



National Audit Office

PROGRESS IN IMPROVING STROKE CARE

A Good Practice Guide



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This document includes 14 examples of innovative initiatives designed to improve stroke care, across the different aspects of the stroke care pathway. These examples were identified during the fieldwork for the National Audit Office's report, *Progress in Improving Stroke Care*, published in February 2010 (available at: www.nao.org.uk/publications).

1 Introduction

Stroke is one of the top three causes of death and the largest cause of adult disability in England, costing over £3 billion a year in direct care costs. In 2005, we published a value for money report assessing the performance of stroke services in England. The report, *Reducing brain damage: faster access to better stroke care*, concluded that as stroke had historically been seen as an inevitable risk of growing old, it consequently had a low priority status within the NHS. The report further determined that both medical and technological developments used to improve the outcome of stroke were not being implemented widely enough; ultimately leading to considerable variations in the efficiency and effectiveness of patient care.

Since the publication of the report in 2005, there have been a number of national, regional and local initiatives designed to improve the way in which stroke services are organised and delivered. At the request of Parliament's Committee of Public Accounts we carried out a follow-up evaluation of stroke care in England. The resulting report, published in February 2010, included an overall conclusion that the improvements have, to date, improved value for money. However, it goes on to warn that there are a number of significant issues that still need to be addressed across the whole patient pathway and which will require the Department and the NHS, to work in partnership with Local Authorities and the third sector, if the value-for-money gains achieved so far are to be sustained and the further improvements envisaged in the Strategy are to be delivered.ⁱ



2 Aim of the Guide

During the course of our evaluation, we identified – with assistance from the NHS Stroke Improvement Programme¹ – many initiatives across the country that were actively aimed at improving the quality of care received by stroke patients. This Good Practice Guide aims to share a few of these innovative solutions to demonstrate how organisations have addressed some of the key issues mentioned in our 2010 report. By using various case studies taken from key stages of the pathway, the practice guide aims to illustrate how incremental changes in the organisation and delivery of stroke services can lead to improvements in the delivery of stroke care.

The case examples below are based on interviews and a review of relevant documents and we did not audit the self-reported figures. As such, we are not presenting these examples as ‘best’ or ‘recommended’ practice, but as options which organisations can consider in developing their own tailored solutions to meet local need. Further examples are also available on the Stroke Improvement Programme website:

<http://www.improvement.nhs.uk/stroke/>

The *Progress in Improving Stroke Care* Good Practice Guide is structured as follows:

Chapter 3: Primary Prevention: Improving Awareness of Stroke in Hard to Reach Groups aims to examine how local-based initiatives can be used to raise stroke awareness in such groups.

Chapter 4: Secondary Prevention: Improving the Management of Atrial Fibrillation sets out how practices in the primary care setting can optimise Atrial Fibrillation treatment.

Chapter 5: Reorganisation and Delivery of Acute Stroke Care aims to illustrate how acute stroke services can be planned and delivered on a regional level.

Chapter 6: Improving Access and Early Diagnosis for Transient Ischaemic Attack (TIA) Patients provides insight into ways in which stroke services can be re-organised to increase access to diagnosis and treatment.

Chapter 7: Improving Transfer of Care and Community Rehabilitation sets out how services can be reconfigured to promote continuity of care.

Chapter 8: Long-term Care shows how comprehensive training of care home staff can be used to improve stroke services within the residential setting.

Chapter 9: Review and Oversight of Stroke Care sets out how systematic evaluation of, and patient involvement in developing, stroke services within the region can be used to improve quality of care.

¹ <http://www.improvement.nhs.uk/stroke/>



3 Primary Prevention: Improving Awareness of Stroke in Hard to Reach Groups

Many strokes are preventable, with primary prevention offering the greatest potential for achieving benefits in value for money. It is currently estimated that one in four patients die from stroke in the UK, with people from low Socio-Economic Status (SES) and Black and Minority Ethnic (BME) groups being three^{2, ii} times and twice^{3, iii} as likely, respectively, to have and or die from a stroke event. In 2005, we recommended that the Department of Health should:

“Refer explicitly to stroke in more of its campaigns (at no or an insignificant additional cost) to ensure that the public and the NHS benefit from preventing more strokes”

In March 2009, the Department launched its Stroke: ACT F.A.S.T. campaign aimed at raising public awareness surrounding the signs and symptoms of stroke. However despite the overall success of the F.A.S.T. awareness campaign, the local impact on hard to reach groups remains unclear. Results from our February 2010 follow-up report indicated that one in five respondents who had experienced stroke were unaware that ethnic origin (amongst other risk factors such as lack of exercise, Atrial Fibrillation and Diabetes) increased the risk of stroke. In order to tackle this, Greater Manchester Public Health Network decided to roll out a targeted awareness campaign to improve the uptake of preventative behaviour in low SES groups. ^{iv}

Case Example A: **Greater Manchester Public Health Network – Raising Stroke Awareness in Low Socio-economic Groups**

Situation The metropolitan area of Greater Manchester is one of the most deprived regions in the country, and exhibits some of the most significant challenges in terms the burden of preventable disease. The Greater Manchester Health Commission's 2008 report highlighted smoking as the single biggest determinant of premature death within the metropolitan area. Furthermore, the 2007 indices of multiple deprivation showed that 17 out of the 50 most deprived super output areas (small geographical units) in England were located within North West.^v

2 For men in England and Wales aged between the ages of the 20-64, the standardised mortality ratio for Social Class 1 (Professional) and Social Class V (Unskilled) was 70 and 219, respectively, with a standard comparator of 100.

3 People of African or Caribbean ethnicity are at higher risk of stroke, especially of having strokes while young. Incidence rates of first ever stroke adjusted for age and sex have been found to be twice as high in black people compared with white people.

Action As part of the larger stroke awareness campaign, the Greater Manchester Public Health network sought to underpin the national Act F.A.S.T. campaign with local awareness initiatives. In 2009, the Greater Manchester Public Health Network, on behalf of the Greater Manchester and Cheshire Cardiac and Stroke Network and in collaboration with the Stroke Association, rolled out a targeted awareness campaign focusing on the prevention of stroke. With high levels of avoidable morbidity within lower SES groups, the campaign aimed to improve the uptake of preventative services by educating both the general public and frontline health professionals about the signs and symptoms of a stroke, emphasising the fact that prompt emergency treatment can reduce the risk of death and disability.

As part of this programme, the Public Health Network decided to underpin the national F.A.S.T. campaign with local initiatives, and a Think F.A.S.T.: Stroke Awareness campaign that served to tackle issues surrounding behaviour change and risk reduction. This was done in addition to providing better access to preventative services.

- **Identifying the extent of the issue.** Research commissioned by the network indicated that low SES groups were less likely to access appropriate preventative services, despite increased levels of high-risk behaviour. This work showed that men from lower SES groups were less likely to engage with prevention and awareness programmes within the metropolitan area.
- **A comprehensive communications plan was designed to increase the uptake of stroke prevention behaviours within low SES groups.** Given the high level of avoidable mortality in low SES groups it was decided that an active approach to public engagement would successfully raise awareness surrounding stroke. Radio advertising, direct marketing and media engagement, were used as a means to raise stroke awareness within low SES groups across the area.

Table 1
Greater Manchester Stroke Prevention and Awareness Initiatives

Activity	Target Audience	Length of Activity	Project Ownership
Think F.A.S.T: Stroke Awareness Roadshows	General Public	4 weeks	Stroke Association and Local Rotary Clubs
Mobile Billboard (Ad Van)	General Public	10 days	Greater Manchester Public Health Network & PR Company
Radio Advertising	General Public	2 weeks	Greater Manchester Public Health Network
Bus Panel Advertising (340 passenger panels)	General Public	4 weeks	Greater Manchester Public Health Network
Media Engagement	General Public and Stakeholders	2 months	PR Company
Direct Marketing (mailout stroke-related literature)	Stakeholders (Primary care professionals and other health professionals)	2 days	Greater Manchester Public Health Network

Source: Greater Manchester Public Health Network

- **A stroke awareness Roadshow was used to actively engage with hard to reach groups within their local areas.** The Greater Manchester ‘Think F.A.S.T: Stroke Awareness Roadshow’ was rolled out in 11 separate locations within the Metropolitan area, in areas of high deprivation. While the roadshow’s main purpose was to raise awareness surrounding the signs and symptoms of stroke, it also offered participants the opportunity to obtain advice surrounding the risk of developing stroke. Roadshow participants were also able to access extra information online, with the Stroke Association having created a designated campaign website offering patients details of other preventative services within the region.
- **Trained health professionals were on hand at the roadshows to conduct blood pressure checks and opportunities for AF screening.** These professionals also distributed F.A.S.T. branded literature and provide advice surrounding lifestyle changes to reduce the risk of stroke. *A further case example of opportunistic screening is included later in this guide.*

Figure 1

Mobile Ad-Van used to raise awareness surrounding the ‘Think F.A.S.T: Stroke Awareness Road show’



Source: Greater Manchester Public Health Network

- **A series of strategic communication programmes were used to inform the public about the Stroke Awareness programme.** Mobile advertising was used to inform hard-to-reach groups about the ‘Think F.A.S.T: Stroke Awareness Roadshow’, with ad-vans being driven within key stroke hotspots, identified using Hospital Episode Statistics (HES) data. In addition, a two-week radio advertising campaign, played on three local stations which included a high volume from the target demographic, was used to promote the stroke awareness roadshow. High profile actors from the television soap Coronation Street were recruited to provide the voiceovers for the stroke campaign. A range of F.A.S.T. branded promotional material was produced and mailed out, along with a covering letter to explain the initiative and promoting the F.A.S.T. message, to all GP Surgeries, Out of Hours clinics, pharmacies, and residential homes in Greater Manchester.

Outcome The use of a comprehensive and strategic communication plan led to the increased uptake of preventative services. Overall, the Greater Manchester stroke awareness campaign was seen to be extremely successful, for a total cost of £30,000. Over a four-week period 2,000 participants had their blood pressure screened, 17 per cent (340) of whom were referred on for further clinical investigation. Due to its success, the campaign was shortlisted for Best Partnership Engagement Initiative (How-do Public Services Communications Awards 2009).

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Case Example B: North West Stroke Alliance – Raising Stroke Awareness in Black and Ethnic Minority Communities

Situation Given the large proportion of ethnic minorities residing within the North West region, gaining an understanding of national *Stroke – Act F.A.S.T.* campaign and its impact on BME groups was seen as high priority for the North West. By tailoring the national F.A.S.T. awareness messages to its targeted audiences, the North West Stroke Alliance aimed to secure better uptake of stroke services within the region.

Action In order to improve the local impact of the national stroke public awareness campaign, the North West Stroke Alliance commissioned an evaluation of the impact of F.A.S.T. on BME communities within the area. More specifically, the Alliance aimed to investigate the key perceptions and attitudes associated with stroke within the Afro-Caribbean and South Asian communities.

Key aims of the Social Marketing Insight Review

Evaluation of the impact of F.A.S.T. on BME communities aimed to:

- review existing insight programmes from other parts of the country;
- understand the knowledge, perceptions and attitudes about stroke and its risk factors within the Afro Caribbean and South Asian communities;
- evaluate the impact of the F.A.S.T. campaign on the above BME communities; and
- investigate what methods are best suited to promote the awareness of stroke.

Source: Research Brief for the insight work on F.A.S.T. campaign and BME communities, North West Stroke Alliance (2009)

- **Buy-in from key stakeholders across the region was instrumental to the roll-out of the social marketing insight review.** The Alliance, which used lessons learnt from previous ethnic minority campaigns and strategies from other types of initiatives to develop their plans, cited support from the key clinicians and service managers across the region as being key to rolling out the programme. Furthermore, work conducted by the University of Central Lancashire and the Stroke Association was used to assess potential models for raising awareness.
- **A technical brief relaying the key purpose of the review was used to bring the project to tender.** With the help of the National Social Marketing Centre and the Greater Manchester Public Health Network, a tendering process was used to select an agency to conduct the social marketing programme on behalf of the North West Stroke Alliance.

Insight Review Target Audience

Despite the increased risk of stroke within BME, awareness surrounding its key risk factors tends to be lower. Key risk factors associated with the onset of stroke were used to select participants in the study:

Ethnicity: The social marketing insight review aimed to examine attitudes and perceptions to stroke within Afro-Caribbean and South Asian populations at risk of stroke within the North West.

Social Class: Given the fact that people who live in economically disadvantaged areas have a higher risk of stroke, insight reviews were conducted in BME communities with high index of multiple deprivation.

Patient/Carer Status: Although stroke is more common within people aged 60 and above, the social marketing review also aimed to capture the views of spouses and family members (of all ages).

Source: Research Brief for the insight work on F.A.S.T campaign and BME communities, North West Stroke Alliance (2009)

- **Delays in the procurement of social marketing expertise were reduced by the introduction of the North West's preferred provider list.** The Alliance invited applications from the list of providers selected through the OJEU (Official Journal of the European Union). A panel reviewed applications based on the aggregate scores of seven evaluation criteria and the highest scoring agency was invited to deliver the social marketing insight review. It was hoped that this piece of work, which included focus groups, would lead to tailored stroke awareness programmes which would later be disseminated at the PCT and/ or network level.

Outcome Preliminary findings from the North West Stroke Alliance insight review indicated that although members of Afro-Caribbean and South Asian communities were aware of the key messages of F.A.S.T. more should be done to raise community awareness surrounding individual risk status. The insight review indicated that over one third (37 per cent) of survey participants spontaneously recalled seeing, hearing, or reading information or advertising about stroke recently. Black Afro-Caribbean participants were more likely to recall seeing something related to stroke (44 per cent) than South Asian participants (31 per cent).

- Qualitative reactions indicated that BME communities within the area had an existing appreciation of the key messages of the F.A.S.T. campaign – the need to recognise the symptoms of stroke and act fast. However, the insight review identified a need for campaigns to emphasize that BME communities were at particular risk of developing stroke. It was further suggested that prevention programmes should not only focus on what to do when faced with stroke, but should also address the various risk factors. In one example taken from responses, South Asian groups identified that there was an opportunity to utilize Asian media channels to get messages across to the target group.

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4 Secondary Prevention: Improving the Management of Atrial Fibrillation

Atrial Fibrillation (AF) is recognised as a key risk factor for stroke. As the most common form of cardiac arrhythmia, it is estimated that 12,500 strokes per year are directly attributable to this disease.^{vi} As years progress, the likelihood of developing AF increases substantially. Furthermore, elderly patients who suffer from AF have a higher risk of developing stroke in successive years. Early detection of AF reduces the likelihood and the severity of stroke. However, this condition is often only detected once a patient presents with serious complications such as stroke or heart failure. Clinical evidence suggests that opportunistic screening, with the use of pulse palpation and ECG diagnosis, provides a cost-effective method of AF detection.^{vii}

Although guidance from the National Institute for Health and Clinical Excellence (NICE) recommends treatment with warfarin for patients with atrial fibrillation and no contraindications, only 24 per cent of stroke patients with the condition were discharged from hospital on warfarin in 2008. Our 2010 report reiterated that the:

“Appropriate treatment (anti-coagulation) of all patients with recognised atrial fibrillation would prevent around 4,500 strokes, and 3,000 deaths per year, and do so highly cost-effectively”.

However, the most recent Quality and Outcomes Framework (QOF) indicators do not currently reward GP practices for treating eligible patients with warfarin over any other anti-coagulant, and we recommended in our follow-up report that

“NICE should review whether the indicators in the Quality and Outcomes Framework for General Practitioners are supporting the delivery of its current atrial fibrillation guidance”.^{viii}

Case Example C: Surrey Heart and Stroke Network – Improving the Management of Atrial Fibrillation in Primary Care

Situation Given the majority of AF patients in the area were seen unnecessarily in the hospital setting, the Network wanted to improve the management of AF patients in primary care; ultimately allowing more complex cases to be managed within the secondary care environment. The West Surrey Cardiac Network recognised that the NHS Heart Improvement initiative offered an opportunity to address this issue within their region, by supporting GPs in developing best practice approaches to AF management.

- A pilot programme was used to assess feasibility of whole scale roll-out of a review of patients with existing diagnosis of AF across the region.** The Surrey Heart and Stroke network piloted an AF treatment review programme across a 13-GP catchment area. Using a MIQUEST search tool, individual practices reviewed their patient registers to identify how many existing AF patients who were at high risk of stroke (CHADS2 score of 2 or more) were on optimal treatment i.e. warfarin. Small cash incentives were issued to cover the extra time and financial resource needed to encourage practices to participate in patient register reviews. Using the CHADS2 risk profile, patients' risks were re-assessed, and where appropriate, patients were invited to discuss the possible conversion to Warfarin. Results from this pilot contributed towards the development of the GRASP AF risk assessment tool.

Guidance on Risk Assessment and Stroke Prevention Tool (GRASP-AF), developed from the MIQUEST search tool, was issued to enable GP's to easily identify at-risk patients who should be on Warfarin. The CHADS2 risk assessment was used to quantify the level of patient risk, and points are assigned depending on risk features. Patients are awarded points if they exhibit Chronic Heart Failure (1 point); History of Hypertension (1 point); Age > 75 (1 point); Diabetes (1 point) and History of TIA or Stroke (2 points). A score of > 2 indicates that the patient is of high risk and would significantly benefit from Warfarin. More information surrounding GRASP-AF can be found on the NHS Improvement website: <http://www.improvement.nhs.uk/graspaf/>

Source: GRASP-AF Guidelines NHS Improvement (2009)

- In order to improve warfarinisation rates, GPs received consultant-led educational updates. Programme updates were used to improve GP participation in the pilot programme.** Educational updates were used to raise awareness surrounding the optimal treatment for AF. Essentially, programme updates aimed to encourage the use of the MIQUEST search in order to optimise treatments for new and existing patients. Updates also highlighted the importance of opportunistic screening as a means to detect undiagnosed AF patients in the over 65 population. At the same time, the Network ran two Surrey-wide Masterclass educational updates that covered the evidence base concerning warfarin in AF. During such classes, nationally renowned speakers were brought in to present the most up-to-date evidence surrounding the use of GRASP-AF and optimisation of AF treatment using Warfarin.

Outcome Good utilisation of the existing workforce, together with a reduction in GP cash incentives, enabled the network to minimise the cost of programme substantially. In June 2008, the AF review programme was promoted amongst all GPs within Surrey. Primary Care Pharmacists, employed by the PCT, were asked to talk to GPs and raise awareness surrounding the GRASP-AF audit. Utilising these existing professionals meant that service costs were subsumed within the everyday activity costs; ultimately this kept the cost of programme roll-out to a minimum. In addition to this, GP cash incentives were also stopped as part of the programme. Programme costs are set out below in Table 2.

Table 2
Overall Cost of the Atrial Fibrillation Programme

Project	Programme Type	Purpose	Programme Cost (£)
Atrial Fibrillation Patient Register Review	Pilot	Cash incentives were issued to encourage practice review of the practice register	1,139
Programme Updates	Pilot	Programmes, given by the lead Consultant Cardiologist, were used to inform GPs about the AF best practice	56
Atrial Fibrillation Primary Care Guideline	Extended Programme	Guidelines were printed and disseminated to encourage GPs to follow NICE AF Guidance	165
Educational Updates- Master classes in Arrhythmia and Sudden Cardiac Death	Extended Programme	Educational updates were used to inform patients about forms of cardiac arrhythmia and sudden cardiac death	150
Warfarin and AF Aide Memoir	Extended Programme	Printing and distribution of double-sided full colour A4 landscape leaflet covering the evidence base regarding AF, stroke, aspirin and warfarin and patient support to all GPs in Surrey (not including locums)	700

Source: Surrey Heart & Stroke Network (2009)

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Case Example D: Colchester Practice Based Commissioning – Implementing Atrial Fibrillation Opportunistic Screening Programmes

Situation The North East Essex PCT holds both the oldest average population and third most deprived population in Europe. Despite existing AF screening programmes in the areas, it was decided that further steps could be taken to improve the early detection within the area.

Action Practice-based Commissioning was used to secure Local Enhanced Service agreement for opportunistic AF screening. Following the previous successes of opportunistic screening programmes in Bedfordshire and Hertfordshire, the Colchester Practice-based Commissioning group decided to incorporate an opportunistic AF screening initiative as part of their flu-clinic programme. Given the significant overlap between the target populations for AF screening and the influenza vaccine, practices were able to take advantage of patient visits to the flu clinic.

Initially GP's within the region expressed reservations about the time and funding commitments linked to the programme. In order to encourage uptake of the initiative, GP's were assured that the programme would be effectively funded. After a series of

negotiations, it was decided that payment would be profit neutral. Calculated on a full cost recovery basis, it was determined that AF screening would cost £2 per patient pulse taken.

Table 3

AF Opportunistic Screening Costing Model: Average Nursing Costs per GP Practice

Screening Intervention	Percentage of List ⁴	Number of Patients	Nurse hours/patient	Total nurse hours	Total nurse cost (£)
Stage 1: Pulse palpation (flu clinic)	15.0	1,125	0.033	37.5	638 ⁵
Stage 2: Further investigation	1.5	113	0.333	37.7	641
Totals	–	–	–	–	1,278

Source: Colchester Practice Based Commissioning Group (2009)

Table 4

AF Opportunistic Screening Costing Model: Average Doctors Costs per GP Practice

Screening Intervention	Percentage of List	Number of Patients	Doctors hours/patient	Total doctor hours	Total doctors cost (£)
Stage 1: Pulse palpation (flu clinic)	15.0	1,125	0	0	0
Stage 2: Further Clinical investigation	1.5	113	0.167	18.8	1,413 ⁶
Totals	–	–	–	–	1,413

Source: Colchester Practice Based Commissioning Group (2009)

Outcome Opportunistic screening was subsequently rolled out between October 2008 and January 2009, with the overall programme costing £74,000. In the first phase of the programme, 37 out of a total of 43 practices signed up for the initiative. Costs for the provision of the Doctor and Nursing staff were estimated to be £2,691 per practice (Table 3 and Table 4). As part of this programme, 37,000 patients were screened in total; with AF being detected within 249 patients (0.7 per cent detection rate). Recent pressures from the Swine flu pandemic have meant that the number of practices signing up for project renewal has decreased slightly, with 26 practices out of a possible 43 signed up for the provision of opportunistic screening.

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⁴ Calculation base on the assumption that the average GP list size was 7,500.

⁵ Nursing costs were estimated to £17 per hour.

⁶ Doctors' costs were estimated at £75 per hour.



5 Reorganisation and Delivery of Acute Stroke Care

Evidence suggests that the organisation and structure of stroke services affects patient outcome. Given the nature of the disease – sometimes requiring both urgent acute treatment and long-term support – stroke care needs to be organised in such a way that delivers the most appropriate treatment in a timely fashion. For example, it is recommended that stroke patients should be treated in a specialist stroke unit.

Case Example E: Improvement Alliance, Salford Royal NHS Foundation Trust – Care Bundles: Stroke 90:10 Programme

Situation The National Sentinel Audit of Stroke is a biennial audit, prepared by the Royal College of Physicians, that allows hospital trusts to benchmark the quality of their stroke services on both a regional and national level. Recent audit data indicates that although there have been improvements in the management of stroke patients, very few hospitals admit patients directly to an acute stroke unit. In addition, the audit has highlighted the need for further improvements in the provision of rehabilitation, and improved assessment of weight and mood.

Action Based on data from the Sentinel Audit of Stroke and in response to the National Stroke Strategy, individuals, organisations and whole health economies worked together to improve services for stroke patients. For example, in a bid to improve its regional performance, NHS North West designed and implemented the Stroke 90:10 programme. As part of this two-year improvement collaborative, teams from 28 hospitals worked collaboratively to improve acute stroke services and raise Sentinel Audit scores from a regional average of 71 in 2008 to 90⁷ (or greater) by the next audit in spring 2010. Although overall findings have yet to be analysed, the Stroke 90:10 programme gives a valuable insight surrounding how collaboration can be used to improve stroke services.

- **The Stroke 90: 10 improvement programme was implemented in a bid to improve the management of patients within the acute care setting.** As part of the programme, participating hospital trusts were asked to calculate their compliance with the Sentinel Audit's nine key process indicators **each month**. Internal systems for robust data collection were created to facilitate improvements in the management of stroke. Trusts were charged with improving individual processes, such as brain imaging and swallow screening. As teams became more skilled in improvement methods, they were asked to work on all four clinical processes together – the collective name for these multiple processes being 'bundles'. Performance was then measured in terms of the number of patients who received **all** processes in the bundle, with credit only being given for 'defect free' care. (Please see 'Quest for Perfect Care...' and 'Description of Stroke Bundles of Care').

⁷ Score is based on the percentage patients within the pathway who have received the appropriate standard of care, according to clinical best practice.

The Quest for Perfect Care...

Healthcare professionals in the North West are engaging with a new concept of delivering stroke care to patients. Instead of looking at care from a service perspective, the local health care professionals aim to look at the delivery of care from the patient perspective. For example, a service might score 75 per cent on two elements of the bundle and 50 per cent on a further two. In the traditional audit practice, this would impact modestly on the overall performance of the service, averaging out the overall score to around 63 per cent. However, by measuring care received at the level of the patient, i.e., 'did the patient receive all the care they should have received', credit cannot be given for getting it right on three out of four occasions and the score for this service would be 25 per cent i.e. one in four patients receiving perfect care.

Table 5
Method of Calculation for the Stroke 90:10 Scoring System

	Brain Imaging	Swallow	Aspirin	Weight	Audit Score	All or None
Patient 1	✓	✗	✗	✓	-	✗
Patient 2	✗	✓	✗	✓	-	✗
Patient 3	✓	✓	✓	✓	-	✓
Patient 4	✓	✗	✓	✗	-	✗
Total (%)	75	50	50	75	63	25

Source: Stroke 90:10 – A quality improvement collaborative to support organisations in NHS North West achieve a score of 90 (or greater) on the 2010 Sentinel audit, NHS North West (2009)

- Using an integrated research design, the 90:10 programme aimed to compare the performance of Phase 1 hospitals with Phase 2.** An integrated research design was used to examine the effect of the Stroke 90:10 collaborative improvement programme. All trusts offering acute stroke services to patients living in NHS North West were invited to participate in the Stroke 90:10 project. Hospitals were divided into two groups using Sentinel Audit scores of above and below 60 per cent. Trusts were then randomly allocated to one of two phases (1 & 2). Out of a possible 31 hospitals, a total of 28 participated within the scheme. Fourteen hospital teams were allocated to Phase 1 (participating in both 2009 and 2010) and another 14 were allocated to Phase 2 (participating in 2010 only). Using the Institute for Healthcare Improvement's Breakthrough Series Collaborative model, the Stroke 90:10 programme aimed to examine how mentors from Phase 1 could be used to accelerate the progress of Phase 2 participants.

Description of Stroke Bundles of Care

Bundle 1 elements: CT scan, Swallow screen, antiplatelet and weight¹

Bundle 1 involves compliance with the use of **early brain imaging** and **administration of aspirin**, and the introduction of **swallow screening** to prevent unnecessary withdrawal of food, fluid and medication. In addition to the benefit of these process indicators, early brain imaging and swallow screen are seen to facilitate the delivery of aspirin. Furthermore, combinations of these interventions preserve brain tissue immediately after stroke. Lastly, reliable **assessment of weight** has been shown to be a marker of the likelihood of repeated weighing and diligent management of nutrition.

Bundle 2 elements: Physiotherapy, occupational therapy, mood assessment, multidisciplinary goals, admission to a stroke unit.

Early **admission to** an organised system of stroke care, preferably **a stroke unit**, facilitates access to specialist therapy and support services. Bundle 2 focuses on delivering more reliable access to stroke rehabilitation. There is overwhelming evidence that stroke units reduce mortality and improve patient outcomes. These improved outcomes are believed to be associated with early intervention by a specialist team which results in more consistent adherence to processes of care such as **early mobilisation**, early feeding, measures to prevent aspiration and increased likelihood of **targeted goal setting**. Post stroke depression is known to affect the likelihood of long term recovery. **Screening patients for altered mood**, whilst not routine, is believed to improve patient experience and outcome.

Source: Stroke 90:10 Final Summary

NOTE

1 Time frames stipulated as per sentinel audit measures.

Outcome Initial programme results were used to assess the uptake of the good practice and determine the benefits of the programme. Data collected from the individual hospitals will be used to examine the performance of the programme. A full analysis of the data from Phase 1 will be published in the autumn of 2010. Statistical analysis will be used to assess the performance of Phase 1 teams compared with Phase 2. More specifically, qualitative analysis will also ascertain **how** Phase 1 hospitals have achieved improvement, and whether Phase 2 participants have improved faster as result of working with Phase 1 teams. Information taken from nine indicators (two bundles) will be used to extrapolate the costs and benefit of reliably implementing the stroke care bundles.

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Case Example F: **Greater Manchester and Cheshire Cardiac and Stroke Network – Planning and Delivery of Acute Stroke Services**

Situation The Greater Manchester area consists of 10 PCTs, and each of these had been responsible for commissioning services within their separate areas. Various disparate commissioning arrangements within Greater Manchester meant that there was considerable variation in terms of the quality of care received by patients. In a bid to reduce these differences, the Stroke Association urged PCTs within region to commission collaboratively across boundaries. By creating a ‘critical mass’ of patients, it was hoped that further investment in the provision of stroke services would maximise the cost- effectiveness associated with further investment.

Action In 2007 the Greater Manchester and Cheshire Cardiac and Stroke Network decided to implement an integrated stroke service across the metropolitan area. In response to recent acute care recommendations issued by NICE and the Royal College of Physicians, the network aimed to provide a service where every patient presenting with stroke or TIA had equal access to a fully integrated, evidence-based hyper-acute and acute specialist stroke care pathway.

- **A ‘consensus’ event involving key stakeholders within the metropolitan area was used to set out the basic principles of acute service design.** The Greater Manchester & Cheshire Cardiac & Stroke Network held an event in the autumn of 2007 bringing together over 90 clinicians, managers, and patient-carer representatives from across the region. The purpose of the event was to come to an agreement on the basic principles of a new and improved acute stroke care pathway. While it was agreed that the primary purpose of the service pathway was to improve patient outcomes, stakeholders also agreed that regional access to both hyper-acute and acute stroke units could more equitable.
- **A multi-disciplinary working group was charged with designing a fully integrated pathway for acute stroke care.** In late 2007, an Emergency Response Group was established to draw up detailed guidelines for new stroke and TIA care pathway for the region. Due to the multitude of stakeholders involved within the delivery of acute stroke care, members from the emergency response group were recruited from a range of healthcare professions and patient user-groups, including ambulance staff, A&E doctors, stroke consultants, stroke nurses, a vascular surgeon, and patient and carer representatives.
- **Once the key stages of acute stroke care were outlined, operational research modelling was used to estimate the key costs and benefits to the health services and wider local communities.** A computer data model of Greater Manchester’s newly proposed pathway was commissioned. The model was used to provide estimates for the level of patient demand for stroke services within the region. In addition to providing an overall cost for the provision of acute services as a whole, cost estimates were also used to determine the structure and size of tariff payments under the revised system. The model used indicators such as income lost and incurred costs to the community to calculate the economic burden

of disease on local communities. The network also commissioned an economic analysis looking at the wider cost and benefits associated with the implementing the services, in collaboration with the Association of Greater Manchester PCTs.

Implementation of the Regional Hub and Spoke Model

- **An independent External Advisory Group was charged with developing a set of standard criteria to assess the ability of hospital Trusts to deliver specialist acute or hyper-acute services.** The capacity to deliver against these criteria was used to determine which hospitals should take which role within the pathway (see below). Increased transparency of selection process, meant that potential providers could easily self assess their delivery capabilities prior to application.

Acute Stroke Care Arrangement in Greater Manchester

Greater Manchester now has one Comprehensive Stroke Centres (CSC), open 24/7, and two Primary Stroke Centres (PSCs), operating to 7pm on weekdays with an aspiration to also open from 7am to 7pm on weekends. During their opening hours, these centres offer rapid access to CT scans, stroke consultants and thrombolysis. The other six hospitals in the region are designated District Stroke Centres (DSCs). Stroke patients are taken to a CSC or PSC for initial urgent treatment; in most cases they will then be repatriated to a DSC near their home.

Source: Greater Manchester & Cheshire Cardiac & Stroke Network (2009).

- **An integrated hub and spoke model was used to deliver acute stroke services within the Greater Manchester region.** In December 2008, the Network began its implementation of the re-designed acute stroke pathway. The metropolitan area now has one Comprehensive Stroke Centre (CSC), two Primary Stroke Centres (PSCs) and six District Stroke Centres (DSCs), and acute stroke care is now collaboratively commissioned by the Association of Greater Manchester PCTs. This was further facilitated by the creation of the Department of Health's guideline tariff designed to be used in integrated models.

Outcome Strategic data collection has played an instrumental part in planning the rollout of further service re-design. To examine the performance of the newly designed stroke service, the network purposely built in a wide array of data collection processes, including: recording the number of episodes of care delivered within the region; the speed of ambulance response; and changes in regional patient outcomes. It was hoped that this data would further lead to:

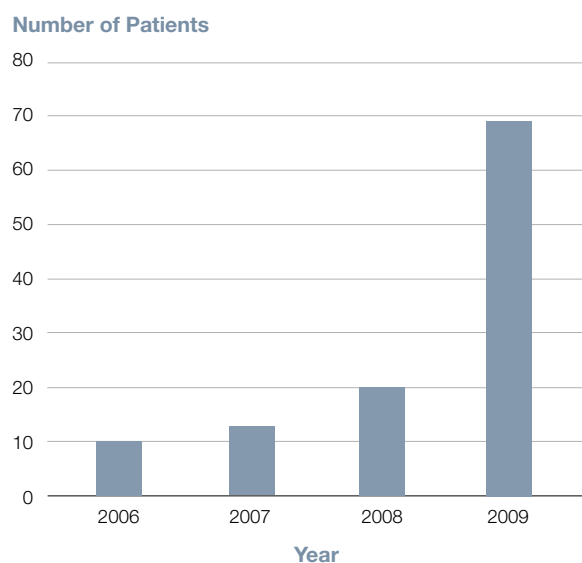
- improvements in the design of patient pathway;
- to better accuracy of the modelling work; and
- refinements in future tariff payments used by PCTs.

Preliminary results indicate that acute service re-organisation has led to improvements in the quality of stroke care.

As part of the stroke service re-design, stroke patients are initially taken to CSC or PSC units for urgent emergency treatment. Once patients have been stabilised, most cases are repatriated to a local DSC units. Preliminary results from the piloted re-organisation scheme, indicates that the integration of acute services has been very successful. The number of eligible patients receiving thrombolysis within the metropolitan area has increased over the past three years: between 2006 and 2009 the number of eligible patients being thrombolysed increased from 10 to 69. As a result of its coordinated effort, Greater Manchester and Cheshire Cardiac and Stroke Network won the 2009 HSJ Award for World Class Commissioning.

Graph 1

Number of Eligible Patient Thrombolysed within the Greater Manchester region between 2006 and 2009



Source: Greater Manchester and Cheshire Cardiac and Stroke Network, (2009)

The network is currently working to make improvements in the rest of the stroke pathway. Work has commenced on networking the model for the TIA pathway; rolling out Early Supported Discharge; and improving rehabilitation and life after stroke services within the area.

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6 Improving Access and Early Diagnosis for Transient Ischaemic Attack (TIA) Patients

Transient Ischaemic Attacks (TIAs), which have the same signs as stroke but where symptoms resolve within 24 hours, require a different treatment pathway. The Strategy recommends that all patients should be assessed by a specialist and treated within 24 hours or 7 days, depending on their risk of a potentially preventable full stroke.^{ix}

Case Example G: University Hospitals Leicester NHS Trust TIA Clinic – Reorganising local TIA Services

Situation The catchment area for University Hospitals Leicester (UHL) had no system in place to rapidly assess patients suffering from suspected TIA events. Although the hospital operated a one-stop system where patients received a carotid scan and a specialist opinion on the same day, there was insufficient capacity and no risk-scoring mechanism employed to identify or prioritise patients for rapid diagnosis. Patient access to additional diagnostic services took several weeks, irregardless of risk status.

Action

1. Planning and Development of TIA Clinic Services

- **In 2007, the university trust outlined plans to create a 7-day TIA clinic.**
To improve access to timely diagnosis, services were redesigned to increase the proportion of high risk TIA patients receiving the full assessment within the stipulated 24-hour window. A proposal highlighting the potential costs and benefits of the programme was submitted to the local PCT.
- **As the main source of funding for the project, the PCT was keen to play a hands-on role in terms of the planning and development of the services.**
Negotiations held between the local commissioner and the trusts were used to determine the payment tariff for the TIA service. Initially the university trust proposed that projected costs of programme delivery would amount to £1,500 per patient. However, the use of workforce substitution and the use of a cheaper vascular provider meant that the final tariff payment was provided at £466 per patient.

Table 6

Leicester General TIA Clinic Staffing

Clinical Health Care Profession	Number of Full Time Equivalents
Band 6 Nurses	4
Healthcare Assistants	2
Clerical Assistants	2
Consultants/Physicians	8
Supporting PA's	1

Source: University Hospitals Leicester NHS Trust (2009)

2. Implementation of the 24/7 TIA Clinic Service

- Despite the need for extra workforce capacity, existing patient management systems enabled the 24/7 clinic to be implemented at an affordable rate.**

A recruitment drive was required to set up the new TIA clinic. A variety of staff appointments (including Band 6 Nurses, Health Care assistants and clinical clerks) were used to fulfil various shortages in clinical workforce capacity. By incorporating the clinic into rotas for the provision of the thrombolysis, it was possible to have a consultant on hand to give a diagnosis 24/7, and by arranging consultant cover, the hospital can provide an outpatient service 365 days a year.

Figure 2

A patient being scanned for Carotid Artery Stenosis in the UHL NHS Trust TIA and Minor Stroke Clinic



Source: University Hospitals Leicester NHS Trust (2009)

- **The provision of the 24/7 clinic has allowed improvements in other key stages of the treatment pathway.** All GP's within areas are required to risk-assess patients prior to referral to the TIA clinic, using the ABCD2 assessment tool. Diagnostic scanning capacity has also increased, in response to the need for more timely diagnosis.

Outcome Before the roll-out of the TIA clinic, three to four patients per week were fully assessed for suspected TIA. By introducing a mobile MRI scanner and a daily carotid ultrasound session, up to seven patients per day are currently assessed. The percentage of high risk TIA patients assessed within the 24-hour window has now increased to 66 per cent from 0 per cent, over a period of two years.

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Case Example H: **NHS Cornwall and Isles of Scilly – Reorganising Community Based TIA Services**

Situation The Royal Cornwall Hospital Trust comprises three hospitals, and serves a population of 420,000. In 2006, the county of Cornwall only had one TIA clinic per week, over 45 weeks of the year, to provide diagnosis and full patient assessment. Staffed by one medical consultant and a general clinical nurse, the TIA clinic had limited workforce capacity, and was unable to provide patients with timely access to clinic and diagnostic appointments. In 2006, the average waiting time for a TIA clinic appointment within the local area was 90 days, with an average of 10 new patients being seen each week. For several years, clinicians within the area had tried, without success, to improve the provision of TIA services.

Action

- **In early 2007 and in response to poor 2006 sentinel audit scores, the South West Strategic Health Authority asked for an action plan for the improvement of local TIA services.** In response, Cornwall and Isles of Scilly Primary Care Trust asked the Stroke Nurse Consultant to come up with a new, cost neutral, TIA service specification that could be resourced through the reconfiguration of existing services. There was a tight turnaround time to get the proposal designed and ready for presentation to the Performance and Delivery Board. During a two-day consultation period, key clinical stakeholders were asked to comment on the necessary changes needed to be made to improve TIA/ Stroke outcome within the area. National, regional and local data was used to estimate the local demand for TIA services, in terms of the predicted numbers of TIA's and required workforce capacity.

- **As part of the revised clinical pathway, Cornwall and Isles of Scilly Primary Care Trust commissioned a five day-a-week TIA clinic.** Given the region's relatively poor transport links and dispersed population, a mobile clinic was thought to be the most appropriate service model. As part of the programme, 15 weekly dedicated CT slots were reserved for suspected TIA patients, and portable carotid duplex machines were purchased so that carotid dopplers could be provided at each of the five clinic sites.
- By positioning services at closer proximity to local communities, it was hoped that there would be an improvement in the referral rate of suspected TIA patients. During the roll-out of the TIA clinic, the lead medical consultant on stroke held various training sessions to inform GP's, the out-of-hours GP service, Emergency Department and Ambulance Trust Teams about ABCD2 triage and the timely referral of TIA patients. All referrers were expected to administer ABCD2 test to enable the clinic team to determine case by case urgency. There is a central referral point and the clinic team includes, a medical consultant, a clinic nurse, a stroke care coordinator (specialist nurse), and a vascular technician with rapid access to imaging and the Vascular Surgical Team.

Outcome Patient scanning capacity has increased considerably, since the roll-out of the mobile TIA clinic. On average, 35 patients per week are currently seen. Furthermore, patients requiring carotid endarectomy typically receive the procedure within seven days of initial service contact. As of 6 February 2010 this service will increase to a 7-day service.

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7 Improving the Transfer of Care and Community Rehabilitation

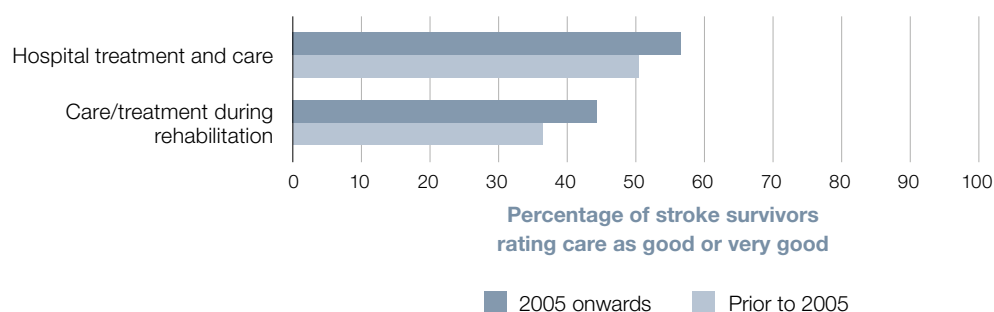
Stroke patients may spend several days or weeks in hospital, but it is in the months and years after discharge that they, their families and carers experience the full impact of the stroke. Rehabilitation plays an essential part in decreasing the long-term disability of stroke patients. *“Community-based stroke-specialist rehabilitation teams, such as Early Supported Discharge teams, can provide better and potentially more cost-effective outcomes than exclusively hospital-based rehabilitation for stroke patients with moderate disabilities, but currently only 36 per cent of hospitals have such teams, and there is confusion about how to fund them within the stroke tariff”.*^x

Modelling from our 2010 report suggests that *“increasing the availability of Early Supported Discharge from its current level – equating to around 20 per cent of patients – to a more optimal level of 43 per cent of patients, with all stroke units providing Early Supported Discharge, would be cost-effective over a ten-year timeframe”.*

Given the variability in the provision of community rehabilitation services across the country, our February 2010 report recommended that: *“Stroke Networks should work with local organisations to ensure that community-based stroke-specialist rehabilitation is available for all appropriate patients. This may involve setting out local standards for rehabilitation services based on Joint Strategic Needs Assessments, and clarifying between Primary Care Trusts and Local Authorities how services will be funded and provided.”* Our report concluded that *“improvements in acute care are not yet matched by progress in delivering more effective post-hospital support for stroke survivors, where there are barriers to joint working between the health service, social care and other services such as benefits and employment support”.*

Graph 2

The change in patient perceptions of hospital care and post-hospital care



Source: National Audit Office, 2010

Case Example I: Medway Primary Care Trust – Reorganising the Rehabilitation Pathway

Action In January 2004, Medway NHS Trust decided to implement a community team, two rehabilitation units and an acute stroke unit to serve the local residents of Medway and Swale. In order to facilitate better coordination of care across both the acute and community setting, rehabilitation therapists operating stroke services were reconfigured into one service.

1. Strategic Reorganisation of Early Supported Discharge and the Community Rehabilitation Pathway

- Reorganisation of the therapists into one services led to key improvements in stroke delivery.** Rehabilitation services within Medway and Swale were reconfigured, so that stroke therapists were employed under a single Stroke Services manager. Reorganisation of rehab therapists was originally implemented in the community before being rolled out to the rest of the pathway. Initially, staff reconfiguration was rolled out in the eight-bedded stroke unit in Sheppey. As the working patterns evolved, rehabilitation staff were charged with conducting in-reach programmes within traditional hospital settings and, outreach programmes. Skilled therapists, based within the community, had an inward looking focus on supporting Band 6 therapists on the unit in addition to conducting therapy in the residential setting. Furthermore, newly employed rehabilitation assistants were charged with working across boundaries.

Key Issues: Barriers to Community Rehabilitation- Shortages in Therapist Capacity

Recruitment for rehabilitation staff for Medway and Swale began in 2004. Although funding for various therapy posts had been secured, existing shortages within certain specialities made it harder to recruit staff. One particular area where shortages were rife was in the field of physiotherapy.

In order to circumvent shortages in stroke physiotherapists, community rehabilitation posts were made rotational. Band 6 physiotherapists, part-funded by Medway PCT and the local Foundation Trust, were able to rotate between the acute stroke unit and the two rehab units and within the community. This enabled physiotherapy staff to gain the valuable experience of working with patients within the acute stroke setting as well as within the community, therefore getting experience of the whole range of the pathway.

Source: Medway Primary Care Trust (2009).

Table 7

Improvements in access to Rehabilitation Service within the Community

Rehabilitation Service Provision	Waiting Times in 2006-2007	Waiting Times in 2008-2009
Occupational Therapists	4.2 weeks	0 weeks
Speech and Language Therapists	3.2 weeks	1 week
Physiotherapists	3.4 weeks	0 weeks

Source: Medway Primary Care Trust (2009)

Targeted funding was used to address shortfalls in key staff. The new community rehabilitation team had been created from the existing stroke therapy workforce. However, a funding commitment was made by the PCT to facilitate extra recruitment for key shortfalls in staff. Therapy staff were pooled from the existing stroke services umbrella. Speech and Language Therapists and Dieticians working under the generic stroke rehabilitation service were pooled into the community stroke rehabilitation team. Occupational Therapists and a Nurse Consultant were appointed as new additions.

Outcome The strategic management of therapists under one coordinating body:

- **Improved Flexibility:** Rehabilitation services could be deployed with a larger degree of flexibility. More specifically, therapy staff could easily be moved across all stages of the pathway to meet the varying levels of patient demand. Staff could easily be moved to areas of the pathway which were busier than others, meaning that, in effect, rehabilitation staff could be deployed anywhere from the acute stroke setting all the way down to community rehab.
- **Asserted a Focus on Clinical Delivery:** Coordination under one body gave the rehabilitation services an added focus on clinical delivery of stroke care. Rather than focusing on the individual demands dictated by the professional services, staff were able to respond to clinical demand. This in turn made it easier to set the tone of clinical leadership; assert goals relating to the quality of care; further develop the service; and foster an environment where staff could develop the necessary skills to manage stroke patients effectively.
- **Improved Transfer of Patient Care into the Community:** Working across both the acute and community settings meant that therapists were able to set, monitor and review patient goals for rehabilitation. Coordination of staff along the pathway meant patients already knew the staff they would see once they entered the community. Rehabilitation staff, in turn, were able to easily assess patient progress throughout the pathway. Familiarity with the clinical case meant that initial community assessments were short and much more effective.

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Case Example J: **Scunthorpe General Hospital – Implementing Early Supported Discharge**

Situation In 2005, the NHS Yorkshire and Humber and the North Lincolnshire PCT received funding to improve community rehabilitation teams within the area. Prior to this, there were no community rehabilitation services to support stroke patients within Scunthorpe and its surrounding areas, and patients would often endure long stays on both the acute stroke and rehabilitation unit.

Action

- **Rehabilitation was organised so that one team was responsible for all therapy delivered within the pathway.** In response to the lack of community therapy services within the area, the Scunthorpe acute rehabilitation unit decided to take on responsibility for the delivery of rehabilitative therapy within the community. Rehabilitation was organised so that one team was responsible for early supported discharge, in-patient rehabilitation, and community rehabilitation.
- **Existing rehabilitation staff took on the responsibility of delivering of community rehabilitation. Furthermore, the use of multi-skilled therapeutic staff meant that fewer staff were needed to deliver rehabilitation services.** Instead of recruiting surplus workforce, the community rehabilitation team was created from the existing in-hospital rehabilitation team. Office co-location with the acute stroke unit staff increased levels of communication and improved the seamless transfer of care.
- **The use of multi-skilled therapeutic staff meant that fewer staff were needed to deliver rehabilitation services.** The community rehabilitation team was created from the existing in-hospital rehabilitation team, and office co-location with the acute stroke unit staff increased levels of communication and improved the seamless transfer of care. A shared competency framework enabled staff to offer a wide range of skills from risk factor management to psychological support, and this competency-based approach to workforce development ensured that stroke patients had access to a wider range of services.
- A big effort was also made to make rehabilitation teams as multi-skilled as possible. All staff in the stroke service were trained to be able to carry out tasks from all disciplines up to a Band 4 level so that all staff could undertake a broad range of generic tasks. This arrangement meant that fewer staff were needed to deliver rehabilitation services. In cases where patients required specialist services, further visits were arranged with more qualified professionals

Table 8
Uplift in Staffing for Multidisciplinary
Community Rehabilitation Team

Profession	Full Time Equivalents (£)
1 Occupational Therapist (Band 7)	34,410
1 Physiotherapist (Band 6)	28,816
4 Therapy assistants (Band 3)	66,792
Total Cost	130,018

Source: Scunthorpe General Hospital (2009)

- **The newly-established rehabilitation team adopted an ‘Early Supported Discharge’ approach.** As part of this programme, generic targets for lengths of stay tended to be avoided; instead rehabilitation goals were set on a case-by-case basis, which resulted in patients being released back into the residential setting at an earlier date, decreasing the total number of patient bed days.

Table 9
Changes in the Total Number of Bed
Days spent on the Acute Stroke Unit

Total Number of Bed Days 2005-06	Total Number of Bed Days 2008-09
10,397	4,947
Total Cost Savings Per Annum	£1,471,500 ^B

Source: Scunthorpe General Hospital (2009)

Outcome As part of this programme, generic targets for lengths of stay tended to be avoided. Instead, rehabilitation goals were set on a case-by-case basis. This approach to patient discharge meant that patients were released back into the residential setting at an earlier date, decreasing the total number of patient bed days. In 2008/09, 54 per cent admitted of the stroke patients were transferred to the community within the first 14 days of being admitted. Over a three-year period, this reduction in the total number of bed days led to a total cost saving of £1.47 million.

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Case Example K: Blackburn and Darwen PCT – Developing Community Rehabilitation Services

Situation. Despite the relatively low incidence of new stroke cases within the region, the burden level of stroke disability was considered to be significantly high. In 2009, it was estimated that around 339 new patients suffered from stroke within the area. Furthermore, a third of people who experienced stroke, were left with long-term disability.

Action

1. Assessing the needs of the stroke patient using a base-line review

- **The NHS Blackburn and Darwen PCT conducted a base-line review examining the relative needs of patients residing within the area.** Results from the base-line assessment revealed four prominent degrees of patient dependency.

Table 10
Levels of Patient Dependency

Patient Dependency	Clinical Pathway
High Functioning Groups	Discharged home with Community Stroke team help. Rehabilitation Duration from 4 to 6 months.
Lower Functioning Groups	Discharged home with Community Stroke team help for 4 to 6 months. Domiciliary rehabilitation from four times a day, six times a week.
Patient Non-Manageable at Home	Intermediate care bed within a residential setting, with daily Community Stroke team input.
Residential Care Groups	Discharged to residential care home. Community Stroke Team ensures that correct management and rehabilitation is being supplied.

Source: Blackburn and Darwen PCT (2009)

- **Working in close collaboration with social services and various internal teams, four distinct ‘pathways’ of care were created to match varying levels of dependency.** Services were designed to meet the various rehabilitation requirements of patients discharged into the community. The NHS Blackburn and Darwen PCT conducted a baseline review examining the relative needs of patients residing within the area. Results from the baseline assessment revealed four prominent degrees of patient dependency. Working in close collaboration with social services and various internal teams, four distinct ‘pathways’ of care were created to match varying levels of dependency. Services were designed to meet the various rehabilitation requirements of patients discharged into the community. To ensure that the appropriate working structures were put in place, the PCT worked closely with various stakeholders.

- **A multidisciplinary team was created through extra PCT investment and an emphasis on staff training.** All occupational therapists and physiotherapist within the newly formed team were trained to carry out specialist rehabilitation therapies such as Functional Electrical Stimulation (FES) and Saeboflex. Access to a further 11 rehabilitation workers, for up to six weeks, was secured for lower-functioning patients. In addition, patients had access to a further four beds in the local authority intermediate care setting for up to six weeks.

Table 11
Multidisciplinary Community Rehabilitation Staffing

Profession	Full Time Equivalents
Team Leader	1
Physiotherapist Band 6 and 7	2
Occupational Therapist Band 6 and 7	2
Speech and Language Therapist Band 7	1
Rehabilitation Support Worker Band 3	3
Specialist Stroke Nurse Band 6	0.5
Social Worker	Input used as and when it was needed

Source: Blackburn and Darwen PCT (2009)

Outcome

- Stroke patient progress was continuously monitored along the four distinct **pathways**. Patients were frequently assessed for improvements in their functional ability. This created an environment where patients could easily be re-directed to the appropriate care pathway. In 2008, 21 per cent of patients originally assigned to the “Residential care” group were stepped down to “Non-manageable at home” category. A further four patients were discharged back home from residential care placements, due to the community rehabilitation team input.
- **The development of community rehabilitation services has led to tangible improvements in the amount of time patients spend in hospital and overall patient outcome.** Organisation of care into four distinct pathways enabled stroke patients to be discharged at an earlier stage, in addition to giving the opportunity to receive individualised rehabilitation in an at-home setting. In 2008/09, patients within the Blackburn and Darwen area were more likely to spend less time in hospital than their counterparts across the country. Furthermore, between 2005 and 2009, the hospital length of stay for stroke patients within the region decreased by 9.5 days.

Table 12

Improvements in Patient Outcome

Quality Indicator	2005	2009
Hospital Length of Stay for Stroke Patients (days)	31.1	21.6
Readmission Rates for Patients with General Conditions (%)	5.2	7.0
Readmission Rates for Stroke Patients (%)	2.4	1.9

Source: Blackburn and Darwen PCT (2009)

- Coordination of rehabilitation within the Blackburn and Darwen PCT has led to significant improvements in stroke patient outcomes.** Over a one-year period, there has been a positive trend in improved patient function, in terms of patients' ability to perform activities of daily living, community skills, functional motor ability, balance and a reduction in dependency levels as a result of the team's intervention following stroke. As a result of programme performance, the NHS Blackburn and Darwen community rehabilitation services won the Local Strategic Partnership awards 2009: Services Closer to home award. Furthermore in 2009, the stroke team have also received national recognition from the National Stroke Improvement Programme (SIP) Team, highlighting the community stroke rehabilitation programme as a model of excellence.

Table 13

Average Change in Patient Outcome Measures after the Implementation of Community Rehabilitation Team

Measures of Patient Outcome	Clinical Outcome	Change in Patient Outcome Score
Modified Barthel Index	Measure of patients level of dependency	-11
Nottingham Extended ADL	Measure of patients ability participate in the daily living	+8
Motor Assessment Scale	Measure of motor function and mobility	+8
Berg Balance	Measure of patients functional balance	+9

Source: Blackburn and Darwen PCT (2009)

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8 Long-term Care

Case Example L: Somerset Community Health, NHS Somerset – Training care home staff

Situation. In 2005, NHS Somerset decided to implement a comprehensive training programme targeted at care home staff working with stroke patients within the Mendip locality. Prior to the rollout of the training programme, staff awareness surrounding key practices used to manage patients in the residential care setting was extremely poor. Despite a recent nursing home audit within one locality showing that 44 per cent of residents were living with the effects of a previous stroke, there were no identified training programmes within the region with any formal structure for assessing or reviewing patients with long-term stroke needs. Furthermore, there was no system to prevent inappropriate referrals or facilitate appropriate referrals to hospital or other health or social care professionals.

Key Barriers to Care Home Staff Training

There are currently 237 care homes within the Somerset region, which fall into either the Nursing, Elderly Mentally Infirm (EMI), or Residential home category. Given that stroke training is not a mandatory requirement, often care home staff will not be paid during the hours of attendance. For the most part, training has to be conducted outside working hours, with staff volunteering their own personal time. The region also has no central structure to monitor the uptake of staff training in relation to stroke, making it difficult to assess the current status of staff training. In addition, the very nature of the care home job means that care home staff are constantly on call, with training often being interrupted.

- **The high turn over of care-home staff, together with the lack of mandatory stroke care training made it hard to sustain a set standard of good quality of care.** Before the roll-out of the regional training programme, the quality of care delivered to stroke patients within the residential care home setting was very much an unknown. Although District nurses and hospital consultants would often deal with care home resident re-admissions or deliver care within the residential setting, the needs of stroke patients were largely dealt with in isolated episodes. Indeed, day-to-day management of care-home residents was mainly the responsibility of nursing and residential care home staff. As a consequence of deficits in care home staff stroke training, there were major issues concerning patient seating, posture and positioning, spasticity management, incontinence, pain, depression, and manual handling, together with overall knowledge skills and knowledge of nursing staff about stroke, relevant community services and primary and secondary prevention of stroke.

Action A comprehensive review of resident needs was used to design the care-home staff training programme. In order to get a better understanding of the burden of disease, a comprehensive audit was used to identify the numbers of people suffering from the effects of stroke within the residential care home setting. On-site visits were conducted in order to view current staff practices of stroke. Additional work was further conducted to collect the views of care home residents concerning the day-to-day management of stroke. Key observations made from care home visits alongside the wider audit of care homes, indicated that the need for better stroke training was a critical.

Figure 3
Care-Home Staff Training Programme: Role play facilitation aides



Source: Somerset Community Health (2009)

A wider training and education programme for stroke was established across Somerset for care-home and care agency staff. In order to ensure that best practice knowledge was retained within the care home setting, training programmes were conducted on a rolling basis. Four key methods of training were used to improve the day-to-day management of residents effected by stroke.

- **Role play programmes** were set up in partnership with the acute and primary care stroke teams to enable care-home staff to envisage some of the difficulties experienced by resident affected by stroke. Nine work-stations were set up with various facilitation aides that mimiced some of the experiences of disability affecting stroke patients. Patients and carers were also invited to relay their personal experiences of stroke to care-home staff. Care staff were also targetted to look at their own risk of stroke, and were also taught the FAST test.
- **Action Learning Sets** were used to consolidate staff training in real life settings. Local health care professionals training sessions were used to provide on-the-job training for care-home staff. During local visits, care-home staff were able to consult with health care professionals in terms of what course of action would best suit individual patient needs.
- **Structured Training Sets** were used to provide comprehensive overview of the most recent tools and techniques used to manage stroke patients. Various health professionals were invited to run hourly sessions, and Training videos were used to show some of the more recent techniques used to deal with patient seating, posture and spacticity. Stroke Association literature was also used to raise awareness about best practice.

Outcome With the overall implementation of the programme being set up at nil cost, the programme received the Mendip PCT Outstanding Achievement Award in 2005.

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9 Review and Oversight of Stroke Care

Case Example M: NHS South West – Strategic Health Authority Stroke service review

Situation The 2007 National Stroke Strategy aimed to secure improvements in local services by providing a robust quality framework, based on a set of 20 Quality Markers covering the stroke pathway. The Strategy sets out a number of responsibilities for Strategic Health Authorities including their role in regional planning and performance management.

Action In response to the Strategy, the South West SHA set a three-year strategic goal to improve the delivery of the stroke services within the area. As part of this initiative, the SHA commissioned a detailed peer review which assessed the current status of stroke services. The South West SHA aimed to raise the quality of stroke services by identifying and responding to key gaps in the patient pathway. As part of the peer review, the SHA conducted an audit of PCTs' capacity to commission services and collected clinical self-assessments of all providers within the area. On-site visits to all acute service providers within the region were then used to corroborate submitted evidence.

- **The peer review was used to provide a systematic baseline evaluation of services within the South West of the country.** In March 2008, the South West SHA commissioned a comprehensive evaluation of stroke services within the region. In order to evaluate the baseline performance of services within each of its 14 health communities, a 'stock taking tool' was developed to enable individual PCTs to assess the provision of stroke services within their local areas. Questionnaires focusing on service provision were sent to PCTs to complete on behalf of their local health economy. Key providers within the stroke pathway were also assessed for the quality of stroke service delivered. Clinical self-assessments (modified from the BASP Peer Review) were used to examine variations in local treatment pathways, workforce capacity and skills-based competencies.
- **Led by the National Clinical Lead for Stroke and a regional stroke consultant, a multi disciplinary 'Review Team' was established to undertake the systematic review of stroke services within the region.** The South West peer review was conducted by a multidisciplinary 'Review Team'. Members of the team were charged with preparing clinical self assessment tools, collating data, and scrutinising PCT returns. Given the clinical breadth of stroke pathway, members were recruited from a number of healthcare professions. Representatives were drawn from key clinical services such as the regional ambulance trusts, primary and secondary health care institutions, as well as the voluntary sector. Once clinical self-assessment tools were completed, the multidisciplinary review team conducted a series of visits to each of the 18 service providers within the region.

- **Over a two-month period, the multidisciplinary review team adopted a four part approach to the Stroke Review.** Audit questionnaires were sent to PCTs with an accompanying deadline of six weeks to complete local returns. After clinical evidence had been submitted and scrutinised, the review team toured various medical facilities, meeting with respective clinical teams; PCT executives, and voluntary sector representatives. On the conclusion of each visit, verbal feedback was provided on the spot and a detailed written report was compiled. At the end of each session, feedback notes were used to provide details of the service review. Preliminary feedback was given to PCTs in the form of end-of-visit wash-up meetings. In the event that serious gaps in the provision of stroke had been identified, wash-up meetings offered commissioners the necessary length of time needed to institute urgent change. Formal reports, subsequently, documenting the required set of actions needed to improve the provision of stroke services, were sent to respective commissioners.
- **Formal meetings held with local Commissioners were used to relay key peer review findings. As a result, strategic action plans were designed to improve the quality of stroke care within the region.** Formal end-of-review meetings were conducted with each of the local PCTs. In order to facilitate collaborative planning, PCTs were clustered into groupings mainly contingent on whether patient flows crossed provider-unit catchment areas. During this process, commissioners had the opportunity to voice their thoughts and concerns surrounding evaluation results. Detailed action plans were then agreed with each commissioning body, and worked into local strategic plans.

Outcomes The SHA Peer review produced detailed information on stroke services. This was then incorporated into a three-year Primary Care Trust action plan to commission new services consistent with the ambitions within the Stroke Strategy. Final reports were used to set out the agreed action plans, and a three-year programme of priorities for each health community. In response to PCT action plans, Stroke Networks developed and aligned their local plans to support the local three-year priorities set out in the final report. In order to improve the performance of services, action plan compliance was monitored on an ongoing basis by the SHA and by the review team annually.

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Case Example N: Dorset Cardiac and Stroke Network – Patient and Public Involvement Programme

Situation The Dorset Network recognised that there was no consistent county-wide process of gaining feedback surrounding stroke patients' perception and experience of the quality of care. Although cases of Public and Patient Involvement (PPI) existed, contributions from the public were rarely collected from the entirety of the pathway, and there was little opportunity for patients and carers to have an ongoing investment in the redesign of stroke services within the region. For the most part, public involvement was undertaken on an ad hoc basis, with feedback on specific stages of the pathway being received in isolation.

Action The Dorset Cardiac and Stroke network used funding for the implementation of the stroke strategy to improve the level of patient and public involvement and engagement. In 2008, the network extended its PPI strategy to cover stroke care when it expanded to its present day form of a Cardiac and Stroke Network.

Engaging with Patient, Carer and Public User-Groups: Creation of the Dorset-wide PPI Strategy

- **The Dorset PPI working group was created with the intention of providing a comprehensive and systematic approach to patient and public involvement.** PPI is an ongoing agenda item for all stroke-specific purchaser and/or provider working groups within the county, linking closely to the PPI working group. In 2008, the Dorset-wide PPI working group was created with the intention of providing a cohesive strategy aimed at embedding public involvement in stroke service delivery. Given the multitude of stakeholders involved in delivering stroke care, key stakeholders were recruited to join the Dorset wide working group. In order to facilitate a comprehensive implementation of the programme, the working-group included PPI, Clinical and Commissioning representatives from NHS Provider Trusts, Primary Care Trusts, the Stroke Association, South West Ambulance and Adult Social Care, as well as patient and carer representatives. Due to its status as a sub-group of the Dorset Stroke Network Board, issues concerning patient and public involvement are considered as a standard agenda item in the quarterly Network Board meetings.
- **In order to ensure that processes for patient participation were included within all stages of the patient journey, representatives were recruited from key clinical stages of pathway.** Representatives were charged with ensuring that patient-carer perspectives were given adequate consideration, in all stroke service improvement working groups. In order to facilitate involvement at the board-level, representatives were provided with ongoing training and support. Furthermore, PPI forums and, local stroke support groups were used to ensure the views of patients and carers were properly represented.

Maximising Public and Patient Involvement: Developing Tailored Programmes

- **The PPI working group actively worked to maximise the level of patient involvement by offering different levels of participation.** PPI projects were grouped into five clusters of activity, which aimed to provide various opportunities for patient and carer involvement. Ultimately, this enabled local people to choose projects more suited to their interests, which in turn helped to make PPI more accessible. Given the varying levels of patient disability, a number of tools were used to help patients overcome barriers to involvement. A database, documenting patients and their chosen level of involvement, was used to contact participants as and when opportunities came up. Currently over 130 people have signed up to over 260 levels of involvement.

Dorset Stroke Network PPI Strategy: Levels of Public and Patient Involvement

Level One – Home Involvement: The PPI newsletter has been developed to keep patients and carers informed about ongoing projects, and to further inform recipients about how user views have influenced change.

Level Two – Discussion Groups: Discussion groups and view seeking forums have been hosted across the region. Stroke patients and their carers were invited to attend one of two DVD viewings. Feedback taken from the discussion groups was used to provide information targeted at stroke patients.

Level Three – Involvement Forums: To date four six-monthly Stroke PPI Involvement Forums have been hosted. Primarily, the purpose of this forum is to provide information, seek patient views and provide a forum for networking and sharing. Views expressed at the forum feed into the Board and Sub-Group structure to allow two-way communication, and ensure views are responded to.

Level Four – Local Representation & Level Five-Network, Regional or National Representation: Stronger Voice Training was provided to patient and carer representatives wishing to sit on a Stroke Improvement Working Group or the Dorset Stroke Network Board. In order facilitate active and supported participation, a 'Buddying' system was set up. Regular patient representative reviews and support forums provided by the network were also used to support patient involvement.

Source: Stroke Patient & Public Involvement – Making it Real!, Dorset Stroke Network (2009)

- **A range of programme recruitment methods were used to increase the uptake of the patient and carer participation.**
- For example:
 - easy-read flyers were distributed to GPs surgeries, care homes, libraries, primary care centres and secondary care centres;
 - radio advertisements were used to target stroke survivors who had lost the ability to read;
 - voluntary sector support groups representing young stroke survivors, such as Different Strokes, were targeted for patient participation;
 - two programme launch events were also held to let local people know about the various opportunities for patient involvement. Patients with communication disability and mobility issues were actively involved in designing and organising the programme to ensure increased access.

Outcome Improved Patient Participation: Increased Involvement in Service Re-organisation. More recently, patient and carer views have been incorporated into a number of service redesigns within the region. Information taken from user feedback was used to inform service specifications for the transfer of care between acute care and community rehabilitation. In a recent exercise used to assess the introduction of 24/7 thrombolysis, patient and carer views were collected and included in service design. As part of this programme, Discovery Interviews (held with participants who had recently experienced thrombolysis) and three PPI Involvement Forums were used to review service planning proposals. Feedback responses from this initiative indicated that 100 per cent of respondents thought that the introduction of this service was essential. In accordance with the patient feedback, 24/7 thrombolysis was implemented in East Dorset, and is now being implemented in West Dorset.

- The use of the easy-read patient and carer feedback form has played an instrumental role in terms of assessing the quality of care, and has been implemented in all hospitals across Dorset. Furthermore, a six monthly PPI newsletter has been produced to let people know how their views have been used to influence service change within the region. In a bid to improve access for people who are partially sighted or have communication disabilities, the PPI newsletter is now in audio-format.

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Endnotes

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