recommendations are marked as **[2007]**, **[2007, amended 2013]**, **[2013]** or **[new 2013]**:

- **[2007]** indicates that the evidence has not been updated and reviewed since 2007
- **[2007, amended 2013]** indicates that the evidence has not been updated and reviewed since 2004, but a small amendment has been made to the recommendation
- **[2013]** indicates that the evidence has been reviewed but no changes have been made to the recommendation
- **[new 2013]** indicates that the evidence has been reviewed and the recommendation has been updated or added.

Strength of recommendations

Some recommendations can be made with more certainty than others. The Guideline Development Group makes a recommendation based on the trade-off between the benefits and harms of an

intervention, taking into account the quality of the underpinning evidence. For some interventions, the Guideline Development Group is confident that, given the information it has looked at, most patients would choose the intervention. The wording used in the recommendations in this guideline denotes the certainty with which the recommendation is made (the strength of the recommendation).

For all recommendations, NICE expects that there is discussion with the patient about the risks and benefits of the interventions, and their values and preferences. This discussion aims to help them to reach a fully informed decision (see also Patient-centred care).

Interventions that must (or must not) be used

We usually use 'must' or 'must not' only if there is a legal duty to apply the recommendation. Occasionally we use 'must' (or 'must not') if the consequences of not following the recommendation could be extremely serious or potentially life threatening.

Interventions that should (or should not) be used – a 'strong' recommendation

We use 'offer' (and similar words such as 'refer' or 'advise') when we are confident that, for the vast majority of patients, an intervention will do more good than harm, and be cost effective. We use similar forms of words (for example, 'Do not offer…') when we are confident that an intervention will not be of benefit for most patients.

Interventions that could be used

We use 'consider' when we are confident that an intervention will do more good than harm for most patients, and be cost effective, but other options may be similarly cost effective. The choice of intervention, and whether or not to have the intervention at all, is more likely to depend on the patient's values and preferences than for a strong recommendation, and so the healthcare professional should spend more time considering and discussing the options with the patient.

Recommendation wording in guideline updates

NICE began using this approach to denote the strength of recommendations in guidelines that started development after publication of the 2009 version of 'The guidelines manual' (January 2009). This does not apply to any recommendations ending **[2007]** (see 'Update information' above for details about how recommendations are labelled). In particular, for recommendations labelled **[2007]** the word 'consider' may not necessarily be used to denote the strength of the recommendation.

Other versions of this guideline

The full guideline, 'Feverish illness in children: assessment and initial management in children younger than 5 years', contains details of the methods and evidence used to develop the guideline. It is published by the National Collaborating Centre for Women's and Children's Health.

The recommendations from this guideline have been incorporated into a NICE Pathway.

We have produced information for the public about this guideline.

Implementation

Implementation tools and resources to help you put the guideline into practice are also available.

Your responsibility

This guidance represents the view of NICE, which was arrived at after careful consideration of the evidence available. Healthcare professionals are expected to take it fully into account when exercising their clinical judgement. However, the guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer, and informed by the summaries of product characteristics of any drugs.

Implementation of this guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity and foster good relations. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties.

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