

Getting it right: The current state of sepsis education and training for healthcare staff across England

Full report



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Foreword

Sepsis is a potentially life-threatening condition that affects an estimated 150,000 people per year in the UK ([UK Sepsis Trust](#), 2016) and is a significant cause of preventable morbidity and mortality. Whilst there have been significant advances in defining the recognition and management of sepsis, reviews of practice and individual cases have identified failings in the healthcare system in identifying and intervening early when patients have sepsis. The standard of care received by patients with sepsis in England needs to improve.

In response to our [Mandate](#) from the Department of Health and on behalf of NHS England's [cross-system sepsis programme board](#), we have scoped the current provision of sepsis education and training for healthcare staff in England. This report outlines the findings of this work.

Whilst the report highlights numerous examples of good practice in relation to sepsis education and training, there are clear gaps in the provision of sepsis education and training. This is particularly relevant for healthcare staff working in community and primary care settings, management and executive staff within healthcare providers, and staff in permanent and non-training roles.

This report includes a summary of the work we have undertaken this year in response to these gaps, for example, the e-learning package "[Think Sepsis: the identification and management of sepsis in primary care](#)" and a [film](#) that signposts viewers to current learning material "[Think Sepsis: Identifying and managing sepsis in paediatrics](#)".

There is still more work to be done however, to ensure that all healthcare staff in England can access up-to-date education and training about sepsis. This report includes recommendations to ourselves and other stakeholders in order to achieve this.

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Introduction

In our [Mandate](#), we were asked to ensure training is available so that healthcare staff are competent in the recognition of, and response to, sepsis. In response to this, and on behalf of NHS England's [cross-system programme board for sepsis](#), we carried out a scoping exercise in order to gain an understanding of the current state of sepsis education and training for healthcare staff across England.

The aims of this exercise were:

1. to identify the groups of healthcare workers currently receiving training in sepsis and the educational resources used to provide this training
2. to identify existing examples of good practice and high-quality training resources
3. to identify gaps in the training currently provided
4. to make recommendations for future work needed to improve the provision of sepsis education and training for healthcare staff in England.

As part of this scoping exercise information was collected about:

- learning materials in use or recommended by relevant stakeholders including the royal colleges and the UK Sepsis Trust
- learning resources currently in use in the clinical service sector that could be shared as good practice
- the impact of existing resources on sepsis awareness, clinical practice and patient outcomes
- staff groups currently receiving sepsis training
- methods to support and embed learning at ground level.

The purpose of this report is therefore to provide us with a broad understanding of the current provision of sepsis education and training for healthcare staff across England. Throughout this report, examples of good and innovative practice in sepsis training are highlighted, which could be adapted for use across the system. We have highlighted high-quality educational resources which could be promoted nationally for use in sepsis training.

Background

Sepsis is the syndrome that results from the body's inflammatory response to infection, and indicates significant physiological distress. It is a time-critical medical emergency. Sepsis results in organ damage, which without prompt recognition and treatment can rapidly progress to septic shock, multi-organ failure and death. Septic shock refers to the most severe end of the spectrum of clinical features caused by sepsis, and is often characterised by a drop in systolic blood pressure, termed 'sepsis-induced hypotension', that is not reversible with intravenous fluid resuscitation ([Singer et al. 2016](#) & [NICE 2016](#)). The most common causes of sepsis are pneumonia, bowel perforation, urinary tract infection and severe skin infections ([Parliamentary and Health Service Ombudsman 2013](#)).

Sepsis is a significant problem in England. In 2014, an estimated 150,000 people in the UK were affected by sepsis, with an estimated 44,000 deaths per year ([UK Sepsis Trust 2016](#)). This puts sepsis as a leading cause of death in the UK, second only to cardiovascular disease. For survivors of sepsis there are often long-term mental and physical effects. These include organ dysfunction, chronic pain, fatigue and post-traumatic stress disorder ([NHS England 2015](#)).

Although there are certain groups in whom sepsis is more common – the very young and very old, people with multiple co-morbidities, people with impaired immunity and pregnant women – it can occur in anybody, regardless of their age or health status. It is important to understand that if sepsis is recognised early and appropriately managed it is treatable, and that if recognition is delayed and appropriate treatment not instituted, significant harm can occur to the patient.

One estimate suggests that with better care 10,000 deaths per year from sepsis could be avoided ([NHS England 2014](#)), which means that many of these 44,000 annual deaths from sepsis are therefore avoidable. Prompt recognition and treatment can save lives. A large retrospective cohort study of adult patients with septic shock revealed that administration of antibiotics within one hour of identified hypotension resulted in a survival rate of 79.9%. Each hour's delay in the administration of antibiotics resulted in a 7.6% decrease in survival rate ([Kumar et al. 2006](#)). Implementation of the [Sepsis Six](#) bundle for the early management of sepsis has been shown to reduce the relative risk of death by 46.6% when delivered to patients with severe sepsis within one hour ([Daniels et al. 2011](#)). The [Sepsis Six](#) bundle consists of six simple tasks: give oxygen to the patient, take blood cultures, give antibiotics, give fluids, take a lactate level and monitor urine output. It is clear that better treatment could improve the morbidity and mortality associated with sepsis.

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Failings in the care received by patients with sepsis

Despite these reports clearly defining the need for rapid recognition of sepsis and initiation of treatment, recent studies into the care that patients with sepsis receive in England report failings, especially related to the care these patients receive in the early stages of their illness.

The Parliamentary and Health Service Ombudsman's report '[Time to Act](#)' (2013) focussed on ten cases of death resulting from sepsis. The failings in the care of these patients mainly occurred in the first few hours following the onset of sepsis, when the rapid recognition and initiation of treatment are critical to a patient's chances of survival.

The National Confidential Enquiry into Patient Outcome and Death (NCEPOD) recently published the results of a review of the processes of care received by patients with sepsis ([2015](#)). Of the 551 cases they reviewed in detail, only one in three patients were considered by the reviewers to have received a good standard of care. The report identified many cases of sepsis where diagnosis was delayed because clinicians failed to record basic vital signs. In cases where sepsis was diagnosed, many patients did not receive the simple interventions that in many cases will save lives.

The need for improved education and training in sepsis

Identifying sepsis in its early stages can be difficult for healthcare staff. The clinical features of developing sepsis can be very subtle and it does not have the distinct features of other conditions such as heart attacks and strokes (NHS England, 2015). This is compounded by the fact that awareness of sepsis amongst the public is low, often resulting in delayed presentation to healthcare services.

One of the shortcomings identified in the Parliamentary and Health Service Ombudsman's report on sepsis ([2013](#)) focussed on the need for adequate education and training of staff in relation to the recognition of sepsis. This was echoed in the recommendations in the report "[Just Say Sepsis!](#)" from NCEPOD (2015). It is important that we train healthcare workers to recognise the subtle early signs of developing sepsis, and develop an ethos in which sepsis is considered in every sick patient that presents to a healthcare worker.

Think sepsis

'Think sepsis' is a concept that encourages every healthcare worker to consider a diagnosis of sepsis for every patient that presents to them acutely unwell or with an

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acute deterioration in their condition. This approach has been successfully used in relation to diagnosing pulmonary embolism, another life-threatening condition that often presents with non-specific symptoms and signs.

The current provision of sepsis education and training in England

Until now there has been no strategic view around sepsis training for healthcare staff in England. Training in sepsis does not form part of statutory mandatory training for healthcare staff in England. Although there are many resources available to assist with sepsis training, for example those developed by the UK Sepsis Trust, there has been no clear direction with regard to what training is required, how it should be delivered, and to whom. As a result there is significant variation in the training provided to different groups of healthcare staff and across different healthcare settings.

The All-Party Parliamentary Group for sepsis report entitled "[Sepsis and the NHS](#)" (2015) contacted 159 NHS trusts in England via a freedom of information request asking about sepsis training. The data collected included the percentage of medical and nursing staff at each trust that can evidence being trained in sepsis recognition and management, and the number of hours of sepsis training received by staff per year.

Responses to that request were received from 121 NHS trusts. Of these, only 55 provided a direct response detailing what percentage of their staff with evidence of sepsis training. Only 74 responded with information about the number of hours of training received by staff each year.

The results revealed a large variation in the proportion of nursing and medical staff being trained in sepsis recognition across different acute hospital trusts, ranging from 8% to 100% with a mean of 66%. The percentage of staff in an acute hospital trust receiving training correlated with the size of the trust, with larger trusts having more staff with evidence of sepsis training.

Nearly three quarters of trusts reported that staff received an hour or less of sepsis training per year. A fifth of trusts demonstrated a day or more of sepsis-specific training per year for medical staff, only two of the 159 trusts contacted were able to demonstrate this for nursing staff.

The All-Party Parliamentary Group for sepsis report ([2015](#)) highlighted a deficiency in the recording of sepsis training in trusts – over a third of trusts were unable to provide any indication of training levels, with half of trusts providing either no data or partially complete data.

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Cross-system sepsis programme board

In 2015, NHS England convened a cross-system sepsis programme board to drive forward the actions that need to be taken in order to improve outcomes for patients with sepsis. The identified actions included the need to increase awareness of sepsis amongst professionals (and the public) and ensure that training in sepsis is available to all healthcare staff. This report forms part of our response to these actions identified by the cross-system sepsis programme board ([NHS England](#), 2015).

Key issues and risks

This report comes at a time of great change relating to the recognition and management of sepsis.

In February 2016 a [new international definition of sepsis](#) was released, the first revision of the definition since 2001. The new definition represents a move away from an excessive focus on inflammation and an over-reliance on using systemic inflammatory response syndrome (SIRS) criteria to make a diagnosis of sepsis, which lack adequate sensitivity and specificity. The new definition is intended to replace the multiple definitions and terminologies that are in use for sepsis around the world which result in discrepancies in reported incidence and mortality ([Singer et al. 2016](#)). There has been some uncertainty in relation to the adoption of this new sepsis definition in England.

The first [NICE guideline for sepsis](#) was released in summer 2016. This covers the recognition, diagnosis and early management of sepsis. This guideline will result in a change in the recommended diagnostic criteria and management of sepsis in children and adults in England, both in hospital and community settings.

As a result of these changes, we must be cognisant that much of the currently available material relating to sepsis is in need of updating.

Another issue is the growing problem of antibiotic resistance and the need for careful antimicrobial prescribing and stewardship. The threat posed by antibiotic resistance to modern healthcare is widely recognised ([Department of Health 2013](#)). It is essential that when healthcare workers receive education and training relating to sepsis, the [fundamental principles](#) of safe and appropriate antimicrobial prescribing, and the importance of antimicrobial stewardship are included. The early management of sepsis requires administration of antibiotics within an hour of patient presentation. There is a risk that with increased awareness of sepsis, undisciplined use of antibiotics will increase and antimicrobial resistance will get worse. This must be addressed in education and training about sepsis.

Methods

Data collection

We conducted a scoping exercise in autumn 2015 with the aim of gaining a broad understanding of the current provision of sepsis education training in England. The stakeholders contacted as part of this exercise include:

- all hospitals in England
- all ambulance trusts in England
- all Health Education England's local teams
- all Academic Health Science Networks in England
- royal colleges and professional societies – Royal College of Physicians, Royal College of Surgeons, Royal College of Obstetricians and Gynaecologists, Royal College of Paediatrics and Child Health, Royal College of Emergency Medicine, Royal College of Anaesthetists, Royal College of Nursing, Royal College of Midwives, College of Paramedics, Royal Pharmaceutical Society, Registered Nursing Home Association
- Skills for Care
- UK Sepsis Trust
- e-Learning For Healthcare

Stakeholders were contacted by email and requested to complete a [survey](#). HEE's local teams, Academic Health Science Networks, royal colleges and professional societies were requested to provide information about any sepsis-related educational and training resources they were aware of, and details of any resources that had been developed, supported, or commissioned by their organisation.

Acute hospital trusts and ambulance trusts, in addition to the above, were asked to provide information on which staff groups were receiving training and whether there were any methods in place to support the delivery of training.

Access to any educational and training resources identified in the surveys was then requested, along with the results of any formal evaluation of these resources.

All stakeholders were asked about the perceived gaps in sepsis training.

A full list of respondents can be found in Appendix A.

A separate scoping exercise of the availability of sepsis educational materials targeted at healthcare staff in primary care was commissioned by HEE and carried

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out by the Royal College of General Practitioners in the summer of 2015 and a report produced. The full report can be found in Appendix B.

Data analysis

Data collected as part of the scoping exercise was analysed to:

- identify which healthcare staff groups are receiving education and training
- identify methods used to deliver education and training
- identify methods used to augment education and training and to ensure that the learning is embedded into practice
- identify educational and training resources with evidence of effectiveness in improving outcomes for patients with sepsis
- identify educational and training resources that could be promoted nationally
- identify examples of good and innovative practice with regard to sepsis training
- identify the gaps in the current provision of sepsis education and training.

Educational and training resources were initially reviewed by two reviewers to identify those with the potential to be shared nationally. These were then reviewed by a larger team of expert reviewers before their inclusion in the report.

Examples of good or innovative practice were identified by two principal reviewers where the training resource was found to be particularly innovative or effective and then reviewed by a larger team as above.

Process of resource evaluation

The process of evaluating the resources was divided into two steps:

1. Step 1: The responses we received from our survey were filtered by: the information source, type of resource; description of resource; date developed; licence status; format; whether currently in use; how delivered, target audience (professional groups / geographical location); evidence of effectiveness; any feedback; numbers of people / trusts who've accessed material; comments; whether we needed more information; and potential to be shared as good practice.

2. Step 2: Once we had filtered down resources from the step one evaluation we then further analysed these under four main domains:

i) *Basic information:* Name of the resource; the information source and where the resource is in use; its brief description; and user quality rating (A, B, C).

ii) *Educational content:* The broad aim of the resource / target groups; whether the learning objectives were clear; whether the educational methods achieved the

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learning objectives; where the resources clinically accurate; were they based on recent published evidence and free from unjustifiable claims and bias; was sepsis defined (and if so according to what criteria e.g. Surviving Sepsis Campaign, UK Sepsis Trust); if not defined how was this described / explained; whether the material need updating to align with a new definition of sepsis; did it cover the recognition of sepsis; did cover the management of sepsis; and was is it contemporary / relevant / up-to-date.it

iii) *Who the resource was aimed at:* The care setting aimed at (e.g. primary, secondary, community); the target professional groups (e.g. doctors, nurses, paramedics); the level of training (e.g. students, foundation programme, pre-registration, CPD); and other / undefined.

iv) *Evidence of effectiveness:* The type of resource; whether any evidence of effectiveness was available; and the [Kirkpatrick level](#) of the educational resource (i.e. reaction, learning, behaviour, and results).

v) *Potential to be shared as good practice:* The resource date of production; its licence status; whether we could share this nationally; and whether it needed updating with new sepsis definition.

This evaluation process was developed in conjunction with Catherine O'Keefe, Head of Professional Development, Dean of Healthcare Education North West London & Clinical Lead Professional Development London and South East, with Ron Daniels, Chief Executive, UKST and was used to identify the final resources recommended in this report.

The resources were identified by two principal reviewers and then underwent peer review. All resources received through the scoping exercise were analysed against an agreed set of criteria described above in order to identify those likely to be most beneficial to healthcare staff. We also utilised the following sources to develop criteria against which to analyse resources:

- expert opinion
- [RCGP Educational Accreditation](#): A Guide for Applicants (Royal College of General Practitioners)
- [Commissioning eLearning Resources in the NHS key principles and guidance](#) (NHS Strategic eLearning Leads Group, 2012)
- [E-learning in the Health Sector: Some Key Quality Principles](#) (Skills for Health, 2012)

Findings

Responses were received from the following stakeholders:

- 66 hospitals
- 10 ambulance trusts
- 12 of Health Education England's local teams
- 9 Academic Health Science Networks
- 4 royal colleges - Royal College of Physicians, Royal College of Obstetricians and Gynaecologists, Royal College of Paediatrics and Child Health, Royal College of Emergency Medicine
- The Registered Nursing Home Association
- Skills for Care
- UK Sepsis Trust
- Health Education England's e-Learning for Healthcare team.

From the 66 hospitals that attempted to respond to the survey, 30 hospitals had undertaken, supported, or commissioned any work to develop educational/training resources related to sepsis. A total of 36 hospitals provided feedback on gaps in the educational and training material currently available around the recognition of and management of sepsis.

Although the aim of this scoping work was not to focus on primary care, we received responses from 3 clinical commissioning groups (CCGs) and 1 primary care organisation. 2 CCGs had undertaken, supported, or commissioned any work to develop educational/training resources related to sepsis and 1 primary care organisation. All had evidence of their effectiveness and any feedback. All 3 CCGs provided feedback on gaps in the educational and training material currently available around the identification of and treatment of sepsis.

The responses have been analysed in such a way that they provide a broad overview of the current provision of sepsis training in England.

Staff groups currently receiving training

Hospitals:

Of the 66 hospitals who responded to our scoping survey, only 25 (38%) responded to questions about the staff groups that are currently receiving training on sepsis. Our data therefore provides only a guide to the staff groups who are currently receiving training.

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i) Medical staff:

Most hospitals that responded to questions about staff groups receiving training indicated that they offer sepsis training to medical staff (23 of 25 hospitals, 92%). Sixteen of these 25 hospitals (64%) stated that they provide sepsis training to all their medical staff. Most hospitals provide sepsis training for foundation doctors (23 trusts, 92% of respondents), frequently delivered as part of the teaching programme for foundation doctors. It is a requirement for successful completion of the foundation programme that foundation doctors must be able to demonstrate to their supervisors learning related to the management of sepsis. The majority of these hospitals also provide training to core and specialist trainees (23 trusts, 92%), delivered either as part of their hospital induction, or in some specialties as part of their specialty-specific teaching programmes. Where this is the case, the departments most commonly offering sepsis training to core and specialist trainees are critical care (10 trusts) and emergency departments (8 trusts), followed by medicine (6 trusts) and care of the elderly (6 trusts). 20 hospitals (80%) stated that they offer sepsis training to their consultant staff.

ii) Nursing Staff:

Most respondents to questions about sepsis training stated that their nursing staff receive training on sepsis (23 hospitals, 92%). The majority of these 23 hospitals stated that training was provided to nursing staff across all specialties (18 hospitals, 78.3%). Where this isn't the case, emergency departments (5 hospitals) and critical care (4 hospitals) are the departments that most commonly offer training.

iii) Healthcare assistants:

Seventeen hospitals (68%) report that they provide sepsis training for their healthcare assistants.

iv) Pharmacy staff:

14 acute hospitals (56% of respondents) provide sepsis training to their pharmacy staff.

v) Allied health professionals:

16 hospitals (64% of respondents) provide sepsis training to allied healthcare professionals (AHPs).

vi) All staff:

14 hospitals (56% of respondents) provide sepsis training to all their staff.

Ambulance Trusts:

10 of the 11 ambulance trusts contacted (90.9%) responded to questions about the sepsis training they provide for staff. All 10 trusts reported that they do provide

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sepsis training for their clinical staff, and all trusts had developed resources to aid this training. Only one trust (9.1%) stated that they provide sepsis training to non-clinical call centre staff.

Paramedics on the Isle of Wight have been trained to recognise sepsis and deliver aspects of the [Sepsis Six](#) management bundle in the community, including delivery of antibiotic therapy, resulting in better integration of sepsis care across the pre-hospital and in-hospital phases.

The project was piloted with a small group of paramedics and two high risk groups of patients: adult patients on or recently finished cytotoxic chemotherapy, and patients with a urinary catheter showing signs of urosepsis. The pilot tested the concept that UK paramedics could accurately recognise sepsis, take blood cultures, and initiate treatment before patients reached the emergency department.

The pilot ran for a year and during this time paramedics treated 69 patients for sepsis. The hospital diagnosis was confirmed as sepsis in 64 of these 69 patients (93%). The average time from 111/999 call to antibiotic administration was 49 minutes, there was an increase of five minutes on the average on-scene time for the ambulance service. Blood cultures taken by paramedics grew possible skin contaminants in three cases (4.3%), which is a rate similar to the in-hospital figures for the blood cultures taken by doctors.

The project has now been rolled out to all paramedics and all patients on the Isle of Wight.

Paramedics on the Isle of Wight receive the following training:

- sepsis introductory video covering the importance of early recognition and management of sepsis, consideration of source identification, and details of the sepsis management protocol developed for paramedics
- 1:1 training sessions with an ambulance service Clinical Support Officer (CSO) to discuss clinical scenarios
- practical training sessions covering blood culture sampling and the reconstitution and delivery of antibiotics
- personal feedback to each paramedic on the cases of sepsis they have treated by Clinical Support Officers.

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Community:

From the 3 CCGs that responded 2 (67%) provided education and training to all medical and nursing staff and only 1 (33%) provided education and training for pharmacists.

We found little evidence of sepsis training specifically for care home staff. Although we did not contact care homes directly, we received responses from the Registered Nursing Home Association and Skills for Care, neither of whom were aware of any sepsis training currently aimed at care home staff. An e-learning module for care workers in the community has been developed by the UK Sepsis Trust and the North West Coast Academic Health Science Network. This is freely available on the UK Sepsis Trust [learning platform](#).

Training mediums used to deliver sepsis training

Hospitals

A variety of training mediums are in use in hospitals for the delivery of sepsis training. The most commonly used mediums are face-to-face teaching sessions and workshops. Hospitals are utilising e-learning, some of which is developed by the hospitals themselves, as well as regionally and nationally developed resources. We were made aware of several e-learning packages currently in development. The most commonly used national training resources are those available from the UK Sepsis Trust. Simulation is frequently utilised for sepsis training. Several hospitals have produced videos to raise sepsis awareness and provide basic education on recognition and management. Other training mediums include a sepsis board game developed by Focus Games in collaboration with the UK Sepsis Trust, and in some trusts, locally developed workbooks and smart phone apps.

The [Sepsis Game](#) is a board game designed by Focus Games in collaboration with the UK Sepsis Trust and NHS England and is aimed at front-line clinical staff and support workers. The game is designed for four to twelve players who compete against each other in two teams.

The game includes scenario cards that are designed to stimulate discussions that raise awareness of sepsis and result in an improvement in the care received by patients with sepsis. The scenarios vary in complexity, meaning the game can be matched to the competency levels of the players.

Teams move round the board by rolling a dice, they then take turns to ask and answer questions on the cards. Active discussions should be encouraged between the teams. An online version of the game [Sepsis Game App](#) is also available.

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Ambulance Trusts

Ambulance trusts are also employing a range of training mediums to train their clinical staff in sepsis. The majority of ambulance trusts provide face-to-face training sessions on sepsis. Several trusts are using training manuals and training packs. Other methods include e-learning modules, training videos, podcasts and smart phone apps.

Royal Colleges, professional societies and charities

All colleges that responded to the survey have been involved in developing online resources for sepsis training. All colleges have produced e-learning modules on sepsis, and the Royal College of Emergency Medicine Free Open Access Medication ([FOAM](#)) network has produced an educational podcast on sepsis.

The Registered Nursing Home Association and Skills for Care had no sepsis training resources aimed at staff in care homes.

The largest producer of nationally available sepsis training resources is the UK Sepsis Trust.

Health Education England Local Teams

Responses were received from 12 out of 13 (92.3%) of HEE's local teams. Only one of HEE's local teams stated that they had directly commissioned the development of sepsis training resources and no local teams had themselves developed resources. Several were aware of resources that had been developed locally by trusts, or are currently in development, however. In some cases, these resources had been funded by the former Strategic Health Authorities, most commonly e-learning packages. Two local teams responded that they have regional simulation networks which have developed sessions on sepsis suitable for a multi-professional audience, in one case the simulation network has received significant funding from HEE.

Academic Health Science Networks

Responses were received from and 9 out of 13 (69.2%) academic health science networks (AHSNs). All AHSNs stated that they were aware of sepsis training resources in use or in development in their regions. Only one AHSN stated that they were directly involved in the development of training resources, this was the North West Coast AHSN who are developing an e-learning module on sepsis for care home workers, in collaboration with the UK Sepsis Trust.

Opportunities utilised for delivery of sepsis training

Hospitals

A variety of opportunities are being used to deliver sepsis training to staff. These include trust inductions for clinical staff, regional and local teaching sessions, especially for medical trainees, and nursing revalidation study days. Several hospitals have incorporated sepsis training into resuscitation courses and courses focussing on the acutely deteriorating patient. Some hospitals have ad-hoc ward based training sessions, frequently run by 'sepsis champions' who are staff members that undertake sepsis training and in turn provide sepsis training to other staff members in their department or ward.

The [Greater Manchester Critical Care Network](#) has incorporated sepsis training into their Acute Illness Management (AIM) course, which is endorsed by and was developed in discussion with the UK Sepsis Trust. The courses are one-day, multi-professional courses and are designed to improve healthcare workers' knowledge around the acutely ill patient and enhance their confidence and performance when dealing with these patients. The courses utilise a mix of lectures, scenarios and small-group learning.

The recognition and early management of the acutely unwell patient with sepsis is included as a module within the AIM courses for adults, paediatrics, and maternal care.

These courses are delivered in all trusts in Greater Manchester, and also as part of pre-registration nursing and physiotherapy programmes at Manchester Metropolitan University and Salford University

The 'Sixty days for Sepsis Six' initiative at Royal United Hospitals Bath aimed to train 600 staff members on the recognition and management of sepsis within 60 days.

Training was delivered via 10-minute training sessions, with the aim of raising awareness of sepsis as a medical emergency, and educating and empowering front-line staff to diagnose sepsis and start treatment with the [Sepsis Six](#) within an hour of presentation.

Training was initially delivered to a core group of staff, who then became cascade trainers, and rolled out the training to their clinical areas.

Training was delivered to staff in their clinical area to maximise attendance. This was sometimes done using a 'tea-trolley' methodology, in which front-line staff were given tea and cake whilst training was delivered during a break from their clinical work.

After the initial 60 days, training was rolled out to all staff in the hospital. This training method has been adopted by other acute trusts in the region and a similar training session is being developed for use in primary care.

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Ambulance Trusts

Ambulance trusts are utilising core skills and professional update training sessions to train their clinical staff in sepsis. One trust stated that in addition to training all current staff, they also ensure all new staff have a one-to-one sepsis training session.

Sustaining learning

The majority of respondents to our survey have methods in place to support and reinforce learning around sepsis recognition and management. These include the use of sepsis screening tools and management pathways and bundles; sepsis boxes or trolleys which contain everything needed to commence the 'Sepsis Six'; stickers for patient notes to alert members of staff to the diagnosis of sepsis; and aide-memoires for staff, frequently printed onto lanyard cards. A few trusts use smartphone apps. Several trusts have held sepsis awareness campaigns for staff and patients, and use posters and screensavers in clinical areas to raise awareness.

All ambulance trusts who responded to the survey use screening tools to aid the identification of septic patients, some also have management pathways and aide-memoires for staff.

[Frimley Park Hospital](#) has introduced a number of interventions on sepsis:

- A music video about recognising and managing sepsis has been recorded and filmed featuring staff from the hospital. The song is based on a popular song and features a number of key people in the trust including the Chief Executive Officer, Medical and Nursing Director. This has been hugely popular among staff as it delivers key messages in an entertaining manner.
- Sepsis education is part of the mandatory annual patient safety training for nursing staff and care assistants.
- All third year nursing students, nurses on their preceptorship course and Foundation Year 2 doctors receive mandatory 1 hour session on sepsis.
- Sepsis sessions have been incorporated in number of other training sessions such as surgical nurses study day and respiratory study day.
- A "sepsis walkabout" was initiated in January 2015, to deliver education and learning to ward staff. A team of senior nurses including heads of nursing, specialist nurses and practice development nurses visit ward areas to talk to staff about sepsis. They have replicated this model for training initiatives on acute kidney injury and the National Early Warning Score (NEWS).

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Hampshire Hospitals NHS Foundation Trust has developed a sepsis symposium which is used to train trainee doctors and nurses in the recognition and early management of sepsis. Learning from the symposium is reinforced throughout the trust using a variety of methods.

The sepsis symposium aims to reduce the time taken by staff to recognise septic patients and instigate treatment by providing a basic knowledge of sepsis and an understanding of the importance of early recognition and treatment. The importance of human factors (including situational awareness, decision making, team working, leadership and task management) as causes for delays in the early diagnosis and treatment of sepsis is a theme running throughout the symposium sessions.

The symposium consists of six twenty-minute modules. The training is provided to all foundation doctors as part of their weekly teaching sessions, and to other staff in their working environment within their own teams. The modules are all suitable for multi-professional training.

Supporting learning

The training received through the sepsis symposium is supported on ground level through a variety of methods:

- Antimicrobial prescribing guideline
- Sepsis management pathway
- Lanyard cards with copies of the sepsis pathway and antimicrobial prescribing guideline
- Publicity – posters and screensavers displayed in wards
- Sepsis champions
- Sepsis box

Improvement in care for patients with sepsis

Prior to the intervention, audit results from medical patients demonstrated an average of 7.5 hours delay in treatment with antibiotics from time of sepsis presentation, 26.2% mortality from sepsis, and a 10.8 days length of stay.

Audit results post-implementation:

- Admission to antibiotic time reduced from 450 minutes to under 100 minutes
- Non-ITU mortality reduced to 16% (National 30-50%)
- Non-ITU length of stay reduced by 2.2 days/ patient
- ITU admissions with Septic shock reduced by 55%
- ITU Septic shock mortality reduced by 65%

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Evidence of effectiveness

28 acute trusts responded to questions about whether they had any evidence of effectiveness of the sepsis education and training they provide. 19 trusts (67.8%) of responding trusts stated that they did have evidence of effectiveness. In the majority of cases this is improved audit results (10 trusts) and positive feedback following teaching sessions (9 trusts). 4 trusts stated that they had improved morbidity and mortality figures, and two trusts stated they have evaluated their educational or training initiative.

All ambulance trusts responded to the questions about evidence of effectiveness of the sepsis education and training they provide. 6 trusts (60%) did have evidence of effectiveness, in all cases this was in the form of improved audit results.

No positive responses about evidence of effectiveness were received from royal colleges, professional societies, academic health science networks or HEE local teams (except where this related to initiatives run in specific trusts, in which case the data is included with the trusts data above).

Sepsis training resources

As part of our scoping exercise we reviewed a large number of educational and training resources that are currently in use across England.

We reviewed:

- 23 resources received from Ambulance Trusts.
- 29 resources received from hospitals.
- 69 sessions from the E-learning for Health (eLfh) platform (28 sessions will need updating once the new NICE guidance are made available and 17 sessions fit the criteria of sepsis recognition and management).
- 30 resources shared by the AHSN, HEE and RC.
- 50 resources on paediatric sepsis.

The table below lists a number of resources which we feel would be beneficial to healthcare workers requiring training on sepsis, and the audience they are most applicable to.

It is important to note that with the publication of the [NICE guidance on sepsis](#), the majority of these resources will need updating.

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Resource	Format	Suggested audience
Nationally developed resources		
BMJ Learning: Severe sepsis and septic shock	E-learning	Doctors in secondary care involved in the care of adult patients
Royal College of Physicians: Acute Care Toolkit - Sepsis	E-learning	Doctors in secondary care working in medical specialties. Nurses working in acute medical specialties.
RCEM FOAM network: Sepsis in the Emergency Department	Podcast	Doctors in secondary care working in emergency departments and critical care settings
The Sepsis Game	Board game	All clinical staff in all settings. An online version of the game Sepsis Game App is also available.
BMJ Learning: Sepsis in children	E-learning	Doctors in secondary care involved in the care of paediatric patients
NHS England Re-ACT Talks: Spotting Sepsis in the Sick Child	Video	Doctors and nurses in secondary care involved in the care of paediatric patients
Spotting the Sick Child: Fever module	E-learning	Doctors and nurses in primary and secondary care involved in the care of paediatric patients
HEE's E-learning for Healthcare resources		
Assessment and Differential Diagnosis of sepsis (03_17_01)	E-learning	Doctors and nurses in secondary care
Management of the septic patient (03_034)	E-learning	Doctors in secondary care. Nursing and pharmacy staff in a critical care environment.
Managing Sepsis (08_09)	E-learning	Foundation programme doctors
Locally developed resources		
Royal Bournemouth and Christchurch Hospitals Trust: War on Sepsis – staff training film #1	Video	All clinical staff in secondary care.
University of Nottingham: Sepsis and Sepsis Six	E-learning	Nursing staff in secondary care

The UK Sepsis Trust produce a number of educational resources, the currently available resources, as well as some in development are listed in the box below.

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The UK Sepsis Trust is a UK based charity established in 2012. Part of the UK Sepsis Trust's work revolves around educating healthcare staff and raising awareness of sepsis amongst healthcare staff and the public. The UK Sepsis Trust produces a variety of educational tools that are widely used throughout England.

Clinical toolkits

These provide guidance to clinical staff in the care of patients with sepsis. They have been updated and co-launched with the new NICE Clinical Guideline on Sepsis with which they are compatible. Each includes a narrative document covering implementation together with easy-to-use screening and action tools.

The following clinical toolkits are available:

- Ambulance Service Toolkit
- Acute Medical Unit Toolkit
- General Practice Toolkit
- Acute Paediatrics Toolkit
- General Ward Toolkit
- Emergency Medicine Toolkit
- Blood Cultures

The UK Sepsis Trust has a series of educational podcasts and videos.

Podcasts

- The impact of sepsis
- Sepsis screening and recognition
- The Sepsis Six

Videos

- Sepsis introduction
- Sepsis – information for healthcare professionals

They have a number of educational resources currently in production:

- Sepsis Savvy - easily accessible online modules, designed to raise awareness of sepsis amongst healthcare workers and members of the public. There will be modules covering sepsis in adults, sepsis in children, and a module aimed at members of the public.
- sepsis toolkit for use in maternity settings
- a 'gamified' film with decision opportunities, created by the makers of the Resuscitation Council's 'Lifesaver' app, in partnership with Royal Surrey County Hospitals and the Health Foundation)
- an [online module developed](#) in collaboration with the North West Coast Academic Health Science Network, aimed at care workers in community settings

Summary of the Royal College of General Practitioners' scoping report for primary care

The scoping exercise carried out across primary care revealed that educational needs around sepsis for healthcare workers in primary care are not clearly defined. The educational and training resources for sepsis in primary care identified in this scoping report include the UK Sepsis Trust's Clinical Toolkit for General Practice, however this is not widely used, and a British Medical Journal learning module focussed on sepsis in children (although this has a secondary care focus). Other resources identified are focussed on specific infections and include sections on sepsis.

See box for a full list of resources identified by the Royal College of General Practice (the RCGP). We have commented on the limitations of some of these resources in brackets.

The full report can be found in Appendix B.

A snapshot survey was carried out by the RCGP in April 2016 to ascertain the proportion of general practitioners who have received sepsis training. Of the 530 completed responses, 37% said they had not received any training in sepsis.

Currently available resources for primary care:

UK Sepsis Trust

GP toolkit for sepsis (not widely used)

BMJ Learning

Sepsis in children (has a secondary care focus)

Community acquired pneumonia an update (not sepsis specific)

Pneumonia caused by atypical pathogens and legionella (not sepsis specific)

UTI in infants and children (not sepsis specific)

RCGP

Management of suspected bacterial UTIs in adults (not sepsis specific)

Managing acute RTIs (not sepsis specific)

Pulse Learning

How not to miss meningitis (not sepsis specific)

Key questions on emergencies in primary care (not sepsis specific)

Key questions on LRTIs (not sepsis specific)

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Gaps in the current training provision

As part of the survey respondents were asked about their views as to where the gaps are in the current provision of sepsis education and training.

The clinical areas most commonly highlighted as having gaps in sepsis training provision were primary care and care homes.

Discussion

Gaps in the current provision of sepsis education and training

The data collected as part of this scoping work, combined with that from the All Party Parliamentary Group on sepsis gives us some understanding of the sepsis education and training offered to healthcare staff across England. It is clear from this data there is significant variation in the training offered to healthcare staff in different care settings across the country. As only a small number of staff responded to the questions about sepsis training, this data represents a guide. The small number of responses may be a result of a deficiency in the collection of data relating to sepsis training in trusts, as found by the All Party Parliamentary Group on sepsis' report.

The results of our scoping work indicate there are significant gaps in the provision of education and training in three key areas:

- primary care
- community settings including residential and care homes
- management and executive teams within healthcare providers

The number of healthcare providers using healthcare staff in training's inductions and teaching sessions to provide sepsis education and training is concerning as these sessions are often not accessible for members of staff in permanent and non-training roles.

Training mediums used to deliver sepsis training

An evaluation of education and training interventions for patient safety published in 2016 outlines best-practices in curricula and training interventions for patient safety according to published evidence, expert opinion and user surveys ([Yu, Fontana and Darzi](#) 2016). The evaluation found that in order to be effective in improving patient safety, education and training interventions should aim to change healthcare workers' skills, knowledge, attitudes and behaviours. These changes need to occur at team and organisational levels, as well as at individual level.

The [Yu, Fontana and Darzi](#) (2016) evaluation found that interactive training methods, such as simulation and team-based learning were most effective for education and training aiming to improve patient safety. As part of our sepsis scoping exercise, we found that face-to-face teaching and simulation are amongst the most commonly employed mediums to deliver training on sepsis. It could therefore be said that the current approaches used for staff training on the recognition and management of sepsis are effective and align to some extent with what [Yu, Fontana and Darzi](#)

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(2016) found. Although some of this face-to-face teaching is unlikely to be interactive as it is delivered to large groups, we found evidence of a variety of opportunities used to deliver sepsis education and training that are, or could be, interactive.

Online learning was another of the most commonly cited mediums for providing sepsis training in our scoping survey. The evaluation of education and training interventions for patient safety was found to be fairly low down on the list of educational and training mediums felt to be effective in acute settings (number 8 of 12 delivery methods). Online learning was more favoured in non-acute settings, where it ranked 5 out of 12 delivery methods. The ease of access of online learning, however, was specifically mentioned as one of the reasons people view it as an effective training medium. This is important as difficulty accessing education training was a key concern cited in the evaluation ([Yu, Fontana and Darzi, 2016](#)).

Sustaining learning

The challenges faced when embedding learning outcomes into clinical practice was another key factor. These are most commonly structural and institutional barriers, such as the design of healthcare structures and processes, a blame culture, and hierarchical relationships ([Yu, Fontana and Darzi, 2016](#)). The majority of respondents to our scoping survey stated that they did have methods in place to sustain and embed learning. We found little evidence of training, however, being offered to management and executive staff in healthcare providers which may be important in breaking down structural and institutional barriers.

The role of behaviour change

One study has used the behaviour change wheel functions and the behaviour change technique taxonomy (v1) to report the content of an existing hospital intervention to implement the [Sepsis Six](#) clinical care bundle and to use the theoretical domains framework to characterise its potential theoretical mechanisms of action. This study demonstrated how the use of a variety of information sources, particularly observation, and tools developed to make behavioural theory and implementation accessible to non-specialists can be used to specify the content and possible mechanisms of action of existing behaviour change interventions which, although designed without the use of theory, have achieved some level of success in clinical practice but require improvement. This initial work will be followed by a theoretical domains framework based qualitative study which will explore experiences of health care professionals receiving the intervention including barriers and levers to [Sepsis Six](#) implementation and modification of the intervention's content based on data from the initial study ([Steinmo et al. 2015](#)).

HEE's activity to date

Our findings from this scoping exercise have informed the commissioning of new educational and training materials and initiatives.

Think Sepsis: the identification and management of sepsis in primary care

This [e-learning package](#) written by a team of general practitioners is aimed at healthcare staff in the community, particularly primary care. The package consists of five modules, the first introductory module is aimed at all healthcare staff in primary care. The remaining four modules are aimed at general practitioners, although will be available to all primary care staff. They cover sepsis in adults, sepsis in children, sepsis in care homes and the frail elderly, and complex safety issues. All modules are freely available on [e-Learning for Healthcare](#).

Think Sepsis: Identifying and managing sepsis in paediatrics

This educational [video](#) features eminent clinicians and the parents of a toddler who died from sepsis in 2011. The video aims to raise awareness of sepsis in children amongst the healthcare community, help them to recognise the signs of sepsis in children, and understand the initial management steps to be taken in the community and secondary care settings. The video directs healthcare staff to appropriate [learning materials](#) to support their further education and training in the recognition and management of sepsis. The video is freely available to all healthcare staff on a variety of [platforms](#), and has been marketed to clinical trainers and learning leads who will be encouraged to use the video within a group learning environment to facilitate interactive discussion around the issues raised in the video.

Royal College of General Practitioners' Sepsis Spotlight Project

We have been working with the [RCGP](#) in developing a primary care sepsis programme and a Clinical Lead has been appointed to deliver this work. A programme of four regional training events will be delivered through RCGP Faculties across England. An [online toolkit](#) of resources on sepsis will be developed for GPs and practice staff, patients and commissioners and will act as a useful signposting tool. In addition this programme will also promote the sepsis [e-learning modules](#) for primary care mentioned above.

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Sepsis: A careworker's guide

We have been involved in the development of this e-learning module produced by the North West Coast Academic Health Science Network, in collaboration with the UK Sepsis Trust. This module is aimed at care workers in the community and covers an introduction to sepsis, recognition of sepsis, the actions to take if you suspect sepsis, and prevention of sepsis. The module is freely available on the UK Sepsis Trust learning [portal](#).

Project Transform: “Sepsis Savvy”

Project Transform is an innovative interactive [film](#) about sepsis aimed at all healthcare professionals from all backgrounds and highlights common factors that may delay or hinder the diagnosis and treatment of sepsis.

Whilst the medical management of sepsis is well known, the features that make the diagnosis of sepsis difficult, the use of safety netting and empowering the most junior members of the team are highlighted by the film.

It was created in conjunction with [The Health Foundation](#), the UK Sepsis Trust and [Health Education England](#).

The next steps

Whenever a patient presents acutely unwell or with an acute deterioration in their condition, healthcare staff and within healthcare providers should be considering sepsis as part of their diagnosis - we should 'Think Sepsis'. To support this, NICE published its new guideline on sepsis recognition, diagnosis and early management in July, 2016 and the new materials developed by HEE have been aligned to this.

We need to work with partners to ensure that education and training is provided to all healthcare staff working in all sectors of the NHS. In order to embed this guidance into practice, this work should include ensuring that this training this is aligned with NICE guidance on sepsis recognition and management.

To help achieve these aims, we have set out a number of recommended actions targeted at ourselves, training providers and other stakeholders.

Recommendations

Health Education England

1. Develop communication and dissemination strategies to maximise uptake and positive engagement with educational and training resources developed or endorsed by HEE.
2. Working with the cross-system sepsis programme board, develop a guide for training providers on updating educational and training resources to align to NICE guidance on sepsis.
3. Working with the Royal College of General Practitioner's (RCGP) clinical lead for sepsis and other relevant stakeholders, undertake the work necessary to ensure the availability of a sepsis educational package for residential and care home staff.
4. Drawing on HEE's existing educational and training resources, produce a sepsis educational package targeted at management and executive teams.
5. Consider developing the HEE Quality Framework to encourage the training in relation to the management of acutely deteriorating patients, including patients with sepsis, within the core training of all healthcare staff.
6. Consider and develop methods for evaluating the resources for sepsis training.
7. Ensure that training resources and training strategies with proven effectiveness are promoted and shared across the system.
8. Work across HEE and with stakeholders to share information about the funding and development of educational and training resources for sepsis at both local and national level. This will help to reduce duplication and improve the quality of resources produced.

Healthcare providers

9. Update all sepsis educational and training resources in accordance with the [NICE guidance](#) for sepsis.
10. Develop strategies to ensure that all their staff members are trained in the recognition and management of sepsis to a level appropriate for their individual needs.
11. Ensure that training reaches all healthcare staff, not just those who are undertaking a formal training programme or attending regular staff inductions, for example consultants, staff grade doctors and associate specialists, nursing staff, allied health professionals and support staff.
12. Consider introducing 'sepsis champions' who take ownership of training strategies and are responsible for their maintenance, development and monitoring of effectiveness. Different trusts will consider different models, for example, the sepsis champion could rotate to different departments on a 6-monthly basis.

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13. As part of sepsis training strategies ensure that methods are in place so that learning around sepsis is sustainable.
14. Monitor the effects of training strategies on outcomes for patients with sepsis within their organisations.
15. Where there is proven effectiveness, share good practice in relation to sepsis education and training, both locally and nationally with assistance from HEE.
16. Ensure that all staff take responsibility for their own learning needs in relation to sepsis and include this in staff appraisals.
17. Wherever possible, complement on-line sepsis training with interactive elements. For example, this could include encouraging staff to discuss e-learning undertaken at teaching sessions or with a supervisor.
18. Ensure that serious incidents which relate to sepsis are used as learning opportunities for individuals and departments, and that appropriate educational resources are used in response to such incidents.

Other stakeholders

19. All educational and training materials that have been produced about sepsis should be updated to reflect NICE guidance on sepsis
20. All education and training related to sepsis, including resources, should embed the concepts of antimicrobial resistance and antimicrobial stewardship.
21. Undergraduate courses for healthcare professionals delivered by higher education institutions should include training in the recognition and management of sepsis in a clinical context within their final year.

Outside the scope of this report

Health visitors and school nurses

Public Health England has carried out a survey of learning needs relating to this group and are producing a sepsis factsheet.

NHS 111 call handlers

The training of NHS 111 call handlers falls under a joint NHS England/Health Education England [NHS 111 Integrated Urgent Care Workforce Development Programme](#). A number of projects have been commissioned from NHS 111 providers and clinical commissioners as part of this work. One of these projects includes some academic work to try and understand what human factors influence health advisors and clinicians when understanding and identifying features of clinical presentations including sepsis. [New Commissioning Standards](#) issued in October 2015 were designed to offer greater opportunities to pass calls directly for more senior clinical advice.

Higher education institutions

Higher education institutions providing education and training for healthcare staff were outside the scope of this report. This has been explored via a separate piece of work entitled “Embedding national antimicrobial prescribing and stewardship competences into curricula: A survey of health education institutions” and can be found on our [antimicrobial resistance](#) webpage.

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Appendix A: Respondents

Acute trusts

Aintree University Hospital NHS Foundation Trust

Barking, Havering and Redbridge University Hospitals Trust

Barts Health NHS Trust

Berkshire Healthcare NHS Foundation Trust

Bolton NHS Foundation Trust

Brighton and Sussex University Hospitals NHS Trust

Buckinghamshire Healthcare NHS Trust

Chelsea and Westminster NHS Foundation Trust

County Durham and Darlington Foundation Trust

Derriford Hospital, Plymouth

Dorset County Hospitals NHS Trust

Ealing Hospital, London

East Cheshire NHS Trust

East Lancashire Hospitals NHS Trust

Epsom & St Helier University Hospitals NHS Trust

Great Ormond Street Hospital

Hampshire Hospitals NHS Foundation Trust

Heart of England NHS Trust

Homerton University Hospital NHS Foundation Trust

Hull & East Yorkshire NHS Trust

Imperial College Healthcare NHS Trust

Kettering General Hospital NHS Trust

Kings College Hospital NHS Foundation Trust

Kingston Hospital NHS Foundation Trust

Lancashire Teaching Hospitals NHS Foundation Trust

Liverpool Heart and Chest Hospital NHS Foundation Trust

Leeds Teaching Hospitals NHS Trust

Maidstone and Tunbridge Wells NHS Trust

North Devon District Hospital

North Hampshire Hospitals NHS Foundation Trust

Northumbria Healthcare NHS Foundation Trust

Oxford University Hospitals NHS Foundation Trust

Papworth Hospital NHS Foundation Trust

Plymouth Hospitals NHS Trust

Poole Hospital

Portsmouth Hospitals NHS Trust

Queen Elizabeth Hospital, King's Lynn

Royal Bournemouth and Christchurch Hospitals NHS Trust

Royal Brompton and Harefield NHS Foundation Trust

Royal Cornwall Hospitals NHS Trust

Royal Devon and Exeter Hospital

Royal Free London NHS Foundation Trust

Royal Hampshire County Hospital

Royal Liverpool University Hospital NHS Trust

Royal London Hospital

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Royal Preston Hospital
Royal Surrey County Hospital,
Guildford
Royal Marsden NHS Foundation Trust
Salisbury NHS Foundation Trust
Sandwell and West Birmingham
Hospitals NHS Trust
South Warwickshire NHS Foundation
Trust
St George's University Hospitals NHS
Foundation Trust
St Mary's Hospital, Isle of Wight
Stockport NHS Foundation Trust
The Royal Wolverhampton Hospitals
NHS Trust
The Walton Centre NHS Foundation
Trust

Torbay and South Devon NHS
Foundation Trust
University Hospitals Coventry and
Warwickshire
University Hospitals of Leicester NHS
Trust
University Hospital Southampton NHS
Foundation Trust
Western Sussex Hospitals NHS Trust
Wexham Park Hospital
Whipps Cross University Hospital
Whittington Hospital
Wrightington Wigan and Leigh NHS
Foundation Trust
York Teaching Hospital NHS
Foundation Trust

Clinical Commissioning Groups

Islington CCG
NHS Bath and North East Somerset CCG
NHS Southern Derbyshire CCG

Ambulance trusts

East of England Ambulance Service
NHS Trust
East Midlands Ambulance Service
NHS Trust
Isle of Wight Ambulance Service
London Ambulance Service NHS Trust
North East Ambulance Service NHS
Foundation Trust
North West Ambulance Service NHS
Trust
South Central Ambulance Service
NHS Foundation Trust
South Western Ambulance Service
NHS Foundation Trust
West Midlands Ambulance Service
NHS Foundation Trust
Yorkshire Ambulance Service NHS
Trust

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HEE local teams

East Midlands	South London
East of England	South West
Kent, Surrey and Sussex	Thames Valley
North Central and East London	Wessex
North East	West Midlands
North West	Yorkshire and Humbe

Academic Health Science Networks

East Midlands	Oxford
Health Innovation Network	Wessex
Kent, Surrey and Sussex	West of England
North East and North Cumbria	Yorkshire and Humber
North West Coast	

Royal Colleges

Royal College of Physicians
Royal College of Obstetricians and Gynaecologists
Royal College of Paediatrics and Child Health
Royal College of Emergency Medicine

Professional societies and charities

UK Sepsis Trust
Registered Nursing Home Association
Skills for Care
e-Learning for Healthcare

Primary Care Organisations

CityCare Partnership

Other organisations

Greater Manchester Critical Care Skills Institute

Appendix B: RCGP scoping report

What's missing? A scoping Report on GP educational needs for the diagnosis and management of Sepsis in primary care

Dr James Larcombe, MbChB PhD Dip AdvGP FRCGP, RCGP Representative to Sepsis Trust Guideline

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Background

Sepsis is a medical emergency. It is responsible for 37,000 deaths annually¹. A significant proportion of these cases originate from primary care. The speed of onset can be remarkably rapid with mortality increasing with each hour treatment is delayed once the features of shock develop². There are a number of case reports and investigations where delay in either recognising the presence of catastrophic sepsis or the implementation of appropriate transportation or treatment has been deemed to be contributory in death or adverse outcomes. General Practice and out of hospital practitioners have a part to play in reducing these and education of these clinicians will be an important element in achieving this. This will form part of a cross-system Sepsis prevention programme being led by Celia Ingham-Clark for NHS England.

Questions needing to be addressed

- GP educational needs around the recognition of, and response to acute illness such as sepsis.
- What resources are already available? How are these accessed?
- What kind of educational content is currently not being delivered?
- If HEE were to commission the development of new e-learning materials in this area what the learning outcomes for these should be?

Current position

GP educational needs around sepsis are not clearly defined, as the evidence base for general practice interventions is not strong. The upcoming changes to guidance on sepsis scheduled for the autumn and early spring will primarily influence secondary care but is also having some impact in primary care. It is not thought that there will be new evidence produced of direct relevance to management of sepsis in general practice. New content will include a National Confidential Enquiry into Patient Outcome and Death (NCEPOD) report, NICE guidance on Severe Sepsis and new international definitions of sepsis. This means that the current SEPSIS Trust toolkits will be out of date within a few months, will require revision, and any work done now producing educational material will need reviewing before the end of the financial year 2015-16. There will be substantial pressure to have educational material available to support GPs in what will be an increasing push on Sepsis mortality through the second part of 2015-16.

Community Acquired Pneumonia an update.
Pneumonia caused by atypical pathogens and Legionella.
UTI in infants and Children
Managing Acute RTIs
Key questions on emergencies in primary care (mixed content)
Key questions on LRTIs.

Further resources:

NHS Scotland

- [News and sepsis screening tool](#) (by NHS Education for Scotland).
- [NB updates](#) (for subscribers).

Map of Medicine

- Relevant map of medicine (all include red flags- sepsis but don't use the sepsis toolkit)
- Neutropenic sepsis in cancer patients
- Acute pyelonephritis
- Bacterial meningitis in children and adolescents/ adults
- (CA Pneumonia) – relates to NICE guide and CRB65 scores

NICE:

- Neutropenic sepsis in cancer patients: NICE [CG 151](#).
- Pneumonia: NICE [CG191](#).
- Feverish illness in children: NICE [CG160](#).

Access to most of the educational sites is by membership or subscription. Map of Medicine is accessible to all with NHS Smart cards and NICE guidance is freely available. Some are exclusive to doctors. The Sepsis Trust Toolkit is not been widely used within primary care and lacks a primary care evidence base. Any educational material would need to be easily accessible to GPs and other clinicians working in a primary care acute setting (doctors/ nurses in Out-of-hours, walk in centres, 111 etc.).

We found nothing in our literature and online search that addresses sepsis as a single entity other than the Sepsis Toolkit, though this is not helpful in primary care. There needs to be a single sepsis educational resource for primary care, created by GPs for GPs that adapts the current evidence used by secondary and tertiary services while acknowledging the limitations of extrapolating this into general practice without a strong evidence base.

What's missing?

- A mechanism to ensure maximum exposure for all the relevant clinicians.

- An educational resource that covers the breadth of sepsis and a condition in its own right.
- Recognition of the gaps in our clinical knowledge, particularly for out of hospital environments
- Recognition of the role immunisation can play in reducing mortality and morbidity.
- A recognition of the ethical responsibilities (and/or legal issues) in the management of sepsis: e.g. an elderly person with possible sepsis who wishes to undergo home treatment; end-of life care; advanced decisions for refusal of treatment.
- Appropriate channels to support electronic distribution of educational and clinical management resources.

Learning Outcomes

- Increased awareness of mortality associated with sepsis.
- Increased awareness of at risks groups such as post op/procedure, children, immunosuppressed and the elderly.
- Increased awareness of important physiological changes associated with sepsis, such as:
 - o Tachycardia
 - o Elevated Respiratory rate
 - o Altered cognition
 - o Reduced BP and or Capillary refill
- Increased awareness of priority for urgent admission (mortality increasing 13% by each hour) and good communication of concerns to senior clinicians.
- Increased awareness of NEWS Scoring.
- Increased awareness of the potential value from early systemic antibiotics and oxygen.
- Understanding steps that GPs can take to reduce sepsis
 - o Immunisation
 - o Education of patients (and carers) at risk-safety netting?

Challenges

Ahead of publishing of new evidence and guidance by NCEPOD, NICE and the new definitions of Sepsis it will be difficult to produce educational material that will not be reworked or reviewed in March 2016. Even with the publication of these new reports the general practice expert opinion we have sought in preparing this document agrees that there is no sound evidence base for primary care management and interventions likely to be present for a number of years. The need to act is however now and an expert GP / primary care clinician group should be used to achieve a consensus position that would support the education and action of relevant clinicians.

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