Strokematters

The STROKE Association

POLICY AND PRACTICE · NEWS · RESEARCH · DEBATE

ISSUE 9 NOVEMBER 2010

Internet therapy: is it the future?

4 Using the web to rehabilitate stroke patients with reading problems

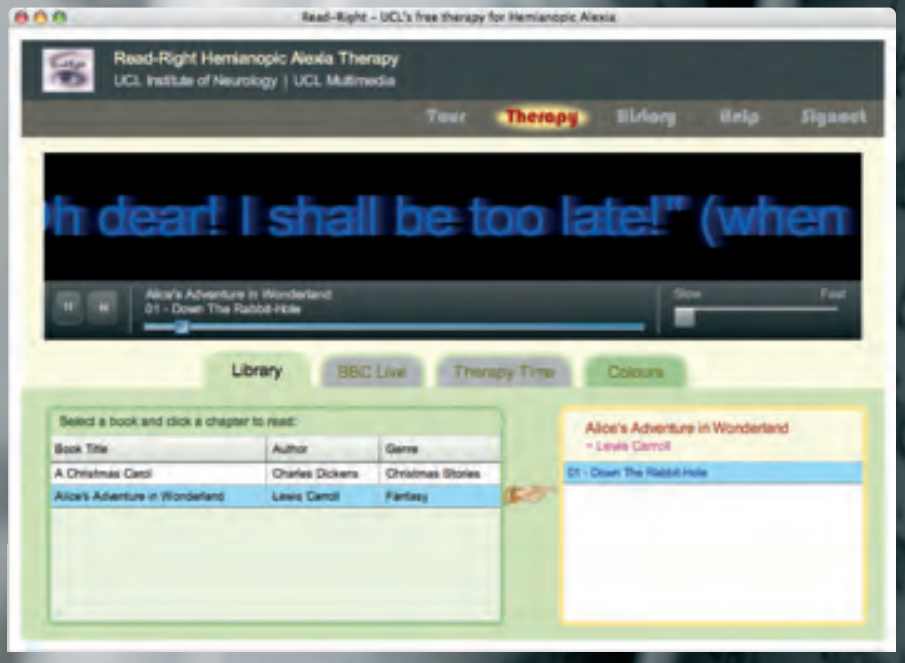
3 A very early rehabilitation trial

6 KYBP campaign's astronomical growth

8 Deficit unawareness in acute stroke

10 SIGN 118: rehabilitation, prevention, management and planning

15 Recovery of motor function after stroke



20 years on and still Dystinctive.

SHARING
your experience

IPSEN *Creating your solution*

Date of preparation: May 2010
DYS08102

Celebrating 2010 years
Dysport®
CLOSTRIDIUM BOTULINUM TYPE A
TOXIN-HAEMAGGLUTININ COMPLEX

DYSPORT® Prescribing Information
Presentation: Vials of 500 units of *Clostridium botulinum* type A toxin-haemagglutinin complex. **Indications:** The treatment of focal spasticity, including: arm symptoms associated with focal spasticity in conjunction with physiotherapy in adults; and dynamic equinus foot deformity due to spasticity in ambulant paediatric cerebral palsy patients, 2 years of age or older. Spasmodic torticollis, blepharospasm and hemifacial spasm in adults **Administration:** Dysport should only be injected by specialists who have had administration training. Blepharospasm and hemifacial spasm, reconstitute 500 units in 2.5mL normal saline. Spasmodic torticollis and focal spasticity, reconstitute in 1mL. **The units of Dysport are specific to the preparation and are not interchangeable with other preparations of botulinum toxin.** Posology: The dose should be lowered for patients with low muscle mass or in whom the suggested dose may result in excessive weakness. See SPC for recommendations. Adult arm spasticity: The recommended dose is 1000 units in total, distributed among the most active arm muscles; biceps brachii (300-400 units); flexor digitorum profundus (150 units); flexor digitorum superficialis (150-250 units); flexor carpi ulnaris (150 units); flexor carpi radialis (150 units). Sites of injection should be guided by standard EMG locations, although actual sites will be determined by palpation. All muscles should be injected at one site, except for the biceps which should be injected at two sites. Paediatric cerebral palsy: Starting dose is 20 units/kg body weight given intramuscularly as a divided dose between calf muscles. Subsequently the dose may be titrated between 10 and 30 units/kg body weight, depending on response. If only one calf is affected, the dose should be halved. The maximum dose administered must not exceed 1000 units/patient. Injections may be repeated approximately every 16 weeks or as required to maintain response, but not more frequently than every 12 weeks. Spasmodic torticollis: The initial recommended dose is 500 units given intramuscularly as a divided dose to the two or three most active neck muscles, which will likely include splenius capitis and sternomastoid. The split amongst muscles will vary according to the type of torticollis diagnosed. Doses within the range 250-1000 units are recommended. Injections should be repeated approximately every 12 weeks or as required to prevent recurrence of symptoms. Blepharospasm and hemifacial spasm: The initial recommended dose is 120 units per affected eye; injections are given subcutaneously, medially and laterally into the junction between the preseptal and orbital parts of both the upper and lower orbicularis oculi muscles of each eye. Injections should be repeated approximately every 12 weeks or as required to prevent recurrence of symptoms. Subsequently the dose may be reduced to 80 units per eye and then to 60 units by omitting the medial lower lid injection. **Contra-indications:** Dysport is contraindicated in individuals with known hypersensitivity to any component of Dysport. **Warnings and precautions:** Patients with a history of dysphagia and aspiration should be treated with extreme caution. Dysport should be used with caution in patients with subclinical or clinical evidence of marked defective neuromuscular transmission. Patients and their care-givers must be warned of the necessity of immediate medical treatment in case of problems with swallowing, speech or respiratory disorders. Patients treated with therapeutic doses may experience exaggerated muscle weakness, especially in those with underlying neurological disorders. Dysport should be used under specialist supervision in such patients only if the benefit is considered to outweigh the risk. Careful consideration should be given to the use of Dysport in patients with a history of allergic reaction to a product containing botulinum toxin type A or in patients with prolonged bleeding times, infection or inflammation at the proposed injection site. Dysport contains a small amount of human albumin. The risk of transmission of viral infection cannot be excluded with absolute certainty following the use of human blood products. Antibody formation to botulinum toxin has been noted rarely in patients receiving Dysport. The recommended posology and frequency of administration for Dysport must not be exceeded. Dysport should only be used to treat a single patient during a single session. **Interactions:** Drugs affecting neuromuscular transmission may enhance the effect of botulinum toxin and should be used with caution. **Pregnancy and lactation:** Safety in this patient group has not been demonstrated. Dysport should not be used unless clearly necessary. **Effects on the ability to drive and use machines:** Dysport may impair the ability to drive or operate machinery in case of adverse reactions such as muscle weakness and eye disorders. **Side effects:** Side effects may occur due to deep or misplaced injections of Dysport temporarily paralysing other nearby muscle groups. In general, adverse events reported in clinical trials included: *common*: generalised weakness, fatigue, flu-like syndrome, pain/bruising at injection site; uncommon: itching; *rare*: neuralgic amyotrophy, skin rashes. Side effects related to spread of toxin distant from the site of administration have been reported (exaggerated muscle weakness, dysphagia, aspiration/aspiration pneumonia, with fatal outcome in some very rare cases). (See section 4.4 of the SPC). Arm spasticity *Common*: dysphagia, arm muscle weakness, accidental injury/falls. Paediatric cerebral palsy Common: diarrhoea, vomiting, leg muscle weakness, urinary incontinence, abnormal gait, accidental injury due to falling. Spasmodic torticollis *Very common*: dysphagia; common: dysphonia, neck muscle weakness; *uncommon*: headache, diplopia, blurred vision, dry mouth; *rare*: respiratory disorders. Blepharospasm and hemifacial spasm *Very common*: ptosis; *common*: facial muscle weakness, diplopia, dry eyes, tearing, eyelid oedema; *uncommon*: facial nerve paresis; *rare*: entropion, ophthalmoplegia. Hypersensitivity reactions have been reported. Prescribers should consult the Summary of Product Characteristics in relation to other side effects. **Overdose:** Respiratory support may be required where excessive doses cause paralysis of respiratory muscles. There is no specific antidote; antitoxin should not be expected to be beneficial and general supportive care is advised. Patients should be monitored for several weeks for symptoms of systemic weakness or muscle paralysis. **Pharmaceutical precautions:** Unopened vials must be maintained at temperatures between 2°C and 8°C. Reconstituted Dysport may be stored in a refrigerator (2-8°C) for up to 8 hours prior to use. Dysport should not be frozen. **NHS Cost:** £308.00 per pack of two 500 unit vials. **POM** PL 06958/0005. **MA Holder:** Ipsen Ltd 190 Bath Road, Slough, Berkshire, SL1 3XE. **Date of preparation of PI:** December 2009. Dysport® is a registered trademark. Ref. DYS07626.

Adverse events should be reported.
Reporting forms and information can be found at www.yellowcard.gov.uk
Adverse events should also be reported to the Ipsen Medical Information Department on 01753 627777 or medical.information.uk@ipsen.com

Strokematters

EDITORIAL BOARD

CHAIR Professor Charles Wolfe Professor of Public Health and Director of R&D, Guy's and St Thomas' NHS Foundation Trust
EDITOR Dr Sharlin Ahmed Research Liaison Officer, The Stroke Association
Dr Ajay Bhalla Consultant Stroke Physician, Guy's and St Thomas' NHS Foundation Trust
Dr Marian Brady Programme Director – Stroke, NMAHP Research Unit, Glasgow
Gill Cluckie Stroke Specialist Nurse, Clinical Lead, Stroke Services, Guy's and St Thomas' NHS Foundation Trust
Dr Peter Coleman Deputy Director of Research and Development, The Stroke Association
Dr Avril Drummond Associate Professor in Rehabilitation and Research Occupational Therapist, University of Nottingham
Dr Nigel Hoggard Senior Lecturer and Consultant Neuroradiologist, Royal Hallamshire Hospital
Professor Masud Husain Professor of Clinical Neurology, UCL
Bridget Penhale Reader, University of East Anglia
Professor Helen Rodgers Professor of Stroke Care, University of Newcastle
Dr David Smithard Consultant Stroke Physician and Director of Research and Development, East Kent Hospitals NHS Trust

Direct enquiries to Sharlin Ahmed at **strokematters@stroke.org.uk**
If you are interested in a free subscription to *Stroke Matters,* visit **www.stroke.org.uk/strokematters**

THE STROKE ASSOCIATION

Stroke Matters is published quarterly by The Stroke Association, Stroke House, 240 City Road, London EC1V 2PR

Phone: 020 7566 0300
Fax: 020 7490 2686
Textphone: 020 7251 9096
www.stroke.org.uk
Stroke Helpline 0845 3033 100

The Stroke Association is registered as a company limited by guarantee in England and Wales No. 61274. Registered charity No. 211015 and registered charity in Scotland No. SCO37789.

AVERT – a very early rehabilitation trial

Professor Peter Langhorne, Geriatric Medicine – stroke care, Glasgow Royal Infirmary

The last 15 years has seen the recognition that stroke patients who are managed in a specialist multi-disciplinary stroke unit are more likely to survive, return home, and regain independence.

The reasons for this benefit are unclear because stroke unit care consists of a complex package. However, there are good reasons to believe that one important part of the stroke unit 'package of care' is early mobilisation – getting stroke patients up sitting, standing and walking as soon as possible. Early mobilisation has been a key feature of practice in a number of the pioneering stroke units (particularly Scandinavia) and advice on early mobilisation is provided in many clinical practice guidelines. However, we do not yet have robust evidence to show that a policy of early mobilisation in itself makes a substantial impact on improving patient outcome. Nor do we fully understand the practicalities and health economic impact of applying such a policy in routine healthcare.

The AVERT (A Very Early Rehabilitation Trial) programme was developed in Melbourne, Australia, under the leadership of Dr. Julie Bernhardt. This has progressed over several years from observational studies to a small pilot randomised controlled trial (based in Australia) and to an international multi-centre randomised controlled trial in several countries. The AVERT programme is comparing a policy of very early mobilisation (ensuring stroke patients are up, sitting, standing and – if possible – walking, within 24 hours of stroke ▶

Early mobilisation is an important part of the stroke unit 'package of care'

▶ onset) versus standard stroke unit care. The primary outcome (used to judge effectiveness of this policy) is independent survival (Rankin Score 0-2) at three months post-stroke. However, the trial is also collecting information on mobility activity, length of stay in hospital, complications, quality of life and independence up to one year after stroke.

The AVERT programme is currently recruiting in ten sites across Australia in addition to sites in New Zealand, Singapore, Malaysia and the United Kingdom. In the United Kingdom, recruitment began in Scotland in 2009 (with support from Chest Heart & Stroke Scotland) and in Northern Ireland in 2010 (with support from the Northern Ireland Chest Heart & Stroke). However, there is a lot of interest in the AVERT programme across the UK, so in early 2010 The Stroke Association awarded funding to provide UK-wide support for the programme. The intention is to recruit a total of 15 to 20 sites across the whole of the UK. We already have significant expressions of interest from almost 30 sites and new site initiations are planned. The aim is to continue recruiting participants into AVERT until the end of 2012 by which point we plan to have recruited over 300 patients from the UK and 2,000 across the world.

In addition to addressing the main AVERT question, there are a number of related projects such as those looking at early mobilisation in patients who have received ('clot-busting') thrombolysis, the effect of early mobilisation on mood, and practical aspects of implementation of early mobilisation. ■

Using the internet to rehabilitate stroke patients with reading problems

Dr Alex Leff, Senior Lecturer and Honorary Consultant Neurologist, University College London (Institute of Cognitive Neuroscience, Institute of Neurology)

Hemianopia is common after stroke

Visual field loss, of which hemianopia is the commonest pattern seen, affects about a third of all patients with stroke.[1] Unlike many other impairments spontaneous recovery of vision appears to stall after about six months.[2] While there has been a lot of effort put into trying to restore useful vision in people with hemianopia, the current evidence suggests that this does not occur.[3] This means that long-term visual impairment affects a great deal of people. This has an impact on a whole variety of activities of daily living, with driving (98%), shopping (94%), financial management (89%), and meal preparation (50%) at the top of the list when people with hemianopia were recently surveyed.[4] The reason financial management is placed so high is because hemianopia often compromises reading ability, so patients have problems reading financial statements, even though their ability with mathematics is usually unaffected. The good news is that there is an effective, clinically proven behavioural therapy that helps improve reading speed in such patients, and it is now available for free at **www.readright.ucl.ac.uk**

Why text reading is slowed by hemianopia

When you read text, as you are doing now, you need to pay attention to the words coming up so that you can plan your reading eye-movements efficiently.[5] English reading patients with a right-sided hemianopia will tend to have problems with this as they do not get enough information about the shape and position of the ensuing words on the line. Patients with left-sided hemianopia are less severely affected.[6] The rehabilitation for this

ABOVE Simulation of the visual effect of hemianopia

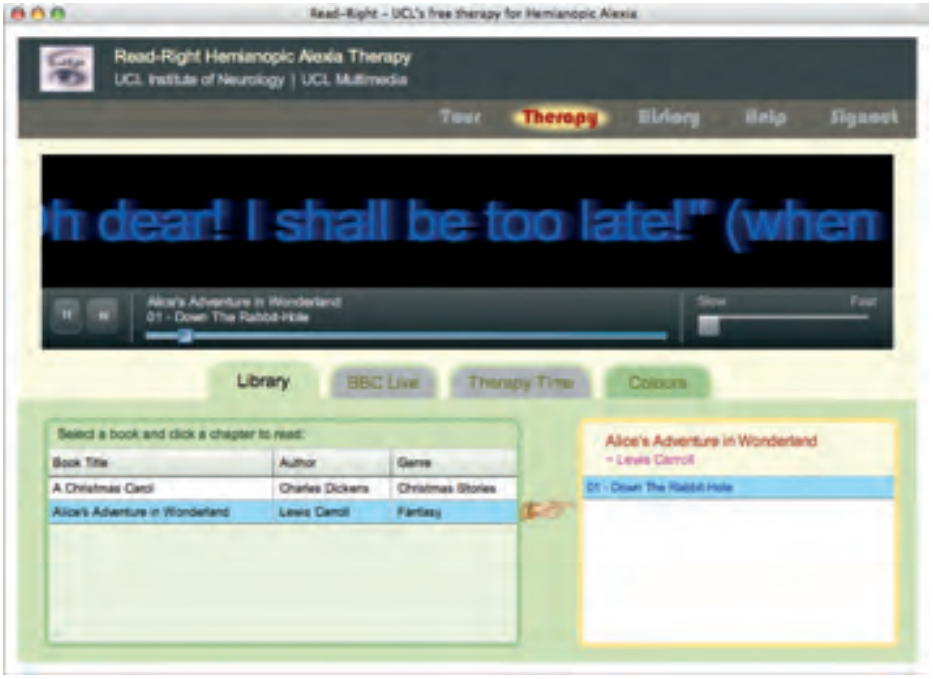
condition (hemianopic alexia or HA) depends on learning to make compensatory reading eye-movements. This can be done by practising reading animated text that scrolls from right-to-left. Therapeutic improvements can be seen in as little as 5 to 15 hours of practice, spread out over a few weeks.[6-8]

The development of moving text therapy

The first group to study this was from Munich in the late 1980s. Patients in this original study came into the hospital to practise reading moving text on a specially set up computer with a therapist on hand.[7] In my own study, which compared practising reading moving text to a control condition, practising 'spot-the-difference' puzzles, we used video cassettes. We recorded a variety of Sherlock Holmes stories (as they were out of copyright) onto VHS tapes at different speeds. When patients got bored with the material or needed a faster version, we would post them another tape. When this study confirmed the beneficial effects of reading moving text, I wanted to make the materials widely available to any suitable patients. This is where the UCL Multimedia department came in.

Harnessing the internet

It soon became apparent that the best way to make the moving text therapy available was to use the internet. We applied to The Stroke Association to fund a web-developer (Yean-Hong Ong) who built a suitable application to do this. We also thought that as well providing the therapy we would need to develop some online tests of visual function (visual field test) and reading speed so that users could see if practising the therapy was having any impact on their reading speeds when they moved back to normal, static text. After solving many technical problems, the site went live in June 2010 and has been used extensively by patients with HA since.



ABOVE Moving text therapy can now be accessed free online – and preliminary data suggests that the internet can deliver such therapy effectively and conveniently

Available texts

As well as providing a variety of books for patients to read (and not just Sherlock Holmes stories any more, both JK Rowling and Terry Pratchett have kindly donated text from their best-selling novels), we also have links to the BBC website so that news, sport, business and science stories that change every day can be accessed.

Who will benefit?

Patients with HA have otherwise normal language functions. While HA is the commonest reading impairment caused by stroke, it is not the only one.[9] The second commonest is alexia associated with a general language disorder (aphasia) and there are other, rarer conditions, such as 'pure' alexia where patients cannot easily identify words that are in their field of view. The read-right therapy will only help patients with a hemianopic component to their reading disorder.

Internet therapy – the future?

As well as feeding back to patients how they are getting on, we are also using the data to see if a simple behavioural therapy like this can be delivered over the internet effectively, the preliminary data suggests that it can. This would be a big step forward as one of the main issues for any type of behavioural therapy (e.g. speech therapy) is practising for enough hours to make the difference. By making the rehabilitation materials available online patients can access them at their own convenience and without having to travel, which is very likely to increase the all-important practice effects. ■

For references in this article, please visit **www.stroke.org.uk/strokematters**

News from The Stroke Association

The Stroke Association is the only UK charity solely concerned with combating stroke in people of all ages. We fund research into prevention, treatment and better methods of rehabilitation and help stroke survivors and their families directly through our Rehabilitation and Support Services. We also campaign, educate and inform to increase knowledge of stroke at all levels of society, and we act as a voice for everyone affected by stroke.

KYBP campaign experiences astronomical growth

The Stroke Association's Know Your Blood Pressure (KYBP) campaign aims to raise awareness among the general public that high blood pressure is the biggest risk factor for stroke and create a national database of blood pressure statistics.

We offer free blood pressure tests and provide participants with information about the risks of high blood pressure, stroke prevention, and The Stroke Association. As the umbrella campaign for The Stroke Association's prevention activity, the initiative is run UK-wide and information is provided on atrial fibrillation and the FAST test at all events.

ABOVE We estimate that we've tested about 73,000 blood pressures in the first nine months of this year

KYBP has experienced astronomical growth this year – 862 events have been registered, ranging in size from taking 16 blood pressure tests to taking over 300. KYBP blood pressure testing stalls have popped up in offices, shopping centres, supermarkets, gyms, hospitals and town halls all over the UK, and with the average number of blood pressures tested at each event being 85 we estimate that The Stroke Association has been involved in testing the blood pressure of approximately 73,000 people in the first nine months of 2010!

If you want to get involved in this exciting campaign and either run a KYBP event or volunteer at an event local to you then please contact Kate Allan on **kate.allan@stroke.org.uk** or **020 7566 1536**.

Know Your Blood Pressure

NHS Inform – a useful resource for patients

NHS Scotland launched a new on-line health information service for patients called NHS Inform in August 2010. It is important that health professionals know about this resource and encourage patients to use it.

The service provides a single source of quality-assured health information for the public in Scotland including the following features:

- health A-Z
- common questions
- a support service directory and
- health zones.

NHS Inform plans to develop a Stroke Zone in the near future and The Stroke Association in Scotland will be working with Chest, Heart and Stroke Scotland and NHS Inform to develop this. The proposed Stroke Zone will include information and links to key organisations – including local services.

For more information about NHS Inform visit **www.nhsinform.co.uk** or call **0800 22 44 88**

Driving forward the stroke agenda at the UK Stroke Forum Conference

At this year's UK Stroke Forum Conference a number of renowned international speakers will present their latest research, including Dr Mark Parsons, Senior Staff Specialist in Neurology at John Hunter Hospital, Newcastle, Australia. Mark will give a talk and interactive workshop, featuring case studies, on the benefits of CT perfusion imaging.

CT perfusion is a relatively new imaging technique that is being increasingly used in the assessment of acute ischaemic stroke patients. This dynamic form of CT scanning generates images that can be processed to show maps of perfusion to the brain. It is theoretically possible from these maps to identify how much brain is at risk of infarction (i.e. penumbra) and how much is irreversibly damaged (infarct core). This knowledge should allow us to better select patients for acute treatment, especially thrombolysis, as well better predict the likelihood of treatment response.

The Princess Margaret Memorial Lecture will be delivered this year by Professor Marion Walker and Associate Editor of *The Observer* Robert McCrum and will address the subject of 'Improving Life after Stroke'.

The focus on life beyond the acute phase is timely as political drivers and stroke services strive to promote successful discharge from hospital and to deliver care and support to those who require it. Encouraging individuals to take responsibility for their own lifelong stroke recovery is actively encouraged by healthcare professionals, but how we achieve this remains uncertain. The involvement and commitment of the NHS, social care and the voluntary sector to work together will be needed, to provide the support required for individuals to lead their lives in the manner they choose. The lecture will address the available evidence base, the challenges and the opportunities available in rebuilding a meaningful life after stroke. Robert will provide a personal reflection on his return to life after stroke.

ABOVE Robert McCrum will provide his personal reflection as a stroke survivor at The Princess Margaret Memorial Lecture

The UK Stroke Forum Conference 2010 runs from 30 November until 2 December at the SECC, Glasgow. Register online at **www.ukstrokeforum.org**
Please note that pre-registration closes on 12 November. Delegates registering on site at the conference will be charged the full fee of £436.

Advance diary date **The UK Stroke Forum Conference 2011 runs from 29 November until 1 December at the same venue.**

ABOVE This year's UK Stroke Forum Conference takes place at the SECC in Glasgow

Atrial fibrillation campaign – a call for supporters

The Stroke Association will be campaigning on the issue of atrial fibrillation in the coming months with major work planned for next year.

If you are a researcher or clinician with an interest in atrial fibrillation and would like to get involved email **campaigns@stroke.org.uk** or phone **020 7566 0317**.

Unawareness of deficit in acute stroke: neuropsychological therapy matters

Dr Aikaterini (Katerina) Fotopoulou, King's College London, (Institute of Psychiatry) and Dr Paul M. Jenkinson, Department of Psychology and Mental Health, Staffordshire University

Motor deficiency is the leading cause of disability following stroke and the main target of neurorehabilitation. However, the co-occurrence of certain cognitive deficits, such as unawareness (lack of insight into one's stroke-induced symptoms) may impede rehabilitation and lead to poor functional outcome.[1] Such patients are unaware of their rehabilitation needs and thus fail to comply with and benefit from interventions.

Unawareness following stroke varies in severity, may concern different functional domains, or be specific to a given deficit (i.e. patients may fail to acknowledge one symptom [paralysis], but recognise another [memory problems]). A prototypical form of unawareness is 'anosognosia for hemiplegia' (AHP); the apparent inability to understand or acknowledge contralesional paralysis. Patients may falsely claim that they moved their paralysed limbs in front of the examiner, despite blatant evidence to the contrary. Some patients even attempt to get out of bed or engage in other activities that are clearly hazardous.[2] AHP is commonly associated with right-hemisphere lesions, although its occurrence after left-hemisphere strokes should not be ignored.[3] AHP is reported to range from 33 to 58% of stroke victims, and persistent AHP may range from 10 to 17%.[2] Sometimes these patients make comments that suggest partial or tacit awareness into their deficits (Fotopoulou *et al*, in press) and hence some clinicians or carers may believe that they are malingering or being 'difficult'. However, these patients typically have genuine (neurologically-induced) unawareness and may even falsely 'experience' their limbs moving.[5]

'...patients may falsely claim that they moved their paralysed limbs in front of the examiner, despite blatant evidence to the contrary. Some patients even attempt to get out of bed or engage in other activities that are clearly hazardous...'

In practice, unawareness is a problem in acute and subacute rehabilitation. Although unawareness is often transient (lasting from days to months) its occurrence at the crucial acute stages can considerably impede rehabilitation.[6] Patients refuse treatments that improve prognosis, e.g. thrombolysis[7] and typically do not take appropriate safety measures.[8] Thus, unawareness is linked to a longer stay in hospital,[9] reduced likelihood of returning to independent living[10] and lower scores on measures of functional recovery.[6] Furthermore, patients with impaired awareness are not amenable to traditional therapy, since they fail to appreciate the necessity for rehabilitation, nor are they realistic about their housing, social and financial needs after discharge. As such, the rehabilitation, reintegration and long-term care of unaware patients is labour-intensive and costly. In addition, about 30% of patients with AHP remain unaware beyond the subacute stage, with even more devastating effects in their recovery.[11] Therefore, it is crucial that the acute rehabilitation of patients with unawareness targets cognitive and emotional problems, in parallel with physical problems.

Unfortunately, there is currently no accepted treatment for patients with motor unawareness, although clinical and experimental studies suggest that improvement and even dramatic recovery is possible.[12] For example, Fotopoulou *et al*[13] reported the first technique to result in a permanent and total recovery of awareness in one AHP patient. They gave a patient with severe AHP visual feedback of her movements (or lack thereof) using a video, i.e. from a third-person perspective (looking at one's body from the outside) and observed immediate recovery of awareness. Recent clinical and neuroimaging studies can explain this effect by suggesting that the neural mechanisms responsible for

ABOVE Patients with anosognosia for hemiplegia may believe that they can move their paralysed limbs despite evidence to the contrary

first- (embodied) and third-person (disembodied) perspectives of one's body image differ.[14] Thus, in at least some unaware patients, brain regions responsible for the representation of the body from a third-person perspective may be spared and may facilitate first-person awareness. Alternatively, the 'off-line' quality of the video replay may facilitate awareness because it allows patients to monitor their own body after they had attempted to perform an action.[5] Interestingly, this recovery was associated with an increase in depressive symptoms.[13] More generally, it has been shown that unawareness and related symptoms are both neurally[4] and subjectively[5] linked with important emotional processes. Thus, building a safe therapeutic rapport with the patient, avoiding direct confrontation when possible, and providing psychotherapeutic or pharmacological treatment against negative emotions may be important parallel considerations.[15,4]

Unfortunately, existing research into unawareness syndromes is of limited appliance to clinical practice and rehabilitation, and remarkably, no systematic studies have been conducted to develop a treatment for stroke-induced unawareness. At least two important factors underlying this lack of research. First, this group of patients is usually disadvantaged by the fact that stroke rehabilitation research frequently excludes patients unable to comply with study procedures because of visuospatial (neglect) or cognitive (awareness) deficits arising from right-hemisphere stroke.[16] Second, although funding for research in the prevention, management and treatment of stroke can be obtained in the UK through several government funding schemes, (e.g. the MRC), funding for research on psychological therapy in stroke patients is much harder to obtain. Neuropsychology and neuropsychological rehabilitation fall in-between physical and mental health fields and thus also in-between the priorities of most funding bodies. For example, studies on neuropsychological rehabilitation are not medical enough for the Medical Research Council, and too medical for the Economic and Social Research Council. This disciplinary disadvantage is also reflected in the provision of psychological services in stroke survivors, despite clear guidelines on their importance.[17] Future research into neuropsychological therapy for unawareness is clearly warranted. ■

'...unfortunately, there is currently no accepted treatment for patients with motor unawareness, although clinical and experimental studies suggest that improvement and even dramatic recovery is possible...'

For references in this article, please visit **www.stroke.org.uk/strokematters**

Stroke patients: rehabilitation, prevention and management of complications, and discharge planning

Lorraine Smith, Chair of the Guideline Development Group for SIGN guideline 118 and Roberta James, Programme Manager, SIGN

SIGN (Scottish Intercollegiate Guidelines Network) has produced quality evidence based guidelines since 1993 and is part of NHS Quality Improvement Scotland.

SIGN guideline No 118 was published in June 2010. It covers general management, rehabilitation, the prevention and management of complications and discharge planning, with an emphasis on the first 12 months after stroke. The guideline complements SIGN 119 *Management of patients with stroke: identification and management of dysphagia* and SIGN 108 *Management of patients with stroke or TIA: assessment, investigation, immediate management and secondary prevention*.

When an individual experiences a stroke, clinical decisions are made about the most appropriate setting for their care, which must acknowledge that each individual stroke patient presents a unique set of problems and potential solutions. Stroke services must be considered at the level of the NHS Board, acute hospitals, primary care and in the patient's own home or care home.

Early assessment, diagnosis and in-hospital treatment of patients with suspected stroke reduces mortality and morbidity. Stroke patients who require admission to hospital should be admitted to a stroke unit and receive 24 hour care by specialist stroke nurses in a stroke unit with a coordinated multidisciplinary team. This should include nursing, medical, physiotherapy, occupational therapy, speech and language therapy and social work staff with a special interest in stroke care. Only when admission to a stroke unit is not at all possible, should rehabilitation be provided in a generic rehabilitation ward on an individual basis. Patients and carers should be actively involved early in the rehabilitation process and provided with active information strategies which include both education and counselling.

The guideline development group reviewed evidence for general rehabilitation principles and specific treatment strategies addressing commoner impairments, limitations and complications after stroke with a range of interventions covered, However, as stroke care is usually delivered by the multidisciplinary team it is useful to consider management and prevention strategies from a more holistic and shared care perspective.

The guideline recommends that patients are mobilised as early as possible after stroke.

Physiotherapists should not limit their practice to one 'approach' should select interventions according to individual need. Where considered safe, pursue every opportunity to increase the intensity of treatment for improving gait. Ankle foot orthoses for use in suitable patients to improve walking speed, efficiency, gait pattern, and weight bearing during stance.

Treadmill training may be considered for people who are walking independently to improve gait speed. To improve functional ambulation, gait oriented physical fitness training may be considered. Repetitive task training may be offered to improve gait speed, walking distance, functional ambulation, or 'sit to stand to sit', where safe and acceptable to the patient.

Occupational therapists should include training in daily living activities as part of an inpatient stroke rehabilitation programme. Splinting is not recommended for improving upper limb function because it does not prevent the development of contractures or improve muscle extensibility.

Nutritional status should be monitored on a continual basis, including swallowing status, nutritional intake, eating assessment and dependence, unintentional weight loss and biochemical measures (eg low prealbumin, impaired glucose metabolism) is recommended. Services caring for patients with stroke should develop and adhere to local urinary and faecal continence guidelines, including advice on appropriate referral.

Cognitive strengths and weaknesses should be fully assessed when patients are undergoing rehabilitation or when returning to cognitively demanding activities such as driving or work. Patients with more complex needs should be referred for specialist neuropsychological expertise. All stroke patients should be screened for visual problems and referred appropriately.

Health and clinical psychology service referral should be considered for patients and carers to promote good recovery and adaptation and prevent and treat abnormal adaptation to the consequences of stroke. The guideline also recommends that all stroke patients should be screened for mood disturbance as early as possible. Patients with post-stroke depression may be considered for treatment with antidepressants on an individual basis following assessment.

Pain severity should be assessed (using a validated pain assessment tool) and treated appropriately as soon as possible. In patients with central post-stroke pain that does not respond to standard treatment, and where clinician and patient are aware of potential side effects, amitriptyline (titrated to a dose of 75 mg) may be considered. If amitriptyline is ineffective or contraindicated, lamotrigine or carbamazepine are alternatives, although they have a high incidence of side effects. Given the complexity of post-stroke shoulder pain, algorithms or an integrated care pathway are recommended for diagnosis and management. In patients at risk of developing shoulder subluxation from having little or no shoulder muscle activity, electrical stimulation to the supraspinatus and deltoid should be considered as soon as possible after stroke.

Vocational activities should be discussed with patients. Early liaison with employers with assessment of the patient's ability to meet the needs of current or potential employment recommended. Patients should be advised that they must not drive for at least one month after their stroke. If there is doubt about a patient's driving ability, referral to the local Disabled Drivers' Assessment Centre is recommended (www.dft.gov.uk/dvla).

Early assessment of discharge needs and patient/carer involvement is important during planning discharge. Patients with mild to moderate stroke should be able to access stroke specialist early supported discharge services in addition to conventional organised stroke inpatient services. Upon leaving hospital, members of the primary care team, community rehabilitation team and care agencies should continue to assess patient progress in partnership with the patient and carer(s). Local expert therapists can advise rehabilitation teams on subjects such as providing relevant information on statutory services such as disability employment advisers at job centres,

In summary specialist rehabilitation is central to successful recovery after stroke. The evidence base for rehabilitation interventions is expanding and challenges traditional patterns of care in many areas. Stroke rehabilitation teams need to adopt these evidence based recommendations and translate them into routine clinical practice.

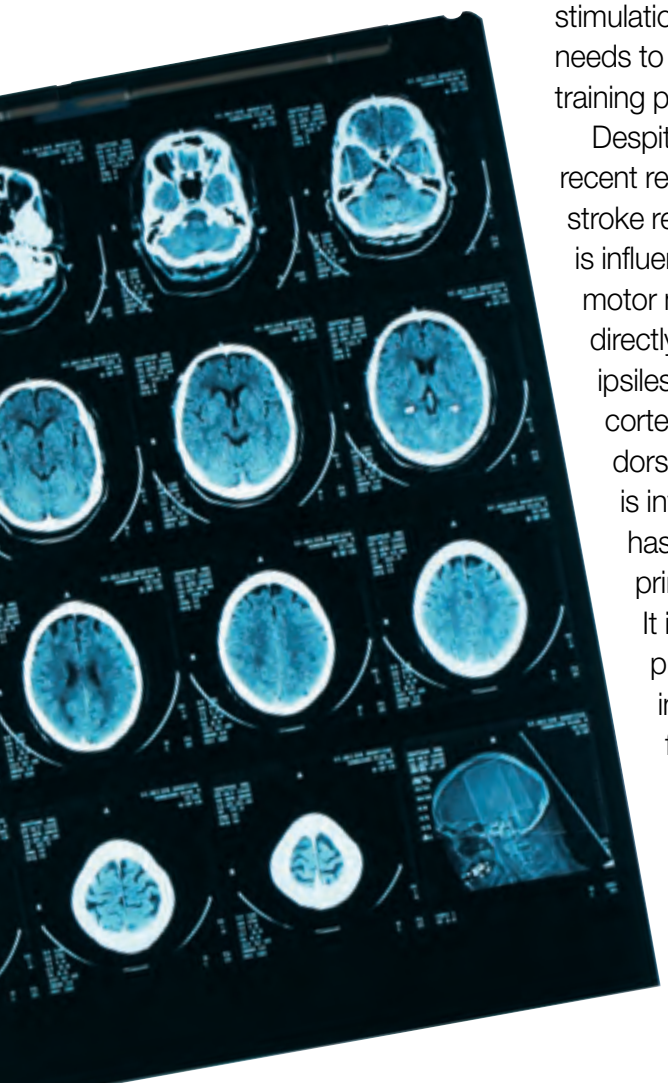
SIGN guideline 118 is at **www.sign.ac.uk/guidelines/fulltext/118/index.html** A patient-friendly version of this guideline will be published later in the year. Continued management of people with stroke and care of the dying and of their family is beyond the scope of this guideline. ■

Acknowledgements
The guideline development group

Recovery of motor function after stroke

Dr Nikhil Sharma PhD, Specialist Registrar in Neurology, The National Hospital of Neurology and Neurosurgery, Queens Square, London

Even years after a stroke, the human brain can still adapt to improve motor function.[1-4] Understanding and influencing this form of neuroplasticity is critical in providing more effective therapies for stroke patients.



Stroke remains the leading cause of long-term motor disability in the world.[5] After stroke, recovery largely depends upon restoring physiological or 'normal' interactions between the undamaged cortical regions of the brain.[1-4] Several groups have reported an abnormal interaction between the primary motor cortex in the affected hemisphere (ipsilesional) and its counter part in the unaffected hemisphere (contralesional).[6-13] Efforts to normalize this interaction and improve motor performance using non-invasive cortical stimulation (Transcranial magnetic stimulation, TMS and trancranial direct current stimulation, tDCS) [14-16, 3, 17, 18] or somatosensory manipulation [1, 19-22] have been successful in small groups of patients and healthy volunteers. However non-invasive stimulation is not useful alone; it needs to be applied with a motor training protocol, to be effective.[23]

Despite these exciting results, recent research suggests that stroke recovery of motor function is influenced by a much wider motor network acting either directly or indirectly on the ipsilesional primary motor cortex.[24-26] For example the dorsal premotor cortex, which is involved in action selection, has a direct influence on the primary motor cortex.[27, 28, 29] It is clear that the dorsal premotor cortex is involved in the recovery of motor function after stroke but the relationship is more complex. The involvement of the dorsal premotor cortex is dependent upon the extent of recovery [25, 30, 31] but unlike the primary motor cortex the hemispheric balance does not relate to motor performance.[32]

LEFT After stroke, recovery largely depends upon restoring 'normal' interactions between the undamaged cortical regions of the brain

In contrast, the prefrontal cortex, which is involved in motor planning, has an indirect effect on the primary motor cortex via the premotor areas.[33] The interactions between these regions are affected after stroke and importantly they relate to motor function. These differences were most prominent during motor imagery (thinking about movement) rather than motor execution[26] and suggests that stroke not only affects movement but also the ability to plan it. There is already considerable interest in using motor imagery and other similar cognitive tasks such as action observation as adjuvant form of rehabilitation.[34-36]

This is an interesting time in the field of stroke neurorehabilitation. New training-based rehabilitative interventions are proving successful even in the chronic stage following stroke.[37, 38] Importantly, new imaging protocols such as functional connectivity,[11, 26] voxel based morphometry (VBM)[39] and diffusion tensor imaging (DTI)[40, 41] are providing new insight into the recovery of motor function. New influences on neuroplasticity such as genetic polymorphisms are being discovered[42] and may provide a novel perspective on recovery. Overall the exploration of the neuroplastic process is likely to result in substantial advances in the path from bench studies to clinical investigations in humans and well-controlled clinical trials in neurorehabilitation. ■

What's new in stroke research?

Outermans, van Peppen, Wittink, Takken, Kwakkel. Effects of high-intensity task-oriented training on gait performance early after stroke: a pilot study. *Clinical Rehabilitation* (published online August 2010).

Summary by Dr Marian Brady

The long-term impact of stroke is significant. We know that at least half of stroke survivors continue to experience significant functional disabilities, including problems walking, a year after their stroke. Intensive, repetitive and functionally relevant task training are now thought to be key components of an effective approach to rehabilitation following stroke.

A single centre randomised controlled pilot study of a high-intensity task-oriented training intervention targeted participants' gait performance following a stroke. A total of 44 participants were randomised to a high-intensity or a low-intensity physiotherapy group in addition to their usual 30 minutes of individualised daily physiotherapy. Both groups participated in a ten-work station circuit training activity for 45 minutes three times per week for four weeks, followed by ten minutes of other activities. Therapy time was matched between groups but the high-intensity groups differed, with a higher number of repetitions and cardio-respiratory workload than in the low-intensity group. Although the outcome assessor was not blinded, the high-intensity group were found to have better walking capacity and walking speed than those allocated to the low-intensity group.

Interestingly, unlike many other high-intensity intervention groups, both groups had a similar number of dropouts for motivational (and overall) reasons. While the findings further support the idea of better outcome measures with more intensive therapy, the authors suggest further clarification is required to explore the contribution of improved motor control when walking and improved cardio-respiratory capacity to improved gait performance.

Carlsson E, Ehnfors M, Ehrenberg, A. Multidisciplinary recording and continuity of care for stroke patients with eating difficulties. *Journal of Interprofessional Care 2010* (May); 24, (3): 298-310

Summary by Bridget Penhale

This Swedish study considered the nature of multidisciplinary stroke care as characterised by the extent of recording by different professional groups in patient records of older people affected by stroke and experiencing eating difficulties and the amount of written information about such difficulties that was transferred with the patient on discharge from hospital.

The research team examined patient notes and discharge summaries for older stroke patients, most of whom were treated on a stroke unit. Fifty-nine records were analysed, using a combination of analytical methods, including categorisation of the phrases used by professionals in their recording.

From the records, evidence of multidisciplinary collaboration relating to the management of eating difficulties was limited. Whilst relevant notes from two physio-therapists were found, nursing staff created over three-quarters of the records (77.8%). In addition, although evidence of appropriate screening for swallowing and body weight was found in most of the patient notes, data on eating and nutritional status was largely absent. Most of the information obtained from the notes concerned swallowing, patients' use of the mouth (for example in chewing) and lack of energy. Whilst eating difficulties were mentioned (by some professional) in more than half of the notes examined, there was little evidence of systematic assessment and few signs of any collaborative inter-professional approaches to eating and nutrition. Care plans appeared to lacked structure and no systematic approach to recording was found. There was scant information in notes or plans about the management of eating for patients. In addition, discharge summaries contained limited and rather poor information about nutritional care and language/ terminology used by professionals involved was generally unspecific. Nevertheless, notes from speech and language therapists were comprehensive and contained detail concerning

patient participation and plans for follow-up.

The researchers suggest that stroke pathways should contain detailed standards for eating assessments, interventions that are profession-specific and for the development of multi-disciplinary collaboration concerning all aspects of care of stroke patients. Further research on professional perceptions of eating difficulties, to determine the extent to which these might differ is also recommended.

Jorge RE et al. Escitalopram and enhancement of cognitive recovery following stroke. *Arch Gen Psychiatry* 2010; 67:187-196

Summary by Professor Masud Husain

It's now well recognised that the burden of cognitive deficits following stroke has a major impact on long-term functional independence, as well as being a risk factor for the development of frank dementia.

The results of this new study, conducted in 129 non-depressed patients recruited within three months post-stroke, suggest that it might be possible to improve cognitive function using drug therapy.

Participants were randomised either to receiving escitalopram (a selective serotonin reuptake inhibitor used clinically as an anti-depressant), placebo or non-drug 'problem-solving' therapy. The three groups were well matched at baseline on measures of cognitive function used in this study.

After a year, patients on escitalopram had higher scores on neuropsychological tests assessing global cognitive function and specifically on tests of verbal and visual memory. Importantly, these changes were associated with improvement in activities of daily living.

These findings offer hope for cognitive enhancement therapy in stroke sufferers. However, although it is appreciated that such studies are remarkably difficult to perform, the results will need verification in a larger sample. It would also be important to establish which sub-groups of stroke patients might be most likely to benefit from such intervention.

Kerr et al. A telephone hotline for TIA and stroke: a prospective audit of a model to improve rapid access to specialist stroke care. *BMJ* 2010; 341; 96-98

Summary by Dr Ajay Bhalla

Given the fact that the risk of stroke after a TIA is highest in the first week, it is vital that neurovascular services are organised promptly to address secondary preventive issues in a timely fashion.

This audit aimed to investigate the introduction of a telephone hotline service 24 hours a day, seven days a week with access to a stroke specialist for subsequent advice and management.

The audit measured access to specialist care and management two years prior to the intervention and two years after.

The introduction of the hotline service reduced the delay in specialist assessment from 13 to three days, although there was a small but significant increase in referrals with stroke mimics. There was an increase in the proportion of stains prescribed as well as a significant reduction in assessment for carotid surgery.

These findings suggest that early specialist access via telecommunication is feasible and effective in urgent secondary prevention and may provide a conduit for triaging patients for hyper-acute care in the future. Whether this model is cost effective in terms of work force requires further evaluation.

Askim T, MØrkved S, Engen A, Roos K, Aas T, Indredavik B. Effects of a community-based intensive motor training program combined with early supported discharge after treatment in a comprehensive stroke unit. *Stroke* 2010; 41:1697

Summary by Dr Avril Drummond

At first glance this paper may be of concern to those campaigning for more therapy. Results from this respected Norwegian team suggest that patients who had increased therapy after their stroke did not perform any better than a control group when compared at six months. However, the trial details are worth examining carefully.

All the participants had been discharged from a stroke unit which focused on early rehabilitation. They were randomly allocated to either a community based 'intensive motor training programme' which was combined with early supported discharge or to a control group who received 'standard treatment'. The intervention group received intensive motor training e.g.

practising sit to stand, step tasks, walking; home exercises were also given. The standard treatment included early supported discharge. The intervention group received approximately 7.5 additional hrs of therapy over the control group and spent 15.5 hrs on home exercises.

The main outcome measure for the study was the Berg Balance Scale at 26 weeks after stroke. Other measures of motor function and the Barthel Index were also measured. The authors report that there were no significant improvements in balance or other measures – although there were some positive trends in favour of the intervention group. Both groups improved over the period.

Although this was generally a well designed and executed trial, it may be that it provides more questions than answers – for example, why the overall emphasis on balance? What about the ceiling effect of the Berg? Was the trial adequately powered? Why use the Barthel to measure function in a community group? The paper should promote further debate around this important topic but the results should be treated with some caution. ■

UK Forum for Stroke Training (UKFST)

Request for reviewers

Do you have an interest in stroke care? Are you a stroke survivor or a friend or relative of a stroke survivor? Or perhaps you experienced in the field of educational accreditation or in stroke care, education or research?

Following its launch in October, the UKFST initiative is looking to establish a group of individuals to undertake reviews of stroke specific courses or training. We are looking to recruit individuals with an interest in stroke care. You could have experienced stroke yourself or through a friend or relative, be involved in the field of stroke care and/or research, be a health, social, community, independent or voluntary care services professional or have some experience in the field of education or accreditation. Your role will be to review applications for endorsement submitted through the UKFST website.

The UKFST, hosted by The Stroke Association, is an initiative to support the development of stroke training and education across the whole of the UK. Allied with the launch of the Stroke-Specific Education Framework (SSEF) by the Department of Health and through the UK Stroke Forum (UKSF), the aim is to present a coordinated strategic approach to workforce development through the endorsement of stroke specific courses and training. Endorsement should provide key benefits, not only for people affected by stroke through improved service delivery and care, but also for those involved at all levels in caring for stroke survivors through transferable education and learning programmes.

If you would like to be part of the UKFST vision in reviewing applications for endorsement please email Brian Brazier at **brian.brazier@stroke.org.uk** for an application pack containing more information on UKFST and the role of a reviewer.

£1 million joint programme grant awarded

The Stroke Association in conjunction with the British Heart Foundation (BHF) has awarded a collaborative programme grant of nearly £1 million every year since 2008. This year the award was funded 78% by the BHF and 22% TSA and was open to applications for research projects concerned with stroke illness but with a cardiovascular link.

This year, the successful recipient of the joint programme grant of £994,464 over five years was Professor Hugh Markus with his project entitled 'How intensively should we treat blood pressure in patients with disease of the small blood vessels in the brain?' This research brings together groups from St George's and Newcastle who have both carried out work over the last ten years to study the relationship between small vessel disease of the brain and cognitive impairment.

Professor Hugh will be presenting his interests on small vessel disease and cognitive impairment at the Royal Lecture in November this year.

dysphagia.org.uk
the new online resource

dysphagia.org.uk is a unique website for anyone affected by or dealing with dysphagia. Supported by leading enteral nutrition and dysphagia experts Fresenius Kabi, it offers helpful information, advice and support.

Visitors will find a detailed guide on living with dysphagia, case studies and a useful list of where to turn for further support.

In addition, there is also comprehensive information on Thick & Easy™, the market leading instant food thickener* which helps provide patients with dysphagia with a varied diet. This ensures not only adequate nutrition, but a better quality of life too. A free recipe book full of ideas is also available for download.

Visit dysphagia.org.uk today

Please contact Fresenius Kabi for further information.

Tel: 01928 533 533
Email: nutrition.service@fresenius-kabi.com
Web: www.fresenius-kabi.co.uk

*IMS market share, April 2010

Thick & Easy™
safer nutrition, safer hydration

FRESENIUS KABI
caring for life

EN00587