

## Fever (Pyrexia)

### Definition / Supporting Information

Fever is defined as an increase in body temperature. There is no single value that defines fever, as this will depend on the method of assessment. In children under 5 years of age, temperature should be measured by electronic or chemical dot thermometer in the axilla, or by infra-red tympanic thermometer, where a value > 37.2 degrees centigrade would constitute an increase in body temperature.

See Fever in under 5s: assessment and initial management [[NICE clinical guideline CG160](#)].

### Essential History

#### Ask about:

- Duration / frequency and height of the fever
- How temperatures are being measured
- History of any recurrent infections, such as:
  - Urinary tract infections
  - Sore throat
  - Otitis media
- Rash
- Exposure to illness in family or community
- History of recent immunisations (see PHE Green Book Chapter 11)
- History of foreign travel

### 'Red Flag' Symptoms and Signs

Evaluation should progress only after the ABCs (airway, breathing, and circulation) of resuscitation have been addressed.

#### Ask about:

- Risk factors for serious illness:
  - Age < 3 months and temperature  $\geq 38^{\circ}\text{C}$  or age 3–6 months and temperature  $\geq 39^{\circ}\text{C}$
  - Does not wake or if roused does not stay awake
  - Weak, high-pitched, or continuous cry
  - Fever > 5 days
  - Rigors

### Look for:

- Any immediately life-threatening features, including:
  - Compromise of the airway, breathing, or circulation (see Airways Obstruction)
  - Decreased level of consciousness (see Altered Conscious Level)
- Evidence of serious illness (see Traffic light system for identifying risk of serious illness [[NICE clinical guideline CG160, section 1.2.4, Table 1](#)] (note that some of the amber features in the guidance are listed as 'red flag' here))
  - Pale / mottled / ashen / blue skin, lips, or tongue
  - No response to social cues
  - Grunting
  - Respiratory rate > 60 breaths per minute
  - Moderate or severe chest in-drawing
  - Tachycardia
  - Prolonged capillary refill  $\geq 3$  seconds
  - Reduced skin turgor
  - Bulging fontanelle
  - Non-blanching rash
  - Neck stiffness
  - Status epilepticus
  - Focal neurological signs
  - Focal seizures
- Localised bone tenderness (osteomyelitis)
- Restricted range of movement in a warm joint (arthritis)
- Cardiac murmurs (infective endocarditis)

### Differential Diagnosis

For the symptoms and signs suggestive of these specific diseases (in conjunction with fever), see Summary table for symptoms and signs suggestive of specific diseases [[NICE clinical guideline CG160, section 1.2.4, Table 2](#)]

- [Bacterial meningitis](#) / meningococcal disease (see Meningitis (bacterial) and meningococcal septicaemia in under 16s [[NICE clinical guideline CG102](#)] and PHE Green Book Chapter 22 and Chapter 25)
- Herpes simplex encephalitis
- Pneumonia
- Urinary tract infection
- Septic arthritis
- Kawasaki's disease
- Other bacterial infections
  - Osteomyelitis

- Endocarditis
- Otitis media
- Pharyngitis
- Sinusitis
- Conjunctivitis
- Typhoid
- Other viral infections
  - Enterovirus
  - Influenza virus (see PHE Green Book Chapter 19)
  - Parainfluenza virus
  - Respiratory syncytial virus (see PHE Green Book Chapter 27a)
  - Adenovirus
  - Rhinovirus
  - Rotavirus (see PHE Green Book Chapter 27b)
  - Rubella
  - Roseola
  - Chickenpox
  - Hepatitis
  - HIV
- Other infections
  - Malaria
- Autoimmune disease
- Neoplastic disease (see Suspected Cancer [[NICE guideline NG12](#)])
  - Lymphoma
  - Leukaemia
- Metabolic disease
  - For example, hyperthyroidism
- Chronic inflammatory disease
- Haematological disease
  - Sickle cell disease
  - Transfusion reaction
- Drug fever and immunisation reaction
- [Poisoning](#)
  - Aspirin
  - Atropine sulfate
- Central nervous system abnormalities
- Febrile seizure (see Febrile seizure [[NICE clinical knowledge summary](#)])
- Hyperthermia
  - Dehydration
  - Excessive muscle activity

- Heat exposure
- Factitious fever (pulse does not correlate with fever; rectal temperature does not corroborate axillary temperature)

## Investigations

Evaluation should progress only after the ABCs (airway, breathing, and circulation) of resuscitation have been addressed.

To be undertaken by non-specialist practitioners (eg, General Practitioner (GP) Team):

- Test urine in children with fever as recommended in Urinary tract infection in under 16s: diagnosis and management [[NICE clinical guideline CG54](#)]

To be undertaken by specialist practitioners (eg, Paediatric / Paediatric Emergency Department Team(s)):

See Management by the paediatric specialist [[NICE clinical guideline CG160, section 1.5](#)]

- In infants younger than 3 months with fever:
  - Full blood count
  - Blood culture
  - C-reactive protein
  - Serum electrolytes and glucose
  - Urine testing for urinary tract infection
  - Chest X-ray only if respiratory signs are present
  - Stool culture, if diarrhoea is present
  - Lumbar puncture if:
    - Under 1 month
    - Appears unwell
    - White blood cell count (WBC)  $< 5 \times 10^9/L$  or  $> 15 \times 10^9/L$
    - Not contraindicated
- In infants older than 3 months with fever and one or more 'red flag' symptoms:
  - Full blood count
  - Blood culture
  - C-reactive protein
  - Urine testing for urinary tract infection
  - As guided by the clinical assessment:
    - Lumbar puncture
    - Chest X-ray irrespective of body temperature and WBC
    - Serum electrolytes, glucose, and blood gas

- Test urine for urinary tract infection if no apparent source of fever (see Urinary tract infection in under 16s: diagnosis and management [NICE clinical guidance CG54, section 1.1])
  - Infants and children presenting with unexplained fever of 38°C or higher should have a urine sample tested by 24 hours at the latest.

## Treatment Approach

Treatment should progress only after the ABCs (airway, breathing, and circulation) of resuscitation have been addressed.

See also Fever in under 5s: assessment and initial management [NICE clinical guideline 160, section 1.5.6–1.6]

To be undertaken by non-specialist practitioners (eg, GP / Non-Paediatric Emergency Department Team(s)) or specialist practitioners (eg, Paediatric / Paediatric Emergency Department Team(s)):

- Give parenteral antibiotics to children with suspected meningococcal disease at the earliest opportunity, either in primary or secondary care (either benzylpenicillin sodium or a third-generation cephalosporin such as cefotaxime or ceftriaxone).
  - Do not delay urgent transfer to hospital to give the parenteral antibiotics.
- Treat confirmed or suspected urinary tract infection (see Urinary tract infection in under 16s: diagnosis and management [NICE clinical guideline CG54, section 1.2])
- Treat confirmed streptococcal infection with appropriate antibiotic
- Consider using either paracetamol or ibuprofen in children with fever who appear distressed.
  - If no risk factors for serious illness

To be undertaken by specialist practitioners (eg, Paediatric / Paediatric Emergency Department Team(s)):

- 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 0.9% sodium chloride and given further fluid boluses as necessary.
- Give immediate parenteral antibiotics to children with fever presenting to specialist paediatric care or an emergency department if they are:
  - Shocked, **or**
  - Unroutable, **or**
  - Showing signs of meningococcal disease
- 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 Meningitis (bacterial) and meningococcal septicaemia in under 16s [NICE clinical guideline CG102]).

- When parenteral antibiotics are indicated, a third-generation cephalosporin (eg, cefotaxime or ceftriaxone) should be given, until culture results are available.
  - For children younger than 3 months, an antibiotic active against listeria (eg, ampicillin or amoxicillin) should also be given.
- Give intravenous aciclovir to children with fever and symptoms and signs suggestive of herpes simplex encephalitis.
- Give oxygen to children with fever who have signs of shock or oxygen saturation (SpO<sub>2</sub>) < 92% when breathing air.
  - Treatment with oxygen should also be considered for children with an SpO<sub>2</sub> > 92% as clinically indicated.
- In children aged 3 months or older with fever without an 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.

## When to Refer

Refer (arrange emergency transfer) to specialist practitioners (eg, Paediatric / Paediatric Emergency Department Team(s)) if:

- Any 'red flag' symptoms

Consider urgent referral to specialist practitioners (eg, Paediatric / Paediatric Emergency Department Team(s)) if:

- Concern about 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
- Parent or carer's concern for the child's current illness has caused them to seek healthcare advice repeatedly
- Family has experienced a previous serious illness or death due to feverish illness which has increased their anxiety levels
- A feverish illness has no obvious cause, but the child remains ill longer than expected for a self-limiting illness.

Escalate care to Paediatric Intensive Care Team if:

- Shock unresponsive to two intravenous fluid boluses
- Unroutable or showing signs of meningococcal disease

## 'Safety Netting' Advice

- Provide parents / carers with verbal and / or written information on warning symptoms and how further healthcare can be accessed (see Fever in under 5s:

assessment and initial management [[NICE clinical guideline CG160, section 1.7.2](#)] and [[NICE clinical guideline CG160, resources](#)])

- 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
- Consider:
  - 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

## Patient / Carer Information

***\*Please note: whilst these resources have been developed to a high standard they may not be specific to children.***

- [How to take your baby's temperature](#) (Web page), the NHS website
- [Fever in children](#) (Web page), the NHS website
- [Fever in under 5s: assessment and initial management](#) (Web page), NICE clinical guideline CG160, National Institute for Health and Care Excellence
- [Fever / high temperature in children](#) (Web page), Patient
- [Glandular fever](#) (Web page), the NHS website
- [Medicines for babies and toddlers](#) (Web page), the NHS website

## Resources

### National Clinical Guidance

[Fever in under 5s: assessment and initial management](#) (Web page), NICE clinical guideline CG160, National Institute for Health and Care Excellence.

[Fever in under 5s](#) (Web page), NICE quality standard QS64, National Institute for Health and Care Excellence.

[Traffic light system for identifying risk of serious illness](#) (Web page), NICE clinical guideline CG160, National Institute for Health and Care Excellence.

[Meningitis \(bacterial\) and meningococcal septicaemia in under 16s: recognition, diagnosis and management](#) (Web page), NICE clinical guideline CG102, National Institute for Health and Care Excellence.

[Urinary tract infection in under 16s: diagnosis and management](#) (Web page), NICE clinical guideline CG54, National Institute for Health and Care Excellence.

[Suspected cancer: recognition and referral](#) (Web page), NICE clinical guidance NG12, National Institute for Health and Care Excellence.

## Medical Decision Support

[The UK immunisation schedule](#) (Web page), Public Health England's Green Book

[Rotavirus](#) (Web page), Public Health England's Green Book

[Respiratory syncytial virus](#) (Web page), Public Health England's Green Book

[Influenza](#) (Web page), Public Health England's Green Book

[Meningococcal](#) (Web page), Public Health England's Green Book

[Pneumococcal](#) (Web page), Public Health England's Green Book

## Suggested Resources

***\*Please note: these resources include links to external websites. These resources may not have national accreditation and therefore PCO UK cannot guarantee the accuracy of the content.***

[Feverish children - management](#) (Web page), NICE clinical knowledge summary, National Institute for Health and Care Excellence.

Advanced Life Support Group. Advanced paediatric life support: the practical approach. 5<sup>th</sup> ed. Wiley-Blackwell; 2004.

[Fever](#) (Web page – requires log-in), Spotting the Sick Child.

[Time to 'Think Kawasaki Disease'](#) (Webinar), Royal College of Paediatrics and Child Health

## Acknowledgements

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**The Fever (Pyrexia) KPP has now been endorsed by the National Institute for Health and Care Excellence (NICE). The endorsement recognises that the KPP supports implementation of the recommendations in the NICE [Fever in under 5s](#) clinical guideline (CG160).**

#### **Update information**

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