JOURNAL AND NEWSLETTER OF THE
**ASSOCIATION OF CHARTERED
PHYSIOTHERAPISTS INTERESTED
IN NEUROLOGY**

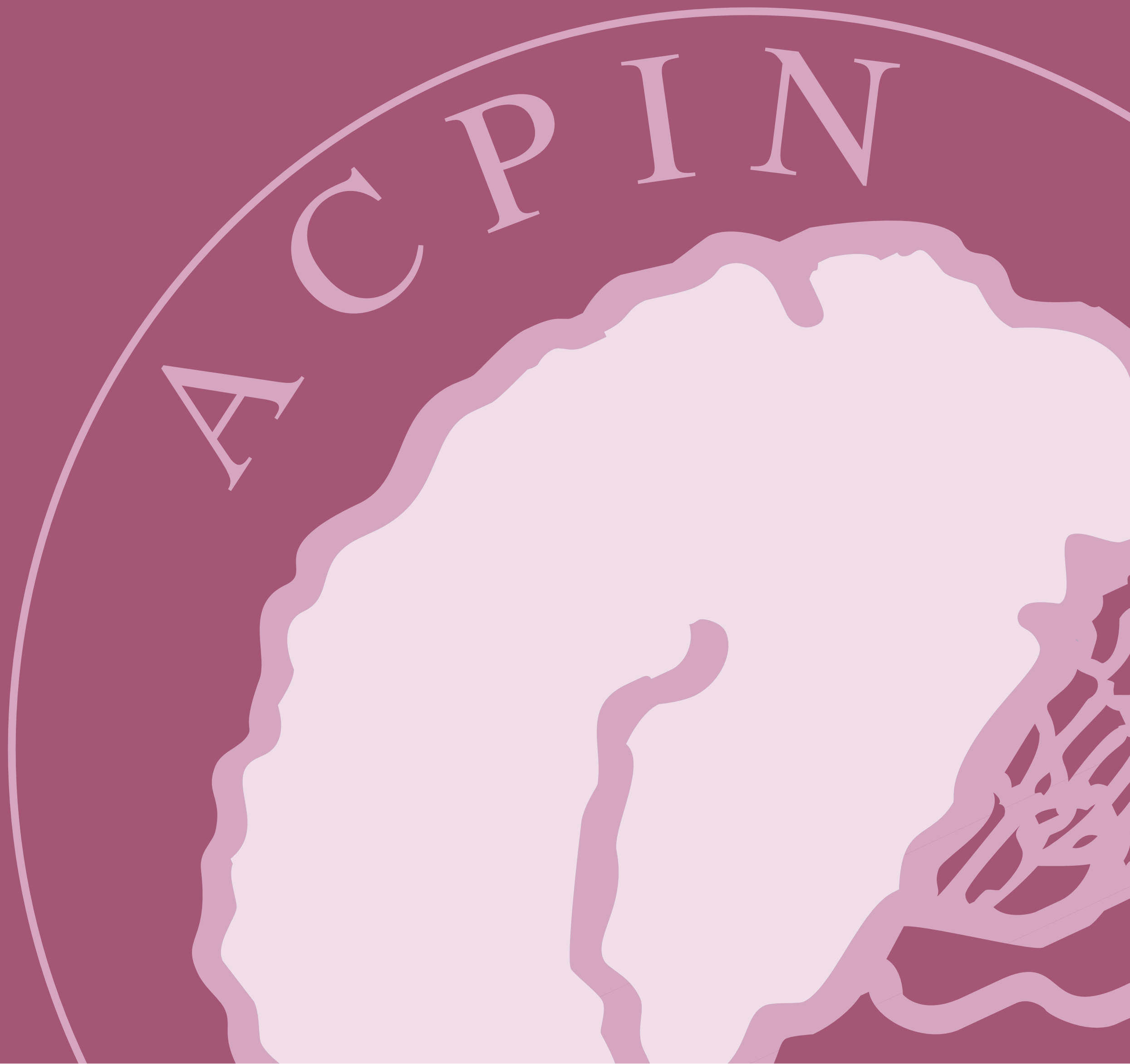
AUTUMN 2000

ISSN 1369-958X

JOURNAL AND NEWSLETTER OF THE **ASSOCIATION OF
CHARTERED PHYSIOTHERAPISTS INTERESTED IN NEUROLOGY**

AUTUMN 2000

Syn'apse



Contents

Articles

Contact addresses

JOURNAL AND NEWSLETTER OF THE **ASSOCIATION OF CHARTERED PHYSIOTHERAPISTS INTERESTED IN NEUROLOGY** **AUTUMN 2000** ISSN 1369-958X

From the Chair...

It is hard to believe that we are nearing the end of yet another year. Each year seems to pass more quickly, this could be the result of ACPIN's increasing workload or the fact that I am getting older!

As always ACPIN has been extremely active and several of our set projects have been completed (see later reports). It has been the year to move house, note my new address. Ros Wade, our *Synapse* co-ordinator, relocated to Exeter last month, hence the slight delay in the production of this issue. Membership has continued to flourish under the new membership renewal procedure. We currently have approximately 1,200 members, which I believe is a record for ACPIN. I would like to take this opportunity to thank you, as ACPIN members, for your support and faith in us as a committee. A membership form for 2001 is enclosed. Please complete and return to Lucy Mees. However, with the growing numbers of members it surprises me that the latest feedback from regional representatives indicates that many groups are experiencing difficulties recruiting committee members. For National ACPIN to thrive the regions must have sound, enthusiastic committees. I urge you to consider joining regional groups, where you will have the opportunity to be part of the bigger picture of ACPIN, and it will allow you to develop professionally.

Our new *Synapse* team, continues to develop, but as always we rely on you as members to forward articles, reviews and case studies so that information can be shared and to expand the evidence base within neurology. More recently, physiotherapy students who have accessed our database for their third year projects will be submitting articles. This sharing of information certainly bridges the gap between under and post graduate education.

The Bobath Memorial Study days were held in June and were extremely interesting. We await the case studies, written by the delegates, for inclusion in future editions of *Synapse.*

So far, three of the planned Athena Neurosciences Study Days have taken place. Feedback has been encouraging and a final report will appear in the Spring 2001 edition.

By the time you receive this copy of *Synapse* the 2nd CSP Annual Congress will have taken place. A full report on our programme 'Neurophysiotherapy : the CNS and Beyond' will be included in the next edition. From the feedback meeting following Congress 1999, ACPIN were under the impression that each CIG could only host two consecutive programmes. Following a year's break further programmes could be submitted. Hence, 2001 sees ACPIN hosting its own residential conference with a plan to submit a programme for Congress 2002.

The programme has now been finalised for the residential conference on the theme of 'Posture and Balance' which will be held from 23-24th March 2001 at the Hilton Hotel, Northampton (formerly Stakis Hotel). See advertisement for further details. To enable as many members as possible to attend we have endeavoured to keep the fees within an affordable band. For the Autumn 2001 a conference will be held on the topic of medicolegal issues. This is still in the planning stage, but we will keep you updated.

As mentioned in the Spring edition, ACPIN was looking into developing its own website, I can confirm that a website has been purchased, www.acpin.net, and at present it is being co-ordinated by Karen Rowland.

The Manual Handling Sub Group, co-ordinated by Anthea Dendy, has developed a pilot package to help members tackle the complex issue of manual and therapeutic handling. The Manual Handling Pilot Package will be distributed to all members early next year. This project was initiated in response to members' requests for more guidance in setting protocols, teaching carers etc. A huge thank you must go to Anthea and her fellow team members for all their tireless work. Presently, regional groups are looking at set transfers and writing up protocols for inclusion in the package.

Nicola Hancock (Hon. Pro), responded on ACPIN's behalf to the CSP regarding the press release on Interferon by NICE, and a report by Tracy Bury is included.

The Research Sub Group are planning to approach the CSP to make their research data base more accessible. Guidelines will then be published on how to access it.

The Clinical Practice Sub Group will commence a new project later this year looking at outcome measures and possibly clinical effectiveness. Again this is another huge topic, which was raised by members, who feel that ACPIN should co-ordinate such a mammoth task. Liaison with the CSP, especially Ralph Hammond, will be required to produce workable guidelines. Watch this space!

This edition sees a first for *Synapse*, a thought provoking editorial by our President Sue Edwards. We thank her for her continued support and encouragement.

A review of ACPIN's business plan will take place in January 2001, following comments by members at Congress.

Finally, a huge thank you must go to all the National Committee members for all their enthusiasm, dedication and hardwork. Remember, it is you the members, that drives ACPIN forward making it a dynamic association, one that you should be proud of.

Linzie Bassett MCSP SRP
Chairperson ACPIN

Address for correspondence:
92 Redacre Road
Boldmere
Sutton Coldfield
West Midlands B73 5EE

EDITORIAL

Sue Edwards, FCSP, SRP

Having been asked to write a short editorial for Synapse and pondered long and hard as to what format this should take, the recent articles regarding the different neurological treatment approaches: Davidson and Waters (2000), Sparkes (2000) and Langhammer and Stanghelle (2000) have virtually forced my hand. Not only is the content of these articles of major interest to neurological physiotherapists but the response by Shelley (2000) and Mayston (2000), to the Sparkes article, have ensured on-going debate.

It appears to be open season on the Bobath concept. In each of the above articles, reference to Bobath is based on the 3rd edition of her book, published in 1990. Key problems identified by Lennon (1996) included the failure of proponents of the Bobath concept to update their theoretical rationale and the absence of published literature by Bobath tutors. Clearly the Bobath approach has strong support in the United Kingdom but information regarding the development of the concept, which has clearly evolved since 1990, is limited to those who are able to attend a course. Physiotherapists cannot argue with comments made regarding what is considered to be the 'outdated neurophysiological basis' of the Bobath approach unless new developments are documented based on current advances in neuroscience.

Sparkes (2000) reviews issues relating to moving and handling in neurological rehabilitation but also criticises the underlying philosophy of the Bobath concept based on the available literature. This prompted a response from both Patty Shelley, Chairperson of the British Bobath Tutors Association (Adults) and Margaret Mayston, Director of the Bobath Centre. Whereas Shelley responds to the moving and handling issues, Mayston summarises the evolution of the Bobath concept and suggests 'should we now go forwards, and not call what we do Bobath?' Perhaps those who consider they have taken the Bobath ideas forwards should consider putting their own name (or another name) to what they do and teach'.

The study conducted by Langhammer and Stanghelle (2000) found that physiotherapy with task orientated strategies, represented by the Motor Relearning Programme (MRP), was more effective than physiotherapy with facilitation/inhibition strategies such as the Bobath programme in the rehabilitation of acute stroke patients. In the MRP group, motor function improved more than the Bobath group, and patients treated stayed fewer days in hospital. Whilst there may be criticism of the study design, it does raise questions in relation to the effectiveness and cost of the Bobath approach. These are questions that are crucial to managers responsible for provision of care who will invariably go for the cheapest option.

The issue of weakness seems to be controversial. To quote from a recent article by Miller and Light (1997) 'Bobath promoted the use of inhibition and facilitation… She suggested that the use of effort with spasticity would only increase co-contraction and reduce co-ordination. She proposed that the "weakness" identified in post-stroke muscle was not real, but was actually a result of the exaggerated co-contraction of opposing muscle groups exhibited by muscles with spasticity'. In March 2000 (ACPIN Conference), I questioned how many neurological physiotherapists would agree with this interpretation. According to the UK national survey conducted by Davidson and Waters (2000), no fewer than 852 out of 973 (88%) of physiotherapists responding to the survey reported that they used the Bobath approach. At that time I suggested that, if I asked 10 people at random who admitted to following this approach, there might not be uniform agreement with regard to the key components of this concept? People undertake courses at different times and have different levels of skill and experience and unless they are constantly updating their practice they may become stuck in a time warp. And who is to know? Is Bobath as taught in 1990 the same as Bobath in 2000?

Both Dr and Mrs Bobath emphasised that theirs was a concept, the rationale of which, must inevitably change. The treatment ideas employed between the 1940s and 1980s were based on the knowledge available at that time. Mrs Bobath was able to improve performance in patients with neurological damage through her handling skills and, with her husband, attempted to present a neurophysiological explanation for the treatment effect. Whilst this may have been acceptable at that time, the ever-increasing availability of knowledge and information related to the control of human movement, surely highlights the need for an updated rationale if Bobath is to maintain its credibility.

Whilst we cannot ignore current clinical practice purely because no one has put pen to paper or carried out a controlled study, we cannot 'unthinkingly and uncritically use unevaluated modalities and skills espoused by charismatic gurus and their disciples' (Hurley 2000). Research evidence indicates that treatment such as resisted exercise training (Miller and Light 1997) and use of the treadmill (Dietz et al 1995, Hesse et al 1995) enhance function and yet it would appear that many therapists are still dubious as to the effectiveness of these interventions (Davies 1999). However, unless evidence is produced to the contrary, on what basis are these treatment approaches considered to be inappropriate?

Therapists need to be cognisant of developments in theories of motor control and adjust their practice accordingly. If what we do as therapists is to be considered valid, a constant process of critical evaluation is required to ensure practice which is evidence based. It is no longer acceptable to base efficacy of clinical practice on belief and feelings. The evidence is there as are ways to measure change; we must use them.

REFERENCES

Davidson I, Waters K (2000) *Physiotherapists working with stroke patients: A national survey*. **Physiotherapy** 86; 7: 69-80

Davies PM (1999) *Weight-supported treadmill training*. **Neurorehabilitation and Neural Repair** 13; 3: 167-169

Dietz V, Colombo G, Jensen L, Baumgartner L (1995) *Locomotor capacity of spinal cord in paraplegic patients*. **Annals of Neurology** 37: 574-582

Hesse S, Bertelt C, Jahnke MT, Schaffrin A, Baake P, Malezic M, Mauritz KH (1995) *Treadmill training with partial body weight support compared with physiotherapy in non-ambulatory hemiparetic patients*. **Stroke** 26: 976-981

Hurley M (2000) *Linking research with practice: the missing link- collaboration*. **Physiotherapy** 86; 7: 339-341

Langhammer B, Stanghelle JK (2000) *Bobath or Motor Relearning Programme? A comparison of two different approaches of physiotherapy in stroke rehabilitation: a randomised controlled study*. **Clinical Rehabilitation** 14: 361-369

Lennon S (1996) *The Bobath concept: a critical review of the theoretical assumptions that guide physiotherapy practice in stroke rehabilitation*. **Physical Therapy Reviews** 1: 35-45

Mayston MJ (2000) Letter. *Motor learning now needs meaningful goals*. **Physiotherapy** 86; 9: 492-493

Miller GJT, Light KE (1997) *Strength training in spastic hemiparesis: should it be avoided?* **NeuroRehabilitation** 9: 17-28

Shelley PA (2000) Letter. *Clarification needed on handling*. **Physiotherapy** 86; 9: 494

Sparkes V (2000) *Physiotherapy for stroke rehabilitation: A need for evidence-based handling techniques: Literature review*. **Physiotherapy** 86; 7: 348-356

The National Institute for Clinical Excellence

Appraisal of Interferon beta / glatarimer for Multiple Sclerosis

Tracy Bury , Head of Research and Development, The Chartered Society of Physiotherapy

The National Institute for Clinical Excellence (NICE) was set up as a Special Health Authority for England and Wales on 1 April 1999. It is part of the National Health Service (NHS), and its role is to provide patients, health professionals and the public with authoritative, robust and reliable guidance on current "best practice". The guidance will cover both individual health technologies (including medicines, medical devices, diagnostic techniques, and procedures) and the clinical management of specific conditions (see http://www.nice.org.uk).

The production of Technology Appraisals is the programme of work that focuses on specific interventions. In prioritising topics for appraisal consideration is given to the priorities of the Department of Health and the National Assembly for Wales, the degree of variation in practice, the extent of clinical need of the patients with a clinical condition and the potential impact on available resources.

The CSP has been asked to submit evidence as part of this appraisal process for a number of interventions. To date, they have mainly focused on drugs or surgical procedures. While this has been the case, the CSP feels that it is important to raise issues that impact on the care that patients receive. This has included raising issues about multi-professional working, patient-focused outcome measures, packages of care and the impact of the effectiveness of one treatment intervention on another. In preparing our submissions we consult with the relevant Clinical Interest Groups and experts in research, identified from the Register of Therapy Researchers.

NICE consults widely in preparing the guidance and commissions a systematic review of the evidence. This is considered by the Appraisal Committee at NICE. Confidential draft guidance is then circulated to those who submitted evidence. The final guidance is then produced and circulated again with the option to appeal the decision. Only once this process is completed is the final guidance made public.

What follows is the CSP's submission on the appraisal of interferon beta/glatarimer for patients with multiple sclerosis (MS). At the time of writing this introduction (August 2000) the final confidential guidance is out for consultation, with the Appraisal Committee due to consider appeals at the end of September. The final decision will be made public as soon as possible after this date.

Executive summary

The use of interferon beta/glatarimer needs to be considered as part of a comprehensive package of care for people with MS.

Patients and their families report the level of rehabilitation and supportive services provided as being inadequate.

Consideration must be given to the use of appropriate outcome measures in studies of interferon beta/glatarimer. This is important in any comparison between these drugs and alternative treatment options.

There is evidence, from randomised controlled trials, to demonstrate that rehabilitation is effective in reducing disability and handicap in people with MS.

Reports from practice indicate that patients taking interferon beta still require physiotherapy input since their drug treatment cannot deal with existing neurological deficit.

If the new drug therapies (interferon beta and glatarimer) bring about a reduction in the number of relapses, there may be a resultant decrease in the MS population's points of contact with members of the rehabilitation team. This risks decreasing access to appropriate therapy, designed to reduce disability and optimise function.

It is important that the provision of drug therapy for people with MS should not be viewed as an either/or treatment option. It is vital that any recommendation for investment in drug therapy should not be at the expense of directing funding away from other essential services and rehabilitation.

Background

Approximately 85,000 people in Great Britain suffer from Multiple Sclerosis (MS). It is most frequently diagnosed in young adults often between the ages of 25 to 35 years. Average life span for those with MS is only marginally shortened, and recognition of the considerable number of years during which those who have MS will live with disability and other MS related difficulties provides a much more realistic picture of the size of the problem. MS causes progressive, irrevocable disability and consequent loss of quality of life for those who have the disease.

It is estimated that MS costs the nation and individuals about 1.2 billion pounds annually (MS Forum, 1995). The cost in personal terms to sufferers and those close to them has not been estimated.

Treatment options

Most new approaches to the treatment of MS are targeted at the control of immune responses and the management of inflammatory events during relapses. Advances in the development of immmunoregulatory drugs have provided a number of new treatment options for MS in recent years. There is evidence to demonstrate that interferon beta delays sustained neurological deterioration in patients with relapsing remitting and secondary progressive MS. The drug, however, is only currently available for those with relapsing remitting disease and not ambulant patients with secondary progressive disease, although licensed for both.

The use of interferon beta/glatarimer needs to be considered as part of a comprehensive package of care for people with MS. It is important that any appraisal of these drugs focuses on the extent to which they are able to alleviate progressive disability and improve quality of life for people with MS.

Since there is no cure for MS, most management strategies are aimed at ameliorating the symptoms of the disease in order to allow the patient to maintain an optimal quality of life. It is well recognised that symptomatic treatment is of vital importance in the management of MS (Shapiro 1994, Petajan & White 1999).

Patients and their families report the level of rehabilitation and supportive services provided as being inadequate (Robinson et al 1996); this is supported by surveys recording levels of services received by people with MS (Hatch et al 1998, McLellan et al 1989, Freeman and Thompson 1999). Unpaid family members frequently provide large amounts of essential care, particularly when the person with MS is more severely disabled.

Rehabilitation services for people with MS are generally poorly funded and patchily provided. Unlike the organisation of stroke rehabilitation, MS rehabilitation rarely takes place in a specialist unit or benefits from input from a specialist team. This is an issue requiring further research.

The physical therapies- physiotherapy, speech therapy, occupational therapy and, more recently, therapeutic nursing - have an important role to play in the management of MS and the well-being of those with MS. Exercise therapies are usually aimed at affecting specific problems associated with MS e.g. muscle weakness, ataxia, spasticity (Olgiati et al 1988) or mobility (Schwidd et al 1997). Physical treatments such as physiotherapy can optimise function and counteract the development of secondary movement problems. Frequently such approaches are accompanied by the use of drug treatments aimed at specific symptoms such as bladder control, tremor or spasticity (Shapiro 1994, Johnson 1996, Petajan & White 1999). Alongside this there is increasing recognition of the importance of the role that strategies to improve physical well being have on mood and psychological status (Petajan et al 1996).

It is as yet unclear whether such therapies are best applied as inpatient intensive rehabilitation, delivered by multi-disciplinary teams, or as less intensive outpatient and home based rehabilitation. A range of therapies including speech and language therapy, occupational therapy and physiotherapy, as well as advice on problems such as bladder dysfunction, fatigue and sexual or psychological disturbances may be needed in different measure by different individuals. It would seem likely then that inpatient goal oriented intensive multi-disciplinary approaches would produce the most effective impact across a range of symptoms. However, this requires further research.

For many sufferers access to such therapies is only available as short-term inpatient treatment, following admission for relapse, with limited outpatient therapy on discharge or advice on home therapies like stretching and mobilising exercises.

Outcome measures

Mobility disability is the foremost concern of those with MS. Scheinberg (1987) stated, ‘When patients are asked what is their major problem, 90% will respond, “Difficulty in walking”’. Any appraisal of interferon beta/glatarimer should therefore include appropriate and detailed assessment (eg De Souza 1999) of the effect of the drug in alleviating mobility disability. Upper limb function is usually quite well preserved in people with MS during the early to middle stages of disease progression. However, when evident, the loss of upper limb and hand function has major effects on physical and social functioning in every day tasks. Loss of bladder and/or bowel control is a severe disabling problem, and is an issue that has been under researched. Incontinence has a major influence on the loss of well being for people with MS, and the impact on personal and social relationships is immense.

Quality of life as an outcome in therapy trials has been measured and shown to improve using the SF36 (Solari et al 1999, Freeman et al 1999). In goal directed therapy such as walking ability (Gehlsen et al 1986, Ogliati et al 1988) or general mobility (Schwidd 1997) specific ambulation measures such as the Hauser ambulation index (Hauser et al 1983) or various walking measures (Jones et al 1997, Lord et al 1998) have been used. Such measures are less frequently used in trials of drug therapies and thus comparison between the two types of study are difficult.

This highlights the importance of using relevant patient-focused outcome measures in any trials that evaluate interventions for people with MS, including drug therapy. In drug trials standard measures are used, such as Kurtze’s Expanded Disability Status Scale (EDSS) (Kurtze 1983), and in recent years, the use of MRI evaluation of numbers and type of lesions has been extensively used as a surrogate marker of the impact of treatment. Drug trials are less likely to include measures of function, quality of life or mental status.

Clinical effectiveness

There is evidence, from randomised controlled trials, to demonstrate that rehabilitation is effective in reducing disability and handicap in people with MS (Freeman et al 1997, Solari et al 1999). These benefits occur in both ambulant and non-ambulant patients.

Beta interferon has been reported in several studies to decrease relapse rate and the rate of development of active CNS lesions detected on MRI scans (eg IFNB MS Study Group & University of British Columbia MS/MRI Analysis Group, 1995). Similar results are reported with Copolymer 1 (glatarimer) (Johnson et al, 1995). Most of the large multi-centre trials of new therapeutic agents have shown considerable impact on MRI detected lesions with reduced numbers of clinically recognised relapses and slowing of progression to higher EDSS values. The EDSS is the only disability score used in drug trials and it does not show an improvement as a result of drug intervention, but maintenance at the same level. The impact of these treatments on disability is less impressive and the nature of the treatments and their various side effects is often interpreted by patients as failure to improve or even worsen quality of life.

Research into the impact of single or multi-disciplinary therapeutic approaches has lagged behind conventional drug trials. This is perhaps not surprising since therapy trials are often designed as goal oriented interventions tailored to the individual and properly blinded controlled studies are difficult to arrange.

Reports from practice indicate that patients taking interferon beta still require physiotherapy input since their drug treatment cannot deal with existing neurological deficit. Also, relapses can continue to occur, albeit less frequently. Physiotherapy is also important, as part of a multi-professional approach, in maximising the patient’s functional potential to get the best effect from the disease-modifying drug.

Cost effectiveness

Holmes et al (1995) concluded from their cost analysis of MS that ‘any future potential therapy should be judged in part on its ability to prolong patient mobility and hence help to facilitate this’. A number of cost-effectiveness studies have been reported however methodological problems make it difficult to draw firm conclusions. A report from the HTA programme is awaited.

Wider NHS implications

It is important that this appraisal identifies those patients most likely to benefit and provides guidance on the use of appropriate assessment procedures and criteria for prescription. We would hope to see the role of education, and processes for ongoing monitoring and support for those prescribed interferon beta/glatarimer highlighted.

If the new drug therapies (interferon beta and glatarimer) bring about a reduction in the number of relapses, there may be a resultant decrease in the MS population’s points of contact with members of the rehabilitation team. This risks decreasing access to appropriate therapy, designed to reduce disability and optimise function.

It is very important that as the new immunotherapies gain ground and are shown to be effective in both early and later stages of MS, added value can be gained by paying more attention to the appropriate delivery of high quality ongoing therapeutic management strategies.

It is important that the provision of drug therapy for people with MS should not be viewed as an either/or treatment option. It is vital that any recommendation for investment in drug therapy should not be at the expense of directing funding away from other essential services and rehabilitation.

It is important that any recommendations arising from this appraisal view rehabilitation and drug therapy as partners rather than as competitors in the allocation of resources.

Acknowledgements

This submission has been prepared with the assistance of experts in research and practice. We gratefully acknowledge the contributions from:

Ms Angela Davies-Smith, Professor Lorraine DeSouza, Dr Jennifer Freeman and Ms Jill Hall.

REFERENCES

De Souza LH (1999) *The development of a scale of the Guttman type for the assessment of mobility disability in multiple sclerosis.* **Clinical Rehabilitation** 13, pp476-481

Freeman JA and Thompson AJ (1999) *Community services in multiple sclerosis: still a matter of chance.* **Multiple Sclerosis** 5(Suppl 1),Sl3l

Freeman JA, Langdon DW, Hobart JC, Thompson AJ (1997) *The impact of inpatient rehabilitation on progressive multiple sclerosis.* **Annals of Neurology** 42, pp236-244

Freeman JA, Langdon DW, Hobart JC, Thompson AJ (1999) *Inpatient rehabilitation in multiple sclerosis. Do the benefits carry over into the community?* **Neurology** 52, pp52-56.

Gehlsen G, Beekman K, Assamann N, Winant D, Seidle M, Carter A (1986) *Gait characteristics in multiple sclerosis: Progressive changes and effects of exercise on parameters.* **Archives of Physical Medicine and Rehabilitation** 67 pp536-539

Hatch J, Johnson J, and Thompson AJ (1998) *Standards of healthcare for people with multiple sclerosis. Improving healthcare in the UK.* **MS Management** 5(1);16-23

Hauser S L, Dawson D M, Lehrich J R et al (1983) *Intensive immunosuppression in progressive multiple sclerosis: a randomised, three-arm study of high-dose intravenous cyclophosphamide, plasma exchange and ACTH.* **New England Journal of Medicine** 308 1 pp73-80

Holmes J, Madgwick T, Bates D (1995) *The cost of multiple sclerosis.* **British Journal of Medical Economics** 8 pp181-193

IFNB MS Study Group & University of British Columbia MS/MRI Analysis Group (1995)

Johnson KB (1996) *Exercise drug treatment and the optimal care of multiple sclerosis patients.* **Annals of Neurology** 39,422 -423

Johnson KP, Brooks BR, Cohen JA, et al (1995) *Copolymer 1 reduces relapse rate and improves disability in relapse remitting multiple sclerosis; results of a phase III multi-centre double-blind placebo-controlled trial.* **Neurology** 45,pp1268-1276

Jones R, Davies Smith A, Worthington J (1997) *Ambulation*. In: *A Problem Oriented Approach to MS* (Ed: Ketalaer P, Prosiegel M, Battaglia M, Messmer M). **Ucelli Acco Leuven, Amersfoort.**

Kurtzke J (1983) *Rating neurologic impairment in multiple sclerosis: an expanded disability status scale (EDSS).* **Neurology** 33, pp1444-52

Lord SE, Halligan PW, Wade DT (1998) *Visual gait analysis: the development of a clinical assessment scale.* **Clinical Rehabilitation** 12,pp107-119

McLellan DL, Martin IR, Roberts MHW, Spackman A, McIntosh-Michaelis S Nichols S (I989) *Multiple sclerosis in the Southampton district.* **University of Southampton: Rehabilitation Research Unit and Department of Sociology and Social Policy.**

MS Forum (1995) *Economic evaluation of MS*. In: *Psychological Factors in Multiple Sclerosis* (Ed: Arnason B.) **Schering AG.**

Olgiati R, Burgunder.J-M, Mumenthaler M (1988) *Increased energy cost of walking in multiple sclerosis: effect of spasticity, ataxia and weakness.* **Archives of Physical Medicine and Rehabilitation** 69, pp846-849

Petajan JH, Gappmaier E, White AT, Spencer MK, Mino L, Hicks RW (1996) *Impact of aerobic training on fitness and quality of life in multiple sclerosis.* **Annals of Neurology** 39 (4),432-441

Petajan JH, White AT (1999) *Recommendations for physical activity in patients with multiple sclerosis.* **Sports Medicine** 27(3),pp179-191

Robinson I, Hunter M, Neilson S. (1996) *A Dispatch from the frontline: the views of people with multiple sclerosis about their needs. A qualitative approach.* Report for the **Multiple Sclerosis Society.**

Scheinberg LC (1987) *Introduction* In: *Multiple Sclerosis: a guide for patients and their families.* 2nd Edition (Eds: LC Scheinberg and NJ Holland) **Raven Press, New York.**

Schwidd SR, Goodman AD, Mattson DH, Mihai C, Donohoe KM, Petrie MD, Scheid EA, Dudman JT, McDermott MP (1997) *The measurement of ambulatory impairment in multiple sclerosis.* **Neurology** 49; 1419-1424

Shapiro RT (1994) *Symptom management in multiple sclerosis.* **Annals of Neurology** 36;SI23-129

Solari A, Filippini G, Gasco P, Colla L, Salmaggi A, La Mantia L, Farinotti M, Mendozzi L (1999) *Physical rehabilitation has a positive effect on disability in multiple sclerosis patients.* **Neurology** 52, pp57-62

OTHER JOURNALS

The aim of this section is to list the titles of papers which have been recently published in key journals, and which may be of interest to ACPIN members

ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION

• 2000, Volume 81, no 1

- Bond JM et al, *Goal directed secondary motor tasks: Their effects on gait in subjects with Parkinsons disease* pp110-116.
- Bryden AM et al, *Electrically stimulated elbow extension in persons with C5/6 tetraplegia. A functional and physiological evaluation* pp80-88.
- Ching-yi Wu et al, *A kinematic study of contextual effects on reaching performance in persons with and without stroke: Influences of object availability* pp95-101.
- Gross JC, *Urinary incontinence and stroke outcomes* pp22-27.

• 2000 Volume 81, no 2

- Cutter NC et al, *Gabapentin effect on spasticity in MS: a placebo controlled trial* pp164-169.
- Frzovic D, Morris M, Vowels L, *Clinical tests of standing balance: Performance of persons with multiple sclerosis* pp215-221.
- Sampson E, Burnham R, Andrews B, *Functional electrical stimulation effect on orthostatic hypotension after spinal cord injury* pp139-143.
- Skold C, *Spasticity in spinal cord injury* pp144-149.
- Teasell R, McRae M, Finestone H, *Social issues in the rehabilitation of younger stroke patients* pp205-209.

• 2000, Volume 81, no 3

- Detrembleur C et al, *Quantitative assessment of intrathecally administered baclofen in spasticity* pp279-284.
- Dickstein R et al, *Postural sway of the affected and non affected pelvis and leg in stance of hemiparetic patients* pp364-367.
- Hess DW et al, *Predictors of return to work after spinal cord injury. A 3 year multi centre analysis* pp359-363.
- Richardson et al, *Halo vest effect on balance* pp255-257.
- Schindl MR at al, *Treadmill training with partial body weight support in non ambulatory patients with cerebral palsy* pp301-306.
- Schmidt B, Dewald J, Rymer Z, *Stretch reflex adaptation in elbow flexors during repeated passive movements in unilateral brain-injured patients* pp269-278.

• 2000, Volume 81, no 4

- Smania N et al, *The rehabilitation of limb apraxia: a study in left-brain-damaged patients* pp379-388.
- Teasell R et al, *Cardiovascular consequences of loss of supraspinal control of the sympathetic nervous system after spinal cord injury* pp506-516.

• 2000, Volume 81, no 5

- Chen C et al, *Brain lesion size and location: Effects on motor recovery and functional outcome in stroke patients* pp447-452.
- Dean C, Richards C, Malouin F, *Task-related circuit training improves performance of locomotor tasks in chronic stroke: A randomized controlled pilot trial* pp409-417.
- Harvey L, Crosbie J, *Biomechanical analysis of a weight relief manoeuver in C5 and C6 quadriplegia* pp 500-505.
- Hayes et al, *Classifying incomplete spinal cord injury* pp644-652.
- Janssen YJM et al, *Chair configuration and balance control in persons with spinal cord injury* pp401-408.
- Phillips B, Lo S, Mastaglia F, *Muscle force measured using 'break' testing with a hand-held myometer in normal subjects aged 20-69 years* pp653-661
- Robinson-Smith G et al, *Self care self efficacy, quality of life and depression after stroke* pp460-464.

• 2000, Volume 81, no 6

- Gosselink R et al, *Respiratory muscle weakness and respiratory muscle training in severely disabled multiple sclerosis patients* pp747-751.
- Liaw M et al, *Resistive inspiratory muscle training: Its effectiveness in patients with acute complete cervical cord injury* pp752-756.
- Wandel A et al, *Prediction of walking function in stroke patients with initial lower extremity paralysis: The Copenhagen stroke study* pp736-738.

• 2000, Volume 81, no 7

- Dursun E et al, *Glenohumeral joint subluxation and reflex sympathetic dystrophy in hemiplegic patients* pp944-946.
- Kennedy P, Rogers P, *Anxiety and depression after spinal cord injury: A longitudinal analysis* pp932-937.
- Miyai I et al, *Treadmill training with body weight support: Its effects on Parkinson's Disease* pp849-852.

AUSTRALIAN JOURNAL OF PHYSIOTHERAPY

• 2000, Volume 46, no 1

- Dean C, Mackey F, Katrak P, *Examination of shoulder positioning after stroke: A randomised controlled pilot trial* pp35-42.
- El-Ansary D, Adams R, Ghandi A, *Musculoskeletal and neurological complications following coronary artery bypass graft surgery: A comparison between saphenous vein and internal mammary artery grafting* pp19-26.

BRITISH JOURNAL OF THERAPY AND REHABILITATION

• 2000, Volume 7, no 2

- Al-Khawaja I, *An overview of spasticity rehabilitation* pp54-60.
- Kilbride C, McDonnell A, *Spasticity: the role of physiotherapy* pp61-64.
- Mustapha N, Botulinum *Toxin-A and motor point injection* pp65-72.

• 2000, Volume 7, no 3

- Hawley, C, Stilwell J, Davies C, Stilwell P, *Post-acute rehabilitation after traumatic brain injury* pp116-122.

- Hewison F, *Establishing a rehabilitation outreach team* pp106-111.

- Stevenson D, *Rehabilitation outreach: a grounded theory study* pp112-115.

• 2000, Volume 7, no 4
- Hogan K, Orme S, *Measuring disability: A critical analysis of the Barthel Index* pp163-167.

• 2000, Volume 7, no 5
- Mulhall A, *Evaluating qualitative research for evidence-based medicine* pp230-235.

• 2000, Volume 7, no 7
- Legg L et al, *A Multidisciplinary research agenda for stroke rehabilitation* pp319-324.

■ CLINICAL REHABILITATION

• 2000, Volume 14, no 1
- Ada L, Canning C, Dwyer T, *Effect of muscle length on strength and dexterity following stroke* pp55-61.

- Andrews A, Bohannon R, *Distribution of muscle strength impairments following stroke* pp79-87.

- Holt RR et al, *Ground reaction force after a sideways push as a measure of balance in recovery from stroke* pp88-95.

- Kersten P et al, *A questionnaire assessment of unmet needs for rehabilitation services and resources for people with multiple sclerosis: Results of a pilot survey in five European countries* pp42-49.

- Kwakkel G et al, *Accuracy of physiotherapists and occupational therapists early predictions of recovery after severe middle cerebral artery CVA* pp28-41.

- O'Hara L et al, *A delphi study of self care in a community population with multiple sclerosis* pp62-71.

- Richards S et al, *Inter-rater reliability of the Barthel ADL index: how does a researcher compare to a nurse?* pp72-78.

- Smith SJ, Ellis E, White S, Moore A, *A Double-blind placebo-controlled study of botulinum toxin in upper limb spasticity after stroke or head injury* pp5-13.

- Snels I et al, *Treatment of hemiplegic shoulder pain in the Netherlands: Results of a national survey* pp20-27.

- Sonde L et al, *Low TENS treatment on post stroke paretic arm: A 3 year follow up* pp14-19.

- Williams Andrews A et al, *Distribution of muscle strength impairments following stroke* pp79-87.

• 2000, Volume 14, no 2
- De Bruin ED et al, *Longitudinal changes in bone in men with spinal cord injury* pp145-152.

- Dowswell G et al, *Unpacking the black box of a nurse led stroke support service* pp160-171.

- Gaubert CS et al, *Inter-rater reliability of the Nottingham method of stereognosis assessment* pp153-159.

- Goulding R et al, *Evaluation of the benefits of monitoring fluid thickness in the dietary management of dysphagic stroke patients* pp119-124.
- Laufer Y et al, *Weight-bearing shifts of hemiparetic and healthy adults upon stepping on stairs of various heights* pp125-129.

• 2000, Volume 14, no 3
- Edmans J, Webster J, Lincoln N, *A comparison of two approaches in the treatment of perceptual problems after stroke* pp230-243.

• 2000, Volume 14, no 4
- Hanger H et al, *A randomised controlled trial of strapping to prevent post-stroke shoulder pain* pp370-380.

- Langhammer B, Stanghelle JK, *Bobath or Motor Relearning Programme? A comparison of two different approaches of physiotherapy in stroke rehabilitation: A randomized controlled study* pp361-369.

- Pollock A, Durward B, Rowe P, Paul JP, *What is balance?* pp402-407.

■ PHYSIOTHERAPY THEORY AND PRACTICE

• 2000, Volume 16, no 1
- Donaghy M, Morss K, *Guided reflection: A framework to facilitate and assess reflective practice within the discipline of physiotherapy* pp3-14.

■ PHYSIOTHERAPY

• 2000, Volume 86, no 2
- Bruton A, Conway J, Holgate S, *Reliability: What is it, and how is it measured?* pp94-99.

- Davidson I, Waters K, *Physiotherapists working with stroke patients: A national survey* pp69-80.

• 2000, Volume 86, no 7
- Sparkes V, *Physiotherapy for stroke rehabilitation: A need for evidence-based handling techniques: Literature review* pp348-356.

■ SCANDINAVIAN JOURNAL OF REHABILITATION MEDICINE

• 2000, Volume 32, no 1
- Geurts A et al, *Systematic review of aetiology and treatment of post-stroke oedema and shoulder-hand syndrome* pp4-10.

- Ladouceur M, Barbeau H, *Functional electrical stimulation-assisted walking for persons with incomplete spinal injuries. Longitudinal changes in maximal overground walking speed* pp28-36.

- Nagaya M, Kachi T, Yamada T, *Effect of swallowing training on swallowing disorders in Parkinson's Disease* pp11-15.

• 2000, Volume 32, no 2
- Koch L et al, *A randomized controlled trial of rehabilitation at home after stroke in south-west Stockholm: Outcome at six months* pp80-86.

■ THE BRITISH JOURNAL OF OCCUPATIONAL THERAPY

• 2000, Volume 63, no 2
- Stephenson S, Wiles R, *Advantages and Disadvantages of the Home Setting for Therapy: Views of Patients and Therapists* pp59-64.

■ PHYSICAL THERAPY

• 2000, Volume 80, no 4
- McNevin NH et al, *Effects of attentional focus, self control on motor learning: Implications for physical rehabilitation* pp373-385.

■ SOCIAL SCIENCE AND MEDICINE

• 2000, Volume 50
- Maclean N, Pound P, *A critical review of the concept of patient motivation in the literature on physical rehabilitaion* pp495-506.

• 2000, Volume 51
- Bendz M, *Rules of relevance after stroke.* pp713-723

ACPIN

A *NATIONAL* ORGANISATION WITH *REGIONAL* COMMITTEES

Are *you* an active member?
This is what you can gain from being an active member of ACPIN.

☐ Network with other colleagues
☐ Learn about research and guidelines being developed nationally and regionally
☐ Reduced costs on courses and study days
☐ Enhancement of your CPD with lectures and study days allowing reflective practice
☐ Social events
☐ Learn how to organise courses and assistance for running courses locally
☐ National and international contacts
☐ Your own copy of synapse including article and book reviews, calender of events,regional reports and a newsletter.
☐ Funding for congress, ARC and conferences/lectures
☐ Information on forthcoming national courses
☐ Expand you horizons and be part of the bigger picture
☐ Discover how ACPIN is developing and being involved in the neurology speciality

Please support you regional committee

Every member is welcome to join the committee and be involved in regional issues and assist in organising programmes for lectures and study days.

For further information contact your local representative.

INFORMATION FROM ACPIN RESEARCH QUESTIONNAIRES

Pam Evans
ACPIN Honorary Research Officer

When we sent out our questionnaire two years ago, we were keen to find out the level of involvement of ACPIN members in research and what you found were some of the constraints. Results from the ACPIN research questionnaire have now been analysed and some of the results which might interest you all are included below.

One of our plans for the future is to use occasional questionnaires to monitor changes in the research activities, confidence levels and attitudes to research of ACPIN members with time. In order to do this we need to avoid any bias which might be caused by influencing you with past results. This only applies to two of the questions from the original questionnaire.

We received 455 completed questionnaires, which at the time represented close to one half of the ACPIN membership. 110 respondents answered ‘yes’ and 345 answered ‘no’ to the question ‘Are you involved in any research activities’?

Of those who were involved in research, 28 were carrying out their own individual research project; 26 were active members of a group carrying out a study; 21 members were assisting in a project run by a physiotherapist; 13 were assisting in a project run by a doctor (we interpreted this as meaning a member of the medical staff); 15 were assisting in a project run by a multidisciplinary team and 3 were assisting in a study run by other professional researchers. A small number of others did not fit into any of these categories.

We asked people to rate their ability to critically appraise research articles (1 = very confident, 5 = not at all confident). 4.9% of you gave yourselves a rating of 1, 13.1% selected 2, 36.2% selected 3, 23.3% selected 4 and 22.5% selected 5. You might not be surprised to know that there was a significant difference between the ratings of the non-researchers and the researchers.

One of the most important questions which we asked members was ‘Have you any strong opinions about how ACPIN can most usefully use its resources to encourage and assist members to do research’? 201 members did not have any strong opinions and 255 responded with suggestions. The responses were used to generate categories and those ideas which were described most frequently are listed below with the number of respondents who mentioned them.

- One day or weekend workshops on how to carry out clinical research – 64
- Provide support for researchers – 34
- Coordinate national or multicentre research projects – 24
- Provide a database – 12
- Increase access to current research / researchers – 40
- Provide contacts between experienced and inexperienced researchers – 8
- Coordinate linking members with similar interests – 19
- Provide suggestions for research projects in areas where they are most needed – 18
- Campaign for time and money to be made available for research – 25
- Provide financial support – 15
- Encourage self-support research groups – 12
- Allow opportunities e.g. evening sessions where ideas/small scale research can be presented and discussed – 14
- Increase the role and accessibility of the Regional Facilitators – 9

It was clear from your responses to the main questionnaire that some of you feel that one thing you would like ACPIN to do is to make information concerning physiotherapists currently involved in research more accessible to members. However, ACPIN, as a special interest group, simply does not have the administrative resources to maintain an up-to-date register - but the CSP does. What ACPIN can do is to ensure that the Society keeps the register in a form which allows as many members as possible to make use of it.

In addition, we asked those of you who were currently participating in research to complete an additional form. We asked only three questions at the time and as a result the amount of detail given by those who responded varied considerably. Nevertheless we collected some very useful information concerning research activities of ACPIN members and a brief summary of this information will follow.

Fifty-three ACPIN members who were involved in research activities responded to our Researcher’s request form. Some of the responses gave detailed information and others gave very little. This made formal classification of all the studies difficult, but we were able to establish that 29 of the projects described were concerned specifically with stroke patients, 4 with head injury patients, 2 with Multiple Sclerosis patients and 1 with patients with Parkinson’s Disease. Members were involved also in more general neurology studies, clinical decision-making studies and in research on cardiovascular function.

The studies included:

- 6 projects evaluating outcome measures
- 6 studies evaluating specific treatment inputs in stroke rehabilitation
- 3 studies examining mobility outcomes/patterns of recovery in stroke patients in relation to either severity of strokes or age
- 6 projects specifically examining gait re-education
- 3 studies relating to the use of botulinum toxin
- 3 studies using EMG to examine changes in motor control

Some of the other studies involved examined:

- the relationship between balance and function
- the relationship between perception and movement; positioning of stroke patients
- the use of electrical stimulation; surveying patient satisfaction
- the use of patient diaries
- the effect of aerobic exercise on functional recovery following head injury
- exercise capacity in PD patients and the effects of improving CV fitness upon fatigue in MS patients.

In some cases very little information was given in relation to the design and methodology of the research, but we have been able to establish that:

- 6 projects were randomised controlled trials
- 1 study was a systematic review
- Experimental methods were being used in many cases
- Several studies involved the use of surveys/questionnaires
- Several single case studies were in progress
- Several audit-related studies were in progress

We have been in discussion with the CSP information services and as a result we should like to pass on some information to you and to make a request. Firstly, the CSP has a database of members who are researching – this is created from the information received from completed copies of the 'CSP Research Database' form, which regularly appears in the Physiotherapy journal. At present this database is a section of the Library Catalogue and it can only be accessed in one of two ways - you can go personally to the Information Centre at the CSP or you can ask the information officers there to search it for you (this is a free service for members). But by early next year the register will be available on the CSP website and potentially accessible to all of you. The register is easy to use, even for those members who still regard computers with considerable suspicion! One could select 'stroke' and 'outcome measures' from the comprehensive subject index and find out that, for instance, four CSP members are researching in that area. It is then easy to call up the full details of each of the researchers.

A database can only be as up-to-date as the information it uses – (apparently only a regular trickle of forms is received from the *Physiotherapy* journal). It is our database, so we need to ensure that the information which we want is available on it. All ACPIN researchers can help to ensure that the information on researchers in Neurology is up-to-date by filling the CSP form. Even if you have filled one out before, if there is any likelihood that the details you gave are now out of date, please fill one in again and send it to the CSP. We have requested that a section to indicate ACPIN membership be added to the form and 'ACPIN' will be added to the subject index as a keyword. Then it will be possible to access ACPIN researchers via the subject index.

We are also considering how best to make available information from members who are involved in research in a more minor capacity or whose research plans are not sufficiently advanced to allow them to fill in the CSP form.

MINUTES OF ACPIN ANNUAL GENERAL MEETING

25th March 2000, Leeds Metropolitan University
Chairperson: **Linzie Bassett**

Linzie Bassett opened the meeting at 12.40pm.

1. APOLOGIES

Pip Boulrer, Janice Champion, Margaret Lewis, Katie Marsland, Rosie Hitchcock.

2. MINUTES OF AGM 1998

The minutes were approved and signed as a true record of the meeting.

3. PRESIDENTIAL ADDRESS

Sue Edwards

Sue opened her address by reporting that the deadline for her book was just 4 days away. Having spent the last 18 months researching it, she felt that she now had a broader prospective of current neurophysiotherapy practice, recent research findings and others' perception of the profession.

She welcomed the opportunity to address the membership and raise two controversial issues on the future of neurophysiotherapy.

Her bottom line question was 'Does physiotherapy work and more importantly, what do physiotherapists actually do?' She also asked what is meant by the term 'conventional physiotherapy' that is often seen in literature. 'Conventional medicine' or 'conventional psychiatry' were not terms used in literature.

Stroke was used as an example to illustrate problems with current literature. There is fairly uniform agreement that physiotherapy is of benefit in the treatment of stroke but there appears to be no evidence that one approach is better that another. Reference was made to Ian Davidson and Karen Waters article in Physiotherapy 'Physiotherapists Working with Stroke Patients – A National Survey' where 88% of physiotherapists reported that they used the Bobath approach to treatment.

Based on these figures, the majority of the ACPIN membership were using the Bobath approach but, Sue asked, could they all agree on what makes up the key components of the concept and would they agree with the references made to it in literature which are based on the third edition of the Bobath book published in 1990?

Sue stated that she was a firm believer in the Bobath approach. Having worked with Mrs Bobath and Jennifer Bryce in the early part of her career, she felt she had an 'amazing' insight into the meaning of the words 'this is not a technique or list of exercises but a dynamic, ever changing concept'. In her opinion it was the handling skills and ability to change patients in treatment sessions demonstrated by Bobath tutors that has provided the strong support Bobath has today.

However she expressed concern that the information regarding the development of the concept, which has clearly evolved since 1990, is limited to those who attend a recent course. New developments needed to be documented and based on current advances in neurosciences. Sue did however, feel that there was light at the end of the tunnel with the commencement of a MSc in Neurophysiotherapy that incorporated the Bobath paediatric course and possibly an adult course at University College London.

The second issue raised by Sue was that of the role of physiotherapists in medico-legal work. She emphasised the view that physiotherapists involved in this work should be experts in their appropriate field. She stated that the CSP does hold a list of expert witnesses which is updated annually and has strict guidelines for physiotherapists carrying out the work but that there was currently no way of policing the system. She felt that some therapists were undertaking work with inadequate knowledge and in so doing, jeopardise the client's case and in her opinion bring the profession into disrepute. Who's responsibility was it to monitor this? She was pleased to hear that ACPIN were planning to look into this issue in the future.

Sue ended her address by relating the issues she had raised back to the topic of the conference – Complex Disability. She asked in the context of medicolegal work, how can we quantify how much and what type of physiotherapy a client will need for the rest of their life? The profession still had a long way to go in providing the scientific evidence that would justify recommended input.

4. CHAIRPERSONS ADDRESS

Linzie Bassett

Linzie opened her address by thanking the National Committee for their hardwork over the past year.

She reported that in June 1999, Martin Watson had resigned as editor of Synapse due to his University work commitments. This was a severe loss to the committee as Martin had worked so hard to raise the profile of the journal. There is now a synapse team co-ordinated by Ros Wade and members were encouraged to maintain the journal's high standard by continuing to send in articles, reviews, case reports and letters so that information could be shared. Ros Wade, Karen Rowland and Louise Gilbert were thanked for their tireless work along with Kevin Wade, the graphic designer.

Jenny Craig, regional representative for Merseyside and Jill Hall, the regional representative for Leeds had also resigned this year and they were both thanked for their time and energy towards ACPIN.

It was reported that following last years AGM, Karen Rowland was appointed Hon. Education Officer and that her first task had been to organise the March 2000 conference.

Linzie went on to thank Sue Edwards for all her support and encouragement as President of ACPIN and informed the membership that Sue has kindly agreed to remain in this position for another year.

ACPIN's membership stands at 1100, in spite of the problems with the pilot membership scheme run by the CSP last year, and it remains one of the largest Clinical Interest Groups. Linzie thanked the membership for their faith and support in the committee.

Members were reminded that the direct debit facility for renewal of membership was no longer in place and that renewal can only take place by forwarding a membership form to ACPIN's database co-ordinator.

A report then followed of the work that ACPIN had been carrying out on behalf of its members:

- In June 1999 ACPIN co-hosted four workshops on Multiple Sclerosis with NANOT and Neuroeducation.
- In November 1999 ACPIN was approached directly by Athena Neurosciences, who had sponsored the Neuroeducation days, to co-host a further six workshops on MS and Spasticity Management in the Community. The study days are being organised for May/June 2000.
- In October 1999 ACPIN joined forces with the CSP for the Annual Congress. The ACPIN programme proved to be very popular, with most lectures having 300 delegates. Linzie reported that ACPIN were looking forward to this year's conference entitled 'Expanding Horizons'.
- The Bobath Memorial Workshops on 'Writing Case Reports' had been organised for June/July 2000 and members were encouraged to take up the free places allocated to each region.
- For 2001 ACPIN were organising two further conferences: a second residential conference in March on 'Posture and Balance' and a study day on 'Medico-Legal Issues' in October.
- Linzie informed the meeting that ACPIN has been involved in the CSP's revision of the Physiotherapy Standards. Core standards had been developed and were currently being piloted. Speciality standards were in the process of being written and Karen Rowland, Anthea Dendy, Tricia Moffitt, Linzie Bassett and Jackie Newitt had all met with Martin Sumner, the Clinical Standards Project Officer, to discuss this document. The speciality standards will be incorporated into the core document.
- As a result of much debate regarding manual handling, Anthea Dendy had volunteered to set up a subgroup that would collate information on risk assessments and plan a study day for later this year. Anthea and Rosie Hitchcock were thanked for co-ordinating this project.
- The latest project that the committee have undertaken is the development of a website for ACPIN. It is hoped that this will allow quicker dissemination of regional and national information.

Members were reminded that this report outlined only some of the work that ACPIN were carrying out and that the ACPIN display board present at the conference had more details.

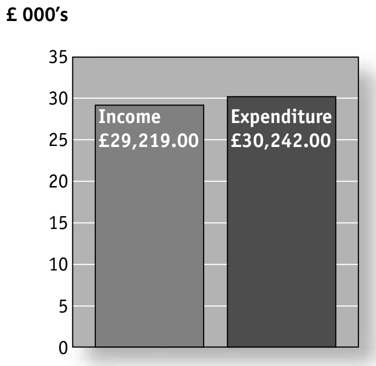
Linzie ended her address by thanking ACPIN members for making it a dynamic organisation that everyone could be proud of.

Following her report, Linzie was thanked by Anthea Dendy for all her hard work as chair of ACPIN.

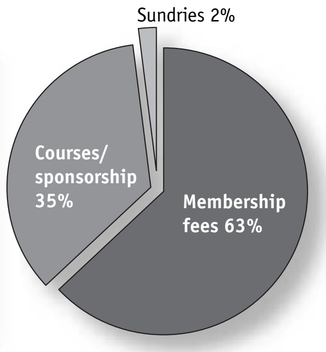
5. TREASURERS REPORT 1999/2000

Patricia Moffitt
ACPIN National Treasurer

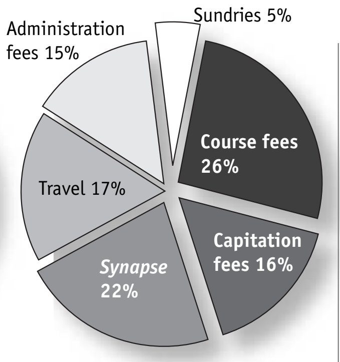
Firstly may I take the chance to publicly acknowledge and thank all regional treasurers for their work to ACPIN and it's



CASH FLOW FOR 1999
Net deficit £1,023.00. It was reported that ACPIN is still awaiting money from the CSP.



MEANS OF INCOME



AREAS OF EXPENDITURE

members over the last year.

Diagrammatic representations of the comings and goings of the National account are shown in the charts above. At the end of the financial year we had a balance of £28,083 (£5000 of which will be used to fund the Bobath Memorial case study workshops in 2000, and a large amount will subsidise the 2001 conference). Copies of the audited accounts are available on request (please contact me directly). I thought it would be useful to show how the membership fee is broken down, especially having increased the membership fee last year.

Breakdown of membership fee

Travel costs	23%	£4:60
Administration	19%	£3:80
Synapse	30%	£6:00
Capitation fees/sundry	28%	£5:60
TOTAL		£20:00

Finally, there is a summary of ACPIN's regional accounts. National ACPIN recommend that regional groups should aim to have an end of financial year balance of approximately £1,000 (maximum of £2,000).

Remember that ACPIN is not a profit-making organisation and regional funds are spent on activities to benefit their local members.

N Ireland	£1,520.52
Scotland	£5,845.64
Merseyside	£1,204.55
Wessex	£1,403.00
Northern	£2,416.17
East Anglia	£1,182.45
North Trent	£1,997.05
Greater London	£3,503.72
South Trent	£1,735.95
Sussex	£989.00
Manchester	£1,315.21
Oxford	£1,020.60
Yorkshire	£2,066.00
South West	£3548.02
West Midlands	£2113.60
Kent	£1129.62
TOTAL	£32,991.10

Accountants: Unanimous vote to retain the current accountants – Langer & Co, 8-10 Gatley Road, Cheadle.

6. NOMINATIONS
Cherry Kilbride, Pam Evans and Tricia Moffitt were each re-elected to serve a further term of office.

7. AOB
None

Meeting Closed at 13.10pm

COMPLEX DISABILITY – ARE YOU MANAGING IT?

ACPIN National Conference 2000
Karen Rowland ACPIN Executive Committee

This thought provoking and interesting day was held on Saturday 25th March at the Beckett Park Campus, Leeds Metropolitan University.

The aim of the day was to provide participants with a multidisciplinary insight into the management of the client with complex disability. The committee felt that this was a subject many therapists would benefit from as these clients can be found in all hospitals throughout the country and their management is variable. The course did prove to be very popular with an attendance of 80 people including a number of non-ACPIN members. It had been decided to provide a programme which gave an overview of important aspects of management in short lectures. The speakers had 30-45 minutes each to provide key issues. Prior to the lectures all participants were given an information pack containing speakers handouts and a list of useful web sites for further information.

The day was a purely theoretical day and we had some eminent speakers from the multi disciplinary fields. We were pleased to welcome the following speakers:

- Professor Lindsay McLellan from the rehabilitation research unit in Southampton
- Sue Edwards President of ACPIN
- Penelope Robinson Director of Professional Affairs, CSP
- Dr Jenny Freeman a research fellow from the Institute of Neurology, Queen's Square
- Amanda Wright, lecturer in physiotherapy, Kings College London
- Kevin Whelan, Research dietitian, Kings College, London
- Dr Simon Fleminger, Consultant Neuropsychiatrist, Lishman Brain Injury Unit
- Ros Wade, Superintendent physiotherapist, Homerton Hospital
- Karen Rowland, Senior Lecturer in Physiotherapy, Sheffield Hallam University.

Sue Edwards set the scene for the day by outlining the client group we were discussing and the areas where these clients needed the assistance from the multi disciplinary team. Sue highlighted with very poignant images the difficulties faced when managing these clients and the pitfalls that can be fallen into. One of the main concerns is who ultimately manages these clients and where does the responsibility lie. Sue also stated that she hoped the day would assist those therapists faced with these challenges on a daily basis.

Professor McLellan followed with a lecture entitled 'Priorities in the prediction and fulfilment of rehabilitation potential'. This lecture encouraged us to look at what is meant by rehabilitation and when this can be identified how we can then measure the outcome. He challenged us to determine what is spontaneous recovery and what is the result of rehabilitation. Using examples of studies already conducted it could be seen that measurements being used do not provide a clear enough picture and hence distorted results. He left us with much food for thought and encouraged us to look to our current practice by stating that practitioners need to think and work within a conceptual framework holding all the essential elements together: potential, prediction, objectives, interaction and outcomes.

Kevin Whelan presented a very interesting session on nutrition which made some of us consider our own nutritional intake carefully. His information on recommended daily calorific intake and a typical patients intake in hospital gave us all food for thought. He indicated the areas where nutritional problems can occur and the role that all members of the team have in identification of these. This lecture was well received as an important topic in terms of rehabilitation.

Amanda Wright then gave a very clear overview of the problems with seating. The areas that she concentrated on were the issues of prescription and the role of seating in the management of complex disability. The complex issues she identified were the patient, family and carers, rehabilitation team, local health authority, regional and national policy and research. One of the biggest issues highlighted was the cost and the variation from region to region which is well known to all health professionals. Amanda provided us with some options which allowed us to all take away ideas and some ways forward in this difficult area.

The last speaker before the AGM was Pen Robinson, director of professional affairs from the CSP.

After our AGM and a good lunch, Ros Wade gave us a case study of a patient with complex disability and took us through the stages in this patients rehabilitation. Through the use of slides and video Ros gave us an overview of the consistent team approach used in the treatment of the patient. This gave the audience a balanced and realistic view of the potential of some of these clients but the multi faceted care approach needed in their management. At this stage of the day it allowed the audience time to assimilate the information given in previous sessions with an actual client.

This was followed by a session which is extremely relevant to all therapists and that is outcome measurements. Dr Jenny Freeman took us through the process involved in the evaluation of treatment and gave us markers and checkpoint stages to consider. One of the most important issues raised was the common mistakes that people fall into, which are included in her abstract (see 'Course review' section).

The next session looked at the idea of using integrated pathways to chart a patients care and to ensure equity. Karen Rowland lead the session which identified what integrated care pathways are and how they have potential value in the rehabilitation process. An example of a pathway for strokes was discussed and all the potential pitfalls and favourable results highlighted. There is no doubt that this can be a way forward for rehabilitation teams in their fight for high quality and equitable care for clients with complex disability.

The day was concluded by Dr Simon Fleminger who discussed the management for behavioural problems. Dr Fleminger provided us with interesting and complex case vignettes to illustrate the difficulties that can occur with changes in behaviour. With each of these vignettes he highlighted many strategies which included patients, families and multidisciplinary team approaches. This is no doubt an area that all therapists in the field of treating complex disabilities must be aware of and illustrated how important it is to have expert input from colleagues in the psychological specialty.

EVALUATION
The responses received from the evaluation forms on the day were extremely positive. Some general comments are listed below:

- Well organised and a good venue although one person felt it should have been in London.
- All participants liked having short, punchy lectures which provided them with information.
- Liked the packs with handouts and further information.
- Very informative and thought provoking day on a topic not often discussed.
- Not one participant felt that any of the sessions were not useful.

Overall there was an overwhelming positive response to the day and the following comment is typical of many: 'an excellent day with plenty of food for thought and action… well done'

STROKE ASSOCIATION

Cherry Kilbride Hon Secretary, ACPIN

ACPIN is continuing to work closely with the Stroke Association on their latest training package about strokes. This teaching module is aimed at increasing the theoretical and practical knowledge on aspects of caring for people who have had strokes and are now resident in nursing homes.

In the autumn two three-day residential training courses will take place ‘to train the trainers’. It is then envisaged that a rolling programme for nursing and care staff will begin.

ACPIN will be involved in the training for trainers module with particular reference to physical needs of the clients.

USEFUL WEB SITES

1. PEDRO - PHYSIOTHERAPY EVIDENCE BASED PRACTICE SITE
ptwww.cchs.usyd.edu.au/pedro

2. ROYAL COLLEGE OF NURSING
www.man.ac.uk/rcn

3. DEPARTMENT OF HEALTH
www.doh.gov.uk

4. MEDLINE DATABASES
www.medportal.com/
www.healthgate.com/HealthGate/MEDLINE/search.shtml

5. COCHRANE SYSTEMATIC REVIEWS
www.update-software.com/clibhome/clib.htm

6. THE LANCET INTERACTIVE
www.thelancet.com

7. WORLD HEALTH ORGANISATION
www.who.int

8. BRITISH MEDICAL JOURNAL
www.bmj.com

9. TRIP (TURNING RESEARCH INTO PRACTICE)
www.gwent.nhs.gov.uk/trip

10. OMNI (organising medical networked information)
www.omni.ac.uk

11. HEALTH ON THE NET
www.hon.ch

12. PUBMED (National Library of Medicine)
www.ncbi.nlm.nih.gov/PubMed

13. ALTA VISTA
www.altavista.digital.com

CSP ANNUAL REPRESENTATIVE CONFERENCE

Nicky Sharman
Eastbourne May 2000

This year’s ACPIN representatives for ARC were Jackie Newitt, Nicky Sharman and Margaret Hewitt.

Unfortunately the ACPIN motion raising concern over the expert witness issue was not accepted but we were asked to second a motion proposed by the Oxford Stewards.

The following is Nicky’s personal account of the event, her first time at ARC.

What a challenge!
To second an a motion asking the CSP to raise the issue of treatment handling with employers to ensure that the risks are reduced in appropriate ways which enable effective rehabilitation to take place.

What an opportunity!
To represent ACPIN and support the Oxford stewards by speaking on this motion to an audience of over 300 physiotherapists.

What was I doing?
This was the first time I had ever done anything like this. Having agreed to be a voting representative for ACPIN, I found myself taking on a more active role than originally anticipated.

ARC 2000 turned out to be a fantastic experience. My eyes were opened to a variety of issues that I might normally have taken only a fleeting interest in. Forty-eight motions were proposed on a wide variety of issues affecting physiotherapy staff, and the debates that followed were challenging and informative. This included the latest developments on Agenda for Change which were presented and discussed extensively in emergency motions. In addition to the motions for debate, the National Group of Regional Stewards had organised fringe meetings on torture victims and ‘zero tolerance’ of domestic violence against women and children. These informative sessions really raised awareness and brought home how prevalent the issues are and how we as a profession can make an impact.

Our motion was carried with no objections and I would like to take this opportunity to thank the supportive ACPIN and Oxford teams who helped me prepare for my three minutes of fame/fear. It was a real group effort - I just had to be the one to get up and speak!

I must admit it wasn’t all hard work… great company, lovely food – all in the best spirit you understand. I can honestly say it was great fun and a nerve racking but very positive experience.

ARC 2001 is to be held in Manchester and the motions submitted for it will be published in *Frontline*. The four ACPIN members who attend this conference need your views on these topics so that they can truly represent the membership in the voting. We urge all members to discuss the motions and let the regional ACPIN committees know your thoughts and opinions.

If you would like to go and represent ACPIN, please contact Nicola Hancock, PRO. (email:Bellhouse@classicfm.net) The ACPIN places are fully funded.

CLINICAL PRACTICE AND AUDIT SUBGROUP

Jackie Newitt ACPIN Committee

Project for 2000 – Bobath Memorial Workshops: Writing Case Reports.

Three workshops have taken place over the summer, run using money from the Bobath Memorial Fund and each had between 15 and 20 participants.

The participants are now in the process of writing up their case reports and we hope to be able to publish some of them in future editions of *Synapse*.

A full report of the workshops will appear in the Spring 2001. *Synapse* along with guidelines on writing case reports that the facilitators have produced.

The group is currently organising a further workshop in Northern Ireland.

LIFE MEMBERSHIP

Linzie Bassett Chair ACPIN

The ACPIN Executive met in July 2000 and agreed to offer Life membership to ACPIN for all our past presidents, in acknowledgement of their term of office and continued support.

We will be contacting each person in the near future.

BALANCE
POSTURE&

ACPIN CONFERENCE & **AGM**
MARCH 23-24th 2001,
HILTON HOTEL, NORTHAMPTON

Papers are invited for the free paper session, and poster presentations will be welcomed.

Please submit an abstract to:
Rosie Hitchcock,
School of Health Professions and Rehabilitation Sciences,
University of Southampton,
Highfield,
Southampton SO17 1BJ.

Closing date:
Monday 5th February 2001.

ACPIN CONFERENCE & **AGM**
NEUROPHYSIOTHERAPY
BALANCE & POSTURE

REVIEWS

Reviews of books and research articles in Synapse are offered by Regional ACPIN groups or individuals in response to requests from the ACPIN committee. In the spirit of an extension of the ERA (Evaluating research articles) project they are offered as information for members and as an opportunity for some members to hone their reviewing skills. Editing is kept to a minimum and the reviews reflect the opinions of the authors only. We give the authors of the original book or paper the opportunity to respond. We hope these reviews will encourage members to read the original article and not simply take the views of the reviewers at face value.

ARTICLES

A THE ACCURACY OF PREDICTING FUNCTIONAL RECOVERY IN PATIENTS FOLLOWING A STROKE, BY PHYSIOTHERAPISTS AND PATIENTS.

Fiona Jones. Physiotherapy Research International _1998, 3(4), p. 244-256_

Lesley Yule BSC, MCSP, Community Rehabilitation Service, North Tyneside, **Jackie Gardiner** BSC, MCSP, Neurological Out-patients Department, Ryhope General Hospital, Sunderland, **Paul Johnson** MCSP, Neurological Rehabilitation, Wansbeck General Hospital, Northumberland, **Diana Jones** BA, MCSP, Research Fellow, Institute of Rehabilitation, Hunters Moor Regional Neurological Rehabilitation Centre, Hunters Road, Newcastle upon Tyne, NE2 4NR

OVERVIEW

This article described a study which aimed to compare how accurate physiotherapists were at predicting functional change compared to stroke patients during the period 6-12 weeks post stroke.

CRITICAL REVIEW

Abstract

A detailed abstract was provided, divided into sections summarising; background and purpose, method, results and conclusions. This helped the potential reader decide on the article's relevance to them. As background it was stated that the use of predictive variables by members of the rehabilitation team had been extensively researched but that there had been little attention paid to the ability of patients to predict their own recovery.

The clinical relevance of patients' ability to predict recovery was not explicitly stated here but most interested clinicians would appreciate the significance of this in the rehabilitation process. Rather than stating a hypothesis the aim of the study was clearly articulated; it was to compare the accuracy of physiotherapists' and patients' predictions relating to recovery after stroke. A clear summary of the method was given, including information about the sample, outcome measures and statistical tests. The major findings of the study were identified and supported by statistical results. Conclusions were summarised with implications for patients' involvement in decision making and in the rehabilitation process.

Introduction

The impact of stroke in terms of causing disability and as a burden on health services, together with the need for health professionals, and therapists in particular to accurately predict recovery was highlighted in relation to recent studies. The clinical judgement and predictive accuracy of physiotherapists was also reviewed in the light of recent evidence. The author pointed out that studies of patients' perceived needs and desires emphasised the need for information and involvement in the rehabilitation process. However there was little or no evidence relating to patients' abilities to estimate degrees of recovery. Therefore by implication the research problem was identified as 'how accurate are patients in comparison to therapists in predicting recovery after stroke?' The rationale for the study was also then clear - in order to effectively engage patients in the rehabilitation process we surely need to know something about their perception of their disability and potential recovery. To address the aim of the study a clear hypothesis was stated, that both physiotherapists and patients would predict functional change accurately within a 6 week period but that physiotherapists would show a higher level of accuracy than patients.

Method

The method section clearly and concisely presented the research procedure. The sample size, population characteristics, method of selection and exclusion criteria were outlined. It was interesting to note dysphasic patients who were able to communicate with gesture or pointing were included in the trial when often these patients miss out on research involvement.

Patients were initially assessed at 5-7 weeks post-stroke using the Rivermead Motor Assessment (RMA), the Dartmouth COOP questionnaire relating to quality of life, and the mini-mental state examination (MMSE), with the follow up assessment taking place six weeks later. However it was not clear when physiotherapy intervention began, what particular approach was used and at what intensity, although we were told that the therapists had been qualified over two years and had specialised in neuro-rehabilitation. The reviewers felt that information about the treatment concepts used would have been helpful as these could have an effect on predictive ability. For example, patients being treated with a task oriented approach may have found predicting future task achievement easier than those being treated using a normal movement approach. However the use of a standardised scale should discount for any differences in approach.

The research procedure was clearly articulated and could be replicated. The validity of the study relies on the selection of the RMA as a valid clinical tool in which items within each section (upper limb, lower limb and trunk, and gross function) are arranged in an order that relates to the natural recovery patterns found in stroke. For those unfamiliar with the RMA some of the sections required close analysis to interpret the clinical use of this hierarchical functional scale. It would have been helpful to have had the RMA provided as an appendix for immediate reference. To ensure consistency of assessment subjects were tested to two levels below the failed task. Once assessed the patients were asked to predict whether they would achieve the last failed item and the next four levels in each of the three sections of the RMA within the next six weeks. For some items descriptors involved complex instructions requiring repeated combinations of movements and patterns in a set timescale. These instructions were often difficult to follow and not always directly related to daily functional activities. Patients with language problems were given additional cues.

Intra-class correlation coefficients (ICCs) were used to describe the association between physiotherapistsí predictions and achieved RMA scores and patients' predictions and achieved RMA scores within each of the three RMA sections. A method of assessing agreement (Bland and Altman 1986) was also employed. Whilst references were provided for both ICCs and assessing agreement (and the reviewers obtained the original papers), a glossary of terms or tests at the end of the article would have been helpful, especially given the difficulty many clinicians have both in understanding statistical results and in obtaining journal articles.

Results

Only the results of the main emphasis of the research, the RMA, were presented. Results were displayed clearly using tables and a graph with good explanations of the figures in the text. RMA scores for all three sections at baseline and follow up were presented using the mean, median, standard deviation , maximum and minimum scores. As the RMA data is in ordinal form the use of the mean must be queried (Bowling 1997). The author explained the significance of all the trends in the data, for example the greater spread of scores from baseline to follow up illustrated by the higher standard deviation. The mean, median and standard deviation of physiotherapist-predicted scores and achieved RMA scores formed one table, with a similar table for patient data. On the basis of mean figures patients' predicted scores were higher than achieved scores in each section, however physiotherapists predicted higher scores for lower limb and trunk and gross function but lower scores for upper limb. A more meaningful picture was presented by a bar chart illustrating median achieved follow-up scores against physiotherapists' and patients' predictions. This showed both physiotherapists and patients to be optimistic in all areas; patients were more optimistic than physiotherapists in relation to upper limb and lower limb and trunk, with physiotherapists more optimistic than patients in relation to gross function.

Two approaches were taken to the relationship between the scores, a measure of correlation or association and a measurement of agreement. Insufficient explanation was given in the article to the difference between correlation and agreement. In addition the description of the proposed method of assessing agreement was confusing. Correlation between physiotherapists' and patients' predicted scores and achieved follow-up scores were uniformly high and well-matched, with the greatest discrepancy in the gross function section. However the measure of agreement showed physiotherapists' predictions were more accurate in each of the three RMA sections than patients'.

Discussion and conclusion

The author states that the hypotheses that both physiotherapists and patients would be able to accurately predict functional change in six weeks were accepted as the forecasts of both 'demonstrated high and significant agreement with achieved follow-up scores'. Use of the word 'significant' here would appear inappropriate as no tests of statistical significance were reported. The hypothesis that physiotherapists would demonstrate a higher degree of accuracy than patients was accepted based on the Bland and Altman (1986) method of assessing agreement. When both correlation and agreement figures are considered together acceptance in relation to the upper limb and gross function section appears appropriate, with reservations in relation to lower limb and trunk.

The author described the upper limb predictions as the most accurate and also the most pessimistic, although these were discussed in relation to the mean. The greater degree of control required for upper limb tasks as opposed to lower limb and the feeling that they contribute less to upper limb recovery were given as possible reasons for physiotherapists' caution. The median values however would suggest that predictions were optimistic. A reference was cited which suggested that therapists were less likely to predict upper limb recovery; the reviewers felt this did not match their experience in practice. The results for lower limb and trunk predictions were found to be similar to those found in other studies in that predictions were more likely to be optimistic than pessimistic.

Difficulties were highlighted with the RMA score in the lower limb and trunk section. Studies were cited mentioning that this section had been found to be unrepresentative of the pattern of recovery after a stroke and that tasks were ambiguous and unfamiliar. These factors were used to explain the weaker level of prediction for activities in this section. It could be argued that this section of the RMA was an inappropriate outcome measure for this study although this was not discussed.

A number of further research questions were identified, for example examining predictions from members of a multidisciplinary team. Several useful clinical implications were identified, including the involvement of patients in goal setting and prediction, making goals functional and relevant, and the need to measure patients as individuals rather than a group.

CONTEXT

The reviewers felt a small amount of information about the context within which the study was conceived and undertaken would have enhanced their understanding. This is now standard in the new format of Physiotherapy.

ACKNOWLEDGEMENT

The reviewers would like to thank the author, Fiona Jones, for responding in detail to

their queries, thereby helping to make their first attempt at writing up team critical appraisal, following the ACPIN Evaluating Research Articles Project, such a worthwhile learning experience for them all.

REFERENCES

Bland and Altman (1986) *Statistical methods for assessing agreement between two methods of clinical measurement.* **The Lancet** February 8, pp307-310

Bowling A (1997) *Research Methods in Health. Investigating Health and Health Services.* **Open University Press.**

Bruton A, Conway JH, Holgate ST (2000) *Reliability: What is it, and how is it measured?* **Physiotherapy** vol 86, no2, pp94-99.

BOOKS

B THE TOTEM POLE AND A WHOLE NEW ADVENTURE

Paul Pritchard, Constable, London 1999

Linda Cargill MCSP

This thrilling book provides a valuable insight into a young man's recovery from a severe traumatic brain injury. Paul Pritchard's book not only provides us with stunning accounts of his life as a rock climber, it also gives a detailed account of his accident on a sea stack called the Totem Pole. It continues with an inspiring account of how he dealt with the terrible consequences of the accident.

The accident left Paul with severe physical, functional, speech and memory problems. His book gives us a detailed account of his recovery including nursing, physiotherapy, occupational therapy, speech therapy and neuropsychology, and the impact that these had on him. He describes highs and lows of his rehabilitation and the struggles he faced accepting the inevitable changes in his lifestyle.

The book concludes a year after the accident with his return to the Totem Pole and his final acceptance of the accident. This is reflected in his description of hemiplegics;

'I could have said that they were suffering from the effects of a stroke, but I would be wrong. They aren't suffering any more. I'm not suffering any more. We have had our lives altered. We are just different'.

This is a fascinating and inspiring book. A must for anyone working in neurorehabilitation.

COURSES

C WHY DO MOVEMENTS INVOLVING ROTATORY COMPONENTS ALTER TONE IN MUSCLE?

Mary Lynch-Ellerington MCSP, SRP

There follows a transcript from lecture notes.

This topic follows on well from the discussions on associated reactions, as one of the main uses of rotatory components of movement is to reduce hypertonicity

A review of the literature was to little avail. Although some quite substantial information is now being gathered on biomechanical changes in muscle there is little written specifically of how and why rotation and/or rotatory components applied to both muscle and joint facilitate an alteration in postural tone either positively or negatively. One piece of published material is by Julie Childs et al on selective trunk mobilisation and its relationship to improved function in an multiple sclerosis patient, and there are two pieces of unpublished work by Cherry Kilbride of the UK and Edwina Reid from Adelaide, Australia.

Kilbride looked at the use of muscle and joint mobilisation to reduce foot hypersensitivity ie positive supporting reaction in the re-education of standing balance, and Reid looked at proprioceptors and their role in proprioceptive neuromuscular facilitation. All studies reported alterations in both postural tone and the resultant ability to make voluntary contraction in a functional activity ie standing.

The definition of rotation taken from the Oxford English dictionary, also used by Brodal (1997), defines rotation as 'movement about an axis where the distal segment travels further than the proximal'.

The importance of rotation in the maintenance of posture and performance of selective movement is discussed by many authors (Lynch and Grisogono 1991, Bobath 1990, Bryce 1972, and Knott and Voss 1968).

Movements involving rotation are to a large extent genetically inherent but at birth immature in performance against gravity.

Movements involving rotatory components exist in all our central pattern generated activities such as reaching and stepping. Therefore rotation is an essential movement component of activities of daily living eg dressing, and basic functions such as eating.

Edwards defines rotation as 'the co-ordinated response between flexion and extension in all planes of movement'. Although lifting begins with a predominance of flexor activity of the trunk and limbs, the acquisition of extension and the ability to combine it with the already present flexor components allows rotation to be performed selectively. For example, learning to sit up from lying demands an increasing progression of rotatory components. In 1993 Alexander et al described this as the activity in terms of the weight bearing side actively working against the surface to maintain extension as the body rotates around its axis. The weight bearing side provides the stability to maintain the posture of the axis while the distal end of the movement the upper limb and lower limb rotate further.

So for rotatory movements to take place a person must be able to generate postural stability against gravity and therefore be able to selectively extend. Postural stability maintains the axis around which the interaction of flexor and extensor components of muscle activity may take place.

Any loss of rotation is a noticeable aspect of impaired movement. Hypotonicity and hypertonicity produce an imbalance of the inter-reaction between flexor and extensor activity which will impair rotation. Rogers (1991) studied the loss of rotation in Parkinson's disease and found increased flexion and a characteristic shuffling gait predominate. However, the solution is not simply to reintroduce rotation, for example by arm swinging activity, but to approach the problem from a muscle imbalance aspect. In encouraging selective extension and improving the anti-gravity activity, flexion and extension can be re-combined to produce rotation.

One of the key features in the upper motor neurone syndrome lesions is a loss of postural stability and hence a loss of selective extension against gravity. Stimulation of the vestibular system improves postural activity against gravity. Kavounoudias et al (1998) looked at the plantar sole of the human foot as a dynamometric map for human balance control.

The first case study presented looked at how mobilisation techniques using selective rotatory components improved both automatic and voluntary knee extension of the ipsilateral limb to facilitate postural stability and therefore an axis from which the other limb can rotate externally to make a step.

Facilitation of the vestibular system through the use of rotatory movements of the foot improves lower limb extension and therefore stepping with rotation.

The patient shown on the video was a male, aged 21 who presented with an incomplete spinal cord injury from 1992. He had been wheelchair dependent (until now), sliding board transfers (now standing), presenting with mass flexor and extensor spasms which were posture specific. He also had poor hand function, poor exercise tolerance and muscle atrophy.

The main points noted from the video were the effect of rotatory components of his right foot to overcome hypersensitivity and the plantar flexion/inversion component which had resulted in his inability to place his heel on the ground, and poor voluntary knee extension.

A second aspect to rotation is the ability for muscles to inter-react to produce flexion and extension components using both Muscles are anatomically organised to facilitate rotation selectively. Muscles that are bi-axial are particularly important in creating postural stability eg quadriceps and latissimus dorsi. However, when they fire inappropriately, as in hypertonicity, they may produce fixation or instability.

Detailed analysis of muscle reveals that even the actin and myosin filaments are organised to produce a torque or rotatory component upon both concentric and eccentric motor activity. It is the controlled contraction of muscle that allows movement of limbs, maintenance of posture and the performance of a variety of tasks, with great precision.

The force produced in contracting muscle and the resulting change in length of the muscle are dependent on factors including the initial length, the velocity of length change and the external loads acting to oppose movement (Kandel and Schwartz 1995). Thus, the central nervous system (CNS), needs information about the lengths of the muscles and the forces they generate. This proprioceptive information is monitored by two types of receptors, the muscle spindles and golgi tendons organs. Information from muscle spindles and tendon organs reach all levels of the nervous system.

In mammals each skeletal muscle fibre in innervated by only one motor neurone. A single neurone and all the muscle fibres it innervates is called a motor unit. All the muscle fibres belonging to a motor unit have similar physiological and biochemical properties, accordingly three types of motor units have been distinguished. All three types of motor units are found in most muscles but in different proportions. Moreover in individual muscles the fibres belonging to one motor unit are widely distributed within the muscle. These two factors give muscle great flexibility of actions. If these properties are interfered with, as in CNS lesions, the variability of muscle activities is reduced.

When a motor neurone pool is activated synaptically, the initial weak inputs activate the cells with the lowest threshold for synaptic activation. As the synaptic input increases in strength, motor neurones with large cell bodies are recruited in turn according to size. This fixed order of recruitment, called the Hennemann principle or size principle, occurs during both automatic and voluntary contractions. This organisation has two important functional consequences. Firstly, ordered recruitment allows for postural stability to precede phasic muscle contraction. Slow motor units are the most heavily used since they are recruited for all movements. Secondly, ordered recruitment simplifies the task of modulating muscle force. Higher centres need only determine how much synaptic drive to deliver to the motor neurone pool as a whole and thus do not have to manage the selection of specific combinations of motor units to produce the needed amount of force.

Therefore, as CNS lesions alter synaptic drive due to denervation at spinal cord level, this produces altered recruitment patterns ie associated reactions.

The Bobath concept recognises that differing aspects of abnormal tone ie hypotonicity and hypertonicity, and biomechanical changes in muscle are integrally linked.

Many authors including Kidd, Lawes, Dietz, Hufschmidt and Maritz postulate that elastic and velocity independent plastic resistance are enhanced in long standing hypertonic states and support the hypothesis that secondary changes in muscle are an important component of abnormal muscle tone. Additionally, even with the sustained muscle contraction associated with hypertonia, there is rarely hypertrophy and more often atrophy. This may be due to the inability of the individual to move through a full range of intended movement.

The biomechanical changes in muscle following an upper motor neurone. syndrome lesion are discussed.

Dattola et al investigated the altered aspect of neural control and demonstrated that sustained activity of hypertonic muscles produced a change in fibre type from fast glycolitic (fg) to slow oxidative (so). Associated reactions are phasic responses ie fg repeated, and repeated over time change the muscle fibre to so and an abnormal posture is sustained. New rotatory components are resisted because of 'no stability, so no axis', and no ability to lengthen and shorten muscle.

Goldspink and Williams, amongst others, have recognised the effects of neurological impairment in relation to immobility which may lead to atrophy. Atrophy is more pronounced in so than fg fibres, again producing lack of postural stability for rotatory movements to take place.

Thirdly, there may be significant alterations in muscle structure ranging from reduction of sarcomeres to sticky cross bridges and thixotrophy or increase static in the viscous properties.

Specific mobilisation of muscle is a manual handling technique which aims to reduce muscle stiffness, prevent contracture and potentiate recovery of selective movement for function. In the second case history presented, the mobilisation of muscle allowed the patient to accept a base of support (bos) with her hand that her associated reactions had previously prevented, and use the bos to move selectively other body parts to enable a sit to stand task. With a more equal weight bearing this in turn controls the associated reactions.

This case study illustrated that the use of rotatory components in specific mobilisation of muscle could reduce muscle stiffness and increase sensation and cognition in a hemianaesthetic patient. As a result the patients' symmetry improved and tasks revolving around midline were easier.

In summary movements involving rotatory components are normal, genetically inherent and efficient. Using such movements with patients who have neurological impairment can effect:

- muscle stiffness
- effect changes in reducing resistance and length
- change proprioception
- reduce fixation and improve postural stability and hence selection movement
- facilitate central pattern generator activity.

Why do movements involving rotatory components alter tone in muscle?

- they reduce thixotrophy
- they unlock sticky cross bridges
- they give length
- they give proprioceptive information re: stability and mobility
- they fractionate stereotypical mass patterns.

Mary Lynch-Ellerington is currently a senior Bobath/IBITAH tutor and a private practitioner in York. She specialises in the training and qualification of Bobath therapists and tutors world-wide and is Director of the British Bobath Tutors Association.

MANAGEMENT OF ATAXIA

Lynne Fletcher MCSP

Summary of slides with additional lecture information.

'Ataxia' is derived from the Greek language to means 'disorder or mess' It is used to refer to a disorder in the 'co-ordination of movement, a disorder of timing and direction, a lack of co-ordination of posture and movement, and where the goal of moving is difficult to fulfill or is a failure.

If the errors made by the patient are too big, in terms of force, speed, amplitude or accuracy or made too often then it will lead to de-motivation.

The functions of the cerebellum include postural and selective movement control and co-ordination, and feed forward planning on the basis of stored experiences (automatically not cognitively).

Patients with cerebellar dysfunction have difficulties with control and co-ordination of movement but not the production of movement.

In the management of cerebellar ataxia, the feedback adjustment is orientated to the proprioceptive input relating to the goal ie feedback adjustment is based on a comparison between the expected and the actual output.

It is important to make sure that the movement continues to be appropriate to the environment eg walking and reaching allows the pattern modification.

Error correction eg when lifting an object assumes a certain resistance and almost immediate re-calibration is made if the weight is different to that expected.

Cerebellar dysfunction results in:

- Dysmetria ie inaccurate amplitude, misplaced force
- Hypermetria ie small, fast and aimed movements
- Hypometria ie slow, small amplitude movements (Diener and Dichgons 1992)
- Dyssynergia ie decomposition of movement, timing and smoothness of organised muscle activity
- Intention tremors ie a disorder of the line of movement amplified in the limb.
- Postural tremor/truncal tremor (Brookes 1986) A decomposition of intended postural contraction of opposing muscles ie inaccurate corrective movement of the whole body.
- Rebound phenomenon with lack of checking a movement, or over correction.
- Dysdiadochokinesia (misjudgment of weight either of objects or body parts).

Ataxic patients often present with ataxia as one of a number of problems eg head injured patients with associated spasticity or even contracture or Multiple Sclerosis patients with associated fatigue and weakness.

Research related to ataxia is much more concerned with the deficit and maybe consideration of management but there seems much less work concerning the changes that can be made by appropriate therapy intervention.

'In striking contrast to other motor impairment such as weakness and spasticity, there exists very little published evidence concerning the best management of disability resulting from ataxia. This may be partly because ataxia is often associated with progressive degenerative disease and it is seldom possible to influence the underlying cause'. (Richard Hardie 1998)

Sanes et al (1990) made the point 'the fundamental reason why ataxia responds so poorly to conventional therapy may be the impairment of learning (and relearning) motor skills associated with cerebellar dysfunction'.

Clearly, although it was considered that cerebellar patients could not learn, the evidence is that individually tailored treatment approaches can give positive changes, if the patient has the opportunity to have sufficient time and practice, supervised and unsupervised to explore their potential.

Gill-Body et al (1996) looked at the rehabilitation of balance in two patients with cerebellar dysfunction. 'The outcome suggests that patients with cerebellar lesions, acute or chronic, may be able to learn to improve their postural stability'.

Therapy may include:

- adaptive motor behaviour such as the use of arms
- wide based gait pattern
- increased speed or the dominance of the use of vision

Therapists need to be able to challenge movement, find the stability limits by experience, consider environment possibilities and also consider that the most important predictor for therapy results in motor learning, is said to be the 'amount of practise'.

Therapy must be goal orientated but allowing movement experiences through facilitation.

The patient needs to explore movement even to the point of making mistakes so they can learn to correct them.

Balance cues can help the patient recalibrate the postural adjustment required. It is often considered that the use of balance aids will automatically lead to fixation and therefore eventual decrease of independent function.

Jeka (1997) pointed out that 'contact cues can be given through balance aids, and even when contact force levels are inadequate to provide physical support of the body postural sway can be reduced in patients with impairment of balance'.

When patients are very afraid to fall they fixate, so reducing the natural postural sway which is part of efficient standing.

With careful assessment some patients will benefit from the use of balance aids to minimise unnecessary compensatory, static activity and allow them to 'use' and so 'refine' their balance potential.

What is balance? Well, if you have it you never think of it, but if you haven't got it you think of little else. If you think of it you cannot really acquire it. It is experientially developed and refined.

Every normal individual knows the feeling of being unsure of their safety eg on icy surfaces or unstable surfaces. It is almost impossible to 'think' balance solutions.

The vestibular system is not under cortical control but needs movement experience to gain a response. There is no such thing as perfect balance, we should instead think in terms of efficiency, and aim for qualitatively better ie more functional improvements.

As is the basis of therapy in all neurological patients, we are not always looking for recovery of 'normal movement' as a defined entity but always looking for the most selective and efficient movement for the individual.

The old idea was of balance as reflex response, but it is now known that balance is more proactive, adaptive and centrally organised. It is based on prior experience, expectation, attention, environmental context and pre-programmed muscle activity.

Brandt et al (1981-1986) wrote that 'the remarkable balancing skills of gymnasts demonstrate that human postural reflexes are not perfect, but can be readjusted to higher performance by training rapid reductions in the postural sway induced by certain maneuvers, can be achieved within a few days by a daily hour of balance training. Patients who change readily to such therapeutic challenges could well be demonstrating potential that would justify longer term rehabilitation'.

It can be demonstrated that if the patient has access to the appropriate therapy on an ongoing basis they can often continue to improve for long periods.

Fixation supports neither stability nor mobility. We need to be careful that we don't prejudge potential but challenge to find it out. Patients may become 'stuck' in their potential and some like to be 'quiet and still' so fix at their level. Where there is greater fixation there may be no improvement in co-ordination and they may then need 'big movements' to disrupt their static behaviour first.

Therefore therapists need to explore potential, and take care not to block potential. It is also important not to let the patient block his/her own potential by fear leading to greater fixation, or the therapists fear resulting in overprotection and fixation. It is the environment that fixes the patient.

Fixation will lead to no improvement in co-ordination because there is no 'practise' in many head injured patients they present with contracture or take anti spasmodic drugs for a tonal problem largely due to fixation for an ataxic picture.

Another area to be considered is the efficiency of righting reactions.

The teaching of 'safe falling' may well prove a useful aspect of therapy. Falling should not just be seen as a failure of righting reactions. As in judo experts and trained gymnasts, the skill of balance control includes falling which uses righting reactions to prevent injury. When a patient knows they can fall without injury they have less fear so less fixation and less risk of falling.

Therapy will include addressing the regulation of tone, mobility not fixation to help the patient regain pleasure in movement and to reduce fear in movement.

It may be necessary to increase postural tone, but decrease fixation and static to allow mobility with fixation.

Activities such as dancing, walking etc we all take for granted, are not just about fitness but purely for the pleasure of moving. There is little pleasure in fear.

Closed chain and open chain movements can be used.

So consider, stability and mobility, the trunk and extremities, recognition of which is the fundamental problem, and acknowledge that often body parts become active in fixed posturing.

As a basic rule we may need to explore large range movements to disrupt static. Taking the patient from one postural orientation to another and through change of speed and direction, they learn to grade and control the transfer independently.

Keep the relevance ie variety in the components of the activity but not too much variability in the activity. Allow establishment through practise, refinement of righting reactions and potentiation of equilibrium reactions.

Therapy needs to give back to the patient experience of their selective movement.

Therapist needs to be willing to explore their own thresholds. They need to be fit, flexible and adaptable, or else they may limit the patients' movement. Feedback may need to be verbal and non-verbal, and knowledge of performance allows the patient to better feed forward.

A great reduction of effort can be achieved if the patient has a sequence they can access automatically, rather than plan the movement cognitively ie have the acquisition of sequencing.

'Frustration leads to a real danger that sufferers from chronic ataxia become unnecessarily inactive and dependent, so just the prevention of established inactivity may be beneficial'. (R. Hardie 1993)

Sporting activity can help patients feel good about themselves and limits unnecessary inactivity. For example self awareness of movement Tai Chi or Yoga, and sporting activity such as swimming, bicyclingto improve basic fitness.

In some cases a dramatic improvement can be seen in postural control just by consideration of alignment of feet, footwear etc in gaining better pelvic control. Mobility of soft tissues may be necessary to allow alignment appropriate for activity.

In consideration of mobility aids, wheeled or other more mobile aids are always preferable to static aids if they must be used.

Therapy therefore may use avariety of movement experience on different surfaces such as the floor, trampets, gymnastic balls or other uneven and/or mobile surfaces.

Trampets for example allow improved control of acceleration and deceleration. Innovative therapy will allow automatic responses, and the use of more challenging environments allows increased confidence

An increase in the ability to produce the agonist activity is also needed. This allows a feeling of 'unweighting' from fixing down for 'stability'.

So consider, is the therapy interesting, motivating, reinforcing, responding, an adapting programme, giving sufficient practise and transferring to function.

It should be interesting because it is more than a series of balance exercises, motivating if the patient succeeds, reinforcing strengths not just exploring weaknesses.

Lynne Fletcher qualified in 1976 and worked in the NHS for 17 years almost exclusively with neurological patients. She qualified as a Bobath tutor in 1986 and as an advanced tutor in 1994. She now works in private practice and teaches Bobath related courses both nationally and internationally.

MILLENNIUM EXTRAVAGANZA

February 5th/6th 2000
London ACPIN

Submitted by the **London ACPIN Committee**

At the end of 1998, the London ACPIN Committee discussed the idea of reinvesting funds in their membership in the form of a millennium extravaganza.

The aim of the event was to promote evidence based practice and clinical effectiveness using a combination of top speakers and postgraduate researchers to inspire members to take their neurophysiotherapy practice into the next millennium.

This well attended course was held at the Institute of Neurology, London. Feedback was positive and confirmed that the course aims were achieved. The weekend was also sponsored by Athena Neurosciences, Ispen Limited and Kendall Camp Orthopaedic.

Below is a selection of abstracts from a variety of the speakers.

EVIDENCE-BASED PRACTICE: AN INTRODUCTION

Ann Ashburn PhD, MCSP
Senior Lecturer in Rehabilitation, University of Southampton.

In recent times, healthcare workers have been encouraged to follow an evidence-based practice approach to the management of their patients. The term emphasises the strength of using the most effective treatments, rooted in the most reliable clinical research evidence and highlights the weakness of favouring treatments based simply on assumptions and myths. Physiotherapists need to value an evaluative culture if evidence-based practice is to grow within the profession. While everyone can be encouraged to learn and practice basic evaluative skills in the clinical setting it is not necessary for everyone to have a research training. A workforce of personnel with skills ranging from the ability to critically review a research paper to those who are creative leaders of research programmes is needed. The following questions were addressed in this presentation:

- What is evidence-based practice?
- Why do it?
- What skills are needed?
- How can you get involved?

BOBATH CONCEPT – OPPORTUNITIES AND LIMITATIONS.

Margaret J Mayston, PhD, MCSP
Director of Bobath Centre.

Since the Bobath Concept was introduced by Dr & Mrs Bobath over 50 years ago, it has probably become the most used therapy approach for adults with hemiplegia and children with cerebral palsy. In recent years the approach has also been applied to other neurological conditions. However, there has been a lack of communication about how the concept has changed (Mayston, 1992) – if it has – and for some it has become no longer relevant. As a result there have been and still are misconceptions, misunderstandings and misinterpretations. It is the purpose of this presentation to review the concept, consider how we might explain the theory underlying it, and suggest that current knowledge can be used to provide an evidence base for the Concept.

The basic idea behind the Bobath Concept is that the therapist through techniques of handling and activating the client can make movement necessary and possible, and incorporate these more useful ways of moving into every-day life. The approach is based on an understanding of postural tone (neural and non-neural elements), all degrees of reciprical innervation which allows for graded activity of all muscles and the variety of movement patterns necessary for all postural and task activities. These concepts are based on current ideas of motor control.

Consistent with changes in the understanding of how movement is organised, it has been necessary to change how the handling techniques are explained. For example, is inhibition an appropriate term to explain tone reduction? (Mayston, 1995). What does the word 'compensation' mean?

Finally, what are the basic ingredients for success? Firstly there is a need to determine who will benefit most, and we have some ways to do that already (Duncan et al 1992; Partridge et al, 2000). The next step is in driving the plasticity of the nervous system in a positive way. Motor Learning theory suggests that active participation, practise and meaningful goals are essential for learning (Schmidt,1991; Winstein,1997 & others). The Bobath Concept has always emphasised the first two, and in recent years has advocated the third. Mrs Bobath used to say that the handling techniques are important, but 'unless you have made the patient active in a way that he can use, then you have done nothing at all' (Bobath, 1960).

IS BALANCE IMPAIRMENT ASSOCIATED WITH DISABILITY AND QUALITY OF LIFE IN YOUNG COMMUNITY DWELLING STROKE PATIENTS?

Helen Lindfield MSc, MCSP
Head of Physiotherapy, Harrowlands Rehabilitation Centre.

Physiotherapists treating people with stroke often concentrate their efforts on improving balance in the belief that this will lead to a reduction in the stroke sufferer's disability and an improvement in function (Berg 1989). Physiotherapists have been criticised for using mainly measures of impairment and assuming that improvement at this level of functioning will lead to a concomitant change in disability and QOL (quality of life) (Rothstein, 1985).

Method

The aim of this study was to identify if balance impairment is associated with disability and QOL in young, community dwelling stroke sufferers. A descriptive cross-sectional survey using measures of impairment, disability and QOL was used to collect data. Participants who fulfilled the study inclusion criteria were selected from the computer records at Harrowlands Rehabilitation Unit, visited at home by the researcher and assessed on a single occasion using the following measures:

- Impairment Measure eg Berg Balance Scale
- Disability Measures eg Barthel Index, 10 metre walk test.
- Quality of Life Measures eg UK version of the Short Form 36, Extended Nottingham ADL Index

A structured questionnaire was devised by the researcher to supplement the information gained from these measures. The questionnaire provided information about whether participants were working, had fallen in the last three months, used a walking aid and were continuing to have physiotherapy.

Results

Twenty nine people (23 men and 6 women) participated in the study. Their ages ranged from 32 to 65 years (mean 51, sd 8.9) and they had all suffered an single incidence of stroke a minimum of six months and a maximum of 24 months before entry into the study. Statistically significant associations were found between the Berg Balance Scale, Barthel Index and 10 metre walk ($r = 0.69 – 0.86$, $p < 0.001$). Statistically significant associations were also found between these measures and the measures used in this study to investigate QOL, the Short Form 36 and the Nottingham Extended ADL index ($r = 0.36 – 0.66$, $p = 0.049 – p < 0.001$).

Conclusions

The Berg Balance Scale showed the strongest association with the quality of life measures used in this study. However, although the Berg Balance Scale had a strong association with the Nottingham Extended ADL Index, associations with the Short Form 36 are less convincing. This seems to indicate, that physiotherapists need to use QOL measures if they want to investigate this aspect of outcome in young community dwelling stroke patients.

DEVELOPMENT AND PRELIMINARY EVALUATION OF A TOOL TO MEASURE ASSOCIATED REACTIONS IN THE HEMIPLEGIC UPPER LIMB

Anne Macfarlane, MSc, MCSP
Superintendent Physiotherapist, Royal Free Hospital, London.

Associated reactions are abnormal postural reactions frequently seen in the affected side of hemiplegic patients and most easily observed in the upper limb (Walshe,1923). In clinical practice, associated reactions are viewed by neurological physiotherapists as the product of effortful movement and detrimental to recovery (Edwards 1996). Subjective grading scales are used by physiotherapists to measure associated reactions but these scales exist in a variety of forms and have not been published nor subjected to formal validity and reliability testing.

A study with two aims was undertaken:

- To develop a clinical tool to measure associated reactions
- To undertake a preliminary evaluation of the reliability of the tool

Development of the tool was carried out using focus group methodology. Focus groups comprising of neurological physiotherapists experienced in the clinical management of brain injury were conducted in two centres. Analysis of the results led to the development of a four item ordinal scale. The tool was evaluated by two senior physiotherapists on 19 hemiplegic subjects during a standardised sitting to standing task. Reliability testing of each item revealed moderate to very good inter-rater agreement (weighted Kappa values 0.43 – 0.85) and good to very good intra-rater agreement (weighted Kappa values 0.61 – 0.87).

Preliminary evaluation of reliability is encouraging although further work is needed on larger numbers of subjects. Future work is also needed to evaluate the sensitivity of the tool to change and to explore its use in relation to different standardised tasks.

PLASTICITY OF THE CENTRAL NERVOUS SYSTEM

Martine A Nadler MSc, MCSP
Bobath Centre

Plasticity of the nervous system may be defined as any enduring change in neuronal properties, either morphological or functional, for example in the strength of internal connections and representation patterns (Donoghue et al. 1996). This talk focuses on plasticity in adult life arising from changes in sensorimotor experience (including motor training) and following pathological damage to the central nervous system (CNS).

In the 1980's seminal work in monkeys using intracellular recording / stimulation techniques showed that both sensory and motor cortical maps were capable of reorganisation. Sensory maps could be altered by manipulating peripheral afferent input eg. after amputation (Merzenich et al 1984), selective digit stimulation (Jenkins et al 1990) or after motor nerve lesions (Donoghue et al 1990). Subsequent work using intracortical microstimulation techniques (ICMS) showed that motor learning produced increased representation of muscles and movement combinations required for the appropriate new skills (Nudo et al 1996a). Human studies using fMRI also showed increased area representations of digits after motor learning (Karni et al 1995) and learning a new skill increased the size of cortically mediated cutaneous reflex responses (Nadler et al 1998). Putative mechanisms accounting for plastic changes after training include either 'unmasking or disinhibition of previously existing lateral connections between neurones within a representational domain through internal or external modulating inputs' and/or 'transcription dependent improvement and growth of new connections and synapses'; the former occurring within a time scale of hours to days and the latter over days or weeks (Karni et al 1998).

Changes in central pathways have been investigated in stroke patients using cutaneomuscular reflex responses (CMRs). Exaggerated spinal reflex responses present in a hand muscle within six weeks after stroke may be indicative of a poor functional outcome at two years (Nadler et al 1999). Cross-correlation techniques have shown that motor unit synchrony is dependent on the patients' functional outcome (Farmer et al 1993, Datta et al 1991, Nadler et al 1999b). Turton et al (1996) have correlated responses to transcranial magnetic stimulation following stroke to functional recovery and outcome.

Nudo (1996) demonstrated that cortical territory surrounding a cerebral infarction representing the hand was lost if the animal did not undergo retraining, and recent studies have shown that constraint induced movement therapy increased functional recovery in chronic stroke patients (Milner et al 1999, Van der Lee et al 1999). Although it has been shown in rats that in the acute phase after a cortical lesion, forced use of a limb can exaggerate neuronal damage (Koslowski et al 1996), it must be remembered that results from animal experiments may not always be directly extrapolated to humans.

How are recent advances in plasticity and neurophysiology relevant to us as clinicians? One of the key messages is that patients need to be active and to experience movement for themselves in order to gain the appropriate sensori-motor experience needed to drive lasting positive plastic changes at the cortical level. The time scale of how much input, how soon and for how long is still unclear and further work is needed.

QUALITATIVE RESEARCH IN STROKE – WHY DO SOME PATIENTS DO BETTER THAN OTHERS?

Fiona Jones MSc, MCSP PG Cert. Ed.
Lecturer, University of Brighton

The changes resulting from a stroke lead to both physical and psychological trauma and could be described as a personal catastrophe (Backe et al, 1996). Stroke patients often have clear individual goals for themselves, by which their success is measured. Recovery has a unique sense for each individual, and may have a different meaning than that which is considered by the therapist (Hafsteindottir, 1997). Clearly the psychological factors influencing recovery are complex, and a challenge for researchers and clinicians is to gain more understanding in a field which has been largely dominated by quantitative inquiry.

Qualitative study used to be considered unscientific, but with a change from the emphasis on reductionist approach to being able to understand behaviour, many researchers now consider other methods which provide a productive source of data. How one person adapts to a new disablement, and responds to the close relationship with the therapist may be influenced by a number of factors. Being able to explore these factors through various methods such as interview, observation, video and focus groups can offer a flexibility to adapt and learn about people as individuals.

'We should adapt our methods as far as we can to the object, and not define the object in terms of the method', (Smith et al 1995).

The circle of research used in qualitative study that can inform clinical practice could be highly significant for physiotherapists, the subject/ patient is often viewed as a collaborator and consequently is actively involved in the research process. In this way the patient becomes a key informant and has an opportunity to directly influence the inquiry and potential future practice.

Qualitative analysis is not taking an easy option, to gain quality data from interviews etc, and to be able to analyse and disseminate the material is a lengthy process, requiring skill and close attention to detail. However the benefits to both therapist and patient, will become apparent as more work in this field is undertaken (Parry 1999, Pound 1999). Hopefully providing an opportunity to develop new theories to help us understand why some people 'do better' than others.

THE ROLE OF REFLEX PATHWAYS IN THE CONTROL OF MOVEMENT

Pam Evans PhD, MCSP

Recent developments in knowledge of the circuitry of the spinal cord are resulting in greater understanding of how spinal pathways are involved in the production of movement. It is also likely that some of the well-recognised symptoms of motor dysfunction, such as those associated with hemiplegia, will be better understood in the light of this greater knowledge of underlying mechanisms.

Most descending signals from supraspinal centres reach motoneurones in the spinal cord via interneurones. Many of these same interneurones are to be found in the spinal reflex pathways carrying signals from various types of sensory neurones. It has been recognised for some time that such interneurones do not just relay the information they receive, but act as centres where signals are integrated and motor patterns are selected. Now, however, it has become possible to put forward testable theories which describe how this might actually happen.

Most of the studies of spinal interneurones have concentrated upon first-order interneurones (that is those interneurones which synapse directly with motoneurones). Such studies have demonstrated that the old idea of isolated, discrete reflex pathways is a misleading one – individual interneurones are often involved in several reflex pathways. Even the Ia interneurones, which act very locally to produce reciprocal inhibition, have been shown to be part of a complex control system with parallel and converging inputs.

In recent years considerable interest has arisen in relation to various collections of both inhibitory and excitatory group II interneurones in the lumbar spine – so named because animal experiments have shown that these cells receive major input from those muscle, joint and cutaneous neurones which are classified as group II afferents. It has been demonstrated that information from large areas of the body converges upon these interneurones (Edgley & Jankoska 1987). The activation of these interneurones can result in different motor output patterns, each involving several muscle groups. In the light of this information and of further evidence showing that some of these cells have input and output connections with muscles in both lower limbs, it is believed that these group II interneurones are involved in whole limb and interlimb coordinated activity. This view has been strengthened by the findings that some of these interneurones show rhythmic activity during locomotion (Shefchyk et al 1990) and other evidence indicating that they are closely linked to the neurones of the spinal pattern generator for locomotion.

Further interest in this field has arisen from human balance experiments. Following the introduction of a disturbance which causes a rapid stretch of a muscle, an initial localised reflex contraction is seen and then a later, more widespread, coordinated response has been identified. The timing of the later response and its changing nature under different balance conditions is consistent with the proposal that this later, functionally important response is produced as a result of input to group II interneurones from group II muscle spindle afferents (eg Corna et al 1996, Dietz et al. 1989).

How can changing patterns of afferent input to these interneurones during movement integrate with supraspinal input to result in different output patterns? Several different populations of interneurones have been identified and it is clear that within each population there are different subpopulations of cells. The cells of each subpopulation can receive input from certain spinal neurons and certain descending tracts and they project to a particular collection of motoneurones in various motoneurone pools. During movement afferent input may result in some of these interneurones being more available than others to respond to descending signals. Also descending tract neurones and spinal generator networks may use presynaptic inhibition to make more or less use of different types of afferent input. The output patterns of movement result from the control of the excitability of the interneurones and the reflex pathways involved. With such a scenario, by making use of the spinal reflex circuitry, supraspinal centres have less need to give detailed commands concerning the activity of individual motoneurones. Several researchers in the field have produced reviews in which they have expanded upon these ideas (see for example Jankoska & Edgley 1993, McCrea 1992, McCrea 1996, Dietz 1992).

The role of neurones of the reticulospinal and vestiulospinal tracts in the control of group II interneurones is also discussed in some of these reviews (see especially Jankowska & Edgley 1993). It has been shown that neurotransmitters which they produce are capable of decreasing the activity of some group II interneurones. If, as seems likely, these tracts are involved in the selection of appropriate patterns of posture and movement through the selection of functionally specialised group II interneurones then loss of this control could explain the loss of appropriate postural adjustments and selective activity and the appearance of abnormal postural reflex activity seen, for instance, in stroke patients.

The London ACPIN committee would like to thank the afore mentioned speakers for the abstracts of their lectures. We would also like to acknowledge the contributions throughout the weekend from additional speakers including Alison Bailey-Metcalf and Ralph Hammond. We hope to provide abstracts from these speakers in the next issue.

A complete reference list for the above abstracts can be obtained by sending a SAE to Karen Harrison Healy, Physiotherapy Dept, Royal London Hospital, London E1 1BB.

SUSSEX ACPIN: SPLINTING IN NEUROLOGY

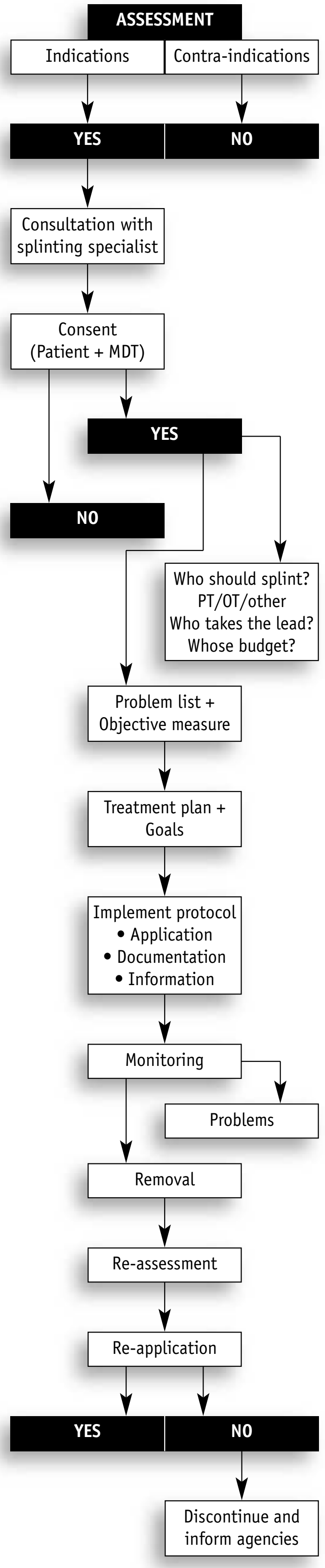
Margaret Hewett, Senior Physiotherapist, Conquest Hospital, St Leonards-on-Sea

Harrowlands Rehabilitation Unit, Dorking, March 10th 2000 was the venue for this study day. An introductory lecture was given by Bernhard Haas summarising the latest thinking about muscle physiology, which set the scene for the more practical elements to follow.

This was followed by a demonstration of two splints, an anteriorly reinforced below-knee splint and an upper limb drop-out splint, by Philippa Carter. These were made with softcast reinforced by scotchcast. She also talked through the indications and considerations for various types of splints and materials.

The two afternoon sessions were lead by Anthea Dendy who gave an overview of the content of the ACPIN Splinting Guidelines. This was followed by a workshop session with different groups looking at and expanding upon the elements of the guidelines. One of the groups was asked to draw up a flow-chart/care pathway for the process of splinting, as shown below.

SPLINTING PROCEDURE/ CARE PATHWAY



WEST MIDLANDS ACPIN: ATAXIA STUDY DAY AND AGM

Sarah Jennings, Senior 1 Physiotherapist, Rehabilitation Unit, Sir Robert Peel Hospital, Tamworth, Staffordshire

On saturday 8 April 2000, at Walgrave Hospital, Coventry, 30 participants gathered at for a very interesting and stimulating half study day on the treatment of ataxia. The morning consisted of two workshops looking at different aspects of treatment.

Workshop 1 was lead by Liz Scott-Tatum and Tina Dolan, two occupational therapists from the Oak Tree Lane centre in Selly Oak, Birmingham. The session considered the use of lycra splinting for the treatment of ataxia. This was demonstrated through the use of case studies, video's and open discussion.

Workshop 2 was a practical session lead by Linzie Bassett and Jackie Pratt, two experienced physiotherapists in neurology. The session included discussion on the principles of treatment of ataxia, a case study and a practical demonstration followed by the opportunity to practice techniques on other course participants.

Feedback on the day was positive and many people felt ataxia is an area in which continuing research is required. The opportunity to share ideas with colleagues was, as always, a valuable experience.

The morning was completed with the West Midlands ACPIN AGM.

LEEDS STUDY DAY

COMPLEX DISABILITY: WHO ARE THESE CLIENTS?

Susan Edwards FCSP

The client group includes those with brain damage, multiple sclerosis, Parkinson's disease, MND, SCI, neuromuscular disorders and cerebral palsy. It is important to consider the therapists role in treatment and management. Treatment can be described as the technique or modality used to enhance motor performance, reducing the impairment and symptoms of pathology, whereas management is the maintenance of the optimal physical condition through control of posture, movement and handling techniques. These are primarily preventive but may be also be corrective. With these clients there can be management without treatment, but *never* treatment without management. Management should underpin all forms of therapeutic intervention and should be on-going for as long as is necessary. Treatment may be considered complimentary to the underlying management and is usually not on-going.

Where are these clients? In a variety of settings including hospitals (neurology, orthopaedic and general wards), Rehabilitation Units, in the community, Nursing Homes or other Institutions. These clients benefit from a multidisciplinary approach with a view to determining and optimising functional outcome. There will be variations in the packages of care available and the finance available to provide the required rehabilitation or care.

It should be remembered that these clients have a relatively normal life expectancy, and throughout their management the value of all intervention should be carefully considered.

Sue Edwards trained at the Robert Jones and Agnes Hunt Orthopaedic Hospital, qualifying in 1971. Throughout her career she has specialised in the management and treatment of patients with neurological disability. She was awarded a Fellowship of the Chartered Society of Physiotherapy in 1995 and was elected President of ACPIN in 1998. She is the ditor and main contributor of *Neurological Physiotherapy: a problem solving approach*.

PRIORITIES IN THE PREDICTION AND FULFILMENT OF REHABILITATION POTENTIAL

Professor Lindsay McLellan

INTRODUCTION

Rehabilitation potential is the capacity of an individual to achieve rehabilitation. In studies of the effects of medical treatment and therapies, rehabilitation potential is usually defined more narrowly as the capacity of an individual to respond to a rehabilitation input.

This potential, and this response, needs to be distinguished from spontaneous or naturally-occurring changes in a person's capabilities – whether improvement is due to biological recovery, or (in children) maturation, or deterioration due to progressive disease or ageing.

At present, much more is known about the predictions of 'natural' recovery and about predictions of responsiveness to drugs and surgical procedures, than is known about the predictions of response to rehabilitation inputs.

Prediction is important not only to the individual patient, but to the therapist or other people assisting in the rehabilitation process. Without it realistic objectives cannot be set and it will be difficult to demonstrate that the input has been effective.

Research into outcomes and effectiveness is much more difficult when predictors are not available, particularly if groups of subjects are being prospectively treated and compared with each other. The less predictable the responses among the individuals in a group, the more chance there is of imbalance between one group and another in respect of the percentage of subjects who are likely to respond particularly well or particularly badly. If you know what the predictors are, you can stratify your group so that they are better balanced. This may enable you to get an unambiguous answer with smaller groups.

Identifying the predictors of response to rehabilitation inputs is, therefore, a major priority for everyone working in rehabilitation.

SPONTANEOUS RECOVERY VERSUS REHABILITATION

Many studies of 'recovery', for example after a stroke, have not made a distinction between natural recovery and rehabilitation and appear to have assumed that these are taking place at the same time and that the changes due to each will occur in the same dimension. On this view, rehabilitation can be thought of simply as a potentiater of natural recovery, taking the person a little further along exactly the same trajectory as spontaneous recovery has done.

Some rehabilitation inputs – for example, mobilising stiff joints, strengthening muscles or building physical and mental stamina may indeed produce results in the same plane and same directions as spontaneous recovery. With such interventions, studies of *timescale* and changes in the *rate of improvement* as therapy is started and stopped may be particularly important. There is a need to develop methods of doing this for interventions of this nature, and examples of some approaches will be discussed in this talk.

Other rehabilitation objectives – for example, learning to use verbal cues to correct faulty sequencing, using gesture and facial expression to augment verbal communication, and adopting patterns of movement that avoid the potentiation of spastic synergies – are skills that are acquired in a different direction or plane to spontaneous improvement in basic function. These skills will need to be measured in such a way as to distinguish them from basic functional recovery. This means measuring specific levels of performance before, during and after treatment taking care to ensure that what is being measured corresponds precisely to the objective(s) of the therapy under test.

INDIVIDUAL TECHNIQUES OR UNDIFFERENTIATED 'MULTIDISCIPLINARY THERAPY INPUT'?

It is much easier to study the impact of individual techniques than to look at generic input yet there has been a tendency to hasten to measure generic input first – perhaps because of a hope that the efforts of a team will be larger and therefore easier to detect than the efforts of a single therapist aiming at one or at most a very small number of precise objectives. We may also feel under pressure to produce evidence to challenge the NHS's meagre expenditure on rehabilitation services.

However, generic effects are inevitably more difficult to detect. The main reason why it is more difficult is that the range of objectives pursued by the individuals in the group will be large and disparate. It will be impossible to select outcome measures that can be applied with equal relevance to every patient and one is likely to end up with a multi-inventory such as FIM and FAM, many of the components or 'cells' in which will either be irrelevant to the subject or to the objectives being worked towards in each individual case. Such inventories will inevitably attenuate the detectable effects of the therapeutic input to the point at which they would be lost unless vast numbers of subjects are tested. My own view is that the FIM and FAM is most useful as a descriptor of the general degree of dependency present in a subject or a group of subjects and that changes in FIM and FAM (and similar inventories) are a much better indicator of spontaneous recovery than of response to specific rehabilitation inputs.

FULFILLING REHABILITATION POTENTIAL

Given that rehabilitation inputs usually aim at training, learning and the acquisition of new skills, we need to ensure that the basic principles of education and skill acquisition are adopted and are seen to be adopted in rehabilitation. 'Inputs' and 'Interventions' need to be described in ways that specify the extent to which these basic rules of skill acquisition are followed, so that it becomes possible to evaluate the nature of the therapeutic input with something of the precision available for a drug. This can be achieved provided that practitioners are themselves thinking and working within a conceptual framework that holds these essential elements – potential, prediction, objectives, interaction and outcome – together.

Professor McLellan was originally trained as a neurologist and started with a particular interest in Parkinson's disease which led to an interest in spasticity and attempts to explore the relationship between clinical features, neurophysiological measurements and function. That was in Glasgow and where he first met therapists who introduced him to methods of measuring physical function. He started in Southampton in 1977 as a Senior Lecturer in Neurology but after further rehabilitation moved to his present post in 1984. He did some work with implanted brain stimulation but became increasingly interested in skill acquisition and the multifarious problems of traumatic head injury. He chaired the Physical and Complex Disabilites Priority-setting group of the NHS Central R&D programme in 1994/5.

NUTRITIONAL REQUIREMENTS AND MANAGEMENT OF CLIENTS WITH STROKE: THE ROLE OF THE DIETITIAN IN MULTIDISCIPLINARY CARE.

Kevin Whelan MSc

NUTRITIONAL REQUIREMENTS

It is a common misconception that the energy requirement of this group of the hospital population is low, however the fall in energy expenditure secondary to reduced physical activity is often counterbalanced by an increase in requirement due to infection or other disease state. With rehabilitation and concurrent increased physical activity comes greater energy expenditure and therefore nutrition care-plans need constant re-assessment in order to incorporate such variables. Requirements are commonly between 1500-2000 kcal/day, whilst Government recommendations are for a minimum provision of 1800 kcal/day (DoH, 1995). A study by Gabriella et al (1998) showed that for a group of stroke patients the average intake was 1084 kcal.

Exogenous dietary protein is required to maintain the constant turnover of body amino acids, which are required for all enzyme reactions and the regeneration of body tissue. Pressure sores are common in stroke patients (Kalra et al 1995), however there is no evidence that protein requirements are raised (Bonnefoy et al 1995). Current recommendations are for achievement of normal requirements which are 0.17g N/kg/d (Elia 1990).

Water supports all biochemical reactions and is required to prevent dehydration. Basic recommendations allow for 30 ml/kg/d (Chernoff 1994).

NUTRITIONAL MANAGEMENT

1. Malnutrition This is described as 10% weight loss in three weeks. Malnutrition occurs in 40% of all hospital patients (McWhirter and Pennington 1994) compared to 49% of stroke patients (Finestone et al 1995). This can result in a reduction in rehabilitation and increased length of hospital stay (Finestone et al 1996). The aetiology of malnutrition in stroke is a result of the complex disabilities which co-existing together with other non-stroke related problems such as:

- **Stroke related**
  - Dysphagia (Smithard et al 1996)
  - Inability to reach food (Blower 1997)
  - Difficulty feeding (Blower 1997)
  - Hemianopia
  - Difficulty preparing food

- **Non-stroke related**
  - Inadequate hospital provision
  - Unpalatable puree diet
  - Depression
  - Tiredness at mealtimes
  - Hospital environment
  - Infection

Many more causes of a reduced oral intake exist. PEG's have been shown to be safe and may be placed within two weeks of continuing dysphagia (James et al 1998), these are superior to NG tubes for long term feeding as the full nutrient prescription is more routinely achieved (Norton et al 1996). However, the decision to insert such a feeding tube needs the consultation of the patient, family and multidisciplinary team and in particular liaison of the Dietitian and the Speech and Language Therapist. Oral intake is always preferable where possible and supplementation using oral sip feeds has been shown to increase nutrient intake and nutritional status (Gariballa et al 1998). Feeding policies vary enormously (Hayes 1998) and stratification of these are required through the use of evidence-based care pathways.

2. Dehydration Fluids are required for all hydrophilic reactions including digestion, absorption, transportation and utilisation of nutrients together with the elimination of products and thermoregulation. Dehydration is common in clients following stroke and can predispose to further cognitive impairment, confusion, increased risk of pressure sores and urinary tract infection. Government requirements for the NHS are for a fluid intake of 1500ml/day. O'Neill et al (1996) demonstrated a hugely inadequate intake of fluid in patients following stroke of 688 ml/day.

3. Constipation Clients demonstrate a delayed gut transit time secondary to reduced mobility and decreased sensation (Ho et al 1995). This can be uncomfortable, further reduce appetite and may require medication. Clearly physical activity, regular trips to the toilet and a gradual increase in dietary fibre will reduce this.

4. Prevention The National Stroke Association of the US identified cigarette smoking, alcohol use, physical activity, diet and hyperlipidaemia as factors which may be modified to reduce further stroke (Gorelick et al 1999). A diet low in saturated fats, high in soluble fibre and anti-oxidant vitamins together with a moderate alcohol intake is associated with a reduced risk of stroke event.

REFERENCES

Blower AC, *Is thirst associated with disability in hospitalised patients?* **J Hum Nutr Diet** 10(5), 289-294, 1997.

Bonnefoy M, Coulon L, Bienvenu J, Boisson RC, Rys L, *Implication of cytokines in the aggravation of malnutrition and hypercatabolism in elderly patients with severe pressure sores.* **Age & Ageing** 24(1):37-42, 1995.

Chernoff R, *Meeting the nutritional needs of the elderly in the institutionalised setting* **Nutr Rev** 52(4): 132-136, 1994.

Department of Health, *The Health of the Nation. Nutritional Guidelines for Hospital Catering, 1995*
Elia M. Artificial nutritional support. **Medicine International** 82: 3392-6, 1990.

Finestone HM, Greene-Finestone LS, Wilson ES, Teasell RW, *Malnutrition in stroke patients on the rehabilitation service and follow-up: prevalence and predictors.* **Arch Phys Med Rehabil.** 76(4) 310-316, 1995.

Finestone HM, Greene-Finestone LS, Wilson ES, Teasell RW, *Prolonged length of stay and reduced functional improvement rate in malnourished stroke rehabilitation patients* **Arch Phys Med Rehabil.** 77(4), 340-345, 1996.

Gariballa SE, Parker SG, Taub N, Castleden CM, *A randomised, controlled, a single-blind trial of nutritional supplementation after acute stroke* **Journal of Parenteral & Enteral Nutrition** 22(5):315-9, 1998.

Gorelick et al. *Prevention of stroke: a review of guidelines and a multidisciplinary consensus statement from the National Stroke Association* **JAMA** 281(12): 1112-1120, 1999.

Hayes JC, *Current feeding policies for patients with stroke* **British Journal of Nursing** 7(10):580-8, 1998.

Ho YH, Goh HS, *Anorectal physiological parameters in chronic constipation of unknown aetiology (primary) and of cerebrovascular accidents – a preliminary report* **Annals of the Academy of Medicine, Singapore** 24(3):376-8, 1995.

James A, Kapur K, Hawthorne B, *Long term outcome of percutaneous endoscopic gastrostomy feeding in patients with dysphagic stroke* **Age and Ageing** 27: 671-676, 1998.

Kalra L, Yu G, Wilson K, Roots P, *Medical complications during stroke rehabilitation* **Stroke** 26(6):990-4, 1995.

McWhirter JP and Pennington CR, *Incidence and recognition of malnutrition in hospital* **BMJ** 308 (6934): 945-948, 1994.

Norton B, Homer-Ward M, Donnelly MT, Long RG, Holmes GK, *A randomised prospective comparison of percutaneous endoscopic gastrostomy and nasogastric tube feeding after acute dysphagic stroke* **BMJ** 312(7022):13-6, 1996.

O'Neill PA, Davies I, Fullerton KJ, Bennett D, *Fluid balance in elderly patients following acute stroke* **Age and Ageing** 21(4): 280-285, 1992.

Smithard DG, O'Neill PA, England RE, Park CL, *Complications and outcome after acute stroke: does dysphagia matter?* **Stroke** 27(7), 1200-1204, 1996.

Kevin Whelan Graduated from Bristol University with a degree in biochemistry and then studied at Leeds Metropolitan University for a post graduate diploma in nutrition and dietetics to qualify for state registration as a dietician. He worked for 18 months as a clinical dietician at St Georges hospital in London working for acute and rehabilitation stroke services. He completed his masters degree conducting research on clinical hydration in dysphagic stroke patients.

He is currently a research dietician at Kings College London where he is conducting a PhD to demonstrate the effects of giving a probiotic on diarrhoea in elderly patients on enteral feeds.

SEATING FOR PEOPLE WITH COMPLEX DISABILITIES.

Amanda Wright MCSP

When considering the issues, whose perspective is it from?

- Patient
- Family and/or carers
- Rehabilitation Team
- Local Health Authority/ Social Services
- Regional/National policy
- Research

WHAT IS 'COMPLEX'?

- **Patient** – Complex means manifold, and may include physical problems such as abnormal muscle tone, particularly spasticity, abnormal movement patterns, abnormal trunk control (proximal stability), abnormal head position and control, loss of range of movement and or fixed joint positions and sensory disturbance. In addition there may be problems with cognitive functional stability, emotional stability, communication. The patient may be in discomfort or pain, in poor general health and may have compromised tissue viability.
- **Family and/or carers** – Complex means perplexing. It is necessary to consider the degree of dependence, the age and ability of carer, their lifestyle and other available support.
- **Rehabilitation team** – Complex means compromise. There must be an inter-disciplinary approach looking at prioritising problems with joint goal setting. This must be pragmatic rather than perfect and include long term planning and clear and concise record keeping.
- **Local authorities** – Complex means expensive. There will be a need to consider service priorities, financial constraints and the availability of specialist skills.
- **Regional/National policy** – Complex means convoluted and may result in variations of services and politics
- **Research** – Complex means difficult. The study population is variable, problems attaining. Funding and completing interdisciplinary research.

THE ROLE OF SEATING

This can be considerd under 3 main headings

- Therapeutic
- Functional
- Comfortable

- The **therapeutic** aspects of seating include:
  - positioning
  - managing spasticity
  - preventing deformity
  - enabling movement
  - Cardiovascular fitness
  - Consciousness/Awareness

  (Kayis et al 1999)

- The **functional** role of seating focuses on:
  - enabling – head control, hand function
  - ease of use
  - purpose
  - restraints
  - safety
  - transport
  - lifestyle

  (Dymond et al 1996, Beaumont White et al 1997, Perr 1996)

- **Comfortable** must consider:
  - quality of life
  - pain
  - stiffness
  - restraint
  - tissue viability

  (Pellow 199, Burns et al 1999, Tefler et al 1997)

The table below shows various seating options.

Chair	Electric wheelchair	Manual wheelchair
	indoor/ outdoor	self-propel/ attendant controlled
static or tilt-in-space		
standard or customised or moulded		
straps/restraints		

assistive technology, wheels, durability

REFERENCES

Barnes MF, (1997) *Standards in neurological rehabilitation, June 1997. European Federation of Neurological Societies Task Force* **Behavioural Neurology** 10, 2-3, S1-S7.

Beaumont-White S, Ham RO, (1997) *Powered wheelchairs: Are we enabling or disabling?* **Prosthetics and Orthotics** 21, 1, 62-73.

Dymond E, Potter R, (1996) *Controlling assistive technology with head movements – A review* **Clinical Rehabilitation** 10, 2, 92-103.

Herman JH, (1999) *Seating and positioning to manage spasticity after brain injury* **Neurorehabilitation** 12, 2, 105-117.

Kanyer B, (1992) *Meeting the seating and mobility needs of the client with traumatic brain injury* **Journal of Head Trauma Rehabilitation** 7, 3, 81-93.

Kohn J, Enders S, Preston J Jr, Motloch W, (1983) *Provision of assistive equipment for handicapped persons* **Arch Phys Med and Rehab** 64, 8, 378-381.

Sharman A, Ponton T, (1990) *The social, functional and psychological benefits of intimately-contoured cutomised seating: the Matrix body support system* **Physiotherapy** 76, 3, 187-190.

Amanda Wright joined the physiotherapy division Kings College London in 1991 setting up and running a community service for adults with learning disabilities and paediatrics. This service provided for children and young adults with profound and complex neurological disabilities and the prescription of seating was a core service activity. In 1998 she took up a secondment as Head of Physiotherapy at the Royal Hospital for Neuro disability aiming to introduce an evidence based approach.

Research interests are the effectiveness of physiotherapy in neuro rehabilitation. She currently holds an NHS R&D grant to promote EBP in the therapy professions.

ETHICAL ISSUES

Penelope Robinson MA, MCSP
Director of Professional Affairs

Complex is defined as 'consisting of several closely connected parts: complicated; intricate; involved; hard to understand. Within disability there has been a focus towards creating a common language for functioning and disablement (WHO 1998). The definitions of the levels of functioning as described in the ICIDH-2, set out three levels of functioning as follows:

- impairments
- activities
- participation

The three levels form distinct but parallel classifications. Limitations of activities and restrictions of participation constitute, along with impairments, the three dimensions of disablement. The conceptual definitions of the dimensions, set out below, provide the key to applying the new model. In the context of a health condition, impairment is a loss or abnormality of body structure or of a physiological or psychological function (eg loss of limb, loss of vision); an activity is the nature and extent of functioning at the level of the person. Activities may be limited in nature, duration and quality (eg taking care of oneself, performing the activities required of a job). Participation is the nature and extent of a person's involvement in life situations in relation to impairment, activities, health conditions and contextual factors (eg being employed, participation in community activities, obtaining a driver's license, being a qualified voter).

The next question is 'who is managing complex disability, and for whom is it complex? This brings out the concepts of autonomy and personhood, and the need to consider where we are within either a medical or social model. Currently the concentration is on pragmatic issues such as

- Justice as the means and measures by which resources are allocated (rationing)
- Informed consent (competence/decision making).

It is also important to consider the moral status of disabled people in terms of the concept of quality of life/feedback from individuals and to continually review attitudinal issues.

Penelope Robinson spent 16 years practising in the NHS. Her last post was as a Senior community paediatric physiotherapist in Ipswich where she was involved in coordinating and developing a district wide service. She joined the CSP in 1982 and was appointed Director of Professional affairs in 1988. She continued to pursue her interests in ethics and the law, and gained a Masters in The Philosophy of Health care in 1989. She has also undertaken a Diploma in Health Care Law. She lectures widely on the legal aspects of physiotherapy, and has contributed to books and journals on these subjects.

COMPLEX DISABILITY: A CASE STUDY

Ros Wade BSc, MCSP Regional Neurological Rehabilitation Unit (RNRU)

D was a 24 year old male who sustained a severe head injury following an assault. A CT head scan showed a left temporoparietal subdural haematoma which was evacuated. His initial Glasgow coma score was three. He spent 18 days on the ITU, initially ventilated via tracheotomy.

He was admitted to the RNRU four months post injury with the following problems:

- Self ventilating but partly through a pinhole at his tracheotomy site
- Poor postural alignment
- Muscle shortening in both upper limbs and the left lower limb
- Pressure sore on left foot
- Muscle weakness and wasting
- Lack of a consistent means of communication
- Doubly incontinent
- PEG fed
- Fully dependant for all ADL
- Behaviour problems.

D's behaviour was a significant factor at this stage. He had been physically aggressive which had made it difficult for him to be managed. He was dependent on a hoist for transfer but getting him out of bed had safety considerations as he would kick out or try to bite. His behaviour was particularly aggressive in sessions where he was being physically challenged, but with a team approach and a series of contracts written with D his rehabilitation did continue.

On admission to the RNRU, D underwent a 10 day assessment period by the multidisciplinary team (MDT). From the physical assessment it was clear that D had severe postural malalignment which impacted on most other areas of therapy. He was also very unfit. The immobility of bed rest in normal healthy subjects is well recognised to produce profound changes in aerobic capacity, fitness and endurance (Convertino 1997) as well as muscle mass, strength, metabolic and cardiovascular changes. These effects in a head-injured population are likely to contribute to reduced functional performance, mood and quality of life perception as well as reduced work tolerance which may impair participation in rehabilitation (Sullivan et al 1990).

Following the assessment period the team put together the rehabilitation aims and the long term goals for admission. The rehabilitation aims are derived from a life goal questionnaire the patient completes within the assessment period. The purpose of this is to develop a more interdisciplinary approach with rehabilitation aimed at the level of participation (handicap) as opposed to disability. This process was adapted from work done at the Rivermead unit and described by McGrath and Davis (1992, 1995). From his life goal questionnaire D selected family, personal care and friends as his priority areas.

The first area for physiotherapy to address was that D posture impacted on all areas and therefore there was a need to establish a 24 hour posture and positioning programme to address the following areas which will be then discussed in more detail:

- A consistent team approach
- Provision of a suitable wheelchair and seating package
- Establish a feeding regime
- Review splinting & casting
- Ability to participate in activities of daily living
- Pressure area care
- Continence

There is growing evidence of the increased efficacy of a comprehensive specialist multidisciplinary service. An article published by Semlyn et al 1998 showed that patients with severe head injury and received a coordinated MDT rehabilitation programme made significant gains throughout the course of the study compared to a similar group of patients who had a single discipline approach.

When assessing for the wheelchair it is important to consider the balance and stability of body segments, ease of change of position, comfort and function as described by Pope in 1985. D was initially provided with a tall Carters recliner with a small wedged cushion to accommodate his pelvic malalignment and extending footrests for his legs.

Following this there was joint evaluation and intervention with the Speech and Language therapists (SALT) for chest hygiene and breath support to review communication and feeding. From the SALT assessment it was clear the in addition to the upper motor neurone damage, D also had damage affecting several of the cranial nerves. Although D could use an alphabet chart with his right foot he was impatient and frustrated when he was misunderstood. Joint sessions were needed to improve his breath control in sitting to enable vocalisation.

In addition when D arrived he was PEG fed, with an unreliable swallow and poor oral hygiene. A desensitisation programme was established for his face and mouth, as well as stretches and facilitation of movement to maintain the position of his cervical spine. He was also provided with adapted cutlery to aid feeding with his right hand. Following a videofluroscopy it became clear that his swallow was safe and effective when his head was rotated to the left and this was then encouraged for all meals.

The next area to address was the muscle shortening and the appropriate use of splinting. The mechanical and neurophysiological changes following spastic equinovarus have been well documented (Watkins 1999), and the principles for splinting established. In *Neurological Physiotherapy*, Sue Edwards states ‘where there is established shortening in the posterior crural muscles and Achilles tendon, serial casting may be considered’. Following application of serial casts, 50° increase in range was achieved and the state of the skin had improved. However further ROM could not be gained and so a surgical release of the tendoachilles was performed and plantigrade achieved.

The next area to consider was D ability to participate in personal care in terms particularly using his hands.

Treatment was aimed at stretching and mobilising the soft tissue of his palm and web space across his thenar eminence in conjunction with regular analgesia to gain ROM, and improve hand hygiene. An adaptation of a soft splint as described by Mackay and Wallen who used this for an elbow, was made for the left hand to maintain range.

The nursing staff addressed pressure care in terms of assessment using dependency and the Waterlow rating scales, and continence was achieved by a toileting programme.

D progressed well with his rehabilitation and this was evaluated in a number of ways:

- Short term goals were reviewed in weekly team meetings
- Long term goals were rated at discharge on Goal Achievement Rating Scale (RNRU)
- 10m walk when appropriate
- FIM (Granger et al 1986) and Barthel (Mahoney & Barthel 1965)
- RNRU Discharge Dependency scale (McNeil and Greenwood 1999)

Throughout the course of treatment D stayed on the Unit (11 months in total) there were regular meetings with the family and local social services. On one level the family support for D was good, but underlying pre existing tensions within the family became more apparent which impacted on his discharge plans.

Although D achieved many of his goals in terms of independence in walking and transfers, he was fully continent and had clear verbal communication of his basic daily needs, it was recommended that D to would benefit from further rehabilitation at a unit incorporating therapy and education and promoting greater functional independence. He had achieved certain aspects of personal care and had begun to be involved in using the computers. It was felt that there were still areas D could achieve in a more appropriate environment. However D refused and insisted on discharge to home.

D spent one year at home with intermittent follow up from an understaffed community team, before finally taking up a place at Banstead place. Inevitably D has lost some of the goals he had achieved but had gained others, such as the ability to do stairs. He is able to walk around his room independently but with a flexed posture. D’s ongoing lack of insight and refusal to cooperate with all aspects of therapy may well be what ultimately determine his outcome from rehabilitation.

REFERENCES

ACPIN, *Clinical Practice Guidelines on Splinting Adults with neurological dysfunction 1998*

BJ, Doyle M, Montgomery J, (1983) *Serial Casting for the management of spasticity in the head injured adult* **Physical Therapy** 63 pp1960-1966

Semlyn J, Summers S, Barnes M, (1998) *Traumatic Brain Injury: Efficacy of Multi-disciplinary Rehabilitation* **Archives of Physical medicine & Rehabilitation** 79, pp 678-683

Sullivan T, Connie T, Goodman, Mackie T, (1988) *Serial Casting to prevent equinis in acute traumatic head injury* **Physiotherapy Canada** 40, 6

McGrath J, Davis A (1992) *Rehabilitation: where are we going and how do we get there?* **Clinical Rehabilitation** 6, pp225-235

McGrath J, Marks J, Davis A, (1995) *Towards Interdisciplinary rehabilitation: further developments at the Rivermead rehabilitation Centre* **Clinical Rehabilitation** 9, pp320-326

Pope P, (1985) *A study of instability in relation to posture in the wheelchair* **Physiotherapy** 71,3, pp127-129.

Kanyer B, (1992) *Meeting the seating and mobility needs of the client with traumatic brain injury* **Journal of Head Trauma Rehabilitation.**

Neurological physiotherapy: A problem solving approach 1996, Edited by Susan Edwards **Published by Churchill Livingstone**.

Watkins C (1999) *Mechanical and Neurophysiological Changes in Spastic Muscles* **Physiotherapy** 85,11, pp603-609

Mackay S, Wallen M, (1996) *Re examining the effects of the soft splint on acute hypertonicity at the elbow* **Australian Occupational Therapy Journal** 43, pp51-59.

McNeil J, Greenwood R, (1999) *The Use of Outcome Measures in a Neurological Rehabilitation Unit* **Neuropsychological Rehabilitation** 9, 3/4 pp321-328

Ros Wade qualified from the Royal London Hospital School of Physiotherapy and North East London Polytechnic in 1985. She has recently taken up the post of Senior Physiotherapist at Mardon Neurological Centre, Exeter. Her specialist interest is in the treatment and management of traumatic brain injury.

MEASURING OUTCOME IN PEOPLE WITH COMPLEX DISABILITIES

Jenny Freeman PhD, MCSP

There has been increasing interest in measuring outcomes since 1980's, with extensive technological developments resulting in increased variations in practice and increasing costs, and a greater demand to demonstrate benefits. In the 1990's there has been a renewed momentum, as emphasis now focuses on shared decision making.

The key steps in the evaluation process include:

- Determining the purpose of the evaluation
- Understanding the aims of the intervention
- Undertaking a valid method of evaluation
- Interpreting the results
- Applying the results to practice

Fundamental questions to consider before selecting a measure include defining what question are you asking, what are you trying to measure, what is the best method and what instrument to measure it with. You must also consider what will be done with the information?

WHAT QUESTION ARE YOU ASKING?

1. What are the characteristics of the population?
2. Is the intervention effective?
   - single intervention
   - overall package of care
   - in routine practice
   - for research purposes

DECIDING WHAT TO MEASURE

- What does the intervention involve ?
- What are the goals of intervention?
- What can be expected to change ?
- What is the likely size of the change ?
- What is the likely timing of the change ?

In cases of complex disability, the physiotherapy management is long-term (life-long) and may cover many different conditions, and is taking into account physical and psychosocial issues, treatment for acute problems alongside long term management, is generally multi-disciplinary and will often deal with a changing baseline.

General aims as described by Pope (1997) include positive components such as the need to optomise functional abilities, encourage active movement, review posture and quality of life. The aims will also consider the negative components such as the need to minimise or prevent pain, protect pressure areas and prevent contractures.

Specific physiotherapy interventions may include:

- gait re-education
- mobilisation techniques
- strengthening programmes
- splinting
- standing regimens
- provision of aids and equipment
- wheelchair provision and alterations

WHAT TO MEASURE

- Impairments: endurance, strength, hypertonicity
- Disabilities: walking, transferring, dressing
- Handicaps: employment, leisure
- Patient satisfaction
- Goal achievement
- A combination of these?

Or should the focus be on:

- Quality?
- Quantity?
- Level of independence?

When selecting a measure, the key features are that it should be clinically useful ie practical to administer, inexpensive and acceptable, and scientifically sound ie valid, – reliable and responsive, as well as show comparability.

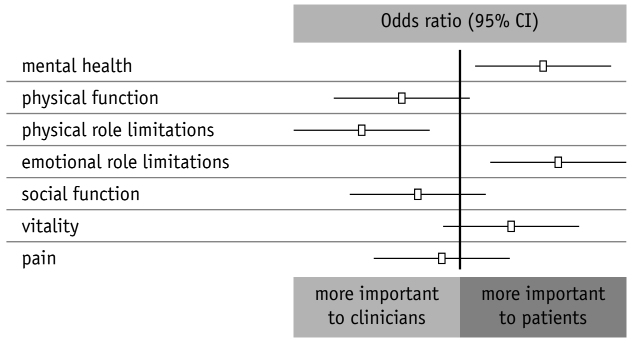
In order to select a measure information can be obtained from the CSP Outcome Measures Database at www.nice.org.uk, or by telephone/fax/letter, literature searches such as from journals/books or through other Internet sites such as www.cchs.usyd.edu.au/pedro Information can be gained through e-mail discussion groups and networking with colleagues.

It is imporatant to use the information in daily practice in terms of assessment (identify problem areas, direct intervention, formulate goals) and through measurement (objective evidence of success or failure, monitor progress objectively, as an aid to communication in reports and as a motivation for patients and staff.) A common mistake is assuming that what you think is an important outcome is what the patient thinks is important. A study by Rothwell et al (1997) reviewed the 'Patient and professional perceptions of important determinants of quality of life'. From the diagram below it is clear that the two views rarely overlapped.

Another common mistake is to assume that because lots of people are using a measure then it is relevant for you and a good measure ! An example of this is the SF-36. This is widely considered to be the gold standard generic instrument for measuring quality of life. It has been extensively evaluated, proven to be reliable and valid in a range of conditions. It has been used in numerous trials world-wide. However, in reality it is of limited use as a measure of outcome in interactions for people with moderate or severe disability as many items are not relevant, there are marked floor effects in a range of dimensions and it shows poor responsiveness. (Freeman et al 1996,1999, Kersten et al 1999).

Another mistakes is to be measuring the right outcome at the wrong time. This is shown in a study in 1999 which looked at the 'Outcome following multidisciplinary inpatient rehabilitation in MS'. It was found that the optimum scores occurred for disability (51%) at discharge, but for handicap (74%), physical aspects of quality of Iife (82%) an emotional aspects of quality of life (91 %) these all occurred following discharge. (Freeman at al, Neurology 1999)

Patient and professional perceptions of important determinants of quality of life



Other mistakes that can be made is to assume that because the measure is reliable, valid and responsive in one population then it will also be reliable, valid and responsive in a different population or setting. Therapists can also be concerned that you need to measure everything. It has been shown that overburdening reduces compliance and that you must consider the reality of time and resources available and if all the information will be used. Finally, there is no perfect measure to suit all people for all purposes at all times.

In summary, know why you are undertaking the evaluation; understand what your intervention aims to change and when change is likely to occur. Consider different perspectives and remember that the choice of measures should be evidence-led. Ensure the measurement process is rigorous and that you use the infomation gathered.

Jenny Freeman works as a research fellow at the Institute of Neurology, Queen Square, London and a lecturer at Plymouth University, Devon. Her clinical specialty is neurology, having worked at the National Hospital for Neurology and Neurosurgery from 1988-98. She gained her PhD in 1997. Her research experience includes clinical trials of rehabilitation, evaluation of outcome measurement instruments and the investigation of quality of life in people with MS. She is on the advisory committee for the Chartered Society of Physiotherapy Outcomes Databases.

MULTI-PROFESSIONAL CARE PATHWAYS

Karen Rowland MCSP

The main objectives for this presentation were to demonstrate the need for and value of multi-professional care pathways within a national context, and to share experiences of development and utilisation of paper based pathways at a local level.

Integrated Care Pathways can improve the efficiency, effectiveness and quality of patient care, and have been defined as 'a way of determining locally agreed multidisciplinary practice for a specific patient group/condition, which is based on guidelines and evidence and which forms all or part of the clinical record. It should also facilitate the evaluation of outcomes for continuous quality improvement.' (NPA 1998)

Care Pathways have many synonyms, such as:

- Anticipated recovery pathway (ARP)
- Integrated Care pathway
- Care profile
- Clinical algorithm
- Clinical standard
- Collaborative care plan
- Multidisciplinary pathway of care (MPC)
- Multi-professional care pathway

The development of multi-professional care pathway have been encouraged by a variety of national Initiatives. These include Clinical Governance, Clinical Effectiveness, Risk management and Information for Health.

Clinical governance when established, acknowledged that by 'shifting the focus towards quality, this will require practitioners to accept responsibility for developing and maintaining standards within their local NHS organisations' (The new NHS Modern and Dependable 1997). Clinical Governance has been defined as' a framework through which NHS organisations are accountable for continuously improving the quality of their services and safeguarding high standards of care by creating an environment in which excellence in clinical care will flourish' (A First Class Service 1998). Clinical Governance emphasises quality improvement processes and requires high quality data collection to monitor clinical care to provide evidence based practice for day-to-day use with the infrastructure to support it. It should also allow poor clinical performance to be recognised and dealt with at an early stage.

Clinical Effectiveness was made a priority by the following directives:

- EL(93)115 – Improving clinical effectiveness
- EL(94)74 – Improving the clinical effectiveness of the NHS
- 1996 Promoting clinical effectiveness
- 1998 Good Practice – Clinical guidelines.
- It encourages the use of clinical guidelines.

Clinical Effectiveness can be defined as 'The extent to which specific clinical interventions when deployed for a particular patient or population, maintain and improve health and secure the greatest possible health gain from the available resources'.

Risk Management is:

- Concerned with prevention of unwanted outcomes
- Reduces variation in clinical practice
- Provides an accepted standard of care
- Prevents and avoids untoward incidents and events
- Ensures the appropriateness of care

A 'First class service (1998)' stated that 'high quality information is essential for good clinical governance and effective performance management'. The purpose of the Information Strategy was to ensure that information is used to help patients receive the best possible care, to provide NHS professionals with the information they need and to provide patients, carers and the public with health information. National Information Developments have included the building and development of EPR (as shown below), and the national target is for 35% of all organisations to be at level 3 by 2002.

NHS EPR MODEL

- **Level 6** Clinical Knowledge and decision support. Level 5 plus telemedicine, other multi-media applications eg medical imaging
- **Level 5** Speciality Specific Support. Level 4 plus special clinical modules, document imaging)
- **Level 4** Clinical Knowledge and Decision Support. Level 3 plus electronic access to knowledge bases, embedded guidelines, rules, alerts, expert system support)
- **Level 3** Clinical Activity Support. Level 2 plus electronic clinical orders, results reporting, prescribing, multi-professional care pathways)
- **Level 2** Integrated Clinical Diagnosis & Treatment Support. Level 1 plus integrated master patient index & departmental systems)

- **Level 1** Clinical Administrative Data. Patient administration and independent departmental systems.

Integrated care pathways provide a framework for care focused around patients not systems, multidisciplinary team working, consistent, timely and coordinated care and patient information about treatment. They provide the tools for the implementation of single patient record, evidence based care, risk management, clinical management and clinical audit. In order for these to be developed locally, they *must* be written by the multi-disciplinary team, have a designated member from each discipline, have direction and staff ownership. They must be implemented through a consultation period, be evidence based and the team must be enthusiastic and believe in the process.

Integrated care pathways (ICP) have already demonstrated a number of achievements. These include the fact that there are approximately ten pathways in operation with positive response from patients and improved communication. The co-ordinated patient care has led to reduced length of stay and by promoting best practice has provided a wide-ranging audit tool. Other benefits have been to raise staffing issues through variance analysis as well as to keep practice current. Some problems encountered include poor compliance to complete the documentation, the need for constant review which is time-consuming, high staff turnover and poor motivation and also some staff saw the ICP as extra work. However it is necessary to allow sufficient time for the ICP to develop.

Further areas for consideration include should ICP's be centrally coordinated and developed, and the need for ICP's to be developed across established organisational boundaries. The legal implications should be considered with regard to version control, audit trail of development, language and variance reporting.

In summary, ICP's require established Multidisciplinary Groups and can provide systematically reviewed care processes. They can produce co-ordinated, patient-focused care and provide excellent audit potential.

Food for thought: If you always do what you always did you will always get what you always got.

Integrated Care Pathways can improve the efficiency, effectiveness and quality of patient care.

Karen Rowland qualified as a physiotherapist in 1987 from the Oswestry and North Staffs School of Physiotherapy. After a staff graduate rotation in Somerset she took up a post on a stroke unit in Sheffield and started her neurological career. After 6 years as a senior I at Bassetlaw hospital in neuromedicine, she took up a lecturing post at Sheffield Hallam University in 1997. She lectures on both the undergraduate and postgraduate programmes and is also in the final stages of her own masters degree. She is currently the honorary education officer for ACPIN.

MANAGING BEHAVIOURAL PROBLEMS IN COMPLEX DISABILITY

Dr Simon Fleminger, Consultant Neuropsychiatrist

Case Vignettes were used to illustrate the principles of management, and the areas covered included general principles, the minimally responsive patient, non-compliance, risk management, aggression, graded moderate exercise and other antisocial behaviours such as sexual disinhibition, shouting and faecal smearing.

General principles of management require a full assessment to be completed to include the history from before injury, attitudes to disability and any mental illness. Then behaviour is reviewed and progress since injury noted, and especially the medical condition. Any use of drugs is also noted (intoxication, withdrawal/craving...). The physical and cognitive state, pain, constipation and agnosia etc are also important areas to consider. Mental health should also be reviewed, in particular anxiety, fear, delusions, or depression.

When looking to make a diagnosis beware of the need to diagnose either organic or mental illness (mind versus brain; physical versus psychological). It is usually an interaction between the two, but often it is the psychological responses which are most amenable to change.

When considering any intervention it is important to document, record and measure symptoms before starting. Then wait. Each area should be approached one at a time in a 'Trial and Error' format (ie stop if no effect, and consider n-of-1 study). Any interventions should be discussed with family and/or carer.

Interventions may focus on a variety of areas such as:

- Environment least restrictive and institutional
- Nursing to create an emotionally warm environment with good physical care
- MDT to provide good liaison between team, joint clear goals, consistency.

Cognitive behavioural programmes which are often based on ABC (antecedents, behaviour, consequences) but which are very difficult to implement and need opportunity for whole team to meet.

Drugs are used as a last resort: 'Start low, go slow, don't chase your tail'.

In patients who are described as in a minimally responsive state, the patient often deteriorates and this may appear to be associated with increasing insight as they can appear to 'give up'. Also at this stage there is often an associated evidence of increasing agitation. It is important to exclude ongoing brain injury, epilepsy etc and look for evidence of fear, persecutory delusions, or depression. It is important to work with family at all stages and accept the need to acknowledge that its as good as it gets. One such case is of a 33 year old patient, GW, who was in coma for six months, but at 30 months was walking with assistance, had an inconsistent yes/no response and could sing familiar songs. However GW then started not to comply with the rehabilitation programme, lost weight, showed increasing distress with eye to eye contact, was thrashing around and had to be nursed in bed. There was slight improvement with antipsychotic and antidepressant combination drug therapy but this was poorly maintained. Five years later, the patient is generally calmer but remains recumbent. (Fleminger S, Murphy L, Lishman WA 1996 *Malignant distress on eye-contact following severe head injury*. J. Neurol. Neurosurg. Psychiatry 61:114-5).

An example of a patient who was actively non-compliant was a 55 year old who had suffered an RTA. He had a history of syncopal episodes and someone whose 'expectations went beyond reality'. The scan had shown an infarct in the distribution of posterior cerebral arteries which had resulted in cortical blindness. He had systematised delusions based on belief that he would recover sight in a few weeks on high protein diet. Therefore he refused to go to unit for visually impaired. The management included attempting to negotiate a compromise and that in the meantime he would learn skills to enable him to be more independent.

Alternatively patients exhibiting passive non-compliance is a relatively common problem. In the role of brain injury the dopamine pathways are often damaged, but there is a need to try to determine contribution of depression and other factors eg their agenda is different , alcohol dependence. In these cases it is important to gently establish rapport with the patient, look for activities they are interested in and try to use these as basis for rehabilitation.

Bromocriptine may have particular role but it is also worth considering an antidepressant.

Aggression is a common problem and often directed at nurses and physiotherapists. Issues to consider are improving staff confidence by safety in numbers, accessing training in the management of aggression, knowledge of breakaway techniques and understanding how to approach the patient. It is important to minimise the situations producing aggression and to use appropriate restraint when necessary (physical restraint is often better than chemical eg mittens, another person to hold arm). Drug management of aggression is very poorly defined.

In terms of risk management a case example is of a 24 year old who attempted strangulation four years ago. She was in a rehabilitation unit for two years but progress was prevented by the risk of deliberate self harm (DSH). She was largely using a wheelchair, was not allowed out of the unit, but continued with repeated DSH such as throwing herself to floor, attempted strangulation and drinking bleach. She was transferred to a behavioural unit where a neuropsychiatric assessment was completed and a 'Risk-Benefit analysis' done. The decision for the behavioural programme was to ignore the DSH! One year later, she never uses the wheelchair on the unit, goes to local shops by herself and is being discharged to a transitional living unit. Although she remains fragile, she is maintained by a consistent approach.

Finally a review of graded moderate activities and the role of physiotherapy. One case describes a 40 year old previously very fit man who was hit whilst riding a bicycle. He sustained a brain injury plus facial fractures. He was non-compliant with local rehabilitation services saying that they would not address his pain. However he presented with an all or nothing approach to activities, and activity produced fatigue and pain. An in-patient cognitive behaviour programme was established in close liaison with the physiotherapy in gym to facilitate an exercise programme, although this was very difficult to implement.

Dr Fleminger works as a consultant neuropsychiatrist to the Lishman Brain Injury Unit at the Maudesley Hospital and the Edgware Brain Injury Unit. Both units look after adults who have suffered cognitive and behavioural problems following acquired brain injury. He trained in psychiatry as well as having considerable experience in neurology.

REGIONAL REPORTS

EAST ANGLIA

Louise Dunthome
Regional Representative
Tel: 01473 704150

East Anglia ACPIN membership stands at 35 and we are still actively recruiting for both ACPIN members and committee members. Anyone who is interested in joining us do give us a call! Due to the large geographical area we cover, evening lectures have been phased out and we are instead organising day courses. In June a very successful day was held on the 'Management of Spasticity for the Community MS Patient'. The feedback received was very good.

In September, a study day entitled 'Manual Handling and Neuro Rehabilitation, Complementary or conflicting?', proved to be a very popular topic with many more applicants than places. It provided an excellent forum to discuss current practice and risk assessment.

East Anglia sent four representatives to the Bobath Memorial Workshop in June, on writing case studies. We are collating information at the moment.

In November Addenbrookes Hospital hosted a study day on respiratory problems encountered in neuro- logical patients.

The committee is hoping to recruit more people on board to help inspire next year's programme. So if you do have an interest in your regional branch please contact us and see what YOU can do to help support East Anglia ACPIN!

KENT

Janice Champion
Regional Representative
Tel: 01634 270198

This year Kent region held a four day course entitled 'A practical approach to Musculo-Skeletal techniques for Physiotherapists in Neurology' in January and February 2000 which was taught by Heather McKibben. This was very well received and has influenced the practice of many who attended.

We held our AGM in March where Susan Rhodes, Specialist Clinician in Musculo-skeletal Physiotherapy introduced us to 'Pilates'. A theoretical lecture was followed by a practical session where our trunk stability (or instability) was explored!

Our November meeting was a lecture on 'Muscle Imbalance in the Upper Quadrant' by Stuart Hide MCSP.

Our new Chairperson is Jane Peters who works at Maidstone Hospital. Jane has taken over from Gill Williams who after many years of leading our group has decided to stand down. Many thanks go to Gill for her hard work and dedication and we welcome Jane to the chair.

Our aims for the forthcoming year are to improve the networking of the 'neuro-physios' in the region and to support the professional development of our members by providing informative and thought provoking meetings and study days.

Next years programme is still in the planning stage but for further information please contact Janice. at the Medway Maritime Hospital.

LONDON

Anne McDonnell
Regional Representative
Tel: 020 7830 2438

London ACPIN started the year 2000 well with a one and a half day course, entitled 'The Millennium Extravaganza'. Sixty Physiotherapists attended and the abstracts are in this edition of Synapse. We also had a successful half a day on FES with Jane Burridge. We have continued to have evening lectures once a month, which have included: 'The NHS into 2000'' Parkinsons Update', 'PVS – Locked in Syndrome', 'Acute Spinal Injuries'. We are always looking for new committee members. If you are interested please contact me, or any member of the Committee. Our 2001 programme includes lectures on 'Acute Stroke Management', Andy Evans on 30 January 2001, 'Management of Patients with Conversion Disorders: a Team Approach', 'Management of Multiple Sclerosis: Current Trends, and 'An Introduction to Pilates'.

MANCHESTER

Louise Rogerson
Regional Representative
Tel: 0161 2914510

Manchester's 2000 programme is progressing well with good attendance for most of the lectures. The committee would like to thank all the speakers who have contributed.

The committee has seen an influx of new members and a new chairperson, Hilary Chatterton, was elected at the AGM. The post of Northwest board representative remains vacant, as does the secretary post; anyone interested in taking up either of these posts should contact a committee member.

Our current membership is 79, which is back to a normal level after a drop in numbers last year. Generally people are happy with the response time for membership applications.

A new working party has been set up to establish courses for clinical appraisal skills and promote the use of journal clubs across the region. This group is collaborating with the national ACPIN research group to fit in with national initiatives.

The regional neuro audit group has recently completed an audit of documentation in the out-patient setting, and this will be repeated in the near future. The group is now turning its attention to the use of Botulinum Toxin across the region to establish the current protocols in use, and what guidelines are being followed.

The committee is currently exploring the possibility of running weekend or one-day courses in the next year, hopefully these will include theory and practical elements.

The programme for 2000 has included talks on Botulinum Toxin, the Management of Parkinson's Disease and ANT.

MERSEYSIDE

Elizabeth Self
Regional Representative
Tel: 0151 706 2760 ext 2769

On behalf of the Mersey committee I would specially like to thank Jenny Craig for all her hard work as regional representative over the past years. She has recently taken the lead in expanding the role of regional research facilitator.

The committee would like to thank all our members and speakers during the initial months of 2000 for their support and extend our thanks once more to Sharon Williams, who continues with her invaluable support lecturing at the workshops and as our president. Despite national membership difficulties our membership is 51 at present. We have a very healthy and active committee of 10 but would like to encourage any member to view or join in what the committee does on your behalf.

The highlight for the beginning of the year's programme was the 'Management of Spasticity in Multiple Sclerosis'. Heather Cameron gave a two-day lecture on trigger points, which was eventually very successful and gave some food for thought. 'Medical Legal Issues' lecture gave a frightening but realistic insight into physiotherapy legal issues. Other successful lectures included a lecture on lower limb orthotics and current research into multiple sclerosis. Incomplete Spinal Injuries and acupuncture lectures will complete the lecture programme for 2000.

I would like to thank all the committee for their hard work in preparing this years lecture programme.

Next year, ideas for lectures include 'Systemic Lupus Erythematosus' 'Neurology Respiratory', 'Lycra splints', 'Benefits and Allowances' and 'Driving Assessment Unit'.

Please continue to support ACPIN and we will be looking forward to seeing you all during the forthcoming lectures.

NORTHERN

Gillian Emond
Regional Representative
Tel: 0191 5656256 ext 43456

Please contact the above for further information.

NORTHERN IRELAND

Margaret Lewis
Regional Representative
Tel: 028 9026 3077

Please contact the above for further information.

NORTH TRENT

Steve Cheslett
Regional Representative
Tel: 01709 561399

Please contact the above for further information.

OXFORD

Nicky Sharman
Regional Representative
Tel: 01296 315000 ext 5919

Oxford region have had a variety of well attended evening lectures every 4-6 weeks. These have included a presentation on gait analysis of patients with complex disabilities, and a talk explaining a new standardised somatosensory testing system. Thanks again to retiring committee members, especially Hilary Glenny (former treasurer). We wish her luck in her new job in the Midlands.

Unfortunately our region has been suffering from a diminished committee. As such we have sent out out a letter requesting increased support from our members … and thank you to those who have responded! We are a very enthusiastic group and always appreciate new ideas and new faces!

Due to new members joining the team we have had to delay organising our provisional programme for 2001. (This is partly in anticipation of the exciting and original ideas we are expecting from our new committee members.) Some thoughts for future talks include neurophysiology and our popular patient demos. Aspects from a planned MS study day (now sadly cancelled) may also be included in next years programme, if there is sufficient interest. Next years programme will be sent out to members as soon as possible.

SCOTLAND

Emma Forbes
Regional Representative
Tel: 01786 473499

2000 has been a very busy year for Scottish ACPIN. Every study day has been successfully run and very well attended. The final study day of this year was on November 25th entitled 'Development of Functional Measurement in Neurology'.

We have had a change of personnel in the committee with a new Chairperson and membership secretary. Also we have a now committee member making a total of seven.

The diary for 2001 has not been finalised yet but suggestions have been submitted and are being followed up at present. Suggestions include 'Dyspraxia', 'Neurosurgery and Neuro Rehabilitation', 'Muscle imbalance' and 'Normal Movement Practical Problem Solving'. Please contact myself on, or any of the committee members with ideas or suggested speakers.

SOUTH TRENT

Linda Cargill
Regional Representative
Tel: 01332 340131 ext 5632

The South Trent ACPIN committee has undergone considerable changes this year, Many thanks to everyone for all their hard work and welcome to the new members. We are still keen to expand the committee further and would particularly welcome representatives from Leicester.

So far this year we have offered four evening lectures and a one-day course. The AGM in January invited an orthotist to speak on the use of lower limb orthoses in neurology. In March a group visited the MS therapy centre in Nottingham. Erica Malcolm also did an evening practical session on 'Handling the upper limb', and in April Cath Sackley presented the results of her research on recovery and management of clients after severely disabling stroke. In June Maggie Campbell did a day course on the 'Assessment and management of balance disorders following TBI', which was attended with great interest.

The committee is now working hard to arrange events for next year. As always we welcome suggestions for the programme and any feedback on how the committee is run.

The current membership for the group is 62.

SOUTH WEST

Liz Britton
Regional Representative
Tel: 0117 9701212 blp 1459

This year we have managed to put together a varied programme of evening lectures and courses. The majority of which have been well supported by our membership.

The half-day workshop on Parkinson's disease held by Gay Moore saw a good attendance from members all over the region. The two-day follow-up motor-science course was also particularly well received.

Plans for the next couple of months include a day entitled 'Life Beyond Normal Movement' led by Sue Edwards MCSP on November. at Bristol General Hospital.

The next big event on the calendar is our AGM in March and this is where we need your help. We would like to hold a day entitled 'Best Practice in the South-West' and we need you to participate. If any of you out there are improving current practice, introducing evidence based practice or just has good ideas that you want to share please contact Colin Domaille, Committee Chairman or myself. Any ideas for next year's programme actively encouraged.

Our committee consists of physiotherapists who have been on the committee for some time and we are on the look out for budding committee members. If anyone is interested they should contact one of the committee.

SUSSEX

Naomi Jones
Regional Representative
Tel: 01273 455622 ext 6823

Please contact the above for further information.

WESSEX

Ros Cox
Regional Representative
Tel: 01202 665511 blp 0294

Year 2000 has seen few changes to the committee with Helen Foster as chairperson, Ros Cox as Regional representative,Carol McFaddon as treasurer and Jo Nisbett as regional secretary. We are looking to expand our committee so all members are welcome to join.

The programme this year has included some excellent study days with 'Strapping of the Neurological Shoulder' by Melissa Benyon back after popular demand from last year and 'Assessment and Treatment of Individuals with Balance Impairments' by Mary Lynch-Ellerington. Evening lectures have been better attended with great speakers on a variety of interesting topics including sensory inattention, perceptual testing and manual handling.

We are organising a Christmas social evening for all hospital representatives to discuss next years programme and development of Wessex ACPIN.

We would also like to extend a warm welcome to all members to attend our committee meetings which are held an hour before all evening lectures.

Year 2001 provisional programme includes a 'Forum to discuss national and regional issues' in January, and in the following months lectures on 'Outcome Measures in Neurology', 'Vertigo', 'Neurodynamics study day', 'Neurophysiology and neurophysiotherapy' study day and a series of 'Normal Movement' study days.

WEST MIDLANDS

Kate Duffield
Regional Representative
Tel: 0121 424 4407

The year 2000 has seen the formation of a strong committee group with 11 members and the re-establishment of a substantial regional membership of 70. This combination has brought new enthusiasm within the region and consequently a rolling programme of half study days and weekend courses have provided interesting and stimulating educational opportunities for our members. All courses have been well attended and feedback has been most positive. Courses for this year have included Ataxia in April which was well attended. A half day course covered assessment and the use of lycra splinting with these patients.

The Bobath Memorial Study Day in June was organised jointly with National ACPIN. Delegates worked through the process of formulating single patient case studies with guidance from eminent researchers. An Advanced Bobath Workshop weekend course was led by Lynne Fletcher and gave a challenging and refreshing insight into advanced Bobath assessment and treatment techniques.

Future courses planned for 2001 include Muscle Imbalance, led by Liz McKay February 2001; Communication Problems following CVA, April 2001.

We look forward to another successful year, and if there are any budding committee members who are interested in becoming part of the team please contact me directly.

YORKSHIRE

Sally Bowes
Regional Representative
Tel: 01274 65277

On behalf of Yorkshire ACPIN I would like to thank Jill Hall for all her time, commitment and enthusiasm over the years she has represented us as the regional representative. Thankfully she is not leaving us totally and will continue to be an active committee member.

We have had a busy year to date. All courses and lectures well attended, with very positive feedback. We would like to thank all that have contributed. The programme for the latter part of the year has included a lecture by Sue Edwards on 'Movement Disorders', and an evening lecture with Mary Lynch-Ellerington. The November lecture included a patient demonstration linked to Associated Reactions by Alan Bass.

We are in the process of planning for 2001, and as ever we would welcome any ideas, indeed anyone also to join the committee.

WHAT IS BBTA?

Dear Colleagues,
BBTA (British Bobath Tutors Association) is an organisation of tutors in the UK specialising in the assessment and treatment of adults with neurological impairment using the Bobath Concept. BBTA complies with the byelaws, rules and regulations of the International Bobath Instructor Training Association (IBITA).

MISSION STATEMENT
'To promote high standards in the assessment and treatment of adults with neurological impairment by provision of educational opportunities and through the development of the Bobath Concept'.

PURPOSE OF ASSOCIATION

- To optomise the activity and well being of adults with neurological impairment through improving therapeutic intervention using the Bobath Concept by running courses at differing levels, including theoretical, practical and patient centred components aimed at developing the assessment and treatment skills of the participants
- To maintain and improve the standards of BBTA recognised courses through continuous evaluation of all aspects of course content, teaching methodology and organisation and by implementing appropriate change where necessary.
- To facilitate personal and professional development of all members through organising regular meetings and educational programmes. Mechanisms in place include peer group review, personal development plans and mentorship.
- To promote the development of the Bobath Concept related to adults with neurological impairment through promoting clinical effectiveness and encouraging research and publications relating to the Bobath Concept.
- To formulate and carry out a training programme for physiotherapists and occupational therapists to become future members of BBTA by providing training modules/workshops, assistantships and peer group support to enable trainees to reach the level of qualification.

WHAT IS IBITA ?
IBITA is the international organisation of Instructors/Tutors specialised in the assessment and treatment of adult patients with hemiplegia and other allied neurological conditions – The Bobath Concept.

IBITA was founded in 1984 and unites instructors/tutors (physiotherapists and occupational therapists) worldwide, representing at the moment more than 170 members in 20 countries.

There are three categories of instructors:

- **Instructor/tutor**, a physiotherapist or occupational therapist who is qualified to lead basic courses.
- **Advanced course instructor**, a physiotherapist or occupational therapist who is qualified to lead both basic and/or advanced courses.
- **Senior instructor**, a physiotherapist or occupational therapist who is qualified to lead basic courses and advanced courses and qualify other instructors at all three levels.

WHAT ARE THE AIMS OF IBITA?

- To improve and spread the assessment and treatment of adult patients with hemiplegia and other allied neurological conditions.
- To promote and further the knowledge of the Bobath Concept related to adult hemiplegia and other allied neurological conditions.
- To increase the availability of IBITA recognized courses being held worldwide.
- To maintain and improve the standards of IBITA recognized courses.
- To improve and standardize the training of instructors throughout the world.
- To organise regular meetings and educational programmes and to facilitate the exchange of ideas between its members.

WHAT IS THE BOBATH CONCEPT?
The Bobath Concept is based on the work of Dr Berta Bobath, MBE, FCSP, D SOC (UC) and Dr Karel Bobath, MD, DPM.

The Bobath Concept is a problem solving approach to the assessment and treatment of individuals with disturbances of tone, movement and function due to a lesion of the central nervous system.

WHAT IS THE ROLE OF IBITA
IBITA set up the regulations, structure and content for:

- A three-week basic course for physiotherapists, occupational therapists, speech therapists and medical doctors, titled 'The Assessment and Treatment of Adult Hemiplegia – The Bobath Concept'.
- A one-week advanced course for physiotherapists and occupational therapists, on 'The Bobath Concept' as applied to the treatment of adult patients with hemiplegia and other allied neurological conditions.
- The training and qualification of instructors/tutors.

IBITA instructors also give introductory courses and workshops for the assessment and treatment of adult patients with hemiplegia and other allied neurological conditions.

WHERE TO GET INFORMATION ON COURSES?
In every country there is a contact person that can give further information on the courses given. Anyone requiring information in the UK should contact BBTA, PO Box 564, York, YO30 1WY.

Patricia Shelley
Chair BBTA

BRITISH ASSOCIATION OF BOBATH TRAINED THERAPISTS (BABTT)

Dear Colleagues,
Founded in 1988 by Mrs Jennifer Bryce MBE FCSP, the British Association of Bobath Trained Therapists (BABTT) is a study group open to individuals who have completed an eight-week basic paediatric Bobath course. This training is uniquely transdisciplinary bringing together speech, occupational and physiotherapists, as well as doctors who have a special interest in cerebral palsy. BABTT currently has approximately 500 members. BABTT is also a recognised Special Interest Group of the Chartered Society of Physiotherapy.

Bobath (Neurodevelopmental Therapy) is a post graduate training (provided by the Bobath Centre) in the treatment of children with cerebral palsy and other allied neurological conditions.

The Bobath Concept is an evolving approach to the assessment, management and treatment of children and adults with cerebral palsy. It is a problem solving approach, based on clinical experience and is constantly being developed. New information is integrated from clinical practice, as client's responses to treatment are evaluated and from theoretical knowledge arising from areas such as motor control, neurophysiology and infant development.

BABTT CONSTITUTION OBJECTIVES

- To create regionally and nationally a forum for discussion of ideas and research for all Bobath trained paediatric post-graduate therapists working in the United Kingdom and Eire.
- To promote a better understanding of the Bobath concept amongst other professionals and parents.
- To set, improve and maintain standards amongst British Bobath trained post-graduate therapists.
- To support and train clinical demonstrators in association with the Bobath Centre to assist with workshops aimed at improving and maintaining standards of Bobath trained post-graduate therapists.
- To support and safeguard the interests of the members.
- To inform members of new developments in the Bobath approach to treatment.
- To support the Bobath Centre in maintaining the standard of training.
- To maintain direct contact with associations abroad concerned with the Bobath concept of treatment and create links with professional bodies in the British Isles.
- To encourage research in the Bobath approach to treatment and to contribute funding towards the same.

BABTT's activities include:

- Quarterly Newsletter
- Annual regional workshops
- Support for research initiatives
- Ongoing clinical education & research
- Sharing of ideas within professional groups
- Transdisciplinary training and liaison through regular study days and annual education/AGM day
- Representation to professional bodies
- Interdisciplinary standards of practice
- Forum for debate, progression of ideas, and presentation
- Increased understanding of allied professionals

Education days are open to non-members.

For further information about the Association please contact: Rosemary Sudlow, Membership Secretary, 82 Burnham Road, Leigh-on-sea, Essex SS9 2JS Email: babtt25@hotmail.com or visit our webpage at www.bobath.org.uk

Sally Jary
Chairperson

BOTULINUM TOXIN CLINIC

Dear Colleagues.

We are starting to assist in the Botulinum Toxin Clinic at Southampton General Hospital with the aim of improving practice and improving the continuity of the service. Our long term aim will be to start injecting patients with the Botulinum toxin.

We would be very grateful to hear from anybody who is involved in these clinics or who is injecting Botulinum toxin to share best practices. Please could you contact me at the Physiotherapy Department, Southampton General Hospital, Tremona Road, Southampton or by phone on 02380 794562.

We look forward to hearing from you.

Yours sincerely,

Helen Foster
Senior Physiotherapist

APOLOGY

We would like to apologise for not acknowledging Wendy Shepherd as the author of the course review 'Managing Disabilities in Neurological Disorders' on page 32 of the Spring 2000 edition of *Synapse*.

Guidelines

■ FOR AUTHORS IN *SYNAPSE*

Synapse is the official newsletter of ACPIN. It aims to provide a channel of communication between ACPIN members, to provide a forum to inform, instruct and debate regarding all aspects of neurological physiotherapy. A number of types of articles have been identified which fulfil these aims. The types of article are:

RESEARCH REPORT
A report which permits examination of the method, argument and analysis of research using any method or design (quantitative, qualitative, single case study or single case design etc).

AUDIT REPORT
A report which contains examination of the method, results, analysis, conclusions and service developments of audit relating to neurology and physiotherapy, using any method or design.

REVIEW PAPER
A critical appraisal of primary source material on a specific topic related to neurology.

TREATMENT REPORT/CASE STUDIES
A report of the treatment of a patient or series of patients which provides a base line description of established treatments, or a new insight into the techniques or treatment of people with a specific problem.

SERVICE DEVELOPMENT QUALITY ASSURANCE REPORT
A report of changes in service delivery aimed at improving quality.

ABSTRACTS
Abstracts from research projects, including those from undergraduate or higher degrees, audits or presentations. They should be up to 300 words and where possible the conventional format: introduction, purpose, method, results, discussion, conclusion.

TECHNICAL EVALUATION
A description of a mechanical or technical device used in assessment, treatment, management or education to include specifications and summary evaluation.

PRODUCT NEWS
A short appraisal of up to 500 words, used to bring new or redesigned equipment to the notice of the readers. ACPIN and *Synapse* take no responsibility for these assessments, it is not an endorsement of the equipment. If an official trial has been carried out this should be presented as a technical evaluation.

POINTS OF VIEW
Articles discussing issues of contemporary interest and any other matters relating to neurological physiotherapy.

LETTERS TO *SYNAPSE*
These can be about any issue pertinent to neurological physiotherapy or ACPIN. They may relate to material published in the previous issue(s) of *Synapse*.

COPY SHOULD BE:

- typed or printed
- double spaced
- on one-sided A4 paper with at least a 1" margin all round
- consecutively numbered
- include the name, qualifications, current position, and contact address of the author(s).
- Ideally, a disk copy of the material should also be included. Documents preferred in *Microsoft Word* for Macintosh or Windows.

References should use the Harvard system. In the text quote the author(s) surname and date (Bloggs 1994). At the end of the article give the full references with the first author/editors name in alphabetical order, eg Bloggs A (1994). 'The use of bandages in the treatment of people with head injuries'. *Physiotherapy* 67, 3, pp56-58.

Tables and figures should be given appropriate titles and numbered consecutively as they appear in the text. Each should be presented on separate sheets of paper after the text.

Any **photographs** and line drawings should be in black and white, in sharp focus with good contrast and at least 5" x 7".

Two copies of each article should be sent to:

Ros Wade
Synapse Administrator
7 Dawlish Park Terrace
Courtlands Lane
Lympstone
Exmouth
Devon EX8 5AA
email:
roswade@compuserve.com

Note: all material submitted to the administrator is normally acknowledged within two weeks of receipt.