

well-used strategy of 'blocking' and replied simply, 'How's your breathing been...?' Several other examples of how not to manage difficult consultations enlivened the proceedings.

Quite simple communication skills can be very effective in detecting psychiatric disease in physically ill patients. Simply asking a patient, 'Are you depressed most of the time?' and further enquiring about mood will detect a large proportion of morbidity.

It is interesting to note that patients' actual illness is not the key to how they will respond to their illness. Rather, it is the amount of stress associated with the illness, the experience of being hospitalised and the types of coping strategies adopted by patients that will influence their response to the illness. However, most people, given time, develop their own ways to manage illness; and it is important to differentiate a normal response to a distressing physical illness from an abnormal response which may require psychiatric treatment.

The key for detecting such illness is a multi-level service which gives all members of a team the necessary skills to recognise a

problem about which they could then speak to a specific member of the team. Further, the designated team member must know when and how to refer patients to specialist services from psychologists or psychiatrists. Unfortunately, the availability of counselling services within the NHS is severely limited, yet psychological problems in patients with physical diseases are eminently treatable, using either medication or psychotherapy.

In summary, the conference laid the foundations for psychiatrists and physicians to work together more extensively in the future in an attempt to appreciate the psychological and physical aspects of patients. Further, it proved that clear lines of communication are important in bringing about such changes.

## Recent advances in predicting the response to clinical rehabilitation

Alison Burbidge

### Is it possible to predict who will benefit from rehabilitation?

Several factors help to predict the response to rehabilitation; for example severity of disease, an individual's ability to understand and learn, and his/her belief in the treatment's efficacy. However, few studies have sought to separate the effects of medical treatment and spontaneous recovery from the effects of rehabilitation. Therefore, in measuring response to rehabilitation it is essential to identify objectives and outcomes that genuinely reflect the process of rehabilitation, which is essentially to solve problems and teach skills rather than to make 'normal'.

### Can specialist rehabilitation teams reliably predict their patients' outcomes?

An early prediction process used in a specialist rehabilitation unit for Service personnel suffering from traumatic brain injury (TBI) was remarkably accurate. After a two-week assessment, patients were assigned a rating on five hierarchical scales: vocation, independent living, communication, leisure and hobbies, and awareness and acceptance. These ratings

were then used to set short-term, long-term and outcome goals. The accuracy of predictions made over one year for the vocational and independence scales was 89% and 75% respectively at three months, and 88% and 74% at 12 months. Thus, general vocational and independence status of brain-injured adults could be accurately predicted two weeks after admission.

Accurate prediction required a skilled multidisciplinary team able to recognise prognostic indicators after a comprehensive initial assessment, and to act upon them with someone to coordinate and lead the process. Reasons for inaccuracy included inadequate information on the severity of injury and failure to detect pre-existing emotional difficulties. Lack of improvement between three and 12 months was often due to inadequate community input and lack of opportunity to change.

### Positive and negative predictors of response to rehabilitation

#### Stroke

The relationship between predictive factors (for example, incontinence or paresis) and outcome (for

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example, length of stay) tends not to reflect the rehabilitation process, except in the case of dependency. Positive indicators include the ability to listen, willingness to ask questions, and pre-morbid independence; negative indicators include perceptual difficulties, passivity and pain. For a successful outcome of treatment, a responsive partnership between patient and therapist is important. There is often a mismatch between rehabilitation and patient-centred goals: patients view recovery as a return to pre-morbid activities such as shopping or gardening, whereas therapists' goals relate to functions such as transfers and dressing. This stimulated a debate about whether it is actually possible for hospital teams to provide successful interventions, since outcomes in the 'real world' are monitored by community teams. It was agreed that hospital clinicians should never lose sight of follow-up.

### *Community occupational therapy*

Most studies have found community occupational therapy to be beneficial. Meta-analysis has confirmed this benefit and show both clinical and statistical benefit. In addition, targeted outcome measures resulted in better outcomes. Essential components for a good outcome were that the patient had an identifiable problem that the therapist had the skills to resolve, and that the patient was willing to change his/her behaviour. Other important factors include duration and intensity of intervention, cultural beliefs, environmental constraints and psychological problems.

### *Aphasia*

Traditional approaches to outcome prediction in aphasia, based on factors such as age, handedness, nature of lesion and social class, have been of limited value. They assume that such factors cannot be modified, that rehabilitation is focused upon the individual alone, and that the patient is passive in the process. Rather than using positive or negative predictive factors, it may be more helpful to think in terms of barriers and facilitators to skill, strategy and personal development. These could be grouped into general areas such as systems and resources, emotional and psychological response, environment, or biological factors. For example, to overcome a psychological barrier such as loneliness, a facilitator could be 'being included in meaningful activities'. Professor Byng emphasised that rehabilitation can only be effective if we listen to individual accounts of the impact of aphasia in order to identify barriers and facilitators, to identify the most productive focus of intervention and to be responsive to change.

### *Lower limb amputation*

Coexisting disease is an important predictor of a negative outcome following lower limb amputation. Musculoskeletal, neurological, psychiatric or cognitive problems may affect both general health and use of the intact limb. In one study, only 50% of amputees who had had a previous stroke could walk more than 30 m at one year compared with 79% without stroke.<sup>1</sup>

## Conference programme

### ■ Introduction: Mapping the determinants of a response to rehabilitation

Professor Lindsay McLellan, University of Southampton

### ■ What is the evidence that specialist rehabilitation teams can reliably predict their patients' outcomes?

Mr Kit Malia, Defence Services Rehabilitation and Rheumatology Centre, Headley Court

### What are the positive and negative predictors of a response to rehabilitation?

#### ■ Stroke

Professor Ann Ashburn, University of Southampton

#### ■ Community occupational therapy – who benefits?

Dr Marion Walker, Nottingham City Hospital

#### ■ Learning to live with aphasia

Professor Sally Byng, CONNECT

#### ■ Rehabilitation after lower limb amputation

Dr Rajiv Hanspal, Disablement Services Centre, Royal National Orthopaedic Hospital, Stanmore, Middlesex

### Different approaches to predicting the effects of therapies that are not drugs or surgical procedures

#### ■ Needs assessment as a predictor of outcome in people with long-term neurological disorders living at home

Professor Christopher Ward, University of Nottingham

#### ■ How can generic care pathways help detect the predictive elements in a rehabilitation programme?

Dr Diane Playford, National Hospital for Neurology and Neurosurgery, London

#### ■ How best to investigate the psychology of personal recovery

Dr David Taylor, Tavistock & Portman NHS Trust

#### ■ What kind of information is needed to predict the response to rehabilitation in a cross-cultural context?

Professor Alan Tennant, University of Leeds

### What are the most fruitful research strategies for improving our capacity to predict the response to rehabilitation?

#### ■ Single case experimental designs to determine the effectiveness of rehabilitation

Professor Barbara Wilson OBE, Medical Research Council Cognition and Brain Sciences Unit, Cambridge

#### ■ Do better randomised controlled parallel group trials

Professor Peter Langhorne, University of Glasgow

Amputation level is also important: only 57% of transfemoral amputees were referred for fitting, compared with 95% of transtibial amputees; transfemorals were able to walk only 40% of their pre-operative distance compared with 80% in transtibials. Residual limb problems such as ulcers and dermatitis are common obstacles to good outcomes and may be caused by a number of factors such as variable stump volume or a poorly fashioned stump.

Comparison with Europe suggests that there is room for improvement. In a recent study, in the UK only 66% of those of working age returned to work, compared with 85–90% in Europe.<sup>2</sup>

The discussion emphasised the high frequency of unrealistic patient expectations and raised the question as to whether discussing costs with patients would be helpful or ethical.

## **Different approaches to predicting response to therapy**

### *Population surveys of need*

Although rehabilitation is person-centred, services are designed for groups of people, for example, those with stroke. Commissioners of services seek to meet the rehabilitation needs (defined as the ability to benefit from an intervention) of these groups and to minimise the risk of physical and social complications. It is useful to assess the average potential for benefit from some interventions, even when the outcomes for individuals are uncertain. Thus, one can estimate average need by comparing the frequency of a particular problem (such as imbalance) with the level of provision of equipment known to improve quality of life or autonomy (for example, a grab rail). The inference of need assumes that grab rails are useful for at least some people with imbalance.

Thought should also be given to predictors of need which may not be expressed by patients. For example, a person with a spinal cord injury is at risk of pressure sores and is therefore likely to need a pressure-relieving cushion.

The discussion highlighted the difficulty in engaging clients who do not perceive the need for prevention – how can effectiveness then be measured? One answer might be to provide patients with education and then to use a measure of autonomy as a primary outcome criterion.

### *Care pathways*

Integrated care pathways (ICPs) map the predicted course of patient care, detailing the expected interventions and variances from the pathway. Care pathways have been developed in Dr Playford's department for spinal cord injury, multiple sclerosis and stroke. Their introduction has resulted in several areas of process change, for example, in identifying 'at risk' patients.<sup>3</sup> Comparison of the three existing ICPs suggested that they could be used for all patients, since 93% of all prompts on the pathways were common to the three diagnostic categories. The prompts that differed were unique and provided important guidelines about management. The number and type of variances were similar for all groups, as was the distribution of goal-related outcomes. Automation of the process will allow the production of quarterly reports of length of stay, distribution of goal categories, variance codes and outcomes, thus allowing regular feedback. By combining ICPs with measures of impairment, disability and outcome, it may be possible to aid prediction by providing information about treatment effectiveness.

## *Investigating the psychology of personal recovery*

Any illness sufficient to require rehabilitation will also require the individual to re-adapt as a person. Investigating what is involved in this adaptation requires the kind of in-depth study of people carried out in psychoanalysis. Dr Taylor described Wall's theory of the three phases of response to injury: immediate (fight–flight), acute (anxiety and irritability) and chronic (withdrawal, sleepiness, lassitude, depression). The chronic phase may lead to recovery or to failure to recover (characterised by pain, long-lasting personal dysfunction or increasing passivity). The concept of a two-way interaction between the personal level and somatic functioning was also introduced. The only way people can have an impact on their bodies is through the link between their 'will' and actions; conversely, physical injury can compromise function at a personal level. Freudian ideas about the ego (person) also suggest that severe illness or injury can disrupt the person's sense of control.

The psychological characteristics that appear to predict recovery as a person are the ability to test reality, to do psychological work and to recognise and grieve for loss. Absence of these characteristics is associated with failure to recover and personal decline. Understanding these psychological processes may provide the basis for assessing the response to injury and to rehabilitation.

### *Predicting the response to rehabilitation in a cross-cultural context*

In order to predict the response to rehabilitation at an international level, information about national variations in case mix, staff mix and therapeutic interventions is needed. Also necessary are common outcome scales that have been translated for use in each country, and that have been shown to be reliable and valid for the diagnostic group. Most importantly, the scales should function similarly in each country (scale equivalence) because without this it is impossible to pool data meaningfully.

The findings of the PRO-ESOR Project group demonstrated that patients in different countries were scored differently on the Functional Independence Measure (FIM) motor scale.<sup>4</sup> Rasch analysis can be used to test whether scales are equivalent.<sup>5</sup> After identifying international differences in the properties of specific items, raw data can be transformed into a linear scale, to give overall scale equivalence, provided enough items in the scale have similar properties in the different national samples.

## **Research strategies for improving prediction**

Single-case design studies (in which baselines are used instead of control groups) have an important role to play in evaluating the effectiveness of rehabilitation in individual patients. They are especially useful for studying rare syndromes (where groups are difficult to collect), for detailed longitudinal studies and when treatment needs to be tailored to the individual. The most useful designs are multiple-baseline designs because they can be applied to the wide range of problems and situations encountered in rehabilitation.

Professor Langhorne argued, however, that although case control studies are often the best approach for individual patients, randomised group trials are needed to predict whether a treatment will produce the same benefit in other patients. Matched study groups achieved by proper randomisation can be used to minimise the effect of covariates, while other potential problems such as error or bias can be solved by high-quality, large trials. Secondary analyses can be used to explore the consistency of results within subgroups of patients, treatments or circumstances but are prone to problems and should therefore be kept to a minimum. Future research methods require better definitions of patient and treatment characteristics and outcome measures that are more relevant and sensitive to change.

A lively debate raised some concern about the ethics of spending scarce resources on large randomised trials rather than on rehabilitation itself, and about the possible abuse of evidence during implementation in 'real life'.

### Comment

There is general evidence that the response to rehabilitation can be predicted. In order to improve accuracy and specificity, it will be necessary to further define patient and treatment characteristics and measure outcome in a more meaningful way. Only then can the mismatch between rehabilitation and patient-centred goals be corrected, and treatments that fit the patient be provided rather than choosing patients who fit the treatment.

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