

Site Name: Royal Derby Hospital

The TASC Principle: Using measurement and structured quality improvement methodology to understand and reduce variation in the acute stroke pathway, strengthen multidisciplinary working, increase thrombolysis rates and reduce delays in diagnosis and treatment.

The Challenge

Following the merger of services across University Hospitals of Derby and Burton, the stroke pathway at Royal Derby Hospital became increasingly complex, spanning multiple sites, teams and systems. Demand continued to grow, with increasing numbers of patients presenting with stroke creating additional pressure on an already stretched service.

Despite strong clinical capability, the pathway was characterised by variation and inefficiencies at multiple points. Pre-alerts from ambulance services were inconsistent in both quality and content, leading to incomplete clinical information on arrival. Differences between ambulance providers and variability in clinical questioning further compounded this issue, resulting in delays in assessment and decision-making.

Within the Emergency Department, stroke pathways were affected by competing priorities, space constraints and inconsistent processes for imaging and initial assessment. This led to avoidable delays in scanning and treatment, as well as frustration for staff. Variation in thrombolysis decision-making contributed to missed opportunities and delays, while creating uncertainty for junior clinicians.

Importantly, while individual issues had been recognised, there was limited shared understanding of the pathway as a whole. Improvement efforts were often fragmented, and there was a need to move towards a more structured, data-driven and system-wide approach to deliver quick, consistent care for patients with suspected stroke.

What they did (the process)

The Derby stroke team worked collaboratively with internal teams and system partners to develop a comprehensive understanding of their pathway and adopted a structured quality improvement approach to problem solving. Central to this was engagement across the system, including Emergency Department staff, ambulance services, radiology, and the wider stroke multidisciplinary team.

The team began by clearly defining their shared aim: *to ensure that every acute stroke patient is assessed, scanned, treated and admitted within one hour of arrival*. This provided a clear and shared purpose for improvement.

A structured diagnostic phase followed, including process mapping, root cause analysis and articulating a problem statement. Key issues were broken down into manageable components, enabling the team to prioritise areas of focus. This approach helped to shift from addressing isolated issues to understanding how different parts of the pathway interacted.

This work informed the creation of a driver diagram (*Figure 1*) which was used to organise improvement work. The team identified key drivers which they felt would influence the success of achieving their aim. These drivers included improving pre-alert quality, increasing the speed and reliability of imaging, strengthening clinical decision-making, and ensuring that more patients were consistently managed on the hyperacute stroke pathway. From this, the team generated change ideas which they felt would influence these key drivers.

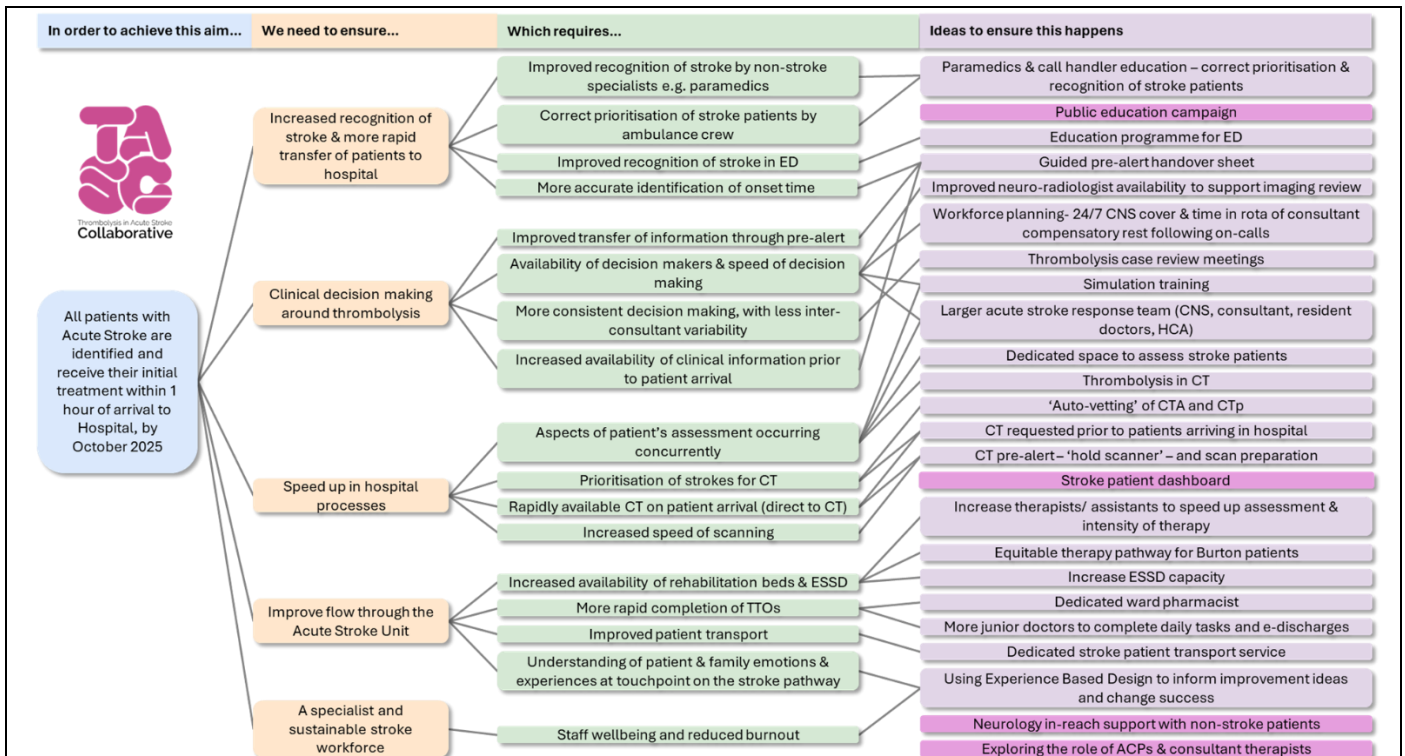


Figure 1: Driver diagram, showing the teams change ideas that they think will influence the primary and secondary drivers to help achieve their aim

Measurement played a central role throughout the programme. The team adopted a '*family of measures*' approach, using outcome, process and balancing measures to robustly understand whether changes made were true improvements. This moved the team away from focusing solely on performance targets and towards measurement for improvement, using small-scale testing to reduce the risk of unintended consequences or 'gaming' behaviours within the stroke pathway. The routine use of Statistical Process Control (SPC) charts to display pathway measures over time enabled the team to understand variation, identify opportunities for improvement, and determine whether changes resulted in statistically significant improvement.

A series of Plan-Do-Study-Act cycles were used to test and refine change ideas. Key interventions included:

- Establishing an acute stroke response team to improve early assessment
- Introducing pre-booking of imaging to reduce delays to CT
- Strengthening pre-alert processes and communication with ambulance services
- Implementing thrombolysis case review meetings to improve learning and consistency
- Introducing a CNS coordinator role to support flow and coordination
- Expanding collaboration with ambulance services, particularly EMAS
- Embedding quality improvement as business as usual within the team

Alongside pathway changes, there was a strong focus on team development and culture. Regular meetings created dedicated time for improvement, and staff at all levels were encouraged to contribute ideas and take ownership. This fostered psychological safety, enabling open discussion, challenge and learning. A dedicated workshop day with the Stoke Clinical Nurse Specialists (CNS) gave the team the opportunity to come together to formulate their team identity (*Figure 2*), team purpose, operating principles, and create a set of shared objectives of what they would like to achieve together over the next year. This further strengthened team relationships and trust, and provided a strong foundation for future improvement work.

Team identity- Headlines!



Task- Write a 'headline' which will appear in a newspaper or professional journal in one year's time. This headline will describe something the team has achieved during that year, be something that all team members would be proud to see in print and be relevant to what the team exists to do.

Stroke CNS TEAM VOTED BEST For Patient Satisfaction.

Derby Stroke Nurses
see 99% of patients
Within 10 minutes of arrival
at hospital

RCH CNS Leading
Training unit for
stroke nursing!

PARALYSED TO
INDEPENDENT 9 HRS
POST STROKE.

15 minute door-to-needle time achieved by
Stroke CNS team.

Critical Stroke
Symptoms addressed
without delay!

Figure 2: A team identity exercise at the Stroke CNS workshop where the team were asked to share 'headlines' that they would be proud to see in print about their improvement work.

What we achieved (the outcomes/data)

Through this structured and collaborative approach, the Derby stroke team achieved meaningful improvements in both performance and culture.

Thrombolysis rates improved (Figure 3), particularly among pre-alerted patients, with more stroke patients being identified, pre-alerted, and treated appropriately. Improvements were also seen in the proportion of patients assessed by the stroke team immediately on arrival at hospital (Figure 4).

Access to imaging became faster and more reliable, which was supported by pre-booking processes and stronger coordination. The introduction of an acute stroke response team helped ensure that patients were assessed more rapidly and consistently on arrival.

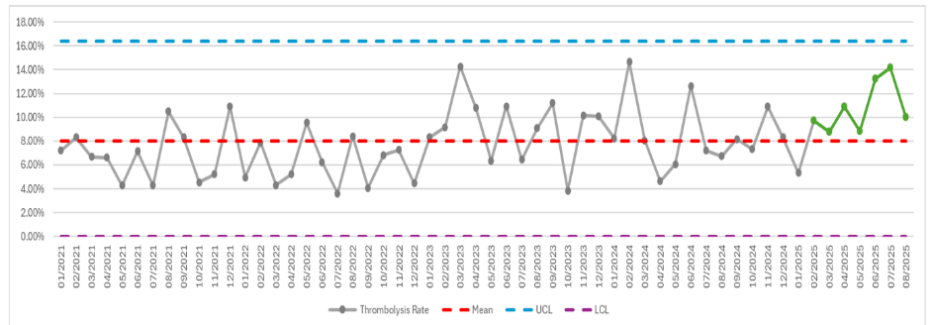


Figure 3: SPC chart showing improvement in weekly thrombolysis rate

Improvements were also seen in the proportion of patients assessed by the stroke team immediately on arrival at hospital (Figure 4).

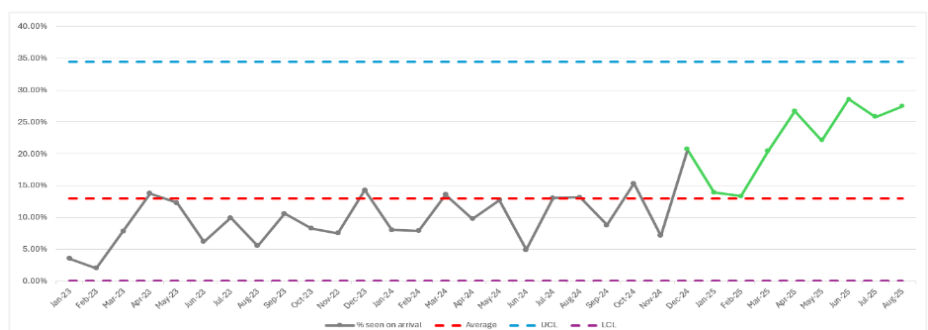


Figure 4: SPC chart showing improvement in % of patients seen on hospital arrival

Crucially, variation across the pathway began to reduce. Higher-quality pre-alert information and stronger relationships with ambulance services improved early decision-making and reduced delays. Clinical teams reported greater consistency in thrombolysis decision-making, supported by shared learning through case reviews.

One of the most significant achievements was the cultural shift within the team. Staff described improved morale, stronger teamwork and a greater sense of ownership over improvement work. The improvement and impact of the Acute Stroke Response Team was recognised through the *Making a Difference Awards* at University Hospitals of Derby and Burton NHS Foundation Trust, where they were presented with the CEO Award (see, right).



The programme also enabled the team to adopt a more improvement-focused approach to data, providing clearer insight into pathway performance, and supporting more targeted change ideas. This created a continuous feedback loop between data, clinical practice and decision-making.

Overall, the team moved from a fragmented approach to improvement towards a coordinated, system-wide model, underpinned by shared purpose, strong relationships and continuous learning.



Testimonials

"The biggest difference I've noticed since working with the TASC programme is a change in the mindset of our team and a belief that we can really make a difference to the service we provide our patients by making small changes, and that we don't need big investments to make things better. We can make small changes ourselves, and review those changes, and still make a big difference to our patients."

Being part of TASC has helped us to improve collaboration across different parts of our stroke service, particularly encouraging us to work more closely with our ambulance colleagues in the East Midlands Ambulance Service, and also working with our radiology colleagues to improve our scan times for stroke patients."

Dr. Caroline Hartley
Consultant Stroke Physician
University Hospitals of Derby and Burton NHS Foundation Trust

Key system contacts

Dr. Caroline Hartley- Stroke Consultant: caroline.hartley1@nhs.net

Cassandra Williams- Stroke Service Manager: cassandra.williams@nhs.net