



CARDIAC AND STROKE NETWORKS ACROSS LANCASHIRE & CUMBRIA

THROMBOLYSIS TELESTROKE SERVICE OUT OF HOURS TO STROKE SOLUTION

SUMMARY

The Cumbria and Lancashire Telestroke Network is a collaboration between six Acute Trusts (across 8 sites) and seven PCTs in Cumbria and Lancashire whose aim was to deliver 24/7 stroke thrombolysis for patients with acute ischaemic stroke in a rural area.

From July 2011 Cumbria and Lancashire have provided a 24/7 Stroke Thrombolysis Telestroke Service. It is an equitable, evidence-based service which provides a timely, efficient, quality assessment of the patient, by a stroke physician. The service has demonstrated cost-savings on long-term care for stroke patients, and has had a positive impact on the workforce due to improved service delivery. For instance, it releases time for Doctors in busy A&E Departments by having access to a stroke physician consultation at the bedside. The service has become more streamlined with the help of radiology clinical leads and imaging managers, who were tasked with booking next slot CT scans for patients during working hours, and within 60 minutes out-of-hours. Stroke Physicians themselves benefit, as the rota ensures cover across the whole network, without the pressure for individual Trusts to provide cover 24/7. It also reduces the workload of on-call radiologists who now only need to be called in if an expert opinion is required.

The service was created in response to the National Stroke Strategy (2007) which issued quality standards for stroke care. Quality Marker 9 emphasised that hospitals that admit stroke patients should provide a 24 hour, seven day a week thrombolysis service for acute ischaemic stroke. Each of the 8 sites involved in the service had an existing 9am – 5pm, Monday – Friday Stroke Thrombolysis Service available. With the implementation of Telestroke, out of hours cover was established, insuring that a 24/7 service is now deliverable across all of Cumbria and Lancashire.

KEY OUTCOMES

- It is too early to tell actual cost savings, but modelling conducted in the Business case suggests that there would be 40 more patients per year in the Network with a mRS (modified Rankin Score) of 1 - 3. The potential annual cost saving in Lancashire and Cumbria for this group of patients is therefore £1.8million annually, which equates to £18 million over ten years.

This cost-saving is based on the modelling that there will be:-

- ▶ 24 patients alive who would have died
- ▶ 36 less patients a year who are dependant
- ▶ 40 more patients a year with no symptoms or no significant disability

- The DH National Stroke Strategy Impact Assessment also identifies the average ten year cost of dependent stroke as £56,381. The modelling suggests that after the introduction of 24/7 thrombolysis there will be 60 less patients per year with a mRS of 4 - 6. The potential cost saving in Lancashire and Cumbria for this group of patients is therefore £2.03 million over ten years.
- Since its launch in July 2011 **83 patients** have already benefited from a remote video consultation via Telestroke, with **33** of those patients receiving thrombolysis. This figure is in line with the consultation-to-conversion rate of 1:3, predicted through the modelling of local need.





GOOD PRACTICE CASE STUDY

- In addition to these consultations a further **80 telephone enquiries** have been received by the on-call Stroke Physicians requesting advice regarding the management of patients with suspected stroke. This advice facility was not an expected function of the service, although it has benefited staff at the acute sites with the clarification of local pathways and diagnosis of stroke. The calls have reduced as the Service has bedded in.
- The training delivered to Stroke Physicians has helped reduce the need to contact on-call radiologists, and alleviated their concerns about the new system.
- A&E Departments are benefitting, as both doctors and nurses can now operate the Telestroke service, which speeds up treatment for stroke patients, and saves time waiting for consultants to arrive.
- All sites across the Network will meet National Quality Standards and will be eligible for CQUIN payments.
- Live mock-up runs at each site helped identify gaps in the stroke pathway, and highlighted areas of existing good practice, which has now been promoted across the Networks. This has enabled a greater understanding of the Stroke Pathway.
- Stroke pathways for all stroke patients, regardless of whether thrombolysis is given, has enhanced and improved the journey and outcomes of all stroke patients.
- Promotion of joint partnership working, within individual sites and across organisations. Multiple staff groups now work together to achieve a robust and effective pathway and there is a genuine enthusiasm from staff to improve stroke patients care
- Contribution to the delivery of level 3 QIPP across Lancashire and Cumbria
- In using this service people realise the wider applications that Telemedicine could provide within their field of practice.

BACKGROUND

This Thrombolysis Telestroke Service is located in, and serves, the population of Cumbria and Lancashire and also Southport and Ormskirk, who joined the Network to benefit from this service. Altogether, it serves a population of approximately 2.2million people.

There are six Trusts that make up the Telestroke Network, which operate across eight sites.

Blackpool Teaching Hospitals NHS Foundation Trust	Blackpool Teaching Hospital
East Lancashire Hospitals NHS Trust	Royal Blackburn Hospital
Lancashire Teaching Hospitals NHS Foundation Trust	Royal Preston Hospital
North Cumbria University Hospitals NHS Trust	Cumberland Infirmary West Cumberland Hospital
Southport & Ormskirk Foundation Trust	Southport & Formby District General Hospital
University Hospitals of Morecambe Bay NHS Trust:	Furness General Hospital Royal Lancaster Infirmary

Multiple public and private organisations also work in partnership with the Network including:-

- ▶ **Cardiac and Stroke Networks in Lancs and Cumbria** – The project has been led by the Cardiac and Stroke Networks in Lancashire and Cumbria.
- ▶ **NWSIS** – Led the ICT Strategy, contractual, and technical discussions and provided the 'intelligent customer' interface with Lead NHS Trust, NHS trusts, and suppliers.
- ▶ **Informatics Directorate** – Each local hospital site has an IM&T department. It was their responsibility to ensure access to the Telecart at their site for all the consultants and to all the other carts.
- ▶ **Commissioning Business Service (CBS)** – supported and advised on the commissioning aspects of the project and the drawing up of contracts.
- ▶ **Virgin Media Business** – This was a turnkey solution delivered by Virgin Media Business, providing the network, conferencing, HDVC Carts and Service Management, with Imerja and Multisense as subcontractors.
- ▶ **Imerja** – was responsible for network and service management as well as technical design.
- ▶ **Multisense** – provided the Telecarts and associated equipment.



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KEY AIMS

- The initiative aims to provide, for the first time, an out-of-hours stroke thrombolysis service for a population of nearly 2.2 million people in Cumbria and Lancashire, ensuring that all individuals who can benefit from treatment to reduce disability and death, do so.
- The Cumbria and Lancashire Telestroke service aspires to be an equitable solution, which overcomes the challenge of delivering specialist services to remote rural populations, as well as sharing the precious resource of stroke specialist knowledge.



Throughout this time, there was formulation of cross-boundary policies and procedures. Governance and operational policies were developed, reviewed, presented and accepted at each site. These documents are available to share, please contact Elaine.day@csnlc.nhs.uk.

KEY STAGES OF SET UP

Sept 2009: Development of business case for out of hour's solution to stroke thrombolysis. Initially only 3 sites out of 8 provided a Mon – Fri 9am – 5pm Stroke Thrombolysis Service



Jan 2010: Awarded Innovate monies by NHS North West Regional Innovation Fund. However, NHS North West SHA could claim back £50,000 if the service missed the target of reaching 10% of all patients, who were eligible for thrombolysis in Cumbria and Lancs. Projected date for start of the service was Nov 2010, which included implementing a daytime service in the other 5 sites as a priority.



Feb 2010: Invites sent out for Trusts to apply to become Lead Provider for the Service. Two sites showed interest, namely; North Cumbria University Hospitals NHS Trust and Blackpool Teaching Hospitals NHS Foundation Trust. Telestroke Service Specification was compiled by the Network and NHS Central Lancs (Lead Commissioners), NHS Central Lancs were going through a massive restructure, and was unable to provide the capacity required for this project. Commissioning Business Service (CBS) was approached to assist NHS Central Lancs in the commissioning and contractual side of the project. The Lead provider of the Telestroke Service was chosen in June 2010.



March 2010: The Network project leads approached each site's Operational Business Manager and Clinical Lead for Stroke, to discuss Job Planning and its implication for the clinicians who were going to take part in the on-call rota. This was to be done on an individual Trust basis, not a Network basis, as each job plan was specific to the individual consultant. This has been the most controversial aspect of the project and is still ongoing in some sites.



March-Sept 2010: All other sites start day time thrombolysis in March, April, May and Sept. Projected November start delayed until Feb 2011, as the team still hadn't managed to get procurement contract sorted or Trust and PCT contracts developed and signed off. Network infrastructure was still to be installed and tested.



Aug 2010 – Nov 2010: Procurement of equipment, tender for services and Evaluation of equipment and services



Sept 2010: CT Scan Interpretation and Assessment Training for stroke physicians, and repeated again in March 2011



Dec 2010 – Jan 2010: Awaiting sign-off of contracts between all parties. Go live date put back to June 6th



Feb 2010 – April 2010 Development of a Lancs and Cumbria Image Exchange Portal called Burnbank, which is a web based portal linking CT scanners across the Network, allowing the CT images to be assessed remotely.



April 2010- July 2010- installation of phone lines to consultants' homes, Installation of Network points to designated areas in the Trusts, installation of carts, and mock-up training. June go live date cancelled due to connectivity issues of laptops to carts.



27th July 2011. All sites go live except one, which was due to late change of Stroke Pathway within their local site.



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HOW IT WORKS

Video Conference

The Telestroke solution uses video-conferencing to enable a specialist stroke physician to assess the patient remotely, and also to review the CT head scan images. The physician is able to confirm the diagnosis of stroke, assess the severity, exclude a haemorrhage on the CT head scan and then advise the local team, with the patient, whether thrombolysis treatment would be of benefit.

A CT Interpretation and Assessment Course was designed for all the Stroke Physicians on the rota so they could view images, and determine if thrombolysis was appropriate. Now the only time a Radiologist needs to be contacted is if the Burnbank image exchange portal is down, as a verbal opinion is required, or if the stroke physician had a complex scan that required an expert opinion from the on-call radiologist at the patient's site. This is of benefit to the radiologists, who originally had concerns about their on-call sessions becoming too onerous.

Rota

There is a Network rota of 16 stroke physicians across all 8 sites. Some Acute Trusts provide three consultants per rota, others two.

Over a 16 week period, each consultant works five weekdays' on-call, starting at 5pm and finishing at 8am, and one weekend on-call starting on Saturday at 8am until Monday 8am.

There is no specific rota for Radiologists if an opinion is needed, then the Radiologist performing their normal on-call for the individual site can be contacted. Some of the sites send their CT's for external reporting out of hours, so if an opinion is required the consultant has to ring the external reporting company for a verbal opinion.

What was done before?

Patients would wait for a CT Radiographer to attend the hospital, which was often the next day. Stroke was not considered an emergency so sometimes the patient could be waiting 1-2 days before being scanned, mainly due to the capacity of the scanner and daytime working hours.

However, following the publication of the National Stroke Strategy, Quality marker 8 stipulates that:

- Patients with suspected acute stroke receive an immediate structured clinical assessment from the right people.
- Patients requiring urgent brain imaging are scanned in the next scan slot within usual working hours and within 60 minutes of request out-of-hours with skilled radiological and clinical interpretation being available 24 hours a day.

Radiology Clinical Leads and Imaging Managers were then tasked with having to implement next slot CT scans for patients during working hours, and within 60 minutes out-of-hours. This was needed as part of the stroke pathway and was implemented prior to Telestroke as a major part of the thrombolysis process

In response to the new requirements to provide a 24/7 service, some sites:-

- ▶ **Trained up general radiographers to perform head scans**, this meant there was always going to be someone on site, or within 30 minutes travelling time, to come in and scan the patient. One of the benefits was that the scanner could be used in a more efficient manner to help reduce backlog of patients and prevent a waiting list for the next day.
- ▶ **Developed 24hr working patterns with no increase in workforce or financial resources.** This meant someone would always be available to perform urgent scans. Those sites who did this found their workforce was stretched to max, and staff found it difficult to sustain the service.
- ▶ **Used external reporting systems out of hours**, - these Trusts found it more cost-effective than having to pay local Radiologists to do on-call, especially if they are called after 11pm which would generate compensatory rest and mean the Radiologist may require the morning off, with no one to cover the morning list.

RESOURCES

NHS Innovation Fund

£250,000 was awarded to the Cardiac and Stroke Network by the NHS Innovation fund following a presentation at a Dragons Den type event for innovative service improvements/developments. This covered the initial cost of equipment and IT infrastructure, including 8 Telecarts (one for each site), 18 laptops and IT infrastructure into the consultant's homes

SHA Informatics Dept.

Initial costs rose to £267,000 due to the requirement to purchase two extra licences for attachment to Burnbank IEP. However, funding for this was secured through the SHA Informatics Dept.

PCTs

Funding for annual recurrent costs was sought and agreed by the PCTs. Recurrent funding identified was maintenance costs, managed service (24hr helpdesk) and a Telestroke administrator. These costs have been divided by Trust and stroke activity within the PCTs.

North Cumbria University Hospitals NHS Trust

This PCT took on a Project manager for 8/9 months which was a Band 7 salary, The Cardiac and Stroke Network paid for 6 months salary out of monies budgeted for Telestroke, the rest was funded by North Cumbria.

ASTUTE

This is a Research project looking at Telemedicine from an educational perspective, one of its main objectives to develop a Telemedicine Toolkit for anyone trying to develop a new service. It is a collaboration between the University of Central Lancashire and the Cardiac and Stroke Networks across Lancashire and Cumbria., The ASTUTE Board gave monies to the Telestroke project for the recording equipment so they could gain insight (with permission) to the video recordings in order to identify future learning requirements for both patients and staff working with Telemedicine.



GOOD PRACTICE CASE STUDY



Cumbria & Lancs Stroke Network

The C&L Stroke Network procured the services of a VAT/Tax expert at a cost of £2,000, for expert advice. It was found that VAT could be claimed back on a managed service, which produced a considerable saving.

The Network also hired a Deal Closer, who offered advice and drew up contacts for both the Acute Trusts and PCTS involved. This service cost £750 per day and it took 5 days to complete.

KEY CHALLENGES

- **Project Sign-off & Funding** – Gaining high-level sign-off for the project and access to funding streams was difficult, because despite gaining verbal agreements initially, these did not always come to fruition.
- **Stroke Physician Consultants** – Getting 16 consultant Stroke Physicians to agree to take part in an out-of-hour rota proved very tricky! There were different responses at each site. Some consultants were extremely proactive, whilst others were in effect told they had to do it. Some of the consultants lacked confidence in giving thrombolysis and performing the audio/visual consultation. Training and the nomination of champions helped overcome this.
- **Job Planning** – it took months to gain agreement on job planning for the rota, because consultants had their own individual job plans, and they had to be sorted separately. What one consultant wanted as recompense for taking part others differed, for example some wanted payment, and some wanted time of in lieu, some wanted off the general medicine rota. Job planning delayed the start date and could have a knock-on effect on all future rotas.

- **A&E Consultants** – some were main drivers and actually performed 9-5 thrombolysis themselves, but a few didn't believe in it and therefore did not promote the new service. As soon as a demonstration of the Telecart was given however, it seemed to be a light bulb moment to some consultants as they realised the potential of the equipment for reducing the lengthy process of treating the few stroke patients who entered A&E, and highlighted that this process could be used for other applications and conditions.
- **Nursing Staff** – nurses, especially in A&E found the Telestroke Service lengthy, but liked the results despite not being keen on seeing themselves on camera. It was found that those hospitals who had stroke specialist nurses or stroke champions had a more robust training programme and this presence streamlined the process.

- **Workforce Capacity** – The organisation with the lead role did not have the time to devote to the project, so a lot of time initially was lost chasing people and tasks. To overcome this, a Project Lead was hired by the Trust, which was funded by the Network to work solely on the Project.

A similar issue occurred at NHS Central Lancs, lead commissioner for the project, who engaged the Commissioning Business Service CBS to assist them.

- **IT infrastructure and connectivity** – this was a challenge due to the area being so rural. The most frustrating aspect was getting the phone lines into individual consultant's houses, and having to set up appointments through a third party. There was no control over the actual time slots or an ability to discuss possible problems at their homes before the BT engineer turned up. Many appointments were therefore cancelled due to issues that could have been avoided if prior discussion had taken place.
- **IT support** – IT leads from most of the sites, provided timely, enthusiastic support and technical help, it wouldn't have been possible without them. This enabled the IT infrastructure to be co-ordinated and developed and monitored efficiently in those sites. It was extremely frustrating for all personnel involved, where IT teams were less accommodating.

NHS Northwest

The North West SHA provided funding for the development and set up of Burnbank Image Exchange Portal at a cost of £10,000 including:-

- Connection of each CT scanner to the portal - £300 per scanner with an annual recurring cost of £150 each. Some sites have 2 scanners so their recurring fee will be £300 per annum
- An annual recurring fee per site is £1,250
- Connection at two of the sites requiring additional manufacturer input - cost of adding nodes to the scanners £880 per site



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KEY LEARNING

- Get contracts signed up-front to gain agreement to the project, and to identify funding streams
- Sort job planning in initial stages, as it has taken months to sort this issue, and it may still destabilise future rotas if agreement is not reached.
- Involve the right people from the beginning
- Follow Procurement's advice for tendering of services from the outset, as time will be wasted in the long-run if this is not done.
- Ensure organisations who take on Lead roles have the workforce capacity to do so, as a lot of time can be lost due to chasing people who haven't got time to do the job.
- Bring in help where needed to drive delivery e.g. a deal closer to assist with production of Trust and PCT contracts, and a VAT expert to look at service to see where monies could be saved.

SUSTAINABILITY

Sustainability of the service is supported through training and a robust IT infrastructure:

- All sites have staff that have undergone 'train the trainers' training in stroke awareness

- Training was delivered for all members of the multidisciplinary team, on a number of stroke requirements
- Telestroke equipment is now in place at all sites and in consultant's homes
- Consultant training on assessment and interpretation of CTs has been set up as a recognised and RCP accredited course, with an intention to develop an e-learning tool and a learning resource DVD
- Engagement of stroke champions at each site, who are prepared to undertake training.
- Some of the Consultants were trained in MEDStat, a stroke specific training programme that would benefit each new medical intake

NEXT STEPS

At present the service is a managed service and consultants have to be at home to do their on-call. The next step it so add the CMA desktop to their work PCs and to add small laptops to the cart which give access to NHS mail and the Burnbank IEP

SUPPORTING MATERIAL

Please contact Elaine.day@csnlc.nhs.uk for any of the above right documentation, or for further information.

Toolkit

- ASTUTE Research Programme UCLan - Telestroke toolkit on how to set up a service, looking at documentation, training

Policies

- Operational Policy
- Governance Policy

Templates

- Privacy Impact Statements
- Equality Impact Statements
- Contract for Commissioners and Collaborative Contract for Acute Trust

CONTACT FOR FURTHER INFORMATION

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