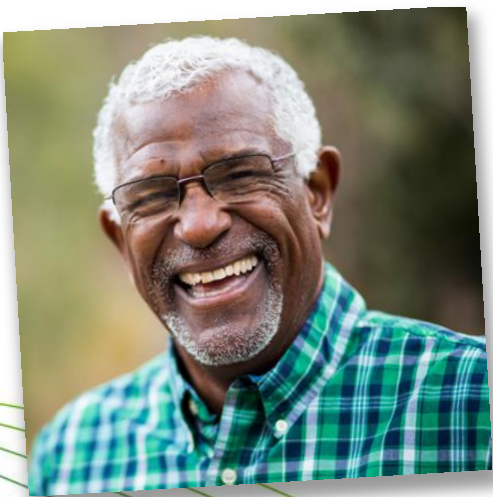


NHS RightCare scenario: The variation between sub-optimal and optimal pathways



Rob's story:
Sepsis identification
and care

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Promoting equality and addressing health inequalities are at the heart of NHS England's values. Throughout the development of the policies and processes cited in this document, we have:

- Given due regard to the need to eliminate discrimination, harassment and victimisation, to advance equality of opportunity, and to foster good relations between people who share a relevant protected characteristic (as cited under the Equality Act 2010) and those who do not share it; and
- Given regard to the need to reduce inequalities between patients in access to, and outcomes from healthcare services and to ensure services are provided in an integrated way where this might reduce health inequalities.

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Foreword from Celia Ingham Clark



Sepsis is one of Britain's biggest killers; tens of thousands of people die in the UK every year, and for those who survive, the consequences can be devastating with organ failure, mental health issues and limb loss. There is evidence of huge variation in the recognition and treatment of sepsis across the country and the need for focused improvements cannot be overestimated.

We are making significant progress. The CQUIN data shows improvements in both screening and timely treatment, and since implementation more than 1600 lives have been saved. The key difficulty for clinicians is the diagnosis, as the symptoms can often be caused by many different illnesses. This resource provides clarity on the issues faced, by bringing the scenarios to life in a very realistic way. This helps. The resource also provides practical guidance on what we can all do to improve care and reduce the risks for patients in a systematic and efficient way.

As Chair of the Cross-system Sepsis Programme Board I am keen to support this initiative because it is a very powerful resource that supports NHS England strategy. Getting this right benefits patients and their families. It also benefits the taxpayer, as the current financial burden relating to sepsis across health and social care is estimated at around £8bn per year. Early diagnosis and prompt treatment saves both lives and money.

This initiative is like many others in that it requires collaborative working across all areas of the health economy so that there can be a smooth, fast and efficient flow between health professionals to optimise treatment. This document makes clear recommendations to enable us to do this better.

I am very confident that, together, we will make a huge impact on one of our biggest healthcare challenges. Please work closely with your local NHS RightCare Delivery Partners and Patient Safety Collaboratives so that you can optimise your impact on sepsis through their tried and tested programmatic approach.

A handwritten signature in black ink, which appears to read 'Celia Ingham Clark'. The signature is written in a cursive style and is underlined.

Celia Ingham Clark MBE, SFFMLM, MChir, FRCS, FRCA
Medical Director for Clinical Effectiveness, NHS England



Professor Sir Bruce Keogh, until recently Medical Director of NHS England, has also given his support to this work as you can see in this [video](#).

NHS RightCare scenarios

This sepsis scenario is part of a [series](#) of NHS RightCare scenarios to support local health economies – including clinical, commissioning and finance colleagues – to think strategically about designing optimal care for people (and their carers) with high impact conditions.

Each scenario is a resource that highlights potential improvement opportunities through a fictitious but representative patient story. They have been developed with experts and include prompts for local health economies to consider.

For this scenario on sepsis, commissioners, clinicians and providers responsible for their population should consider:

- Planning care models to address speedy diagnosis of possible sepsis in all areas of the health economy (Primary, Community and Secondary care)
- Systematic and robust monitoring of patients for signs of acute deterioration using NEWS (the national early warning score version 2) and assessing acutely ill patients for sepsis
- Providing tailored and speedy care to patients in line with guidance¹, which considers, for example, treatment burden and sharing information with other professions and services
- Education for clinicians, patients, carers and family members through a variety of appropriate communication channels.

Please contact your local [NHS RightCare Delivery Partner](#) if you would like to explore any of the scenarios further.

The story of Robert's experience of developing sepsis and how it could be improved

In this scenario using a fictional patient, Robert, we examine a case of sepsis, its identification and subsequent management, comparing a sub-optimal, difficult scenario against an ideal pathway. At each stage we have modelled the costs of care to commissioners and describe the impact of sub-optimal care and then of ideal care on the outcomes and experiences of Robert and his family.

This document is intended to help local health economies understand the implications - on quality of life and costs - of shifting the sepsis pathway away from a sub-optimal journey to one that consistently delivers timely evidence-based excellence.

This scenario has been produced in partnership with clinical and patient stakeholders using the NHS RightCare methodology. The aim is to help clinicians and commissioners improve value and outcomes for this patient group.

¹ <https://www.england.nhs.uk/wp-content/uploads/2017/09/sepsis-guidance-implementation-advice-for-adults.pdf>

Introduction

Sepsis is a leading cause of death in the UK. In 2014 it was estimated that there were 123,000² cases of sepsis in England resulting in nearly 37,000³ deaths. It is estimated that by the application of best practice to all these cases as many as 10,000⁴ deaths may be avoided each year.

We know that when someone develops sepsis their deterioration can be quick and initially difficult to recognise. Mortality from septic shock increases rapidly for each hour that resuscitation and antibiotics are delayed⁵. This has led to the development of hospital systems such as the 'Sepsis Six Bundle'⁶ to ensure prompt delivery of key elements of treatment.

Table 1: The Sepsis Trust, ED / AMU Sepsis Screening and Action Tool, 2017⁷

2017 Sepsis 6 Bundle

1. Administer Oxygen
2. Take blood cultures
3. Give IV antibiotics
4. Give IV fluids
5. Check serial lactates
6. Measure urine output

The latest guidance from NHS England, *Sepsis guidance implementation advice for adults*⁸ contains information on recognising sepsis in hospital and in primary care.

All acute hospitals now have systems to detect and respond to suspected sepsis, which has been encouraged and supported by the development of a Sepsis Commissioning for Quality and Innovation (CQUIN) indicator in 2015. Successful as this has been, there is still scope for improvement.

Approximately 70% of sepsis cases arise in the community⁹ which means that the opportunity for early identification and prompt management is as much a community

² Sepsis: Written question – 10526 <http://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2015-09-16/10526/>

³ NHS England. Second sepsis action plan. In: England N, editor.: NHS England; 2017

⁴ NHS England. Our Ambition to Reduce Premature Mortality: A resource to support commissioners in setting a level of ambition. 2013.

<http://webarchive.nationalarchives.gov.uk/20160605131141/https://www.england.nhs.uk/wp-content/uploads/2014/03/mort-res-22-5.pdf>

⁵ Kumar A, Roberts D, Wood KE, et al. Duration of hypotension before initiation of effective antimicrobial therapy is the critical determinant of survival in human septic shock. *Critical care medicine* 2006; 34(6): 1589-96.

⁶ Daniels R, Nutbeam T, McNamara G, Galvin C. The sepsis six and the severe sepsis resuscitation bundle: a prospective observational cohort study. *Emergency medicine journal* : EMJ 2011; 28(6): 507-12.

⁷ <https://sepsistrust.org/wp-content/uploads/2017/08/ED-adult-NICE-Final-1107.pdf>

⁸ <https://www.england.nhs.uk/wp-content/uploads/2017/09/sepsis-guidance-implementation-advice-for-adults.pdf>

⁹ Esteban A, Frutos-Vivar F, Ferguson ND, et al. Sepsis incidence and outcome: contrasting the intensive care unit with the hospital ward. *Critical care medicine* 2007; 35(5): 1284-9.

problem as it is a hospital one. This requires the whole system to work well together to ensure that deteriorating patients are rapidly and appropriately assessed and that when suspected of having sepsis they receive appropriate care.

The Royal College of General Practitioners (RCGP) has recognised this and describes the need to develop a sepsis aware community¹⁰. The College is working with Health Education England, NHS England and other partners to achieve this.

Table 2: A Sepsis aware community¹⁰

A Sepsis aware community will have addressed:

- Sepsis education and awareness
- Integration and connectivity between patients and services
- IT and technology support
- Measuring success
- Leadership and accountability

This scenario demonstrates opportunities to reduce the unwarranted variation in sepsis care. 2016 and 2017 have seen new definitions of sepsis¹¹, NICE guidance¹² and the publication of a new National Early Warning Score (NEWS2)¹³. These all re-emphasise the importance of physiological assessment to augment clinical judgement. They also give the opportunity for a shared language to communicate concerns regarding deteriorating patients, particularly those with sepsis.

Unwarranted variation in sepsis care still exists and behaviour change is still needed in some areas. This scenario gives some insight into what might need to change and is based on research and discussion with clinicians and patients.

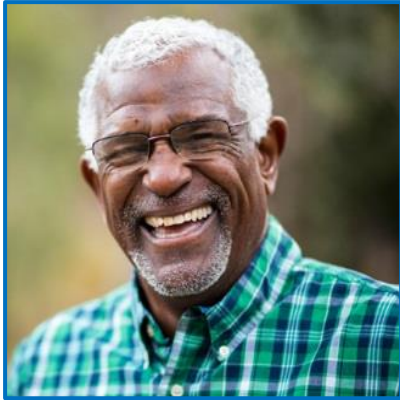
¹⁰ Royal College of General Practitioners. RCGP Sepsis Summit Consensus Report: RCGP, 2017
<http://www.rcgp.org.uk/clinical-and-research/toolkits/sepsis-toolkit.aspx>

¹¹ Singer M, Deutschman CS, Seymour CW, et al. The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). *Jama* 2016; 315(8): 801-10

¹² National Institute for Health and Care Excellence. Sepsis: recognition, diagnosis and early management. NICE; 2016.

¹³ Seymour CW, Gesten F, Prescott HC, et al. Time to Treatment and Mortality during Mandated Emergency Care for Sepsis. *N Engl J Med* 2017.

Introducing Robert



Robert is a 72-year-old husband and family man, who retired from his work in local government seven years ago. He prefers to be known as Rob by everyone, saying that if he gets called Robert he thinks he is in trouble.

He has been enjoying an active retirement with his wife Emily. Much of their time is spent working with their local church where Rob is a lay preacher. They particularly enjoy helping provide a fortnightly meal and social event for local elderly residents which supports the lonely and frail.

Rob and Emily have a large extended family with two children and four grandchildren living nearby. They provide childcare for the two youngest three days a week, allowing their daughter and son-in-law to work full-time and purchase their family home. They also collect their son's children from school frequently, so their house is always full of noise and activity. Rob and Emily are currently planning a trip back to Trinidad with their family to attend a family wedding celebration and visit relatives.

Rob tries to keep physically active and enjoys woodwork; when not busy with his family he will happily spend hours in his small workshop making things for his grandchildren or for sale for the church.

Rob's sub-optimal health journey

Rob has been physically well most of his adult life but was found to have raised blood pressure a few years before retirement. Rob maintains a regular regime of physical exercise to help keep his blood pressure and weight well controlled.

Four years ago, he began to experience abdominal pains and after recent recurrent episodes it was decided that he should have his gallbladder removed laparoscopically. Being relatively fit and well Rob is keen to have the surgery undertaken so that his planned family trip won't be interrupted by ill-health and he can enjoy the Trinidad cuisine without restriction.

The operation

Rob attends his local district general hospital to have his gallbladder removed following a clean bill of health from the pre-operative assessment. The surgery is

conducted laparoscopically as planned without any difficulty, and Rob is discharged the next day. He is advised that the recovery period is normally fairly short and that he should be back to his normal activities within a couple of weeks. Should he have any difficulties he is advised to contact his GP.

He leaves hospital happy that the surgery is now behind him and is looking forward to recovering at home with his family.

The cough

Rob recovers well initially, but around nine days after surgery begins to cough. The dry cough is accompanied by a mild fever. He and his family are not unduly concerned to start with as there is a 'bit of a bug' going around and one of the grandchildren had been unwell with it for a few days but is now fully recovered. Unfortunately, Rob isn't bouncing back as quickly as he would anticipate; he finds that his cough has become more productive and he starts to feel like he has the flu. He uncharacteristically declines breakfast and goes back to bed. Under pressure from his family he agrees to them calling his local GP for further advice.

The GP

Rob's family are pleased to get through to his GP surgery and they speak with a receptionist who arranges for a GP to call him back later that morning.

Rob is called back by his regular GP a couple of hours later who checks through his symptoms. Rob does not think he has a temperature at present, but remarks that he was feeling feverish during a disturbed night and is currently taking regular paracetamol. He explains that his cough has deteriorated over the last five days, and he has started producing coloured sputum. Rob explains that one of his grandchildren has recently been unwell and his GP concludes that Rob probably has a viral bronchitis which should resolve without further intervention, particularly antibiotics. He is advised that recovery can take several weeks but that he should call back if things get worse or if he is not showing signs of significant improvement in the next week.

The deterioration



After 48 hours Rob is showing no improvement in his symptoms and his family are becoming increasingly concerned. Emily has contacted her daughter as Rob has remained in bed and has vomited twice overnight.

Rob is becoming feverish and breathless when moving around. Rob's daughter telephones the local surgery at 08:40 and explains their concerns. After a discussion with a GP the receptionist calls the family back and advises that Rob should attend surgery that afternoon for a consultation with a GP.

When Rob attends for his appointment at 15:45 his GP is somewhat shocked by his appearance and apparent deterioration. Rob is breathless walking from the waiting room and remains so during much of the consultation. He struggles to concentrate on what he is being asked, and defers to Emily who has accompanied him for the answers. She describes the fever, cough and recent vomiting which the GP finds concerning. The doctor establishes that Rob is pyrexial, 38.6, with a tachycardia of 122bpm. There are some crackles in the right mid zone of his chest and his abdomen is slightly uncomfortable in the right upper quadrant. Rob's GP is in no doubt that he needs to be assessed in hospital.

The admission

The GP speaks to the surgical team on-call, concerned that he has a febrile patient who is vomiting 16 days post-operatively. They agree to assess him on the surgical day unit.

Rob's family have brought him to the GP surgery by taxi as neither Emily nor her daughter drive, and the GP concludes that Rob is sick enough to merit an ambulance to take him into hospital. He decides to request an urgent ambulance personally. He speaks to the ambulance urgent call line at 16:10 and explains he has a patient who is febrile post-operatively, vomiting and appears to be particularly unwell. He requests that the ambulance service attends as soon as possible as he is concerned about Rob's appearance. Rob and Emily are asked to sit in the waiting room whilst waiting for the ambulance service to arrive.

The GP is surprised when at 19:10 as he is about to leave the surgery, that Rob and Emily are still waiting. Rob is clearly uncomfortable and in distress with his breathing. Although he has not vomited again Rob remains pale and his blood pressure when recorded is 100/56. His pulse is 114 bpm and his temperature has fallen to 36.0. His GP dials 999 and asks that the call is expedited to an immediate 999 response.

The GP feels he has no option but to wait with Rob and Emily until the ambulance arrives almost an hour later at 20:15.

The ambulance

The double technician ambulance crew arrives. Rob is taken to the ambulance using a chair as he is finding it difficult to stand. They record a respiratory rate of 32, pulse 124, BP 98/54, oximetry 94% and temperature 35.9. They note that Rob is alert, but

that he is a bit slow to respond. They decide that oxygen is not required as his oximetry is satisfactory. Despite his abnormal physiological findings they decide to continue to the surgical assessment unit, as they are aware that there is currently an ambulance delay in handover at the emergency department. They ask that a pre-alert message is sent to the surgical assessment unit regarding Rob's condition.

The Surgical Assessment Unit

The crew and Rob arrive on the surgical assessment unit at 20:48. The electronic patient report form that they have completed proves difficult to hand over to staff and the GP letter with initial observations appears to be missing.

A baseline set of observations is carried out by a Health Care Assistant (HCA) on arrival, a National Early Warning Score (NEWS) is calculated and oxygen applied. The junior doctor on the ward is alerted to Rob's arrival and his NEWS value; the surgical registrar is currently busy with a surgical procedure.

Table 3: Surgical observations

	Value	Score
Resp rate	32	3
Oximetry	92%	2
O2 present	No	0
Pulse	124	2
BP	98/54	2
Temp	35.9	1
ACVPU	Alert	0
Total		10

The surgical junior doctor recognises that Rob is unwell and noting that in addition to his hypotension Rob has a glucose level of 3.0 he decides to give a stat bolus of 500 mls of glucose 5% solution over 10 minutes. The doctor is unclear as to the cause of Rob's illness, as there do not seem to be any significant abdominal signs and he can hear little movement in the right side of Rob's chest. Rob has been uncooperative with history taking and examination and at 21:15 the junior doctor decides to give the oxygen and fluid a little time to have their effect, planning to reassess Rob in 30 minutes.

At 22:00 hours, the surgical registrar becomes available and is called to reassess Rob. He quickly determines that Rob's condition is unlikely to be surgical and that he is showing signs of pneumonia. He contacts his medical colleagues explaining that Rob is unwell and on oxygen.

At 23:00 hours the medical registrar attends Rob and finds him close to collapse with sepsis. Rob is struggling to breathe and the doctor is shocked. His first actions are to call his consultant and the ICU outreach team as he feels the patient is at high risk of cardiac arrest. Rob's pulse has risen to 140 but can no longer be felt at the radius or

brachial points, his oxygen saturation has fallen to 82% despite high flow oxygen and his respiration has changed from rapid breathing to slow and laboured breaths.

The Intensive Care Unit

At 23:30 Rob is ventilated, given antibiotics, fluid resuscitation and inotropes. Gradually over five days of treatment with IV amoxicillin, metronidazole and gentamicin his condition stabilises and improves. He is then discharged to the general medical ward and eventually, following 11 days in hospital, he is deemed fit enough to return home.

Table 4: The levels of NEWS scores and associated clinical risk in the sub-optimal scenario

Date	Time		Clinical concern	NEWS
14 days pre admission		Post op discharge	Low	Unknown
2 days pre admission		GP call	Low	Unknown
Admission day 1	1545	GP appointment	High	Unknown
	2015	Ambulance	High	Unknown
	2048	SAU arrival	High	10
	2200	Surgical review	High	Unknown
	2300	Medical review	High	Unknown
	2330	ICU	High	Unknown
Admission day 12		Discharge	Low	Unknown

The two scenarios (the optimal one follows from page 18) show the challenges of communicating concern regarding a patient between services within a healthcare system. Despite high subjective clinical concern by the clinicians involved in Rob's care they have at each step failed to engage the immediate attention for Rob by the next clinician or service in the pathway. It is essential that we build a universal language for communicating deterioration, irrespective of cause.

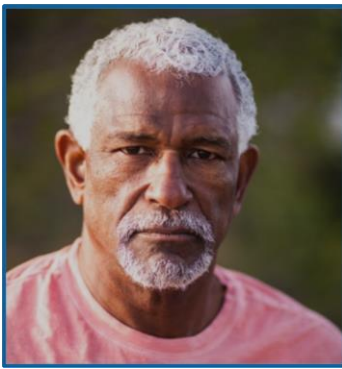
NEWS2 is the best validated track and trigger early warning score system for adults and is recommended for use in all acute settings by the NHS Quality Board including NHS England and NHS Improvement. It is used to identify patients who are acutely deteriorating and who need expert clinical assessment to find the cause of their deterioration. Sepsis is the commonest cause of acute deterioration.

The West of England Academic Health Science Network (AHSN) has produced a [video](#) showing the use of NEWS values to track a patient deteriorating with sepsis

and to communicate concern from GP to Ambulance to Emergency Department, to the benefit of the patient.

GP review

Two days after discharge from hospital Rob is seen by his GP in surgery. This GP is shocked at the change in Rob who now walks with a stick and the support of his wife Emily. He has little memory of how unwell he was, or of the days leading up to his admission. He's worried as to how weak he has become, how poor his memory seems to be, his persistent cough and associated breathlessness. Rob's GP reassures him that it is early days in his recovery and makes arrangements to review him on a regular basis.



Three months on, Rob has slowly regained some of his fitness but is limited to about one hour of slow activity before needing to rest. His sleep remains disturbed and his mood low with occasional flashbacks.

Rob's family is concerned about his mental state and have asked if he needs counselling or even a dementia screen. Rob does not feel that he will ever be well again.

The impact of sepsis for Rob

Rob's sepsis was not properly recognised during his illness, and the impact of Rob's continuing ill-health proves to be significant for his whole family. Rob has had to give up his church activities completely and now attends the social activities he used to run as a frail recipient of support. His wife Emily has had her social life curtailed too as she continues to support Rob with many tasks. His children are recognising that they both need more support with the practicalities of daily life such as shopping and travel, particularly as Emily does not drive and Rob no longer feels safe behind the wheel.

They have had to give up caring for their two grandchildren and this is placing significant strain on the extended family's finances. Their daughter-in-law is contemplating reducing her working hours to support them and to assist in providing childcare. All plans for the family trip to Trinidad have been abandoned as a consequence of Rob's sepsis.

Rob has gained approximately 10 kg in weight since discharge and although initially welcome, his reduced activity and weight gain seems to be having a negative impact on his blood pressure and blood sugar. He is having to take additional anti-hypertensive medication and has been advised that he is now in the pre-diabetic range with his blood tests. His mood remains low and he resents being a burden to his family. His interest in woodwork has diminished as he lacks the concentration or stamina to complete even simple tasks. His family have arranged a dementia screen for him as they are worried.

Impact on quality of life:¹⁴

Patients who survive sepsis report lower quality of life compared with population averages and often cannot resume prior roles or activities. For example, in one study, only 43% of previously employed patients returned to work within a year of contracting septic shock.

A study of spouses caring for partners who had survived sepsis found that the spouses were at increased risk of depression.

Note: Not everyone is as lucky as Rob to have such a supportive family. Consider the impact without this support in appendix 1¹⁵ which highlights the story of a real patient. You can also see Julie's description of her experience of a sub-optimal pathway [in this video](#).

The impact for the practice and hospital

The practice and hospital are disappointed to receive a letter from a firm of solicitors which asks for copies of notes and correspondence regarding Rob's care. Shortly afterwards Rob and Emily move to another practice.

¹⁴ JAMA Enhancing Recovery From Sepsis - A Review. Hallie C. Prescott, MD, MSc; Derek C. Angus, MD, MPH

¹⁵ Appendices to this document can be found at <https://www.england.nhs.uk/rightcare/products/ltc/sepsis-scenario/>

Questions for GPs and commissioners to consider

At the CCG population level, there will be large numbers of people that will experience sepsis in the months and years ahead. Therefore the following questions are very important for immediate consideration.

In the local population, who has overall responsibility for:

- Promoting the use of NEWS2¹⁶ across the whole care pathway, within the community as well as all hospitals in your areas?
- Promoting sepsis as a condition for which targeted interventions must be planned and delivered?
- Identifying and targeting individuals who are at a higher risk of sepsis with educational and instructive information?
- Planning care models to address key stages of sepsis diagnosis and intervention escalation?
- Ensuring timely referral, communication and action throughout the pathway?
- Identifying and reporting on measurable positive and negative sepsis associated outcomes?
- Quality assurance and value for money in sepsis care?
- Understanding if your health economy already has valuable local data around patient experience and outcomes for sepsis care in your area?
- Understanding how this local data could be used to identify and drive improvements?
- Evaluating any existing engagement activity that has already taken place with patients with regards to sepsis? ¹⁷

The above questions are vital in understanding who manages which components of the whole system. Most importantly, it is impossible to effect optimal improvement if the system is not aware of the answers.

For a real life example of a sepsis improvement project at a hospital in Liverpool, please see appendix 2¹⁸.

¹⁶ Please see the following page for further information

¹⁷ If you require advice and resources around engagement please contact The Involvement Hub through this link: <https://www.england.nhs.uk/participation/>

¹⁸ Appendices to this document can be found at <https://www.england.nhs.uk/rightcare/products/lrc/sepsis-scenario/>

The National Early Warning Score

The National Early Warning Score (NEWS) is the best validated track-and-trigger Early Warning Score (EWS) system and is used in the majority of UK hospitals to identify and respond to patients at risk of deteriorating or sepsis.^{19, 20, 21, 22}

A recent Patient Safety Measurement Unit survey demonstrated that 64.6% of the 127 acute trusts who responded used an unmodified NEWS; 14.2% used a modified NEWS; and 19.7% used another early warning score.²³ Potential harm could occur as a result of having variable scoring systems across regions, or even within the same organisation, and this is magnified when we consider how frequently staff and patients move around.

In December 2017, an updated version of NEWS (NEWS2) was published. It contains improvements on the previous version of NEWS²⁴. For example, the chronic hypoxia sub chart helps to better tailor escalation to baseline oxygen levels in those with respiratory disease. It also includes the addition of delirium to the consciousness sub chart, and the reinforcement of the value of aggregate scores versus single parameter extreme recordings.

Because NEWS was developed from comparing the observations of emergency admission survivors and non survivors, and infection is the most common reason for admission, it is unsurprising that NEWS is at the heart of the national operational definition for sepsis. Patient Safety Collaboratives²⁵ across England are supporting acute and ambulance providers to adopt NEWS2 and are also testing the use of NEWS2 across health care settings.

The updated version of NEWS gives a clear opportunity for all services to deliver a universal system for assessing the deteriorating patient and communicating concern with a tool whose validity and benefits are well understood. We need to engage with all providers to ensure not only that they use an early warning score but that they use NEWS2, to drive a safe harmonised system to the benefit of patients such as Rob.

This video from March 2018 describes the importance of NEWS2 as well as providing an update on the sepsis CQUIN: [Celia Ingham Clark MBE - Managing Serious Infection CQUIN](#)

To make a start and to learn more about NEWS2, there is an online training resource: [NEWS2 Online Training Resource](#).

¹⁹ Royal College of Physicians. National Early Warning Score (NEWS): Standardising the assessment of acute illness severity in the NHS. Report of a working party. London: RCP, 2012

²⁰ Prytherch DR, Smith GB, Schmidt PE, et al. ViEWS--Towards a national early warning score for detecting adult inpatient deterioration. Resuscitation. 2010 Aug;81(8):932-7. doi: 10.1016/j.resuscitation.2010.04.014

²¹ Smith GB, Prytherch DR, Jarvis S, et al. A Comparison of the Ability of the Physiologic Components of Medical Emergency Team Criteria and the U.K. National Early Warning Score to Discriminate Patients at Risk of a Range of Adverse Clinical Outcomes. Crit Care Med. 2016 Dec;44(12):2171-2181

²² NHS England. Sepsis guidance implementation advice for adults, September 2017

²³ NHS Improvement (2017). National NEWS implementation baseline survey- acute trusts (online)

²⁴ 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, December 2017

²⁵ <https://improvement.nhs.uk/resources/patient-safety-collaboratives/>

What could have happened differently? Rob's optimal pathway

The operation

Rob attends for his gallbladder surgery which goes well and, as part of his planned discharge, the following day he is given clear instructions as to what he should expect in terms of recovery time and rehabilitation activities. Care is taken to explain what the signs of a deterioration or an abnormal recovery would look like, with particular attention paid to sepsis, as it is recognised that there is an increased risk of this life-threatening infection in the six-week post-operative period²⁶. This advice is supported by a discharge leaflet and Rob is encouraged to share the information with his wife Emily.

The cough

When Rob starts to feel unwell after surgery he refers to the leaflet he was given at discharge from hospital and concludes with his family that there is not much to be concerned about. They understand there is a 'bit of bug' going around as one of their grandchildren has recently been unwell. However, when Rob fails to bounce back quickly and feels that his cough is getting worse he feels empowered to talk with his GP to find out if it might be related to his recent surgery.

The GP



Both Rob and his family are pleased that the receptionist notes their concern and seems to respond appropriately when they quote "we are concerned that it could be sepsis" (by asking about breathing difficulties, confusion and light headedness).

They arrange a face-to-face consultation with a GP in a same day appointment which both sides feel is appropriate.

Rob's GP is fully alert to the possibility of significant infection following the surgery 14 days earlier and conducts a full examination of his chest and abdomen. He also takes care in assessing Rob's physiology. He finds and records the following: Respiratory rate 14, pulse 86, oximetry 98%, temperature of 37.9 and blood pressure 144/92. He says that there are no significant findings when examining Rob and

²⁶ <https://www.nice.org.uk/guidance/NG51/chapter/Recommendations#risk-factors-for-sepsis>

nothing which points to him needing antibiotic treatment at that point. He reinforces the existing patient-facing information about sepsis, signs of deterioration and when to seek prompt reassessment.

The deterioration

Two days later Rob's condition has worsened with an increasing cough and now vomiting. His family have noticed that he is breathless and are beginning to wonder if this is the sepsis they have been warned about. At 08:30 they call the GP receptionist and raise their concern about sepsis. The receptionist arranges for them to come to the surgery directly so that they can be seen when a doctor is available.

At 09:00 a different GP sees Rob who is clearly unwell and breathless as he sits in the examination chair. The GP rapidly carries out an examination and a record of Rob's physiology. His computer automatically calculates the NEWS2 score and alerts that it is raised from the previous reading two days earlier.

Table 5: GP observations

	Value	Score
Resp rate	26	3
Oximetry	94%	1
O2 present	No	0
Pulse	114	2
BP	114/60	0
Temp	38.6	1
ACVPU	C	3
Total		10

There are now some crepitations in the right chest and his abdomen is slightly tender in the right upper quadrant. Rob has found it difficult to cooperate and give his own history throughout the examination and the GP assesses that this is a change in mental state. His conclusion is that hospital assessment is required promptly, and that Rob's family are correct in their concern that this could be sepsis.

The admission

20 minutes later Rob's GP speaks to the medical admissions team about his patient's state, that he suspects sepsis and that his patient has a NEWS2 value of 10, which has changed significantly from two days ago when it was zero²⁷. They both agree that on this basis he needs to be seen in the emergency department so that any resuscitation can be started quickly. At 09:23 the ambulance service is called using the 999 number, and after completing their basic questions Rob's GP states that he suspects sepsis and that his patient has a NEWS2 value of 10. He is pleased

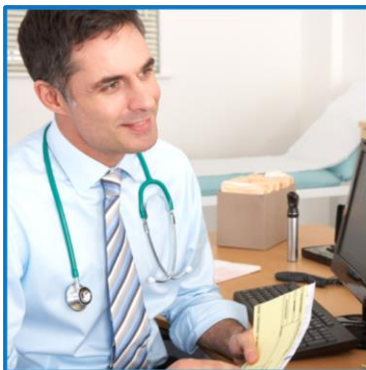
²⁷ National Early Warning Score (NEWS): Supporting clinical judgement and patient safety
<https://vimeo.com/208284106>

to be told that they are already dispatching an ambulance to the practice with the anticipation that it will be with them quickly.

Rob's GP prepares a detailed letter including his findings and the previous observations. A paramedic crewed ambulance arrives 13 minutes later and after walking him into the back of the ambulance they assess Rob. They find that his oxygen saturations have dropped to 92%, and they commence high flow oxygen, recording a NEWS2 of 13.

The paramedic decides to insert an intravenous cannula so that there is the option of giving a fluid bolus to Rob should his condition worsen en-route.

Whilst the patient is being reassessed by the paramedic crew, Rob's GP decides to contact the consultant in the local emergency department with his findings and concerns. At 10:00 Rob is in the resuscitation room of his local district general hospital and being seen by a consultant-led team, receiving high flow oxygen and a fluid bolus. Broad spectrum antibiotics are administered (intravenous amoxicillin, gentamicin and clarithromycin as there is initial uncertainty as to whether his infection is due to the surgery or a chest infection). Blood cultures are taken prior to the administration of his antibiotics. His NEWS2 on arrival to the ED is now 14.



An alert junior doctor looks at Rob's old notes and finds that his systolic baseline BP was 130-140mmHg and his oxygen saturations were 96% on discharge, enabling the team to realise the parameters they should be aiming for.

The doctor also checks his previous blood results in anticipation of future comparison with his current admission.

Blood cultures, serum electrolytes, a full blood count and clotting are taken on entry to the hospital and Rob has a urinary catheter inserted so that his urine output can be accurately monitored. The radiographer takes a portable chest X-ray that demonstrates a right middle and lower lobe pneumonia. In view of this his antibiotic regime is altered to amoxicillin 2g/TDS and clarithromycin 500mg/BD. His observations are carried out every 15 minutes. His second and third set of observations record a NEWS2 of 14 and 12.

His lactate on admission was found to be 3.6 mmol/L, and two litres of intravenous fluid resuscitation is commenced, in 500ml boluses over the following hour. Despite this, he only starts to pass urine an hour into his hospital stay.

The phone rings in the resuscitation room and a nurse relays Rob's significant abnormal blood results: White blood count of $21.4 \times 10^9/L$ (his discharge white blood count was $12.6 \times 10^9/L$), urea of 10 mmol/L, Creatinine of 144 $\mu\text{mol/L}$ (his baseline urea and creatinine were 4.5 mmol/L and 65 $\mu\text{mol/L}$ respectively) and C-Reactive Protein (CRP) of 365 (his CRP was 104 mg/L on discharge). A sample of urine is sent for pneumococcal and legionella antigen and a serum procalcitonin (PCT) measured at point of care. The PCT is 14.5 ng/L, signifying serious bacterial infection.

90 minutes after Rob's arrival, his NEWS is still elevated at 15 and he has only managed to pass 10ml of urine.

The consultant, who is involved in supervising his care from the start, is worried that Rob looks like he is starting to tire, repeats his lactate and notes it has worsened (6.2 mmol/L). He then contacts the critical care outreach and ICU team who agree to take Rob to the high dependency unit as he is not responding to adequate resuscitation. It is agreed that Rob should be prepared for full escalation, intubation and vasopressors in the event of him requiring these.

Supportive treatments are continued on the high dependency unit with an arterial line inserted and low dose vasopressors commenced to maintain his BP without overloading Rob with fluid.

His NEWS2 is 10 on day two, and he is still febrile. He has been managed on non-invasive ventilation with a small amount of inotropic support.

The physiotherapist has managed to assist Rob in producing lots of rusty sputum. His urinary pneumococcal antigen has flagged positive and repeated blood tests show a CRP of 502 mg/L, white blood count of $24.4 \times 10^9/L$ and stable urea/creatinine (8.4 mmol/L and 116 $\mu\text{mol/L}$ respectively). An HIV test is sent. His repeat lactate is 4.2 mmol/L. The day two procalcitonin (PCT) has reduced to 2.3 ng/L and Rob's case is discussed as part of the daily microbiology HDU ward round. In view of the reduced PCT and his mild clinical improvement, the team decide to persist with amoxicillin and clarithromycin as his antibiotic treatments.



Rob's NEWS2 is 3 on day three and he is transferred to a downstream medical ward, much to the relief of Emily and the rest of his family.

Rob is now feeling much better and is passing 50ml of urine/hour. His repeat bloods show a CRP of 340 mg/L, a white blood count of $18 \times 10^9/L$ and urea/creatinine of 6.7 mmol/L and 100 $\mu\text{mol/L}$ respectively. His HIV test is negative. His antibiotics have been reviewed and changed to amoxicillin as there were clear signs of a multi-lobar pneumonia on his chest x-ray, his positive pneumococcal antigen and a reducing procalcitonin. His catheter is removed and he successfully manages a trial without catheter.

Two days later Rob is independent of oxygen and starting to mobilise and looks well enough for discharge, it is planned that Rob will be discharged the following day.

Table 6: The levels of NEWS scores and associated clinical risk in the optimal scenario²⁸

Date	Time		Clinical concern	NEWS2
14 days pre admission		Post op discharge	Low	0
2 days pre admission		First GP appointment	Medium	Not calculated
Admission day 1	0900	Second GP appointment	High	10
	0930	Ambulance	Very High	13
	1000	ED Resus	Extreme	14
	1100	ED Resus	Extreme	12
	1200	ED Resus	Extreme	15
Admission day 2		HDU	High	10
Admission day 3		Ward	Medium	3

The recovery

After a five-day admission Rob goes home, his discharge summary states that he had sepsis and pneumonia and requests that the GP arranges a convalescent chest x-ray in six weeks to ensure recovery. He will complete a 14-day treatment with oral amoxicillin and is given a leaflet about his anticipated recovery path and support (including UK Sepsis Trust information, website, helpline and links to support groups). The following day his family attend the GP surgery with Rob, who remains weak, but grateful for the prompt attention he's received. His GP is able to explain

²⁸ For more detailed patient observations, please see appendix 3. Appendices to this document can be found at <https://www.england.nhs.uk/rightcare/products/ltc/sepsis-scenario/>

what recovery will be like and advises that Rob has a pneumonia and influenza vaccination in a few weeks' time.

Two months later, Rob and Emily both present for their seasonal flu vaccination and Rob is immunised against pneumonia. His GP arranges a convalescent chest x-ray that shows the pneumonia has completely resolved. They are both in high spirits having just returned from the family wedding in Trinidad and three weeks with their relations.

The practice reviews Rob's care with the practice team as part of their significant event analysis, as a positive learning activity. They recognise the value of a sepsis-aware practice, the use of physiology to identify change, and NEWS2 values in communicating concern to improve patient outcomes.

Conclusions²⁹

In the months after hospital discharge for sepsis, the GP is aware that the practice needs to be alert to:

- (1) identifying new physical, mental, and cognitive problems and referring for appropriate treatment
- (2) reviewing and adjusting long-term medications, and
- (3) evaluating for treatable conditions that commonly result in hospitalisation, such as infection, heart failure, renal failure, and aspiration.

²⁹ JAMA Enhancing Recovery From Sepsis - A Review. Hallie C. Prescott, MD, MSc; Derek C. Angus, MD, MPH

The ‘bills’ and how they compare

For the financial evaluation a detailed analysis was performed by mapping the lifecycle of the pathways. Through this process it is possible to identify the cost drivers that would be incurred in primary, emergency and hospital care, using where appropriate, the NHS National Tariff, NHS reference costs and, where there is a hospital stay, average cost per bed day³⁰. We have included the wider social and economic impacts but not the cost outside of the health remit or the social, emotional, physical and financial costs to the patient and family members.

This scenario is using a fictional patient, Rob. It is intended to help commissioners and providers understand the implications (both in terms of quality of life and financial costs) of shifting diagnosing and treating patients with sepsis faster and more appropriately.

Note: The financial costs are indicative and calculated on a cost per patient basis. Local decisions to transform care pathways would need to take a population view of costs and improvement. For a macro-economic picture of the financial costs to the whole health economy, review this paper from the [York Health Economics Consortium](#).

Table 14: Financial analysis

Analysis by cost category	Sub-optimal	Optimal	Optimal %
Primary care management	£238	£451	190%
Urgent and emergency care	£247	£247	100%
Secondary care management	£7,518	£2,318	31%
Grand total	£8,003	£3,016	38%

The key difference between the sub-optimal and optimal pathways is prompt diagnosis and good communication between healthcare professionals which results in prompt administration of antibiotics. Not only does this drastically improve the health outcomes of many patients but in this case it also significantly reduces the

³⁰ The £400 per bed day cost is an estimate of cost for the cohort considered to calculate the approximate costs of a single day's treatment in a ward in a hospital setting. This value has been derived from 2015/16 SUS data using the weighted bed-day cost with Market Forces Factor applied for age ranges between 40-74. This is consistent across the whole suite of these RightCare scenarios. Edbrooke and colleagues estimated the average cost per patient day in 11 ICUs was £1,000 www.ics.ac.uk/EasySiteWeb/GatewayLink.aspx?allid=441. The excel spreadsheet designed to cost these scenarios includes full details of cost data sources and is available upon request. Please contact NHS RightCare at rightcare@nhs.net if you would like further details about the methodology.

volume and type of bed days in hospital from 11 days (five in ICU) in the sub-optimal case down to four days (one in ICU) in the optimal case.

Primary care invests much more significantly in post sepsis after care with practice visits every two weeks for the first three months after hospital discharge. This ensures that Rob is closely monitored; the GP practice is aware of the problems that can occur post sepsis (e.g. mental health issues), if not well managed.

This shift in focus represents improved value for money, better use of healthcare resources and most importantly a significant improvement in Rob's clinical outcome and quality of life.

Financial calculation notes

- Costs have been tracked for 100 days in both scenarios from the first GP contact after discharge from hospital post-operation.
- The scenario variance is prudent because the legal, diabetes and mental health cost implications in the sub-optimal case have not been taken into account in this analysis and could be very substantial.
- In the two sepsis scenarios used here, the cost of drug treatment is low. It is not possible to assign an exact figure against these costs because most of the medicines used will be captured through the HRG codes used in hospitals. In some scenarios, where resistant organisms are identified, more expensive antimicrobials may need to be prescribed. In these situations, the cost of drug treatment can increase significantly.
- As noted above, the financial calculation presented here represents an indicative level of efficiency potential of the case only. Firstly, as the case is an example pathway, different pathways for other patients may increase or reduce the potential benefit. Secondly, the potential releasing of resource associated with implementing the optimal pathway across a larger cohort of patients will be subject to over-arching contractual arrangements in place between providers and commissioners, which may differ across the country. For example, some of the financial benefits identified in the case, may not be fully realisable where the elements of the pathway are subject to block contracts or risk/gain shares in place between contracting parties. Equally, the release of resource may only be realised should there be a critical mass from within the targeted patient population. Each healthcare organisation and system will need to assess the potential for realising the financial benefits identified within the case.
- It should also be noted that the financial calculation is considered from a commissioner perspective. The impact on income and costs for provider organisations will require consideration in the implementation of the optimal pathway.
- Each healthcare organisation and system will need to assess the potential for realising the financial benefits identified within the case.

CQUIN data insights

Since April 2015 NHS trusts in England have been able to participate in a quarterly CQUIN scheme, which contains four indicators around the identification and timely management of sepsis.

The CQUIN initially focussed on emergency patients, but was extended to include inpatients in April 2016.

The purpose of this CQUIN proposal is to embed a systematic approach towards the prompt identification and appropriate treatment of life-threatening infections, while at the same time reducing the chance of the development of strains of bacteria that are resistant to antibiotics.

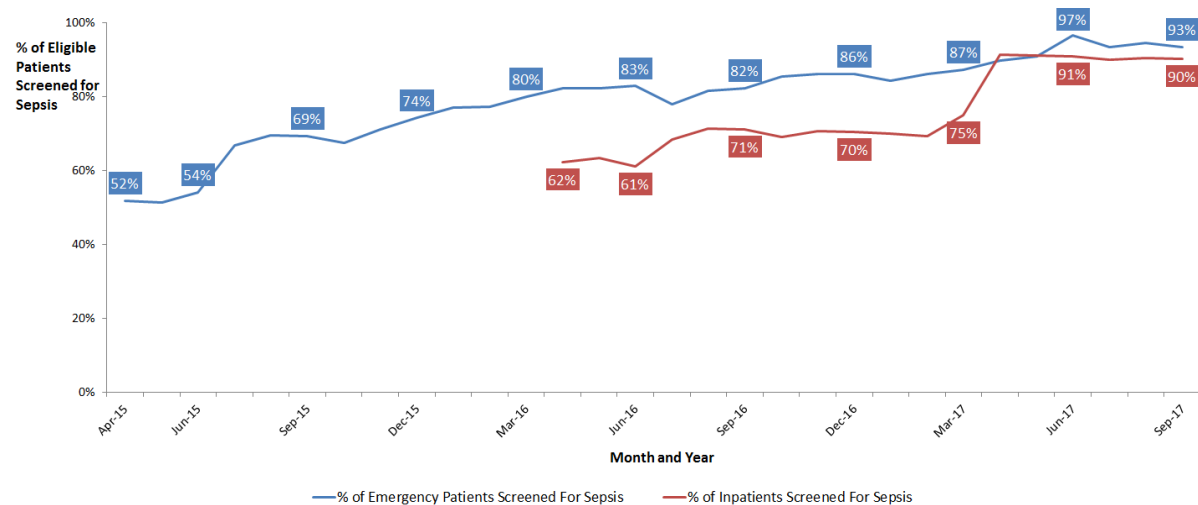
You can see [more detailed information about the CQUIN specification here](#).

Indicator 2a: Timely identification of sepsis in emergency departments and acute inpatient settings

This indicator calculates the percentage of patients who meet the criteria for sepsis screening and were screened for sepsis. The indicator applies to adult and child patients arriving in hospital as emergency admissions and to patients on acute inpatient wards.

Note: During 2018/19, acute and emergency units should be transitioning to use the National Early Warning Score (NEWS2) to screen patients. By Q4 of 2018/19, payment will only be made if over 90% of screened cases have been screened using NEWS2.

Chart A: Emergency patients being screened for sepsis in England (Indicator 2a)

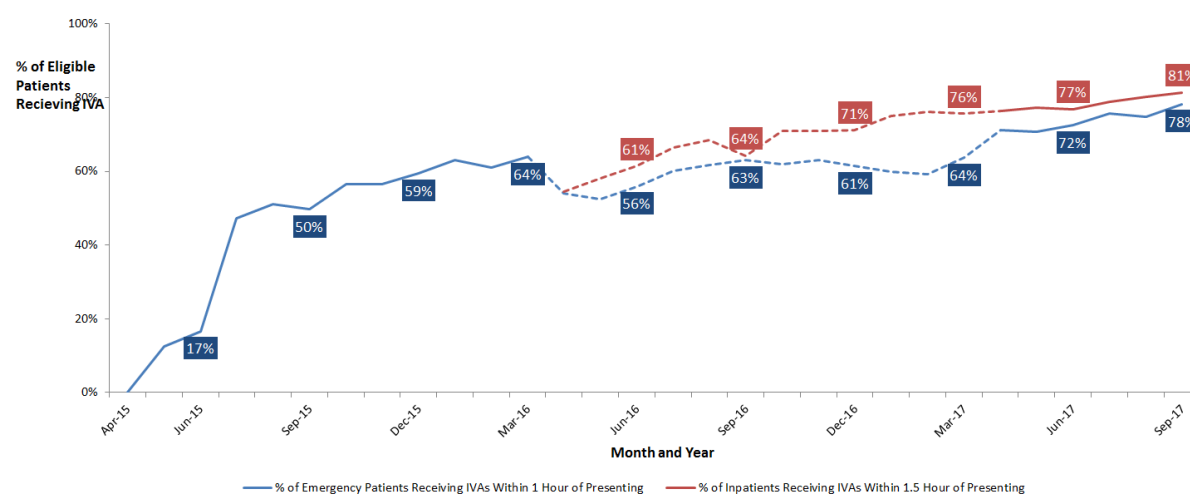


Indicator 2b: Timely treatment of sepsis in emergency departments and acute inpatient settings

Prompt treatment of sepsis reduces the associated mortality and morbidity. This indicator calculates the percentage of patients who were found to have sepsis in sample 2a and received IV antibiotics (IVAs) within one hour.

Note: Between April 2016 and March 2017 trusts were asked to only include patients who had also had a three-day review; this affected the number of patients who met the criteria. This period is highlighted on the chart with dashed lines; solid lines indicate trusts were only assessed on having given IVAs within the appropriate time.

Chart B: Emergency patients and inpatients indicated as severe sepsis receiving intravenous antibiotics rapidly³¹ in England (Indicator 2b)



Deaths averted

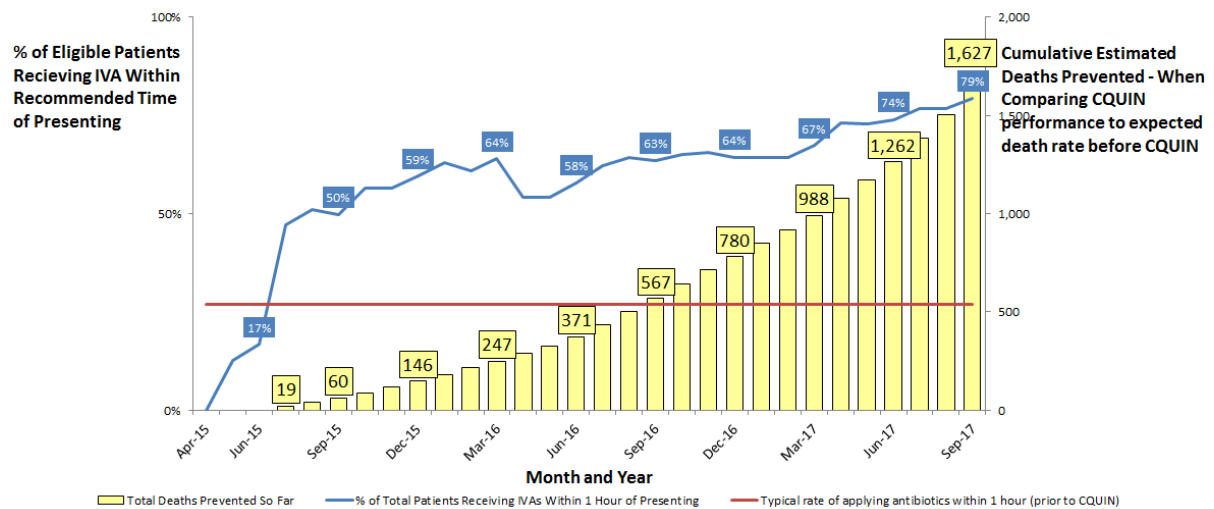
Using the sample of data from the CQUIN it has been possible to estimate a minimum number of deaths that have been averted through the increased use of appropriate IVAs, compared to the situation described by the Royal College of Emergency Medicine (RCEM) in its 2011/12 *Severe Sepsis and Septic Shock* Clinical Audit (where 27% of patients received IVAs within 1 hour of arrival).

Between April 2015 and September 2017 it has been calculated that minimum estimate of 1,627 sepsis-related deaths have been averted through the increased use of IVAs within the appropriate timeframe in sampled patients. This is considered to be a conservative estimate³².

³¹ In the first year Emergency patients were recorded as receiving within 1 hour of arrival. In year two Emergency patients within 1 hour and Inpatients within 1.5 hours. Year three and both were recorded as receiving within 1 hour of arrival.

³² This is a minimum estimate based on best available evidence prior to CQUIN of the impact that giving antibiotics rapidly to sepsis patients reduces mortality by about 15% from about 33% to 28%. The estimate applies only to the patients sampled for the sepsis CQUIN data collection.

Chart C: Estimated cumulative deaths prevented in increased use of appropriate IVAs in England in emergency and inpatients



The initial increase in the CQUIN sepsis data collection in 2015/16 was due to trusts establishing their data collection methodology and improvements in data quality. The trends have continued to increase as there have been improvements in awareness of sepsis and better recording and identification of sepsis, or suspicion of sepsis along with improvements in treating rapidly with antibiotics.

While the figures in the document are correct at the time of publication, CQUIN data is updated on a quarterly basis. To request more up to date data or to get more detail on how the information is calculated please email england.sepsis@nhs.net

Indicator 2c: Antibiotic review

Indicator 2d: Reduction in antibiotic consumption per 1,000 admissions and proportion of board spectrum antibiotic use

[The NICE Sepsis: recognition, diagnosis and early management guideline 2016](#) states that antibiotic prescriptions should be reviewed once microbiology results are available. Evidence has shown that timely antibiotic reviews are associated with lower mortality in patients diagnosed with sepsis³³.

For more information on indicators 2c and 2d please email Public Health England at CQUIN@phe.gov.uk.

³³ Garnacho-Montero et al, De-escalation of empirical therapy is associated with lower mortality in patients with severe sepsis and septic shock. Intensive care Medicine; 2014; Jan;40(1): 32-40

Links to other resources

For more information about sepsis, its detection, management, guidelines and policy you may wish to look at the following resources:

- **NHS England publications:**
 - Improving outcomes for patients with sepsis - second sepsis action plan <https://www.england.nhs.uk/wp-content/uploads/2017/09/second-sepsis-action-plan.pdf>
 - Sepsis guidance implementation advice for adults <https://www.england.nhs.uk/wp-content/uploads/2017/09/sepsis-guidance-implementation-advice-for-adults.pdf>
- **Health Education England materials:**
 - Getting it right - the current state of sepsis education and training for healthcare staff across England <https://hee.nhs.uk/our-work/sepsis-awareness>
 - THINK SEPSIS: The identification and management of sepsis in primary and secondary care and paediatrics: <https://www.e-lfh.org.uk/programmes/sepsis/>
 - Antimicrobial resistance resources <https://hee.nhs.uk/our-work/antimicrobial-resistance>
- **NICE guidance:**
 - NICE: Sepsis Quality standard [QS161] September 2017 <https://www.nice.org.uk/guidance/qs161>
 - NICE: Sepsis: recognition, diagnosis and early management guideline [NG51] September 2017 <https://www.nice.org.uk/guidance/ng51>
- **CQUIN guidance:**
 - NHS Improvement resources to support delivery of the *Reducing the impact of serious infections* CQUIN, parts 2c and 2d <https://improvement.nhs.uk/resources/reducing-impact-serious-infections-antimicrobial-resistance-and-sepsis-cquin/>
 - Celia Ingham Clark MBE - Managing Serious Infection CQUIN <https://www.youtube.com/watch?v=XGwNyi1cDIM>
- **CCG Improvement and assessment framework (CCG IAF)**
 - The Secretary of State infection control event took place on 14 November and outputs have been linked to the CCG IAF. The CCG IAF technical annex 2017/18 is further evidence that sepsis awareness raising amongst healthcare professionals must be prioritised by CCGs: <https://www.england.nhs.uk/wp-content/uploads/2017/11/ccg-technical-annex-2017-18-v1-1.pdf> (see pages 107-112)

- **Organisations**
 - The UK Sepsis Trust <https://sepsistrust.org/>
 - Cross-system Sepsis Programme Board (formed by NHS England) <https://www.england.nhs.uk/ourwork/part-rel/sepsis/>
 - Public Health England <https://www.gov.uk/government/organisations/public-health-england>
 - Getting It Right First Time (GIRFT) <http://gettingitrightfirsttime.co.uk/>
- **Tools and support:**
 - Suspicions of sepsis dashboard: A ‘suspicion of sepsis’ national dashboard has been developed and is in final testing phase. A list of 200 clinically validated ICD-10 codes that relate to bacterial infection have been developed to allow the identification of patients with suspicion of sepsis from local administrative data. The outcomes of these patients (e.g. mortality, length of stay, readmission rate, and intensive care admissions) can be tracked over time to assess the impact of treatments and improvement programmes. The dashboard will be available shortly. For more information, please visit <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5734411/>
 - The NEWS2 e-learning link at the RCP: <https://tfinews.ocbmedia.com/>
 - Clinical Policy Unit (within NHS England) responsible for the Sepsis programme via email england.clinicalpolicy@nhs.net
 - Public Health England’s Antimicrobial Resistance Handbook: Start Smart then Focus - including guidance for optimal treatment of infections https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/605967/PHE_AMR_resource_handbook.pdf
 - Surviving Sepsis: A human factors approach: <https://www.patientstories.org.uk/recent-posts/surviving-sepsis-a-human-factors-approach/>
 - “Think Sepsis”, a Health Education England management and executive learning package. Targeted at trust boards and senior executives (under development) <https://www.e-lfh.org.uk/programmes/sepsis/>
 - Situation, Background, Assessment, Recommendation (SBAR) – an easy to use, structured form of communication that enables information to be transferred accurately between individuals: <https://improvement.nhs.uk/resources/sbar-communication-tool/>
- **Blogs & Knowlex tutorials:**
 - Here’s the NEWS: Great progress on sepsis but still more to do by [Celia Ingham Clark](#)

- NEWS2: An opportunity to standardise the management of deterioration and sepsis – in BMJ by [Matt Inada-Kim and Emmanuel Nsutebu](#)
- Knowlex - An Hour on sepsis - [Dr. Matt Inada-Kim](#)

Think change, Think NHS RightCare

This scenario was tested and created using the proven NHS RightCare approach.

NHS RightCare is a methodology that focuses relentlessly on increasing value in healthcare and tackling unwarranted variation. It is underpinned by intelligence and robust evidence, showing commissioners and local health economies 'Where to Look' i.e. where variation and low value exists. The approach then goes on to support health economies through 'what to change' and 'how to change'. The diagram showing all three key phases is shown below:



NHS RightCare offers facilitation and support to all CCGs and their health economies in implementing the RightCare approach and the developmental thinking, tools and data that enhance population healthcare improvement.

NHS RightCare is a proven approach that delivers better outcomes and frees up funds for further innovation. Please explore our latest [publications](#) and for more details about our programme visit www.england.nhs.uk/rightcare.

You can also contact the NHS RightCare team via email at rightcare@nhs.net

NHS RightCare, NHS Elective Care Programme and Getting It Right First Time (GIRFT)

NHS RightCare is working closely with two other national programmes, NHS Elective Care and NHS Improvement's Getting It Right First Time (GIRFT). The cohesive aim of these three complementary programmes is to provide full system patient care to ensure the best possible outcomes for patients and securing the most efficient use of resources to create a sustainable NHS. Each programme is clinically-led, and together they help identify opportunities to reduce unwarranted variation, aiming to remove barriers to care, across all local health and social care economies in England.

Initially the NHS RightCare approach works with local health economies to help them highlight differences across population healthcare, identify opportunities and encourage prevention, while GIRFT works with trusts to discuss findings and improve the quality of medical and clinical care. Elective Care weaves throughout both approaches, resulting in all three programmes contributing to better health outcomes for patients by ensuring that people see the right person in the right place, first time.

Deep dives of data are packaged by each programme, providing intelligence and insight to opportunities, presenting findings and sharing examples of best practice across populations. Consideration and attention is given to pathway redesign, integral to each programme, ensuring where possible that optimal care is in place throughout the entire patient journey. All three programmes harmonise over shared decision making, comprehensively advocating this approach throughout the system.

All three programmes work collaboratively with their stakeholders, creating action plans and opening up lines of enquiry about whether they are delivering optimal care for their populations.

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- Emmanuel Nsutebu (National Clinical Advisor, Cross-system sepsis programme board)
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- Neil Lester (Senior Finance Lead, Efficiency and Transformation)
- Ian Robson (Improvement Facilitator, Audit for Improvement Team)
- Frederick Wheeler (Senior Statistical Officer, Clinical Programmes and Patient Insight Analytical Unit)

This information can be made available in alternative formats, such as easy read or large print, and may be available in alternative languages, upon request. Please contact 0300 311 22 33 or email england.contactus@nhs.net