

1 **NATIONAL INSTITUTE FOR HEALTH AND CARE**
2 **EXCELLENCE**

3 **Guideline**

4 **Suspected sepsis in people aged 16 or over**
5 **who are not and have not recently been**
6 **pregnant**

7 **Draft for consultation, March 2023**

This guideline covers the recognition, diagnosis and early management of sepsis for all populations. The guideline committee identified that the key issues to be included were: recognition and early assessment, diagnostic and prognostic value of blood markers for sepsis, initial treatment, escalating care, identifying the source of infection, early monitoring, information and support for patients and carers, and training and education.

This guideline will update NICE guideline NG51 (published July 2016)

Who is it for?

- People with sepsis, their families and carers
- Healthcare professionals working in primary, secondary and tertiary care

What does it include?

- the recommendations
- recommendations for research
- rationale and impact sections that explain why the committee made the 2023 recommendations and how they might affect practice
- the guideline context.

Information about how the guideline was developed is on the [guideline's webpage](#). This includes the evidence reviews, the scope, details of the committee and any declarations of interest.

New and updated recommendations

We have reviewed the evidence on suspected sepsis in people aged 16 or over who are not and have not recently been pregnant. You are invited to comment on the new and updated recommendations. These are marked as **[2023]**.

You are also invited to comment on recommendations that we propose to delete from the 2016 guideline. See [changes made to NG51](#) for a list.

The drivers for this update are the endorsement by NHS England of NEWS2 for risk stratification in people aged 16 or over who are not and have not recently been pregnant in acute mental health, hospital and ambulance settings, and new evidence about the timing of administration of antibiotics for people with suspected sepsis. To improve antimicrobial stewardship at the earliest opportunity, we have updated these areas of the guideline as a priority. We will update as soon as possible the recommendations that are not about antibiotics, but that relate to managing and treating suspected sepsis in people aged 16 or over who are not and have not recently been pregnant and are in acute mental health, hospital and ambulance settings. Until that is done, we recognise that the care pathway described in this guideline is disjointed.

We have not reviewed the evidence for the recommendations marked 2016 (shaded in grey), and cannot accept comments on them. In some cases, we have made minor wording changes for clarification.

See [changes made to NG51](#) for a full explanation of what is being updated.

Full details of the evidence and the committee's discussion on the 2023 recommendations are in the [evidence reviews](#). Evidence for the 2016 recommendations is in the [full version of the 2016 guideline](#).

1 **Contents**

2 NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE 1

1	Guideline	1
2	Suspected sepsis in people aged 16 or over who are not and have not recently been	
3	pregnant.....	1
4	Draft for consultation, March 2023	1
5	Contents.....	2
6	Could this be sepsis?	5
7	1.1 When to suspect sepsis	5
8	1.2 People who are most vulnerable to sepsis.....	7
9	Face to face assessment	9
10	1.3 Initial assessment and examination	9
11	Evaluating risk level in people with suspected sepsis	11
12	1.4 In the community and in custodial settings.....	11
13	1.5 In acute hospital settings, acute mental health settings and ambulances ...	14
14	Managing suspected sepsis outside acute hospital settings	15
15	1.6 When to transfer immediately to an acute hospital setting	15
16	1.7 Managing the condition while awaiting transfer.....	16
17	1.8 If immediate transfer is not required.....	17
18	Managing suspected sepsis in acute hospital settings	18
19	1.9 Taking microbiological samples and blood cultures	18
20	1.10 High risk of severe illness or death from sepsis	18
21	1.11 Moderate to high risk of severe illness or death from sepsis	22
22	1.12 Low to moderate risk of severe illness or death from sepsis.....	25
23	1.13 Low risk of severe illness or death from sepsis.....	26
24	Antibiotic therapy, intravenous fluid and oxygen for people with suspected sepsis..	28
25	1.14 Choice of antibiotic therapy for people with suspected sepsis	28
26	1.15 Intravenous fluid for people with suspected sepsis.....	30
27	1.16 Using oxygen for people with suspected sepsis	31
28	Finding the source of infection in all people with suspected sepsis.....	31
29	1.17 Investigations.....	31
30	Information and support for all people with suspected sepsis	32
31	1.18 People who have sepsis and their families and carers	32
32	1.19 Information at discharge for people assessed for suspected sepsis, but not	
33	diagnosed with sepsis.....	33

1	1.20	Information at discharge for people at increased risk of sepsis	33
2	1.21	Information at discharge for people who have had sepsis	34
3		Training and education.....	35
4	1.22	Healthcare staff involved in assessing clinical condition	35
5	1.23	Healthcare professionals involved in triage or early management.....	35
6		Terms used in this guideline.....	35
7		Critical care specialist or team.....	35
8		Sepsis.....	36
9		Suspected sepsis.....	36
10		Senior clinical decision maker	36
11		Recommendations for research	36
12	1	Epidemiological study on presentation and management of sepsis in England.	36
13	2	Association between NEWS2 bands (0, 1 to 4, 5 to 6, 7 or above) and risk of	
14		severe illness or death.....	37
15	3	Derivation of clinical decision rules in suspected sepsis.....	37
16		Rationale and impact.....	38
17		Evaluating risk level in people with suspected sepsis: In acute hospital settings,	
18		acute mental health settings and ambulances	38
19		Outside acute hospital settings: when to transfer immediately	40
20		Managing suspected sepsis in acute hospital settings: type and timing of	
21		antibiotics.....	41
22		Context.....	43
23		Finding more information and committee details	44
24			
25			

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 Could this be sepsis?

2 1.1 When to suspect sepsis

3 1.1.1 [was 1.1.1] Think 'could this be sepsis?' if a person presents with
4 symptoms or signs that indicate possible infection. **[2016]**

5 1.1.2 [was 1.1.2] Take into account that people with sepsis may have non-
6 specific, non-localised presentations, for example feeling very unwell, and
7 may not have a high temperature. **[2016]**

8 1.1.3 [was 1.1.3] Pay particular attention to concerns expressed by the person
9 and their family or carers, for example changes from usual behaviour.
10 **[2016]**

11 1.1.4 [was 1.1.4] Assess people who might have sepsis with extra care if they
12 cannot give a good history (for example, people with English as a second
13 language or people with communication problems). **[2016]**

14 1.1.5 [was 1.1.5] Assess people with any suspected infection to identify:

- 15 • possible source of infection (see [finding the source of infection, in this](#)
16 [guideline](#))
- 17 • factors that increase risk of sepsis (see [people who are most](#)
18 [vulnerable to sepsis, in this guideline](#))
- 19 • any indications of clinical concern, such as new-onset abnormalities of
20 behaviour, circulation or respiration. **[2016]**

1 1.1.6 [was 1.1.6] During a remote assessment, when deciding whether to offer
2 a face-to-face-assessment and, if so, on the urgency of it, identify:

- 3
- 4 • factors that increase risk of sepsis (see [people who are most vulnerable to sepsis, in this guideline](#)) and
 - 5 • indications of clinical concern such as new onset abnormalities of
 - 6 behaviour, circulation or respiration. **[2016]**

7 1.1.7 [was 1.1.7] Use a structured set of observations to assess people in a
8 face-to-face setting to stratify risk if sepsis is suspected. (See [face to face assessment](#) and [evaluating risk level in people with suspected sepsis](#), in
9 this guideline). **[2016]**

11 1.1.8 [NEW] Use the national early warning score ([NEWS2](#)) to assess people
12 with suspected sepsis who are aged 16 or over, are not and have not
13 recently been pregnant, and are in an acute hospital setting, acute mental
14 health setting or ambulance. **[2023]**

15 1.1.9 [was 1.1.9] Suspect neutropenic sepsis in patients **who**

- 16 • **are having or have had** systemic anticancer treatment **within the last 30**
17 **days and** who become unwell
- 18 • **are receiving or have received immunosuppressant treatment for**
19 **reasons unrelated to cancer. Use clinical judgement (based on the**
20 **person's specific condition, medical history, or both, and on the**
21 **treatment they received) to determine whether any past treatment may**
22 **still be likely to cause neutropenia.**

23

24 **[This recommendation is adapted from [NICE's guideline on neutropenic](#)**
25 **[sepsis in people with cancer.](#)] [2016, amended 2023]**

26 1.1.10 [was 1.1.10] Refer patients with suspected neutropenic sepsis
27 immediately for assessment in secondary or tertiary care. [This
28 recommendation is from [NICE's guideline on neutropenic sepsis in people](#)
29 [with cancer.](#)] **[2016]**

- 1 1.1.11 Treat people with neutropenic sepsis, **regardless of cause**, in line with
2 [NICE's guideline on neutropenic sepsis in people with cancer](#). [2016,
3 **amended 2023]**

For a short explanation of why the committee made the 2023 recommendation and how it might affect practice [or services], see the [rationale and impact section on evaluating risk level in people with suspected sepsis](#).

Full details of the evidence and the committee's discussion are in [evidence review A: NEWS2](#).

4

5 **1.2 People who are most vulnerable to sepsis**

- 6 1.2.1 [was 1.2.1] Take into account that people in the following groups are
7 at higher risk of developing sepsis:

- 8
- 9 • the very young (under 1 year) and older people (over 75 years), or
10 people who are very frail
 - 11 • people who have impaired immune systems because of illness or
12 drugs, including:
 - 13 – people having treatment for cancer with chemotherapy (see
14 [recommendation 1.1.9 on when to suspect neutropenic sepsis](#) [was
15 1.1.9])
 - 16 – people who have impaired immune function (for example, people
17 with diabetes, people who have had a splenectomy, or people with
18 sickle cell disease)
 - 19 – people taking long-term steroids
 - 20 – people taking immunosuppressant drugs to treat non-malignant
21 disorders such as rheumatoid arthritis
 - 22 • people who have had surgery, or other invasive procedures, in the past
23 6 weeks
 - 24 • people with any breach of skin integrity (for example, cuts, burns,
25 blisters or skin infections)
 - people who misuse drugs intravenously

- 1
- people with indwelling lines or catheters. **[2016]**

2 1.2.2 [was 1.2.2] Take into account that women who are pregnant, have given
3 birth or had a termination of pregnancy or miscarriage in the past 6 weeks
4 are in a high-risk group for sepsis. In particular, women who:

- 5
- have impaired immune systems because of illness or drugs (see
6 recommendation 1.1.9 [was 1.1.9])
 - have diabetes, gestational diabetes or other comorbidities
 - needed invasive procedures (for example, caesarean section, forceps
9 delivery, removal of retained products of conception)
 - had prolonged rupture of membranes
 - have or have been in close contact with people with group A
12 streptococcal infection, for example, scarlet fever
 - have continued vaginal bleeding or an offensive vaginal discharge.
14 **[2016]**

15 1.2.3 [was 1.2.3] Take into account the following risk factors for early-onset
16 neonatal infection:

- 17
- Red flag risk factor:
 - Suspected or confirmed infection in another baby in the case of a
19 multiple pregnancy.
 - Other risk factors:
 - Invasive group B streptococcal infection in a previous baby or
22 maternal group B streptococcal colonisation, bacteriuria or infection
23 in the current pregnancy.
 - Pre-term birth following spontaneous labour before 37 weeks'
25 gestation.
 - Confirmed rupture of membranes for more than 18 hours before a
27 pre-term birth.
 - Confirmed prelabour rupture of membranes at term for more than 24
29 hours before the onset of labour.
 - Intrapartum fever higher than 38°C if there is suspected or confirmed
31 bacterial infection.

1 – Clinical diagnosis of chorioamnionitis.

2

3 [This recommendation is from [NICE's guideline on neonatal](#)
4 [infection.](#)] [2016]

5 Face to face assessment

6 1.3 Initial assessment and examination

7 1.3.1 [was 1.3.1] Assess temperature, heart rate, respiratory rate, blood
8 pressure, level of consciousness and oxygen saturation in young people
9 and adults with suspected sepsis. [2016]

10 1.3.2 [was 1.3.6] In community settings, measure oxygen saturation if
11 equipment is available and taking a measurement does not cause a delay
12 in assessment or treatment. [2016]

13 1.3.3 [was 1.3.7] Examine people with suspected sepsis for:

- 14 • mottled or ashen appearance
- 15 • cyanosis of the skin, lips or tongue
- 16 • non-blanching rash of the skin
- 17 • any breach of skin integrity (for example, cuts, burns or skin infections)
- 18 • other rash indicating potential infection. [2016]

19 1.3.4 [was 1.3.8] Ask the person, parent or carer how often the person urinated
20 in the past 18 hours. [2016]

21 1.3.5 [was 1.4.13] Ask the person with suspected sepsis and their family or
22 carers about any recent fever or rigors. [2016]

23 1.3.6 [was 1.10.1] As part of the initial assessment, carry out a thorough
24 clinical examination to look for sources of infection, including sources that
25 might need surgical drainage. Follow the [recommendations on finding the](#)
26 [source of infection.](#) [2016]

1 Interpreting findings

2 Temperature in suspected sepsis

3 1.3.7 [was 1.4.11 and 1.4.12] Do not rely on fever or hypothermia alone to rule
4 sepsis either in or out. **[2016]**

5 1.3.8 [was 1.4.14] Take into account that some groups of people with sepsis
6 may not develop a raised temperature. These include:

- 7 • people who are older or very frail
- 8 • people having treatment for cancer
- 9 • people severely ill with sepsis
- 10 • young infants or children. **[2016]**

11 1.3.9 [was 1.4.15] Take into account that a rise in temperature can be a
12 physiological response, for example after surgery or trauma. **[2016]**

13 Heart rate in suspected sepsis

14 1.3.10 [was 1.4.16] Interpret the heart rate of a person with suspected sepsis in
15 context, taking into account that:

- 16 • baseline heart rate may be lower in young people and adults who are fit
- 17 • baseline heart rate in pregnancy is 10 to 15 beats per minute more than
18 normal
- 19 • older people with an infection may not develop an increased heart rate
- 20 • older people may develop a new arrhythmia in response to infection
21 rather than an increased heart rate
- 22 • heart rate response may be affected by medicines such as beta-
23 blockers. **[2016]**

24 Blood pressure in suspected sepsis

25 1.3.11 [was 1.4.17] Interpret blood pressure in the context of a person's previous
26 blood pressure, if known. Be aware that the presence of normal blood
27 pressure does not exclude sepsis in children and young people. **[2016]**

1 Confusion, mental state and cognitive state in suspected sepsis

2 1.3.12 [was 1.4.18] Interpret a person's mental state in the context of their normal
3 function and treat changes as being significant. **[2016]**

4 1.3.13 [was 1.4.19] Be aware that changes in cognitive function may be subtle
5 and assessment should include history from patient and family or carers.
6 **[2016]**

7 1.3.14 [was 1.4.20] Take into account that changes in cognitive function may
8 present as changes in behaviour or irritability in both children and in adults
9 with dementia. **[2016]**

10 1.3.15 [was 1.4.21] Take into account that changes in cognitive function in older
11 people may present as acute changes in functional abilities. **[2016]**

12 Oxygen saturation in suspected sepsis

13 1.3.16 [was 1.4.22] Take into account that if peripheral oxygen saturation is
14 difficult to measure in a person with suspected sepsis, this may indicate
15 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](#).

16

17 Evaluating risk level in people with suspected sepsis

18 1.4 In the community and in custodial settings

19 1.4.1 [was 1.4.1] For people aged 16 or over in the community and in custodial
20 settings, grade risk of severe illness or death from sepsis using the
21 person's

- 22
- history

- 1 • physical examination results and
- 2 • criteria based on age (for people aged 16 or over who are not and have
- 3 not recently been pregnant, see [table 1: criteria for stratification of risk](#)
- 4 [from sepsis in people aged 16 or over who are in the community or in a](#)
- 5 [custodial setting](#)). [2016]

6 1.4.2 [was 1.4.2, 1.4.3] Recognise that people aged 16 years or over with
7 suspected sepsis in the community and in custodial settings are at

- 8 • high risk of severe illness or death from sepsis if they meet any of the
- 9 high-risk criteria in [table 1: criteria for stratification of risk from sepsis in](#)
- 10 [people aged 16 or over who are in the community or in a custodial](#)
- 11 [setting](#)
- 12 • moderate to high risk of severe illness or death from sepsis meet any of
- 13 the moderate- to high-risk criteria in [table 1: criteria for stratification of](#)
- 14 [risk from sepsis in people aged 16 or over who are in the community or](#)
- 15 [in a custodial setting](#). [2016]

16 1.4.3 [was 1.4.4] If people aged 16 or over with suspected sepsis in the
17 community and in custodial settings do not meet any high risk or
18 moderate- to high-risk criteria, see them as being at low risk of severe
19 illness or death from sepsis. [2016]

20 **Criteria for stratification of risk from sepsis in people aged 16 or over in**
21 **the community or in a custodial setting**

22 **Table 1: Criteria for stratification of risk of severe illness or death from sepsis**
23 **in people aged 16 or above if they are in the community or in a custodial**
24 **setting, or if they are in an acute setting and are or have recently been**
25 **pregnant**

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

Category	High-risk criteria	Moderate- to high-risk criteria
		<p>History of acute deterioration of functional ability</p> <p>Impaired immune system (illness or drugs including oral steroids)</p> <p>Trauma, surgery or invasive procedures in the last 6 weeks</p>
Respiratory	<p>Raised respiratory rate: 25 breaths per minute or more</p> <p>New need for oxygen (40% FiO₂ or more) to maintain saturation more than 92% (or more than 88% in known chronic obstructive pulmonary disease)</p>	<p>Raised respiratory rate: 21 to 24 breaths per minute</p>
Blood pressure	<p>Systolic blood pressure 90 mmHg or less or systolic blood pressure more than 40 mmHg below normal</p>	<p>Systolic blood pressure 91 to 100 mmHg</p>
Circulation and hydration	<p>Raised heart rate: more than 130 beats per minute</p> <p>Not passed urine in previous 18 hours.</p> <p>For catheterised patients, passed less than 0.5 ml/kg of urine per hour</p>	<p>Raised heart rate: 91 to 130 beats per minute (for pregnant women 100 to 130 beats per minute) or new onset arrhythmia</p> <p>Not passed urine in the past 12 to 18 hours</p> <p>For catheterised patients, passed 0.5 ml/kg to 1 ml/kg of urine per hour</p>
Temperature	-	<p>Tympanic temperature less than 36°C</p>
Skin	<p>Mottled or ashen appearance</p> <p>Cyanosis of skin, lips or tongue</p> <p>Non-blanching rash of skin</p>	<p>Signs of potential infection, including redness, swelling or discharge at surgical site or breakdown of wound</p>

- 1 A downloadable version of this table is also available [hyperlink to be added, link
2 accessibility to be reviewed].

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](#).

1

2

1.5 In acute hospital settings, acute mental health settings and ambulances

3

4

The NEWS2 should not be used for women who are or have recently been pregnant.

5

6

1.5.1 [updates 1.4.1] In people aged 16 or over, grade risk of severe illness or death from sepsis using the person's:

7

8

- history

9

- physical examination results (especially symptoms and signs of

10

infection – see [recommendation 1.1.1 on when to suspect sepsis](#)) and

11

- NEWS2 score. **[2023]**

12

1.5.2 [updates 1.4.2] When evaluating the risk of severe illness or death from sepsis in people aged 16 or over with suspected or confirmed infection, use clinical judgement to interpret the NEWS2 score and recognise that:

13

14

15

- a score of 7 or more suggests high risk of severe illness or death from sepsis

16

17

- a score of 5 or 6 suggests a moderate to high risk of severe illness or death from sepsis

18

19

- a score of 1 to 4 suggests a low to moderate risk of severe illness or death from sepsis

20

21

- a score of 0 suggests a low risk of severe illness or death from sepsis

- 1 • the presence of a single parameter contributing 3 points to the person's
2 NEWS2 score may require managing their condition as per a higher
3 risk level than that suggested by their NEWS2 score alone. **[2023]**

4 **1.5.3** [NEW] Consider evaluating the person's risk of severe illness or death
5 from sepsis as being higher than suggested by their NEWS2 score alone
6 if there is cause for concern because of deterioration or lack of
7 improvement of the person's condition since:

- 8 • any previous NEWS2 score was calculated
9 • any interventions have taken place.

10
11 This should include taking into account any NEWS2 score calculated or
12 intervention carried out before admission into the emergency
13 department. **[2023]**

For a short explanation of why the committee made these recommendations and how they might affect practice, see the [rationale and impact section on evaluating risk level in people with suspected sepsis](#).

Full details of the evidence and the committee's discussion are in [evidence review A: NEWS2](#).

14 **Managing suspected sepsis outside acute hospital** 15 **settings**

16 **1.6 When to transfer immediately to an acute hospital** 17 **setting**

18 **In community and custodial settings**

19 **1.6.1** [was 1.5.1] Refer people aged 16 or over with suspected sepsis in the
20 community and in custodial settings for emergency medical care if:

- they meet any high-risk criteria (see [table 1: criteria for stratification of risk from sepsis in people aged 16 or over who are in the community or in a custodial setting](#)) or
- they are aged 16, 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. **[2016]**

1.6.2 [was 1.7.1] Pre-alert secondary care (through GP or ambulance service) when any high-risk criteria are met in a person aged 16 or over with suspected sepsis in the community or in a custodial setting, and transfer them immediately. **[2016]**

Transfer by ambulance for people with a NEWS2 score of 5 or above

1.6.3 [NEW] Consider a time-critical transfer and pre-alerting the hospital for people aged 16 or over with consecutive NEWS2 scores of 5 or above and suspected or confirmed infection.

1.6.4 [NEW] When deciding whether a time-critical transfer and pre-alerting the hospital is needed for someone aged 16 or over with consecutive NEWS2 scores of 5 or above and suspected or confirmed infection, take into account:

- local guidelines and protocols in relation to clinician scope of practice
- conveyance agreements
- advanced care planning
- end of life care planning. **[2023]**

1.7 Managing the condition while awaiting transfer

1.7.1 [was 1.7.3] In locations where time before admission to the emergency department (including any transfer time) is more than 1 hour,

1 ensure GPs and ambulance services have mechanisms in place to give
2 antibiotics to people with high risk criteria in pre-hospital settings. **[2016**
3 **amended 2023]**

4
5 See also the [recommendations on choice of antibiotic therapy, in this](#)
6 [guideline](#).

For a short explanation of why the committee made the 2023 recommendation and how they might affect practice [or services], see the [rationale and impact section on outside acute hospital settings: when to transfer immediately](#).

Full details of the evidence and the committee's discussion are in [evidence review B: antibiotics](#).

7 **1.8 If immediate transfer is not required**

8 1.8.1 [was 1.5.2] Assess people aged 16 or over with suspected sepsis in the
9 community and in custodial settings who meet any moderate to high risk
10 criteria to:

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

13
14 If a definitive diagnosis is not reached or the person's condition cannot
15 be treated safely outside an acute hospital setting, refer them urgently
16 for emergency care. **[2016]**

17 1.8.2 [was 1.5.3] Provide people aged 16 or over with suspected sepsis in the
18 community and in custodial settings who do not meet any high risk or
19 moderate to high risk criteria with information about:

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

22
23 Also see [information at discharge for people assessed for suspected](#)
24 [sepsis, but not diagnosed with sepsis, in this guideline](#). **[2016]**

1 Managing suspected sepsis in acute hospital settings

The drivers for the 2023 update are the endorsement by NHS England of NEWS2 for risk stratification in people aged 16 or over who are not and have not recently been pregnant in acute mental health, hospital and ambulance settings, and new evidence about the timing of administration of antibiotics for people with suspected sepsis. To improve antimicrobial stewardship at the earliest opportunity, we have updated these areas of the guideline as a priority. We will update as soon as possible the recommendations that are not about antibiotics, but that relate to managing and treating suspected sepsis in people aged 16 or over who are not and have not recently been pregnant and are in acute mental health, hospital and ambulance settings. Until that is done, we recognise that the care pathway described in this guideline is disjointed.

The NEWS2 should not be used for women who are or have recently been pregnant.

1.9 Taking microbiological samples and blood cultures

1.9.1 [was 1.7.4] For patients in hospital who have suspected infections, take microbiological samples before prescribing an antimicrobial and review the prescription when the results are available. For people with suspected sepsis take blood cultures before antibiotics are given. [This recommendation is adapted from [NICE's guideline on antimicrobial stewardship.](#)] [2016]

1.10 High risk of severe illness or death from sepsis

A person is at high risk of severe illness or death from sepsis if they have suspected or confirmed infection and either a NEWS2 score of 7 or above or a NEWS2 score of 5 or 6 and

- a single parameter contributing 3 points to their NEWS2 score (see [recommendation 1.5.2 on evaluating risk of severe illness or death from sepsis](#)) or
- there are any other clinical reasons for concern that may require their risk of severe illness or death from sepsis to be evaluated as higher than suggested by their NEWS2 score alone (see [recommendation 1.5.3 on taking causes for clinical concern into account when evaluating risk of severe illness or death from sepsis](#)).

1.10.1 [was 1.6.1] For people aged 16 or over with suspected sepsis and 1 or more high risk criteria:

- arrange for the [senior clinical decision maker](#) to immediately assess the person's condition and think about alternative diagnoses to sepsis
- carry out a venous blood test for the following:
 - blood gas including glucose and lactate measurement
 - blood culture
 - full blood count
 - C-reactive protein
 - urea and electrolytes
 - creatinine
 - a clotting screen
- give antibiotics in line with recommendations 1.10.2 and 1.10.3 and the [recommendations on choice of antibiotic therapy, in this guideline](#)
- discuss with an appropriate consultant (this may be the consultant under whom the patient is admitted or a consultant covering acute medicine, anaesthetics). **[2016] [This recommendation will be amended in a future update.]**

Antibiotics

1.10.2 [was 1.6.1, bullet 3] Give people aged 16 or over with a high risk of severe illness or death from sepsis (see [recommendation 1.5.2 on evaluating risk of severe illness or death from sepsis](#)) a broad-spectrum antibiotic, within 1 hour of calculating the person's first NEWS2 score on admission to emergency department or ward deterioration, if it has not been given before (see [recommendation 1.7.1 on managing the condition while](#)

1 [awaiting transfer](#)).

2

3 Also see the [recommendations on finding the source of infection, taking](#)
4 [microbiological samples and choice of antibiotic therapy](#), in this
5 [guideline](#). [2023]

6 1.10.3 [NEW] If someone has a NEWS2 score of 5 or 6, a single parameter
7 contributing 3 points to their total NEWS2 score, and is deemed to be at
8 high risk of severe illness or death from sepsis, use clinical judgement to
9 determine whether:

- 10 • they need antibiotics within the time limit for people at high risk (1 hour)
- 11 **or**
- 12 • giving them antibiotics within the time limit for people at moderate to
13 high risk (3 hours) would be safe. [2023]

14

15 See also recommendation 1.10.2, and [recommendation 1.11.2 on](#)
16 [timing of antibiotics for people at moderate to high risk of severe illness](#)
17 [or death from sepsis](#). [2023]

For a short explanation of why the committee made the 2023 recommendations and how they might affect practice [or services], see the [rationale and impact section on managing suspected sepsis in acute hospital settings: type and timing of antibiotics](#).

Full details of the evidence and the committee's discussion are in [evidence review B: antibiotics](#).

18 Intravenous fluids, inotropes and vasopressors

19 1.10.4 [was 1.6.2] For people aged 16 or over with suspected sepsis, any
20 high risk criteria, and **either** lactate over 4 mmol/litre **or** systolic blood
21 pressure less than 90 mmHg:

- 22 • give intravenous fluid bolus without delay (within 1 hour of identifying
23 that they are high risk of severe illness or death from sepsis) in line with

1 [recommendations on intravenous fluids for people with suspected](#)
2 [sepsis, in this guideline](#) and

- 3 • refer to [critical care specialist or team](#) for them to review the
4 management of the person's condition, including their need for central
5 venous access and initiation of inotropes or vasopressors.

6
7 Referral may be a formal referral process or discussion with specialist
8 in intensive care or intensive care outreach team. **[2016] [This**
9 **recommendation will be amended in a future update.]**

10 1.10.5 [was 1.6.3] For people aged 16 or over with suspected sepsis, any
11 high-risk criteria and lactate between 2 and 4 mmol/litre, give an
12 intravenous fluid bolus without delay (within 1 hour of identifying that they
13 meet any high-risk criteria in an acute hospital setting) in line with
14 [recommendations on intravenous fluids for people with suspected sepsis,](#)
15 [in this guideline.](#) **[2016] [This recommendation will be amended in a**
16 **future update.]**

17 1.10.6 [was 1.6.4] For people aged 16 or over with suspected sepsis, any high
18 risk criteria and lactate below 2 mmol/litre, consider giving an intravenous
19 fluid bolus (in line with [recommendations on intravenous fluids for people](#)
20 [with suspected sepsis, in this guideline](#)). **[2016] [This recommendation**
21 **will be amended in a future update.]**

22 **Monitoring and when to alert a consultant**

23 1.10.7 [was 1.6.5] Monitor people aged 16 or over who meet any high-risk
24 criteria continuously, or a minimum of once every 30 minutes depending
25 on setting. Physiological track and trigger systems should be used to
26 monitor all adult patients. [This recommendation is adapted from [NICE's](#)
27 [guideline on acutely ill patients in hospital.](#)] **[2016] [This**
28 **recommendation will be amended in a future update.]**

29 1.10.8 [was 1.6.6] Monitor the mental state of people aged 16 or over with
30 suspected sepsis. Consider using a scale such as the Glasgow Coma
31 Scale (GCS) or AVPU ('alert, voice, pain, unresponsive') scale. **[2016]**

1 1.10.9 [was 1.6.7] Alert a consultant to attend in person if a person aged 16
2 years or over with suspected sepsis and any high-risk criteria does not
3 respond within 1 hour of initial antibiotic, intravenous fluid resuscitation, or
4 both. Not responding is indicated by any of:

- 5 • systolic blood pressure persistently below 90 mmHg
- 6 • reduced level of consciousness despite resuscitation
- 7 • respiratory rate over 25 breaths per minute or a new need for
8 mechanical ventilation
- 9 • lactate not reduced by more than 20% of initial value within 1 hour.

10 [2016] [This recommendation will be amended in a future update.]

11 1.11 Moderate to high risk of severe illness or death from 12 sepsis

13 A person is at moderate to high risk of severe illness or death from sepsis if they
14 have suspected or confirmed infection and **either** a NEWS2 score of 5 or 6 **or** a
15 NEWS2 score of 1 to 4 and

- 16 • a single parameter contributing 3 points to their NEWS2 score (see
17 [recommendation 1.5.2 on evaluating risk of severe illness or death from sepsis](#)) or
18 • there are any other clinical reasons for concern that may require their risk of
19 severe illness or death from sepsis to be evaluated as higher than suggested by
20 their NEWS2 score alone (see [recommendation 1.5.3 on taking causes for clinical
21 concern into account when evaluating risk of severe illness or death from sepsis](#)).

22 1.11.1 [was 1.6.8] For people aged 16 or over with suspected sepsis and
23 **either** a 2 or more moderate- to high-risk criteria **or** systolic blood
24 pressure 91 to 100 mmHg, carry out a venous blood test for the following:

- 25 • blood gas, including glucose and lactate measurement
- 26 • blood culture
- 27 • full blood count
- 28 • C-reactive protein
- 29 • urea and electrolytes

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30

- creatinine

Arrange for a clinician to review the person’s condition and venous lactate results within 1 hour of meeting criteria.

A ‘clinician’ should be a medically qualified practitioner or equivalent who has antibiotic prescribing responsibilities. **[2016] [This recommendation will be amended in a future update.]**

1.11.2 [NEW] For people with a moderate to high risk of severe illness or death from sepsis, request assessment by a clinician with core competencies in care of acutely ill patients for them to consider:

- deferring administration of a broad-spectrum antibiotic for up to 3 hours after calculating the person’s first NEWS2 score on admission to emergency department or ward deterioration
- using the available time to gather information for a more specific diagnosis (see [recommendations on finding the source of infection](#) and [choice of antibiotic therapy](#), in this guideline).

Once a decision is made to give antibiotics, do not delay administration any further. **[2023].**

1.11.3 [NEW] If someone has a NEWS2 score of 1 to 4, a single parameter contributing 3 points to their NEWS2 score, and is deemed to be at moderate to high risk of severe illness or death from sepsis, use clinical judgement to decide whether:

- they need antibiotics within the time limit for people at moderate to high risk (3 hours) or
- giving them antibiotics within the time limit for people at moderate to low risk (6 hours) would be safe.

See also recommendation 1.11.2, and [recommendation 1.12.2 on](#)

1 [timing of antibiotics for people at low to moderate risk of severe illness](#)
2 [or death from sepsis. \[2023\]](#)

3 1.11.4 [was 1.6.9] For people aged 16 or over with suspected sepsis who
4 meet 2 or more moderate- to high-risk criteria and have **either** lactate
5 over 2 mmol/litre **or** evidence of acute kidney injury, treat their condition
6 as if they were at high risk of severe illness or death from sepsis.

7
8 For definition of acute kidney injury, see [NICE's guideline on acute kidney](#)
9 [injury](#). [2016] **[This recommendation will be amended in a future**
10 **update.]**

11 1.11.5 [was 1.6.10] For people aged 16 or over with suspected sepsis who meet
12 2 or more moderate- to high-risk criteria, have lactate of less than 2
13 mmol/litre and no evidence of acute kidney injury, and in whom a
14 definitive condition cannot be identified:

- 15 • repeat structured assessment at least hourly
- 16 • ensure a [senior clinical decision maker](#) reviews the person's condition
17 and need for antibiotics within 3 hours of meeting 2 or more moderate-
18 to high-risk criteria. [2016] **[This recommendation will be amended**
19 **in a future update.]**

20 1.11.6 [was 1.6.11] For people aged 16 years or over with suspected sepsis
21 who meet 2 or more moderate- to high-risk criteria, have lactate of less
22 than 2 mmol/litre and no evidence of acute kidney injury, and in whom a
23 definitive condition or infection can be identified and treated:

- 24 • manage the definitive condition
- 25 • if appropriate, discharge with information depending on the setting (see
26 [information at discharge for people assessed for suspected sepsis but](#)
27 [not diagnosed with sepsis](#)). [2016] **[This recommendation will be**
28 **amended in a future update.]**

For a short explanation of why the committee made the 2023 recommendations and how they might affect practice [or services], see the [rationale and impact section on managing suspected sepsis in acute hospital settings: type and timing of antibiotics](#).

Full details of the evidence and the committee's discussion are in [evidence review B: antibiotics](#).

1.12 Low to moderate risk of severe illness or death from sepsis

A person is at low to moderate risk of severe illness or death from sepsis if they have suspected or confirmed infection and a NEWS2 score of 1 to 4 (see [recommendation 1.5.2 on evaluating risk of severe illness or death from sepsis](#)).

1.12.1 [was 1.6.12] For people aged 16 or over with suspected sepsis who meet only 1 moderate- to high-risk criterion:

- arrange clinician review within 1 hour of meeting criterion for clinical assessment
- perform blood tests if indicated.

A 'clinician' should be a medically qualified practitioner or equivalent who has antibiotic prescribing responsibilities. **[2016] [This recommendation will be amended in a future update.]**

1.12.2 [NEW] For people with a low to moderate risk of severe illness or death from sepsis, request assessment by a clinician with core competencies in care of acutely ill patients for them to consider:

- deferring administration of a broad-spectrum antibiotic for up to 6 hours after calculating the person's first NEWS2 score on admission to the emergency department or ward deterioration
- using the available time to gather information for a more specific diagnosis (see [recommendations on finding the source of infection and choice of antibiotic therapy](#), in this guideline).

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Once a decision is made to give antibiotics, do not delay administration any further. **[2023]**

1.12.3 [was 1.6.14] For people aged 16 or over 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 criterion. **[2016] [This recommendation will be amended in a future update.]**

1.12.4 [was 1.6.13] For people aged 16 or over with suspected sepsis who meet only 1 moderate- to high-risk criterion and in whom a definitive condition can be identified and treated:

- manage the definitive condition
- if appropriate, discharge with information depending on setting (see [recommendations on information at discharged for people assessed for suspected sepsis but not diagnosed with sepsis](#)). **[2016] [This recommendation will be amended in a future update.]**

For a short explanation of why the committee made the 2023 recommendations and how they might affect practice [or services], see the [rationale and impact section on managing suspected sepsis in acute hospital settings: type and timing of antibiotics](#).

Full details of the evidence and the committee’s discussion are in [evidence review B: antibiotics](#).

1 **1.13 Low risk of severe illness or death from sepsis**

2 A person is at low risk of severe illness or death from sepsis if they have suspected
3 or confirmed infection and a NEWS2 score of 0 (see [recommendation 1.5.2 on](#)
4 [evaluating risk of severe illness or death from sepsis](#)).

5 1.13.1 [was 1.6.15] Arrange clinical assessment of people aged 16 years or
6 over who have suspected sepsis and do not meet any high-risk or
7 moderate- to high-risk criteria, and use clinical judgement to manage their
8 condition.

9
10 Clinical assessment should be carried out by a medically qualified
11 practitioner or equivalent who has antibiotic prescribing responsibilities.
12 **[2016] [This recommendation will be amended in a future update.]**

13 1.13.2 [NEW] For people with suspected or confirmed infection and a low risk of
14 severe illness or death from sepsis:

- 15 • consider continuing routine NEWS2 score monitoring and
16 • manage in line with local practice. **[2023]**

For a short explanation of why the committee made the 2023 recommendations and how they might affect practice [or services], see the [rationale and impact section on managing suspected sepsis in acute hospital settings: type and timing of antibiotics](#).

Full details of the evidence and the committee’s discussion are in [evidence review B: antibiotics](#).

1 **Antibiotic therapy, intravenous fluid and oxygen for people** 2 **with suspected sepsis**

The drivers for the 2023 update are the endorsement by NHS England of NEWS2 for risk stratification in people aged 16 or over who are not and have not recently been pregnant in acute mental health, hospital and ambulance settings, and new evidence about the timing of administration of antibiotics for people with suspected sepsis. To improve antimicrobial stewardship at the earliest opportunity, we have updated these areas of the guideline as a priority. We will update as soon as possible the recommendations that are not about antibiotics, but that relate to managing and treating suspected sepsis in people aged 16 or over who are not and have not recently been pregnant and are in acute mental health, hospital and ambulance settings. Until that is done, we recognise that the care pathway described in this guideline is disjointed.

3 **1.14 Choice of antibiotic therapy for people with** 4 **suspected sepsis**

5 **Everyone**

6 1.14.1 [was 1.7.5] If meningococcal disease is specifically suspected (fever
7 and purpuric rash), give appropriate doses of

- 8 • parenteral benzyl penicillin in community settings and
- 9 • intravenous ceftriaxone in hospital settings.

10
11 [This recommendation is adapted from [NICE's guideline on meningitis](#)
12 [\(bacterial\) and meningococcal septicaemia in under 16s.](#)] [2016]

13 1.14.2 [was 1.7.6] For all people with suspected sepsis and a clear source
14 of infection, use existing local antimicrobial guidance. [2016]

15 1.14.3 [NEW] Use source-specific antimicrobials once the source of infection is
16 confirmed. [2023]

1 1.14.4 [was 1.7.13] Follow the recommendations in [NICE's guideline on](#)
2 [antimicrobial stewardship: systems and processes for effective](#)
3 [antimicrobial medicine use](#) when prescribing and using antibiotics to treat
4 people with suspected or confirmed sepsis. [2016]

5 **Under 18s excluding neonates**

6 1.14.5 [was 1.7.8] For people aged up to 17 years (excluding neonates) with
7 suspected community acquired sepsis of any cause give ceftriaxone 80
8 mg/kg once a day with a maximum dose of 4 g daily at any age. [This
9 recommendation is adapted from [NICE's guideline on meningitis](#)
10 [\(bacterial\) and meningococcal septicaemia in under 16s.](#)] [2016]

11 1.14.6 [was 1.7.9] For people aged up to 17 years (excluding neonates) with
12 suspected sepsis who are already in hospital, or who are known to have
13 previously been infected with or colonised with ceftriaxone-resistant
14 bacteria, consult local guidelines for choice of antibiotic. [2016]

15 **People aged 18 or over**

16 1.14.7 [was 1.7.7] For people aged 18 years and over who need an
17 empirical intravenous antimicrobial for a suspected infection but who have
18 no confirmed diagnosis, use an intravenous antimicrobial from the agreed
19 local formulary and in line with local (where available) or national
20 guidelines. [This recommendation is adapted from [NICE's guideline on](#)
21 [antimicrobial stewardship.](#)] [2016]

For a short explanation of why the committee made the 2023 recommendation and how it might affect practice [or services], see the [rationale and impact section on managing suspected sepsis in acute hospital settings: type and timing of antibiotics.](#)

Full details of the evidence and the committee's discussion are in [evidence review B: antibiotics.](#)

22

1 **1.15 Intravenous fluid for people with suspected sepsis**

2 **Type of fluid**

3 1.15.1 [was 1.8.1] If patients over 16 years need intravenous fluid
4 resuscitation, use crystalloids that contain sodium in the range 130 to 154
5 mmol/litre with a bolus of 500 ml over less than 15 minutes. [This
6 recommendation is from [NICE's guideline on intravenous fluid therapy in
7 adults in hospital.](#)] [2016] **[This recommendation will be amended in a
8 future update.]**

9 1.15.2 [was 1.8.8] Consider human albumin solution 4 to 5% for fluid
10 resuscitation only in patients with sepsis and shock. [This
11 recommendation is adapted from [NICE's guideline on intravenous fluid
12 therapy in adults in hospital.](#)] [2016] **[This recommendation will be
13 amended in a future update.]**

14 1.15.3 [was 1.8.7] Do not use starch-based solutions or hydroxyethyl
15 starches for fluid resuscitation for people with sepsis. [This
16 recommendation is adapted from [NICE's guidelines on intravenous fluid
17 therapy in adults in hospital](#) and [intravenous fluid therapy in children and
18 young people in hospital.](#)] [2016] **[This recommendation will be
19 amended in a future update.]**

20 **Mode of delivery**

21 1.15.4 [was 1.8.6] If using a pump or flow controller to deliver intravenous
22 fluids for resuscitation to people over 12 years with suspected sepsis who
23 need fluids in bolus form ensure device is capable of delivering fluid at
24 required rate for example at least 2000 ml/hour in adults. [2016] **[This
25 recommendation will be amended in a future update.]**

26 **When to deliver a second bolus**

27 1.15.5 [was 1.8.4] Reassess the patient after completion of the intravenous
28 fluid bolus, and if no improvement give a second bolus. If there is no
29 improvement after a second bolus alert a consultant to attend (in line with

1 recommendation 1.8.10 [was 1.6.7]). **[2016]** **[This recommendation will**
2 **be amended in a future update.]**

3 **1.16 Using oxygen for people with suspected sepsis**

4 1.16.1 [was 1.9.1] Give oxygen to achieve a target saturation of 94–98% for
5 adult patients or 88–92% for those at risk of hypercapnic respiratory
6 failure. **[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](#).

7

8 **Finding the source of infection in all people with suspected** 9 **sepsis**

10 **1.17 Investigations**

11 1.17.1 [was 1.10.2] Tailor investigations of the sources of infection to the
12 person's clinical history and to findings from examination. **[2016]**

13 1.17.2 [was 1.10.3] Consider urine analysis and chest X-ray to identify the
14 source of infection in all people with suspected sepsis. **[2016]**

15 1.17.3 [was 1.10.4] Consider imaging of the abdomen and pelvis if no likely
16 source of infection is identified after clinical examination and initial tests.
17 **[2016]**

18 1.17.4 [was 1.10.5] Involve the adult or paediatric surgical and
19 gynaecological teams early on if intra-abdominal or pelvic infection is
20 suspected, in case surgical treatment is needed. **[2016]**

21 1.17.5 [was 1.10.6] Do not perform a lumbar puncture without consultant
22 instruction if any of the following contraindications are present:

- 1 • signs suggesting raised intracranial pressure or reduced or fluctuating
2 level of consciousness (Glasgow Coma Scale score less than 9 or a
3 drop of 3 points or more)
- 4 • relative bradycardia and hypertension
- 5 • focal neurological signs
- 6 • abnormal posture or posturing
- 7 • unequal, dilated or poorly responsive pupils
- 8 • papilloedema
- 9 • abnormal ‘doll’s eye’ movements
- 10 • shock
- 11 • extensive or spreading purpura
- 12 • after convulsions until stabilised
- 13 • coagulation abnormalities or coagulation results outside the normal
14 range or platelet count below 100×10^9 /litre or receiving anticoagulant
15 therapy
- 16 • local superficial infection at the lumbar puncture site
- 17 • respiratory insufficiency in children.
- 18
- 19 This recommendation is adapted from NICE's guideline on meningitis
20 (bacterial) and meningococcal septicaemia in under 16s.] **[2016]**

21 **Information and support for all people with suspected** 22 **sepsis**

23 **1.18 People who have sepsis and their families and** 24 **carers**

25 1.18.1 [was 1.11.1] Ensure a care team member is nominated to give
26 information to families and carers, particularly in emergency situations
27 such as in the emergency department. This should include:

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

1 1.18.2 [was 1.11.2] Ensure information is given without using medical jargon.
2 Check regularly that people understand the information and explanations
3 they are given. **[2016]**

4 1.18.3 [was 1.11.3] Give people with sepsis and their family members and
5 carers opportunities to ask questions about diagnosis, treatment options,
6 prognosis and complications. Be willing to repeat any information as
7 needed. **[2016]**

8 1.18.4 [was 1.11.4] Give people with sepsis and their families and carers
9 information about national charities and support groups that provide
10 information about sepsis and the causes of sepsis. **[2016]**

11 **1.19 Information at discharge for people assessed for** 12 **suspected sepsis, but not diagnosed with sepsis**

13 1.19.1 [was 1.11.5] Give people who have been assessed for sepsis but have
14 been discharged without a diagnosis of sepsis (and their family or carers,
15 if appropriate) verbal and written information about:

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

21 1.19.2 [was 1.11.6] Confirm that people understand the information they have
22 been given, and what actions they should take to get help if they need it.
23 **[2016]**

24 **1.20 Information at discharge for people at increased risk** 25 **of sepsis**

26 1.20.1 [was 1.11.7] Ensure people who are at increased risk of sepsis (for
27 example after surgery) are told before discharge about symptoms that
28 should prompt them to get medical attention and how to get it. **[2016]**
29

1 See [NICE's guideline on neutropenic sepsis in people with cancer](#) for
2 information for people with neutropenic sepsis (recommendation 1.1.11
3 [was 1.1.11]).

4 **1.21 Information at discharge for people who have had** 5 **sepsis**

6 1.21.1 [was 1.11.8] Ensure people and their families and carers have been
7 informed that they have had sepsis. **[2016]**

8 1.21.2 [was 1.11.9] Ensure discharge notifications to GPs include the
9 diagnosis of sepsis. **[2016]**

10 1.21.3 [was 1.11.10] Give people who have had sepsis (and their families and
11 carers, when appropriate) opportunities to discuss their concerns. These
12 may include:

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

23 1.21.4 [was 1.11.11] Give people who have had sepsis and their families and
24 carers information about national charities and support groups that
25 provide information about sepsis and causes of sepsis. **[2016]**

26 1.21.5 [was 1.11.12] Advise carers they have a legal right to have a carer's
27 assessment of their needs, and give them information on how they can
28 get this.

1 See [NICE's guideline on rehabilitation after critical illness in adults](#) for
2 recommendations on rehabilitation and follow up after critical illness.

3
4 See [NICE's guideline on meningitis \(bacterial\) and meningococcal
5 septicaemia in under 16s](#) for follow up of people who have had
6 meningococcal septicaemia.

7 **Training and education**

8 **1.22 Healthcare staff involved in assessing clinical 9 condition**

10 1.22.1 [was 1.12.1] Ensure all healthcare staff and students involved in
11 assessing people's clinical condition are given regular, appropriate
12 training in identifying people who might have sepsis. This includes
13 primary, community care and hospital staff including those working in care
14 homes. **[2016]**

15 **1.23 Healthcare professionals involved in triage or early 16 management**

17 1.23.1 [was 1.12.2] Ensure all healthcare professionals involved in triage or early
18 management are given regular appropriate training in identifying,
19 assessing and managing suspected sepsis. This should include:

- 20 • risk stratification strategies
- 21 • local protocols for early treatments, including antibiotics and
22 intravenous fluids
- 23 • criteria and pathways for escalation, in line with their health care
24 setting. **[2016]**

25 **Terms used in this guideline**

26 **Critical care specialist or team**

27 Critical care specialist or team means an intensivist or intensive care outreach team,
28 or a specialist in intensive care or paediatric intensive care.

1 **Sepsis**

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

4 **Suspected sepsis**

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

7 **Senior clinical decision maker**

8 A 'senior clinical decision maker' for people under 18 is a paediatric or emergency
9 care qualified doctor of grade ST4 or above or equivalent.

10 A 'senior clinical decision maker' for people aged 18 years or over should be a
11 clinician with core competencies in the care of acutely ill patients.

12 **Recommendations for research**

13 The guideline committee has made the following recommendations for research.

14 **1 Epidemiological study on presentation and management of** 15 **sepsis in England**

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

18 **Why this is important**

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

1 **2 Association between NEWS2 bands (0, 1 to 4, 5 to 6, 7 or above)**
2 **and risk of severe illness or death**

3 In adults and young people (16 and over) with suspected sepsis in acute hospital
4 settings, ambulance trusts and acute mental health facilities, what is the association
5 between NEWS2 bands (0, 1 to 4, 5 to 6, 7 or above) and risk of severe illness or
6 death? In adults and young people (16 and over) with suspected sepsis in acute
7 hospital settings, ambulance trusts and acute mental health facilities, what is the
8 association between the NEWS2 score of 3 in a single parameter and risk of severe
9 illness or death? **[2023]**

10 **Why this is important**

11 The NEWS2 has been introduced in 2017 and is widely used across the NHS
12 prehospital and acute care settings. However, evidence on the NEWS2 tool was not
13 found. It is important to investigate the success, safety and possible implications on
14 patients and staff of using the NEWS2 tool to stratify the risk of severe illness or
15 death over a 5- to 10-year period. As a specific subgroup within this population, the
16 category of a NEWS2 score of 3 in a single category was also of a great concern
17 and lack of data around its stratification and possible risk of deterioration remains
18 uncertain. Data regarding the categorisation of the risk of a NEWS2 score of 3 in one
19 parameter is scarce and interpretation contradictory.

20 **3 Derivation of clinical decision rules in suspected sepsis**

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

24 **Why this is important**

25 In primary care and emergency departments people with suspected sepsis are often
26 seen by relatively inexperienced doctors. Many of these people will be in low and
27 medium risk groups but evidence is lacking as to who can be sent home safely and
28 who needs intravenous or oral antibiotics. The consequences of getting the decision
29 making wrong can be catastrophic and therefore many patients are potentially over-

1 investigated and admitted inappropriately. Current guidance is dependent on use of
2 individual variables informed by low quality evidence.

3 **Rationale and impact**

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

6 **Evaluating risk level in people with suspected sepsis: in acute 7 hospital settings, acute mental health settings and ambulances**

8 [Recommendations 1.1.8, 1.1.9](#) and [1.5.1 to 1.5.3](#)

9 **Why the committee made the recommendations**

10 **People with neutropenia or immunosuppression**

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

17 **Using the NEWS2 to evaluate risk from sepsis**

18 Evidence showed an increased risk of ICU admission and mortality in people with
19 suspected sepsis aged 16 and over associated with a NEWS score of 5 or more.
20 This supports the findings of the 2022 AoMRC statement on the initial antimicrobial
21 treatment of sepsis. It is also in line with the clinical experience of the committee.

22 The committee agreed, based on consensus, to recommend that the 4 NEWS2
23 score bands outlined in the AoMRC report should be used to determine the level of
24 risk from sepsis for someone in any of the settings where NEWS2 has been
25 endorsed by NHS England (acute hospital settings, acute mental health settings and
26 ambulances).

1 **Interpreting NEWS2 scores**

2 The committee discussed the importance of clinical judgement when interpreting the
3 NEWS2 scores. They agreed that the NEWS2 should be used as a tool to support
4 clinical decision making, not to replace clinical judgement. A NEWS2 score should
5 thus be interpreted within the context of patient's history and physical examination
6 results.

7 **NEWS2 score of 0**

8 The committee discussed the care for someone with a NEWS2 score of 0. They
9 were concerned that a score of 0 may be interpreted as indicating that there was no
10 risk and no action was needed. They emphasised that people with a possible or
11 confirmed infection and a NEWS2 score of 0 are still at risk of sepsis and should
12 receive routine NEWS2 score monitoring in line with local practice.

13 They also agreed that acute illness is a dynamic state and treatment priorities must
14 be adjusted over time. They agreed to highlight that deterioration or lack of
15 improvement in the person's condition might indicate the need to take more urgent
16 actions than suggested by their NEWS2 score alone, depending on any previous
17 NEWS2 score or action already taken.

18 **Single parameter contributing 3 points to a NEWS2 score**

19 In the NEWS2 framework as defined by the Royal College of Physicians for the
20 assessment of acute illness severity (that is, not specific to sepsis), specific attention
21 is given to a NEWS2 score of 3 in a single parameter, which is classified as low-
22 medium risk. The AoMRC report on the initial antimicrobial treatment of sepsis uses
23 the NEWS2 to evaluate risk of severe illness or death from sepsis. It does not
24 support systematic use of a single parameter contributing 3 points to a NEWS2
25 score to escalate care but does state that 'abnormal single parameters should be
26 used to alert clinicians to the need for more detailed observation and investigation'.

27 The committee considered this issue at length. Despite the lack of evidence, and
28 based on their clinical expertise, they agreed that:

- 1 • a single parameter contributing 3 points to a NEWS2 score is an important red
2 flag suggesting an increased risk of organ dysfunction and further deterioration
3 and
4 • in the presence of such a parameter, clinical judgement is key to carefully
5 consider whether the person's condition needs to be managed as per a higher risk
6 level than that suggested by their NEWS2 score alone.

7 **How the recommendations might affect practice**

8 Because the NEWS2 is already in use in most NHS acute care settings, Emergency
9 Departments, ambulance services and mental health facilities in England, the
10 committee agreed that recommending its use to evaluate risk of severe illness or
11 death from sepsis in these settings would further improve consistency in the
12 detection of and response to acute illness due to sepsis (for people for whom the
13 NEWS2 can be used), at no further cost.

14 **Outside acute hospital settings: when to transfer immediately**

15 [Recommendations 1.6.3 and 1.6.4](#)

16 **Why the committee made the recommendation**

17 The committee considered:

- 18 • settings and situations where a clinician with core competencies in the care of
19 acutely ill patients may not be present, such as ambulances and mental health
20 facilities
21 • important issues faced in rural areas, where transport to the nearest appropriate
22 acute setting might take longer than in urban areas.

23 Because evidence shows a higher risk of acute deterioration in people with
24 suspected sepsis and a persistent NEWS2 score of 5 or more, which would require
25 timely management and treatment, they agreed time-critical transfer and pre-alerting
26 the hospital should be considered for these people.

27 **How the recommendations might affect practice**

28 The committee carefully considered the threshold at which to prompt immediate
29 transfer, to avoid an excessively high volume of referrals, that would put undue

1 pressure on emergency departments and acute hospital wards, while also avoiding
2 geographical inequalities associated with transfer time. The committee strived to
3 create a better balance whilst avoiding a negative impact on current practice.

4 **Managing suspected sepsis in acute hospital settings: type and** 5 **timing of antibiotics**

6 [Recommendations 1.7.1 \(amended\), 1.10.2, 1.10.3, 1.11.2, 1.11.3, 1.12.2, 1.13.2,](#)
7 [1.14.3](#)

8 **Why the committee made the recommendations**

9 **Timing of antibiotics**

10 Given the lack of direct evidence, the committee decided, by consensus, to
11 recommend adopting the initial antimicrobial treatment of sepsis outlined in the 2022
12 AoMRC statement. That is, for people with low to moderate, moderate to high and
13 high risk of severe illness or death from sepsis, antibiotics should be given,
14 respectively within 6, 3, and 1 hour and, for people at low risk, on a need for basis, in
15 line with local practice.

16 The committee highlighted that:

- 17 • the purpose of deferring antibiotic delivery is not to delay treatment, but to have
18 extra time to gather information for a more specific diagnosis, allowing for more
19 targeted treatment
- 20 • the 1-, 3- and 6-hour time limits are a maximum (rather than an aim) for each risk
21 level
- 22 • clinical judgement is key when considering someone's specific care needs.

23 This explains why they also recommended that once a decision is made to give
24 antimicrobials, administration should not be delayed any further.

25 The committee agreed that basing the risk evaluation and antibiotic delivery time on
26 the NEWS2 would ensure due consideration is given to both patient safety and
27 antimicrobial stewardship.

1 **Type of antibiotics**

2 As part of giving due consideration to both between patient safety and antimicrobial
3 stewardship, the committee agreed that:

- 4 • For people with suspected sepsis for whom the source of infection is unknown,
5 broad-spectrum antibiotics should be given within the recommended timeframe for
6 the person's risk category.
- 7 • Once the source of infection is confirmed, source specific antibiotics should be
8 used instead.

9 **Single parameter contributing 3 points to a NEWS2 score**

10 The committee agreed that a single parameter contributing 3 points to a person's
11 NEWS2 score may be suggestive of organ dysfunction because it reflects a
12 parameter at an extreme value. Therefore, based on their clinical expertise, the
13 committee concluded that for people with such a parameter, clinical judgement is
14 needed to determine whether antibiotic administration can be deferred, and by how
15 much.

16 **When to count time from (time zero)**

17 To guide the appropriate timing for delivering antibiotics, the committee discussed
18 what constitutes time zero. After a long discussion, they agreed to define it as 'a first
19 NEWS2 score calculated on admission to emergency department or ward
20 deterioration' and accompanied by suspected or confirmed infection. This is in line
21 with the AoMRC report.

22 However, the committee raised concerns about possible inequalities and delays in
23 clinical assessment and subsequent reviews that may be due to

- 24 • geographical variability in transfer time and
- 25 • the high influx of patients and already strained NHS system.

26 They recognised that a long time might elapse between the moment a patient is first
27 deemed to be at high risk and that of admission in an emergency department, so
28 they also agreed to make recommendations to address this issue. To this end, they
29 amended, by consensus, an existing recommendation from NICE's guideline on

1 suspected sepsis (2015) to ensure that, in situations where not only transfer time but
2 also possible delays between arrival and admission in the emergency department
3 take more than 1 hour, GPs and ambulance services should have mechanisms in
4 place to give antibiotics to people with high risk of severe illness or death from
5 sepsis.

6 **How the recommendations might affect practice**

7 The committee agreed that for ambulance services, mental health facilities, and
8 acute hospitals that are already using the NEWS2, the recommendations would not
9 have a major impact on practice.

10 They also highlighted that risk stratification and antibiotic delivery time based on the
11 NEWS2 ensure due consideration is given to patient safety, antimicrobial
12 stewardship and resource capacity constraints.

13 **Context**

14 Sepsis is a clinical syndrome caused by the body's immune and coagulation systems
15 being switched on by an infection. Sepsis with shock is a life-threatening condition
16 that is characterised by low blood pressure despite adequate fluid replacement, and
17 organ dysfunction or failure. Sepsis is an important cause of death in people of all
18 ages. Both a UK Parliamentary and Health Service Ombudsman enquiry (2013) and
19 a UK National Confidential Enquiry into Patient Outcome and Death (NCEPOD,
20 2015) highlighted sepsis as being a leading cause of avoidable death that kills more
21 people than breast, bowel and prostate cancer combined.

22 Sepsis is difficult to diagnose with certainty. Although people with sepsis may have a
23 history of infection, fever is not present in all cases. The signs and symptoms of
24 sepsis can be very non-specific and can be missed if clinicians do not think 'could
25 this be sepsis?'. In the same way that healthcare professionals consider 'could this
26 pain be cardiac in origin?' when presented with someone of any age with chest pain
27 this guideline aims to make 'could this be sepsis?' the first consideration for anyone
28 presenting with a possible infection.

29 Detailed guidelines exist for the management of sepsis in adult and paediatric
30 intensive care units, and by intensive care clinicians called to other settings. To

1 reduce avoidable deaths, people with sepsis need to be recognised early and
2 treatment initiated. This guideline aims to ensure healthcare systems in all clinical
3 settings consider sepsis as an immediate life-threatening condition that should be
4 recognised and treated as an emergency. The guideline outlines the immediate
5 actions needed for those with suspicion of sepsis and who are at highest risk of
6 morbidity and mortality from sepsis. It provides a framework for risk assessment,
7 treatment and follow-up or 'safety-netting' of people not needing immediate
8 resuscitation. The intention of this guideline is to ensure that all people with sepsis
9 due to any cause are recognised and initial treatment initiated before definitive
10 treatment on other specific pathways is instituted.

11 At the time of writing, the terminology around sepsis is changing and new
12 international consensus definitions have been published. Previous terminology
13 included terms SIRS (systemic inflammatory response syndrome), severe sepsis
14 and septic shock but new terminology suggests using terms sepsis and septic shock
15 only . Sepsis is defined as a life-threatening organ dysfunction due to a dysregulated
16 host response to infection and septic shock as persisting hypotension requiring
17 vasopressors to maintain a mean arterial pressure (MAP) of 65 mmHg or more and
18 having a serum lactate level of greater than 2 mmol/l despite adequate volume
19 resuscitation. Neither of these definitions are useful in early identification of people at
20 risk and the guideline recommends actions according to clinical parameters that
21 stratify risk of severe illness or death from sepsis.

22 There is significant overlap between this guideline and other NICE guidance, in
23 particular the care of [acutely ill patients in hospital](#), the assessment and initial
24 management of [fever in under 5s](#), bacterial meningitis and meningococcal
25 septicaemia ([Meningitis \(bacterial\) and meningococcal septicaemia in under 16s](#)),
26 [neutropenic sepsis](#), antibiotics for prevention and treatment of [neonatal infection](#),
27 and [pneumonia in adults](#).

28 **Finding more information and committee details**

29 To find NICE guidance on related topics, including guidance in development, see the
30 [NICE topic pages on sepsis](#) and [antimicrobial stewardship](#) .

1 For details of guideline committee, see the [committee member list](#).

2 **Update information**

3 See the list of [changes made to NG51](#).