TRANSFORMING **CARE** INSTITUTE

NHS
The Shrewsbury and Telford Hospital
NHS Trust

Saving lives through sepsis success

The Shrewsbury and Telford Hospital NHS Trust (SaTH)

Introduction: why sepsis matters

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Every year in the UK there are more than 150,000 cases of sepsis, resulting in the deaths of 44,000 people; more than from bowel, breast and prostate cancer combined.

Despite these staggering numbers, awareness and understanding of sepsis remains relatively low across the NHS, and considerably lower still amongst the public.

In addition, the systems and processes that would improve the chances of surviving sepsis are either not always readily available, or not implemented in a timely way.

This combination means many sepsis sufferers are not treated within the significant 'golden hour', during which treatment effectiveness is improved substantially.

All of the evidence suggests that by both increasing awareness of the symptoms of sepsis and increasing the speed of treatment, more patients will survive; and it is these key challenges that The Shrewsbury and Telford Hospital NHS Trust have been tackling in recent months – to dramatic effect.

The greatest chance of successful treatment occurs if patients are treated within the **'golden hour'**.

8% For each hour of delay in treatment, mortality increases by 8%.

Objective: save time, save lives

The UK Sepsis Trust believes that 12,500 lives can be saved every year by changing the way the NHS deals with sepsis, and it was this potential and clear scope for improvement that compelled the Trust to put sepsis at the heart of its improvement programme. In order to deliver life saving results, the Trust focused on achieving three vital aims:

1. **Improving the recognition of sepsis:** reducing the time it takes to identify the symptoms of sepsis
2. **Improving the diagnosis of sepsis:** increasing the speed of which sepsis can be confirmed
3. **Improving the treatment of sepsis:** ensuring more patients are treated within the 'golden hour' and given the best chance of success

By working in partnership with the Virginia Mason Institute and NHS Improvement, learning and adopting proven methods and techniques for quality improvement, the team had the ideal platform for success.

Key challenges: recognising what is important at SaTH

"The challenges of managing sepsis are relatively common across NHS organisations, but it was important to recognise them within our Trust and the extent to which we could influence them.

"Firstly, raising the profile of sepsis to improve awareness has always been a significant factor. The UK Sepsis Trust and others have been doing great work in this area, but we knew there was more we could be doing in SaTH.

"We also recognised how difficult it can be to make improvements right across a complex, adaptive system, and that genuine engagement would be vital from outset.

"In a similar vein, we knew that our staff would be able to offer the best ideas, and capturing them from the busy frontline staff who are already under pressure would be essential to coming up with the right solutions."

Dr Edwin Borman
Medical Director and Value Stream Executive Sponsor

The process: thinking differently about sepsis

By partnering with the Virginia Mason Institute and NHS Improvement the team were able to take an honest look at the current state of the sepsis pathway from multiple perspectives, gaining an accurate understanding of what treatment is like for patients with sepsis. This initial step informed the team that more work would be required than originally thought, but with the reassurance that additional support was available through the partnership.

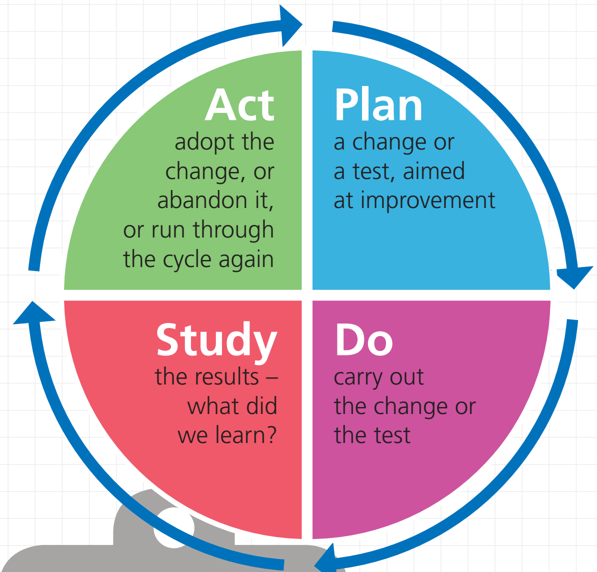
Following further early work to measure the baseline, a Kaizen plan was created to identify the quality of treatment the team, collectively, were aspiring to deliver. This whole-team involvement in the process was incredibly powerful, and was maintained throughout to encourage contribution and create ownership.

What is a Kaizen plan?
A Kaizen plan identifies 'what good looks like', and outlines the work required to get there from the current situation.

Next, the process of improving the sepsis pathway was broken into bite-sized, manageable sections, and whole-week improvement workshops were delivered to tackle each in turn. Known as Rapid Process Improvement Workshops (RPIWs), these sessions were designed to drill down to the root cause of the problems and identify solutions to significant issues that had existed for some time. These involve extensive data collection at the beginning, and wide a range of different staff were then brought together to come up with ideas and make plans for implementation.

"In the past the team had tried to tackle these issues by going a mile wide and an inch deep, but with this process we were supported to go an inch wide and a mile deep. This meant the team could come up with detailed, realistic and deliverable improvements."

Dr Guy Calcott
Registrar, Obstetrics, SaTH



Working with Virginia Mason Institute and NHS Improvement

Virginia Mason Institute is working with five NHS trusts over five years to support an accelerated transformation in quality:

- Barking, Havering and Redbridge University Hospitals NHS Trust
- Leeds Teaching Hospitals NHS Trust
- Surrey and Sussex Healthcare NHS Trust
- The Shrewsbury and Telford Hospital NHS Trust
- University Hospitals Coventry and Warwickshire NHS Trust.

Each trust has selected a number of 'value streams' to work on through this partnership, which are areas of interest they believe they can make significant gains in for the benefit of patients and staff.

The programme involves intensive support with a range of coaching and mentoring for leaders and staff across each trust in how Virginia Mason Institute has applied lean management successfully in a healthcare setting.

Formal training and certification in lean methodology and access to licensed materials provide the trusts with the opportunity to bring about sustainable and lasting culture change.

For further information, please visit:
improvement.nhs.uk/resources/virginia-mason-institute

What made this process different?

"Previous process improvement has predominantly been project based, led by a passionate individual, often through a committee or meeting structure. Solutions were often implemented with little opportunity to make adaptations or gain consensus from the people who are actually doing the work.

"This new way of working enables multiple experiments to test hypotheses in order to ensure the right solution can be found. The proposed solution is then tested over a longer period of time to provide further opportunities for improvement and refine existing changes. This approach utilises a Plan, Do, Study, Act cycle of testing ideas.

"A vital aspect is that these ideas are generated and tested by the teams doing the work, as they will know the solutions better than anyone. This also leads to better engagement and sustainability of the improvements."

Nick Holding
Senior Specialist and Value Stream Lead, SaTH

Improvements: making practical changes

As a result of the process, a wide range of practical improvements have been made, including:

Sepsis Trolley

The team introduced a bespoke sepsis trolley to store all of the items required to provide timely treatment for patients who are diagnosed with sepsis. This means all of the items are one place, where previously staff were required to collect them from different places across the ward. This has significantly reduced the delay of treatment from 296 minutes to 30 minutes.

Sepsis Box

Similar to the trolley, the box places all the items required in one place in order that a diagnosis can be obtained quickly. This has been developed further to include the treatment elements too, and is found to be more appropriate than the trolley in areas where teams may not expect to see a high number of patients with sepsis.

Early Assessment Tool

A patient who arrives at the Emergency Assessment Areas may wait a while to be assessed, following initial check-in with the Clerk. The Early Assessment Tool provides the Clerk with an easy-to-use reference as the first point of contact with the patient, and gives the opportunity to raise the alarm if the patient is showing signs of sepsis.

Sepsis Bleep

Having the right people available to rapidly recognise and treat sepsis is crucial, and is often seen as the most difficult element of the treatment of sepsis. The sepsis bleep is given out before each shift to a doctor and an HCA who are called if and when a patient is identified. Each member of the Sepsis Team then has specific tasks in order to deliver the treatment as quickly as possible.

Revised Sepsis Screening Tool

The previous screening tool was developed corporately, from national and international guidance. However, this was not being used, as the teams using it did not find it user friendly. A revised version was created by the frontline team, who increased compliance to 100%.

Sepsis Workbook

The team found that knowledge of sepsis was patchy across the Trust, with many frontline staff not being given sufficient information to enable them to recognise the signs and symptoms. A staff nurse from the AMU team developed a simple workbook that staff read and complete to improve knowledge. This has been further developed and is now available via e-Learning, and linked to the staff record system.

Outcomes: reducing time dramatically

This combination of improvements has led to some significant outcomes, which have exceeded initial expectations. Huge time efficiencies have been achieved across virtually all elements of the sepsis pathway, including reducing the time taken to deliver all elements of the sepsis bundle from seven hours to just 30 minutes.

There have also been important reductions in the time taken to recognise and confirm sepsis, giving people the best chance of fast treatment. This includes a 60% reduction in the time taken to obtain initial diagnosis and a six hour reduction in the time it takes to turnaround the blood sample.

Once diagnosis has been confirmed, treatment is also much quicker now, with the average time for delivery of antibiotics now 83% faster than before the improvements were made. This ensures many more people receive treatment within the 'golden hour', which gives them the best chance of success. **Ultimately this means saving lives.**

Successes at SaTH

Faster diagnosis

60% — 60% reduction in time to obtain initial diagnosis (76 to 30 minutes)

6 hours — 6hr reduction in time to turnaround blood sample (400 minutes to 7 minutes)

Faster treatment

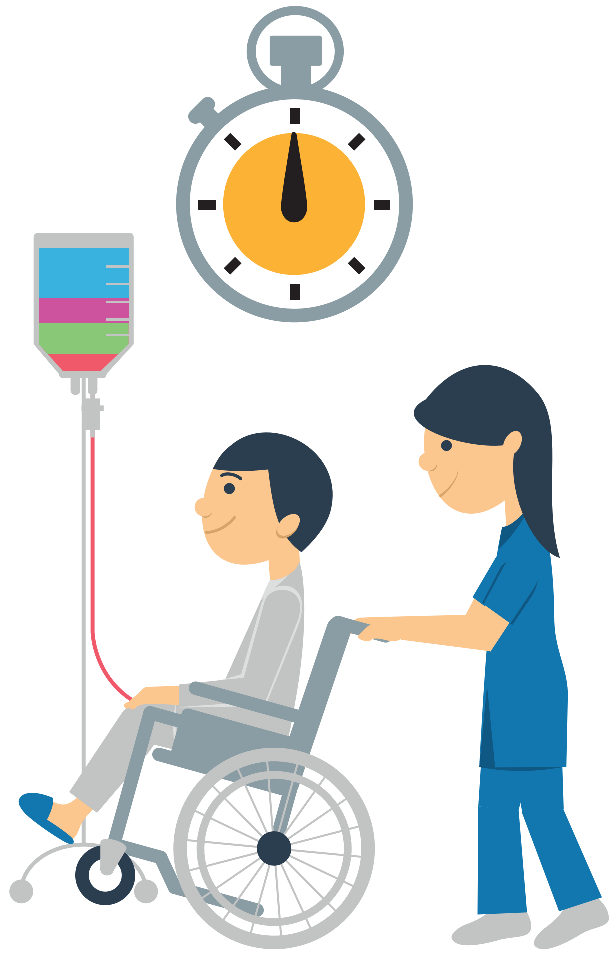
83% — 83% reduction in time to deliver antibiotics (now just 20 minutes)

93% — 93% reduction in time to deliver all elements of the sepsis 'bundle' (now just 30 minutes)

"Another time saving has been in the administration of sepsis, specifically the amount of time it takes for me to complete the paperwork I need to. This has reduced from 45 minutes to just seven minutes, freeing up my time so that I can spend it with patients."

Jenny Lawson
Staff Nurse, AMU, PRH, SaTH

Benefits: improving the lives of patients



For patients, the improvements mean that they are getting the most appropriate treatment as quickly as possible, with significantly reduced delays. This means more are treated during the 'golden hour', giving them the best chance of successful treatment. Ultimately, this is expected to reduce avoidable deaths from sepsis significantly across the Trust.

As well as improving healthcare outcomes, these enhancements contribute to a significantly improved patient experience. This is primarily achieved via the clearer and more efficient pathway, which reduces anxiety through far shorter waiting times and quicker diagnosis. Staff are also able to spend more time communicating with the patients, ensuring they understand what the care plan is, and answering their questions much more quickly and definitively.

Benefits: improving the lives of staff

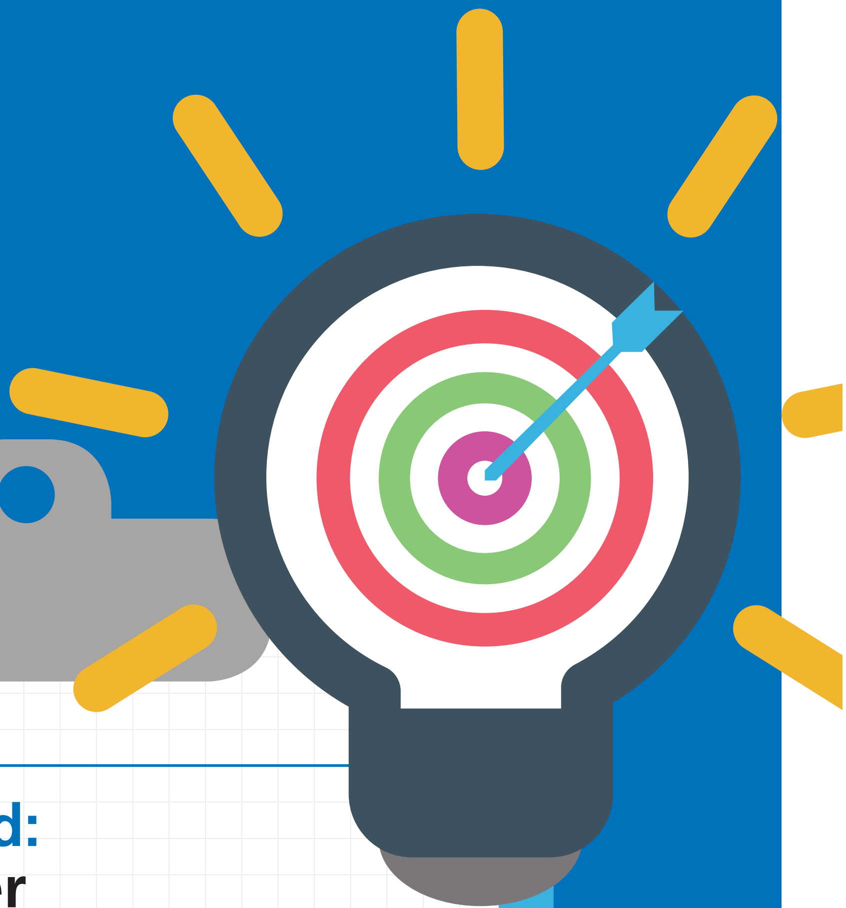
There are also significant benefits for staff, not least the improvement in morale as a result of them feeling that they are providing the best possible care for patients.

Staff have also been urged to contribute to the process from the very beginning, and the sense of ownership and importance this has created has been vital to eliminating delays and waste in the process that had been frustrating staff for some time.

There have also been a number of practical benefits for staff as a result of the reorganisation of the working environment. This has meant the correct equipment is on hand when needed, meaning staff do not need to waste time tracking down the things they need, giving them extra time to do more valuable work.

"I think a lot of the time the teams could see the answers to these challenges in the past but were not in a position to make the changes we needed to. However, this process has empowered us to make these vital improvements, and see first hand the benefits for our patients."

Emma James
Ward Manager, AMU RSH, SaTH



Lessons learned: making it easier for others

"A key thing we have learned is that big bang, imposed change does not often work. For the best results, it's vital we involve the teams in generating the improvements so that they are right for the individual areas. For example, we could have just purchased a sepsis trolley from Bristol Maid, however without real understanding and ownership by the staff, that would likely have sat gathering dust in a corner.

"We have also realised the importance of taking our time to come up with the right solutions. Breaking the work down into bite-sized chunks may take longer, but we've found it a lot more effective. Improvement is rarely an overnight success, so developing this level of patience in the improvement work is critical.

"I think we have also recognised that sharing ideas and successes across the Trust is vital to the creation of a continuous improvement culture. As a result of sharing what we've done, a number of other teams are wanting to introduce sepsis trolleys and boxes in their areas; meaning the lessons we have learned can benefit many more patients and staff."

Emma Salvoni
Ward Manager, SAU RSH, SaTH

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Further information

If you would like to find out more about the improvements made at The Shrewbury and Telford Hospital NHS Trust, please contact:

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