

Recognition, diagnosis, and early management of sepsis:

NICE guideline

INTRODUCTION

The National Institute for Health and Care Excellence (NICE) has published a clinical guideline on the recognition, diagnosis, and early management of sepsis. The guidance covers children and adults, and is for health professionals working in all settings.¹

The Health Service Ombudsman identified sepsis as one of the main causes of avoidable death² and the Sepsis Action Plan (2015) suggested that better treatment could reduce mortality and morbidity associated with sepsis, and that 10 000 deaths a year could be prevented.³

GUIDANCE

Sepsis is a life-threatening organ dysfunction caused by a dysregulated host response to infection.⁴ The challenge for all healthcare professionals is to identify sepsis before significant organ failure has occurred. The challenge for primary care clinicians is to detect the small number of patients who might have sepsis among the many patients who present with an uncomplicated infection and who do not have and will not develop sepsis. The guideline recognises that clinical judgement is always required and aims to ensure patients are assessed appropriately to pick up any clues to the presence of sepsis.

The overwhelming nature of sepsis means that usual markers of infection such as a temperature may not develop. In fact the temperature may be low because the patient may not be able to mount a febrile response. Patients may instead have non-specific, non-localised presentations such as feeling very unwell. However, sepsis may lead to organ failure, such as acute kidney injury, cardiovascular impairment including tachycardia, septic shock or cardiac arrest, respiratory failure, or impact on the central nervous system.

The NICE guideline starts with a recommendation to think 'Could this be sepsis?' when a patient with infection contacts a healthcare professional. The

guideline uses the analogy of chest pain, where the first step when a patient presents with chest pain is to exclude a cardiac cause. This is commonly done with a brief history of the nature of the pain and risk factors for cardiac disease.

Initial assessment

The guidance recommends that the initial assessment of patients with suspected infection should include identification of the source of infection, any factors that would make the patient more susceptible to sepsis (Box 1), and indicators of clinical concern, in particular indications of problems with mental state, circulation, or respiration. A patient's mental state should be interpreted in the context of their normal function. Irritability in the older person or in children may indicate a change in mental function, and collateral history from family is important because changes may be subtle.

The very young, particularly neonates, but all children aged <1 year, and older people >75 years, are at higher risk of developing sepsis. Those who are at risk of neutropenic sepsis because of current treatment require automatic assessment in secondary care, but there are an increasing number of patients whose immunity may be impaired due to medication such as steroids or biological treatments, or due to chronic disease such as diabetes, kidney disease, or sickle cell anaemia. It is important not to forget women who are currently pregnant, or have been pregnant, as they are particularly at risk because their immune system is modulated to accept foreign protein from the foeto-placental unit and they are at 50% more risk than young adults who are not pregnant.³ This includes women who may have had a miscarriage or termination.

Face-to-face assessment

The majority of patients presenting to

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Box 1. Factors that increase the risk of sepsis

- Patients <1 year old or >75 years old, or very frail patients
- Patients who have impaired immune systems because of illness or drugs:
 - chemotherapy for cancer treatment
 - impaired immune function (such as those with diabetes or sickle cell disease, or patients who have had a splenectomy)
 - long-term treatment with corticosteroids
 - treatment with immunosuppressant drugs for non-malignant disorders, such as rheumatoid arthritis
- Patients who have had surgery, or other invasive procedures, in the past 6 weeks
- Patients with any breach of skin integrity (such as cuts, burns, blisters, or skin infections)
- Intravenous drug misuse
- Patients with indwelling lines or catheters.
- Women who are pregnant or have given birth or had a termination of pregnancy or miscarriage in the past 6 weeks, in particular women who:
 - have impaired immune systems because of illness or drugs
 - have gestational diabetes or diabetes or other comorbidities
 - needed invasive procedures (such as caesarean section, forceps delivery, removal of retained products of conception)
 - had a prolonged rupture of membranes
 - either are or have been in close contact with people with group A streptococcal infection (such as scarlet fever)
 - have continued vaginal bleeding or an offensive vaginal discharge

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primary care with infection will not have sepsis and can be treated according to disease-specific guidelines; for example, the urinary tract in children guideline or according to clinical judgement. Patients with risk factors and any indicators of clinical concern should have a structured face-to-face assessment, and for those with suspected sepsis the guideline provides criteria to stratify risk of severe illness or death according to age (risk stratification tables are available on the NICE website).¹

The guideline committee considered a structured assessment important to detect any physiological abnormalities that may indicate the need for action. These should include temperature, pulse rate, respiratory rate, blood pressure, level of consciousness, and oxygen saturations. In children this should include capillary refill time (CRT), but blood pressure should only be measured if a correctly sized cuff is available and oxygen saturations should only be measured if this does not delay assessment.

When interpreting these figures, account must be taken of normal values for the patient such as physiological bradycardia in the athlete, low systolic blood pressure in a young woman, a patient with COPD and longstanding low oxygen saturations, or the older person on a beta-blocker.

There are currently no scoring methods or point-of-care tests that can be used out of hospital to support a diagnosis of sepsis.

Management

Immediate management of people with suspected sepsis is based on the results of the structured assessment. Those with suspected sepsis and high-risk criteria should be referred to acute hospital settings for emergency medical care. This is time critical as survival has been found to reduce for each hour's delay in treatment. The hospital must be pre-alerted that a patient is being admitted so as to facilitate a fast response.

Antibiotics should not be given unless meningococcal disease is specifically suspected (non-blanching rash in the presence of fever). The aim is for samples such as blood cultures or urine to be taken prior to the administration of antibiotics to improve antibiotic stewardship.

Patients with suspected sepsis and any moderate- to high-risk criteria should be assessed to make a definitive diagnosis of their condition and decide if they can be safely treated outside of hospital. If a definitive diagnosis cannot be reached or

the patient cannot be safely managed in the community, they should be referred for emergency care.

Adults, young people, and children who do not meet any high-risk or moderate- to high-risk criteria are considered to be low risk, and should be provided with safety netting information about symptoms to monitor, and how to seek further advice if needed.

Comment

The guideline aims for a pragmatic approach where the consideration by primary care clinicians of whether someone has sepsis will hopefully reduce delay in diagnosis. It is important to note there is a lack of good-quality evidence to inform risk assessment and the guideline group had to develop recommendations from low-quality evidence. Recent international work has sought to develop sepsis-specific scores to highlight patients at increased risk but this work has not been validated in the UK, and in its current form would likely overwhelm services.⁴ There is evidence for use of early warning scores on hospital wards to identify unwell and deteriorating patients, and the guideline has made a research recommendation for assessment of these scores in emergency and community care. It is possible that, in the future, research will identify biomarkers for sepsis to support clinicians' decision making.

The challenge for primary care remains how to identify those patients with possible sepsis. It is hoped that the reminder to think about sepsis and knowledge about at-risk groups will facilitate this. The suspicion of sepsis in primary care requires clinical judgement and must be combined with patient history, examination, and a full set of observations to risk assess the patient and inform the management. As part of the NHS Sepsis Action Plan, Health Education England has produced a report outlining current provision and future requirements for education of healthcare professionals, which includes specific education developed for primary care.⁵

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Provenance

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