

Collaboration between primary care, ambulance services and acute trusts has reduced the death toll from sepsis in South West England by an estimated 3,000 in the last two years. **Matt Limb** finds out how they did it.

# Early warnings save lives

**A**round 37,000 people die of sepsis in England each year. Sepsis is a serious complication of an infection that, without quick treatment, can lead to tissue damage, multiple organ failure and death.

But sepsis can be difficult to identify and there is no single diagnostic test. “The multi-organ response means that patients often present with very vague symptoms”, says Alison Tavare, a GP and primary care clinical lead for the West of England Academic Health Science Network (AHSN).

“It can affect the brain, causing confusion, and the lungs, causing shortness of breath. It can also affect the heart, causing blood pressure to drop and the pulse to go up, and it can affect the kidneys potentially leading to acute

kidney injury,” she explains.

Tavare, who experienced the debilitating effects of sepsis herself following spinal surgery, adds: “Sometimes patients who’ve got sepsis have a feeling of doom and imminent death which means they present as very anxious and that’s an additional challenge for clinicians.”

In hospitals, structured observations or early warning scores have long been used to help clinicians identify and respond to signs of deterioration and assess the risk of sepsis. But not all hospitals use the same systems, and they have tended not to be used in pre-hospital settings.

Clinicians and managers at the West of England AHSN believed that developing an effective ‘early warning tool’ for sepsis in primary care settings would help to trigger a better clinical response across the whole system.

“If a GP knew a patient’s score right at the start of the pathway, we could ensure that the patient with a sepsis risk would be seen at the right time by the right clinician”, says Anne Pullyblank, the network’s medical director, who led the three year project to develop the tool.

The network worked to adapt an existing tool – the National Early Warning Score (NEWS) – for use in all care settings so it would be understood as a “common language” at the point of handover of patients between GP practices, ambulance services, acute NHS trusts, community and mental health services.

“No one had looked at outcomes using an early warning score outside hospital,” explains Pullyblank, who is also a consultant colorectal surgeon at Bristol’s Southmead Hospital. “When we started the project in 2015, we weren’t necessarily looking at sepsis specifically... We wanted to improve mortality in people that were acutely unwell by using a score which tells you how sick a patient is at an earlier point in their illness.”

**“At first I wasn’t sure how relevant NEWS would be for me as a GP,” says Tavare, who has helped to develop sepsis guidelines for the National Institute for Health and Care Excellence (NICE). But she saw the value of using it with her own patients and wanted to share learning with colleagues.**

“The value of NEWS is its simplicity



Alison Tavare



Anne Pullyblank



and, because it looks at the six measurements of physiology, it can pick up the multi organ failure of sepsis,” she explains. “So it’s not diagnostic, but it helps identify if the patient is deteriorating.”

The project team held a series of meetings with stakeholders including acute trusts, clinical commissioning groups, ambulance services and community health partners. It used the “breakthrough collaborative” model for quality improvement, recommended by the Institute for Healthcare Improvement. The team arranged seminars and produced a range of resources to promote and support the initiative, including educational posters, patient stories and videos.

“We held big events every six months, where people from every sector came together, but in between there were community task groups,” says Pullyblank.

Tavare says some GPs, like her, were sceptical about using the NEWS score, which had not been designed or validated for use in primary care. The team encouraged GPs to see the system as something that would support but not replace their clinical judgement, and provide an “objective justification” for referral decisions.

A key challenge for all GPs is knowing

how urgently a patient needs to go to hospital and how they should communicate their concerns about the patient. In the West of England project, GPs were not initially asked to calculate full NEWS scores themselves, but to provide patients’ vital signs observations when they referred them to the single “hub” point of entry for acute admissions. These values were converted into NEWS scores by hospital staff.

GPs “started to learn that if the score is 5 they don’t have to argue or debate with anyone about getting the patient seen, it’s much easier for them,” says Pullyblank. “If the score is 5 you have to ‘think sepsis’ and a hospital review is appropriate.”

Tavare says a NEWS score can be a “safety-net” for GPs who fear they have “missed something” in a patient. “As a GP, once you’ve admitted a patient that you might not have identified without NEWS, you become a convert,” she adds.

One video prepared by the team features a GP, a paramedic and an emergency consultant explaining what happened to one patient with suspected sepsis when NEWS was used throughout the pathway.

He was rushed to hospital with an initial NEWS score of 7 (the level which

triggers an emergency response) which then rose to 8, indicating further deterioration, when re-checked in the ambulance. The hospital was pre-alerted so the patient could receive the most appropriate treatment quickly, including antibiotics, rather than having to wait in a queue to be seen.

The patient, whose score peaked at 11 before falling, was treated within five hours of first seeing his GP. He recovered fully after being admitted to a ward and returned home within three days.

**Most services across the region covered by the West of England AHSN have now adopted NEWS, including all six acute trusts.**

Tavare says it has become routine to ask for the score and its component parts when GPs call to arrange an admission, and the data is used to help decide where the patient should be seen. NEWS has also been introduced into the electronic patient record system used by the South West Ambulance service, and paramedics ask for NEWS scores when a transfer is requested.

The South West region has “significantly reduced” mortality from suspected sepsis and now has the lowest mortality rate in England – down to 4.3% in 2017-18, compared with an average of 5.2% for England as a whole. All this adds up to an estimated 3,000 lives saved so far, according to the AHSN, and the project has won patient safety awards from both the *British Medical Journal* and the *Health Service Journal*.

Tavare says the results are “phenomenally encouraging” and the team are working to deliver further improvements, such as making better use of the system in learning disability settings.

Pullyblank says the project succeeded because it was very widely embraced in each sector by people who contributed their “goodwill” to making a new idea work. “People have confirmed that NEWS [has] improved communication across systems, across professional roles, and supported clinical decision making and prioritisation,” she says. ■