NICE National Institute for Health and Care Excellence

NICE guideline

Suspected sepsis in under 16s: recognition, diagnosis and early management

NICE guideline
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Your responsibility

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the Yellow Card Scheme.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Contents

This guideline partially replaces NG51.

This guideline should be read in conjunction with NG143, NG195, NG240 and NG224.

Overview

This guideline covers the recognition, diagnosis and early management of suspected sepsis in under 16s (not pregnant or recently pregnant). It includes recommendations on recognition and early assessment, initial treatment, escalating care, finding and controlling the source of infection, early monitoring, information and support, and training and education.

NICE has also produced guidelines on:

- suspected sepsis in pregnant or recently pregnant people and
- suspected sepsis in people aged 16 or over.

See the visual summaries on evaluating and managing suspected sepsis in under 16s.

Who should use this guideline?

- Healthcare professionals working in primary, secondary and tertiary care
- People under 16 with suspected sepsis who are not and have not recently been pregnant, their families and carers

Could this be sepsis?

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

1.1 When to suspect sepsis

1.1.1 Think 'could this be sepsis?' if a person presents with symptoms or signs that indicate possible infection. **[2016]**

1.1.2 Take into account that people with sepsis may have non-specific, non-localised presentations, for example feeling very unwell, and may not have a high temperature. **[2016]**

1.1.3 Pay particular attention to concerns expressed by the person and their family or carers, for example changes from usual behaviour. **[2016]**

1.1.4 Assess people who might have sepsis with extra care if there is difficulty in taking their history, for example people with English as a second language or people with communication challenges (such as those associated with learning disabilities or autism). **[2016, amended 2024]**

1.1.5 Assess people with any suspected infection to identify:

- possible source of infection (see the recommendations on finding and controlling the source of infection)
- factors that increase risk of sepsis (see people who are most vulnerable to

sepsis)

- any indications of clinical concern, such as new-onset abnormalities of behaviour, circulation or respiration. **[2016]**

1.1.6 During a remote assessment, when deciding whether to offer a face-to-face assessment and, if so, on the urgency of it, identify:

- factors that increase risk of sepsis (see people who are most vulnerable to sepsis) and
- indications of clinical concern such as new-onset abnormalities of behaviour, circulation or respiration. **[2016]**

1.1.7 Use a structured set of observations to assess people in a face-to-face setting to stratify risk if sepsis is suspected. (See the recommendations on face-to-face assessment and grading risk in people with suspected sepsis). **[2016]**

1.1.8 Consider using an early warning score to assess people under 16 with suspected sepsis, in any setting. **[2016, amended 2024]**

1.1.9 Suspect neutropenic sepsis in people who become unwell and:

- are having or have had systemic anticancer treatment within the last 30 days
- are receiving or have received immunosuppressant treatment for reasons unrelated to cancer. Use clinical judgement (based on the person's specific condition, medical history, or both, and on the treatment they received) to determine whether any past treatment may still be likely to cause neutropenia. **[2016, amended 2024]**

1.1.10 Refer people with suspected neutropenic sepsis immediately for assessment in secondary or tertiary care. [This recommendation is from NICE's guideline on neutropenic sepsis in people with cancer.] **[2012]**

1.1.11 Treat people with neutropenic sepsis, regardless of cause, in line with NICE's guideline on neutropenic sepsis in people with cancer. **[2016, amended 2024]**

1.2 People who are most vulnerable to sepsis

1.2.1 Take into account the factors that may increase the risk of developing sepsis or sepsis not being identified promptly. These include:

- age: being under 1 year
- ethnicity: being from an ethnic minority background
- clinical features such as:
  - frailty (that is, living with chronic illnesses, disabilities or complex care needs)
  - multimorbidities or severe chronic conditions
  - impaired immune function because of illness or medical treatment
  - surgery or invasive procedures in the past 6 weeks
  - indwelling catheters
  - repeated antibiotic use
  - breach of skin integrity
- communication challenges, such as with people:
  - with learning disabilities
  - with cognitive impairment
  - who need an interpreter
- drugs or alcohol misuse
- social, economic or environmental factors such as:
  - homelessness
  - living in deprived areas.

See also recommendation 1.1.9 on when to suspect neutropenic sepsis.

[2016]

For specific risk in pregnant or recently pregnant young people, see the NICE guideline on suspected sepsis in pregnant or recently pregnant people.

1.2.2 Take into account the following risk factors for early-onset neonatal infection:

- Major risk factor:
  - Suspected or confirmed infection in another baby in the case of a multiple pregnancy.
- Other risk factors:
  - Invasive group B streptococcal infection in a previous baby or maternal group B streptococcal colonisation, bacteriuria or infection in the current pregnancy.
  - Pre-term birth following spontaneous labour before 37 weeks' gestation.
  - Confirmed rupture of membranes for more than 18 hours before a pre-term birth.
  - Confirmed prelabour rupture of membranes at term for more than 24 hours before the onset of labour.
  - Maternal intrapartum fever higher than 38°C if there is suspected or confirmed bacterial infection.
  - Clinical diagnosis of chorioamnionitis.

[This recommendation is from NICE's guideline on neonatal infection.] **[2021]**

Face to face assessment

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1.3 Initial assessment and examination

1.3.1 Assess temperature, heart rate, respiratory rate, blood pressure, level of consciousness and oxygen saturation in people aged 12 to 15 with suspected sepsis. **[2016]**

1.3.2 Assess temperature, heart rate, respiratory rate, level of consciousness, oxygen saturation and capillary refill time in children under 12 with suspected sepsis. **[2016]**

1.3.3 Measure blood pressure of children under 5 if heart rate or capillary refill time is abnormal and equipment is available, including a correctly-sized blood pressure cuff. In community settings, only do this if taking a measurement does not cause a delay in assessment or treatment. **[2016]**

1.3.4 Measure blood pressure of children aged 5 to 11 who might have sepsis if equipment is available, including a correctly-sized cuff. In community settings, only do this if taking a measurement does not cause a delay in assessment or treatment. **[2016]**

1.3.5 In community settings, measure oxygen saturation if equipment is available and taking a measurement does not cause a delay in assessment or treatment. **[2016]**

1.3.6 Examine people with suspected sepsis for:

- mottled or ashen appearance
- cyanosis of the skin, lips or tongue
- non-blanching petechial or purpuric rash
- any breach of skin integrity (for example, cuts, burns or skin infections)
- other rash indicating potential infection.

For signs and symptoms of meningococcal disease, see the NICE guideline on bacterial meningitis and meningococcal disease. **[2016, amended 2024]**

1.3.7 Ask the person or their family or carers how often the person urinated in the past 18 hours. **[2016]**

1.3.8 Ask the person with suspected sepsis and their family or carers about any recent fever or rigors. **[2016]**

1.3.9 Ask the person or their family or carers if they have recently presented (for example to their GP or to hospital) with symptoms or signs that could indicate sepsis. **[2024]**

For a short explanation of why the committee made the 2024 recommendation and how it might affect practice, see the rationale and impact section on initial assessment and examination.

Full details of the evidence and the committee's discussion are in evidence review C: early management of suspected sepsis (except antibiotic therapy) in the NEWS2 population, in acute hospital settings.

1.3.10 As part of the initial assessment, carry out a thorough clinical examination to look for sources of infection, including sources that might need drainage or other interventions. Follow the recommendations on finding and controlling the source of infection. **[2016, amended 2024]**

1.4 Interpreting findings

Temperature in suspected sepsis

1.4.1 Do not rely on fever or hypothermia alone to rule sepsis either in or out. **[2016]**

1.4.2 Take into account that some groups of people under 16 with sepsis may not develop a raised temperature. These include:

- people living with chronic illnesses, disabilities, or complex care needs
- people having treatment for cancer
- people severely ill with sepsis
- babies or children
- people with a spinal cord injury **[2016, amended 2024]**

1.4.3 Take into account that a rise in temperature can be a physiological response, for example after surgery or trauma. **[2016]**

Heart rate in suspected sepsis

1.4.4 Interpret the heart rate of a person under 16 with suspected sepsis in context, taking into account that:

- baseline heart rate may be lower in young people who are fit
- heart rate response may be affected by medicines such as beta-blockers. **[2016]**

Blood pressure in suspected sepsis

1.4.5 Interpret blood pressure in the context of a person's previous blood pressure, if known. Be aware that the presence of normal blood pressure does not exclude sepsis in people under 16. **[2016]**

Confusion, mental state and cognitive state in suspected sepsis

1.4.6 Interpret a person's mental state in the context of their normal function and treat changes as being significant. **[2016]**

1.4.7 Be aware that changes in cognitive function may be subtle and assessment should include history from the person and their family or carers. **[2016]**

1.4.8 Take into account that changes in cognitive function may present as changes in behaviour or irritability in under 16s, especially those with a learning disability. **[2016, amended 2024]**

Oxygen saturation in suspected sepsis

1.4.9 Take into account that if peripheral oxygen saturation is difficult to measure in a person with suspected sepsis, this may indicate poor peripheral circulation because of shock. **[2016]**

Be aware that some pulse oximeters can underestimate or overestimate oxygen saturation levels, especially if the saturation level is borderline. Overestimation has been reported in people with dark skin. See also the NHS England Patient Safety Alert on the risk of harm from inappropriate placement of pulse oximeter probes.

Evaluating risk level

NICE has produced visual summaries on evaluating risk of severe illness of death from sepsis in:

- children under 5
- children ages 5 to 11
- young people aged 12 to 15.

1.5 Grading risk

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1.5.1 In people under 16, grade risk of severe illness or death from sepsis using the person's:

- history
- physical examination results and
- criteria based on age (see table 1: criteria for stratification of risk from sepsis in under 5s, table 2: criteria for stratification of risk from sepsis in children aged 5 to 11 and table 3: criteria for stratification of risk from sepsis in young people aged 12 to 15). **[2016]**

1.5.2 Recognise that people under 16 with suspected sepsis are at high risk of severe illness or death from sepsis if they meet any of the high risk criteria:

- For children under 5, see high risk criteria in table 1.
- For children aged 5 to 11, see high risk criteria in table 2.
- For young people aged 12 to 15, see high risk criteria in table 3. **[2016]**

1.5.3 Recognise that people under 16 with suspected sepsis are at moderate to high risk of severe illness or death from sepsis if they meet any of the moderate to high risk criteria:

- For children under 5, see moderate to high risk criteria in table 1.
- For children aged 5 to 11, see moderate to high risk criteria in table 2.
- For young people aged 12 to 15, see moderate to high risk criteria in table 3. **[2016]**

1.5.4 If people under 16 with suspected sepsis do not meet any high or moderate to high risk criteria, see them as being at low risk of severe illness or death from sepsis. **[2016]**

Criteria for stratification of risk from sepsis in under 5s

Table 1: Criteria for stratification of risk of severe illness or death from sepsis in children under 5

Category	Age	High risk criteria	Moderate to high risk criteria
Behaviour	Any	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	Not responding normally to social cues No smile Wakes only with prolonged stimulation Decreased activity Parent or carer concern that child is behaving differently from usual

Category	Age	High risk criteria	Moderate to high risk criteria
Respiratory	Any	Grunting Apnoea Oxygen saturation of less than 90% in air or increased oxygen requirement over baseline See recommendation 1.4.9 for safety warnings about the use of pulse oximeters	Oxygen saturation of less than 92% in air or increased oxygen requirement over baseline Nasal flaring See recommendation 1.4.9 for safety warnings about the use of pulse oximeters
Respiratory	Under 1 year	Raised respiratory rate: 60 breaths per minute or more	Raised respiratory rate: 50 to 59 breaths per minute
Respiratory	1 to 2 years	Raised respiratory rate: 50 breaths per minute or more	Raised respiratory rate: 40 to 49 breaths per minute
Respiratory	3 to 4 years	Raised respiratory rate: 40 breaths per minute or more	Raised respiratory rate: 35 to 39 breaths per minute
Circulation and hydration	Any	Bradycardia: heart rate less than 60 beats per minute	Capillary refill time of 3 seconds or more Reduced urine output For catheterised patients, passed less than 1 ml/kg of urine per hour
Circulation and hydration	Under 1 year	Rapid heart rate: 160 beats per minute or more	Rapid heart rate: 150 to 159 beats per minute
Circulation and hydration	1 to 2 years	Rapid heart rate: 150 beats per minute or more	Rapid heart rate: 140 to 149 beats per minute

Category	Age	High risk criteria	Moderate to high risk criteria
Circulation and hydration	3 to 4 years	Rapid heart rate: 140 beats per minute or more	Rapid heart rate: 130 to 139 beats per minute
Skin	Any	Mottled or ashen appearance Cyanosis of skin, lips or tongue Non-blanching petechial or purpuric rash For signs and symptoms of meningococcal disease, see the NICE guideline on bacterial meningitis and meningococcal disease.	Pallor of skin, lips or tongue
Temperature	Any	Less than 36ºC	-
Temperature	Under 3 months	38°C or more	-
Temperature	3 to 6 months	-	39°C or more
Other	Any	-	Leg pain Cold hands or feet

This table is also downloadable as a visual summary on evaluating risk of severe illness or death from sepsis in children under 5.

Criteria for stratification of risk from sepsis in children aged 5 to 11

Table 2: Criteria for stratification of risk of severe illness or death from sepsis in children aged 5 to 11 years

Category	Age	High risk criteria	Moderate to high risk criteria
Behaviour	Any	Objective evidence of altered behaviour or mental state Appears ill to a healthcare professional Does not wake or if roused does not stay awake	Not behaving normally Decreased activity Parent or carer concern that the child is behaving differently from usual
Respiratory	Any	Oxygen saturation of less than 90% in air or increased oxygen requirement over baseline See recommendation 1.4.9 for safety warnings about the use of pulse oximeters	Oxygen saturation of less than 92% in air or increased oxygen requirement over baseline See recommendation 1.4.9 for safety warnings about the use of pulse oximeters
Respiratory	Aged 5 years	Raised respiratory rate: 29 breaths per minute or more	Raised respiratory rate: 24 to 28 breaths per minute
Respiratory	Aged 6 to 7 years	Raised respiratory rate: 27 breaths per minute or more	Raised respiratory rate: 24 to 26 breaths per minute
Respiratory	Aged 8 to 11 years	Raised respiratory rate: 25 breaths per minute or more	Raised respiratory rate: 22 to 24 breaths per minute

Category	Age	High risk criteria	Moderate to high risk criteria
Circulation and hydration	Any	Heart rate less than 60 beats per minute	Capillary refill time of 3 seconds or more Reduced urine output For catheterised patients, passed less than 1 ml/kg of urine per hour
Circulation and hydration	Aged 5 years	Raised heart rate: 130 beats per minute or more	Raised heart rate: 120 to 129 beats per minute
Circulation and hydration	Aged 6 to 7 years	Raised heart rate: 120 beats per minute or more	Raised heart rate: 110 to 119 beats per minute
Circulation and hydration	Aged 8 to 11 years	Raised heart rate: 115 beats per minute or more	Raised heart rate: 105 to 114 beats per minute
Temperature	Any	-	Tympanic temperature less than 36°C
Skin	Any	Mottled or ashen appearance Cyanosis of skin, lips or tongue Non-blanching petechial or purpuric rash For signs and symptoms of meningococcal disease, see the NICE guideline on bacterial meningitis and meningococcal disease.	-
Other	Any	-	Leg pain Cold hands or feet

This table is also downloadable as a visual summary on evaluating risk of severe illness or death from sepsis in children aged 5 to 11.

Criteria for stratification of risk from sepsis in young people aged 12 to 15

Table 3: Criteria for stratification of risk of severe illness or death from sepsis in young people aged 12 to 15 in any setting

Category	High risk criteria	Moderate to high risk criteria
History	Objective evidence of new altered mental state	History from patient, friend or relative of new onset of altered behaviour or mental state History of acute deterioration of functional ability Impaired immune system (illness or drugs including oral steroids) Trauma, surgery or invasive procedures in the last 6 weeks
Respiratory	Raised respiratory rate: 25 breaths per minute or more New need for oxygen (40% FiO2 or more) to maintain saturation more than 92% (or more than 88% in known chronic hypercapnic respiratory failure) See recommendation 1.4.9 for safety warnings about the use of pulse oximeters	Raised respiratory rate: 21 to 24 breaths per minute
Blood pressure	Systolic blood pressure 90 mmHg or less or systolic blood pressure more than 40 mmHg below normal	Systolic blood pressure 91 to 100 mmHg

Category	High risk criteria	Moderate to high risk criteria
Circulation and hydration	Raised heart rate: more than 130 beats per minute Not passed urine in previous 18 hours. For catheterised patients, passed less than 0.5 ml/kg of urine per hour	Raised heart rate: 91 to 130 beats per minute (100 to 130 beats per minute in pregnancy) or new-onset arrhythmia Not passed urine in the past 12 to 18 hours For catheterised patients, passed 0.5 ml/kg to 1 ml/kg of urine per hour
Temperature	-	Tympanic temperature less than 36°C
Skin	Mottled or ashen appearance Cyanosis of skin, lips or tongue Non-blanching petechial or purpuric rash For signs and symptoms of meningococcal disease, see the NICE guideline on bacterial meningitis and meningococcal disease.	Signs of potential infection, including redness, swelling or discharge at surgical site or breakdown of wound

This table is also downloadable as a visual summary on evaluating risk of severe illness or death from sepsis in young people aged 12 to 15.

Managing suspected sepsis

1.6 Outside acute hospital settings

NICE has produced a visual summary on managing risk of severe illness or death outside acute hospital settings.

When to transfer immediately to an acute hospital setting

1.6.1 Refer people under 16 with suspected sepsis for emergency medical care if:

- they meet any high risk criteria (see tables 1 to 3 on criteria for stratification of risk from sepsis) or
- their immunity is impaired by drugs or illness and they meet any moderate to high risk criteria.

Use the most appropriate means of transport (usually 999 ambulance).

Emergency care requires facilities for resuscitation to be available and, depending on local services, may be emergency department, medical admissions unit, and paediatric ambulatory unit or paediatric medical admissions unit. **[2016]**

1.6.2 Pre-alert secondary care (through GP or ambulance service) when any high risk criteria are met in a person under 16 with suspected sepsis outside of an acute hospital, and transfer them immediately. **[2016]**

Managing the condition while awaiting transfer

1.6.3 In remote and rural locations where transfer time to emergency department is routinely more than 1 hour, ensure GPs have mechanisms in place to give antibiotics to people under 16 with high risk criteria in pre-hospital settings. For high risk criteria, see tables 1 to 3 on criteria for stratification of risk from sepsis.

[2016, amended 2024]

1.6.4 In remote and rural locations where combined transfer and handover times to emergency department are greater than 1 hour:

- ambulance services should consider whether they need to put mechanisms in place to be able to give antibiotics to people with high risk criteria if antibiotics have not been given before by a GP (see recommendation 1.5.2 on grading risk)
- paramedics who are thinking about giving antibiotics should follow local guidelines or seek advice from more senior colleagues, if needed. **[2016, amended 2024]**

  See also the recommendations on choice of antibiotic therapy for people with suspected sepsis.

If immediate transfer is not required

1.6.5 Assess people under 16 who are outside acute hospital settings with suspected sepsis and any moderate to high risk criteria to:

- make a definitive diagnosis of their condition
- decide whether their condition can be treated safely outside hospital.

  If a definitive diagnosis is not reached or the person's condition cannot be treated safely outside an acute hospital setting, refer them urgently for emergency care. **[2016]**

1.6.6 If a person under 16 with suspected sepsis does not meet any high risk or moderate to high risk criteria, provide them and their parents or carers with information about:

- symptoms to monitor and
- how to access medical care if they are concerned.

Also see information at discharge for people assessed for suspected sepsis, but not diagnosed with sepsis. **[2016]**

1.7 In acute hospital settings

NICE has produced a visual summary on managing risk of severe illness or death in acute hospital settings.

Initial investigations to find the source of infection

1.7.1 For people in hospital who have suspected infections:

- start looking for the source of infection (see the section on finding and controlling the source of infection)
- take microbiological and blood samples before giving an antimicrobial.

See the UK standards for microbiology investigations. **[2016, amended 2024]**

1 or more high risk criteria

Assessment, blood tests and antibiotics

1.7.2 For people under 16 who have suspected sepsis and meet 1 or more high risk criteria:

- arrange for the senior clinical decision maker to urgently assess the person's condition and think about alternative diagnoses to sepsis
- carry out a venous blood test, including for:
  - blood gas, including glucose and lactate measurement
  - blood culture
  - full blood count

  - C-reactive protein
  - urea and electrolytes
  - creatinine
  - liver function tests
  - a clotting screen

- give a broad-spectrum antimicrobial without delay (within 1 hour of identifying that they meet any high risk criteria), if antibiotics have not already been given for this episode of sepsis
- discuss with a consultant.

  Also see the recommendations on finding and controlling the source of infection and choice of antibiotic therapy. **[2016, amended 2024]**

1.7.3 Ensure urgent assessment mechanisms are in place to deliver antibiotics when any high risk criteria are met in a person under 16 in secondary care (within 1 hour of meeting a high risk criterion in an acute hospital setting). **[2016]**

1.7.4 Give parenteral antibiotics to children under 3 months as follows:

- children younger than 1 month with fever
- all children aged 1 to 3 months with fever who appear unwell
- children aged 1 to 3 months with white blood cell count less than 5×10^9/litre or greater than 15×10^9/litre.

  [This recommendation is from NICE's guideline on fever in under 5s.] **[2007, amended 2013]**

Intravenous fluids

1.7.5 For children under 12 with suspected sepsis, any high risk criteria and lactate over 4 mmol/litre:

- give intravenous fluid bolus without delay (within 1 hour of identifying that they meet any high risk criteria), in line with recommendations on intravenous fluids for people with suspected sepsis and
- refer to a critical care specialist or team for them to review the management of the person's condition, including their need for central venous access and initiation of inotropes or vasopressors.

  Referral may be a formal referral process or discussion with a specialist in intensive care or intensive care outreach team. **[2016]**

1.7.6 For young people aged 12 to 15 with suspected sepsis, any high risk criteria and **either** lactate over 4 mmol/litre **or** systolic blood pressure of 90 mmHg or less:

- give intravenous fluid bolus without delay (within 1 hour of identifying that they meet any high risk criteria), in line with recommendations on intravenous fluids for people with suspected sepsis and
- refer to a critical care specialist or team for them to review the management of the person's condition, including their need for central venous access and initiation of inotropes or vasopressors.

  Referral may be a formal referral process or discussion with a specialist in intensive care or intensive care outreach team. **[2016]**

1.7.7 For people under 16 with suspected sepsis, any high risk criteria and lactate between 2 and 4 mmol/litre, give intravenous fluid bolus without delay (within 1 hour of identifying that they meet any high risk criteria), in line with recommendations on intravenous fluids for people with suspected sepsis. **[2016]**

1.7.8 For people under 16 with suspected sepsis, any high risk criteria and lactate below 2 mmol/litre, consider giving an intravenous fluid bolus in line with recommendations on intravenous fluids for people with suspected sepsis. **[2016, amended 2024]**

Monitoring and escalation

1.7.9 Monitor people under 16 with suspected sepsis who meet any high risk criteria continuously, or a minimum of once every 30 minutes depending on setting. Use physiological track and trigger systems. **[2016]**

1.7.10 Monitor the mental state of people under 16 with suspected sepsis. Consider using the Glasgow Coma Scale (GCS) or AVPU ('alert, voice, pain, unresponsive') scale. **[2016]**

1.7.11 Alert a consultant to attend in person if a person under 16 with suspected sepsis and any high risk criteria does not respond within 1 hour of any intervention. **[2016, amended 2024]**

2 or more moderate to high risk criteria

Children under 12

1.7.12 For children under 12 with suspected sepsis and 2 or more moderate to high risk criteria:

- carry out a venous blood test, including for:
  - blood gas, including glucose and lactate measurement
  - blood culture
  - full blood count
  - C-reactive protein
  - urea and electrolytes
  - creatinine
  - liver function tests
  - a clotting screen

- arrange for a clinician to review the child's condition and venous lactate results within 1 hour of meeting 2 or more moderate to high risk criteria.

  A 'clinician' should be a medically qualified practitioner or equivalent who has antibiotic prescribing responsibilities. **[2016, amended 2024]**

1.7.13 For children under 12 with suspected sepsis who meet 2 or more moderate to high risk criteria and have lactate over 2 mmol/litre, treat their condition as if it met one or more high risk criteria. **[2016]**

1.7.14 For children under 12 with suspected sepsis who meet 2 or more moderate to high risk criteria, have lactate of 2 mmol/litre or lower, and in whom a definitive condition cannot be identified:

- repeat structured assessment at least hourly
- ensure a senior clinical decision maker reviews the child's condition and their need for antibiotics within 3 hours of meeting 2 or more moderate to high risk criteria. **[2016]**

Young people aged 12 to 15

1.7.15 For young people aged 12 to 15 with suspected sepsis and **either** 2 or more moderate to high risk criteria **or** systolic blood pressure 91 to 100 mmHg:

- carry out a venous blood test, including for:
  - blood gas, including glucose and lactate measurement
  - blood culture
  - full blood count
  - C-reactive protein
  - urea and electrolytes
  - creatinine

  - liver function tests
  - a clotting screen

- arrange for a clinician to review the person's condition and venous lactate results within 1 hour of meeting 2 or more moderate to high risk criteria.

  A 'clinician' should be a medically qualified practitioner or equivalent who has antibiotic prescribing responsibilities. **[2016, amended 2024]**

1.7.16 For young people aged 12 to 15 with suspected sepsis who meet 2 or more moderate to high risk criteria and have **either** lactate over 2 mmol/litre **or** evidence of acute kidney injury, treat their condition as if it met 1 or more high risk criteria. **[2016]**

For a definition of acute kidney injury, see NICE's guideline on acute kidney injury. **[2016]**

1.7.17 For young people aged 12 to 15 with suspected sepsis who meet 2 or more moderate to high risk criteria, have lactate of 2 mmol/litre or lower, have no evidence of acute kidney injury, and in whom a definitive condition cannot be identified:

- repeat structured assessment at least hourly
- ensure a senior clinical decision maker reviews the person's condition and need for antibiotics within 3 hours of meeting 2 or more moderate to high risk criteria. **[2016]**

1 moderate to high risk criterion

1.7.18 For people under 16 with suspected sepsis who meet only 1 moderate to high risk criterion:

- arrange for clinician review within 1 hour of meeting a moderate to high risk criterion and
- perform blood tests if indicated.

A 'clinician' should be a medically qualified practitioner or equivalent who has antibiotic prescribing responsibilities. **[2016, amended 2024]**

1.7.19 For children under 12 with suspected sepsis who meet only 1 moderate to high risk criterion and in whom a definitive condition cannot be identified:

- repeat structured assessment at least hourly
- ensure a senior clinical decision maker reviews the child's condition and need for antibiotics within 3 hours of meeting a moderate to high risk criterion. **[2016]**

1.7.20 For young people aged 12 to 15 with suspected sepsis who meet only 1 moderate to high risk criterion, have lactate of less than 2 mmol/litre and no evidence of acute kidney injury, and in whom a definitive condition cannot be identified:

- repeat structured assessment at least hourly
- ensure a senior clinical decision maker reviews the person's condition and need for antibiotics within 3 hours of meeting moderate to high risk criterion.

  For a definition of acute kidney injury, see NICE's guideline on acute kidney injury. **[2016]**

No high risk or moderate to high risk criteria

1.7.21 For people under 16 who have suspected sepsis and meet no high risk or moderate to high risk criteria:

- arrange for clinician review
- use clinical judgement to manage their condition.

  A 'clinician' should be a medically qualified practitioner or equivalent who has antibiotic prescribing responsibilities. **[2016]**

Discharge

1.7.22 Before discharging people who have been assessed for suspected sepsis, provide information to people under 16 and their parents or carers on:

- the management of their definitive condition (if identified) and
- warning signs for sepsis (see information at discharge for people assessed for suspected sepsis). **[2024]**

Antibiotic therapy, intravenous fluid and oxygen

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1.8 Choice of antibiotic therapy for people with suspected sepsis

All people under 16

1.8.1 When the source of infection is confirmed or microbiological results are available:

- review the choice of antibiotic(s) and
- change the antibiotic(s) according to results, using a narrower-spectrum antibiotic, if appropriate. **[2024]**

1.8.2 For all people with suspected sepsis and a clear source of infection, use existing local antimicrobial guidance. **[2016]**

1.8.3 For guidance on antibiotics for meningococcal disease, see the NICE guideline on bacterial meningitis and meningococcal disease:

- outside of hospital, see the section on transfer to hospital and antibiotics before arrival at hospital

- in hospital, see the section on antibiotics for meningococcal disease in hospital. **[2016, amended 2025]**

1.8.4 Follow the recommendations in NICE's guideline on antimicrobial stewardship: systems and processes for effective antimicrobial medicine use when prescribing and using antibiotics to treat people with suspected or confirmed sepsis. **[2016]**

Newborn babies under 28 days

1.8.5 Treat babies presenting in hospital with suspected sepsis in their first 72 hours after birth with intravenous benzylpenicillin and gentamicin. **[2016]**

1.8.6 Treat newborn babies under 28 days who present with community acquired sepsis with ceftriaxone 50 mg/kg once daily if they are:

- more than 40 weeks corrected gestational age
- not already receiving an intravenous calcium infusion at the time.

  If 40 weeks corrected gestational age or below or receiving an intravenous calcium infusion, use cefotaxime 50 mg/kg every 6 to 12 hours, depending on the age of the baby. **[2016]**

Under 3 months old

1.8.7 For babies younger than 3 months, give an additional antibiotic active against listeria (for example, ampicillin or amoxicillin). **[2016]**

Under 16s excluding newborn babies

1.8.8 For people under 16 (excluding newborn babies under 28 days) with suspected community acquired sepsis of any cause give ceftriaxone 80 mg/kg once a day with a maximum dose of 4 g daily at any age. For newborn babies under 28 days, see recommendation 1.8.6. **[2016, amended 2024]**

1.8.9 For people under 16 (excluding newborn babies under 28 days) with suspected sepsis who are already in hospital, or who are known to have previously been infected with or colonised with ceftriaxone-resistant bacteria, consult local guidelines for choice of antibiotic. For newborn babies under 28 days, see recommendation 1.8.5. **[2016, amended 2024]**

1.9 Intravenous fluids for people with suspected sepsis

Type of fluid

1.9.1 If newborn babies under 28 days need intravenous fluid resuscitation, use glucose-free crystalloids that contain sodium in the range 130 to 154 mmol/litre, with a bolus of 10 to 20 ml/kg over less than 10 minutes. [This recommendation is from NICE's guideline on intravenous fluid therapy in children and young people in hospital.] **[2017]**

1.9.2 If people under 16 need intravenous fluid resuscitation, use glucose-free crystalloids that contain sodium in the range 130 to 154 mmol/litre, with a bolus of 10 ml/kg over less than 10 minutes, up to a maximum bolus volume of 250 ml. Take into account pre-existing conditions (for example, cardiac disease or kidney disease), because smaller fluid volumes may be needed. [This recommendation is from NICE's guideline on intravenous fluid therapy in children and young people in hospital.] **[2017]**

Mode of delivery

1.9.3 Use a pump, or syringe if no pump is available, to deliver intravenous fluids for resuscitation to children under 12 with suspected sepsis who need fluids in bolus form. **[2016]**

1.9.4 If using a pump or flow controller to deliver intravenous fluids for resuscitation to young people aged 12 to 15 with suspected sepsis who need fluids in bolus form, ensure the device is capable of delivering fluid at the required rate. **[2016]**

When to deliver a second bolus

1.9.5 Reassess the person after completion of the intravenous fluid bolus, and if there is no improvement give a second bolus. If there is no improvement after a second bolus, alert a consultant to attend in person (in line with recommendation 1.7.11). **[2016, amended 2024]**

1.10 Using oxygen for people with suspected sepsis

1.10.1 Oxygen should be given to people under 16 with suspected sepsis who have signs of shock or oxygen saturation (SpO2) of less than 92% when breathing air. Treatment with oxygen should also be considered for under 16s with an SpO2 of greater than 92%, as clinically indicated. **[2016]**

Be aware that some pulse oximeters can underestimate or overestimate oxygen saturation levels, especially if the saturation level is borderline. Overestimation has been reported in people with dark skin. See also the NHS England Patient Safety Alert on the risk of harm from inappropriate placement of pulse oximeter probes.

Finding and controlling the source of infection

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

1.11 All people under 16

1.11.1 Tailor investigations of the sources of infection to the person's clinical history and to findings from examination. **[2016]**

1.11.2 Consider urine analysis and chest X-ray to identify the source of infection in all people with suspected sepsis. **[2016]**

1.11.3 Consider imaging of the abdomen and pelvis if no likely source of infection is identified after clinical examination and initial tests. **[2016]**

1.11.4 Involve the relevant surgical team early on if surgical or radiological intervention is suitable for the source of infection. The surgical team or interventional radiologist should:

- seek senior advice about the timing of intervention
- carry the intervention out as soon as possible, in line with the advice received. **[2024]**

For a short explanation of why the committee made the 2024 recommendation and how it might affect practice, see the rationale and impact section on finding and controlling the source of infection.

Full details of the evidence and the committee's discussion are in evidence review C: early management of suspected sepsis (except antibiotic therapy) in the NEWS2 population, in acute hospital settings.

1.12 Babies aged 3 months or less

1.12.1 Perform lumbar puncture in the following babies with suspected sepsis (unless contraindicated, see the section on lumbar puncture in the NICE guideline on bacterial meningitis and meningococcal disease):

- babies younger than 1 month
- all babies aged 1 to 3 months who appear unwell
- babies aged 1 to 3 months with a white blood cell count less than 5×10^9/litre or greater than 15×10^9/litre. **[2016]**

For guidance on contraindications to lumbar puncture, see the section on lumbar puncture in the NICE guideline on bacterial meningitis and meningococcal disease.

Information and support for all people with suspected sepsis

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

1.13 Communicating and sharing information

1.13.1 In discussions with people under 16 with suspected sepsis or their family or carers, and when sharing information with them:

- follow the recommendations in NICE's guideline on babies, children and young people's experience of healthcare
- ensure that the information given supports shared decision making
- tailor the timing, content and delivery of information to the person's needs and preferences, paying particular attention to people with additional needs such as autism or learning disabilities, or people whose first language is not English. **[2024]**

1.14 People who have sepsis and their families and carers

1.14.1 Ensure a care team member is nominated to give information to families and carers, particularly in emergency situations such as in the emergency

department. This should include:

- an explanation that the person has sepsis, and what this means
- an explanation of any investigations and the management plan
- regular and timely updates on treatment, care and progress. **[2016]**

1.14.2 Ensure information is given without using medical jargon. Check regularly that people understand the information and explanations they are given. **[2016]**

1.14.3 Give people under 16 with sepsis and their family members and carers opportunities to ask questions about diagnosis, treatment options, prognosis and complications. Be willing to repeat any information as needed. **[2016]**

1.14.4 Give people under 16 with sepsis and their families and carers information about national charities and support groups that provide information about sepsis and the causes of sepsis. **[2016]**

1.15 Information at discharge for people assessed for suspected sepsis, but not diagnosed with sepsis

1.15.1 Give people under 16 and their families and carers who have been assessed for sepsis but have been discharged without a diagnosis of sepsis (and their family or carers, if appropriate) verbal and written information about:

- what sepsis is, and why it was suspected
- what tests and investigations have been done
- instructions about which symptoms to monitor
- when to get medical attention if their illness continues
- how to get medical attention if they need to seek help urgently. **[2016]**

1.15.2 Confirm that people understand the information they have been given, and what actions they should take to get help if they need it. **[2016]**

1.16 Information at discharge for people at increased risk of sepsis

1.16.1 Ensure people under 16 who are at increased risk of sepsis (for example after surgery), and their family and carers, are told before discharge about symptoms that should prompt them to get medical attention and how to get it. **[2016]**

See NICE's guideline on neutropenic sepsis for information for people with neutropenic sepsis.

1.17 Information at discharge for people who have had sepsis

1.17.1 Ensure people under 16 and their families and carers have been informed that they have had sepsis. **[2016]**

1.17.2 Ensure discharge notifications to GPs include the diagnosis of sepsis. **[2016]**

1.17.3 Give people under 16 who have had sepsis and their families and carers opportunities to discuss their concerns. These may include:

- why they developed sepsis
- whether they are likely to develop sepsis again
- if more investigations are necessary
- details of any community care needed, for example, related to peripherally inserted central venous catheters (PICC) lines or other intravenous catheters
- what they should expect during recovery
- arrangements for follow-up, including specific critical care follow up if relevant
- possible short-term and long-term problems. **[2016]**

1.17.4 Give people under 16 who have had sepsis and their families and carers information about national charities and support groups that provide information about sepsis and causes of sepsis. **[2016]**

1.17.5 Advise carers they have a legal right to have a carer's assessment of their needs, and give them information on how they can get this.

See NICE's guideline on bacterial meningitis and meningococcal disease for follow-up of people who have had meningococcal disease.

Training and education

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

1.18 Healthcare staff involved in assessing clinical condition

1.18.1 Ensure all healthcare staff and students involved in assessing people's clinical condition are given regular, appropriate training in identifying people who might have sepsis. This includes primary, community care and hospital staff including those working in care homes. **[2016]**

1.19 Healthcare professionals involved in triage or early management

1.19.1 Ensure all healthcare professionals involved in triage or early management are given regular appropriate training in identifying, assessing and managing suspected sepsis. This should include:

- risk stratification strategies
- local protocols for early treatments, including antibiotics and intravenous fluids
- criteria and pathways for escalation, in line with their health care setting.

[2016]

Terms used in this guideline

Critical care specialist or team

A paediatric intensivist (where available), an intensivist or intensive care outreach team, or a specialist in intensive care or paediatric intensive care.

Not responding to intravenous fluid resuscitation

Signs that the person is not responding to resuscitation include lack of improvement or worsening:

- tachycardia
- level of consciousness
- blood pressure
- respiratory rate
- blood lactate
- urine output
- peripheral perfusion
- blood gases.

Recently pregnant

Someone is considered to have recently been pregnant:

- in the 24 hours following a termination of pregnancy or miscarriage
- for 4 weeks after giving birth.

Clinical judgement is needed after miscarriage (particularly in the second trimester) or termination (particularly in the second or third trimester), because it is not clear how

quickly people return to pre-pregnancy levels in these situations.

Sepsis

Sepsis is a life-threatening organ dysfunction due to a dysregulated host response to infection.

Suspected sepsis

Suspected sepsis is used to indicate people who might have sepsis and require face-to-face assessment and consideration of urgent intervention.

Senior clinical decision maker

A 'senior clinical decision maker' for people under 16 is a paediatric or emergency care qualified doctor of grade ST4 or above or equivalent.

Recommendations for research

1 Epidemiological study on presentation and management of sepsis in England

What is the incidence, presentation and management of sepsis in the United Kingdom? **[2016]**

Why this is important

The lack of robust UK based epidemiological studies on the incidence and outcomes from sepsis have been clear throughout the guideline development process. A large epidemiological study to collect information about where sepsis is being treated, patient interventions and patient outcomes would provide population based statistics on epidemiology of sepsis which are necessary to support evaluation of interventions, planning of services and service redesign. The mortality and morbidity and service complexity associated with severe infection and sepsis, and the need to use broad-spectrum antimicrobials to treat sepsis, justifies the cost required to set up such a study.

2 Derivation of clinical decision rules in suspected sepsis

Is it possible to derive and validate a set of clinical decision rules or a predictive tool to rule out sepsis which can be applied to patients presenting to hospital with suspected sepsis? **[2016]**

Why this is important

In primary care and emergency departments people with suspected sepsis are often seen by relatively inexperienced doctors. Many of these people will be in low and medium risk groups but evidence is lacking as to who can be sent home safely and who needs intravenous or oral antibiotics. The consequences of getting the decision making wrong can be catastrophic and therefore many patients are potentially over-investigated and admitted inappropriately. Current guidance is dependent on use of individual variables

informed by low quality evidence.

Rationale and impact

These sections briefly explain why the committee made the updated recommendations and how they might affect practice.

People with neutropenia or immunosuppression

Recommendations 1.1.9 and 1.1.11

Why the committee made the recommendations

The committee carefully thought about care for people with neutropenia or immunosuppression, such as those on anticancer treatment and immunosuppressant therapies, because sepsis shares many of the same signs and symptoms as neutropenic sepsis. The committee agreed that people with suspected neutropenic sepsis are at very high risk and should be treated in line with NICE's guideline on neutropenic sepsis in people with cancer.

Return to recommendations

Initial assessment and examination

Recommendation 1.3.9

Why the committee made the recommendation

The committee agreed that the initial assessment is an important opportunity to identify people who are most at risk of sepsis. They noted that sepsis is hard to recognise (particularly in the initial stages), because the signs and symptoms are not specific. So when people who are unwell present multiple times to a GP or hospital with non-specific signs and symptoms, they may not initially be identified as at risk of sepsis. However, the committee agreed that this group is more likely to have sepsis, and they highlighted the need to ask people if they have presented before.

How the recommendation might affect practice

Asking people about multiple presentations can be done as part of the existing initial assessment, so should not require additional resources to implement. This information could allow sepsis to be diagnosed and treatment started earlier. This could reduce costs, because fewer critical care interventions would be needed at a later point.

Return to recommendation

Discharge

Recommendation 1.7.22

Why the committee made the recommendation

By consensus, the committee removed recommendations on discharge for people at moderate and low risk of severe illness or death from sepsis. The committee did not think that the initial management period was the right time to consider discharge for people at these risk levels. The section of the 2016 recommendations on providing information and safety netting was retained, as this is applicable to everyone with suspected sepsis when they are eventually ready for discharge.

How the recommendation might affect practice

This change to the recommendations is not expected to have a significant impact on practice, because safety netting information should already be provided to people who have had suspected sepsis.

Return to recommendation

Finding and controlling the source of infection

Recommendation 1.11.4

Why the committee made the recommendations

The 2016 recommendation on involving surgical teams only covered intra-abdominal and

pelvic infections. Infections at other sites can be treated surgically or radiologically, and the committee expanded the recommendation by consensus to address this.

The committee discussed the timing of interventions and agreed that this would vary depending on:

- the patient
- where the source of infection was
- if the intervention would be surgical or radiological
- if an interventional radiologist was available.

Because of this, the committee could not recommend a specific timeframe for interventions. However, they agreed that interventions should be carried out as soon as possible.

How the recommendations might affect practice

Prompt source control could mean fewer critical care interventions are needed at a later point, which would reduce costs.

Return to recommendation

Finding more information and committee details

To find NICE guidance on related topics, including guidance in development, see the NICE topic pages on sepsis and antimicrobial stewardship.

For full details of the evidence and the guideline committee's discussions, see the evidence reviews. You can also find information about how the guideline was developed, including details of the committee.

NICE has produced tools and resources to help you put this guideline into practice. For general help and advice on putting our guidelines into practice, see resources to help you put NICE guidance into practice.

Update information

January 2026: We have amended the recommendations to refer to 'learning disabilities' rather than 'learning difficulties'.

November 2025: We have split the original sepsis guideline, that covered all age groups, into 3 guidelines (including this one). See also NICE's guidelines on suspected sepsis in over 16s: recognition, assessment and early management and suspected sepsis in pregnant or recently pregnant people: recognition, diagnosis and early management.

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