Suspected sepsis: a GP's guide to recognition and referral

Dr Greg Edwards reviews guidance on suspected sepsis, emphasising the pivotal role of primary care in recognising and referring possible cases

Sepsis is defined as 'life-threatening organ dysfunction caused by a dysregulated host response to infection'.[1] It can lead to tissue damage, organ failure, and death and is a time-dependent condition, meaning that early recognition and treatment are critical for improving outcomes. With an estimated 48,000 sepsis-related deaths annually in the UK,[2] many of which are potentially avoidable, early recognition and timely referral remain vital priorities.

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For GPs working in primary care, recognising sepsis early is critical yet often challenging because of the condition's nonspecific and variable presentation. This article outlines the practical steps that GPs can take to recognise possible cases of sepsis, assess risk, communicate effectively with secondary care, and optimise early management. It draws from UK guidance, including NICE's *Suspected sepsis: recognition, diagnosis and early management*,[3] the UK Sepsis Trust's clinical tools,[4] and guidance from the Royal College of General Practitioners (RCGP).[5]

Read this article to learn more about:

- how to identify and assess suspected sepsis in a primary care setting
- best practice for referring individuals identified as being at high risk and providing safety netting for others who are at risk of sepsis
- the potential roles of the National Early Warning Score and remote monitoring in the assessment and management of sepsis.

Key points can be found at the end of this article.

Read this article online at: **medscape-uk.co/GinP-sepsis**

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The challenge of sepsis in primary care

The incidence of sepsis in primary care is difficult to quantify, in part because of variability in recording and coding; however, the condition is widely believed to be under-recognised and is often misclassified.[5,6] With many patients presenting with nonspecific symptoms, early recognition requires a high index of suspicion and confidence in clinical decision-making.[5,6] Primary care clinicians must also contend with the challenge of differentiating sepsis from 'normal' physiological responses to self-limiting infections, particularly during seasonal surges in respiratory infections.

Groups at increased risk of sepsis

Sepsis can arise from any infection, but it is commonly associated with respiratory, urinary, abdominal, and skin infections.[7] It can arise in people of all ages, but is more common—and often more dangerous—in:[3]

- very young children
- older adults and those who are very frail

Table 1: Criteria for stratification of risk of severe illness or death from sepsis in people aged 12 years or above in community settings[3]

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 obstructive pulmonary disease) See recommendation 1.4.10 of the guideline 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
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 (**www.nice.org.uk/ng240**).	Signs of potential infection, including redness, swelling or discharge at surgical site or breakdown of wound

FiO2=fraction of inspired oxygen

- pregnant women and those who have given birth or experienced a miscarriage or termination of pregnancy in the preceding 6 weeks
- people with impaired immune systems, for example from chemotherapy or long-term steroid use
- people who have had surgery in the preceding 6 weeks, have experienced a breach of skin integrity, misuse drugs intravenously, or have indwelling lines or catheters.

Clinical red flags and risk stratification

NICE recommends a structured, risk-stratification approach to assessing the likelihood of sepsis.[3] This involves identifying high-risk/red-flag features, any of which should prompt consideration of immediate referral to an acute hospital setting for emergency care.[3] For people aged 12 years or over, these features are outlined in Table 1.[3]

Children aged under 5 years

NICE's guidance on suspected sepsis offers equivalent criteria for risk stratification in children aged under 5 years and children aged 5–11 years,

which should be consulted when assessing risk.[3] In addition, in its guidance on assessing and treating fever in children aged under 5 years, NICE has produced a traffic-light system to assist clinicians with categorising illness severity.[8] Features such as reduced responsiveness, weak or high-pitched cry, and grunting all suggest serious illness.[8] Children who are aged under 1 year, are immunocompromised, have indwelling devices, have had surgery in the preceding 6 weeks, or have a breach of skin integrity are at particular risk.[3]

Parental concern and clinical intuition

In paediatric cases, parental concern should not be underestimated.[3,8] A parent stating that their child is 'not themselves' or appears very unwell should be treated as a potentially serious warning sign.[3,5,8] The NICE guideline on fever in under 5s also supports using parental insight as part of assessment.[8]

Similarly, a GP's clinical intuition—often described as a 'gut feeling' that something is wrong—can be a valid predictor of serious illness.[9–11] Trusting this instinct and erring on the side of caution is advised.[6] Gut instincts should prompt action even in the absence of objective signs.[6]

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A structured approach to assessment

An initial examination should include assessment of temperature, heart rate, respiratory rate, level of consciousness, oxygen saturation, and blood pressure.[3] Blood pressure should only be assessed in children aged under 12 years if a correctly sized blood pressure cuff is readily available.[3]

GPs should document clinical observations clearly and consider using digital templates integrated into electronic patient record systems to support guideline adherence and auditing initiatives.[3,5,6] It is important that clinicians take a structured approach and document assessments and decisions adequately—not only for patient safety, but also for medicolegal protection.

Sepsis tools

The UK Sepsis Trust provides clinical toolkits (**bit.ly/3RRT4p3**) specifically designed for primary care and community settings.[4] These include sepsis screening tools for adults and children presenting in general practice, out-of-hours/telephone triage, and community services.[4]

Embedding these tools into practice systems and using them during clinical consultations can support consistent decision-making and may help primary care practitioners to escalate concerns quickly and clearly. The UK Sepsis Trust also provides e-learning modules and a range of sepsis resources, including posters and leaflets.

Remote consultations and sepsis risk

Remote consultations have become a routine and effective part of general practice, particularly for triage, follow up, and chronic disease management. When used appropriately, they support timely access and patient engagement.

However, in the context of suspected sepsis, certain clinical cues—such as general appearance or subtle signs of deterioration—may be less obvious without an in-person assessment.[3,12] GPs should be cautious and arrange a face-to-face review if there are concerns or diagnostic uncertainty.[3,12]

The role of NEWS2 in primary care

Although the National Early Warning Score (NEWS) 2 (see Figure 1) is not

Figure 1: NEWS2 scoring table[17,18]

Physiological parameter	Score 3	2	1	0	1	2	3
Respiration rate (per minute)	≤8		9–11	12–20		21–24	≥25
SpO_2 Scale 1 (%)	≤91	92–93	94–95	≥96			
SpO_2 Scale 2 (%)	≤83	84–85	86–87	88–92 ≥93 on air	93–94 on oxygen	95–96 on oxygen	≥97 on oxygen
Air or oxygen?		Oxygen		Air			
Systolic blood pressure (mmHg)	≤90	91–100	101–110	111–219			≥220
Pulse (per minute)	≤40		41–50	51–90	91–110	111–130	≥131
Consciousness				Alert			CVPU
Temperature (°C)	≤35.0		35.1–36.0	36.1–38.0	38.1–39.0	≥39.1	

Reproduced from: Royal College of Physicians. *National Early Warning Score (NEWS) 2: Standardising the assessment of acute-illness severity in the NHS. Updated report of a working party.* London: RCP, 2017. Available at: **www.rcp.ac.uk/improving-care/resources/national-early-warning-score-news-2**

Box 1: Case study: recognising sepsis in practice

A 74-year-old man with COPD contacts his GP practice reporting that he feels 'unwell' with increased breathlessness and a low-grade fever. He is assessed via telephone triage and brought in for a same-day face-to-face review. On examination, his respiratory rate is 28 breaths per minute, his oxygen saturation is 89%, his temperature is 38.6°C, and he appears confused.

The clinician recognises red flags for sepsis (respiratory rate, oxygen saturation, and apparent confusion[3]) and completes the UK Sepsis Trust's relevant sepsis screening tool for general practice. He is urgently referred to hospital via ambulance, with a referral letter detailing all observations, the patient's NEWS2 score, and his medication and allergy history. The ambulance crew pre-alerts the hospital about 'red-flag sepsis' and shares the man's NEWS2 score. On arrival, he is diagnosed with community-acquired pneumonia and sepsis. Intravenous antibiotics and fluids are administered within the hour, and within days his condition stabilises.

As this example demonstrates, prompt recognition, structured assessment, and efficient communication with secondary care can significantly improve outcomes.

COPD=chronic obstructive pulmonary disease; NEWS2=National Early Warning Score 2

formally validated for use in general practice, it can be a useful adjunct for assessing clinical acuity in adults with suspected sepsis,[13–15] particularly during home visits or in urgent treatment centres. As emphasised by the RCGP, NEWS2 may be useful in primary care, but should only be considered as an adjunct to individual clinical judgement.[15]

When used appropriately, NEWS2 provides a standardised language for communicating physiological observations and escalation needs to ambulance crews and secondary care colleagues.[14,15] GPs can also use the individual elements of the score—such as respiratory rate, oxygen saturation, and level of consciousness—to support decision-making in the absence of a full score.[3,15]

Practices should ensure access to basic equipment (including pulse oximeters, thermometers, and BP monitors), and may wish to consider training relevant staff in the appropriate use and interpretation of NEWS2 to support triage and handover.[3,5,15] A paediatric equivalent, the national Paediatric Early Warning System (PEWS), has been developed and is being used in certain areas of the UK.[16]

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Referral and early management

All people who are identified as being at high risk of sepsis (see *Clinical red flags and risk stratification*) should be referred immediately for emergency medical care using the most appropriate means of transport.[3]

Antibiotic use in primary care

In certain situations, antibiotics may need to be administered in primary care. The decision to administer antibiotics should be based on a mixture of clinical severity and logistical factors, as NICE recommends that GPs should give antibiotics immediately if:[3]

- sepsis is suspected **and**
- the patient meets any of the high-risk criteria for sepsis **and**
- hospital transfer will be delayed by more than 1 hour (for example, because of remote location, ambulance delay, or long transport time).

In such cases, broad-spectrum intravenous antibiotics should be used, guided by local microbiology policy and availability.[3,14] Ideally, blood cultures should be taken before antibiotics, but treatment should not be delayed if this is impractical.[14] However, if the patient is stable and rapid transfer is available, transfer should not be delayed because antibiotics are being administered.

GPs should document the rationale for any antibiotic use and communicate clearly with secondary care,[5] including giving information about any recent antimicrobial exposure. Primary care clinicians should pre-alert the receiving hospital about a case of suspected sepsis to improve transition and reduce time to treatment.[3,14] Rapid access to paramedics can also help to facilitate prompt treatment.

For an example case study on the recognition and referral of suspected sepsis in primary care, see Box 1.

When immediate transfer is not required

Clinical decisions should always be made in the context of the individual patient's condition, comorbidities, clinical stability, and goals of care.[3,14] Sepsis risk-stratification tools are designed to support decision-making, but must be interpreted alongside overall clinical judgement and the patient's history.[3] Escalation to hospital may not be appropriate in every case, and it is essential to document shared decision-making with the patient and/or their family whenever possible.

If immediate hospital transfer is not indicated but the person is at moderate to high risk of sepsis, primary care clinicians are advised to assess whether:[3]

- a definitive diagnosis of the person's condition can be made
- the condition can be safely managed outside of hospital.

If either of these cannot be confidently established, the person should be referred for emergency care.[3]

For patients who do not meet high or moderate risk criteria, safety netting should be carried out (see *Safety netting*).[3] To support safety netting, clinicians should have a low threshold for follow-up assessment.

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Safety netting

If immediate hospital referral is not indicated but sepsis is a possibility, safety netting is essential.[3,5] Patients and carers should be given a timeframe for reassessment, as well as clear information about:[3,14]

- the reasons why sepsis was suspected and how it has been investigated
- what symptoms to look out for
- when and how to seek further medical assistance.

Red-flag symptoms that patients should be aware of include worsening confusion, increasing breathlessness, mottled or cold extremities, reduced urine output, and a rapidly deteriorating condition (see *Clinical red flags and risk stratification*).[3]

Safety netting should be documented and include clear contingency plans.[3,5] A written or text-based safety-netting message can help to reinforce this advice.[5] It may be useful to implement standardised safety-netting leaflets or text messages to ensure consistency.

Virtual wards and remote monitoring

Remote monitoring technologies and virtual wards are valuable tools for enhancing management in the community,[19] and it may be appropriate for certain patients deemed at risk of sepsis to be monitored in the community in this way. These services enable clinicians to monitor physiological parameters such as heart rate, temperature, and oxygen saturation remotely, facilitating early identification of deterioration.[19] They also support safe discharge, continuity of care, and reduced hospital burden.[19]

Training and quality improvement

Training and continuous quality improvement are essential for improving sepsis outcomes in primary care.[3,5,6] This training should involve both clinical and nonclinical staff, in recognition of the vital role played by nonclinical team members—particularly reception staff—in identification.[5,6]

Nonclinical staff

Receptionists are often the first point of contact in general practice, whether in person or over the phone. Their ability to recognise red-flag symptoms and escalate concerns appropriately can be crucial. For example, a receptionist who notices a patient struggling to speak, sounding confused, or describing difficulty breathing should be empowered to alert clinical staff immediately. Practices should therefore consider offering specific sepsis training to reception teams to help them recognise concerning symptoms and understand when to prioritise same-day appointments or escalate for urgent review.[3,5]

Training

Clinical leads—or 'sepsis champions'—within practices can help to coordinate training, raise awareness, and drive audit activity.[5] GPs, practice nurses, and other clinical staff should have regular training on sepsis recognition, including the use of decision-support tools and safety-netting protocols.[3,5] Simulation training and roleplay scenarios may be especially helpful for improving team confidence and coordination, particularly in out-of-hours settings and other settings in which urgent triage decisions are regularly required.

Quality improvement

Auditing and feedback are also vital for improving the identification of sepsis.[5] Reviewing cases of suspected or confirmed sepsis—especially missed opportunities and cases in which referral was delayed—can identify system-level learning points.[5,6] Practices may wish to consider including sepsis in their quality-improvement plans and aligning training priorities with the local integrated care board's patient-safety initiatives.

Summary

Sepsis is a time-dependent condition for which delays in recognition and treatment increase the risk of harm, making its recognition in primary care both challenging and critical. GPs must remain vigilant, examine patients effectively, and trust their clinical judgement, as prompt identification, communication, and referral can save lives.

Supporting this work with training, standardised protocols, and sepsis champions within practices can help

Key points

- Be vigilant for suspected sepsis, thinking *'could this be sepsis?'* when assessing any person with signs or symptoms of infection
- Use structured, age-appropriate assessments (such as those provided by NICE) to assess an individual's risk of sepsis
  - key criteria include altered mental state, raised respiratory rate, new need for oxygen to maintain saturation, low SBP, raised heart rate, reduced urine output, cyanosis, and a mottled or ashen appearance
- Primary care practitioners should trust their clinical instincts and listen to parental concerns when assessing possible cases
- Prioritise face-to-face assessment when sepsis is a possibility, as examination is required for assessment
- Refer patients for emergency medical care if red flags are present
  - do not delay referral for investigations, and only administer antibiotics in primary care if a patient is unstable or there will be a delay in transfer to hospital
- Provide clear safety-netting advice when a patient is considered at low enough risk to be managed in the community
- Clearly document all key findings, safety-netting activity, and rationale for decision-making, and share important information with secondary care when referring
- Ensure that all team members, including reception staff, are trained to recognise red flags and escalate concerns appropriately
- Consider practice audits to review trends in the recognition and referral of sepsis.

SBP=systolic blood pressure

to improve outcomes. As digital health continues to evolve, the integration of remote monitoring and virtual care into standard practice may enhance the ability of healthcare services to manage sepsis safely and effectively in the community.

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