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Thrombolysis in Acute Stroke Collaborative

Thrombolysis in Acute Stroke Collaboration (TASC) Toolkit

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Foreword

A Case for Change: Scaling the Success of the Thrombolysis in Acute Stroke Collaboration (TASC)

Phase one of the Thrombolysis in Acute Stroke Collaboration (TASC) has been an undeniable success. We want to express our heartfelt thanks to the six outstanding units – Torbay, Winchester, Eastbourne, Lister, Lincoln, and Preston – that have achieved unprecedented improvements in the quality of care they provide.

We know that fostering a mindset of collaboration is the cornerstone of delivering exceptional care. These six teams have demonstrated exactly that – embracing the power of working together to drive meaningful change. Through their hard work and dedication, they are improving patient outcomes in ways that are truly inspiring and setting a benchmark for others to follow.

One of the most rewarding aspects of this initiative has been seeing these teams take full ownership of their data and use it as a lever for quality improvement. National data can often be perceived as a punitive tool – a stick rather than a resource for progress. Yet these teams have completely flipped that narrative. They’ve embraced the data as a catalyst for change, translating it into tangible improvements and building confidence in their ability to deliver the care the data shows is possible.

This success is not just a local achievement – it is a clear demonstration of what can be accomplished on a national scale. By taking the lessons learned from these six trailblazing units and applying them across the country, we have the opportunity to transform stroke care nationwide. Proactive engagement with data, collaboration between teams, and a shift in mindset towards continuous improvement can drive better outcomes for patients everywhere.

The achievements of these teams highlight the potential for national data to be a force for progress and empowerment. Scaling this change across the NHS will help us unlock that potential, delivering consistently high-quality care and improving outcomes for stroke patients on a much broader scale.

Now is the time to build on this momentum and turn local success into national transformation.

Dr. David Hargroves
Consultant Stroke Physician, National Clinical Director for Stroke Medicine, NHSE

Professor Martin James
Consultant Stroke Physician, Clinical Director of the National Stroke Audit (SSNAP)

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Introduction

The Thrombolysis in Acute Stroke Collaborative (TASC) is a quality improvement collaborative created in 2023 bringing six clinical teams together with the shared aim that by 2025 thrombolysis would be given to at least 20% of patients who could benefit from the intervention. All six sites participating in the first cohort of the collaborative made significant statistical improvements towards achieving this aim.

During the 12-month active phase of the collaborative the programme team worked with participating sites to distil the principles of their approach. The result is this co-produced toolkit designed to share best practices for improving thrombolysis rates across acute NHS services. With stroke being a leading cause of morbidity and mortality, timely and effective intervention is critical. This toolkit draws inspiration from the collaborative. The principles we have included in the toolkit emerged as we worked alongside clinical teams and adoption of the principles described in this toolkit will guide any clinical team to take a structured approach to improving thrombolysis rates in acute stroke.

At the heart of the TASC are a series of initiatives undertaken by clinical teams to improve access to thrombolysis for suitable patients. Examination of the approach's teams took informed the creations of emerging principles. They have shaped the content of this toolkit, providing healthcare providers access to innovative practices that can be adopted to improve access to thrombolysis. The goal is to share and disseminate best practices across healthcare services, ultimately improving patient outcomes in acute stroke care.

One of the key objectives of the TASC toolkit is to foster a culture of continuous improvement. By evaluating current practices and identifying areas for enhancement, healthcare teams can adapt their approaches to make improvement. This involves understanding the improvements that can improve thrombolysis rates but also exposing organisational and logistical challenges that may hinder timely intervention.

The toolkit emphasises the importance of a multidisciplinary approach, involving collaboration among healthcare professionals from various backgrounds. This ensures that all aspects of patient care, from onset of stroke to post-thrombolysis follow-up, are handled with expertise and precision. By working together, clinical teams can develop a comprehensive understanding of each patient's needs and tailor their interventions accordingly. Furthermore, the significance of patient and public involvement in the design and implementation of stroke services is crucial. Engaging patients in discussions about their care not only enhances the overall experience but also empowers them to be active participants in their treatment journey.

In summary, the TASC toolkit aims to help clinical teams improve thrombolysis rates across acute NHS services by establishing a framework of best practices, fostering collaboration, and promoting patient engagement. As we move forward, it is essential that clinical teams embrace these principles to ensure that every patient receives the highest standard of care in their acute stroke journey. Through the effective implementation of the TASC toolkit, teams can make significant strides towards reducing the burden of stroke and enhancing the quality of life for people living with strokes.

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Principle 1
Optimise front door processes to deliver timely thrombolysis

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"Optimise front door processes to deliver timely thrombolysis" focuses on enhancing the efficiency and effectiveness of patient care from the onset of stroke to maximise access to treatment the moment they arrive in hospital. Achieving timely thrombolysis requires the implementation of several key strategies.

Firstly, **Prehospital Video Triage (PVT)** (see link opposite) enables healthcare professionals to assess patients remotely before their arrival. By linking with pre-hospital services through video technology, stroke clinicians can quickly evaluate symptoms and prioritise patients who may need urgent thrombolysis. Secondly, an **Ambulance Pre-Alert** system allows ambulances to notify the hospital prior to arrival, enabling teams to prepare in advance for incoming patients. This proactive communication facilitates immediate action upon arrival, streamlining the transfer of care and reducing the time to diagnosis and treatment.

Additionally, establishing an **Electronic System for Pre-Booking Scans** ensures that imaging facilities are primed to receive patients as they arrive, allowing seamless coordination between emergency services and radiology departments to minimise wait times. The **Estate Design for Rapid Access to Computerised Tomography (CT) Scans** is also crucial; a thoughtfully designed hospital layout can facilitate quick access to essential facilities, such as scanning equipment, thus expediting the diagnostic process. Ideally, pathways should allow ambulance teams to bring patients directly to scanners, handing them over as they arrive, with imaging pre-booked and ready.

Lastly, clarifying **Roles and Responsibilities** within the responding team is vital, ensuring that all members, including senior decision-makers, understand their roles both in and out-of-hours. By integrating these elements, healthcare facilities can optimise their front door processes, enhancing the likelihood of timely thrombolysis and ultimately improving patient outcomes from stroke.

Prehospital Video Triage and how artifical intelligence is helping to speed up the diagnosis and treatment of stroke patients

Key points from PVT Triage clip:

- Emphasise the urgency of treatment: "time is brain"
- Use video triage between ambulance crews and stroke specialists
  - Assess patients enroute to hospital.
  - Prepare in advance for scans or treatment.
- Deploy AI decision support tools in stroke diagnosis
  - Reduce time taken to process and interpret brain scans.
  - Support quicker treatment decisions.
  - Integrate clinical expertise with technological tools: use AI to support, not replace, clinical judgement.

At **Lincoln County Hospital** they have worked with the local ambulance provider to increase pre-video triage and improve front door processes. You can find out more about their journey here.

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Principle 2
Work closely with radiology to deliver timely imaging

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'Work closely with radiology to deliver timely imaging' emphasises the importance of collaboration between clinical teams and radiology departments to ensure rapid and accurate imaging for those experiencing strokes. Effective networking is fundamental; building strong relationships between emergency medicine and radiology teams is essential for fostering communication and coordination. Regular meetings, joint training sessions, and interdisciplinary workshops can enhance collaboration, ensuring all team members are aligned on protocols and best practices for acute stroke imaging.

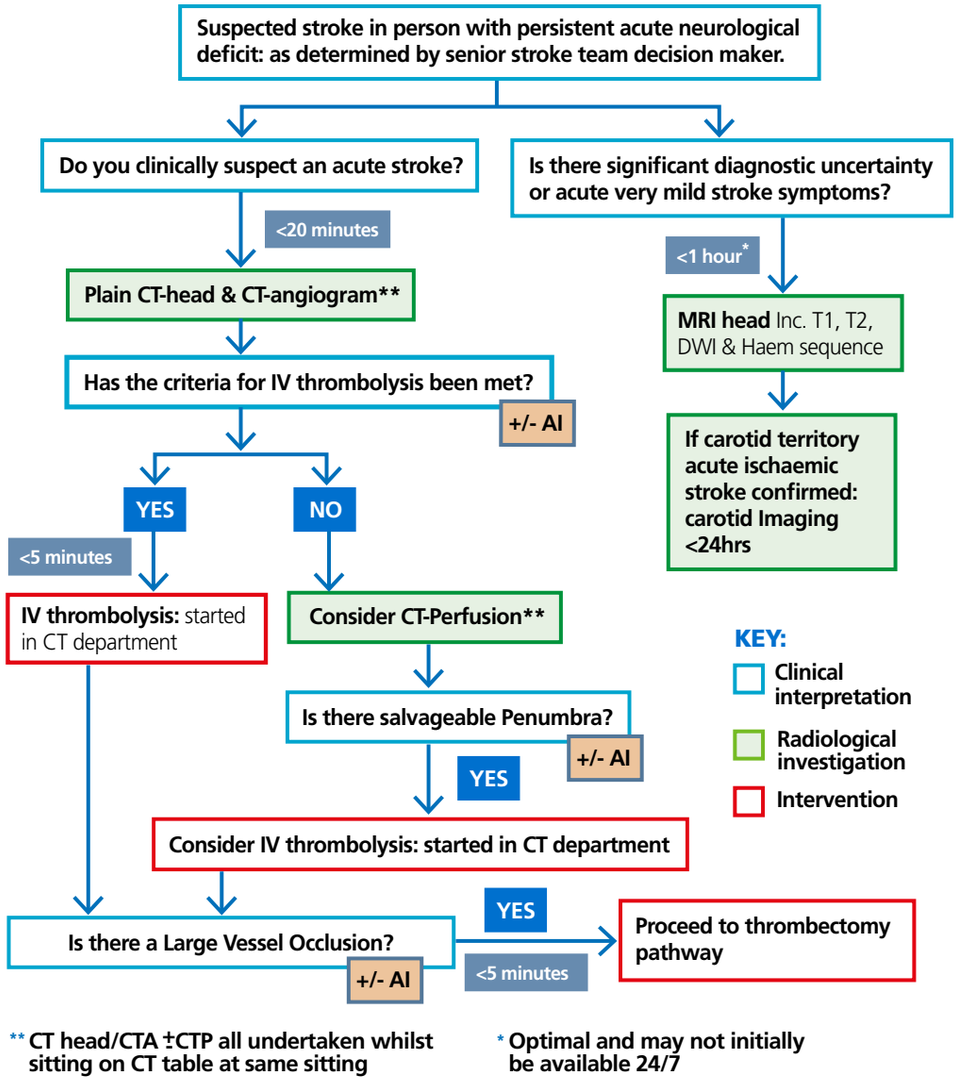
The implementation of national guidance, such as the National Institute for Health and Care Excellence (NICE) and the **National Optimisation of Stroke Imaging Programme (NOSIP)**, is crucial for standardising practices across the board. By integrating these guidelines into daily operations, teams can create a consistent approach to imaging that aligns with the latest evidence-based recommendations, ultimately improving patient outcomes.

Additionally, leveraging **Artificial Intelligence (AI) Computer-Aided Tools** can significantly enhance the clinical decision-making process in acute stroke care. The integration of artificial intelligence tools, such as Brainomics, allows for the rapid analysis of imaging data, assisting clinicians in diagnosing and determining the most appropriate course of action for patients, thereby expediting treatment initiation.

Engaging **Senior Leaders** in the pathway's development is vital for securing the necessary resources and support needed to make improvements. By involving leadership in discussions about the importance of timely imaging for stroke patients, organisations can prioritise and allocate funding and personnel to improve processes and technologies.

Establishing a **Clear CT Pathway** for acute stroke cases is another important strategy. This pathway should outline roles, responsibilities, and timelines, ensuring that all team members understand the steps required to facilitate rapid imaging from patient arrival to imaging completion.

National Optimal Stroke Imaging Pathway (NOSIP)



** CT head/CTA ±CTP all undertaken whilst sitting on CT table at same sitting

* Optimal and may not initially be available 24/7

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Furthermore, reducing the time it takes to interpret CT scans is critical; implementing strategies such as prioritising stroke patients, utilising teleradiology services, and promoting a culture of urgency among radiologists can substantially decrease interpretation times, allowing for quicker clinical decisions and treatment where appropriate.

By focusing on these strategies, healthcare teams can work closely with radiology to ensure that acute stroke patients receive timely imaging. This is essential for effective and prompt treatment, leading to better patient outcomes and quicker thrombolysis where clinically indicated.

At **Lancashire Teaching Hospitals NHS Foundation Trust**, they have worked together as a team to develop an effective pathway. You can find out more about their approach here.

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Principle 3
Develop 'a thrombolysis mindset'

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A thrombolysis mindset involves embedding a culture where thrombolysis is seen as the default treatment for eligible patients with acute ischaemic stroke. This principle requires proactive teamwork, robust processes, and a commitment to continuous improvement to ensure timely and effective care for those affected by strokes.

One of the key components is adopting a **‘Why Not Thrombolyse?’** approach. This shift encourages teams to focus on identifying reasons why thrombolysis cannot be delivered rather than defaulting to exclusion. It empowers clinicians to challenge misconceptions, address clinical hesitations, and remove barriers that may prevent the timely administration of thrombolysis.

To support this mindset, it is essential to ensure **Clear and Accessible Guidelines**. Providing concise, up-to-date clinical protocols that are readily accessible to all staff – including digital tools and quick-reference materials – will facilitate adherence to best practices. Additionally, aligning local guidelines with national standards, such as those set by NICE and the Royal College of Physicians (RCP) Stroke Guidelines, will promote consistency in care delivery.

Another vital aspect is to **Set and Share Internal Standards**. Establishing clear local targets for thrombolysis delivery, such as achieving door-to-needle times within 60 minutes, creates accountability among staff. Regularly sharing data on performance against these standards can help identify areas for improvement and encourage a culture of excellence.

Fostering **Multidisciplinary Collaboration** is crucial for developing a thrombolysis mindset. Facilitating regular discussions about stroke cases involving stroke teams, emergency clinicians, radiologists, and nursing staff allows for aligned decision-making and addresses variations in practice. These forums can be used to review challenging cases and share learnings to enhance confidence and consistency across the team.

Providing **Individual Feedback** is another important strategy. By reviewing thrombolysis rates by individual clinicians and teams, healthcare facilities can identify patterns, celebrate successes, and address any barriers to delivery. Supporting staff with targeted training and mentorship can also enhance their skills and confidence in administering thrombolysis.

Finally, embedding **Data into Improvement Cycles** is essential for driving change. Utilising thrombolysis performance data in local quality improvement initiatives and regional benchmarking meetings fosters an environment of shared learning. Open discussions about outcomes can help address systemic issues and drive improvements across the pathway.

By embedding these elements into daily practice, teams can create a culture where thrombolysis is consistently prioritised, ensuring eligible patients receive timely, evidence-based treatment. This proactive approach not only supports better outcomes but also helps reduce unwarranted variation, aligning with NHS priorities for high-quality stroke care.

At **Hampshire Hospitals NHS Foundation Trust**, they created a process to review and discuss all stroke patients. You can read about their approach here.

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Principle 4
Identify clinical change champions

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Effective clinical leadership is essential to improving thrombolysis rates and delivering high-quality stroke care. Clinical change champions play a pivotal role in inspiring, guiding, and supporting teams to prioritise best practices while fostering a culture of continuous improvement.

One of the key components is **Visible and Accessible Leadership**. Champions should maintain a regular, authentic presence in clinical settings, actively engaging with teams to understand challenges and build trust. Leaders who are approachable foster open discussions about thrombolysis practices, encouraging all team members to share insights and concerns without hesitation.

Promoting **Inclusivity through Flattened Hierarchies** is vital for creating an environment where every team member – regardless of role or seniority – feels empowered to contribute. Encouraging multidisciplinary discussions and collaborative decision-making can lead to innovative solutions and help reduce barriers to timely thrombolysis administration.

Champions must also **Advocate for Best Practices**, actively promoting the benefits and urgency of thrombolysis to ensure it remains a clinical priority. By sharing success stories and evidence-based outcomes, they can inspire confidence within the team and drive the adoption of timely treatment protocols.

To further reinforce this commitment, champions should **Model Consistency and Excellence**. By exemplifying adherence to thrombolysis guidelines and demonstrating best practices in their own clinical work, champions set a standard for others to follow. Consistent behaviour from leaders reinforces the importance of thrombolysis and encourages a shared commitment to high-quality patient care.

Effective Communication is another essential aspect of empowering clinical change champions. Regular and clear communication regarding thrombolysis protocols, performance metrics, and improvement initiatives helps to align team efforts. Champions can facilitate forums for sharing updates, addressing concerns, and celebrating successes, which enhances team cohesion and motivation.

It is also crucial to embrace **Multidisciplinary Leadership**. Leadership should not be confined to a single profession; champions from various disciplines – including stroke physicians, nurses, radiographers, therapists, and pharmacists can drive improvement from multiple perspectives. This shared responsibility ensures that every team member feels invested in optimising thrombolysis rates.

Finally, champions should sustain a **Culture of Quality Improvement** by embedding thrombolysis enhancement into the team's ethos. Using data and feedback to identify opportunities for change, champions can lead quality improvement projects that address specific barriers and drive measurable progress.

In summary, clinical change champions are vital for creating and sustaining a culture of excellence in thrombolysis delivery. By fostering trust, promoting inclusivity, and exemplifying best practices, champions empower teams to prioritise timely and effective treatment for stroke patients. This collaborative approach ensures that leadership is shared, outcomes are improved, and unwarranted variation is reduced across the NHS.

Click here to access the **Clinical Leadership Guide.**

Principle 5
Design a workforce to manage stroke effectively

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This principle underscores the necessity of a well-structured and skilled workforce that is dedicated to optimising thrombolysis rates and enhancing stroke care. A strategic approach to workforce design can ensure that all aspects of stroke management are covered and the entire team operates cohesively.

Such an approach to the workforce requires a multi-disciplinary team (MDT), essential for stroke management, encompassing not only medicine but also Specialist and advanced nursing, Therapy and pharmacy roles to perform assessments and make clinical decisions, improving efficiency in care delivery and enhancing patient management.

Evaluating and ensuring adequate staffing levels is crucial for effective stroke management. A well-staffed team can respond promptly to acute situations, facilitate timely thrombolysis, and provide comprehensive patient care without delay, ultimately leading to better outcomes. Equally an MDT approach ensures that all perspectives and expertise contribute to patient care decisions, including the timely administration of thrombolysis e.g. pharmacists can provide valuable insights into medication protocols, manage dosing, and monitor potential drug interactions, thereby enhancing patient safety and treatment efficacy.

Designing workflows that promote seamless transitions and communication across the stroke care pathway is vital. This includes establishing clear protocols for referral, triage, assessment, and treatment, ensuring that every team member understands their role and contributes to a streamlined process.

A workforce development plan will help identify training needs, skill gaps, and opportunities for professional growth within the team. This plan should focus on enhancing knowledge and skills related to stroke care, particularly in thrombolysis protocols and decision-making. It is important to disseminate knowledge of stroke care beyond the immediate stroke team. Training and education sessions for all pre-hospital staff, including paramedics, emergency department personnel and general practitioners, can raise awareness and ensure that everyone understands the urgency of thrombolysis and the protocols involved.

Promoting consistent behaviour across the workforce is key to maintaining high standards of care. This can be achieved through regular training, clear guidelines, and a culture of accountability, ensuring that all team members adhere to established protocols for thrombolysis.

Incorporating managerial staff in the stroke workforce design is essential for ensuring that operational and administrative support aligns with clinical needs. Managers can facilitate resource allocation, promote interdepartmental collaboration, and support staff development initiatives.

By designing a workforce that incorporates these elements, healthcare organisations can more effectively improve thrombolysis rates, and ultimately enhance the quality of care provided to patients experiencing acute strokes.

See 'Non Medical Workforce in Stoke' webinar slides for useful information to ensure you have a skilled multi-disciplinary workforce delivering effective stroke with example from **Lincoln County Hospital**.

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Principle 6
Actively manage the stroke pathway

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This emphasises the need for proactive management of the entire stroke care pathway to ensure timely and appropriate care, especially regarding thrombolysis.

Key components include:

1. **Operational Management:** Focused attention on this role towards coordinating resources, staff, and processes to align with patient needs.

2. **Project Management:** Assuring there is support; this role enables setting clear goals, timelines, and responsibilities to improve thrombolysis rates.

3. **Analyst Support:** Analysts can track key metrics, evaluate outcomes, and identify trends related to thrombolysis rates, providing insights that inform clinical practice and operational improvements. Using data analysis to engage with the team supports performance tracking, assessment of outcomes, and inform improvements.

Having these three components enables the team to use data more effectively by leveraging Sentinel Stroke National Audit Programme (SSNAP) and Stroke Audit Machine Learning (SAMuel) data to benchmark against national standards and improve care practices through the implementation of evidence-based strategies to enhance thrombolysis rates. It also enables the team to:

- **Use Time Stamps** to document key events to identify delays and optimise treatment times, e.g. patient arrival, triage, imaging, and treatment administration, facilitating more rapid thrombolysis when indicated.

- **Pathway Mapping:** Visualise the stroke care process to identify bottlenecks and streamline workflows ensuring that all team members understand their roles within the system.

- **Dashboard Monitoring:** Using real-time dashboards to track key performance metrics, provide an at-a-glance view of key indicators related to thrombolysis rates. The dashboard can display metrics such as treatment times, compliance with protocols, and patient outcomes, enabling teams to respond quickly to any issues that arise

- **Adherence to Stroke Standards:** Ensuring practices align with established best practice evidence guidelines for optimal care of patients following a stroke. By incorporating these standards into the management of the stroke pathway, teams can create a consistent approach that supports timely thrombolysis and optimal patient care.

All of the above required defined Management Roles whereby clear responsibilities to ensure accountability and effective coordination are assigned, ensuring all team members understand their contributions to improving thrombolysis rates.

By actively managing the stroke pathway with these strategies, healthcare teams can improve efficiency, responsiveness, and thrombolysis rates, leading to a patient-centred approach and thus contributing to better patient outcomes.

At **East & North Herts NHS Trust – Lister Hospital** they have a great example. You can read their story here.

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Principle 7
Actively involve patients and the public

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Actively Involve Patients and the Public underscores the importance of engaging service users in the process of improving thrombolysis rates and enhancing overall stroke care. By prioritising patient and public involvement, healthcare organisations can ensure that services are tailored to meet the needs and preferences of those they serve, leading to better outcomes and a better experience for patients.

One key component is to **Understand the Experience of Service Users and Staff**. Gaining insights into how patients and healthcare professionals feel is crucial for identifying areas for improvement within the stroke pathway. Conducting interviews, surveys, and focus groups can help uncover the challenges faced by patients during their care journey, as well as the perspectives of clinicians involved in the administration of thrombolysis and provision of care. To do this we worked with teams to map the emotional pathway patients experience on a stroke journey. Using this methodology provides insight to allow teams to work with patients to make improvements to the pathway that matters to them.

Implementing an **Experience-Based Design Methodology** allows healthcare teams to incorporate patient experiences into the development and improvement of services. By understanding the emotions, values, and needs expressed by patients, teams can create a more compassionate and effective care environment that prioritises timely thrombolysis. This approach ensures that the patient's voice is central to service design. More details can be **found here**.

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Furthermore, organisations should aim to **Co-Design Services with Patients and the Public**. Actively engaging patients and the public in the co-design of services empowers them to contribute to the development of care pathways. This collaborative process can involve workshops, advisory panels, or focus groups where patients share their insights and preferences. Such engagement leads to more relevant and user-friendly services that facilitate quick access to thrombolysis.

In addition, it is essential to **Encourage Engagement and Feedback**. Creating channels for ongoing engagement and feedback from patients and the public is vital for continuous improvement. Tools such as patient satisfaction surveys, suggestion boxes, or digital platforms can provide valuable input on their experiences with stroke care. Analysing this feedback can inform changes in practice, ensuring that services evolve to meet the needs of patients effectively.

By actively involving patients and the public in these ways, healthcare organisations can foster a culture of collaboration and responsiveness, ultimately leading to improved thrombolysis rates and enhanced overall patient care. Engaging service users not only enhances the relevance and quality of stroke services but also empowers patients to take an active role in their healthcare journey, reinforcing the principle that patient involvement is integral to achieving the best possible outcomes.

You can access the national **Experience-Based Design (EBD)** studies through the links below. These explore patient and staff experiences across several touchpoints in NHS settings, highlighting challenges and demonstrating how EBD supports co-designed improvements in care quality and staff well-being:

Analysis of the Experience-Based Design Feedback Data on a National Scale

SCAN ME

Staff Experience in the NHS: A National Study – An Experience-Based Design Approach

SCAN ME

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Principle 8
Embed a quality improvement approach

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"Embed a Quality Improvement Approach" focuses on using a robust quality improvement (QI) mindset in the stroke pathway. Quality improvement is a systematic, data-driven approach that can be used in any sector of healthcare. It gives structure to building safer, more effective, and patient-centred care. This has been a fundamental contributor to improving thrombolysis rates in cohort 1 of the TASC collaborate.

Embed the Model for Improvement

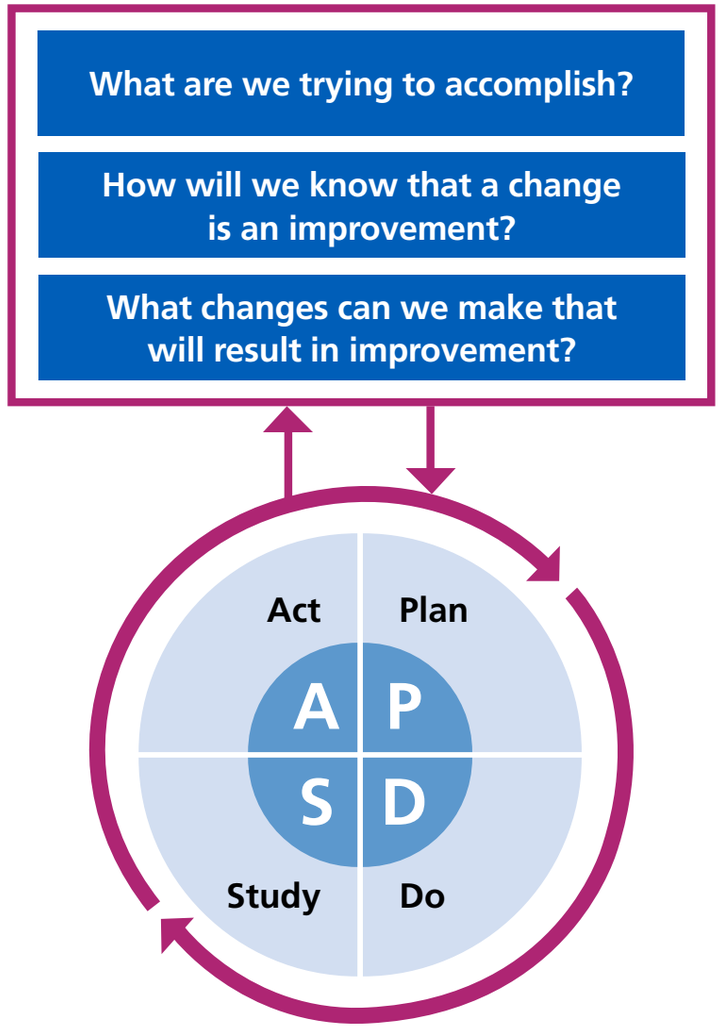
Implementing a Model for Improvement provides a systematic change methodology. The model encourages teams to define their aims, establish measures, and identify changes that can lead to improvement, ensuring that efforts are aligned with overarching goals for thrombolysis enhancement. Ultimately, using the model ensures teams test changes in a structured way and that the tests of change are aligned with the goals of the project.

What are you trying to accomplish: This is about setting a clear aim that the team all agree to, if it alters a few times at the beginning of the project, this is normal. It should be outcome-focused. Most worked on a "no delays" type aim, around eliminating delays around the door to needle times for patients eligible for thrombolysis.

How will we know that a change is an improvement?: This is about measuring the appropriate measures and displaying them to allow the "voice of the system" (variation) to be heard. In TASC, this was achieved in SPC charts, experience based design and Pareto analysis.

What changes can we make that will result in improvement? An MDT approach must be taken when trying to identify the potential tests of change. Running sessions to create driver diagrams worked well in the TASC network, gaining great buy-in from the teams. A network-level driver diagram was created as an output from the network (see below).

Model for Improvement



PDSA: These are the test of change cycles. What were the best examples of PDSA in TASC? Video triage? MDT's not thrombolysed patient review.

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Adopting a Measurement for Improvement Mindset

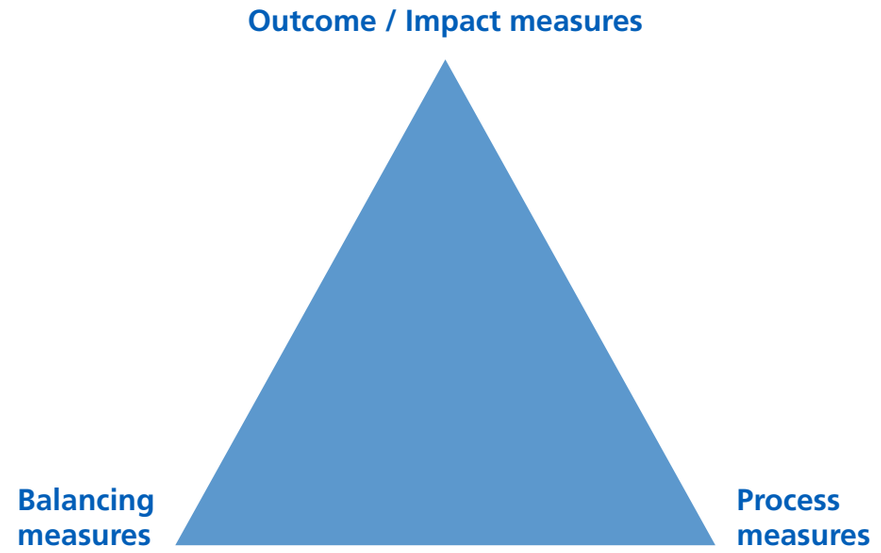
Measurement for improvement is the use of data to understand processes, test changes, and drive continuous enhancements in care delivery and outcomes. There is a rich data source in the Stroke pathway (SSNAP), you must approach this from a "measures" (the raw data, time and counts of patients) perspective and not focus on "Metrics" (ratios, rates and percentages). Knowing the percentage of patients who were scanned within 1 hour of arrival (a metric), will not help you improve the time it takes to be scanned. Give each patient a voice in the data and look at the measure of how long it takes to get from A to B, not the percentage that did this journey within a given time. Ideally do this with a Statistical Process Control Chart (SPC), one dot for one patient, this will then form a good basis for a baseline, inform you of opportunities for improvement and serve as a platform to demonstrate improvement.

The framework of triangulating between outcome, process, and balancing measures (a part of its Model for Improvement) ensured a structured and safe approach to driving quality improvement in TASC.

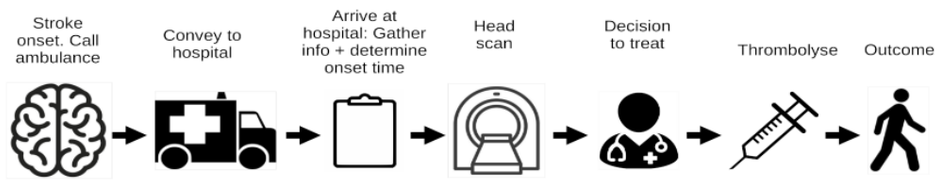
Outcome Measures: Outcome measures evaluate the impact of a change on patient health, such as mortality rates, recovery times, or patient satisfaction.

Process Measures: Process measures assess whether the steps in a system or process are functioning as intended, like adherence to clinical guidelines or timeliness of interventions.

Balancing Measures: Balancing measures ensure that changes made to improve one area do not unintentionally cause problems in other areas, such as increased staff workload or delayed care in another department.



In TASC 1 sites we used this flow map to determine which SPC charts to create and analyse. Flow maps are valuable for quality improvement as they visually represent processes, making it easier to identify inefficiencies, bottlenecks, and opportunities for improvement.



The main SPC charts we created were, all in minutes (a measure, not metric):

1. Onset time to Thrombolysis
2. Onset time to Arrival at hospital
3. Arrival to Head scan
4. Head scan to Thrombolysis

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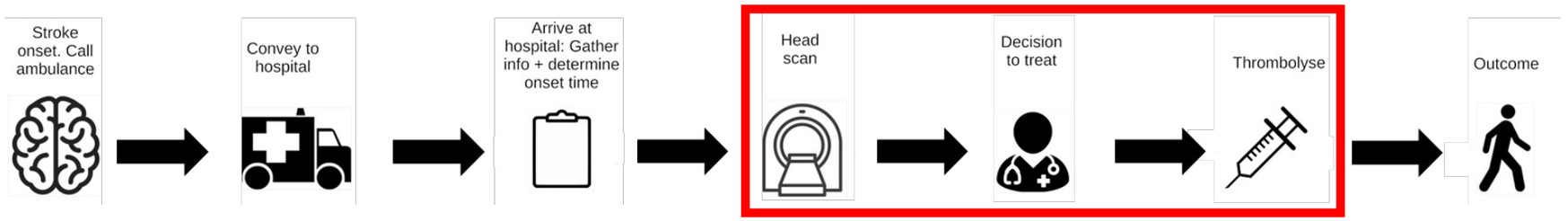
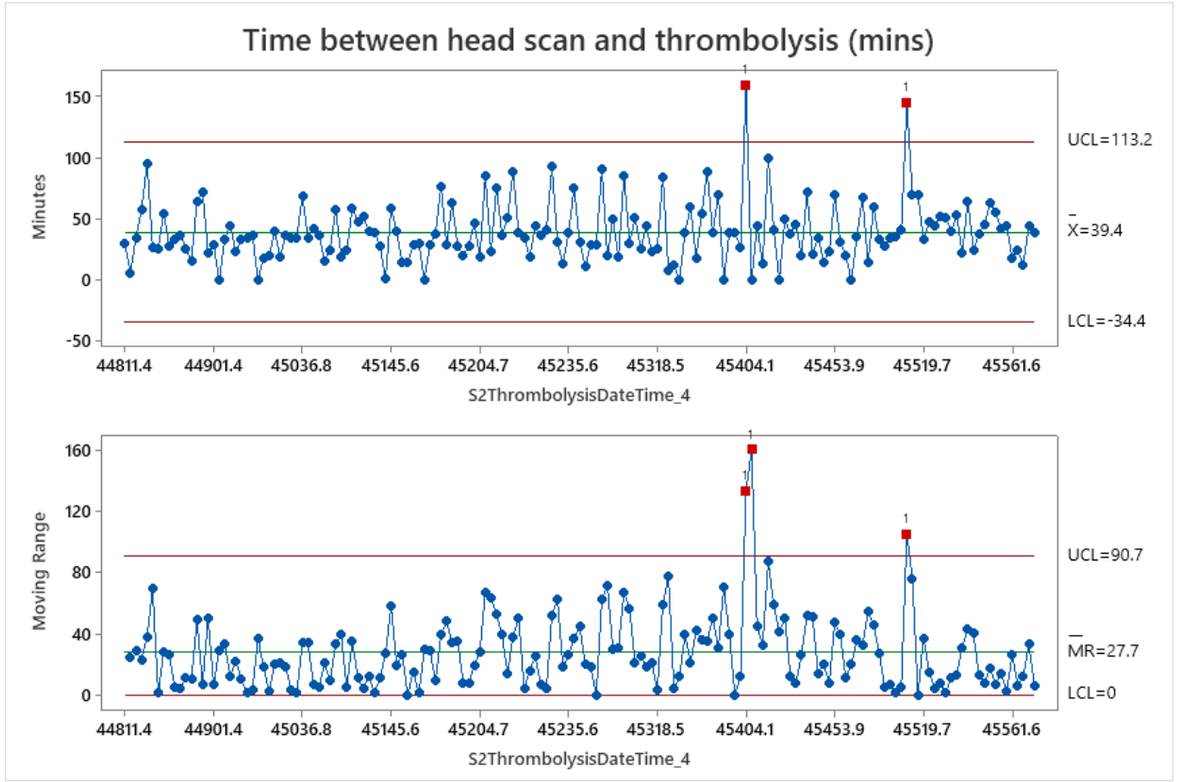
Here is an example of how to combine flow maps and SPC charts, giving each patient a voice.



Time between head scan and thrombolysis (mins), by patient – 165 patients



	Mins
Average	39.4
UCL	113.2
80% Variation	76.3

Average MR	27

- The average **time between head scan and thrombolysis** is **39 minutes**
- This **may vary** by approx. **27 minutes**
- **Most patients** (80% variation) will take **no longer than 76 minutes** between head scan and thrombolysis

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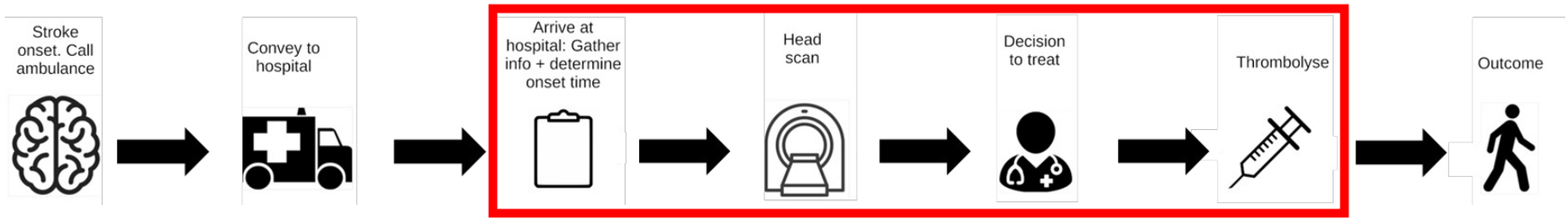
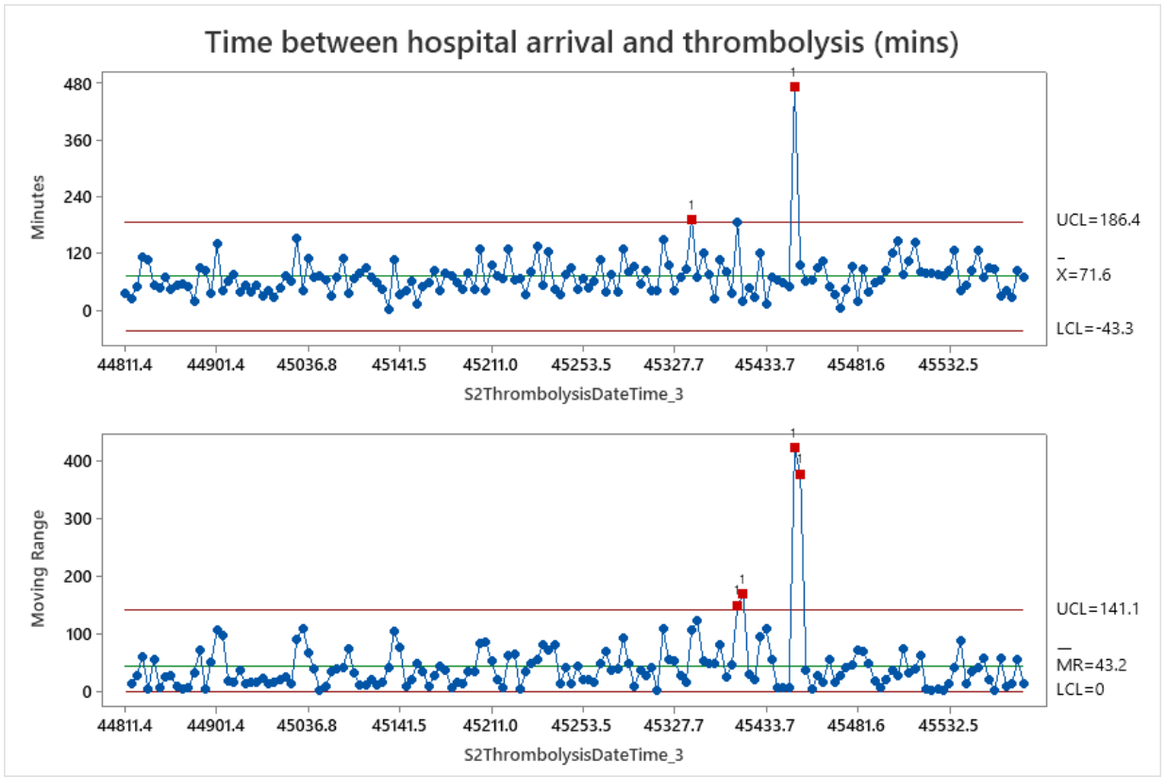
Using this approach enabled us to develop a way of understanding opportunities within the thrombolysis pathway.
In the example below, we can see that most of the time it takes 129 minutes from arrival at hospital to thrombolysis.



Time between hospital arrival and thrombolysis (mins), by patient – 158 patients



	Mins
Average	71.6
UCL	186.4
80% Variation	129
Average MR	43

7 removed as must be data errors > 1300 minutes

- The average **time between hospital arrival and thrombolysis** is **71 minutes**
- This **may vary** by approx. **43 minutes**
- **Most patients** (80% variation) will take **no longer than 129 minutes (2.1 hrs)** between hospital arrival and thrombolysis

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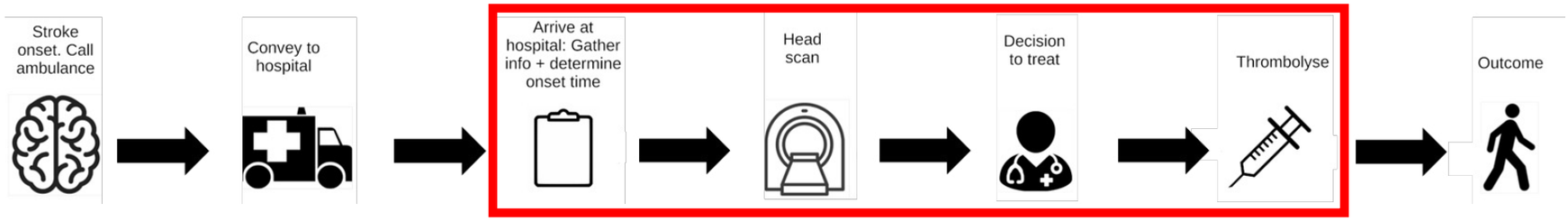
If you have 4.5 hours to thrombolyse a patient, this leaves you an opportunity window of 141 minutes (270 – 129 = 141 minutes) from stroke onset to arriving at hospital.

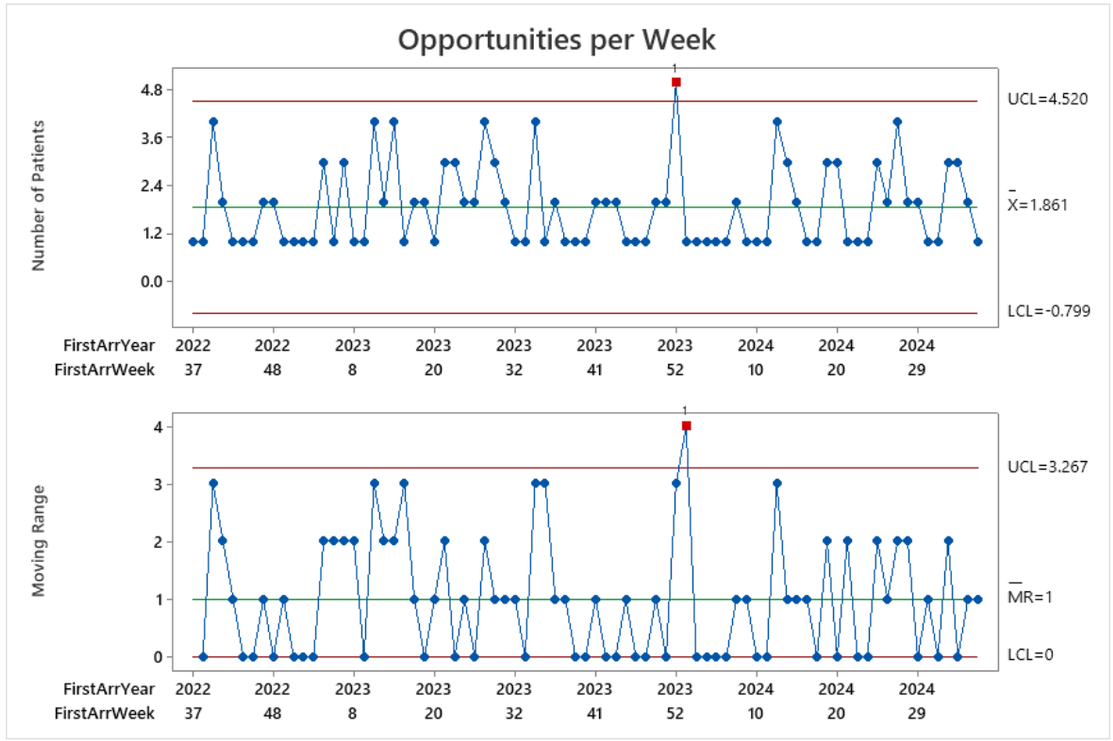


It takes (80% of the time (usually) 129 minutes from arrive to thrombolysis time

That leaves 141 minutes (270 minutes (4.5 hours) – 129 minutes)

252 patients have an onset to arrival time less than 141 minutes

Removing the patients that had thrombolysis (105) takes the number of patients to 147



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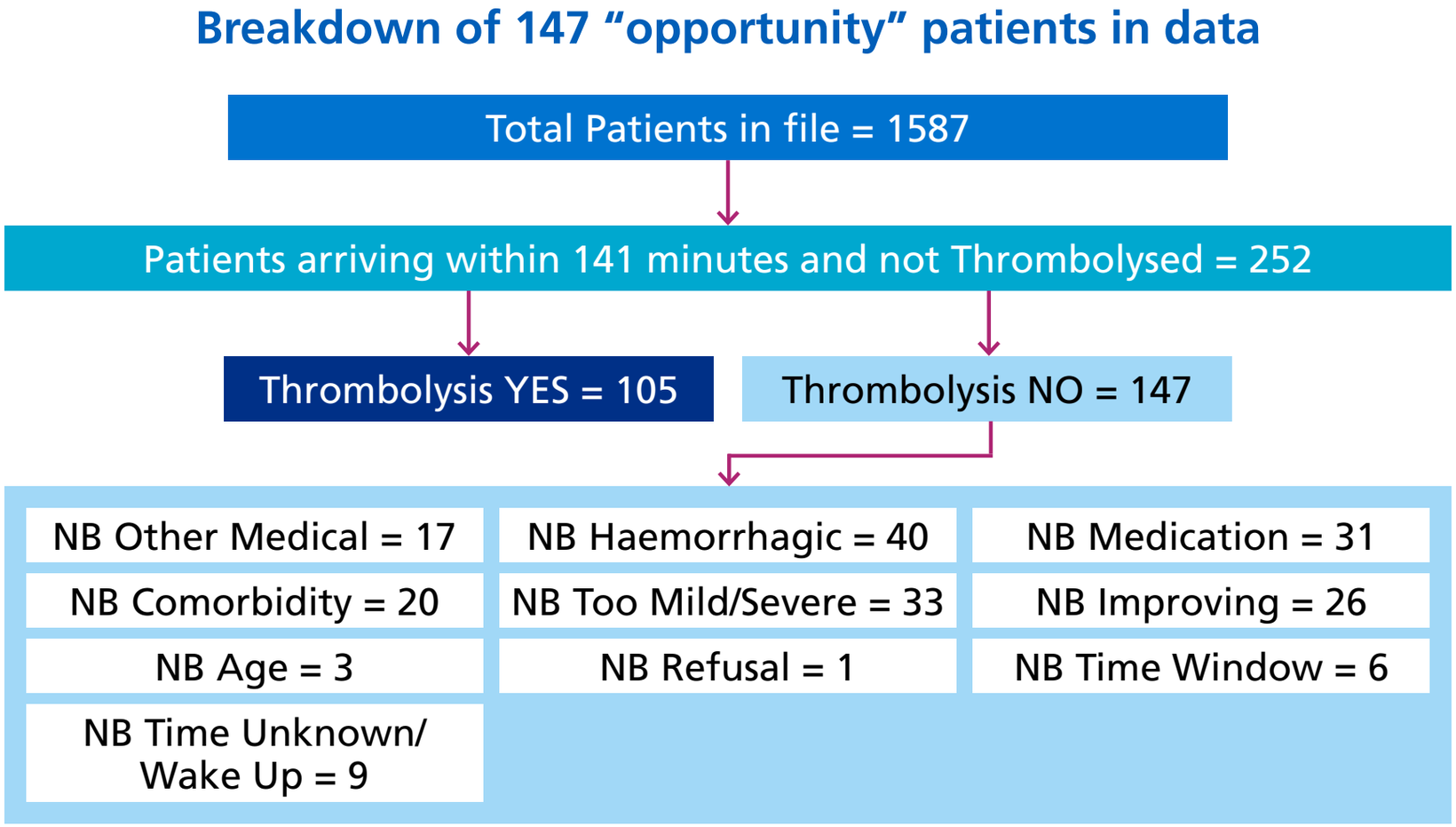
This example shows that between 2 and 3 patients a week arrive within the opportunity window, but are not thrombolysed:



We then grouped these opportunity patients into the "No but" reasons used within the SSNAP database. This started some wonderful discussions about why these patients were not thrombolysed. The next stage was to undertake a structured case file review, using the "mapping the last 10 patients QI tool" where these opportunity patients were explored.

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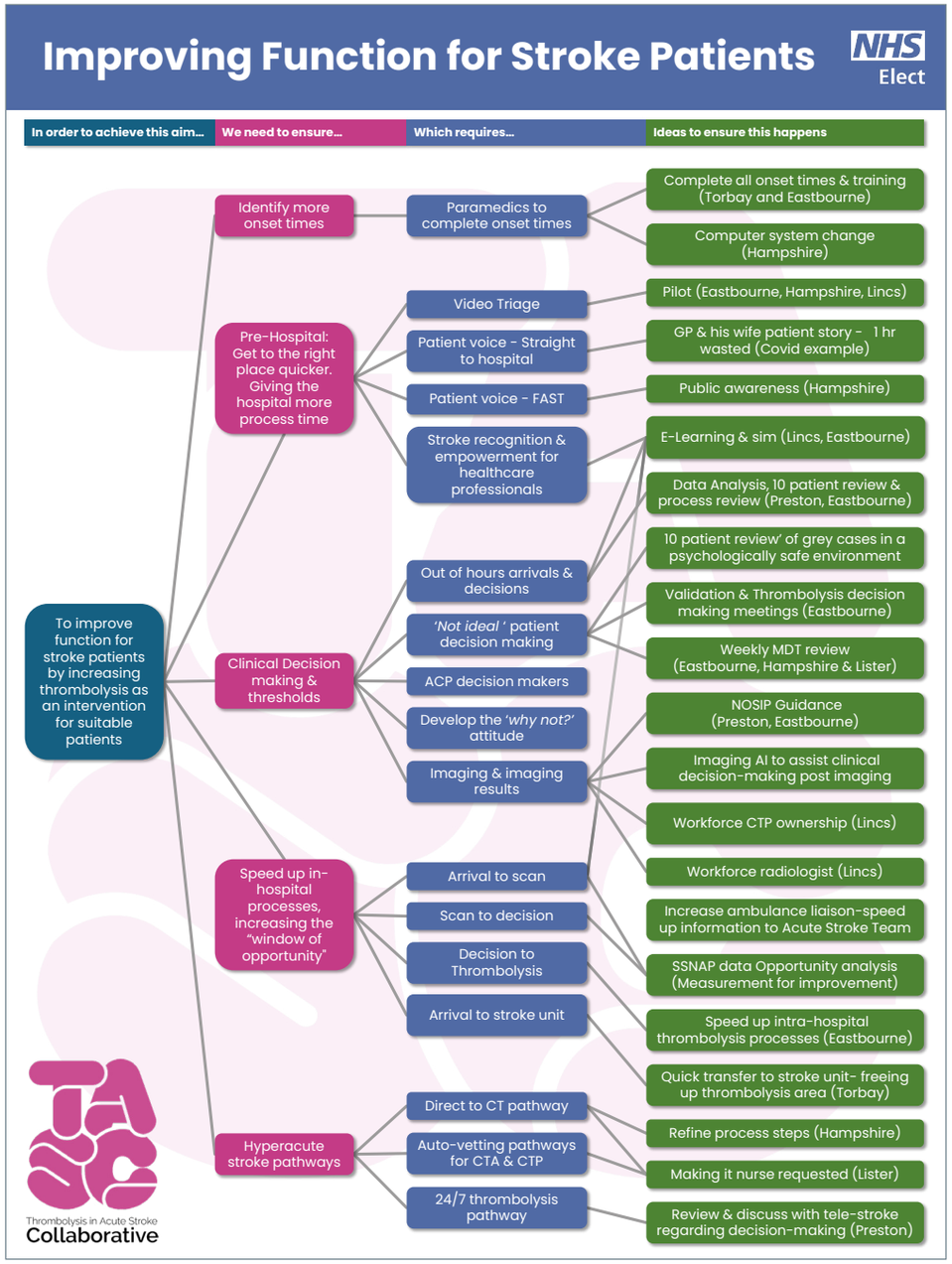
Utilising QI Tools

The main QI tools used in the TASC network were:

- **SPC:** Statistical Process Control is a method for using data over time to distinguish between normal variation and significant changes in processes, helping to guide effective decision-making in quality improvement.
- **Pareto Analysis:** Pareto analysis is a decision-making tool that helps prioritize improvements by identifying the most significant factors, based on the principle that 80% of effects often come from 20% of causes.
- **Functional/process Mapping:** Mapping is a visual tool that outlines the steps, decisions, and flow of a process, helping to identify inefficiencies and areas for improvement.
- **Mapping the last 10 patients tool:** The NHS "Mapping the Last 10 Patients" tool helps teams analyse recent patient journeys to identify bottlenecks, inefficiencies, and opportunities for improvement in care pathways.
- **Experience based Design (EBD):** Experience-Based Design (EBD) is a quality improvement approach that involves patients and staff collaboratively redesigning healthcare services based on their lived experiences and emotional journeys.
- **PDSA cycles:** PDSA (Plan-Do-Study-Act) cycles are a structured approach to continuous improvement, involving planning a change, implementing it, studying the results, and acting based on the findings to refine or expand the process.
- **Driver diagrams:** Driver diagrams are visual tools used to map out the key factors and actions that drive desired outcomes, helping to clarify relationships between various components in a system or process. A network level Driver diagram was created at the conclusion of the first TASC network. **See here**



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Principle 9
Education and training for all staff

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Ensuring stroke teams have the right knowledge, skills, and confidence is crucial for improving thrombolysis rates, and delivering high-quality care. A well-trained workforce can make rapid clinical decisions, coordinate effectively, and deliver the best possible patient outcomes. Stroke care is fast-paced and complex, requiring ongoing education to keep teams up to date with best practices, technological advancements, and new evidence-based approaches. Embedding a culture of learning is key. Fostering an environment where staff refine decision-making and stay engaged with evolving clinical standards, ensuring they are confident in high-pressure situations.

Simulation-based training plays a significant role in preparing staff for real-life stroke scenarios. These sessions help teams practice clinical decision-making, stay calm under pressure, and improve communication. The ability to adapt and maintain psychological safety in fast-moving situations helps teams collaborate effectively, handle uncertainty, and perform their best when it matters most. Clear roles, shared goals, and a focus on ongoing reflection and learning are also crucial for effective teamwork in stroke care, and simulation reinforces these, boosting confidence in delivering time-critical treatment.

Structured competency frameworks complement practical training by embedding consistent standards across stroke teams. By defining skill sets for various roles, these frameworks ensure that staff, from emergency responders to stroke physicians, understand their responsibilities and are equipped to deliver high-quality care. Regular assessments help identify areas for development, while stroke-specific frameworks integrate evidence-based practices into workflows. These frameworks streamline processes, promote communication, and provide guidelines for assessment, intervention, and follow-up care. Advanced clinical practice (ACP) frameworks offer pathways for specialisation, fostering a culture of lifelong learning and professional growth.

A **culture of continuous learning** goes beyond formal education by making reflection and feedback a regular part of everyday practice. **Reviewing real stroke cases** as a team allows everyone to identify patterns, tackle challenges, and improve decision-making, helping to provide more consistent, effective care. It's key to create psychological safety in these discussions so that staff at all levels feel comfortable sharing uncertainties, insights, and ideas without fear of blame. Research on high-performing teams shows that structured, blame-free reflection builds trust, boosts collaboration, and leads to stronger decision-making. A structured approach, like the **"Learning from Excellence"** model, encourages teams to focus on improvement rather than individual fault, creating an environment where shared learning leads to better patient outcomes. By putting these principles into practice, stroke teams can improve teamwork, reduce variation in care, and keep improving thrombolysis delivery.

In summary, prioritising education, training, and professional development is essential for stroke teams to enhance confidence, competence, and consistency in delivering thrombolysis. By integrating simulation, competency frameworks, guidelines, e-learning, and personal development portfolios, healthcare teams can continually improve their capabilities, ensuring staff are prepared to provide timely, high-quality care.

At **Hampshire Hospitals NHS Foundation Trust**, they have a great example of stroke case reviews and shared learning. You can read their story here.

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Principle 10
Utilise executive leadership effectively

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Effective executive leadership is crucial to improving stroke thrombolysis rates and ensuring high-quality stroke care across an organisation. Leaders play a key role in driving service improvements, securing resources, and embedding a culture that supports timely, evidence-based stroke treatment. By prioritising stroke care, executives create an environment where teams are empowered to implement best practices and improve patient outcomes.

One of the key responsibilities of senior and executive leadership is ensuring that stroke care is recognised as an **organisational priority**. This includes securing investment in critical areas such as workforce development, specialist equipment, and data-driven initiatives. By embedding stroke objectives into hospital-wide strategies, leaders help ensure accountability and a focus on continuous improvements in thrombolysis rates and overall stroke care. Engaging with key stakeholders, including clinicians, nurses, allied health professionals, administrative staff and community partners, is also vital. When leaders create a shared vision for stroke care, it fosters collaboration and encourages active participation, aligning resources to improve thrombolysis rates.

Senior leaders must also **prioritise communication, particularly with the board of directors**. Regular updates with clear data on thrombolysis rates, patient outcomes, and the impact of interventions help secure ongoing support and resources for stroke initiatives. This communication ensures that stroke care remains a top priority at the organisational level, facilitating necessary investments and policy changes.

Data-driven decision-making plays a crucial role in effective leadership. By regularly monitoring performance measures such as door-to-needle times and thrombolysis rates; leaders can evaluate progress and adjust strategies accordingly. Transparent reporting and open discussions of performance and measurement for improvement data foster a culture of accountability, continuous improvement, and informed decision-making, all of which are essential for optimising stroke services.

Visibility and advocacy are equally important. Executive leaders who actively engage with stroke teams, through attending meetings, recognising achievements, and addressing challenges, help to maintain motivation and momentum. By championing stroke care and celebrating successes, leaders inspire staff, boost morale, and encourage multidisciplinary collaborative efforts to improve thrombolysis rates.

In summary, effective executive leadership is integral to improving stroke thrombolysis rates. Executive leaders can create a culture of excellence in stroke care by prioritising stroke care, engaging stakeholders, maintaining open communication with the board, championing best practices, and supporting data-driven decision-making. This approach not only enhances clinical practice but also leads to better patient outcomes and overall community health.

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Conclusion

In conclusion, the TASC toolkit serves as a comprehensive resource designed to help clinical teams enhance thrombolysis rates across acute NHS services. By distilling key principles derived from successful collaborative practices, this toolkit aims to provide clinical teams with actionable strategies that foster a culture of continuous improvement. Each principle outlined, from optimising front door processes to engaging patients and the public, underscores the importance of a multidisciplinary approach to stroke care.

The emphasis on collaboration, effective communication, and data-driven decision-making is essential for ensuring that every eligible patient receives timely and effective treatment. By implementing the insights and practices contained within this toolkit, healthcare teams can make significant strides toward improving patient outcomes and reducing the burden of strokes. As we move forward, it is crucial that clinical teams embrace these principles, ensuring that they not only enhance their own practices but also contribute to the broader goal of elevating the standard of stroke care across the NHS.

Through the collective efforts and commitment to quality improvement encapsulated in the TASC toolkit, we can achieve a future where every patient benefits from the highest standard of care during their acute stroke journey.

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Further reading

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Authors

Dr David Hargroves,
Professor Martin James
Professor Simon Conroy
Dr Vincent Connolly
Deborah Thompson
Matt Tite
Mandy Rumley Buss
Marc Berry

Participating sites

Cohort 1

- Eastbourne District General Hospital – East Sussex Healthcare NHS Trust
- Lincoln County Hospital – United Lincolnshire Teaching Hospitals NHS Trust
- Lister Hospital – East and North Hertfordshire NHS Trust
- Royal Hampshire County Hospital, Winchester – Hampshire Hospitals NHS Foundation Trust
- Royal Preston Hospital – Lancashire Teaching Hospitals NHS Trust
- Torbay Hospital – Torbay and South Devon NHS Foundation Trust

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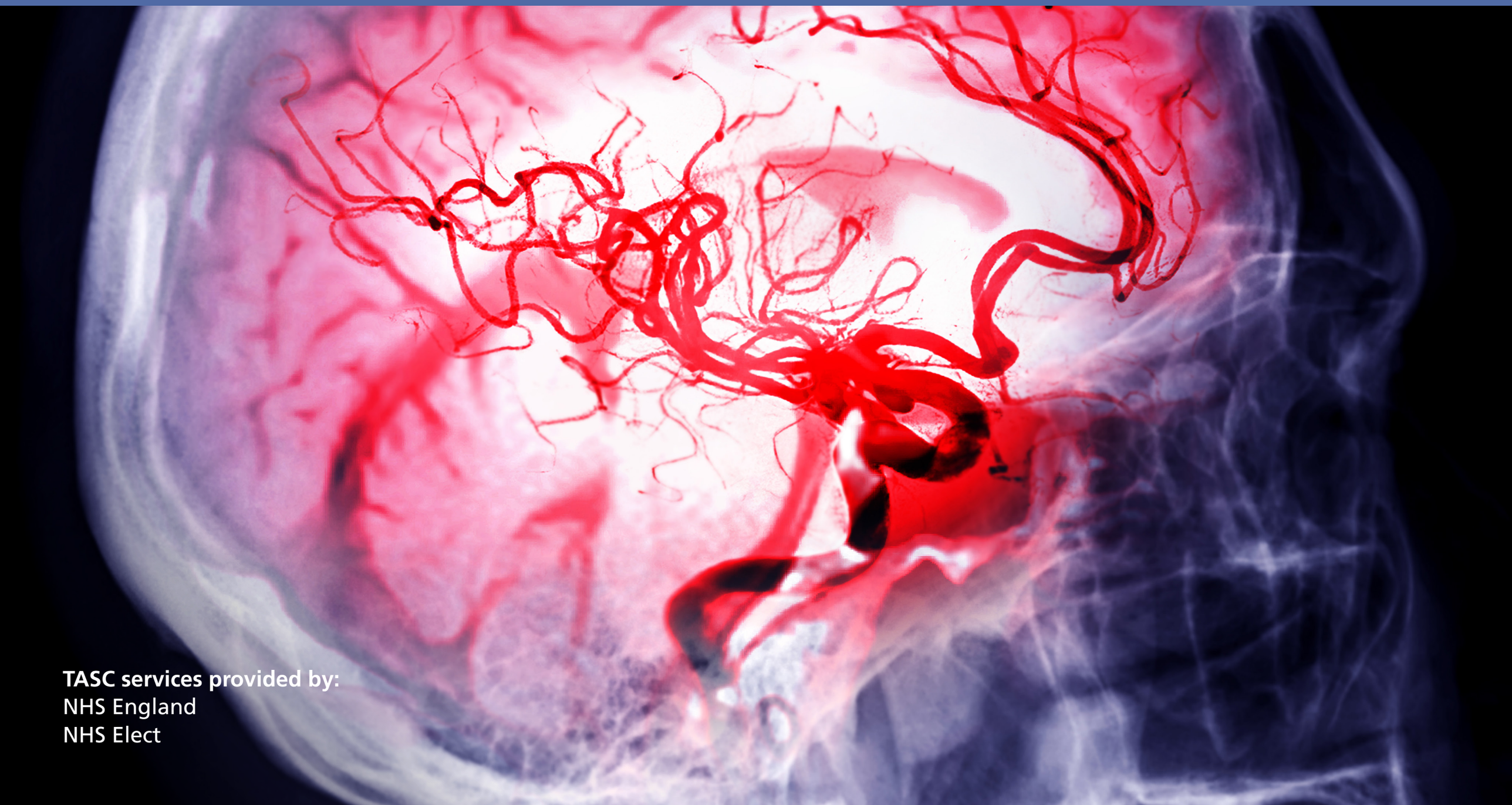
NIHR | Applied Research Collaboration South West Peninsula

NHS

KING'S College LONDON

SSNAP | Sentinel Stroke National Audit Programme

Thrombolysis in Acute Stroke Collaborative



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