



National Audit Office

Department of Health

Progress in improving stroke care

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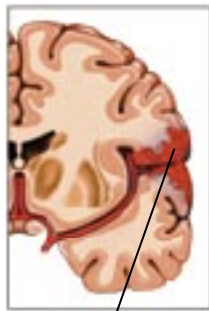
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Figure 1 Background on stroke

What Stroke Is

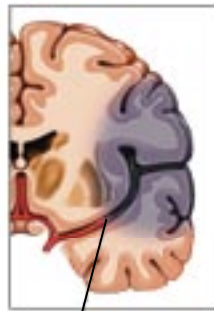
A stroke occurs when blood flow to part of the brain is interrupted, causing damage to the brain tissue. The two main causes of stroke are blood clots blocking arteries (*Ischaemic*, 85 per cent of all strokes) and arteries bursting (*Haemorrhagic*, 15 per cent).

Haemorrhagic



Haemorrhage/blood leaks into brain tissue

Ischaemic



Clot stops blood supply to an area of the brain

Strokes where the symptoms resolve within 24 hours are known as *transient ischaemic attacks* (TIAs).

The Effects on the Individual

Around one in four people who have a stroke die of it.

Around half of stroke survivors are left dependent on others for everyday activities; among people who survive a stroke, long-term health problems can include:

- Paralysis down one side of the body
- Inability to speak
- Loss of cognitive abilities
- Incontinence

Other effects of these problems can include loss of job and breakdown in relationships.

Stroke survivors often need care for some time after their stroke, and potentially for the rest of their lives, which can put emotional and financial strain on those around them.

Whom It Affects

Stroke, like heart attack, is a vascular disease, and its risk factors include:

- High blood pressure or cholesterol
- Irregular heart rhythm (atrial fibrillation)
- Diabetes
- Smoking
- Unhealthy diet or high alcohol intake
- Previous stroke or TIA, or family history of stroke

Stroke is often viewed as a disease of the elderly, but one quarter of strokes occur in people under the age of 65, and it can strike people of any age, including children.

People of African or Caribbean origin and men of South Asian origin are more likely to have a stroke than people from other ethnic groups.

Stroke is more common in men than in women, but women who suffer a stroke are more likely to die of it.

The Effects on the Country as a Whole

There are approximately 110,000 strokes and 20,000 TIAs per year in England alone.

Around 300,000 people are living with moderate to severe disabilities as a result of stroke.

We estimate that, in 2008-09, the direct care cost of stroke was at least £3 billion annually, within a wider economic cost of about £8 billion.

Without preventative action, there is likely to be an increase in strokes as the population ages.

Source: National Audit Office, Department of Health

Summary

Introduction

1 Stroke is one of the top three causes of death and the largest cause of adult disability in England, and costs the NHS over £3 billion a year. In November 2005 we published *Reducing brain damage: faster access to better stroke care*, which concluded that historically stroke had had a low priority within the NHS as it was seen as an inevitable risk of growing old, and that medical and technological developments which could improve patient outcomes were not being implemented widely. We identified considerable variations in the efficiency and effectiveness of treatment, and scope for potential savings as the result of more efficient practices.

2 Our report formed the basis of a hearing of the Committee of Public Accounts, whose report in June 2006 concluded that the human and economic costs of stroke could be reduced by re-organising services and using existing capacity more wisely. The Committee made a number of recommendations for the Department of Health (the Department) and NHS organisations, and asked us to report back on progress in improving stroke care.

3 This report sets out our evaluation of how stroke care has changed over the last four years, the extent to which these changes have improved the value for money of stroke care provision nationally, and the risks and issues to be managed to ensure that stroke care services continue to improve in future. Our methodology – which included commissioning a census of all hospitals, a survey of 760 stroke patients and carers, and building an economic model of stroke services – is summarised in Appendix One.

What has changed since we reported on stroke in 2005?

4 **There has been a major change in the Department's approach to stroke care since our previous report.** In December 2007 it published the *National Stroke Strategy* (the Strategy), which represents a comprehensive response to the concerns raised by the Committee of Public Accounts (summarised in Appendix Two). The Strategy defines markers for high-quality stroke care, and sets out actions and progress measures for achieving the vision over a ten-year period.

5 The Department announced funding of £105 million over the three years 2008-09 to 2010-11 to support implementation of the Strategy. To date, about £59 million has been allocated, primarily to Strategic Health Authorities and through ring-fenced grants to Local Authorities. The Department also enhanced the NHS 'tariff' payment for stroke to reimburse hospitals for providing thrombolysis (clot-busting treatment that can greatly improve eligible patients' chances of recovery). The Department made implementing the Strategy a 'Vital Sign' Tier 1 national requirement in Primary Care Trusts' 2008-09 to 2010-11 operating plans¹.

6 The regional support for stroke care has also changed, with England having been divided into 28 *Stroke Networks*, which are intended to improve the coordination and provision of care. The Networks are supported and partially funded by the Department's *NHS Stroke Improvement Programme*, established in December 2007.

7 Implementation of the Strategy has been aided by strong leadership at the national level, supported by some notable examples of regional and local commitment to service improvement. All hospitals in England formally recognise a specialist stroke clinician as having principal responsibility for stroke services.

Emergency response and acute hospital care

8 There is better public and professional awareness of the symptoms of stroke, and that it is a medical emergency, following the Department's 'Stroke – Act F.A.S.T.' advertising campaign, launched in February 2009. The campaign is expected to cost £9.5 million over the first two years (£11.5 million in total). Whilst it is too early to assess the long-term effects of the campaign, our audit of Ambulance Trusts showed that the number of calls categorised as being a suspected stroke during April to June 2009 increased by 54 per cent in comparison to the same period in 2008. As well as responding to more calls, ambulance staff are now better trained in recognising the symptoms of stroke and, in some regions, travel longer distances to deliver patients to specialist urgent 'hyper-acute' stroke care. The improvements within ambulance trusts have been achieved without specific additional funding, although they have involved additional costs.

¹ Since April 2008, NHS performance has been managed against three tiers of "vital signs" with the Department limiting its central performance management to Tier 1 national priorities. The two Vital Signs measures for stroke are the proportion of patients who spend at least 90 per cent of their time on a stroke unit (expected to be 80 per cent by the end of 2010-11), and the percentage of higher risk TIA cases who are treated within 24 hours (60 per cent by the end of 2010-11)

9 Acute care is being reorganised within hospitals to deliver the key elements of care that are known to improve outcomes. There have been measurable improvements since 2006, including the adoption of new technologies, but there is still room for further improvement.

- National Institute for Health and Clinical Excellence (NICE) guidance recommends immediate admission to a specialist **stroke unit** to optimise outcomes. All relevant hospitals in England now have such a unit, and the proportion meeting key clinical requirements has risen to 82 per cent in 2009 from 73 per cent in 2008. The proportion of stroke patients who spend more than 90 per cent of their hospital stay on a stroke unit has increased from 51 per cent in 2006 to 59 per cent in 2008. However, in 2008, only 17 per cent of stroke patients reached the stroke unit within four hours of their arrival at hospital.
- **Brain imaging** to diagnose the type of stroke is critical for stroke patients and the Strategy recommends that access to scans and, where clinically appropriate, **thrombolysis** should be available to appropriate patients, 24 hours a day, seven days a week. By 2008 all hospitals provided access to scans, with 59 per cent of applicable patients in England given a brain scan within 24 hours, an increase from 42 per cent in 2006. Access at weekends and evenings is significantly more limited. In 2006, fewer than one in five trusts offered access to thrombolysis for at least part of the week; in 2009, two-thirds did so. The overall number of patients receiving thrombolysis more than doubled between 2007-08 to 2008-09.

10 Acute stroke services are currently funded via the Payment by Results tariff of around £4,000 per patient episode. Most of the service reorganisation within hospitals has been achieved without additional funding per episode, apart from the uplift in April 2008 of about £800 per patient thrombolysed.

11 As well as reorganising stroke care within individual hospitals, the Strategy requires Strategic Health Authorities to consider how best to reconfigure services to optimise access to specialist care. Whilst rural and urban areas will require different solutions, progress in reconfiguring services varies considerably across the country. The Greater Manchester and London areas have developed business cases that set out the costs and benefits of reconfiguring their services and are some way along the path to implementing these plans. Some hospitals in rural areas are now using new technologies to address geographical barriers, for example using telemedicine to enable doctors to make diagnoses and interpret scans whilst off-site.

Rehabilitation, post-hospital support and meeting longer-term care needs

12 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. Patients and carers also lack good information about the services they may need and how to access them on discharge from hospital, as well as on how to prevent further strokes. Only half of stroke survivors in our survey said they were given advice on further stroke prevention on leaving hospital, and only a quarter were given information about the benefits system.

13 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.

14 The Strategy indicates that stroke survivors should be reviewed at six weeks and six months after their stroke, and annually thereafter. However, in 2008, 30 per cent of patients were not given a follow-up appointment within six weeks of discharge from hospital. Commissioners and providers are unclear how, and in which setting, the annual review process should be implemented, and what are its objectives. This is compounded by a lack of accepted outcome measures to assess the quality of long term care for stroke survivors. At least one-third of stroke patients have depression at some stage after their stroke, yet psychological support was rated the least satisfactory service in long-term care in our patient survey, with only 24 per cent of respondents rating it as good or very good.

15 The Department has allocated **£30 million to Local Authorities to improve post-hospital support for stroke survivors over two years**. This has been predominantly used to increase support services commissioned from voluntary organisations. The largest national stroke charity, the Stroke Association, estimates that once their current level of services reaches full capacity, one in two eligible patients will be able to access them, compared with one in five in 2005. It is, however, difficult to assess the cost-effectiveness of long term care provision because of a lack of outcome measures and agreed standards for resourcing such services.

16 While the Strategy highlights the need to provide training to frontline staff and those within a wider range of organisations that come into contact with stroke survivors, there are still shortcomings within some areas. For example, at least a quarter of people in residential nursing care have had a stroke, yet there is no requirement for care home staff to have training in the identification, communication, mobility and other needs of residents who have had a stroke.

Prevention of stroke

17 The best way of reducing the human and economic costs of stroke is through prevention. Stroke prevention continues to present a challenge, although improvements have been made through more targeted prescribing of statins. GPs' levels of treatment for **risk factors for stroke**, such as high blood pressure and high cholesterol, have not changed since our previous report. However, GP treatment data does not include patients who are not on GPs' registers. The Department estimates that GPs' registers only include around 56 per cent of the total number of people with hypertension. In 2009 the Department launched the NHS Health Checks programme, a unified approach to prevention of all vascular disease, including stroke, and is now rolling it out.

18 Even after having a stroke, one in five people in our survey were not aware that lack of exercise increased their risk of a further stroke, rising to around two in five of respondents for diabetes and atrial fibrillation (irregular heart rhythm). Guidance suggests appropriate treatment (anti-coagulation) of all people with recognised atrial fibrillation would prevent around 4,500 strokes, and 3,000 deaths per year, and do so highly cost-effectively. NICE recommends treatment with warfarin, but in 2008 only 24 per cent of stroke patients with atrial fibrillation were discharged from hospital on this treatment.

19 There is increased, and more properly risk-based, provision for diagnosis and treatment of transient ischaemic attacks (TIAs). These indicate that the person is at significantly raised risk of having a stroke and therefore require rapid further investigation. Ninety-five per cent of trusts now offer a specialist neurovascular clinic for assessment and treatment of TIA, with the median number of clinics rising from one to three per week over the past two years. The cost of these clinics can be outweighed by their benefits in terms of prevented strokes, with one model of rapid TIA referral and treatment delivering potential savings of around £600 per patient assessed and treated².

Value for money conclusion

20 The Department's approach of developing a national stroke strategy underpinned by national and local leadership, national tier 1 performance indicators, clinical audit data, a national stroke tariff and £105 million seed corn funding, has increased the priority given to stroke care. Early indications are that implementation of the strategy is also starting to deliver improved levels of service and improved outcomes. Our modelling of the likely changes in patient outcomes resulting from the changes in service organisation suggests that, since 2006, stroke patients' chances of dying within ten years have reduced by an estimated 4 percentage points (from 71 to 67 per cent).

21 Improved patient outcomes from reductions in death and disability can be quantified in terms of 'quality-adjusted life years' (QALYs). We estimate that the average number of QALYs per patient has increased to 2.5 from 2.3, for an increase in average per-patient cost of seven per cent in real terms (to £24,900 from £23,300). This represents an incremental cost-effectiveness ratio of £5,500 per QALY, well below the standard benchmark for assessing cost-effectiveness in healthcare of £20,000 to £30,000 per QALY gained. Moreover, there have been improvements in prevention of first and subsequent strokes, and a start has been made on delivering better post-hospital and longer term care. **Hence we conclude that the actions taken by the Department since 2006 have, to date, improved value for money.**

22 Notwithstanding these improvements, we have identified 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. A good practice guide, including case examples of how some of these challenges are being met locally, is available on our website at www.nao.org.uk/publications, and we commend the adoption of such good practice more widely.

Recommendations

Issue: There are clear economic and patient benefits in having a fast emergency response and early access to stroke units. However, the extent to which services have been reconfigured to improve access to emergency stroke care varies considerably across the country. Some areas with the most developed service configurations have highlighted that this level of service provision may require additional investment and, as such, efforts to reconfigure services are complicated by the increasingly challenging economic climate.

- a** **Strategic Health Authorities** need to undertake, and keep under review, robust cost-benefit analyses to identify the optimum organisation of acute stroke services that balance current affordability against longer term cost-effectiveness.
- b** The **Department of Health** should consider whether ambulance trusts should use measures such as call-to-hospital time, as a way of evaluating the effectiveness of the emergency response to stroke. **Primary Care Trusts**, as part of their contracts with hospitals, should ensure that both individual and aggregated patient outcome data is fed back to ambulance trusts, to enable them to benchmark their performance and identify areas for improvement.
- c** **Primary Care Trusts** should require hospitals whose audit results indicate patients are not being admitted to stroke units quickly enough to demonstrate that their triage protocols minimise inappropriate stroke admissions to medical assessment units, and that stroke patients are not unnecessarily being treated on non-specialist wards as a result of poor bed management.

- d **Strategic Health Authorities** should agree with their Primary Care Trusts a stroke action plan and timeline for all hospitals who are failing to achieve the expected level on their Vital Sign stroke indicators, as part of their review of quality metrics. Strategic Health Authorities, working with the Stroke Networks should agree with **Primary Care Trusts** whether they should operate sanctions or a reward based approach to boost compliance with the defined quality measures.
- e As part of the work in developing a *Best Practice Tariff* for stroke, the **Department of Health** should review all levers within the tariff payment structure to ensure that it rewards cost-effective practices in the treatment of both strokes and TIAs.

Issue: Improvements in acute care are not yet matched by progress in delivering more effective post hospital support for stroke survivors and their carers. There is a need for better joint working between health and social care, community care and care homes and other services including benefits and employment services.

- f The **Stroke Improvement Programme** should collate and disseminate to all Stroke Networks examples of good practice in providing information to patients and carers to help them navigate the health, social care and benefits systems. **Primary Care Trusts** should contractually require stroke care providers to give comprehensive discharge summaries to all patients, and check that this has happened by 2012.
- g **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. The **Department of Health** should provide practical guidance on how the tariff can support greater provision of community rehabilitation teams.
- h The **Department of Health** should work with the **Stroke Improvement Programme** and other stakeholders to develop, by 2012, a set of indicators of high-quality long-term stroke care, for example drawing on recent work on patient-reported outcome measures and evaluations of the Expert Patients Programme. This work should also focus on fully realising the Strategy's requirements relating to the involvement of stroke survivors and carers in service development and review. In parallel, it should refresh the longer term care aspects of the Strategy, to develop more measurable quality markers, and set specific milestones for improvement in these areas over the next five years.

- i **Local Authorities** and **NHS organisations** must begin planning, if they have not already done so, how they will sustain support services, and hence deliver value for money when the additional funding for stroke ceases after 2010-11. The **Department of Health** should evaluate the effectiveness of the Local Authority stroke grants during 2010-11, and **Strategic Health Authorities** and **Stroke Networks** should assist **Primary Care Trusts** and **Local Authorities** to commission appropriate longer term support services for stroke survivors and carers, building on this evidence and the priorities outlined in their Joint Strategic Needs Assessments.
- j The **Department of Health** should work with Skills for Care, the employer-led authority on the training needs of social care staff, to develop a programme of stroke training for care home staff, based on the stroke-specific education framework developed by the UK Forum for Stroke Training. This should develop options for integrating stroke-care qualifications and inductions into existing training frameworks. Given the prevalence of stroke survivors in care homes, the **Care Quality Commission** should check that the specific needs of this group of residents are being met.

Issue: Preventing strokes requires a joined-up approach from a range of organisations, to target those at risk and provide them with appropriate treatment, education and information.

- k As part of their 'local vision' responses to the NHS Next Stage Review, **Strategic Health Authorities** should, working with **Primary Care Trusts** and **Stroke Networks**, develop and implement strategies for managing atrial fibrillation. **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, and its guidance on recommended blood pressure and cholesterol levels.
- l We reiterate the recommendation made in our 2005 report that the **Department of Health** should refer explicitly to stroke in relevant public health campaigns to ensure that the public and the NHS benefit by preventing more strokes.