



Stroke Case Study

History

1928: The term stroke was assigned to bleeding in the brain caused by blood vessel problems.

1950s: The first carotid endarterectomy is performed, a surgical excision of the inner lining of an artery that is clogged with atherosclerotic build up.

1970s: Aspirin is found to be effective in preventing stroke and CT Scans and PET scans are used to determine brain metabolism.

1998: An evidence synthesis into the detection, adherence and control of hypertension for the prevention of stroke publishes in *Health Technol Assess* 1998; Vol. 2:11

2003: Researchers suggest that a policy offering a combination of blood pressure reducing drugs to all people with established cardiovascular disease or above a specified age may reduce the risk of stroke and heart disease (*Health Technol Assess* 2003; Vol. 7:31).

2004: An HTA-funded study into the best imaging strategies for acute stroke finds that a strategy where most patients presenting with stroke are scanned immediately is the most clinically and cost-effective method (*Health Technol Assess* 2004; Vol. 8:1).

2005: A randomised controlled comparison of alternative strategies in stroke care suggests that stroke units achieved better outcomes than care in the ward or at home (*Health Technol Assess* 2005; Vol. 9:18).

2005: A clinical trial finds that opportunistic screening by GPs for atrial fibrillation, a major risk factor for stroke, could lead to an important reduction in stroke (*Health Technol Assess* 2005; Vol. 9:40).

2006: A trial evaluating feeding policies in patients admitted to hospital with a recent stroke publishes in *Health Technol Assess* 2006; Vol. 10:2. The findings suggest that routine supplementation of hospital diet for unselected stroke patients is not supported.

2007: The National Stroke Strategy is launched setting a clear direction for the development of stroke services in England over the next ten years.

2008: An evidence synthesis published in *Health Technol Assess* 2008; Vol. 12:30 suggests that training stroke patients to repeat a series of movements over and over again could be effective in improving lower limb function after stroke.

2008: A clinical trial assessing whether hypertension or hypotension immediately post-stroke can be therapeutically treated, and improve post-stroke prognosis, is due to publish its full results in the *Health Technology Assessment* journal series in December 2008.

Background

Stroke is the most common life threatening neurological condition, the third biggest cause of death, and the largest single cause of severe disability in the UK. Each year more than 120,000 people in England will suffer from a stroke causing about 10 per cent of all deaths.



The annual cost to the NHS is over £2.8 billion¹. However, many strokes are preventable, most are treatable, and the harm done by stroke can be greatly reduced if doctors act quickly to warning signs like transient ischaemic attacks or 'minor strokes'.

Strokes are a blood clot or bleed in the brain which can leave lasting damage, affecting mobility, cognition, sight or communication. It is unusual in being a major disease for which few medical treatments are available. Of these, none are patentable. The main interventions are prevention and rehabilitation, supplemented by accurate imaging and optimal care.

The burden of stroke is projected to increase, as over the coming decades the proportion of older people in the population is set to rise. The total number of new strokes each year is projected to increase considerably. By 2020, in the developed world, stroke is estimated to account for six per cent of the total burden of illness.

Policy

In 2007 the Department of Health launched its National Stroke Strategy which sets out what needs to be done to address health inequalities and achieve the necessary advancements in stroke services over the next ten years¹. It is intended to provide a quality framework to secure improvements to stroke services, to provide guidance and support to commissioners, strategic health authorities, and social care, as well as informing the expectations of patients and their families by providing a guide to high quality health and social care services.

Much of the guidance produced by NICE in the area of stroke has been informed by HTA research. This includes two reviews on nicotine replacement therapy to aid smokers in smoking cessation (*Health Technol Assess*, 2002; Vol. 6:16 and *Health Technol Assess*, 2008; Vol. 12:2 guidance ref. TA39); guidance on alteplase for ischaemic stroke (Evidence Review Group report ref: 06/51/01, guidance ref. TA122); and the use of alternative antiplatelet agents for the prevention of occlusive vascular events in people who have had an ischaemic stroke or a transient ischaemic attack (*Health Technol Assess*, 2004; Vol. 8:38 guidance ref. TA90)

HTA research has also supported the development of a Vascular Risk Management Programme. The findings of a study (*Health Technol Assess*, 2003; Vol. 7:31) into a new strategy for lowering blood pressure to prevent myocardial infarction and stroke informed the National Screening Committee's Diabetes, Heart Disease and Stroke prevention project. This recommended a Vascular Risk Management Programme, in which the whole population would be offered risk assessment that could include measurement of risk factors such as blood pressure, cholesterol and glucose.

Adding to the evidence base

HTA research into stroke covers prevention, screening, treatment and management, and rehabilitation. The HTA programme has invested over £6 million from 1993 to August 2008 in the commissioning of 23 studies into the area of stroke, 16 of which have published in the influential *Health Technology Assessment* journal series and six are ongoing, including three clinical trials.

In addition, the HTA programme has been working with the Stroke Research Network to encourage researchers to submit proposals for stroke and dementia research through its researcher-led funding stream. The funding round closed in January 2008 and resulted in 29



proposals being submitted. From these, five applicants in the area of stroke have been shortlisted to submit a full proposal.

Prevention and screening

Seven HTA studies have been commissioned to address the area of prevention. This includes two key studies looking at lowering blood pressure, as stroke is one of the risks associated with high blood pressure; and research assessing screening for atrial fibrillation which can lead to stroke.

Blood pressure

A study published in 1998 (*Health Technol Assess* 1998; Vol. 2:11) reviewed the existing evidence to assess the most effective methods for detecting hypertension, improving patient adherence to treatment, improving control of blood pressure and improving professional compliance with standards of good practice. The research team concluded that population screening does not appear to increase detection of people with hypertension.

A further study in 2003 considered a new preventive strategy for lowering blood pressure to prevent myocardial infarction and stroke. The research team found that the current approach for treating patients with blood pressure above a specific level limits the number who can be treated. They suggested that offering treatment to all people with established cardiovascular disease and above a specified age is likely to have the greatest public health impact and reduce the risk of stroke (*Health Technol Assess*, 2003; Vol. 7:31).

Atrial fibrillation

A 2005 HTA clinical trial (*Health Technol Assess*, 2005; Vol. 9:40) investigated different systems of screening for atrial fibrillation (AF) in people aged 65 and over. The study involved 15,000 people at 50 primary care centres across England. Three different methods of screening were examined over a 12 month period. The researchers found that a national programme of opportunistic screening, where GPs take a patient's pulse during the course of a normal consultation, is likely to lead to significantly more cases of AF being identified annually, and is likely to be considered a cost-effective measure for early detection by NHS policy-makers.

Research has been conducted to assess self-testing and self-management of oral anticoagulation treatment compared with clinic-based monitoring. It is estimated that approximately 950,000 people in the UK are currently taking warfarin and the numbers continue to increase by about 10 per cent each year, primarily driven by its use for patients with atrial fibrillation. The researchers concluded that for selected and successfully trained patients, self-monitoring is effective and safe for long-term oral anticoagulation therapy. It may also enhance the quality of life for some patients (*Health Technol Assess*, 2007; Vol. 11:38).

Narrowing of arteries

High levels of cholesterol (hypercholesterolaemia) in the blood can lead to the hardening and narrowing of the arteries in the major vascular systems. This in turn can lead to blood clots which, if happen in the brain, can result in a stroke. Identifying and treating hypercholesterolaemia could therefore help to prevent and reduce the chance of a stroke.



An HTA study (*Health Technol Assess*, 2000; Vol 4:29) on screening for hypercholesterolaemia versus case finding for familial hypercholesterolaemia (FH) explored the literature and conducted a cost-effectiveness analysis. From the findings, the research suggests that case finding in the relatives of known FH patients is probably cost-effective, as is a universal screening strategy in all 16 year olds, and screening of patients admitted to hospital with premature myocardial infarction. However, primary data on the effectiveness and cost implications of screening strategies is lacking, so it is difficult to conclude which one strategy is more effective or less costly than another.

Research currently underway includes a £1.4 million large-scale international randomised trial, co-funded by the HTA programme, comparing the effectiveness of two different interventions to reduce the risk of stroke (project ref. 06/301/233). Many strokes are caused by narrowing of the carotid arteries, a condition that affects about a million adults in Europe alone. It happens when fatty deposits build up on the walls of the carotid arteries. Fragments of these deposits can fall off and lodge in the brain, causing a major stroke. The research team are comparing two such procedures for preventing this: the standard operation, carotid endarterectomy (CEA), where the deposits are removed before they cause a stroke; and the newer technique of carotid artery stenting (CAS), where a fine scaffolding (stent) is placed inside the narrowed artery to widen it and to hold it open.

Imaging

Another study published by the HTA programme (*Health Technol Assess*, 2002; Vol. 6:7) has investigated magnetic resonance angiography for carotid artery stenosis and peripheral vascular disease, which can lead to stroke. Magnetic resonance angiography (MRA) is a technique for imaging blood vessels that contain flowing blood. This review looked at the use of contrast-enhanced MRA and two-dimensional (2D) and three-dimensional (3D) time-of-flight (TOF) MRA for presurgical assessment in carotid artery disease and in peripheral vascular disease. The researchers concluded that MRA was a cost-effective option for identifying both carotid artery disease and peripheral vascular disease.

A 2006 trial assessed whether less invasive imaging tests, alone or combined, could replace intra-arterial angiography, and what effect this would have on strokes and deaths, the number of endarterectomies performed, and whether less invasive tests were cost-effective. After transient ischaemic attack (TIA) people are at a particularly high risk of stroke. The researchers found that less invasive tests such as ultrasound, magnetic resonance angiography (MRA), computed tomographic angiography (CTA), and contrast-enhanced MRA (CEMRA) can be used in place of intra-arterial angiography, if radiologists trained in carotid imaging are available (*Health Technol Assess*, 2006; Vol. 10:30).

Treatment and management of stroke patients

The HTA programme has funded five studies investigating the treatment and management of stroke patients. One key trial compared the management of stroke patients on either stroke units, general wards with stroke team support or at home with a specialist domiciliary care team. The research team found that stroke units were more effective and cost-effective than care in the ward or at home in reducing mortality, institutionalisation and dependence after stroke. They suggested that a role for specialist domiciliary services for acute stroke was not supported (*Health Technol Assess*, 2005; Vol 9:18).



In 2002 an HTA-funded evidence synthesis assessed the effectiveness and cost-effectiveness of thrombolytic drugs and neuroprotective drugs for acute ischaemic stroke in the NHS. From the results the researchers suggested that the widespread use of thrombolytic therapy in routine clinical practice in the NHS is not supported (*Health Technol Assess* 2002; Vol. 6:26).

Further published HTA research investigated computed tomographic scanning and magnetic resonance imaging after acute stroke for the management of patients. Appropriate evidence-based strategies for the use of imaging in stroke patients could make patient care more effective and efficient, as clinicians disagree on the clinical diagnosis of stroke in about 20 per cent of patients. From the findings the research team suggested that strategies in which most patients are scanned immediately are the most clinically and cost-effective method, as the cost of providing computed tomography (even out of hours) was less than the cost of inpatient care (*Health Technol Assess*, 2004; Vol. 8:1).

An HTA-funded trial, published in 2006, evaluated feeding policies in patients admitted to hospital with a recent stroke. The international FOOD Trial Collaboration used shared resources to conduct three trials testing separate but inter-related ideas about the potential benefits of adding oral supplements to the hospital diets of stroke sufferers, and when and how to feed patients who are unable to swallow as a result of stroke. The researchers concluded that oral food supplements should be reserved for undernourished patients, and that doctors should feel confident that tube feeding patients who can't swallow does not need to begin in the first few days after stroke. If tube feeding is required, feeding through the nose is concluded to be the best option as it is possible that it might lead to an eventual improvement in swallowing (*Health Technol Assess* 2006; Vol. 10:2).

Other research includes a £1.1 million clinical trial due to publish in December 2008 (project ref. 01/73/03) which has assessed whether hypertension or hypotension immediately post-stroke can be therapeutically treated, and improve post-stroke prognosis. Elevated blood pressure (BP) levels are common following acute stroke and may have an adverse effect. Previous data has suggested that both high and low blood pressure levels in the acute stroke period are associated with a poor short and long-term prognosis. Researchers reduced blood pressure in patients with hypertension and acute cerebral infarction or haemorrhage with labetalol or lisinopril. In ischaemic stroke patients with "low" blood pressure they raised blood pressure with phenylephrine.

Rehabilitation

Fifty per cent of those who suffer a stroke are left with problems moving and using their arms and legs and speech problems. The HTA programme has recognised that there is a need for research into this area and has commissioned four research projects to address this.

An HTA study, published in 2008, has reviewed the existing literature on the clinical and cost-effectiveness of repetitive task training for people who survive a stroke (*Health Technol Assess* 2008; Vol. 12:30). Researchers assessed whether training stroke patients to repeat a series of movements over and over again would help them to recover use of their arms and legs and, in turn, help them to use their arms and legs to do activities such as walking or dressing. They found that some form of repetitive functional task practice could be effective in improving lower limb function at any time after stroke, but how long this would last is unclear.



A multi-centre randomised controlled trial and resource utilisation study is currently evaluating the clinical and cost-effectiveness of using botulinum toxin in the treatment of upper limb spasticity due to stroke (project ref: 02/41/06). Over 300 patients have been recruited to the trial and randomised to receive botulinum toxin injections to the arm plus a four week upper limb therapy programme, or the upper limb therapy programme alone. The upper limb therapy programme consists of upper limb therapy for one hour per day, two times per week, in addition to other rehabilitation needs.

The HTA programme has also commissioned research to assess the clinical and cost-effectiveness of communication therapy for people with dysarthria (difficulty with motor speech production) or aphasia (difficulty understanding or expressing the spoken or written word) (project ref. 02/11/04). These are both common problems which can affect stroke patients. The £1.4 million clinical trial is the first trial of its kind. To discover whether improved communication is due to the specialist skills of a therapist or the time spent with the patient, researchers are providing half of the participants with early speech and language therapy, and the other half are being visited by a non-therapist.

Reducing uncertainty

The HTA programme's research portfolio has added significantly to the evidence base in the areas of prevention and screening, treatment and rehabilitation, and the causes of stroke. More than £6 million has been invested in 23 pieces of key research, such as: communication therapy and repetitive task training for people who have suffered a stroke; feeding policies for patients in hospital after stroke; a comparison of two different interventions to reduce the risk of stroke; and the management of stroke patients on either stroke units, general wards or at home.

Alongside the research already commissioned the HTA programme has been working with the Stroke Research Network to encourage researchers to submit proposals for stroke and dementia research through its researcher-led funding stream. Five applicants in the area of stroke have been shortlisted to submit a full proposal.

The HTA programme's portfolio of stroke research demonstrates its ability to meet the demonstrable need of the NHS for research-based evidence that other funders – both commercial and public sector – have not met.

References

1. Department of Health. National Stroke Strategy, December 2007. Available online at: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyandguidance/dh_081062

Appendix

Project title and selected key journal papers (click on the project title of your choice to view further details):

Screening for stroke.

HTA ref: 93/05/02. *Research Type: Secondary Research (e.g. systematic review)* Published

Cost-effectiveness of screening for hypercholesterolaemia versus case finding for familial



hypercholesterolaemia.

HTA ref: 95/29/04. *Research Type: Secondary Research (e.g. systematic review)* Published

Outputs from this project

- Marks, D; Wonderling, D; Thorogood, M; Lambert, H; Humphries, SE; Neil, HAW. **Cost-effectiveness analysis of different approaches of screening for familial hypercholesterolaemia.** BMJ 2002; 324: 1303

Cost and quality implications of the organisation of vascular services.

HTA ref: 94/20/01. *Research Type: Secondary Research (e.g. systematic review)* Published

The cost effectiveness of magnetic resonance angiography: carotid artery stenosis and peripheral vascular disease.

HTA ref: 97/13/04. *Research Type: Secondary Research (e.g. systematic review)* Published

A systematic review of the effectiveness, cost effectiveness and barriers to implementation of thrombolytic and neuroprotective therapy for acute ischaemic stroke in the NHS.

HTA ref: 98/02/02. *Research Type: Secondary Research (e.g. systematic review)* Published

Outputs from this project

- Kwan, J; Hand, P; Sandercock, P. A systematic review of the barriers to delivery of thrombolysis for acute stroke. Age & Ageing Journal 2004; 33: 116-121 DOI: 10.1093/ageing/afh064.
- Sandercock, P; Berge, E; Dennis, M; Forbes, J; Hand, P; Kwan, J; Lewis, S; Neilson, A; Lindley, R; Thomas, B; Wardlaw, J. Cost-effectiveness of thrombolysis with recombinant tissue plasminogen activator (rt-PA) for acute ischaemic stroke in the NHS. Stroke 2004 Jun;35(6):1490-7. Epub 2004 Apr 22.
- Kwan, J; Hand, P; Sandercock, P. Improving the efficiency of delivery of thrombolysis for acute stroke: a systematic review. Quarterly Journal of Medicine; 97(5):273-9.

A policy for the drug treatment of high blood pressure.

HTA ref: 93/05/01. *Research Type: Secondary Research (e.g. systematic review)* Published

What is the best imaging strategy for acute stroke?

HTA ref: 96/08/01. *Research Type: Primary Research (e.g. trial)* Published

Outputs from this project

- Keir, SL; Wardlaw, JM. Systematic review of diffusion and perfusion imaging in acute ischaemic stroke. Stroke 31:2723-2731.
- Wardlaw, JM; Dennis, MS; Warlow, CP; Sandercock, PAG. Imaging appearance of the symptomatic perforating artery in patients with lacunar infarction: occlusion, or other vascular pathology? Annals of Neurology Vol: 50, Pages: 208-215.
- Guy, S; Wardlaw, JM. Who writes guidelines, and who should? Clinical Radiology 2002; 57:891 - 897.
- Keir, SL; Sandercock, PAG; Wardlaw, JM. Antithrombotic therapy in patients with any



form of intracranial haemorrhage: a systematic review of the available controlled studies. *Cerebrovas Dis* 2002; 14:197-206.

- Keir, SL; Wardlaw, JM; Warlow, CP. Stroke epidemiology studies have underestimated the frequency of Intracerebral haemorrhage. A systematic review of imaging in epidemiological studies. *Journal of Neurology*, 2002; 249: 1226-1231.
- Wardlaw, JM; Keir, SL; Dennis, MS. The impact of delays in computed tomography of the brain on the accuracy of diagnosis and subsequent management in patients with minor stroke. *Journal of Neurology, Neurosurgery & Psychiatry*, 2003; 74: 77-81.
- Keir, SL; Wardlaw, JM; Bastin, ME; Dennis, MS. In which patients is diffusion-weighted magnetic resonance imaging most useful in routine stroke care? *Journal of Neuroimaging* 2004 Vol. 14 Number 2 pages 118-122.
- Wardlaw, JM; Seymour, J; Cairns, J; Keir, SL; Dennis, MS; Sandercock, PAG,. Immediate Computed Tomography Scanning of Acute Stroke Is Cost-Effective and Improves Quality of Life. *Stroke* Vol. 35, Number 11, November 2004, pages 2477-2483.
- Seymour, J; Cairns, J; Wilkie, A; Sandercock, P; Wardlaw, J. Geographical access to imaging facilities for stroke patients in Scotland. *Health Place* 2006 Dec: 12(4): 617-30 Epub 2005 Sep 29.

Clinical effectiveness and cost-effectiveness of clopidogrel and modified-release dipyridamole in the secondary prevention of occlusive vascular events: a systematic review and economic evaluation.

HTA ref: 02/24/01. *Research Type: NICE Technology Assessment Report (TAR)* published

A randomised controlled trial and cost-effectiveness study of systematic screening (targeted and total population screening) versus routine practice for the detection of atrial fibrillation in people aged 65 and over: The SAFE study.

HTA ref: 96/22/11 *Research Type: Primary Research (e.g. trial)* published.

Outputs from this project

- Mant, J; Fitzmaurice, DA; Hobbs, FDR; Jowett, S; Murray, ET; Holder, R; Davis, M; Lip, GYH. Accuracy of diagnosing atrial fibrillation on electrocardiogram by primary care practitioners and interpretative diagnostic software: analysis of data from screening for atrial fibrillation in the elderly (SAFE) trial. *BMJ*.
- Fitzmaurice, D; Hobbs, FDR; Jowett, S; Mant, J; Murray, E; Holder, R; Raftery, J. **Screening versus routine practice in detection of atrial fibrillation in patients aged 65 or over: cluster randomised controlled trial.** *BMJ*. 2007 Aug 25; 335(7616):383. Epub 2007 Aug 2.

Clopidogrel used in combination with aspirin compared with aspirin alone in the treatment of non-ST-segment-elevation acute coronary syndromes: a systematic review and economic evaluation.

HTA ref: 02/24/02. *Research Type: NICE Technology Assessment Report (TAR)* published

A controlled comparison of alternative strategies in stroke rehabilitation.

HTA ref: 93/03/26. *Research Type: Primary Research (e.g. trial)* published

FOOD - A multicentre international randomised trial to evaluate percutaneous endoscopic gastrostomy and nasogastric tube feeding in patients admitted to hospital with a recent



stroke.

HTA ref: 96/29/01. *Research Type: Primary Research (e.g. trial)* published

Outputs from this project

- Dennis, M. Performance of a statistical model to predict stroke outcome in the context of a large, simple, randomised, controlled trial of feeding. *Stroke*; 2003; 34, 1, 127 - 133.
- Dennis, M. Poor nutritional status on admission predicts poor outcomes after stroke. *Stroke* 2003;34:1450-1456.
- Krespi, Y. Does routine oral nutritional supplementation for hospitalised stroke patients improve their outcome? Results of the FOOD trial. *Clinical Nutrition*.
- The FOOD Trial Collaboration; Clarke, J; Cranswick, G; Dennis, MS; Flaig, R; Fraser, A; Grant, S; Gunkel, A; Hunter, J; Lewis, S; Perry, D; Soosay, V; Williams, C; Williamson, A; Young, A,. Routine oral nutritional supplementation for stroke patients in hospital (FOOD): a multicentre randomised controlled trial. *Lancet* Volume 365 26 February 2005 pages 755-763.
- The FOOD Trial Collaboration; Clarke, J; Cranswick, G; Dennis, MS; Flaig, R; Fraser, A; Grant, S; Gunkel, A; Hunter, J; Lewis, S; Perry, D; Soosay, V; Williams, C; Williamson, A; Young, A,. Effect of timing and method of enteral tube feeding for dysphagic stroke patients (FOOD): a multicentre randomised controlled trial. *Lancet* Volume 365 26 February 2005 pages 764-772.
- Bardutzky, J. Review of feeding acute stroke patients. *Aktuelle Neurologie*.

Accurate, practical and cost-effective assessment of carotid stenosis in the UK.

HTA ref: 01/37/03. *Research Type: Secondary Research (e.g. systematic review)* published

Outputs from this project

Wardlaw, JM; Chappell, FM; Best, JJK; Wartolowska, K; Berry, E. Non-invasive imaging compared with intra-arterial angiography in the diagnosis of symptomatic carotid stenosis: a meta-analysis. *The Lancet* vol 367, issue 9521, 6 May 2006- 12 May 2006 , Pages 1503-1512.

What is the cost effectiveness of self-monitoring and self-management of anticoagulation treatment compared with clinic based monitoring?

HTA ref: 05/33/01. *Research Type: Secondary Research (e.g. systematic review)* published

Alteplase for acute ischaemic stroke.

HTA ref: 06/51/01. *Research Type: NICE Evidence Review Group Report (ERG)*

Intravenous magnesium compared with sotalol for prevention of atrial fibrillation after coronary artery bypass surgery.

HTA ref: 07/18/01. *Research Type: HTA Technology Assessment Report* published

The long term effects of biofeedback treatment for essential hypertension in adults.

HTA ref: 07/04/01. *Research Type: HTA Technology Assessment Report* published



Controlling hypertension and hypotension immediately post-stroke (CHHIPS) trial.

HTA ref: 01/73/03. *Research Type: Primary Research (e.g. trial)*

Outputs from this project

- The, CHHIPS Trial Group. CHHIPS (Controlling Hypertension and Hypotension Immediately Post-Stroke) Pilot Trial: rationale and design. *Journal of Hypertension* 2005 Mar;23(3):649-55.
- Mistri, AK; Robinson, TG; Potter, JF. Pressor Therapy in Acute Ischemic Stroke: Systematic Review. *Stroke Journal of the American Heart Association*.

What is the clinical effect and cost effectiveness of treating upper limb spasticity due to stroke with botulinum toxin?

HTA ref: 02/41/06. *Research Type: Primary Research (e.g. trial)*

Relapse prevention in NHS stop smoking services: Current practice, potential effectiveness and cost effectiveness.

HTA ref: 06/32/01. *Research Type: Secondary Research (e.g. systematic review)*

Assessing the effectiveness of Communication Therapy in the North West (the ACT NoW study).

HTA ref: 02/11/04. *Research Type: Primary Research (e.g. trial)*

Asymptomatic Carotid Surgery Trial-2 (ACST-2): an international randomised trial to compare carotid endarterectomy with carotid artery stenting to prevent stroke.

HTA ref: 06/301/233. *Research Type: Primary Research (e.g. trial)*

A systematic review of repetitive task training with modelling of resource use, costs and effectiveness.

HTA ref: 05/17/04 *Research type: Secondary Research (e.g. systematic review)*