

SPRING 2002

Syn'apse

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



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ACPIN's AIMS

1. To encourage, promote and facilitate the exchange of ideas between ACPIN members within clinical and educational areas.
2. To promote the educational development of ACPIN members by encouraging the use of evidence based practice and continuing professional development.
3. To encourage members to participate in research activities and the dissemination of information.
4. To develop and maintain a reciprocal communication process with the Chartered Society of Physiotherapy on all issues related to neurology.
5. To promote networking with related organisations and professional groups and improve the public's perception of neurological physiotherapy.
6. To encourage and participate in the setting of guidelines within appropriate areas of practice.
7. To be financially accountable for all ACPIN funds via the Treasurer and the ACPIN committee.

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From the Chair

Linzie Bassett MCSP SRP
Chairperson ACPIN

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Welcome to the Spring edition of *Synapse*. Since my Autumn report we have seen the advent of an 'imaginative' scheme by the Department of Health which will allow beta interferon and glatiramer acetate to be funded by the NHS, this is despite the recent decision by NICE that the drugs were too expensive to fund. This scheme will allow thousands of multiple sclerosis patients who would have missed out, to receive potentially life-enhancing drugs on the NHS. This is certainly a major breakthrough for such a patient group.

In January we saw the introduction of the 'modern matron' onto the wards of NHS Trust hospitals, which has been implemented to strengthen the role of the ward manager, be a visible figure to the public but ultimately to improve the quality of care and service provision to all in-patients.

At the *Leading for Change* conference held in Harrogate recently, leaders of the Allied Health Professions (AHPs) urged therapists to seize the reins of leadership offered to them by the NHS.

One scheme available is through attendance on a LEO (Leading an Empowered Organisation) programme. To implement such a programme solidly within the workplace a multidisciplinary approach has been more effective. As neurophysiotherapists perhaps we should be working even more closely with other multidisciplinary

team members to bring such a new initiative to the fore.

It is very reassuring to note that membership of ACPIN is continuing to thrive, currently 900 members have renewed, nearly 250 more than at this time last year. The new system of renewal of membership where the year runs from January to December seems to be more efficient.

The Private Physiotherapy Register has been a success providing appropriate information for patients and therapists.

The Northampton and Surrey regional groups were formally voted in at the AGM on 9th March 2002 bringing the total of regional groups to 18 (See Regional Reports on page 40). Cornwall has also expressed an interest in becoming a new regional group.

Synapse depends on your support and we thank all those of you who have contributed. However, despite being one of the largest clinical interest groups and having a wealth of information at regional and at an individual level, the number of contributions is still small. Failure to submit articles for inclusion in *your* journal dilutes the quality of what is now a recognised journal. I urge you to contribute by writing articles, case reports, course reviews and by reviewing articles. Please contact Ros Wade for further information.

Last Summer the Executive Committee formally proposed the provision of a small bursary to support research and project work. Applications are now invited from members; further details in the Research section (see page 26).

In December, Ralph Hammond, Professional Adviser at the CSP, contacted ACPIN regarding a proposal

to develop a network of members regarding outcome measures. I am pleased to inform you that Dr Sue Mawson, Sheffield University has kindly agreed to be ACPIN's link.

ACPIN submitted questions for the CSP's Physiotherapy Research Priorities Project, Neurology Panel. The first expert panel meeting was held in January 2002 and attended by myself and Cherry Kilbride. The questions are currently being redefined to meet the criteria of the CSP's Charitable Trust who are funding the project. This project will certainly boost the evidence base required in the neurological field of physiotherapy.

NANOT liased with the Royal College of Physicians to produce a summary of the stroke guidelines for neuro occupational therapists. The CSP and ACPIN are keen for this summary to be transcribed for all ACPIN members. See letters page re: stroke guidelines, comments invited.

The CIGLC is reviewing 'time off' for clinical interest/occupational group activities. There is evidence that members are experiencing difficulty accessing time out of the workplace for CI/OG related activities. A survey of members has been commissioned.

By the time you receive this copy of *Synapse* ACPIN's first conference and AGM for this year will have taken place. A full report on our programme *The Management of Incomplete Spinal Injuries* is included in this edition.

The programme has been finalised for Congress 2002, many eminent speakers and one international speaker have been invited. The title is *Affecting Change Within Neurophysiotherapy*. The programme will include evidence-based presentations around current clinical neurophysiotherapy, research and concepts of management. An application form (see page 45) is included in this issue, be sure to book early under ACPIN CIG!

In view of the success of the *Posture and Balance* residential course, a further date has been booked for 21st-22nd March 2003 at the Hilton Hotel, Northampton. The programme entitled *Movement dysfunction in the upper limb* is currently being designed and should be available at Congress 2002. ACPIN are also in the process of submitting a programme on *Progressive Disorders* for Congress 2003.

After four years in office, our President, Sue Edwards, is retiring. She has been a valuable asset to ACPIN and her support and enthusiasm have driven ACPIN forward. A huge thank you to Sue and we wish her well in all her future projects.

I am delighted to inform you that Sue is succeeded by another well-known supporter of ACPIN, Professor Ray Tallis, Consultant in Geriatric Medicine at Manchester University. We welcome him in his new post although this will mean all 'after-dinner speeches' will have to be curtailed.

Sadly this year sees the resignation of our Honorary Education Officer, Karen Rowland. We thank her for all her time and energy establishing this post and we wish her well in future ventures.

Finally, a huge thank you must go to all the National ACPIN Committee Members for their dedication and to you our members for your continued support and encouragement.

President's address

Sue Edwards FCSP SRP
President ACPIN

As I approach the end of my term of office as President, I have again been asked to contribute to *Synapse*, but on this occasion, I am assured that this is to be my swan song.

Looking back over the past four years, I was initially quite wary of the role of President and what was expected, but I must confess that I have enjoyed every minute. Having been informed that I could either be merely a 'figurehead' or be an active participant, I chose the latter course and I have not been disappointed. The committee might have thought I was doing them a favour by attending some of the committee meetings (or they may have wished me at Jericho) but I certainly gained tremendous insight in the running of the ACPIN road show. It never ceases to amaze me, the commitment and dedication of both the national and regional committee members.

As I appear to have developed a reputation for being controversial, and having been given the all clear from Linzie to be as controversial as I like, why change the habit of a lifetime.

With regard to the evidence base for neurological physiotherapy, I genuinely believe that things are improving. How many of us working in clinical practice are faced with students or junior physiotherapists questioning our rationale for why we are using a particular technique or treatment modality? No longer can we get away with merely recommending an intervention based on 'clinical experience'. What an all encompassing term this is. What do we mean by it? Is it age compounded

by grey hair and middle aged spread giving testament to a wealth of clinical knowledge. Based on what? Or is it burying one's head in the sand having been taught a particular intervention on a course or sticking with what one feels comfortable?

Why do we do what we do? Should we stand the patient? If so, for how long? Are splints required? If so, should they be used intermittently or 24 hours a day? How long should the splinting intervention last? Should we allow the patient to walk? On my travels, I still come up against therapists who insist that a patient return to his wheelchair until he develops adequate pelvic control. Is this justified? Where is the evidence to show that by staying off their feet a patient will end up with an improved gait pattern? When this example was quoted in the Davidson and Waters survey (2000), many therapists considered this to be an out dated assumption but sadly this is not the case.

As my successor, Professor Tallis says in a recent article written with Val Pomeroy (January 2002) 'that overall rehabilitation works is clear, but it is unclear whether all of it or only some of it improves outcomes for patients'. They go on to say that the Bobath approach rests on assumptions that include, 'the effort involved in activities such as muscle strength training increases spasticity'. I mention this particular quote because reference is made to Edwards 1996. Did I really say that? Having changed my views so radically over the past seven years, in great indignation I searched through the relevant chapter convinced that I was being misrepresented but alas, it was only too true. My saving grace is that I have now

radically altered the section on tone in the second edition.

Clearly there is evidence to support some aspects of neurological physiotherapy but there are still areas of practice, which do not have a strong evidence base. Must these be discarded? I hope not. Heaven forbid that we throw out the baby with the bath water but we must also accept that 'conventional' practice must be evaluated.

It may interest members to know that an evidence based neurological physiotherapy course which has been set up by University College London in conjunction with the Bobath Centre is now up and running. Although much of the evidence does not specifically relate to Bobath, this information is used to develop an improved knowledge base and working hypotheses for treatment. An MSc looking into the Bobath concept has been established at Leeds University.

Pomeroy and Tallis (2002) in describing the Bobath concept suggest that 'it could be that it is the interventions that are most important rather than the name of an approach or its theoretical framework'. Margaret Mayston, Director of the Bobath Centre, has also muted this suggestion in the past but this was not met with great enthusiasm. Davidson and Waters (2000) found that 88% of physiotherapists used the Bobath approach but if I end where I began as President in 1998 'What do we mean by the term Bobath?'

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Critiquing the literature an essential part of evidence based practice

The ability to critique published research is an essential part of being an evidence based practitioner. The clinician uses this skill to establish the 'strength' of the evidence provided in the literature, judging whether the evidence should be used to inform the clinical decision making process (Sackett et al 1996, 1997). In the field of stroke rehabilitation, there is a lack of evidence to support the use of different physiotherapy techniques (Langhorne et al 1996, Kwakkel et al 1999). It was therefore significant when a paper entitled 'Bobath or Motor Programme? A comparison of two different approaches of physiotherapy in stroke rehabilitation: a randomised controlled study', was published in *Clinical Rehabilitation* (Langhammer and Stanghelle 2000).

The author states in the abstract that 'The present study indicates that physiotherapy treatment using the MRP is preferable to that using Bobath programme in acute rehabilitation of stroke patients'. Before accepting these important findings, the physiotherapist must first review the paper to establish the validity and reliability of the evidence.

The purpose of this article is to take the reader through this review process, enabling them to make an informed judgement regarding the 'strength' of the findings and furthermore to establish whether the evidence should be used to 'make decisions about the care of individual patients' (Sackley et al 1996).

When writing, reporting or reviewing RCTs there is an established format called the CONSORT statement (Consolidated Standards for Reporting Trials). This was developed in the mid 1990s (Begg et al 1996) and further revised (Moher et al 2001) to include a useful check list for reviewing RCTs. The following headings and review were adapted from Crombie (1996) *The pocket Guide to Critical Appraisal* and from the revised CONSORT statement.

TITLE AND ABSTRACT

This research is of interest to physiotherapists as numerous authors (Turner Strokes 1999, Ottenbacher 1995, Langhorne et al 1996) have identified the need for well designed studies into the efficacy of neurological rehabilitation. Further, more controversy has existed regarding the most appropriate treatment approach for patients' who have had a stroke (Lennon

1996, Riddoch et al 1995, Goodgold-Edwards 1993). Whilst many physiotherapists are perhaps adopting a more eclectic stance, incorporating neurophysiological, musculoskeletal and cognitive/behavioural approaches to rehabilitation, many still fall into a dichotomy of either 'Bobath' or the 'Motor Relearning Program' (MRP). This paper is therefore of significant importance.

The title of the paper indicates that the design is a 'Randomised Controlled Trial' (RCT) which, while some feel may not be the most appropriate methodology in neurological rehabilitation (Sim 1994, Mant 1999), is the accepted gold standard for the provision of evidence of effect or causality (Kramer and Shapiro 1984, Roberts 1999). The abstract, often the only part of an article to be incorporated on an RCT data base such as PEDRO, clearly states 'improvement in motor function was significantly better in the MRP group'.

INTRODUCTION

The literature review is limited and not up to date with only one reference to Bobath (1990) and one to the MRP (Horak 1991). Of concern is the statement that the Bobath approach is based on a 'reflex hierarchical theory' when there is evidence in the literature that the approach has developed from this original idea, integrating current evidence regarding motor control and neuroplasticity (Lennon 1996). Similarly Carr and Shepherd, the originators of the MRP have published an up to date book on rehabilitation in neurology (Carr and Shepherd 2000).

The aims are clearly stated and appropriate, this suggests that research hypothesis have been specified and that the research is well planned. Whilst the authors state that a power calculation was undertaken the details were not included. This process is carried out to establish how many subjects are required to detect an effect if it exists. The lack of this formal calculation becomes significant when reviewing the results.

METHODS

The sample is well defined with appropriate inclusion and exclusion criteria set, however this was a convenience sample not randomly selected from a population. This prevents the inference of the results to the wider stroke population, a point not alluded to in the research abstract. Subjects were randomised into two

groups although the method used to generate the random allocation sequence is not stated. A useful flow chart similar to that recommended by CONSORT is used to establish what happened to the sample of 124 patients. Inclusion of the numbers allows the reviewer to establish whether the authors performed an intention-to-treat analysis (Hollis 1999). This is not possible with this paper as the information in the flow diagram is incomplete.

There was a good level of 'blinding' with both the patients and the outcome assessors being unaware of the group allocation until after the last test was performed. Details of the interventions, Bobath and MRP were given as was a minimum the length of time for each patient to receive treatment. Unfortunately the manuals used to administer the interventions were outdated (Bobath 1990, Carr and Shepherd 1987). This immediately causes concern regarding the internal validity and clinical 'usefulness' of the research.

OUTCOME MEASUREMENT

Four outcome measures were used, the MAS, SMES, Barthel index and the NHP. These are appropriate for the research question although some concern has been identified regarding the validity of the Barthel index as a measure of disability (Hogan and Orme 2000, Turner Strokes 1999). The authors report that the outcome measures are valid and reliable however Mawson (2001) suggests that the reliability and validity studies undertaken in the development of the MAS are limited. It is important to note that these are all ordinal scales. Measurements were taken at three days, two weeks and three months. It is unclear why the second measurement was taken at two weeks when the hospital stay of the patients ranged from 21 days to 34 days. Length of hospital stay, use of assistive devices and destination after discharge were also used as secondary outcomes.

STATISTICAL ANALYSIS

The results of this study were analysed using the Student t-test and the ANOVA. Both tests are inappropriate as they are tests of significance for parametric data and the ordinal scales used in this study provide non parametric data (Hicks 2000). The authors did use non parametric statistics correctly on the NHP. Tennent et al (1996) has demonstrated that the Barthel index is not an interval scale and should therefore not be analysed as such. Numerous authors have discussed the error of summing ordinal data, this method being further compounded in the article by inappropriate analysis of the mean difference between groups (Kwakkel et al 1999, Hogan and Orme 2000, Michels 1983, Simm 1994, Kidd et al 1995).

RESULTS

Due to the summation of values, the calculation of the arithmetical mean and inappropriate statistical analysis it hardly seems worth continuing with the review. However, on scrutiny the data in tests 1, 2 and 3 make interesting reading. Firstly, as the authors correctly state, the Bobath group was 'slightly more' dependent at entry to the study. It might be suggested that the difference in mean MAS score of 24 (MRP group) versus 19 (Bobath group) and mean Barthel score of 56 (MRP group) and 46 (Bobath group) is in fact clinically significant. The difference was not apparently statistically significant, this may reflect the sample size, without appropriate information regarding the power calculation this possibility remains unclear.

Secondly the authors state that the MRP group 'improved more than the Bobath group both in MAS and SMES (part 2)' and that this was statistically significant. However, looking at the change in score from the Bobath groups lower starting point, the difference at three months on both the MAS and on the SMES (part 2) is one point higher for the Bobath group. In other words the Bobath group changed more over three months than the MRP group. See *Tables 1* and *2*.

GROUP	TEST 1 MEAN SCORE	TEST 2 MEAN SCORE	DIFFERENCE 2 - 1 'CHANGE'	TEST 3 MEAN SCORE	DIFFERENCE 3 - 1 'CHANGE'
MRP	24	32	8	37	13
BOBATH	19	23	4	33	14

Table 1 Difference between test scores on MAS for Bobath and MRP groups

GROUP	TEST 1 MEAN SCORE	TEST 2 MEAN SCORE	DIFFERENCE 2 - 1 'CHANGE'	TEST 3 MEAN SCORE	DIFFERENCE 3 - 1 'CHANGE'
MRP	47	58	11	65	18
BOBATH	39	48	9	58	19

Table 2 Difference between test scores on SMES (part 2) for Bobath and MRP groups.

DISCUSSION OF RESULTS

Whilst this exercise is perhaps slightly pointless, as the changes in mean scores is 'meaningless', it does serve to demonstrate that both approaches may have had similar results. Unfortunately because of the design and time frame for outcome measurement it is difficult to say how much of this change recorded was due to the physiological process of recovery that occurs in all stroke patients during the first two weeks (Lee and Van Donkelaar 1995). It might be suggested that because of this natural process, the three month data collection point was perhaps more likely to be attributable to the

different interventions. The only result that seems to be justified was that the Bobath group had a longer hospital stay than the MRP group, which must be considered in the light of the difference between the two groups at the out set.

SUMMARY

It is useful when undertaking a critical review to list the main problems with the paper. This enables the reviewer to consider the strength of the evidence provided in relation to the flaws in the research:

- The dependent variables, Bobath and MRP were both based on out dated treatment manuals preventing the reader from extrapolating to their own clinical practice and compromising the internal validity of the study.
- A power calculation was not included preventing the reader from establishing whether the change predicted in the calculation was clinically significant.
- The lack of randomisation from a population of stroke patients preventing the reader from inferring the findings to all stroke patients compromising the external validity of the research.
- The summing of ordinal data culminated in 'meaningless' information
- The statistical analysis was inappropriate, significance potentially being an artefact of the analysis rather than a 'true' difference between the interventions.
- There was a difference in base line disability scores making it difficult to establish the significance of the length of stay findings.

Whilst this was a well designed and worth while study with appropriate outcome measurements, the flaws in the paper identified in this review suggest strongly that this evidence should not be used in the clinical decision making process. The findings outlined in the abstract are unsubstantiated and unjustified, they cannot be inferred to the wider population of stroke patients and should not be used as evidence to underpin the use of the MRP.

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RESPONSE TO DR MAWSON'S ARTICLE

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Johan K Stanghelle
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Sunnaas Sykehus

I am flattered that mine and Professor Stanghelle's article was under the scrutiny of Dr Mawson. As we understand this forum is a way of educating physiotherapists to read articles with a critical view which is most admirable. This means objective handling of an article in order to make it full justice.

Aim of the study

'Bobath or Motor Relearning Programme? A comparison of two different approaches of physiotherapy in stroke rehabilitation: a randomised controlled study.' One goal was to see if it was practically possible to undertake this study in the clinic within the frame of evidence based practise. The other goal was to try the hypothesis that implied that physiotherapy in the acute stroke care was important but no special method was identified better than the other (see references 1-3).

Introduction

This study was undertaken in 1996 till 1997 and the first published result was in 1998, which limits the references made to the time before and around 1997-98. We used Carr and Shepherd published 1985 and 1987 as references to MRP, not Horak as mentioned by Dr Mawson (see references 4-5). I have argued before and will argue again the reason why we only used the books of Bobath (see reference 6). The Bobath's cultivated the method; their courses were in accordance to their principles. They wrote the books on which the method was developed. Any references should

therefore be made to the origin. Lennon, Davies etc are not references to the Bobath method they are interpretation of the method and cannot be used as references to describe the method.

The power calculation was mentioned and should perhaps have been presented but in order to make an article into appropriate size you might cut out the wrong things. The calculation was made on a pilot study with two groups (10 in each): one got physiotherapy 1½ hours a day for six weeks, the other 30 minutes of treatment. Both groups were tested with MAS and an ADL index. The random procedure was left out in this article of the same reason as described above but is presented in the original work at the University of Oslo. The procedure was conducted by the secretary of the ward and a dice, inspected by the nurse in charge of the beds.

The flow chart was changed by recommendation of the editor but of course it could have been mentioned in the text. Most of the patients excluded were patients with more than one stroke and patients (67) with >5 points on each of the scores in the MAS (34) the rest was 'diverse secondary conditions' (23). The manuals were produced with the material that existed when the study was started 1995-96. They were also discussed with Dr Carr and Dr Shepherd and representatives of the Bobath concept here in Norway. After careful consideration we went along with these manuals. Seen out of this perspective Dr Mawson's concerns about the internal validity and 'clinical' usefulness seem somewhat subjective? We used the literature that described the different approaches by the original authors, which is an adequate thing to do in these cases. The difficulty when it comes to physiotherapy is that you get an interpretation of existing therapies and a clinical adaptation of the same so that generalisation becomes impossible. This is the thing

we wanted to avoid and managed through the manuals and an up dating of therapists so therapy was comparable. You might say that we gained conformity in treatment but lost individuality but then again no. The relationship between patient and physiotherapist is personal and individual and that was the same for both groups. The criticism that the interventions were 'outdated' seems out of place. As far as I can judge they are still in use especially Bobath and not much has changed in clinical practise when it comes to spasticity management, the slowing of processes not to elicit synergies etc.

Outcome measures

There are several considerations to take when you choose outcome measures. We choose these since they are well known and have been used in other studies. There are weaknesses with standardised tests but not more so than individual analyses frequently used in the clinic. In fact it is easier for patients and personnel to relate to a test, 'qualitative' arguments can refer to the same tests. We could not have known the critique of MAS in 1996 (Mawson 2001). We also did an internal reliability test of MAS and SMES; we wanted to have two persons to test the patients. The reliability was excellent for both tests in our case. Taken into account that all tests have their weaknesses it is preferable to use well-known test where most weaknesses are known to get an objective view of the patient and his/hers function. These weaknesses are also taken into consideration with the study.

Why we chose to test our patients at three days, two weeks and three months was of practical reasons. The length of stay is described as mean. We wanted to test our patients a second time before they left the hospital and in order not to interrupt the running of the ward we had to compromise.

Statistical analysis

As far as data is concerned we presented our data as t-values except NHP. This decision was made after we had analysed MAS, SMES, and Barthel ADL-index with non-parametric statistics and had the same result. So since the result did not differ and the discussion is ongoing when to use the t-test it was not 'wrong' to use it in this setting.

Results

We state there are no significant differences in MAS, SMES or Barthel ADL in the acute stage. This is something we tested and described. Dr Mawson's statement that there were significant differences therefore seems somewhat surprising. I can see the point with a larger sample size but as we argue, it took one year to get our sample size with those inclusion criteria. The difficulty in getting a group and a setting as homogeneous as possible is strenuous work, if time is lengthened other variables change weakening the study. This is one of the difficulties with randomised controlled studies.

So in conclusion as for Dr Mawson's summary:

- Bobath and MRP are both up to date in our study.
- A power calculation was made.
- The population was randomised.
- The data was correctly handled and resulted in a clinical message.
- The statistical analysis were appropriate and chosen in accordance with the data.
- There was a difference in baseline scores but this was tested and re-tested in order to make sure this had no clinical influence.

Thus we still believe that our conclusion is appropriate: 'The present study indicates that physiotherapy treatment using the MRP is preferable to that using the Bobath programme in the acute rehabilitation of stroke patients.'

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WHOSE COMMENTS ARE VALID?

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Langhammer and Stanghelle (2000) assumed that their data consisted of interval scale measurements, and performed an appropriate statistical analysis of their data. Mawson assumed that the Langhammer and Stanghelle data did not consist of interval scale measurements, and concluded that they had performed an inappropriate statistical analysis of their data. The question therefore is: 'Which assumption is correct?'

The question is answered by reference, firstly, to the Barthel ADL Index, one of the measuring scales used by Langhammer and Stanghelle, and secondly, by using as an example data from a hypothetical clinical trial in which two groups each of 20 randomly selected subjects were given two different treatments. This is necessary as the raw data from the Langhammer and Stanghelle study is not available. This does not invalidate the argument which follows. To limit the complexity of the answer the three function portion of the Barthel ADL index given in *Table 1* is used.

Under the Mawson assumption the data from the end of the Langhammer and Stanghelle would have to be presented as in *Table 2* as these measurements are ordinal measurements. An appropriate chi-squared analysis on the data in *Table 2* shows that the null hypothesis 'there is no difference between the effects of the two treatments' is invalid, and that the alternate hypothesis 'there is a difference between the effects of the two treatments' is valid.

The description of a disability profile is tedious to write, and difficult to understand. The description can be simplified by using alpha codes to denote the components of

FUNCTION	COMPONENTS
Dressing	Dependent
	Needs help but can do about half unaided
	Independent (including buttons, zips, laces, etc)
Stairs	Unable
	Needs help (verbal, physical, carrying aid)
Bathing	Dependent
	Independent (bath – must get in and out and wash self; shower – unsupervised/unaided)

Table 1

a function in an ordered sequence, for example, A for the first component, B for the second component, and C for the third component. Alternatively, as will all ADL scales used in neurological rehabilitation, numerals can be used to denote the components of a function in an ordered sequence, for example, 0 for the component denoting the highest loss of ability, 1 for the component denoting the second highest loss of ability, and 2 for the component denoting the third highest loss of ability. Using numerals as codes in this way

DISABILITY PROFILE	TREATMENT	
	A	B
Dressing: needs help and Stairs: needs help and Bathing: independent	7	1
Dressing: needs help and Stairs: independent and Bathing: dependent	9	3
Dressing: independent and Stairs: unable and Bathing: independent	3	9
Dressing: independent and Stairs: needs help and Bathing: dependent	1	7

Table 2

gives the Barthel scores of *Table 3*.

The disability profiles in *Table 2*, based on the Mawson assumption, can now be simplified to give *Table 4*. Remembering that in arithmetic and means *add*, and forgetting that the scores are numerals denoting order, and not numbers denoting quantities, or amounts of disability, then the scores for a subject can be added to obtain the measuring scale described by Wade and Collin (1988). It is now possible to calculate an average score per subject, and to use a t-test to determine whether the difference between the two such averages is statistically significant. For the two groups of 20 subjects under consideration the average score per subject is 3.0 in each case. A t-test shows that the null hypothesis 'there is no difference between the effects of the two treatments' is valid, and that the alternate hypothesis 'there is a difference between the effects of the two treatments' is invalid. This finding contradicts the finding under the Mawson assumption, and raises the question 'which of the two findings is correct?'

The question is answered by reference to the properties of measuring scales defined by the *theory of measuring scales* presented by Stevens (1946), and illustrated by Senders (1958). These properties define a valid measurement as a measurement that has a unique

FUNCTION	COMPONENT	SCORE
Dressing	Dependent	0
	Needs help but can do about half unaided	1
	Independent (including buttons, zips, laces, etc)	2
Stairs	Unable	0
	Needs help (verbal, physical, carrying aid)	1
	Independent up and down	2
Bathing	Dependent	0
	Independent (bath – must get in and out and wash self; shower – unsupervised/unaided)	1

Table 3

DISABILITY PROFILE	TREATMENT	
	A	B
1 and 1 and 1	7	1
1 and 2 and 0	9	3
2 and 0 and 1	3	9
2 and 1 and 0	1	7
Total	20	20

Table 4

References

Langhammer B and Stranghelle John K (2000) *Bobath or Motor Learning Programme?* Clinical Rehabilitation, 14 pp361-369.

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meaning. The Barthel scores for the disability profiles in *Table 4* are:

- 1 and 1 and 1 = 3
- 1 and 2 and 0 = 3
- 2 and 0 and 1 + 3
- 2 and 1 and 0 = 3

These four quite different disability profiles each have a Barthel score of 3. A Barthel score therefore does not have a unique clinical meaning, and is not a valid measurement. This means it is erroneous to assume that a Barthel score is an interval scale measurement. Consequently the Mawson assumption, unlike the Langhammer and Stanghelle assumption, is a valid assumption, and the finding under the Mawson assumption is the correct one.

This illustration shows that the Langhammer and Stanghelle assumption that their data consists of interval scales of measurement is incorrect and that their statistical analysis is inappropriate. Hence their conclusions in this paper are unfounded.

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How does the Bobath concept view the relationship between low tone, associated reactions, and compensatory strategies?

In this project the relationship between low tone, associated reactions, and compensatory strategies will be studied by reviewing relevant literature, discussing scientific basis, and following a case study through two phases of treatment in relation to washing and dressing. It is hoped that the varying influences of these three terms and their impact on each other will be explored in theoretical and practical terms. The working definitions for each of the terms will be explained in relation to the Bobath Concept, and the case study will be using the Bobath approach.

LITERATURE REVIEW AND THEORETICAL DISCUSSION

Associated Reactions

Associated reaction is well established as a term, however, the definition continues to be debated in the literature as acknowledged by Stephenson (1998) in the introduction to his discussion paper. Walshe (1923) originally defined associated reactions as 'released postural reactions in muscles deprived of voluntary control'. The definition of associated reactions in the Basic Bobath course notes 2001 is 'Clinically associated reactions describe adverse tonal reactions in response to stimuli which exceed the individual's inhibitory control.' There is not a great deal of further information in the literature in relation to associated reactions. This fact was reiterated by Lynch-Ellerington in her lecture at the CSP Congress 1999.

In terms of the relationship between associated reactions and low tone, Lynch-Ellerington (1999) stated that 'associated reactions are always accompanied by hypotonia with inadequate postural tone proximally'. Edwards (1996) discusses associated reactions and states that the true cause of the associated reaction needs to be identified and an example of this could be 'instability of the pelvis' implying the presence of low tone leading to an associated reaction in the upper limb. However, the bulk of the literature (Cornall 1990, Bhakta et al 2001) discusses associated reactions in relation to high tone.

Compensatory strategies

Compensatory strategies are not defined in the literature. *The Pocket Oxford Dictionary of Current English* (1992) defines 'compensate' as 'counterbalance' or

'offset disability or frustration by development in another direction'. This is very accurate for the use of the term in the Bobath concept as it is used to describe the body's methods of adjusting to damage of the nervous system. This is seen as a greater use of other systems or unaffected areas to make up for a loss of movement or sensation elsewhere.

The action of dressing and undressing is a learned action that is well established by adulthood. A range of specific motor patterns will be stored in the premotor area and selected when appropriate. The basal ganglia will have a role to play in initiating the movement. It will also aid with appropriate positioning of the trunk and limbs before the cerebral cortex activates the discrete movements of the hands and feet to achieve the goal. The corticoreticulospinal system is involved with postural tone affecting both the ipsilateral trunk (medial) and bilateral limb movements into flexion and extension (lateral). By recruiting adequate postural tone balance is maintained while carrying out functional tasks. The postural tone will provide a stable base from which to selectively and accurately move the upper limb and lower limb in a variety of postures. If there is an area of damage in the cortex the ability to recruit postural tone may be impaired. There may be increased recruitment of other areas, eg the non-hemiplegic side, via this system to compensate in order to achieve the goal. There will be continuous feedback and feed-forward with the central nervous system, modulating the movement via the cerebellum to ensure the goal is achieved (Basic Bobath course notes 2001).

In the event of a stroke, when a new hemiplegia is the outcome, this normal system will be affected. In relation to the case study there was a lack of recruitment of proximal tone observed clinically. This implied that the basal ganglia and corticoreticulospinal system were not functioning adequately even though the cerebral cortex was attempting to move the limbs in order to achieve the motor goal of reaching the foot to put a shoe on.

Low tone was identified in the left side of the trunk. Therefore, there was no stable base on which to move, and with limb excursion there was a resulting displacement of the central keypoint. The vestibular system will have detected this displacement via the peripheral-sensory receptors which pass to the vestibular nuclear complex. This fast acting system will then output to the various elements of the balance



Figure 1 Baseline



Figure 2



Figure 3



Figure 4

systems, including the lateral vestibulo-spinal tract which will activate the anti-gravity muscles in the neck, trunk, and limbs. The response ought to be a fine balance of flexor/extensor excitation throughout the trunk to provide a stable base for the limb excursion. The response on the left was not co-ordinated due to poor recruitment of appropriate tone. It is proposed that the right side will then increase its activity to compensate for this lack of recruitment on the left using right side flexion and rotation to the left as the strategy to take the weight off the unstable left side. The amount of effort required to carry out the activity using this approach would be increased and it is likely that this would then contribute to the development of an associated reaction. Dvir et al (1996) suggest that in relation to associated reactions 'physical effort, such as compensatory movements... has been shown to be a trigger'. The links between increased effort and an increased associated reaction are recognised by Lynch-Ellerington in her 1999 lecture and in the Basic Bobath course notes 2001.

The principle behind the treatments in this case study was that by increasing the recruitment of the muscles on the left there would be better access to normal balance reactions. Therefore the compensatory strategies would be reduced, the effort would reduce, and there would be a decrease in the associated reaction seen.

This creates the hypothesis that decreased tone leads to the need for compensatory strategies, and also increases the effort of an activity which contributes to the exacerbation of an associated reaction.

THE CASE STUDY

Ms A is a 32 year old female who was diagnosed with a multiple sclerosis plaque related stroke causing a sudden onset of left hemiplegia in late December 2000. Prior to this incident Ms A had been fit and well, worked full time in an office, and enjoyed going to the gym six times a week. Initially, Ms A had a flac-

cid left side, was unable to sit independently, was incontinent of bladder, and was dependent for all activities of daily living. Ms A had a short period of inpatient rehabilitation, achieving mobility and activities of daily living with assistance of one person, before travelling to India for eight weeks. Ms A resumed her physiotherapy as an outpatient in May 2001, shortly before this project was commenced. Ms A consented to taking part in the study and consented to the use of her photographs in accordance with local policy.

The joint aim of the treatment was to gain independence in putting Ms A's shoes on and off with integration of the left upper limb into the activity, and reduce the abnormal posturing (associated reaction) with the left arm and hand.

Figure 1 shows sitting posture at the start of treatment on a plinth set at repeatable height. Figures 2, 3 and 4 show the putting on of the shoe in sitting at the start of the treatment episode. The associated reaction in the left upper limb can be clearly seen as a pattern of abduction, retraction, gleno-humeral extension and internal rotation, elbow flexion, and finger extension, as can the retraction of the left side of the thorax. The use of the right arm preferentially in the task can also be seen with the compensatory strategy in the trunk evident.

The right side flexion and rotation to the left aids the picking up of the left lower limb where selective hip flexion is lacking.

The initial aim of treatment was to re-align the scapula from its retracted, winging alignment onto the chest wall and align the thorax from its rotated posture with the pelvis to result in equal weight bearing. Re-aligning the scapula allowed the humerus to be re-aligned with the glenoid, leading to relaxation of the overactivity seen in the pectoral muscles. This was observed to have a direct consequence on the associated reaction of the left upper limb with decreased abduction. However, the increased weight through the left hip remained evident with hip malalignment



Figure 5 Weight transference



Figure 6 Weight transference



Figure 7 Assisted reaching



Figure 8 Thorax alignment

(noted by the position of the femur on the pelvis), compensated for by increased activity in erector spinae and the right obliques and abdominals. With manual facilitation the hip was re-aligned, and this allowed facilitation of effective weight transfer to the right and the left, and anteriorly and posteriorly. This was then carried over actively by Ms A. The treatment is shown in *Figures 5 and 6*.

This was then explored by active assisted reaching to and away from the foot in sitting, with facilitation to maintain the alignment and therefore decrease the effort. This is shown in *Figure 7*.

The shoulder girdle was stabilised to allow Ms A to rotate the thorax forward on the left, and therefore translate weight effectively over the left hip and foot. There was a marked reduction in the associated reaction in the arm despite no direct intervention to the left upper limb. In sitting the alignment of thorax on pelvis was improved with more appropriate activity noted in the left obliques with decreased overactivity in erector spinae and equal weight bearing. This is shown in *Figure 8*. The activity of fastening the shoe was much easier with less resistance from the left side, as was placing the shoe on the floor. However, the associated reaction remained evident for the placing of the foot in and out of the shoe.

When the left foot was actively lifted off the floor in sitting the movement was achieved by posteriorly tilting the pelvis and mass movement throughout the left side. This caused a large displacement of the central key point posteriorly eliciting exaggerated balance reactions in the form of head righting and fixation of the right lower limb on the plinth. It also became apparent that the associated reaction observed was aiding balance in that it counteracted the large posterior shift in centre of gravity via the anterior displacement of the upper limb. The clear boundaries of compensatory strategy and associated reaction were becoming blurred, as by definition the associated reaction was now also a compensatory strategy. However,

the compensatory strategy could also be seen as contributing to the associated reaction, as it pulls the thorax to the right through side flexion resulting in elevation of the left shoulder and thorax. This may be one of the reasons for the pattern of associated reaction observed into abduction, as opposed to a pattern of flexion and adduction. It must also be considered that the associated reaction may have influenced the compensatory strategy used.

With facilitation at the thorax and pelvis to maintain alignment (inhibiting the right sided compensatory strategy and promoting recruitment on the left), the left foot was placed in and out of the shoe. Additional facilitation on the lower limb was used to gain movement of the left lower limb on a stable pelvis. This reduced the observed associated reaction in the upper limb. Once this free selective movement of the left lower limb was established the facilitation was decreased, the stability of the trunk and pelvis was much improved and the associated reaction remained reduced. These findings suggest that the low tone may be a causative factor for both compensatory strategies and associated reactions. It is not possible to state whether the associated reaction influenced the compensatory strategy or vice versa. These two features seem to have a very complex relationship which is difficult to define.

By the sixth session Ms A was able to put her left foot in the shoe and fasten the shoe with a much reduced associated reaction, and was therefore able to integrate the left upper limb in the activity. This is shown in *Figures 9, 10, and 11*. Of note, no verbal cues were given regarding the use of the left or right hand before or after treatment. However, after treatment Ms A was able to use her left hand in the task, which is her dominant hand. The goal of the treatment was achieved and this was the outcome measure used in this section of the treatment.

The next stage of the treatment was to work on standing to put the shoe on and off. The main problem



Figure 9



Figure 10



Figure 11



Figure 12



Figure 13

Reduced associated reaction at the sixth session

preventing this task was the associated reaction in the left foot, inverting and plantar flexing the foot which inhibited Ms A's effort to push her foot into the shoe. Ms A was unable to transfer the weight to the right because of the lack of stability and low tone in the left hip and abdominals, and fixing with the obliques on the right. In order to clear the floor with the left foot, Ms A over-displaced to the right and hip hitched on the left with anterior tilt and hip flexion. Once the foot approached the shoe the foot plantar flexed and the weight loaded onto the left thus inhibiting any further progression with the dressing task. *Figure 12* shows facilitation of this task, as Ms A could not perform the task independently. *Figure 13* shows how far Ms A could get her foot into the shoe in standing.

The working hypothesis was that the low tone on the left and the compensatory strategy (of right side flexion and rotation to the left in the trunk and overuse of the right arm) were together impeding balance. The low tone and lack of selective movement around the left hip and lower trunk were significantly increasing the effort of the task. The compensatory strategy used was adversely affecting the recovery of normal balance reactions, and restricting the freedom of movement. Together these two key facts were contributing to the associated reaction seen in the arm and the foot during this task.

The abnormal movement patterns on the left could not be accessed successfully without first addressing the fixing on the right. This adds credence to the idea that the compensatory strategy was influencing the associated reaction, as the compensatory strategy needed to be addressed first. Standing on one leg on the right could not be achieved with facilitation, as the effort remained too great and the associated reactions became more marked. Ms A was sat on the edge of the plinth with her right foot on the floor and the weight of the left supported by the plinth to achieve right leg stance. In this position the fixing with the latissimus dorsi on the left and the erector spinae was evident

and facilitation was used to eccentrically lengthen erector spinae and recruit the obliques. Using this facilitation whilst weight bearing through an extended right leg, enabled access to normal alignment and appropriate balance reactions in the right leg, the trunk, and pelvis.

This treatment was then progressed to work in standing with facilitation to maintain the alignment at the trunk and pelvis, and inhibit the inappropriate compensatory strategy in the left upper limb and right latissimus dorsi and obliques. With this alignment the foot was able to be placed freely into the shoe, however, this did not carry over well without facilitation. When carrying out the activity independently, the learned pattern of movement was used and balance remained impaired. To access a more automatic response, the foot was prepared by mobilisation and desensitisation to allow access to the vestibular system. Then, the right foot was facilitated off the floor and automatic balancing was accessed with recruitment of tone in the left side of the trunk and pelvis. The left foot was then facilitated off the floor to gain automatic weight transfer to the right with a free left leg. The early stages of this treatment are shown in *Figure 14* with a second therapist used to maintain the trunk alignment gained in sitting.

On transferring this to putting the shoe on, alignment was maintained with minimal facilitation and the reaction in the foot was reduced. With improved balance the need for compensations was less and the effort needed was reduced. This is shown in *Figures 15, and 16*, and shows how much further the foot could get into the shoe in standing which reflects the reduction in reaction in the foot. *Figure 17* shows Ms A fastening her shoe in standing with minimal assistance. Ms A was unable to do this at all prior to commencement of the treatment as she was unable to maintain the foot on the floor due to the reaction in her foot and her hamstrings. The treatment was pro-



Figure 14



Figure 15 Putting on shoe in standing



Figure 16 Putting on shoe in standing



Figure 17

gressed to achieve this position with weight-bearing through both feet as opposed to only the right. This reduced the effort significantly, and thus reduced the reaction in the left leg allowing the foot to remain on the floor and the shoe to be fastened.

The hypothesis for this part of the treatment would seem to be correct. The low tone and the fixing were changed with the treatment and balance appeared to be much improved. Ms A could now stand on one leg for three seconds each side, she was unable to do this for more than one second initially. This was the outcome measure selected for this stage of the treatment. In terms of the relationship between the associated reaction, compensatory strategies and the low tone, the low tone appeared once again to have a causative role, whilst the associated reaction and compensatory strategies appear to be intrinsically linked. The compensatory strategy of fixing was ineffective, thus creating the need for the left foot to remain in contact with the floor. However, it is possible that the reaction in the foot inhibited appropriate balance reactions in the trunk, thus creating the need for the compensatory strategy.

CONCLUSION

The relationship between associated reactions, compensatory strategies and low tone is a very complex issue. Even in the one case study used, the relationship changed from one setting to another. Low tone does appear to have a causative effect, in that it creates the need for compensations and increases the effort of activities. However, the use of compensatory strategies and the presence of an associated reaction can inhibit the recovery in areas of low tone. The idea that associated reactions can be useful is not mentioned in the literature reviewed, but this case study does seem to suggest that the body can use the associated reaction and it can become part of the compensatory strategy. Compensatory strategies and associated reactions can influence each other in terms of presentation and extent as this case study shows. The true nature of the

relationship needs to be assessed in each individual as it has a strong influence on the treatments used and the order in which problems are addressed. It is also important to note that the relationship is continuously changing, and assumptions cannot be made. By forming hypotheses and exploring them, answers can be found and the individual patients will benefit from seeing a change in their presentation and their functional capabilities in everyday life.

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Development of local splinting guidelines within the Neuroscience's Directorate at the Royal Hallamshire Hospital, Sheffield

A working group of physiotherapists and occupational therapists was set up to review current splinting practice within Sheffield Teaching Hospitals NHS Trust. The group carried out a literature search and reviewed the National ACPIN guidelines on splinting adults with neurological dysfunction. The guidelines were adapted to meet local needs and a standardised assessment proforma was developed. Learning outcomes and recommendations have been highlighted.

BACKGROUND

A lack of objectivity and standardised practice in selecting patients for splinting, and in the splinting procedure, was identified by senior clinicians within the Neuroscience's Directorate at RHH, Sheffield Teaching Hospitals NHS Trust. The following is an account of the process that ensued to guarantee that the practice of splinting followed sound clinical reasoning and was, wherever possible, based on evidence.

PROCESS

Working group

A working group of clinicians was set up to facilitate a detailed review of local practice. The group consisted of ten therapists, both OT and PT, working within the Neuroscience Directorate, with guidance from the research co-ordinator and clinical audit officer.

Literature review

The working group carried out a literature review to establish an evidence base for splinting rationale and process. Physiological and mechanical changes in the immobilised muscle were well documented (Goldspink and Williams 1990) and were found to be a common sequel to neurological damage (Andrews and Greenwood 1993). Many authors advocated splinting neurological patients to effect biomechanical changes and influence tone (Edwards 1996). However, research into the efficacy of splinting and its effect on the immobilised muscle was limited. No standardised documentation or assessment tools were found.

ACPIN guidelines

The ACPIN guidelines discovered during the literature review drew upon the limited evidence available, augmented by expert opinion and a consensus conference. Guidelines are produced for the benefit of clini-

cians and their patients and are a mechanism for improving the quality of service (NHS Executive, 1996). These national guidelines went some way to help standardise national practice and partially meet identified local needs. However, they required further reviewing for use at local level, as they were not immediately applicable to STH practice.

Developing local guidelines

Local guidelines were developed and accepted as trust policy in November 2000. The local guidelines highlighted eleven key areas for change of practice, which include consent, identification of suitable patients, assessment, professional responsibility, patient and therapist position, documentation, fabrication and materials, monitoring and re-evaluation. Changes to the national guidelines, based on the reviewed evidence or demanded by specific local service delivery needs were clearly documented.

LEARNING AND DEVELOPMENT

Consent

The NHS executive (2001) stated that informed consent could only be obtained from (adult) patients and not from their next of kin. However, if a delay in the intervention is likely to be detrimental to the patient, then the principle of best interest may be applied. Therapeutic decisions based on this principle should be clearly documented and discussed in full with the medical team. Local guidance and documentation were produced to clarify the method and type of consent obtained prior to the splinting procedure.

Identification of patients suitable for splinting

A Pre-splinting Screening Assessment now provides justification of clinical decision-making. Impedance of function and risk of contractures were deemed to be the main reasons for splinting due to the ease of application of outcome measures.

Standardised assessment documentation

For the purpose of clinical audit and effectual implementation a Standardised Assessment Form was produced covering outcome measures, moving and handling issues, fabrication and splint application, patient and carer information, monitoring and the reassessment process.

IMPLICATIONS FOR PRACTICE

Training needs and competencies

Following this review of current practice and the process of identifying minimum standards for practice, it became clear that some of the therapists deemed previously to be competent did not now meet the new standards set by the group. Competency criteria have since been developed for all Lead Splinters and associated training needs have been defined.

DISCUSSION

In the climate of clinical governance demands are placed on clinicians to justify their practice. The process of reviewing clinical guidelines is time consuming, requiring commitment from both clinicians and their managers. Despite this, the group developed a greater understanding of guidelines and their impact on clinical practice.

The group drew upon a variety of clinical experiences but the group had little experience of research and audit. The group benefited greatly from cross-disciplinary working and the support offered from the research and audit specialists. Clinicians often found it difficult to justify taking time away from their clinical caseload and the departure of the project leader and the subsequent change of leadership further delayed the project.

The varied membership enabled inter-disciplinary discussion on major issues such as consent and the role of cognitive assessment in obtaining informed consent.

RECOMMENDATIONS

Developing local guidelines has been an essential part of implementing and auditing best practice within Sheffield Teaching Hospitals NHS Trust. Anyone considering reviewing or developing guidelines are advised to seek managerial and research/audit support as well as commitment from clinicians.

This project also highlighted the importance and need for further research into splinting in neurology.

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CSP ANNUAL CONGRESS 2002

This now prestigious event will be taking place at the International Convention Centre in Birmingham from Friday October 11th to Sunday October 13th, 2002.

Book these dates *now* and complete the application form on page 45. Please tick the ACPIN CIG box so that ACPIN receives its capitation fees from the CSP. This is used to fund speakers and subsidise ACPIN courses.

ACPIN are pleased to announce that we will be hosting a programme, and are looking to 'affect change' within neurophysiotherapy with a variety of national and international speakers including:

Professor Andrew Miles
(Professor of Public Health Policy, University of East London)
What is evidence?

Professor Carolee Winstein
(Associate Professor, USC, Los Angeles, USA)
Motor control and learning for neurological rehabilitation

Dr Shiela Lennon
(Ulster University)
Evaluation of physiotherapy based on the Bobath concept in stroke rehabilitation

Dr Mary Cramp
(University of East London)
Strength training for stroke

Professor Maria Stokes
(Director of Research and Development RHND, London)
Muscle Dysfunction

Dr Martine Nadler
(The Bobath Centre, London)
Constraint induced movement therapy

Dr Brian Durwood
(Head of Physiotherapy, Podiatry & Radiography, Glasgow Caledonian University)
Outcome measures and movement analysis

ACPIN will be hosting a fringe meeting on Saturday 12th October from 6.15-7.15pm to discuss *Treadmill training – the evidence*. Further information will be available in *Frontline*, but if you would like to register for a place please email Anthea Dendy at antheadendy@msn.com



ACPIN news

MINUTES OF ACPIN ANNUAL GENERAL MEETING

Saturday 9th March 2002
The Hilton Hotel, Aztec West, Bristol

Chairperson: Linzie Bassett

The 2002 AGM opened at 12 noon. Rowena Wright proposed that the minutes of last years AGM was a true and accurate account. Anne McDonnell seconded the proposal.

Sue Edwards gave her outgoing speech as president. Sue was thanked on behalf of all ACPIN members by Linzie Bassett and presented with a gift of appreciation.

Professor Ray Tallis has succeeded Sue as ACPIN's new president and was welcomed to the meeting.

Professor Tallis began by warmly thanking his predecessor and recalled that he remembers ACPIN when it was ACPSIN – sometime in the 70's!

He went on to say that he considered ACPIN to be a 'very exciting place to be' and that he felt very at home with neurophysiotherapists. In fact more so than with some medics. He thinks that we are able to combine 'reality and possibility' within our clinical reasoning.

Professor Tallis then continued with his summary of Sue Edward's contribution by adding that it had not only been to ACPIN but to the profession worldwide. He felt two contributions stood out clearly to him:

- The 1988 paper with Cecily Partridge which looked at co-defining therapies and was, in his opinion well ahead of time.
- Sue's textbook.

Professor Tallis concluded his

speech by saying that he may have to apologize for being present at the meeting but he was looking forward to his presidency.

- Chair's speech (see below)
 - Treasurers report (see below)
- Vote taken and carried to retain current accountants.
- It was agreed by the Membership that Northampton and Surrey can form Regional ACPIN Groups.

Linzie Bassett closed the meeting at 12.34pm.

CHAIRPERSON'S ADDRESS

Linzie Bassett

Traditionally the Chairperson's report is intended as a resumé of the year's activities within the organisation and outlines future plans. Located on the display board are reports submitted by each subgroup leader identifying the activities they have undertaken on behalf of ACPIN.

This report also allows me the opportunity to offer personal thanks to the dedicated members of the National Committee.

Following our last AGM the National Committee welcomed Dr Mary Cramp as Honorary Research Officer, Jo Tuckey and Alison Bailey Hallam as Executive Members. Louise Dunthorne has recently been co-opted as an Executive Member. This year sees the resignation of our Honorary Education Officer, Karen Rowland. We thank her for all her time and energy establishing this post and we wish her well in future ventures. Gillian Emond (Northern), Nicky Sharman (Oxford) and Steve Cheslett (North Trent) have all re-

signed from the committee, we thank them for their commitment and wish them well.

After four years in office our President, Sue Edwards, is retiring. She has been a valuable asset to ACPIN and her support and enthusiasm will be sorely missed. A huge thank you and we wish her well in all her future projects – perhaps a third edition of her book!

I am delighted to inform you that Sue is succeeded by a well known supporter of ACPIN, Professor Ray Tallis, Consultant in Geriatric Medicine at Manchester University. We welcome him in his new post and thank him for supporting today's conference.

Membership is growing steadily each year, at the end of 2001 we had 1,292 members, so far this year 863 members have renewed, an increase of 160 renewals on this time last year. This makes ACPIN one of the largest clinical interest groups. The membership year now runs from January to December.

The Private Physiotherapist Register appears to be a success by providing appropriate information ie cost, area, pathology.

Synapse is becoming a recognised journal providing a wealth of information for members. To allow for its development the team rely on members to submit material, however this does not appear to be happening readily despite the increasing membership and I urge you as members to contribute to your journal.

I would like to thank Ros Wade (Synapse Co-ordinator), Karen Rowland, Louise Gilbert and Kevin Wade our designer.

The publication of the manual handling document provoked a huge response, a free copy being sent to each member. Extra copies are available here today.

Last summer the Executive Committee formally discussed the provision of a small bursary to support research and project work and

applications will be invited from members in the Spring 2002 edition of Synapse. If you are interested, please discuss this with Mary Cramp.

Regarding events last year, the residential conference in Northampton on *Posture and Balance* was voted an overwhelming success. The course fee was heavily subsidised by ACPIN and Jackie Newitt will discuss this further in her Treasurer's report.

In view of the success of hosting such a conference a further residential conference has been planned for March 21st-22nd 2003 at the Hilton Hotel, Northampton. The topic being related to movement dysfunction of the upper limb. Remember to keep your diary free!

ACPIN did not host a programme at Congress last year but planned a one day conference on medicolegal issues. Sadly this had to be cancelled due to lack of interest with only 14 members applying. This was extremely disheartening as this was a topic requested by members.

ACPIN will be joining forces with the CSP again for this year's Congress. The programme is nearing completion and has many eminent speakers and one international speaker, title *Affecting change within neurophysiotherapy*. The programme will include evidence based presentations around current clinical neurophysiotherapy, research and concepts of management.

Three motions have been submitted for the Annual Representatives Conference by the Communication subgroup, lead by Nicola Hancock, which are on view today. Two have been accepted, one to join with the Learning Disabilities group.

Recently Ralph Hammond – Professional Adviser at the CSP contacted ACPIN regarding a proposal to develop a network of members regarding outcome measures. An expert within this field was approached and we are pleased to inform you that it has been accepted by Dr Sue Mawson.

NANOT liaised with the Royal

College of Physicians to produce a summary of the stroke guidelines for neuro occupational therapists. The CSP and ACPIN are keen for this summary to be transcribed for all ACPIN members. It is hoped this will be published by April to be distributed alongside Synapse.

ACPIN submitted questions for the CSP's Physiotherapy Research Priorities Project, Neurology Panel. The first expert panel meeting was held in January 2002 and attended by myself and Cherry Kilbride. The questions are currently being defined to meet the criteria of the CSP's charitable trust who are funding the project. This project will certainly boost the evidence base required in the neurological field of physiotherapy.

Over the last six months we have seen the formation of a new regional group based in Northampton. A core of five members initiated the project to alleviate the problem of travelling excessive distances for meetings. This week an application has been received from Surrey and the surrounding area and I understand that Cornwall are also proposing a new group which would bring the total of regional groups to 19.

The existing constitution which was written in 1996 requires updating and this will be one of the main projects for the Executive Committee this spring.

So thank you all for listening. I hope this has clarified some of the work ACPIN has carried out on your behalf.

Finally, I would like to thank you, our members, for your continued support and for making ACPIN such a powerful association.

TREASURER'S REPORT

Jackie Newitt

The cash flow for the national ACPIN account during the year 2001 is as follows:

- Income: £54,302
- Expenditure: £64,391

The net deficit is £10,089 and at the end of the financial year we had a balance of £10,319.

Income this year as you can see from the chart on the right is from two main sources: membership and courses. Due to an increase in membership numbers, the income from subscription fees has risen this year from £24,200 to £25,870.

Our biggest expenditure continues to be on running and subsidising the national ACPIN conferences (see chart on right). Although fully subscribed to, the residential Balance and Posture Conference in March 2001 was heavily subsidised for ACPIN members and consequently this has led to a substantial deficit. In the future we will need to seek increased sponsorship to keep the costs as low as possible for our members. This year we have also produced and distributed free to the membership the *Guidance on Manual Handling in Treatment* document.

Copies of the audited accounts are available on request.

I would like to thank all the regional treasurers for their work over the past year. I had hoped to present a summary of the regional accounts. Unfortunately I have only received the year end accounts for five out of the 15 regions so far and I would like to use this opportunity to remind all regional treasurers that the regional accounts must be audited and the report sent to me.

Accountants: Unanimous vote to retain the current accountants: Langer & Co, 8-10 Gatley Road, Cheadle, Cheshire, SK8 1PY.

BALANCE SHEET		
	2001	2000
	£	£
Income	54,302	36,883
Expenditure	64,391	44,558
Net deficit	10,089	7,675
Net current assets	10,319	20,408

INCOME		EXPENDITURE	
			Promotional £3,220
			Sundries £1,288
			Administration £5,795
Sundries £1,629			Synapse £7,083
Courses/ sponsorship £26,608			Travel £5,795
			Capitation fees £4,507
			Courses £36,703
Membership fees £26,065			

CLINICAL INTEREST GROUP LIAISON COMMITTEE (CIGLC) REPORT

Louise Gilbert

CIGLC Representative for ACPIN

Resource Directory

A resource directory of the clinical interest and occupational groups has been produced and forms part of the Standards of Physiotherapy Practice pack. Each CI/OG (Clinical Interest/Occupational Groups) has been included within an umbrella group and the information highlights what each group can offer to its members.

2002 CIGLC Conference

The conference will be on 18-19th November 2002 at Kenilworth, Coventry and a draft programme is being produced at present. The main aim of the conference is for training CI/OG representatives in areas such as chairing, minute taking and public speaking. Each group will be offered two places so if anyone from the National or regional committees is interested please contact Louise Gilbert.

Time-off survey

A questionnaire aimed to provide information to CIGLC about the extent and nature of difficulties in obtaining time out of work for CI/OG related activities has been designed and drafted by a subgroup of the committee. This will be targeted at CI/OG members in the near future.

CSP Conference on prescribing for physiotherapists

A summary of the day and the issues raised was published in *Frontline* on January 16th 2002 (Vol 8 No 2). ACPIN are keen to hear your views and ideas on how to take the debate further forward within our area of clinical interest.

The CIGLC action plan at present has two main priorities for the next two years. These are:

1. 'Time-off issues' for CI/OG members, following the survey the aim

is to develop guidance for managers.

2. Promotion of the CI/OG roles and increasing membership rates.

Other action points in the CIGLC action plan 2002 are:

- Creating links with clinical networks within other professions around issues of mutual interest.
- Ensure that CI/OGs are well represented at ARC.

Any comments/views can be forwarded to Louise Gilbert at: l.gilbert@uel.ac.uk

EDUCATION OFFICER REPORT

Karen Rowland

Hon Education officer

The last 12 months have been a busy for ACPIN. The website has been very successful with many people using it for course information and access to regional ACPIN groups. Due to cost it has been decided to update the website twice a year in April and then in November. This will enable the information to be kept current and useful to the users. ACPIN would welcome any constructive comments on the development of this site.

The residential conference held in March in Northampton on *Posture and Balance* was extremely successful. The venue was excellent and provided high quality service in all aspects. It has been decided to use the same venue for the next residential conference in March 2003.

Unfortunately last November's conference on *Legal Issues in Neurophysiotherapy* had to be cancelled due to lack of support. This was very disappointing due to the hard work that had been put in. The committee are attempting to liaise with other special interest groups in order to develop courses of joint interest. Education will continue to be developed through courses, information technology and liaison. ACPIN will be active in further developments over the coming year.

PRO & COMMUNICATIONS SUB-GROUP REPORT

Nicola Hancock

Honorary PRO ACPIN

Our group continues to facilitate communication within ACPIN itself and between ACPIN and other health professionals and neurological bodies.

Following the success of the ACPIN motions for ARC congress 2001, we again prepared early and thoroughly this year. We have submitted three motions, which are cited below, and all have had positive acceptance from the CSP regarding their appropriateness for debate at Congress 2002 in Belfast.

We continue to seek out sponsorship from national companies for our major study days, largely with great success. We have compiled a Sponsors Database that is held by the Regional representatives – if you have suggestions of supportive sponsors that you may have used locally, please let your representative know so that they can be included for future reference.

MOTIONS FOR ARC 2002

Motion 1

This conference demands that the CSP should produce detailed guidelines defining the physiotherapists role and responsibilities when educating carers, both agency and family, in rehabilitation skills, particularly in the current climate of increased litigation and liability.

Explanatory note As staff numbers decrease and pressure to discharge rehabilitation patients increases, physiotherapists are frequently required to educate carers in maintenance and rehabilitation home programmes, including exercises, stretches and positioning. We must have specific guidelines to ensure clear definition of responsibilities in terms of education, monitoring and

ongoing input in these cases. Where does liability for incompetent carers, who may have seemed competent in the gym, lie? Guidelines in this grey area would clarify the situation for all CSP members.

ACPPLD submitted a very similar motion, also emphasising ethical issues in this difficult area, and we have decided to second their motion in this case.

Motion 2

This conference demands that the CSP should lobby the media to ensure immediate improvement in public awareness of cerebro-vascular disease with respect to primary and secondary prevention, outcomes and potential for positive rehabilitation via physiotherapy, since public awareness of stroke as a cerebral event remains poor.

Explanatory note: Many ACPIN members working with stroke patients and their carers continue to find that knowledge of stroke, including its causes, pathology, outcomes and rehabilitation potential remains poor. The CSP must lobby the media to initiate a campaign to improve understanding of stroke through television and radio advertising, which could aid in primary and secondary prevention as well as assist patients and carers with coping with the onslaught of stroke and its potential outcomes. The campaign should be extended to medical bodies to develop a consensus on the name of stroke eg brain attack as a considerable number of different terms are still used.

The agenda committee has accepted this motion.

Motion 3

This conference believes that the CSP should immediately lobby Trust executives to ensure provision of appropriate and accessible working rehabilitation space in view of the current emphasis on acute bed resources and length of stay statistics.

Explanatory note: An increasing number of ACPIN members are reporting cases of Trust management executives assessing current rehabilitation space with a view to reducing or closing such environments to accommodate further acute departments. This reflects the unfortunate but significant degree of short-sightedness and poor understanding of rehabilitation as an integral part of recovery which begins on day one of a patient's stay. Without appropriate therapeutic areas, skilled therapists will find it increasingly difficult to ensure relevant treatment is given to early/acute, intermediate and long-term rehabilitation patients and this may impact directly on length of stay. The CSP must act.

The agenda committee has accepted this motion.

CSP 2001 CONGRESS AND EXHIBITION

International Convention Centre, Birmingham
19-21 October 2001

Dr Mary Cramp

Honorary Research Officer ACPIN

Extending the boundaries was the title of the 2001 CSP Congress and Exhibition. Held once again in the International Convention Centre, Birmingham, the format of Congress was similar to previous years with a mixture of plenary sessions, keynote lectures and free paper sessions.

Seven concurrent scientific programmes were on offer involving nine of the Society's clinical and occupational groups. The contributing groups were Physiotherapy Pain Association, Association of Chartered Physiotherapy in Respiratory Care, Association of Chartered Physiotherapists in Sports Medicine, Chartered Physiotherapists working with Older People, British Association of Bobath Trained Therapists, Chartered Physiotherapists in Mental Healthcare,

Extended Scope Practitioners, Association of Chartered Physiotherapists in Orthopaedic Medicine and Rheumatic Care Association of Chartered Physiotherapists.

With seven concurrent sessions, there were many choices to make regarding what lectures to attend. The programmes organised by Chartered Physiotherapists working with Older People (AGILE) and British Association of Bobath Trained Therapists (BABTT) were of particular interest. The AGILE programme *Gait Galore* explored many aspects of gait from basis biomechanics, measurement to gait dysfunction and re-education. Professor Ray Tallis opened proceeding with some reflections on gait with his usual aplomb. At the same time, Professor John Stephens, Department of Physiology, UCL was speaking on *The sensory control of movement* at the BABTT programme. Given his background and research experience, it was a disappointing lecture, being very basic and not extending into the relevance of the topic to paediatric neurorehabilitation. However, later in the programme, Dr. Margaret Mayston addressed the topic of *Sensory aspects of motor control in neurological dysfunction*. Drawing on the literature and her own experiences, she gave clear and thoughtful presentation on possible role of sensory inputs on motor reorganisation.

Back at the AGILE sessions, there were many lectures to interest physiotherapists involved in neurology. Fiona Coutts spoke about gait patterns in older people, addressing several points raised by Professor Tallis. Gay Moore addressed gait pattern changes with Parkinson's disease. Psychological aspects of falling were explored by Dr Janet Simpson and Dr Sue Mawson spoke about measurement of functional gait and balance. One of the most interesting lectures was given by Dr. Sheila Lennon. She gave an excellent presentation on evidence-

based gait re-education in stroke rehabilitation and sparked a lot of discussion among the audience. ACPIN will have the pleasure of hearing more of her work at Congress in 2002.

Free paper sessions were held concurrently and the content of the various sessions was mixed. The short presentations were, in general, informative and interesting. They provided an insight into the research and service development that therapists were involved with. However, having to choose between presentations of interest was frustrating. More time and fewer concurrent sessions would increase the value of the free paper sessions.

There were many other activities occurring at Congress. The Founders Lecture 2001 was given by Barbara Hammer, the first and only woman to pilot Concorde. She spoke about extending the boundaries of women at work and the skills required to succeed. Fellowships of the Society are also conferred at Congress. This year, eight fellowships were conferred and the new fellows included among them Mary Lynch-Ellerington and Val Pomeroy.

ACPIN did not offer a programme for 2001 but had a stand to promote activities of the group. We were pleased that many members took time to visit us at the stand. ACPIN will return to CSP Congress in 2002. The CSP are already inviting applications to attend.

THE CASEMIX PROGRAMME – ESTABLISHING HEALTHCARE FRAMEWORKS FOR STROKE AND HEAD INJURY

Ros Wade

ACPIN representative on Clinical Working Group

WHAT IS CASEMIX?

The Casemix programme of the NHS Information Authority was established in 1987, as part of the

Resource Management Initiative. The first step involved grouping healthcare interventions in acute inpatient settings. As the groups expanded a system was invented to group people together with similar needs for healthcare and similar ability to benefit from that care. In 1999, this programme was renamed as the Casemix Programme, with the aim to 'describe the range of healthcare services and healthcare needs of specific groups of people or patients' in a systematic way. This information can then be used by both clinicians and managers to understand the cost of care, the needs related to care of a particular group, and the expected outcome for that group. It also aims to facilitate resource management, case management, commissioning of services and audit. There has been a greater shift towards describing health service delivery from the perspective of patient-clinician interaction viewed against the healthcare needs of the population. It has been recognised that there can be inequalities in access to services for patients, and by developing these systems of information a more 'standardised' package of care should be made available. Also, with the plans for electronic records, it will be easier to collate data for use within clinical governance agendas and clinical audit.

HEALTHCARE FRAMEWORKS

'The Healthcare Framework relates groupings of people with healthcare needs Health Benefit Groups (HBG's) to the appropriate groupings of interventions for those needs - Health Resource Groups (HRG's).' These HBG's therefore, are groups of people with similar healthcare needs who, given similar interventions, may be expected to have a similar range of outcomes. They are related, where available, to HRC's which are groups of intervention episodes expected to consume similar amounts of healthcare resource

and are clinically homogenous.

The Casemix programme works with lead clinicians and pilot sites within the NHS to identify available patient data and/or data needs. When all parties are satisfied that the groupings are clinically and statistically meaningful, they are signed off by the lead clinician on behalf of the relevant professional body. Once clinical endorsement is received they are released into the NHS. This is an enormous programme looking to define services provided by the NHS, for example out-patient treatments, community-based activity, palliative care, intensive care etc. Within the in-patient care group, no less than 565 HRG's have been used to describe interventions. These have been subdivided into 18 sections based on body systems, such as nervous system respiratory system, musculoskeletal system etc.

ther informed by performance indicators that relate to the structure and provision of healthcare and expected health outcomes.'

Performance indicators have been drawn from published sources and relate to six key themes:

- Health improvement
- Fair access
- Effective delivery of appropriate healthcare
- Efficiency
- Patient/carer experience
- Health outcomes of NHS care

Currently, healthcare frameworks are available for coronary heart disease and female breast cancer. Work is underway on piloting Frameworks for lung and colorectal cancers, female sexual health, stroke and head injury. Further plans are in progress to develop Frameworks for diabetes, osteoarthritis of the hip, fractured neck of femur, some cancers, meningitis and mental health.

a neurophysiotherapist but with no time limit, or a should all patients be seen by a physiotherapist for the same amount of time, or should the outcome be the decisive point and the resources should be available for the patient to receive intervention until this outcome is achieved? The aim is to answer these variations within the matrices. Another major question is the influence of the environment in which the condition exists and the co-morbidities that may be associated with this. For example in some areas of the country the incidence of head injury may relate to an enhanced environment of drugs and/or homelessness, which inevitably impact on resources. This type of 'external' factor is not addressed within the matrices and would therefore be part of an appendix of further recommendations.

At present the Frameworks consist of the four matrices as shown.

been noted that between matrix 3, which is confirming the condition and appropriate acute clinical management, the sub-acute rehabilitation stage is not recorded. Matrix 4 is concerned with the maintenance and support within the remit for those patients who no longer benefit from rehabilitation, but where the intention is to maintain the patient at the current level and prevent deterioration. This is an area where, within physiotherapy, there is currently little resource allocated.

The working groups are currently now working on establishing a new matrix 3b to present the necessary information for the rehabilitation phase from hospital, through rehabilitation units/stroke units and into the community/reablement teams. This requires consultation with the NHS Information Authority as it a change to the established format. However, it is hoped that the

HRG'S	PREVENTION AND HEALTH PROMOTION	INVESTIGATION AND DIAGNOSIS	CLINICAL MANAGEMENT	CONTINUING CARE	OUTCOME INDICATORS
AT RISK	MATRIX 1				
PRESENTATION		MATRIX 2			
CONFIRMED DISEASE			MATRIX 3		
CONTINUED CONSEQUENCES OF DISEASE				MATRIX 4	
STRUCTURES AND PROCESS INDICATORS					

DEVELOPMENT OF MATRICES

'The healthcare framework has been developed by dividing it into stages of the natural history of the condition. An associated range of interventions has been linked to each condition, and the relationship of these are in sub-sections known as matrices. Each matrix corresponds to one stage of the condition, and can be filled with data on incidence and prevalence of illness and cost of treatment. These data are then fur-

STROKE AND HEAD INJURY WORKING GROUP

Whilst being involved with the working groups for stroke and head injury some interesting questions have arisen. One of the key factors within these groupings is that the condition or intervention should be 'similar'. This has led to much discussion as to what is meant by this description. For example, if a patient should be seen by a physiotherapist does it matter whether it is

What has become apparent is that these are medically oriented and have mainly related to investigations that should be carried out or advice that should be available. Physiotherapy has been primarily recognised within matrix 3 as part of specialised support for those patients who present with confirmed disease and neurological deficit, within the need for both these patient groups to access multidisciplinary assessment. However, it has

Frameworks for stroke and head injury will be available later in the year.

Quotations reproduced from 'The Casemix Programme', Crown © NHS Information Authority

Further information can be obtained via the helpdesk on 01962 844588 or the website at: www.nhsia.nhs.uk/phsmi/casemix

Research forum

Welcome to our new feature in Synapse. This new section will focus on issues relating to research, particularly those of interest and relevance to physiotherapists working in neurology. So, if there are topics you would like us to consider in future issues of Synapse, or if you want to communicate with your colleagues on particular issues, do contact us.

This issue, we are introducing the ACPIN Research Bursary – an exciting new development for ACPIN. ACPIN is offering a small research bursary to its members to help support their research activities. Committing money solely for research activity is a major step for ACPIN and we look forward to receiving the first applications by 30th September. Terms and conditions of the bursary and a copy of the application form are published below. Further copies or an electronic version of the form can be obtained by contacting Mary Cramp at Department of Health Science, University of East London, Romford Road, Stratford, London E15 4LZ or by email on mary.cramp@talk21.com or on the ACPIN website at www.acpin.net

PLANS OF THE RESEARCH SUBGROUP

The research group will have a busy year in 2002. To keep us on track, the group has set out the following aims for 2002:

- To provide support to ACPIN national committee and liaise with external agencies, as appropriate, on research-related issues
- To develop an informed view of research activity within ACPIN membership

- To promote and support research activity within the membership
- To advance understanding of aspects of research among the membership

Key aspects of fulfilling our aims in 2002 are the introduction of the research bursary, developing the research report section of Synapse and analysing information gathered from research questionnaire circulated with membership forms from 2002.

UPDATE ON RESEARCH QUESTIONNAIRE 2002

Many thanks to all who have taken the time to complete the research questionnaire circulated with the membership forms for 2002. To date, we have received 175 replies with more arriving all the time.

Members are involved in a broad range of research, too numerous to detail here. 73 members have indicated that they are currently involved in research. Most are based in the NHS. 37 members are working on funded projects and 11 are holding research funds. 36 are doing research without funding, 20 as part of a further degree.

64 members have indicated that they are planning to get involved in research. Of these, 31 plan to start in the next 12 months. 7 have secured funding and 15 are conducting research as part of an educational programme. For the remaining 43 members planning to get involved in research, it was not possible to commit to starting research within the next 12 months. Several people indicated that time was a key factor.

We will continue to monitor research activity over the next couple of years. We will be hoping to see more physiotherapists getting in-

involved in research, gaining further qualifications and obtaining research funding, based on the assumption that these factors may lead to research that is relevant to neurological physiotherapy.

ACPIN RESEARCH BURSARY 2002/2003

ACPIN is offering research bursaries to members. The purpose of the award is to encourage research activity among the membership and to assist members undertaking research as part of their current workload or undertaking research as part of an educational course. Bursaries of up to £400 are available to cover research-related costs.

Awards

- The maximum award allowable is £400. Up to four awards will be made annually.
- Awards will be made to cover research-related costs in relation to a specific project, eg equipment; materials/consumables; specialist software; travel expenses.
- Awards will not be granted to cover the following: course fees; computers, staff time (secretarial support of data entry; blinded Rx)

Eligibility

- Applicants will be full members of ACPIN of at least two years standing.
- Applicants will be resident in the UK.
- Applicants will be planning to be or currently involved in research.
- Research must be related to physiotherapy for neurological conditions.
- Members conducting research as part of an educational course are eligible to apply for support.
- Applicants are expected to be the active participant in the proposed project.
- Applicants cannot apply for more than one ACPIN bursary.

Application procedure

- Applications for the award must be submitted on the standard application form.
- Application forms can be obtained from Mary Cramp (Honorary Research Officer), Department of Health Science, University of East London, Romford Road, Stratford, London E15 4LZ or by email on mary.cramp@talk21.com or via the ACPIN website at www.acpin.net
- Applications will be considered twice annually. Completed application forms should be received by 30th September or by 31st March for consideration at the National Committee meetings in November and May respectively.
- An application once submitted may only be re-submitted upon invitation.

Guidance on the application form

- Applications for the award must be submitted on the two page application form. All parts of the form must be completed and applicants must not exceed the space provided. Typescript forms are preferred and typescript must not be less than 10pt. It is essential that applicants:
- Give a clear concise account of the proposed research.
 - Provide a brief background to the research.
 - Outline the aim/purpose.
 - Describe the plan of investigation including details about the design, sample, and measures.
 - Provide justification of support requested.

Selection procedure

Applications will be considered in competition bi-annually. Completed applications will be reviewed anonymously and graded independently by members of the Research Subgroup, ACPIN National Committee. If members know of a conflict of interest, they will withdraw from the selection procedure. Recommendations will be reviewed by an independent expert referee. Awards

will not given automatically for each competitive round. Applicants will be informed of the decision of the committee within two months of the application deadline. The decision of the Committee is final.

Terms and conditions

1. Awards are made on the understanding that the investigations comply with ethical and safety requirements of the involved institutions. Evidence of ethical approval and insurance arrangements may be requested.
2. Bursaries must be used solely for the purposes set out in the application procedure. Any changes in proposed expenditure must be agreed to by ACPIN. At the end of the research project, any remaining balance should be returned to ACPIN.
3. A summary of expenditure accompanied by receipts (where appropriate) will be required.
4. ACPIN must be notified of any further changes in the proposed project eg timescale etc.
5. Recipients of a research bursary will be required to produce a report for Synapse on completion of the research project. The report will be expected within six months of completion of the project.

POINTERS ON WRITING A SHORT RESEARCH PROPOSAL

A research proposal is a structured description of your proposed piece of research. A proposal can serve many purposes such as providing a blueprint to work from, informing colleagues/authorities about your plans, obtaining ethical approval or making a request for financial support. A proposal should be tailored for its purpose, matching any given requirements. In the case of the ACPIN research bursary, you are required to write a short research proposal within a limited amount of space and you have been asked to provide a brief background, aim/purpose, plan of investigation and justification of support.

Where to start

The obvious starting point of any proposal is the research idea. Is the research idea a good idea? Have you got a clear question to answer and is there a need to address the question? Is it relevant and appropriate? Is the research feasible? Are there suitable research methodologies available to answer your question? By addressing some of these questions and others, you can convert your research idea into a concrete proposal. Studying the published literature will help, considering not only the outcome of the study but the methods and measures employed in the research.

In most circumstances, resources will dictate what is possible for you to do and your research idea will probably require modification to take account of the available resources. Time is one of the most valuable resources in research. Be careful about overestimating the time you have available to conduct your research and underestimating the time required to collect your data. It is worth working out the time required for your research per subject. Subject availability will also determine what is possible. A common error is to overestimate subject availability. You need to consider what inclusion/exclusion criteria you will need to apply and make an allowance for refusals. If you are using equipment, make sure you know about its availability, reliability and what happens if it breaks down! Overall, be realistic when you are planning your investigation. Having a detailed, realistic plan will make it easier to write a proposal.

Writing the proposal

Many people are put off by the thought of writing. Though writing a short research proposal is challenging, it is certainly manageable. One of the main challenges of a short proposal is the limited space available to present your research idea and plan. When space is limited, it is

possible to think that it won't take long to write but don't underestimate the task. Every word counts and you need to convey your proposal in clear and brief detail.

Presentation, writing style, grammar and spelling are important when you are writing for someone else. Good writing is simple and concise. Putting time and effort into your writing is important so that you can maximise your use of the available space. It is important to give a clear picture of the proposed work and make sure that all essential information is included.

With regard to the bursary application, background should be based on review of the literature relevant to the area of study and consider underlying theoretical issues and basis for the proposed research. As space is limited, make sure you present only essential information. A concise statement of the research question(s) should be given for aim/purpose. Plan of investigation should provide details about how you will investigate the research questions covering issues such as subjects, experimental design, measurement, intervention (if relevant), data analysis and time-scale for the proposed research. This is a key part of the proposal and your plan needs to be clear, realistic and feasible. Justification of support should outline how funding would be utilised and how it would assist your research.

Quick tips

- Organise your thoughts
- Gather any information required
- Develop a clear, specific and well-argued plan
- Allow plenty of time to write the proposal – it always takes more time than you anticipate
- Expect to write three drafts – in early drafts, put in everything you want to without consideration for space restrictions; in later drafts, focus on the 'smooth transfer of ideas'

- Keep sentences short and simple – never use two words when one will do
- Reference key literature and measures where possible
- Get your application in on time!

There are several helpful books available about writing. Here are two examples of what's available:

- French S & Sim J (1993) *Writing: A guide for therapists* Butterworth Heinemann Ltd Oxford.
- Matthews JR, Bowen JM, Matthews RW (1996) *Successful Scientific Writing* Cambridge University Press, Cambridge.

ACPIN national conference 2002 The management of incomplete spinal injuries Abstracts and biographies

Lecture 1

Aetiology and secondary cord changes

Elaine Scott MCSP SRP

Lecture 2

The role of the physiotherapist in the treatment of people with incomplete spinal injuries

Sue Edwards FCSP SRP

Lecture 3

Recent advances in treatment and rehabilitation of incomplete spinal injuries

Sue Paddison MCSP SRP

Lecture 4

Management of spasm and botulinum toxin

Davina Richardson MCSP

Lecture 5

An overview of orthoses

Sybil Farmer MCSP SRP

Lecture 6

Neuromuscular electrical stimulation

Dr Jane Burridge

AETIOLOGY AND SECONDARY CORD CHANGES

Elaine Scott

Superintendent Physiotherapist
Princess Royal Spinal Injuries Unit
Northern General Hospital NHS Trust

Spinal cord injury (SCI) affects a small but significant number of people in this country every year. The incidence of such injuries in this country is approximately 10-15 per million of the population per annum ie 600-900 new injuries each year. Life expectancy for this patient group has steadily improved since the pioneering work of Ludwig Guttman in this country and the establishment of specialist units which manage initial complications, provide a comprehensive rehabilitation programme and a regular follow-up service. At present average life expectancy is within five years of the general population. Therefore this, combined with the young age of many patients, gives a growing, and ageing, population of individuals with spinal cord injury.

Incomplete spinal cord injury (ISCI) is obviously a subsection of the above group. At the most basic, level an incomplete injury can be described as one in which there may be any combination of motor and/or sensory function remaining below the level of the injury. There are a number of ways of categorising level and pattern of 'incompleteness' – either by categorising remaining neurological function, or by describing the pattern of damage within the cord and its clinical presentation.

Recent studies over a five-year period at the Princess Royal Spinal

Injuries Unit based at the Northern General Hospital in Sheffield found that 70% of admissions had incomplete injuries. When split by Frankel grades the following breakdown was found (Figure 1). Frankel grade A present as motor and sensory complete; B's are sensory incomplete,

spinal cord consists of cell bodies, small projection fibres and glial cells. The dorsal horn is mainly sensory, the anterior horn contains the cell bodies of lower motoneurons innervating muscles. White matter consists of ascending and descending tracts. These are the axons of

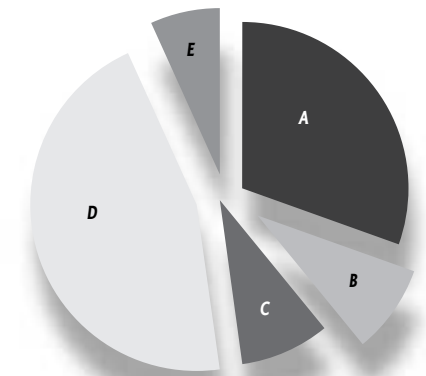


Figure 1 Incomplete admissions to PRSIU by Frankel Grade

motor complete; C's are motor and sensory incomplete with sparing being considered as 'unfunctional'; D's are motor and sensory incomplete with sparing being considered 'functional'; E's are 'normal' neurologically.

To understand the clinical presentation of spinal cord injury, knowledge of the underlying anatomy of the cord is needed. The spinal cord extends from C1 to approximately L1/2 then terminates in the conus and cauda equina. The cauda equina consists of nerve roots – anterior horn cell axons. Damage at or below approximately L1/2 results in a lower motor neurone lesion (LMNL). This is characterised by a flaccid paralysis, loss of tendon reflexes and often-profound muscle wasting.

The spinal cord extends from C1 to T12/L1. The grey matter of the

motor and sensory fibres. The position of tracts within the cord, the sensory or motor information they convey and their point of decussation ie whether they run ipsi or contralaterally in the cord explains the clinical picture seen. Damage to the cord may result in features of both upper and lower motoneurone syndromes. Damage to the tracts results in the features of an upper motor neurone syndrome (UMNS), where there is substantial damage to the anterior horn cells within the grey matter a LMNL is seen.

INCOMPLETE SYNDROMES

There are four main patterns of incomplete injury described in the literature (Grundy & Swain 2002, Somers 2001). Not all subjects present with these classic syndromes, but may show a general pattern fitting into one of these groups. These

patterns most often present in the cervical cord but may also be seen to a variable degree following damage to the thoracic spine.

Anterior Cord Syndrome

Figure 2

The anterior part of the cord is damaged due to a flexion injury. Diving injuries are a common cause of this syndrome. Patients present as motor complete from the level of the injury with loss of pain and tempera-



Figure 2 Anterior Cord Syndrome

ture sensation. As the dorsal columns are spared patients have good proprioception, touch and pressure sensation.

Central Cord Syndrome

Figure 3

Typically seen as a result of a fall in older patients with cervical spondylosis. Mechanism is a hyperextension injury that compresses the cord between osteophytic vertebral body and intervertebral disc and the ligamentum flavum. Grey matter at the level of the lesion and centrally situated cervical tracts are most damaged. The classic picture is therefore of flaccid weakness of arms due to the anterior horn cell damage with relatively strong but 'spastic' trunk and legs. These patients may be capable of walking but have very poor upper limb function.

Brown-Sequard Syndrome

Figure 4

Classically due to stab injuries but also occurs where lateral mass fractures of the vertebrae have occurred. Mechanism of injury is that of a flexion and rotation injury. Signs are those of a hemisection of

the cord. Power and proprioception are reduced or absent but good pain and temperature sensation are found on the side of the injury. The uninjured side has good power and proprioception but reduced or absent pain and temperature. The clinical picture is due to the differences in points of decussation of tracts - the spinothalamic tract decussates in the cord, the dorsal columns and the corticospinal tracts in the mid-brain.

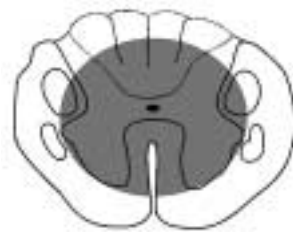


Figure 3 Central Cord Syndrome

Posterior Cord Syndrome

Figure 5

Occurs following hyperextension injuries where the spinal arch has been damaged. This results in loss of proprioception due to posterior column damage. Patients may have good power and pain and temperature but profound ataxia.

PATHOPHYSIOLOGICAL CHANGES POST INJURY

This is still a debated area. A complex combination of reactions occurs. It is believed that in traumatic SCI it is the initial mechanical compression due to vertebral displacement that causes the damage to the cord - either to nervous tissues directly or by disruption of blood supply (Kakulas 1999). This instigates a chain of events that run in parallel. The neuropathological reactions resulting from spinal cord injury are similar to those following other central nervous system damage. Sequelae can conveniently be split into early, late and intermediate stages.

Early

- Complete disruption of a proportion of nerve fibres and partial in-

jury of others - some will be permanently damaged, some reversibly so.

- Traumatic demyelination
- Within a few minutes of injury small haematomas occur within the central grey matter. By four hours post injury these progress until there is a central haemorrhagic mass which effects both grey and white matter to a variable degree. By 24 hours post injury a necrotic area forms within

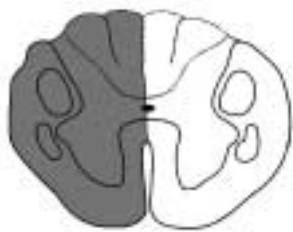


Figure 4 Brown-Sequard Syndrome

the cord. This usually extends over a number of segments.

- Oedema occurs reaching a maximum 3-6 days post injury. This leads to further necrosis. May last up to 15 days.
- Vascular damage may lead to ischaemia and therefore further cord damage. Ischaemia starts at onset and hits a peak at 24 hours post injury.

Intermediate changes

- Debris from necrosis is removed by macrophages
- 5-6 days post injury 'healing' occurs in the form of scar tissue - astrogliosis - formed by astrocytes.
- Central area of haemorrhagic necrosis tends to form a cyst.
- Collagenous scarring occurs.
- Oligodendrocytes produce an axonal growth-inhibiting hormone.
- Oedema still present.

Late stage

- Remyelination of some axons may occur. This is with Schwann cells; not oligodendrocytes ie nerve root regeneration. There is

conjecture as to this aiding recovery in the longer term.

- Undamaged and partially damaged fibres regain the ability to conduct.
- The lesion is now a glial lined, multilocular cyst.
- Wallerian degeneration of both afferent and efferent pathways is continuous.

Incomplete spinal cord injuries therefore present with a complex picture. There is a combination of



Figure 5 Posterior Cord Syndrome

cystic formation, partially or completely destroyed or demyelinated fibres, a variable degree of scarring and resolving haematoma. The clinical picture presented depends upon the pattern of damage within the cord that is usually related to mechanism of injury as previously described.

During the above stages the clinical presentation goes from that of spinal shock - characterised by muscle paralysis, flaccid muscle tone and a loss of tendon reflexes - through a transition phase to a 'spastic state' - exaggerated tendon reflexes, increased muscle tone and muscle spasms (Hirsemenzel 2000). Approximate time scales for this transition is 8-10 weeks. These are not clear-cut stages but rather a continuum.

Whilst the above gives an indication of some of the main sequelae at the level of the lesion consideration must be given to the effect of these issues upon the caudal section of the cord released wholly or partially from higher centre control. Motor systems have three levels of control: the spinal cord, the brainstem and the brain. The spinal cord is the low-

est in the hierarchy. These systems are organised both serially and in parallel. Spinal segmental mechanisms have an important role to play in the production and control of movement. They are modulated by sensory and higher centre input through a complex system of interneurons (Kandel, Schwartz & Jessell 2000). Where the spinal cord is damaged, the normal balance of these mechanisms is lost. Whilst the complexities of the neurobiology of the motor system is poorly understood - the following is an attempt to summarise some of the resulting central and peripheral changes.

PLASTICITY OF THE SPINAL CORD

Whereas higher centres have long been considered capable of plastic adaptation to injury, the spinal cord has not been considered as such. However, a growing body of evidence in both animal and human studies, presented in two review papers (Rainteau & Schwab 2001, Wolpaw & Tennissen 2001), suggest that the spinal cord itself is capable of a substantial degree of plasticity in both the normal and pathological state. Activity dependent plasticity, that is plasticity which produces a persistent CNS modification that results from past experience and affects future behaviour, occurs in the spinal cord throughout life and is driven by input from the periphery and the brain. This plasticity may occur in the spinal cord below the level of the injury or in spared fibre tracts across the lesion. Spinal cord injury changes the cord below the level of the lesion. This change may be due to:

SPARING FOLLOWING INJURY AND THE 'SPINAL REFLEX CENTRE'

The cord is very seldom transected. Dimitrijevic (1988) in his extensive studies describes a continuum of damage from the totally transected cord, through what he describes as 'discomplete' and incomplete injuries, all the way to individuals who have relatively minor cord damage. In a population of clinically complete SCIs (Sherwood et al 1992) it was found that 84% had some sub-clinical sparing of neurological function. At a spinal segmental level the cord can act as a 'spinal reflex centre' via its system of interneurons and is believed to be capable of

descending input encounters abnormal, often hyperexcitable, cord circuitry.

The cord attempts to 'heal' itself. Animal studies into the recovery of spinal cord function suggest the presence of four mechanisms active in this process (Dimitrijevic 1987)

- Sprouting and anatomical reorganisation of axonal branches and dendrites (anatomical plasticity)
- Synaptogenesis and modifications of synaptic strength (synaptic plasticity)
- Restoration of function to uninjured and uncrossed fibres
- Remyelination of demyelinated injured fibres, as well as restoration of the ability to conduct impulses through injured fibres in the absence of myelin.

As well as changes at cord level, damage to the spinal cord has been shown to have effects at cortical and subcortical levels. Studies have shown changes in the primary motor cortex related to loss of sensory input from the damaged cord, and to plastic change within the nuclei of the midbrain and brainstem. Changes at one level of the CNS have an effect upon other areas that need to be considered within rehabilitation.

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generating basic patterns of stereotyped movement (central pattern generators). A much-reduced population of axons is capable of activating segmental interneuronal networks - however, the smaller the percentage of remaining axons the less selective movement is likely to be.

CHANGES IN INHIBITORY MECHANISMS FOLLOWING SCI

- The dorsal reticulospinal (inhibitory), medial reticulospinal (mainly excitatory) and vestibulospinal (excitatory) tracts synapse upon interneuronal networks within the cord which control spinal stretch reflexes and flexor and extensor reflexes (Sheean 1998). Damage to these tracts results in an imbalance of excitatory and inhibitory control and features of the upper motor neurone syndrome are likely to present.

- Subjects with SCI demonstrate decreased reciprocal inhibition (Faist et al 1994). The authors found that these patients presented with decreased presynaptic inhibition by Ia inhibitory interneurons.
- Renshaw cell (RC) activity is decreased in SCI (Mazzocchio & Rossi 1997). The RC is implicated in the task dependent control of movement and receives a descending input from higher centres. It acts to stabilise and control the firing rate of the anterior horn cell through a negative feedback loop. Motor nerves are therefore less able to control their rate of discharge.

MOTOR UNIT RECRUITMENT FOLLOWING ISCI

Heckman (1993) investigated the effect of incomplete spinal cord injury in spinalised cats. He found that dorsal hemisection involving the lateral reticulospinal tract caused disruptions in motor unit recruitment and in rate modulation. Motor

unit recruitment usually follows a very orderly pattern from slow oxidative (SO) to fast glycolytic (FG) fibres being progressively recruited with increasing intensity of activity. The range of forces over which motor units are usually recruited is compressed, with fatigue resistant and fast fatigable units being recruited at much lower forces. Rate modulation, that is the rate of action potential discharge, was affected with the motor unit discharge rates being abnormally low. The combined effects of these changes are a lack of smoothness in muscle contraction and high fatigue levels.

CHANGES IN MUSCLE FOLLOWING ISCI

Biopsy of muscle following spinal cord injury has shown that there is substantial atrophy of SO fibres (Gordon & Mao 1994). In the normal these motor units are found in abundance in postural, deep lying, single joint muscles. Following cord injuries a preponderance of FOG and FG fibres is found. The ability to sustain muscle contraction is substantially reduced with fatigue being an issue. The most severe atrophy is seen in unloaded muscles that are immobilised in a shortened position. With many patients undergoing a substantial bedrest whilst waiting for bones to heal this is likely to add to these issues. The type of activity and length of treatment session need careful consideration when patients initially mobilise.

Changes in soft tissues due to immobilisation also need to be considered, especially in the bedrest phase of management. Alterations in joints, muscle rheological change and muscle imbalance all need to be addressed.

AUTONOMIC NERVOUS SYSTEM DISTURBANCE

The effect of damage to the autonomic nervous system upon general

health and wellbeing should not be forgotten. These may include bradycardia leading to decreased blood pressure, bladder and bowel incontinence, altered sexual function, impaired control of body temperature, inability to control peripheral vasodilation, gastrointestinal and urinary tract complications and autonomic dysreflexia. Poor management of these complications can, at worst, have life threatening effects upon the individual

IN SUMMARY

Spinal cord injury occurs due to initial mechanical or pathological damage to the cord. The initial insult starts a complex cascade of events within the cord that result in a variable degree of damage. The central nervous system attempts to compensate for this damage in a variety of ways that result in changes to the CNS and peripheral system. An understanding of these changes and the initial medical management of the spinal injury should help to direct therapeutic intervention appropriately.

Initial orthopaedic management varies across the country. Fractures may be managed conservatively or surgically. There is much debate between specialists in the field as to the best management. It is however agreed that the most important issue is to prevent further damage to the cord by the maintenance of spinal alignment and extreme care in handling the fracture. A minimum 6-8 week bedrest period for conservative management is not unusual. During this period avoidance of possible soft tissue complications, within the limits of the absolute need to maintain spinal alignment, is of great importance. Many patients suffer from profound sensory deprivation due to a combination of ascending tract damage and their position during bedrest. On mobilising many patients wear some form of rigid spinal orthosis for many weeks to further protect the fracture site.

Following a lesion to the spinal cord plastic adaptation to injury occurs at multiple sites within the CNS. It is activity dependent and sensory driven. It may have positive or negative effects. The challenge in therapy is to bring about positive, plastic change. Consideration needs to be given to duration, intensity and mode of therapy to drive and maximise constructive plasticity within the abilities of the damaged cord.

Damage at or below the 12th thoracic vertebrae will result in a LMNL. Damage to the cord itself will result in the features of an upper motorneurone lesion where spinal tracts have been damaged and a LMNL where there is substantial damage to grey matter and nerve root damage. This is of particular importance in central cord syndrome. The signs and symptoms of each should be recognised and therapy directed appropriately.

Fatigue may be a substantial issue. This may be due to autonomic nervous system changes, changes in motor unit recruitment and rate modulation or to changes seen within muscle due to disuse or denervation atrophy. Atrophy is particularly marked in anti-gravity, postural muscles. Consideration should be given to length of treatment times and to the type of muscle activity being facilitated. A balance is needed between patients fatigue levels and the intensity of input needed to assist plasticity as discussed above.

Whilst knowledge of the underlying neurophysiology and peripheral changes should guide treatment the therapist should never lose sight of the individual. Optimal physical rehabilitation should take into account the psychological, social, medical and spiritual needs of the patient.

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Elaine Scott has worked in the field of spinal cord injury since 1989 and has been superintendent physiotherapist at the Princess Royal Spinal Cord Injury Unit based at the Northern General Hospital in Sheffield since 1993. She is at present in the process of writing up her M.Phil thesis that investigated the effects of functional electrical stimulation upon spasticity in the incomplete spinal cord injured. From 1996-1999 she was involved as a research therapist in a European multi-centre trial investigating the use of FES in gait enhancement for patients with incomplete spinal cord injury.

THE ROLE OF THE PHYSIOTHERAPIST IN THE TREATMENT OF PEOPLE WITH INCOMPLETE SPINAL CORD INJURY (ISCI)

Susan Edwards FCSPT

The aim of this presentation is to identify the special needs of people with ISCI; to discuss the therapeutic strategies that may be used to empower them to attain optimal function and to provide an overview of the holistic management within the multi-disciplinary team (MDT).

It is important to demystify the management of people with spinal cord injury as over 50% present as

incomplete lesions and non-traumatic causes account for 1.2% of all neurology out-patient referrals (Stevenson et al 1996). Therefore it is not, nor should it be, a condition confined to specialist units. In cases of a complete lesion the outcome can be relatively easily predicted, but this is not the case for incomplete lesions. There needs to be greater collaboration and liaison between neurophysiotherapists and spinal cord injury physiotherapists.

WHAT ARE THE SPECIAL NEEDS FOR A PATIENT WITH ISCI?

- The patient will spend several weeks in bed, the time varying dependent on whether the injury is managed conservatively or with surgical fixation. Being unable to move and restricted to a limited visual field can lead to marked sensory deprivation.
- Perhaps the most crucial aspects of care surrounds the management of bladder and bowel dysfunction. The rehabilitation therapy needs may be adequately addressed outside of a spinal unit but in many instances, the bladder and bowel problems are not.
- Additional management strategies for this patient group include advice on positioning and wheelchair provision. It is worth considering how much time a patient spends in bed as opposed to in a wheelchair. Currently there are significant resources dedicated to designing, modifying and supplying wheelchairs and yet little emphasis placed on postural management in bed.

It is also important to consider issues of therapeutic handling. When a patient has an incomplete lesion there is always a question with regard to the extent of recovery and the degree of residual paralysis. Initially there is the need for skilled respiratory care, but also for passive and active movements. Recent studies with PET scans have shown

that when passive movements are performed on patients following stroke, activity is seen in cortical areas (Nelles et al 1999) highlighting the need for the patient to participate in the movement irrespective of the degree of paralysis.

There is also the question of when to teach 'trick' movements. In patients with a lesion at C6 who have no triceps activity, they can be taught to extend the elbow using distal fixation and teres minor (nerve supply C5) to externally rotate the shoulder. Should there be further recovery this learnt movement will not be detrimental. Conversely, the tenodesis grip is essential for hand function in a patient with a complete lesion and yet for patients with recovering hand function the tightness of the fingers, essential for effective tenodesis action, may impede recovery of hand function.

Pain following injury may also be a problem particularly in patients with central cord lesions, where it has been noted that pain has worsened with rehabilitation (Roth 1990). This may be dysaesthetic pain but it may also be due to the positioning and handling the vulnerable upper limb joints.

Atrophy is a major feature which may be as a result of either denervation atrophy with LMN lesions, or disuse atrophy produced by decreased drive onto the spinal motoneuronal pool (Gordon and Mao 1995). Strengthening programmes are clearly indicated.

Many of these issues are best managed by a dedicated MDT, looking at recovery in a functional context of activities of daily living. Splinting may be required and hopefully in time we will dispel the view that physiotherapists deal with the lower limbs and the OT's the upper limbs and have greater integration between therapy staff. The MDT can also contribute to developing bladder and bowel programmes and with establishing

closer liaison, particularly with regard to prescription of anti-spastic medication.

Finally, consideration must be given to the longer term issues such as management in the community, the need for ongoing physiotherapy, whether hydrotherapy is required or swimming in a public pool and the aids and appliances that may be needed. Secondary problems of musculo-skeletal impairments or the development of a syrinx can seriously compromise the long-term success following discharge. A syrinx, for example, at T4 may not be of great functional significance but a syrinx in the cervical region producing a one higher level of lesion could have catastrophic consequences. Any changes in function should therefore be assessed, not only by medical staff at review appointments, but also by therapists to ensure the person with ISCI retains their optimal level of function.

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Sue Edwards works on a part-time basis as a Clinical Specialist at Stoke Mandeville Hospital, spinal injury

unit. She does sessional work with both adults and children at the Bobath Centre, London. She has an honorary contract to provide professional support and advice to the National Hospital, Queen Square. Sue also acts as an expert witness in medico-legal cases of adults and children with neurological disability as well as teaching nationally and internationally. She has written two editions of *Neurological Physiotherapy: A Problem-solving Approach*, but (as she says) never again!

RECENT ADVANCES IN TREATMENT AND REHABILITATION OF INCOMPLETE SPINAL CORD INJURIES

Sue Paddison

Superintendent Physiotherapist
Spinal Injuries Unit RNOHT, Stanmore

The presentation content included:

- Incidence of Incomplete SCI
- Neurological Assessment
- Recent research and implications
- Acute management
- Rehabilitation
- Follow Up

A meeting of the physiotherapy teams working in the national Spinal Injury Units suggested an incidence of 60-70% of SCI patients admitted to their units are 'incomplete'.

In normal assessment of an acute spinal cord injured patient we would always document sensory and motor activity. If this were assessed to be present below the level of the spinal cord injury, as therapists we would always say that the patient is incomplete. There is an existing classification to try to classify 'how incomplete', called Frankel classification. However the World Health Authority and American Spinal Injuries Association reviewed this classification in 1992 and

created the ASIA classification system. This is the current valid system that is internationally recognised. The reason for this was the compelling research evidence that acknowledges the presence of some neurological sparing into the lowest sacral segments as being significant prognostic indicators for neurological recovery.

When is a good time to undertake an ASIA examination? There are several papers that discuss that 72 hours post injury, may be a useful time frame (Brown 1991, Maynard 1979). One month post injury is also seen as a good time for this classification (Waters 1992,3,4). Stauffer in 1983 noted that it is rare to see patients to be in total spinal shock and be totally a-reflexic.

The ASIA classification defines that a patient can have neurological sparing below the level of their injury but in the absence of the sacral sparing this is known as a zone of partial preservation.

RECOVERY OF THE INCOMPLETE SPINAL CORD INJURY

Ditunno (2000) reports that 90% of incomplete SCI patients have some recovery of a motor level, in their upper limbs compared to 70-85% of the complete injuries. Pin prick sparing in a dermatome is an excellent indicator of increased recovery of motor strength (Polynton 1997). Katoh and El Masry (1995) found that pin prick preservation below the level of the injury to the sacral dermatomes is the best indicator of useful recovery, with 75% of patients regaining the ability to walk. 50% of patients that had no sacral sparing did regain some motor recovery but it was not of functional use.

Waters, using a one month baseline examination at a centre, showed ASIA recovery rate relatively constant regardless of the initial neuro level of injury.

In the majority of tetraplegics and paraplegics, there was approximately

12-14 point increase in ASIA scores in lower limb motor score during the first year, but then minimal improvement during the second year, using the 50 point scale. He noted the exception of incomplete tetraplegics without sharp-dull discrimination, who then failed to demonstrate any lower limb motor recovery. Overall, it was found that scores improved by 11 points by end of year, with little improvement by two years.

Incomplete paraplegics

In general, 85% of muscles scored at grade 1/5 or 2/5 at one month, are found to have recovered to >= 3/5 by one year. However, if a muscle is graded 0/5 at one month, only 55% of these muscles recovered some volitional control, and only 26% recovering >= 3-5 power. (Waters 1994). It is commented widely that the incomplete SCI patients will make all useful recovery within the first two years post injury but from experiential observation this seems untrue particularly in incomplete tetraplegics where recovery may occur over significantly longer periods.

RECOVERY AND SYNDROMES

Anterior spinal syndrome

In these cases, spinothalamic and corticospinal tracts are most affected, with sparing of the posterior tracts. Generally, motor recovery is thought less in these patients in comparison with other incompletes. (Crozier, Foo et al)

Central cord

With this condition, motor impairment in the upper limbs is greater compared with lower limbs, and studies tend to show that 57-86% patients will ambulate (Penrod). In patients under 50 years, ambulation can be as high as 97%, compared with 41% of older patients over 50 years (Foo). Where lesions are due to cervical spondylosis, generally only about 31% will ambulate and these

patients have a mean age of 60 years.

Brown Sequard

In these cases, there is relatively greater ipsilateral proprioception and motor loss and contralateral loss of sensitivity to pinprick and temperature. There is a favourable prognosis, and almost all ambulate successfully (Bosch, Penrod, Taylor). The theory for this, despite the loss of pin prick on the one side of the cord, is axons in the contra lateral cord may facilitate recovery (Little 1985). Recovery also tends to occur proximal – distal, and flexion before extension.

AMBULATION RECOVERY

Waters reported 76% SCI with preserved sensation but no motor function, will ambulate and Maynard reports 44% ambulate. Crozier's work was significant, and reports pin prick preservation impacts on prognosis for ambulation. On examination at 72 hours, 89% of patients with pinprick preserved went onto to ambulate, compared with 11% having preserved light touch but not pinprick (ASIA B-E) The theory for this significance of sacral preservation is that the proximity of the spinothalamic tracts mediate pinprick to the lateral corticospinal tracts.

With incomplete paraplegics (ASIA B-E), 76% become community ambulators by two years compared to 46% of incomplete tetraplegics who ambulate at one year post injury, probably due to upper extremity weakness compromises the ability to perform gait. Age is a big factor in indication of outcome (Burns and Ditunno).

SURGERY VERSUS

CONSERVATIVE MANAGEMENT

There is great debate on this subject but no significant research to recommend better outcomes with either management approach. Surgery aims to minimise neurological deterioration, restore alignment and stabilisa-

tion, facilitate early mobilisation, reduce pain, to minimise hospital stay and to prevent secondary complications (Johnston 2001).

From the physiotherapy point of view the ability to get a patient up against gravity sooner, seems to be a desirable outcome from surgery.

NEW INTERVENTIONS

There are a number of new agents being developed to minimise secondary injury from SCI. These include agents to:

- Prevent immediate adverse reactions to injury such as neuronal death and scar formation.
- Minimise inhibitory properties of the CNS environment and maximise the growth potential of damaged neurons.
- Stimulate axonal guidance systems that will be required for directed outgrowth and functional reconnection.
- Optimise the function of surviving systems (Ramer MS et al 2000).

It is hoped that the development of pharmacological interventions will lead to improved long term outcomes from SCI (Ladouceur 1997), by working at different stages of the injury sequelae. These stages include:

1. Neuronal atrophy and death – intervention here would aim to minimise immediate CNS response, but other interventions to consider are the neurotrophic factors and embryonic transplants. At present we are working to facilitate neuro-recovery and enhance function of compromised axons.
2. Scar/cyst formation, inflammation, growth inhibition, axon retraction. The aim would be to harness trophic influences and minimise inhibitory influences. The use of one pharmacological agent, methylprednisolone is now an accepted standard of care in the USA and most of UK, and is thought to improve neurorecovery (Bracken et al 1990, 1997).

Schwann / stem / olfactory ensheathing cell transplants. Anti-inhibitory agents. Regeneration research continues in animals and trials of cell transplantation are underway in humans (Wirth et al 1998). Guide extended regrowth and form appropriate reconnections – Diffusible/contact-mediated attractive/repulsive guidance cues.

3. Axonal degeneration and deafferentation. The aim here would be to optimise the function of surviving fibres, and promote controlled collateral sprouting, and strengthen remaining intact systems. Early evidence has indicated that GM-1 ganglioside might also improve recovery by augmenting axonal sprouting. (Geisler et al 1991, Walker and Harris 1993), and 4-Aminopyridine is being evaluated as a potential for chronic SCI. Hansebout et al 1993, Segal et al 1999 believed that axonal conduction could be improved by facilitating the propagation of action potentials in demyelinated nerve fibres.

Other areas of research have looked into the following areas:

- Low power laser treatment to enhance regeneration.
- Laser acupuncture.
- Peripheral nerve graft into spinal cord.
- Revascularisation of the spinal cord by displacing the intercostal neurovascular fascicle into the cerebrospinal channel and by transposition of the omentum Johnston (2001).

ACUTE MANAGEMENT

In our own department we are implementing some clinical management protocols in the light of research evidence. One of these areas is the increasing incidence of shoulder pain in incomplete spinal cord injured patients.

In a study by Waring (1991) 75% of tetraplegics had shoulder pain,

with 60% for having pain for two weeks or more. Patients who reported shoulder pain were in two categories, with 39% unilateral pain, and 61% bilateral. In 39% of patients, onset was within the first three days post injury, and within first two weeks post injury – for a further 52%.

The reasons for this are diverse but not least due to the muscle imbalance, spasticity and direct trauma to the shoulder girdle, which combines with other factors such as joint immobilisation and central and peripheral sources of nerve pain.

We have always advocated early intervention of consistent shoulder range of movement exercises. Patients who had delay in the initiation of shoulder range beyond two weeks post injury showed a significant risk factor for shoulder pain. Scott and Donovan (1981) report special positioning to prevent loss of range – 90% abduction, combined with other positioning techniques leads to decreased frequency and severity of shoulder pain. We have established a protocol and audit to evaluate our team management of this problem. This feeds back into the CSP national standards of management of SCI.

REHABILITATION DEVELOPMENTS

There has been much research and new technologies that have influenced our clinical practice. A few examples are discussed:

Body weight support gait training

According to the central pattern generator (CPG) theory, it is considered likely in the future that methods using the concept of activity-dependent neuroplasticity will most likely play an increasing role in the rehabilitation of SCI.

Functional electrical stimulation

FES and its role in gait also needs to be evaluated. Already work has been

done on its use as neuroprostheses in activities of daily living. Examples of surface stimulation systems already approved include Parastep System (Sigmedics, Inc. IL, USA).

Gait remains inefficient in many cases, needing high energy levels. Implanted devices are also being developed (LARS programme in UK and Chae et al 2000).

Gait Analysis on the partial weight bearing system using the treadmill

Two principles:

- Central Pattern Generators (CPGs)
- Repeated exercise of gait motion to increase strength co-ordination and endurance.

There are spinal systems that contribute to the control of locomotion by local segmental and intersegmental spinal circuits. These co-ordinate simultaneous contraction of the several muscles needed to generate rhythmic stepping, predominantly flexors and extensors. The spinal network generates rhythm and shapes of the motor bursts of motor neurons (Grillner 1985). In normal walking it has been shown that muscle activity patterns are not centrally generated by reflex induced activity eg through stretch reflexes (Prochazka et al). There is evidence that neural networks in the isolated spinal cord are capable of generating rhythmic output (reciprocally organised between agonists and antagonists) in the absence of efferent descending and movement related afferent sources.

It has been demonstrated in animal studies and postulated to be similar in humans.

The gait facilitation on the treadmill system is thought to be influenced by three main sensory sources acting on the CPGs.

- Load – proprioceptive feedback from the extensor muscles
- Exteroceptive afferents from the mechanoreceptors of the foot.
- Joint position and muscle stretch from the hip flexors and ankle plantarflexors.

We are collaboratively looking at outcome measures to evaluate this work in the national SIUs. We have recently discussed new measures such as WISCI (Walking Index for Spinal Cord Injury – Ditunno et al 2000) and WISCI II (Ditunno and Ditunno 2001), as useful tools. These may provide more accurate measures of improvement in walking. Other evaluation tools to consider include the Spinal Cord Ambulatory Inventory and the Rancho Los Amigos gait scale.

Do we think it will be useful to our treatment? There have been concerns from physiotherapists against too early gait exercise causing development of 'wrong patterns'. The advantages of treadmill training include improved circulation and stimulation of vegetative nervous sequelae. Early training with some weight bearing may help reduce osteoporosis. A study by Abel et al (2002) showed patients did profit from exercise on the treadmill with reduced weight bearing, as initially patients needed an average of 25% reduction of weight-bearing, but at the end of the training cycle only required on average 13% weight reduction. The motion of the hip is helped by the harness so as to move almost entirely within normal range limits. Therapists helping to manually guide the foot placement (reciprocally organised between agonists and antagonists) in the absence of efferent descending and movement related afferent sources.

Findings also support the claim that this form of locomotion training helps to feed the nervous system with regular sensory input of walking. This may facilitate the activation of the postulated CPGs. The access of CPGs in humans can be utilised in treatment by selective work on one leg, altered alignment, experience of rhythmic patterning and speed.

We have to question if this treatment is effective or can progress be due to other factors? Do supraspinal levels interact with the spinal locomotor centres? Do afferents

activate the CPGs, can the cord learn from the increased demands of loading the limb? Could this just be muscle plasticity or spontaneous recovery?

Does the conjunction of FES in this gait feed into the retention of cortical mapping in our patients.

This is the task ahead for all clinicians involved in this work.

FOLLOW UP

From experience we know that many of our incomplete patients do go on to make functional recovery past the two year cut off point, and that some arrangement for follow-up is required. As physiotherapists we can ensure this opportunity is not lost and real qualitative changes can be made. The economic implications are strongly argued when you can keep someone mobile and reduce carer input. We must encourage utilisation of all treatment modalities and equipment available, and avoid the purist approach and not shy off of using equipment and splints.

We need to be aware of the recovering Lower Motor Neurone patients who may need close monitoring and review as they may benefit from early diagnosis and surgical restoration to facilitate recovery. Their physical management needs will need to be constantly addressed as they recover.

CONCLUSION

In conclusion, current research gives rise to the hope that in the near future clinicians will be actively intervening in an attempt to alter and augment natural recovery. As this comes to fruition, functional outcomes and quality of life for SCI patients should improve.

Sue Paddison qualified as a Chartered Physiotherapist in 1986 and went on to become Superintendent III in Acute Trauma and Orthopaedics. Since 1993 she has been working full time as a

Superintendent Physiotherapist on the Spinal Injuries Unit at the Royal National Orthopaedic Hospital Trust, Stanmore. She is a member of clinical interests groups working with the national spinal injury units to develop evidence-based guidelines. She is part of the working party, collaborating with the CSP to develop and audit the National Standards of Physiotherapy in the Management of Spinal Cord Injuries. She is a member of the ACCESS 2000 clinical governance team and now also works as an Associate of the National Clinical Governance Support Team, to facilitate implementation of clinical governance in practice. She is a conference convenor for the Spinal Injuries: New Horizons International Conference 2000. Publications include *Spinal Injuries Management* in Stokes, M (1998) *Neurological Physiotherapy*. She has lectured nationally and internationally to diverse professional groups, as well as presenting papers at conferences and meetings relevant to the field.

MANAGEMENT OF SPASM AND BOTULINUM TOXIN

Davina Richardson

The management of spasms and abnormal muscle tone has improved in recent years due to a better understanding of the pathophysiology of damage to the nervous system. Doctor Geoff Sheean writes comprehensively on the subject (Sheean et al). Physiotherapists are strongly advised to read his work on the upper motor neurone syndrome and the pathophysiology of its features, such as co-contraction, spasms, spasticity, clonus, claspknife phenomenon, increased reflexes, and flexor withdrawal reflexes.

There are a number of strategies for managing and treating these features of upper motor neurone

damage which include elimination of the aggravating factors, physiotherapy, oral drugs, intrathecal drugs, chemical denervation and surgical techniques (neurosurgical and orthopaedic). It is important for the physiotherapist to be aware of all available treatment options and understand how they can be used in combination to achieve the best results for the patient.

Much of the literature on management of spasms and spasticity or hypertonia as it is sometimes referred to, use flow charts or algorithms to illustrate the possible treatment options. This can suggest that there is a hierarchical approach to the management. For example physiotherapy techniques with education and advice are the first level, followed by oral medications then if this fails potentially intrathecal medication or nerve blockade and finally the last resort being surgery. The author would like to suggest that a parallel model of practice is adopted at all stages in the management of spasms and spasticity. Such that at any one time a combination treatment approach is adopted to manage the situation. Which treatments are used and at what time is the skill of the clinician. For example in the acute stage if the patient and carers have been educated in positioning and handling effectively but carry over is poor the situation may be optimised by the addition of a focal injection of botulinum toxin or the addition of a low dose of oral baclofen.

In conclusion management of spasms and spasticity is complex. It requires detailed and accurate assessment which is time consuming. It requires careful measurement to evaluate the effectiveness of the chosen treatment options. A combination of treatment options is usually optimal. The management must be regularly monitored over the patients lifetime. All the treatment options will be optimised if the team has a thorough understanding of the impact of the problem on the patients quality of life and what the goals of the treatment are.

A case study is included in the reference list on the management of an incomplete spinal cord injured patient, level C5/6. This includes the use of outcome measures and botulinum toxin.

It is in the best interests of the patients that all the members of the team have knowledge of the possible treatment options. The management of spasticity is well covered in the book edited by Professor M Barnes and G Johnson. This covers the drug and surgical management well and gives a good overview. With the knowledge of all the treatment options and an understanding of their potential and their limitations the therapist must then

ensure that the assessment of the patient is detailed and that the treatment plan is optimal for the individual. In respect to the management of increased tone (spasms and spasticity) it is essential to develop specific skills. The assessment of the muscles should include the anatomy, trigger factors, neural activity, biomechanical elements, the pattern, severity, duration, impact on function, response to previous treatment and how the picture has developed over time. Following this type of assessment it is then important to use some form of measurement so that any treatment intervention can be monitored for effect.

Measurements of spasm and spasticity is complex and difficult but an attempt should be made. For example subjective rating of severity, comfort scores, Ashworth scale of spasticity, Tardieu scale of spasticity, seating scores and goal attainment scaling can be useful (Sheean et al).

In conclusion management of spasms and spasticity is complex. It requires detailed and accurate assessment which is time consuming. It requires careful measurement to evaluate the effectiveness of the chosen treatment options. A combination of treatment options is usually optimal. The management must be regularly monitored over the patients lifetime. All the treatment options will be optimised if the team has a thorough understanding of the impact of the problem on the patients quality of life and what the goals of the treatment are.

A case study is included in the reference list on the management of an incomplete spinal cord injured patient, level C5/6. This includes the use of outcome measures and botulinum toxin.

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Davina Richardson trained at UEL, and has extensive clinical experience in acute neurology and rehabilitation. She studied for Masters in Neuroscience at UCL and completed a clinical research trial into the role of botulinum toxin. She is currently working in the community setting at Charing Cross Hospital in London.

AN OVERVIEW OF ORTHOSES

Sybil Farmer MSc MCSP SRP

Orthoses can be used to prevent, limit or assist movement at joints. In choosing the appropriate prescription the first choice is between a stock or bespoke orthosis. This presentation will describe and discuss:

- **the use of ankle foot orthoses (AFOs) in the management of gait abnormalities**

- **the use of orthoses for stretching contractures**

AFOS

Stock AFOS include the lygaflex, leafspring and the Campsolite. There are a number of features which can be used in the designs of custom made AFOs. Cast rectification, trim lines, strap positioning all effect the degree of control provided. Orthotic ankle joints come in a variety of styles from the simple 'Gaffney' pivot to the complex active contour joint.

Gait analysis is used to identify the nature and timing of the abnormalities in the gait cycle. Clinical judgement is used to select which are the key abnormal features to be addressed by the orthosis prescribed. The effectiveness of the orthosis in normalising the walking pattern is monitored with gait analysis.

CONTRACTURE MANAGEMENT ORTHOSES

Contactures can be stretched by orthoses which incorporate a sprung hinge. Dynasplint, Empi and Ultraflex provide stock dynamic orthoses. These can be applied to elbow, knee, wrist and ankle. ORLAU has used a bespoke orthosis the Contracture Correction Device (CCD) initially treating knee and elbows. Ultraflex Systems from the USA have developed an extensive range of components which include a mechanism for stretching into supination or pronation. These orthoses are used at ORLAU and other UK centres for the management of contracture.

In devising a management regime including stretching orthoses the clinician should consider the factors which have caused (and maintain) the contracture. These are described in the reference below. There are a number of potential advantages of using bespoke dynamic orthoses over the use of passive stretching or serial plastering. The orthoses once correctly applied delivers a given stretch

to the joint/joints whilst it is worn. It can be removed for hygiene. Some patients can don the splint themselves or a carer may be taught to apply the splint with the alignment for stretching being controlled by the splint. Work is on going in exploring the issues relating to immediate and long term effects of using orthoses in the management of contracture.

Orthoses can be used therapeutically so we as therapists should aim to keep abreast of advances in technical developments and design. This will enable us to use our understanding of pathology and the rehabilitation process to integrate these into innovative treatment regimes.

Reference

- Farmer S E, James M (2001) *Contractures in orthopaedic and neurological conditions: a review of causes and treatment* Disability and Rehabilitation 23(13), pp549-558.

Sybil Farmer trained in Bristol and on qualifying in 1967 she joined her husband who served in the Royal Air Force in Singapore. Her choice of work location has followed his moves. She has always been interested in paediatrics and first became interested in using orthoses therapeutically when working with people with severe learning difficulties at Harmston Hall Hospital in 1979. This interest has developed through liaising between the NOC and community paediatrics in Oxfordshire. She completed the postgraduate diploma in biomechanics by distance learning from the University of Strathclyde before joining ORLAU in 1991. She participates in the clinical and research work in movement analysis and treating walking impairments. She has been able to present work at the British Association of Prosthetists and Orthotists and European Society for Movement Analysis in Adults and Children Scientific meetings.

NEUROMUSCULAR ELECTRICAL STIMULATION

Dr Jane Burridge

This lecture describes the principles of neuromuscular electrical stimulation (NMS), including a brief description of the stimulation parameters and related neurophysiology. The objective of this section will be to answer the question 'Why should it work?'

Two aspects of NMS will be discussed: the orthotic application and the therapeutic use of stimulation to increase muscle strength, reduce spasticity and influence motor learning. This part of the lecture will relate neurophysiological theory to practical experience and research evidence

The clinical applications for both upper limb and walking will be described, reported and discussed. Practical issues of usefulness, selecting suitable patients and measuring outcomes will be presented and opened for discussion.

Finally, developing applications and the use of NMS with other treatment modalities will be presented.

Jane Burridge is a Senior Lecturer at the University of Southampton in the School of Health Professions and Rehabilitation Sciences. Jane graduated as a physiotherapist in 1973 from Bristol School of Physiotherapy. In 1978, following the birth of her son she changed career and studied flute at the Guildhall School of Music and Drama in London and worked as a performing musician and teacher for ten years. On returning to physiotherapy she specialised in neurophysiotherapy, completed the Bobath courses and was the senior physiotherapist on the Stroke Rehabilitation Unit at Salisbury District Hospital. In 1993 she began her research into Functional Electrical Stimulation (FES) and

worked in the Department of Medical Physics and Biomedical Engineering at Salisbury Hospital and began to study for a PhD at the University of Southampton, graduating in 1998. She has published and lectured widely in the field of FES and was responsible for the setting up of FES as a clinical service. She is involved with research projects investigating the use of FES in a wide variety of disabilities including SCI, Stroke and Cerebral Palsy (CP) and in the use of Botulinum Toxin in tetraplegia, CP and stroke. She is a director of the International Functional Electrical Stimulation Society and works for the European Commission as an assessor and evaluator.

Delegate reports

MANAGEMENT OF SPASM AND BOTULINUM TOXIN

Julia Williamson
Northern Region
Regional representative

Davina presented a hugely informative lecture on this topic. She gave an overview of the management of spasm, of which botulinum is but a small part.

We began with revision of upper motor neurone positive features which are amenable to management, reminding us that it is the site of the lesion that dictates the presentation and reinforcing the relationship between presentation and pathology/aetiology and neuro-anatomy. Davina promoted a wide-ranging assessment tool covering areas such as; anatomy, trigger points, neural activity, biomechanical pattern, severity, duration, impact on function, response to previous intervention such as drugs, physiotherapy and alternative therapies, development over time and current medication and treatment. She also challenged the traditionally hierarchical model of intervention that places handling (physio) at the top and surgery at the bottom. It is important that the patient's needs are carefully assessed and which ever modality or mix of modalities likely to work best, is chosen. This leads to a parallel 'combination model' which should benefit the patient directly as individual treatments do not have to be ticked off before the next one can begin.

Spasm management should cover the following areas:

- Elimination of aggravating factors (and here Davina picked up on a theme from other speakers; that bladder and bowels should be well managed in the ISCI patient

as improper management impacts hugely on the individuals life as well as his spasm).

- Education and advice.
- Physiotherapy strategies including orthotics and splinting.
- Oral medication.
- Intrathecal medication.
- Chemical neurolysis/partial denervation.
- Surgical techniques (orthopaedic /neuro).
- FES.

One of Davina's last points was that once a treatment strategy had been decided upon that was tailored to the individuals presentation and need, clear planning was needed to establish who was to implement the programme (including how often and how much) and who will monitor the programme.

Her 'take-home' points were:

- A clear understanding of impairment and aetiology will enhance treatment.
- Detailed and accurate assessment is required.
- Treatment must be appropriate and timely.
- Management is ongoing and provision must be made for regular review throughout the patient's lifetime.
- Botulinum toxin is an adjunct to physiotherapy.

This is but a part of all that Davina crammed into her 45 minutes, as she also managed an overview of oral medication and two excellent case studies. All this and the address for a document entitled *The Management of Adults with Spasticity using Botulinum toxin: A Guide to Clinical Practice* produced by the North Staffordshire Rehabilitation Centre and available from: Radius Healthcare, Freepost (KT4211), Byfleet, Surrey KT14 7BR.

NEUROMUSCULAR ELECTRICAL STIMULATION

Irmgard Niermann

Senior II Stroke Unit, Derbyshire Royal Infirmary

Jane Burridge, as a final speaker set herself the task to keep everyone awake and to stop us from leaving early.

A quick start was made looking into basic principles of electrical stimulation and physiological effects, stating that direct motor response needs to be faster than reflex response from skin receptors, and FES should stimulate anterior horn cells and influence reciprocal inhibition, to make it work.

Neurophysiology in practice was experienced when several orthotic applications were presented including research findings. A summary:

- Wieler and Stein (1999) used foot drop devices and quadstim-4 and hamstring and gluteus medius muscle stimulation. Result: 45% increase in walking speed.
- FES and gait (Ladouceur and Barbeau, 2000) achieved changes in kinematics, in joint angles of ankle/hip.
- CREST Stimulator for walking, showed no increase in speed but much improved quality.
- NESS Handmaster. Splint with surface stimulation maintains wrist extension designed for holding objects. C5/6 lesions. Not working well, less functional.
- Bionic Glove for C6 lesions with voluntary wrist extension. Triggered by wrist extension to assist finger flexion.
- Freehand (USA) implanted system used by C5/6 tetraplegics with electrode in muscle and transmitter mounted on chest wall detecting skin movement.
- Grip System(GB) Cuff with 12 polar-electrodes responding to pressure to control level of stimulation. System learns movement.

The compliance of these systems is good when devices are simple and user-friendly and the patient is suitable. Implanted systems are complicated and used mainly in research.

FES is used with other treatment modalities such as Botulinum Toxin (BTX) or treadmill.

FES and BTX – a study of two incomplete tetraplegic subjects. Results were presented in a film showing patient during Jebsen-Taylor hand function test. Increased speed and improved functional movement were clearly visible. FES and treadmill. Studies are ongoing in Addenbrookes Hospital and Glasgow Southern General.

Outcome measures were discussed. PET scanning is available to relate extrinsic changes to changes within CNS. Ulnar nerve stimulation is visible during stimulation and lasting changes are present on remapping.

FES influences motor learning. This can be explained using the 'Hebbian learning rule': Between two anterior horn cells bonds are built and strengthened if stimulation is coming from cortical as well as afferent sources. After FES motor units fire better, patients perform better in tests, and effects last longer.

In this lecture Jane evoked lively interest and discussion.

Reviews

GET ON THE BALL – SWISS BALL APPLICATIONS FOR NEURO PHYSIOTHERAPISTS

22nd September 2001

Course Tutor: Joanne Elphinston

B Pty MA MCSP SRP

Lorna Melville

Centre for Brain Injury Rehabilitation,
Royal Victoria Hospital, Dundee

Joanne Elphinston is an Australian trained physiotherapist who is based in the UK after five years in the USA. Joanne first started working with the Swiss Ball while in the USA, and over the past ten years has been developing its applications for a wide variety of patient presentations.

Based on her previous two *Get On The Ball* courses held in Perth, ACPIN Scotland invited Joanne to teach another course specifically for their members and other interested neurophysiotherapists. Joanne is teaching ball courses all over the UK, however this is the first course that has been sponsored by ACPIN and therefore limited to neuro physios only.

Working in a neuro specialty, two of our more common aims of treatment are to improve posture and stability. Joanne reminded us that the muscles which provide postural stability are muscles which require low threshold recruitment. In other words, they should be able to be effective (ie stabilise) with the least amount of muscular and cognitive effort. Automatic responses were emphasised, and throughout the course a variety of exercises with the ball were explored to produce spontaneous and appropriate recruitment of muscle groups.

Joanne also highlighted that a lot

of our expectations and previous experiences lead us to develop fixed ideas regarding 'correct posture'. We discovered this in a very interesting exercise where we paired up and 'corrected' our partner's posture. Although our aims were to create a more relaxed and efficient position for the patient, our traditional methods of correction left our partners feeling awkward and uncomfortable, with some unusual gait patterns being produced. Joanne taught us a simple alternative which could be produced from minimal instruction, and which improved postural position with reduced effort. This was an excellent way to remind our partners how to adjust their posture whilst on the ball doing the various exercises in order to prevent compensations.

Through experimenting with the ball on the course I felt there were ways we could use the ball to assist us to facilitate patient movements. I also learned new techniques to improve a patient's balance, co-ordination, stamina and automatic postural adjustments using the ball.

The exercises with the ball were taught to us in order that we would be able to progress our patients in small stages, and in a variety of positions. We learned how it is important to progress in small increments to allow the patient to succeed with low risk of developing compensatory strategies.

The feedback from the course evaluation forms was very positive and I certainly found the day beneficial. Some participants commented that there was a lot of information to absorb in one day, however as ACPIN had requested a one day course, Joanne tried to accommodate this.

The course was beneficial to physiotherapists who worked in a wide variety of neuro fields with patients of varied ages and abilities. Since being on the course I realise that using the ball during therapy can create a fun element of treatment which can be beneficial when working with patients who could be in hospital for a number of months with very disabling conditions. I felt that the day had just the right balance of theory and practical and I am now using the gym ball with increased confidence for more of my patient treatments. As Joanne highlighted, it is always useful to have an adjunct to treatment in order to reach the desired outcome and the ball is an excellent tool to be able to do this.

NEUROPLASTICITY AND NEUROPHYSIOLOGY: A CLINICAL APPLICATION FOR THERAPISTS

12 November 2001

Ipswich Hospital

Course tutor: Dr Martine Nadler

Waldi Ertl MCSP SRP

Dr Nadler qualified as a physiotherapist in 1987 and attained an MSc and a PhD from UCL. She is currently working part-time at the Bobath Centre in London and has published research on acquisition of motor skill after stroke.

To start the day, each of the 24 physiotherapists attending from around the region were asked what they specifically wanted to – know in relation to neuroplasticity. A variety of questions were all answered by Martine in the course of the day.

The first lectures on constraint-induced therapy (CIT) and treadmill training reviewed current literature and thinking and encouraged all of us to 'have a go' and use it in our clinical setting on a smaller scale. Martine has done some research in

CIT and is just setting up a small patient group at the Bobath Centre.

The lectures on plasticity were thorough, well referenced and always related to our daily clinical practice, which was very much appreciated. They included an update of cortical plasticity, with strong evidence that both sensory and motor maps can be modified, therefore emphasizing the need for handling and treatment of neurologically impaired patients to be challenging.

Lunch was followed by a one-hour patient demonstration, mainly focusing on the upper limb. Again, Martine used thoughts and techniques we could all relate to and follow, and changes in the patient's motor output were obvious.

Sue Edwards' updated version of *Neurological Physiotherapy* (2001) provided the basis for the last lecture on nerve-muscle interaction and hypertonia and Mayston (2001) was quoted in an update on the Bobath Concept. Some refreshing concepts emerged, eg that there is no evidence that preventing a person from moving in the early stages influences spasticity, but that lack of movement experience could be detrimental to recovery. A video showed a patient with severe ataxia using a public gym in London, helped by Sue Edwards and a fitness instructor with a specialist interest. This patient progressed a lot with regular attendance and the message was to use exercise therapy and remember that non-use leads to muscle weakness and needs to be addressed.

At the end of the day Martine's husband, neurologist Dr Pereira, was on hand to answer any other questions and we all left inspired by Martine's enthusiasm, sense of humour and ability to relate a complex subject with such ease to the realities of clinical practice. The course comes highly recommended.

PILATES FOR USE IN NEUROLOGY

10th November 2001

Walsgrave Hospital, Coventry

Course tutor: Kate Fernyhough

MCSP SRP BCPT

Catherine Jolley MCSP SRP

Participants learnt that pilates integrates movement principles of conventional rehabilitation, (strength and stability training), with complementary therapies. It challenges postural control and promotes a learning method that enhances movement awareness through conscious direction to promote better use of the body.

Speaker Kate Fernyhough provided a stimulating and interesting day. She commenced by discussing theories behind spinal stabilisation and muscle balance.

She outlined how slow twitch tonic fibres provide postural activity. Forming a local muscle system, they increase segmental stability with an antigravity function. Fast twitch phasic fibres provide ballistic, rapid activity. They form a global muscle system giving movement production with high force and power.

Describing the pathogenesis of some painful syndromes, Kate showed how changes in this muscle function cause muscle imbalance and postural defects. She explained how this affects proprioception and normal reflex systems such as the autonomic and neuro-endocrine systems, which in turn cause further movement dysfunction. All these can be influenced by pilates which can therefore break the cycle of muscle imbalance and pain.

A further session outlined how pilates uses motor-learning principles to train separate motor components, put them together and retrain the system to recruit automatic activity by gaining cortical representation. Focussing on transverse abdominus, the aim is to selectively work the muscles, activate

systems that control and support the movement process and enhance movement awareness through conscious direction.

Theory sessions were interspersed with practical sessions. This allowed participants to experience pilates themselves, giving them insight into what is needed to teach others.

The day closed with a discussion regarding how pilates can be applied to neurology. Many participants felt that they were already using many concepts but could now apply them in a more formal and structured way.

Feedback was very positive. Many commented how topical the subject was in uniting neurology and musculo-skeletal fields of physiotherapy. It was felt that a two-day course would give greater coverage of the topic. West Midlands ACPIN therefore hopes to run a two-day course in 2003. Those on the reserve list who failed to gain a place on the November course will be contacted before fliers are released.

HemiHelp

Are you treating a child with hemiplegia? Do you want to know more about the condition and its associated problems? Did you know there was an effective support group available for you?

Most Synapse readers will know that childhood hemiplegia is a condition affecting one side of the body causing a weakness or stiffness and lack of control on the affected side.

It is caused by damage to some part of the brain, before during or after birth, when it is known as congenital hemiplegia, or later as a result of illness or injury, when it is known as acquired hemiplegia.

Generally, injury to the left side of the brain will cause a right hemiplegia and injury to the right side a left hemiplegia. Childhood hemiplegia is a relatively common condition, affecting up to one child in a thousand.

The causes of congenital hemiplegia are mostly unknown, and usually parents become aware of their child's hemiplegia gradually during his or her infancy. There is a higher risk in premature babies, and it is unclear whether a difficult birth may be an occasional factor.

Acquired hemiplegia results from the damage to the brain during childhood. The most common cause is a stroke but it can also result from an accident or infection.

The physical side of hemiplegia varies greatly from child to child but is well documented and most children receive adequate treatment during the early years of their life when it is easy to work with them (this, of course, is subject to funding, which varies greatly from area to area)

On the face of it therefore, hemiplegia seems like a fairly mild condition in contrast to other physical disabilities.

However, it can be argued that it is more difficult to be mildly disabled in an able bodied world. Fewer allowances are made for the less visibly disabled child, so they have a choice between openly acknowledging their condition or hiding it and struggling to keep up.

A large research project by Professor Robert Goodman and

Dr Carole Yude at Great Ormond Street Hospital for Children showed that many of the children had specific learning problems and visual perceptual difficulties, while more than 60% had emotional and behavioural problems.

Professor Goodman and Dr Yude concluded that regardless of the mildness of the hemiplegia - physically or in terms of learning difficulties - the associated conditions are more disabling than the hemiplegia itself.

So how do we encourage and support these children to reach their full potential? To realise their own goals and not those imposed on them by parents?

HemiHelp was set up in 1990 by a small group of parents, and now has a thriving membership of both professionals and families united in their desire to understand and help children with hemiplegia.

It aims to provide information and support for people with hemiplegia and their families, and to raise general awareness of the condition. It also longs to facilitate research into hemiplegia and its associated conditions

HemiHelp also:

- Runs a telephone information and support line.
- Produces straightforward fact sheets and leaflets on various subjects of interest to members.
- Has produced an informative and entertaining video for 8-14 year olds.
- Provides a resource booklet of useful names and addresses for members.
- Produces a regular newsletter for members to share information and experience.
- Runs regular workshops for professionals and parents.
- Organises sports and activity days for children.

Membership of HemiHelp is free to both professionals and families and more information about membership and the professionals' workshop can be obtained from Natasha McDonald, at HemiHelp, Bedford House, 215 Balham High Road, London, SW17 7BQ.

Telephone 020 8767 0210 or tash@hemihelp.org.uk

Regional reports

■ EAST ANGLIA

Louise Dunthorne
Regional representative

East Anglia committee recently sent a flyer to its members asking for suggestions of topics they would like covered. Thank you to those people who wrote back. We have incorporated your ideas into our programme for the coming year.

Last year saw very good attendance at the organised courses. Wendy Hendrie ran a very interesting half-day on current advances in Multiple Sclerosis treatment. In November we ran a fully subscribed course led by Martine Naidler on Neuroplasticity. Feedback was excellent and many people commented on how well the information was applied clinically. March saw our AGM combined with a talk on driving with disabilities, which covered how individuals are assessed and the adaptations available for them.

Forthcoming events include:

- an update on Parkinson syndromes by Dr Manji, Consultant Neurologist
- a three day course on splinting, run by Sue Edwards
- a day considering relevant outcome measures within Neurology

Dates and venues will be confirmed as soon as possible, and members notified.

East Anglia committee has said goodbye to a couple of key people. Our Secretary, Sarah Andrews has left as she has moved out of region, and Louise Dunthorne has left her post as Regional Representative to join the Executive Committee. So we are very keen to hear from anyone in East Anglia who would like to join our team, and take a more ac-

tive role in their regional ACPIN group. We only meet four times a year, so time commitment is minimal. If you want to chat about it contact our Chairperson, Lou Kenworthy on 01473 702072.

■ KENT

Janice Champion
Regional representative

The Kent region has had a difficult year as a result of the membership reducing over the last few years. However after a meeting in January 2002 of enthusiastic, motivated physiotherapists it was decided to try and raise the profile of ACPIN in Kent and attract more members.

Kent ACPIN are planning to hold 3 or 4 day courses/study days in the forthcoming year rather than having evening meetings which are difficult for therapists to attend. We hope by offering different venues and widely advertising our events we can remain a viable group.

For further information please contact Janice Champion, Kent Regional Representative at Medway Maritime Hospital on 01634 833959.

■ LONDON

Anne McDonnell
Regional representative

At the end of 2001 London ACPIN had just under 200 members. The committee generally arranged one evening lecture a month which were mostly well attended. The lectures in the latter part of the year included: *Why people learn to walk but do not use their arms again; Acute*

management of traumatic brain injury; and The history and theory behind treatment ideas through time. We organised one Saturday morning course on *Exercise in Neurology* which attracted a good number of participants and provided some interesting discussions.

The programme for 2002 has been finalised. Please check in *Frontline* for any last minute changes.

- 14th May Austin Claffy *Neglect* (Charing Cross)
- 11th June Anne Jones *Does Positioning make a difference in stroke recovery. Can we answer the question?* (St Thomas')
- 9th July Val Pomeroy *Objective Measures of the quality of movement* (St Thomas' or Guys)
- 14th September Half Day TBA
- 15th October Sue Edwards *Incomplete spinal cord injuries* (Royal Free)
- 12th November TBA *MND and demyelinating diseases* (St Thomas')

■ MANCHESTER

Louise Rogerson
Regional representative

Manchester ACPIN ran a programme of ten evening lectures in 2001. Thank you to all the speakers who participated this year, and thank you to our members for their ongoing support. Two of the evening sessions were run by the committee themselves, the therapeutic handling open forum and the anatomy and palpation workshop. The therapeutic handling evening was very useful in promoting discussion of current practice across the region, and in resolving some of the issues. The anatomy and palpation workshop was very popular with all who attended, and we will be running another evening like this in 2002.

Next year's programme is currently being finalised and will be

published in late January 2002. The programme includes patient workshops, posture and seating the complex patient, and a hand workshop. Thank you to everyone who completed the evaluation forms and made comments for future lectures, your comments have been noted and acted on in the design of the new programme.

The committee is currently introducing CPD support at the meetings. It is hoped that this will allow members of the committee to get something back for all their hard work throughout the year, as well as provide incentive to attend the meetings no matter how far they have to drive!

The committee is hoping to organise a weekend course in the coming year, we are currently researching topics. If you would like to speak to the committee for any information on the programme, or with ideas for a weekend course please contact us on the numbers in your programme for 2001.

■ MERSEYSIDE

Elizabeth Self
Regional representative

This year's programme kicked off with a Parkinson's half-day study day held at the Glaxo Center in Liverpool which was well attended. The general feedback was good and the venue was ideal for lectures and convenient if a little noisy. At the AGM on the 14th March, Dr Lecky spoke on neuropathologies and Guillian Barre Syndrome. The next half-day study day will be on the 22nd May. The topic will be gait with a variety of speakers who will talk on Muscle Imbalance, FES, Normal Movement, Biomechanics etc. Speakers to be confirmed watch out for the flyer. A practical workshop by Sharon Williams is on the 18th July when she will discuss a topic and then demonstrate a patient

treatment as this seems to be a popular format. September's half day has not been finalized so if you have any requests for topics please contact me at Broadgreen Hospital.

The membership last year was approximately 45 and we continue to have a healthy and active eleven member committee.

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

■ NORTHAMPTON

Jan Matthew
Regional Representative

Physiotherapists with an interest in neurology had previously run a group in this region but it had folded.

It was decided to re-start this and in an early meeting I asked if the group thought trying to become an ACPIN region was a good idea. Meetings in both Oxford and South Trent are at least an hour's drive one way and we all found, however enthusiastic we may be, this was too far for an evening. The group were keen for me to investigate the possibility and in the meantime we held a few quite well attended evening meetings.

The usual 'volunteering' (involving not a little arm twisting) was successfully done to form a committee and then the push was on to make sure we had enough people interested in the area. The name was discussed and decided as was the main venue for meetings – Northampton, being the central town of the geographical area. We have many members in Kettering and Milton Keynes.

Can we reach the magic number 20 by February was the question? Somehow it was done and now the real work begins. We have lots of good ideas for evening meetings and study days. In what many people may feel is a 'quiet' area we have some excellent clinicians, very proactive teams and enthusiastic

professionals working in a variety of areas. Basically lots to offer and all are very welcome.

So watch out, ACPIN Northampton is definitely on the map, hopefully here to stay.

Year's programme. Dates to be confirmed:

- April: Talk on cannabis trials in MS from nurses running them and AGM
- June 15th Rescheduled *Study day on Gait*
- September: *Vestibular re-training*
- November: *Pilates and practical workshop*

We are planning a spasticity/Botox day in January 2003

All finalised dates will be sent to all members and departments.

■ NORTHERN IRELAND

Siobhoan MacAuley
Regional representative

No report available. Please contact the Regional Representative for information.

■ NORTHERN REGION

Julia Williamson
Regional representative

The Northern region has had an eventful year with, generally, well attended courses ranging across a wide variety of subjects. We ended the year with two evening lectures looking at acupuncture and complementary therapy and their application to neurological patients. These encouraged an holistic approach to patient care demonstrating that for a small input of resources, a great deal could be achieved in alleviating distressing symptoms.

The year ahead is jam packed with courses and evening lectures, hopefully appealing to a wide range of practitioners across the region. The AGM, held in March, repeated

last years successful formula ie a lecture to draw people in followed by the meeting. In May we will return to Cumbria (after being forced to abandon last years course there due to foot and mouth) so watch out for fliers detailing a gait workshop with Linzie Meadows on the 10th and 11th. Evening lectures have been arranged for June, September and November. The committee have plenty of ideas but if there are any requests, please let us know. Mary Lynch-Ellington will lead a Senior clinicians course on July 8th and 9th. Although we have not yet finalised the exact content this is sure to be a popular course so book early! With all this planned the Northern Region is looking forward to a busy 2002!

■ NORTH TRENT

Alex Morley
Regional representative

I have recently taken over the role of regional representative from Steve Cheslett and thank Steve for all his hard work over the last few years. We were pleased to welcome back into circulation our chairperson Sue York.

North Trent ACPIN has had a successful year in 2001. The committee meetings were generally well attended, except for the last one, and I am assuming the poor turn out was a result of too many Christmas festivities. Day courses and evening lectures ran well and membership at present stands at 58 full members with many new members sending forms off for 2002.

Events for 2002 include:

- *Chronology or Biology* PhD feedback
- *Parkinson's disease* – update and workshop in conjunction with the local AGILE group
- An evening lecture following up an EBP project on *Management of the low tone shoulder*
- *Lower limb functional anatomy and strapping*

- *Sexuality and disability*
- Lecture on the *Theoretical basis for splinting in head injury.*

■ OXFORD

Annabelle Cooper
Regional representative

Oxford ACPIN has begun 2002 with a membership of 60. The committee has unfortunately seen the departure of Kirsty Holmes from the Chair. We would like to thank her for all her hard work and wish her well in her new job. Consequently we are 'Chairless' at present so anybody interested in taking up the position or even just becoming a committee member is sure to be received with opened arms by our small but friendly committee! As a result of a new committee member joining from Reading we hope new venues in Reading will make lectures more inviting to more of our members in 2002.

2001 ended and 2002 started in style with two well attended evening lectures, a patient practical led by Lou Gatehouse, John Graham, Charlie Winwood and Robyn Wilkinson, and *The application of Pilates to the treatment of patients with Neurological disorders*, led by Claire Guy with a much enjoyed class led by Sinead Murphy and Louise Hayley. Other recent lectures covered Augmentative and Assistive Communication, Evidence and Research about Recovery and Management of Severe Disability after Stroke, and Gait analysis in the Oxford Gait Laboratory. Thank you to all speakers. The programme for the rest of 2002 includes:

- April *An update on the findings from the Multi Centre Cannabis Research Trials* (Oxford)
- May *The theory and practical of shoulder impingement, related to neuro patients* by a Musculoskeletal Clinical specialist (Oxford)
- June Updates on local research about *The effects of mobilisation on the affected foot in hemiplegic*

patients on standing balance and walking and Robot mediated therapy for rehabilitation of the upper limb post-CVA (Reading)

- September a *Patient Practical* (Aylesbury).
- October *Recent developments in the Rehabilitation of Patients with Vestibular Disorders* (Oxford).

We will shortly be considering ideas for 2003. Please support us helping you by sharing your ideas and comments with committee members at evening lectures or contacting myself on 01865 255435 or Jo Forrest (Secretary) on 01635 32500 ext 3306.

SCOTLAND

Emma Forbes

Regional representative

The 2002 programme is currently being planned by the Scottish committee. Dates are in the process of being organised and exact dates and times will be confirmed in the near future.

- August Various local speakers MND/ Guillan Barre (Ninewells Hospital, Dundee) Information available from John Innes and Wendy Juner
- November John Graham, Trainee Bobath Tutor, plus local speakers MS practical and theory (Perth Royal Infirmary) Practical workshop and lectures – information available from Sarah Davidson

A forth study day will be planned at the end of the year.

Scottish ACPIN have developed links with the National Clinical Effectiveness Forum and now publish the various activities that take place in the regional Neuro Networks in the regular newsletter.

The annual AGM will take place following the April workshop at approximately 1.30pm. We are always looking for new committee members so please contact Sarah Davidson if you are interested.

Your renewal of membership is

now due so please act quickly. Most study days now feature a discounted rate for ACPIN members.

As ever the committee are keen for feedback and ideas from the membership so please contact one of the committee members.

SOUTH TRENT

Linda Cargill

Regional representative

Membership in October 2001 was 64. Please can everyone ensure they have renewed their membership for 2002.

We are delighted to welcome Victoria Goodman from Leicester onto the committee and are striving to arrange more lectures/courses in Leicester this year. Leela Durai is standing down as chairperson so if anyone would like to take up this position, or join the committee, please contact us.

The programme this year has consisted of *Washing and dressing of stroke patients* with Erica Malcolm and the *Medical management of stroke* with Tom Robinson. In May there will be an evening lecture on treatment strategies of cognitive/perceptual problems with OTs at Linden Lodge. The practical sessions on washing and dressing with stroke patients were over subscribed so we are hoping to run these again later this year. Other ideas include practical study days on the hip and shoulder complexes and an update on neurophysiology. These should be finalised by the AGM in March.

SOUTH WEST

Gina Sargeant

Regional representative

As we begin 2002 the South West has gained a new youthful contingent to the committee with Lynsay Mills, Catherine Neck, Helen Turk

and Vicky Hudson, a band of keen Senior II's, many thanks to them for coming. We sadly say goodbye to Colin Domaine as chair, what an excellent job he has done too! A new chair will be voted in at the AGM.

Our AGM is the 27th April at Frenchay Hospital – a days lectures on *Pain control and Management in Neurological Condition*, £30 to ACPIN members, sent to myself above, with lunch provided by IPSEN. We are excited to have the national AGM on our doorstep and have actively encouraged members to attend.

We mailed all our members with current programme info, membership forms and plans to increase communication. We are also very keen to establish an e-mail mailing list of everyone in the South-West, so please send your addresses!

In this years programme we are holding a head injury patient workshop, and FES case study session and a morning lecture on CATs (Critically Appraised Topics), so who knows there may be an article for *Synapse* this year from the South-West.

SURREY & BORDERS

Sally de la Fontaine

Regional representative

After years of talking about it an inaugural meeting was held at Woking Community Hospital on the 5th February 2002 for Surrey, Hampshire and Berkshire areas to establish if there was interest in setting up another branch of ACPIN. Twenty seven people attended with five apologies for others who are also interested in joining the group. Ideas for lectures, speakers, venues and times for a programme were discussed and volunteers for a committee were identified.

Since that meeting a committee of seven has been established and a provisional programme drawn up for the year.

The name of the group, Surrey &

Borders, is designed to reflect the interest from members living close to Surrey, in parts of Hampshire, Berkshire and Middlesex, who have been unable to attend other branch meetings due to the travelling distance involved.

The provisional programme for 2002/2003:

- 14th May 2002 *Manual Handling*, Woking Community Hospital, Anthea Dendy
- 3rd July 2002 *Nurse specialising in Multiple Sclerosis*, Royal Surrey County Hospital
- 12th September 2002 *Vestibular rehabilitation* lecture, Haslemere or Farnham
- 12th November *Continence management*, Woking Community Hospital
- 5th February *Bobath*, followed by AGM, Frimley Park Hospital

Final details will be advertised when the programme has been confirmed.

The committee are also hoping to collate information on local NHS and private neurological services with the branch members in the near future.

We hope that the initial enthusiasm for the new branch continues and welcome any advice and/or suggestions about future meetings and courses.

SUSSEX

Naomi Jones

Regional representative

The committee of Sussex ACPIN continue to work hard at attracting more members to local workshops and lectures, with weekend half-day workshops proving to be more popular as always.

Last year 2001, Sussex enjoyed evening lectures on Acupuncture (Val Hopwood), Guillan Barré (support group), and feedback talks from the National *Posture and Balance* conference and from AGILE.

Helen Constantine led a half-day

interactive study group on the vestibulo-spinal system in April which was attended by an encouraging 20 participants. This was well received and the topic linked in well with the national *Posture and Balance* day.

At the time of writing, Sussex ACPIN look forward to another Saturday workshop led by Helen again, entitled, *Spasticity, what is it and how does it happen?*

The future programme looks promising with planned lectures on *Exercise in Neurology* (hopefully, Monica Busse) in April, the *Control sensory control of movement* (hopefully Jart Marsden) in June, *Motor re-learning*, and from Bernhaard Haas (in September) feedback from his Parkinson's research at Eastbourne District General.

Sussex ACPIN has been approached by the National committee to appraise an article for *Synapse* in Autumn 2002, and Margaret Hewett (Chairperson, Sussex) has kindly volunteered.

Membership is only currently 20, but we hope that this is because many members have not yet renewed.

WESSEX

Ros Cox

Regional representative

Happy New year to all of you and we look forward to seeing you at the courses and lectures we have organised for you this year. The beginning of 2002 has kicked off well with the start of the normal movement course with Janice Champion and the acupuncture weekends with Val Hopwood which have both been very popular. The rest of the years programme is as follows:

- June 10th An evening lecture by the nutritionist Steve Wooton *Effects of deconditioning on function in neurology* (Southampton Hospital)
- July *Spasticity Workshop*

- September Evening lecture to be arranged
- October David Fitzgerald *Muscle imbalance course*
- November Evening lecture to be arranged

We always welcome new members to Wessex ACPIN regional committee so if anyone is interested in joining us and being more involved and informed about ACPIN and regional information as well as helping to set up courses and lectures please contact Jo Nisbett on 0238079 4562.

WEST MIDLANDS

Kate Duffield

Regional representative

West Midlands ACPIN have had another successful year both in provision of an interesting and varied programme but also in the recruitment of new members. The committee continues to be strong with fourteen members. This has enabled us to share roles and responsibilities and hence the workload.

The programme for 2001 included FES, Muscle Imbalance, Pilates in Neurology, Communication problems following stroke and Therapy Research. Feedback and evaluation has been very positive and participants are tending to request longer courses. This is being addressed.

Courses planned for the rest of the year include:

- June 8th Lucy Smith *Motor Relearning*
 - September 28th *Conductive Education in Parkinsons Disease*
- Other courses to be confirmed at this time include FES and a half study day in a Gait Laboratory.

West Midlands ACPIN functions and remains to be successful due to the hard work and commitment of the committee with support from its membership. Sadly 2002 will see the resignation of two long-standing and respected ACPIN committee members. On behalf of the

committee and region I would like to extend sincere thanks for all their valued hard work and very good luck for the future to Katie Marsland and Sarah Jennings.

West Midlands ACPIN hopes to meet the needs of its membership, but only you can inform us of our true success. If you have any specific needs that you believe ACPIN could help to fulfil please do not hesitate to contact myself. We are always open to fresh ideas for courses and new venues.

YORKSHIRE

Anne-Marie Knowles

Regional representative

In 2002 the existing format for the Yorkshire ACPIN programme of events will be continued with a selection of evening lectures, study days and short courses.

In response to feedback from some of our members, the committee is trying to arrange local ACPIN events which do not coincide with other local neurological activities or National ACPIN study days.

The committee is also trying to respond to requests for details of local ACPIN events to be available well in advance of the event, although this is sometimes beyond the control of the committee.

The programme for 2002 so far is:

- April AGM Details to be confirmed
- May 8th *Assessment and treatment of dyspraxia*, Chapel Allerton Hospital, Leeds
- June – tbc
- July 27th-28th *Splinting course*, Tutor: Sue Edwards

Details of all Yorkshire ACPIN events are sent to each member of Yorkshire ACPIN and are also published in *Frontline*.

Please contact any of the committee members if you have any requests or suggestions for the programme in autumn 2002.

Letters

Dear Editor

Update on progress with the National Clinical Guidelines for Stroke (NCGS)

Sheila Lennon and I presented the results of extensive literature searches to the Intercollegiate Working Party (IWP) for discussion at the December meeting. This was based on work undertaken by the CSP working party. A paper was also submitted asking for all the physiotherapy relevant amendments that had been agreed at previous meetings to be changed to the next document. This was accepted.

The IWP will now update the whole guideline document for publication in 2003. This is an opportunity for members to feed back to us comments they may have on the existing document. Please can you ask your members to do this? Any feedback must be in writing either by post or email to Ralph Hammond. The deadline for this will be May 31st, 2002. The information we would like to receive could be:

- Are there any areas missing from the guideline?
- Is any literature missing? If so please give us the reference
- Do you disagree with our interpretation of the evidence? If so, how and why?
- Do you have any suggestions for rewording any of the guidelines?

Progress has been made in producing a physiotherapy-specific summary of the guidelines. AGILE, ACPIN and the Society will contribute to the costs. Sheila will include her name as the ACPIN/AGILE contact for these guidelines on this summary.

The Royal College of Physicians'

Publications Department will print and produce approximately 2,500, which will be distributed free to members. AGILE and ACPIN members will receive theirs directly, a *Frontline* article will invite other members to request copies from the Society. We hope to achieve this by the end of March.

Please contact me should you want any further information.

Yours sincerely,

Ralph Hammond
Professional Adviser
Research and Clinical Effectiveness Unit
Chartered Society of Physiotherapy

Sheila Lennon
Lecturer in Physiotherapy
School of Rehabilitation Sciences
University of Ulster at Jordanstown

ERRATUM

Bobath Memorial Workshops
Guidelines on writing a case report
– Example 2
Synapse Spring 2001 p19

This article was jointly written by Paulette van Vliet and Dr Sue Mawson.

GUIDANCE ON MAUAL HANDLING IN TREATMENT

Further copies can be obtained by sending a cheque for £2.50 and an A4 stamped (44p) self addressed envelope to:

Mrs A Dendy,
Physiotherapy Department
St George's Hospital
Blackshaw Road
Tooting
London SW17

or

Mrs R Wade
Physiotherapy Department
Mardon Neurological Centre
Wonford Road
Exeter
Devon EX2 4UD.



Affecting Change

2002 Congress and Exhibition of the Chartered Society of Physiotherapy

11-13 October 2002

International Convention Centre, Birmingham

REGISTRATION FORM

Title Mr/Ms/Mrs/Miss/Dr/Prof (DELETE AS APPROPRIATE)

First name Surname
(PLEASE USE BLOCK CAPITALS)

Job Title Place of Work
(eg Senior 1 PT, senior lecturer, private practitioner) (name of hospital or practice)

THE ABOVE INFORMATION WILL APPEAR ON THE ATTENDANCE LIST AND YOUR NAME BADGE

Address
(for correspondence)

Town/Country Post code

Telephone number Fax

Do you have any dietary/special requirements? Yes No Would you like details about creche facilities? Yes No

If YES, please detail (e.g vegetarian,vegan, gluten free etc)

Bookings for the creche cannot be accepted after 15 September 2002

This form is available in alternative formats please contact the Communications Department on 020 7306 6622

A · Registration details

Are you:

PLEASE TICK ONE BOX ONLY

- CSP member
- Non CSP member
- Physiotherapy student
- Retired/unwaged CSP member
- Assistant member
- Exhibitor
- Exhibition visitor only (NO FEE)
exhibition will be open on Friday and Saturday only

B · Interest group programmes

If you are registering for the conference sessions please state which programme you will be **mainly** attending (for room allocation).

PLEASE TICK ONE BOX ONLY. You can swap between sessions.

- Orthopaedics (AOCP)
- Paediatrics (APCP)
- Occupational Health and Ergonomics (ACPOHE)
- Acupuncture (AACP)
- Neurology (ACPIN)
- Mental Healthcare (CPMH)
- Physiotherapy Managers (ACPM)
- Sports Medicine (ACPSM)

Are you a member of any CIG/OG's/ Please list all that apply

YES/NO if YES which one?

* Clinical or occupational interest group

Closing date for applications is 5 October 2002 · but please register as soon as possible

Any queries regarding your booking, please contact: The Communications Department

CSP · 14 Bedford Row, London WC1R 4ED · Tel: 020 7306 6622 · Fax: 020 7306 6623 · E-Mail: crewc@csphysio.org.uk

C · REGISTRATION FEES

Full registration to include all daytime catering as specified on the programme, entry to all conference sessions and trade exhibition (open Friday and Saturday only) and VAT at the current rate. Please note the rates are **NOT** interchangeable. All fees are strictly as stated below.

FULL REGISTRATION

				PLEASE TICK BOX	
CSP members				Non members	
Before 31 May 2002	£160	<input type="checkbox"/>		Before 31 August 2002	£195 <input type="checkbox"/>
1 June-31 August 2002	£185	<input type="checkbox"/>		After 1 September 2002	£230 <input type="checkbox"/>
After 1 September 2002	£215	<input type="checkbox"/>		Day delegate rate	£100 <input type="checkbox"/>

DAY AND HALF DAY RATES- (Friday and Sunday are half days-lunch not included)

CSP members				Non members			
Before 1 September		After 1 September		Before 1 September		After 1 September	
Friday	£50 <input type="checkbox"/>	£75 <input type="checkbox"/>		£75 <input type="checkbox"/>	£85 <input type="checkbox"/>		
Saturday	£95 <input type="checkbox"/>	£110 <input type="checkbox"/>		£110 <input type="checkbox"/>	£120 <input type="checkbox"/>		
Sunday	£50 <input type="checkbox"/>	£75 <input type="checkbox"/>		£75 <input type="checkbox"/>	£85 <input type="checkbox"/>		

DISCOUNTED RATES – (please note that bookings must be received before 1 September 2002 to qualify for discounted rates)

Physiotherapy students/or assistant members **Retired/unwaged members**

Full registration	£65 <input type="checkbox"/>	£70 <input type="checkbox"/>
Friday	£20 <input type="checkbox"/>	£30 <input type="checkbox"/>
Saturday	£30 <input type="checkbox"/>	£50 <input type="checkbox"/>
Sunday	£20 <input type="checkbox"/>	£30 <input type="checkbox"/>

C.I.G SPEAKER - Full Registration rate : £100

D · SOCIAL EVENTS AND FRIDAY NIGHT SUPPERS

Would you like to receive details on any of the suppers being organised by the groups in section B.

YES/No if **YES** which ?

CSP Annual Dinner - Saturday 19 October 2002			
CSP members	£37.50 per ticket	No. of tickets required
Non-members	£50 per ticket	No. of tickets required

Ticket price to include pre-dinner wine reception, four course meal and entertainment and VAT at the current rate.

E · PAYMENT DETAILS

Registration fee	£	all cheques to be made payable to the Chartered Society of Physiotherapy
CSP Annual Dinner	£	
Total	£	payable in pounds sterling only Inclusive of VAT (reg. VAT No. 232323800)
Credit card payments VISA/MASTERCARD/ACCESS are accepted		
Card number	Expiry date
Card holders signatureAmount to debited		

OVERNIGHT ACCOMMODATION WHEN YOU REGISTER

A list of hotels will be sent to you. Please make reservations via the Birmingham Convention and visitor Bureau. All the information will be on the booking form.

BOOKING CONDITIONS (Please note)

- Please enclose full payment to secure your booking
- ✦ All fees and the Annual Dinner costs are inclusive of VAT at the current rate of 17.5%.
- ✦ Invoices will be issued for group bookings of 5 or more only. A separate form must be completed for each person and sent together to qualify for an invoice. A covering letter stating who to send the invoice to, should accompany any group bookings.
- ✦ All invoices must be paid within the respective deadline date to qualify for any reduced fees.
- ✦ All payments must be received BEFORE the event or cancellation may result.
- ✦ Please note that fees do not include travel, accommodation or social events.
- ✦ Please use one registration form per person - please photocopy this form if necessary. Attendees are advised to take a copy of their registration form for their own records.
- ✦ Cancellations will be refunded up until the closing date but subject to a £15.00 fee, however substitute names are welcomed at no additional charge.

Guidelines for authors

■ 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
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 Courtlands Lane
 Lymington
 Exmouth
 Devon EX8 5AA
 email:
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Note: all material submitted to the administrator is normally acknowledged within two weeks of receipt.

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