ORAL PAPERS

Outcome measurements in physical medicine and rehabilitation

ASSESSING RESPONSIVENESS OF OUTCOME INVENTORIES: MEDICINE AND REHABILITATION

P. Schuck,* Th. Franke and G. Gammelin
Saxon Balneology and Rehabilitation Medicine Research Institute (FBK), D-08645 Bad Elster, Germany; e-mail: peter.schuck@medkur.de

Two types of studies must generally be distinguished, yet are often confounded: (1) intervention studies to test the efficacy/effectiveness of a therapy/treatment, for which reliable, valid and responsive assessment tools are required for outcome measurement; and (2) clinometric studies to scrutinize the quality of assessment tools. The latter require effective therapies in order to establish estimates of responsiveness.

Textbooks mainly focus on objectivity, reliability, and validity only. Appropriate designs and statistics to evaluate responsiveness or sensitivity to change are scarce.

Frequently used experimental and quasi-experimental (e.g. one-armed, two-armed, controlled, not-controlled, with or without randomization) designs in quality-of-life research for this purpose will therefore be discussed, as well as diverse parameters (e.g. different effect sizes, Guyatt’s Responsiveness Index etc.) to describe this quality of an assessment tool.

As can be expected, there is no single, ‘ideal’ design for a given inventory and for different situations. Also, different parameters not only yield different results for different designs, but the same parameter even yields different results for different designs.

Nevertheless, it is strongly argued to evaluate the sensitivity to change and not to assume it without empirical testing. In doubt several parameters should be reported.

* Author for correspondence.

Outcome measurements in physical medicine and rehabilitation and its implication on Austrian health care policy

HOW DOES THE SOCIAL INSURANCE SYSTEM MEASURE HEALTH? CAN OUTCOME MEASUREMENT HELP?

G. Pöllmann* and K. Schneider
SKA der PVArb. Saalfelden, ÖRG, Thorerstrasse 26, A–5760 Saalfelden, Vienna, Austria

Purpose: Rehabilitation treatment (RT) pursues the aim of maintenance and recreation of working capacity. We tried to document the obtained success retrospectively by means of objective and subjective data.

Methods: 18 months after a four-week stay in a rehabilitation centre, patients’ data about working capacity and quantity of sickness days were collected. To each patient a questionnaire was mailed for getting details about the immediate success of rehabilitation and the further course of disease and working capacity.

Results: 391 patients’ data were collected (age: 41.8± 6.9 years; 286 male, 105 female). Only patients up to the limit of 50 years were included to eliminate possible cases on early or old-age pension and to focus attention on the comparison of working capacity and disability pension. Stationary treatment was caused by rheumatic (n = 268; 68.6%), cardiovascular (n = 116; 29.6%) or other diseases (n = 7; 1.8%). All data about occupation, sickness days, motions for disability pension and case histories were documented. 236 (60.4%) of the returned questionnaires were evaluated.

(1) Working capacity: At the time of RT 359 patients were registered by the social insurance as workers. 18 months later, 332 patients still remained in this condition. Hence, in 92.47% of the cases working capacity was maintained.

5 patients of 32 (15.62%) who already were admitted to get disability pension for a stipulated period could be brought back to work.

(2) Sickness days: 239 (66.6%) of the 359 workers finished their sickness days immediately after RT-ending. In 79 of the cases we got additional informations from the district’s health insurance. The evaluation of these showed that the quantity of sickness days reduced from 5203 to 3828 in the time of 18 months before to 18 months after RT (26.4%).

* Author for correspondence.
Abstracts

Subjective data: the evaluation of the questionnaires showed following results: 91.5% of the patients gave consent to the global question about the success of RT, 69.6% of them specified the improvement to have lasted longer than 6 months. 90.8% were satisfied with the clarification about their diseases and declared in 76.2% that this clarification helped to manage their diseases furthermore. 83.5% of the patients stated an improvement of their complaints by the suggested treatment after RT. 67.8% confirmed the resulting improvement of their quality of life, 55.1% confirmed the enhancement of their capacity at work.

Conclusions: In this pilot study we tried to show, that the success of RT can be proved by reduction of sickness days and maintenance and recreation of working capacity. A larger quantity of such data might allow a cost-utility analysis within the meaning of evidence-based medicine. So outcome measurement can help to confirm the efficacy of specialized rehabilitation institutions in medical as well as in economic regard.

Outcome measurements in rehabilitation of musculoskeletal disorders I

Optimal balance between job demands and individual capacity – an outcome measure within prevention and rehabilitation

G. Gard
Department of Musculoskeletal Disorders, Division of Physical Therapy, Lund University, Box 5134, 220 05 Lund, Sweden; e-mail: gubvor.gard@sjukgym.lu.se

Optimal balance between job demands and individual capacity may be an objective outcome measure in prevention and rehabilitation. Today a wide variety of individual capacities are needed to fulfill the job demands in working life: physical, intellectual, social and/or emotional capacities. An optimal balance could be a goal in ergonomic introduction programmes as well as in work rehabilitation at the work place. First Job analysis must be carried out for each individual, describing all functions/activities in a job during a working day with the frequency and time of each activity listed. The analysis may also include working postures, repetitiveness, static work load as well as the risks for harmful effects, resulting in a job profile for each individual with actual job. Secondly, a functional capacities assessment must be done for each individual. There are methods to

Assessment methods for rehabilitation and harmonization

S. Biefang
University of Ulm, Germany; e-mail: sibylle.biefang@lrz.uni-muenchen.de

A state of the art review identified German assessment methods for rehabilitation with the aim to improve the selection of instruments for routine and research applications, to define main areas of instrument development, and to contribute to the harmonization of measurement, especially in intervention studies supported by the new programme ‘Rehabilitation Research in Germany’.

All instruments were evaluated with respect to their relevance for rehabilitation and methodological standards, and only those recommended for use which satisfied certain criteria including publications or manuals. The main areas of method improvement were backed by a comparison with the international state of the art. Harmonization of measurement in intervention studies was based on a taxonomy of rehabilitation outcomes, the distinction between generic and specific outcomes assessment which, if combined, allows for a comparison of different patients and treatments, and a minimum follow-up of 12 months, in order to evaluate effects also with respect to return to work.

The review identified 126 original German or German versions of Anglo-american instruments for generic, disorder-specific, pediatric, geriatric, rehabilitation needs and vocational assessment. There were two kinds of deficits: lack of measures (e.g. of specific instruments for cardiovascular disorders) and insufficient implementation of methodological standards (e.g. in translating and constructing equivalent German versions of Anglo-american instruments). Based on the taxonomy of rehabilitation outcomes first-choice generic instruments (e.g. the SF-36 for functional status/wellbeing) were proposed and, in addition, a combination of data collected at baseline and after 12 months suggested, irrespective of the circumstance that individual studies, for example, also provide for a follow-up at the end of the treatment. The proposal is subject of ongoing discussions of those involved in the intervention studies.

Improvement of assessment in rehabilitation is an international task. German efforts are still very much restricted to the national level. Therefore, recommendations resulting from the deficits the review revealed, emphasized the need for providing more international cooperation in future instrument development and harmonization.
registre functional capacities, different methods for physical, intellectual, social and emotional capacities. The most well-known methods for physical capacities are developed in the United States and are called Blankenship, Isernhagen, Polinsky, Key and Valpar. Repeated tests in standardized test situations are done and the result is a functional capacities profile for each individual. Reliability and validity studies of some of these methods and new methods are on-going within Physical Therapy Departments in Sweden. The job profile is then compared with the individual capacity profile. The aim of the comparison is to get an objective measure of the capacities to focus on in rehabilitation, to describe changes during rehabilitation and to predict working ability after rehabilitation. Functional limitations can be identified and the real work situation can be changed.

The comparison between job demands and individual capacity may be used: (1) in preventive ergonomic and/or psychosocial work; and (2) in work rehabilitation for individual rehabilitation planning and as objective measures for the Social Insurance Office.

**ASSESSING CHANGE IN FUNCTIONAL STATUS: A DISCUSSION OF AN ADL–MEASURE**

R. Lalu
GERO (Gerontological-Economic Research Organization) e.V., Kanzleistrasse 9, D-78462, Konstanz, Germany; e-mail: admin@gero.org

**Purpose:** In measuring functional change of rehabilitation patients, two aspects should be taken into account: the actual difference between functionality levels and the initial level from which this difference is calculated. The present study proposes a measure of change which integrates these two aspects. This measure evaluates the change between the functional status at two points in time and is based on the assessment of ADL items.

**Method:** Each ADL item is compared with its correspondent from the next ADL assessment. In our case, binary ADL items have been used: the patient’s autonomy with feeding, walking inside, washing, bathing, toileting and incontinence. In comparing a binary ADL assessment from two points in time, four cases are possible: improvement, positive stationary (patient doesn’t need help at both assessments), negative stationary and deterioration. After assigning a code to each stage of change (from ‘4’ for improvement to ‘1’ for deterioration) and summing the codes of each pair of ADL items, a measure of change is obtained, which takes into consideration both visible change (improvement/deterioration) and ‘invisible’ evolution (positive/negative stagnation). In order to test this measure of change, data from 573 geriatric rehabilitation inpatients were analysed. All patients were hospitalized twice and their functional status was investigated with a 7 Item ADL Index at admission and discharge of every hospitalization. The aim of the analysis was to test the capacity of the proposed measure of ADL change to predict later levels of ADL functionality. The ADL score at the second discharge (ADL4) was considered as the criterion variable in several multiple autocorrelated regressions using 3 different sets of predictors: (1) previous ADL scores (ADL4 on ADL1, ADL 2, ADL 3); (2) simple ADL score differences (ADL4 on ADL2–ADL1, ADL3–ADL2, ADL4–ADL3); and (3) the proposed measure of change, which was also calculated for three intervals: first and second rehabilitation and home.

**Results:** The results showed that the previous ADL levels (ADL1, 2, 3) have only an average predictive power on a further ADL assessment (ADL4). Better predictors of ADL4 are the differences of ADL scores. The best predictors of ADL4 are the measures of change under discussion. A parallel analysis, conducted on 476 geriatric rehabilitation inpatients, showed the proposed measure to correlate highly significant with the subjective appraisals of the outcomes of rehabilitation of both patients and physicians.

**Conclusions:** For binary ADL assessment, the proposed measure proved to be more sensitive to change and more predictive of further functional levels than simple ADL score differences. Further replications should clarify if this is the case for ordinal measurements of ADL items too, since assigning codes for functional change/stagnation is a more sensitive task in ordinal variables.

**USING OUTCOME MEASURES TO MEASURE SERVICE IMPROVEMENT**

F. Köhler* and H. G. Dickson
Department of Rehabilitation and Geriatric Medicine, Liverpool and Brasie Hospital, Locked Bag 82, AUS–2164, Wetherill Park, NSW, Australia; e-mail: f.kohler@unsw.edu.au

We describe how we use our outcome measure database to monitor performance so as to ensure that decreasing length of stay is not an artefact of changes in casemix and does not occur at the expense of decreased improvement while in hospital.

* Author for correspondence.
As part of the quality assurance activities of our Rehabilitation Unit, we constructed a database based on the format of the Uniform Data Set for Medical Rehabilitation, promulgated by the American Congress of Rehabilitation and the American Academy of Physical Medicine and Rehabilitation. While the admission criteria to the ward have not changed over the last six years, we have constantly tried to increase the efficiency of our service.

The results indicate that while the length of stay has decreased over the last six years, the casemix, functional dependence, discharge status and other parameters of patients have not changed markedly.

We conclude that the use of an outcome measure assists in demonstrating improvements in service efficiency.

OUTCOMES IN HEALTH CARE

M. Bond†* and C. Arslanian‡
† Cedaron Medical Inc., P. O. Box 2100, Davis, California 95617, USA
‡ Tucson Orthopedics, Tucson, Arizona, USA.

The current outcomes movement emphasizes patient perceived changes in condition as valid and responsive to the intervention. This patient derived data is one of the essential units in the evaluation of effectiveness of medical treatments or outcomes programme.

In 1996, the American Academy of Orthopedic Surgeons (AAOS) began funding the development of an outcomes database. The ability of clinical practices to benchmark against large databases for evidence of opportunities for improvement will be presented. The lessons learned in the implementation of the project will also be shared.

Outcomes research places a new emphasis on point of delivery, community based outcomes research whereby the individual clinic becomes the center of innovation. The ultimate goal is to optimize healthcare through prospective treatment effectiveness research. This research should assist the health care industry in building consensus in treatment protocols and tuning of the clinical or critical pathways.

An outcomes research database has dimensions that reach beyond the local clinic for benchmarking. With the AAOS outcomes database, outcomes research provides the building blocks for an international database to which individual clinics may bench mark their performance. The various types and values of outcomes indicators will be discussed. The first results of the AAOS outcomes project will be discussed.

OUTCOMES ASSESSMENT WITH THE MODEMS® QUESTIONNAIRES: TRANSLATION CROSS-CULTURAL ADAPTATION AND VALIDATION OF AN ITALIAN VERSION OF THE INSTRUMENTS

E. Romanini,† R. Padua,‡* G. Zanoli,‡ L. Padua§ and C. Bertolini‡
† Depts. of Orthopaedics, USCC, Rome, Italy
‡ Neurology and Physical Medicine, UCSC, Rome, Italy
§ Dept. of Orthopaedics, University of Ancona, Italy

Patient-oriented measures are becoming a widely accepted parameter in assessing outcomes of musculoskeletal disorders. However, many clinical studies have been recently published in which different questionnaires were used. In order to obtain a standardized and comparable instrument for patient-oriented evaluation of musculo-skeletal conditions, various generic and patient-specific instruments were evaluated, both theoretically and in a clinical setting; finally the MODEMS® questionnaires developed by the AAOS (American Academy of Orthopaedic Surgeons) were selected for use within an Italian speaking population. These instruments (four basic questionnaires for upper limb, lower limb, spine and pediatric conditions) provide a thorough but easy to apply method for health status evaluation in musculo-skeletal disorders.

A process of adaptation to Italian language was applied to the Outcomes Data Collection Module version 2.0 following the guidelines proposed by Guillemin in 1993. Two different translations and two back-translations were obtained from physicians and professional translators and a Multispecialty Committee evaluated and revised the material. The tools were then administered to patients referred to two University hospitals for various musculo-skeletal conditions.

Reliability, sensitivity, validity and responsiveness of the instruments were tested. The questionnaires proved to be an effective tool in the Italian version as in the original one.

We believe that MODEMS™ questionnaires provide a good solution to standardize patient-oriented assessment in musculo-skeletal conditions and they can be used in different language populations, if a correct

* Author for correspondence.
process of translation, cross-cultural adaptation and validation is performed by experienced teams.

Outcome measurements in cardiovascular and oncological rehabilitation

THE ASSESSMENT OF THE EFFICIENCY IN ONCOLOGICAL REHABILITATION

J. V. Teichmann
Fachklinik Erbprinzentanne, Goslarsche Strasse 80, D-38678 Clausthal-Zellerfeld, Germany

Purpose: There are only few studies on the evaluation of the efficiency of oncological rehabilitation (Reha). The objective of this study is to determine the patient’s Reha requirement and his/her individual Reha goals, and to assess the efficiency of a complex Reha programme consisting of medical care, physical therapy, sports therapy, psychological support and health care seminars. Methods: The determination of the Reha requirement in oncologic patients is difficult as the somatic problems often greatly interfere with psychosocial distress. Therefore the multidimensional IRES (Indicators of Reha-Status) patient questionnaire (Gerdes and Jaeckel, Rehabilitation 34, XIII–XXIV, 1995) was used for evaluation. This assessment instrument comprises three main issues, the ‘somatic status’, the ‘functional status’ and the ‘psychosocial status’ which are aggregated in the ‘reha-status’. On the assessment level of the single patient, a ‘patient’s profile’ is created which provides additional information about the patient’s functional impairment and subjective distress. The measuring points for analysis of data on patient groups were at admission (t0) and at discharge (t1).

Results: At admission for inpatient reha (t0) 418 patients with various oncologic diseases (breast cancer, gastrointestinal cancer, urogenital cancer, lymphoma, and some other cancers) were included into the study. The average age was 54.6±12.2 years; 56% were female, 44% male. At t0 the patients regarded their health status as excellent or good (12.1%), satisfactory (39.5%) or poor (46.8%). According to the ‘reha-status’ 42.1% were ‘extremely suspect’ (IRES-score 5.4±0.7), 24.1% ‘suspect’ (6.7±0.3), and 33.8% ‘normal’ (7.9±0.6) in comparison to an adapted (for age, sex, social class) norm-reference sample (n = 442). At discharge (t1) 405 patients were included; subject to evaluation at t0 and t1 were n = 397 patients. The analysis revealed a significant improvement of the ‘reha-status’ (t0 = 6.5±1.2/t1 = 6.9±1.3; p < 0.001); significant improvements were also noticed for the subdimensions ‘somatic status’ (t0 = 5.9±1.5/t1 = 6.2±1.6; p < 0.001) and ‘psychosocial status’ (t0 = 6.8±1.5/t1 = 7.3±1.4; p < 0.001), whereas the ‘functional status’ had not changed significantly (t0 = 7.1±1.5/t1 = 7.2±1.5; p > 0.05).

Conclusions: This study shows that the regular use of the IRES instrument is feasible and can support the Reha specific diagnostic. The analysis of the outcome data revealed that our complex Reha programme achieves significant measurable improvements of the patients performance. These results can also be used for internal quality assessment. Further studies will have to investigate to which extent these effects will gain clinical relevance and how long they may persist. Future investigations are planned in regard to long term developments and to identify subgroups of patients with special Reha requirements.

PRELIMINARY RESULTS OF AN EXPERIMENTAL REHABILITATION PROGRAMME FOR CANCER PATIENTS

K. R. M. Streppel,†* W. H. van Harten‡ and R. Warmerdam‡
† Roessingh Research and Development, Roessinghsbleekweg 33, Enschede 7522, The Netherlands; e-mail: k.streppel@rrd.nl
‡ Rehabilitation Centre ‘Het Roessingh’, Enschede, The Netherlands

The number of people living with cancer increases. In contrast with Germany and the United States, The Netherlands are unfamiliar with rehabilitation programmes for cancer patients. Based on results of an assessment of rehabilitation needs in Dutch cancer patients, an experimental rehabilitation programme for cancer patients has been started in 1997 at rehabilitation centre Het Roessingh. The purpose of this study was to evaluate the preliminary results of this experimental programme.

The experimental rehabilitation programme for cancer patients consists of various rehabilitation parts such as: physical therapy (fitness, swimming), group psychotherapy, relaxation therapy, creative therapy and information on nutrition and health care. The outcomes of this study are based on aspects of quality of life, aspects that could influence quality of life and patient satisfaction. Aspects of quality of life were assessed with various instruments at different times (two months before start, at the start, at the end and three months after the end of the programme). Also, use of care was assessed.

* Author for correspondence.
Instruments used were: EORTC, SF-36, FACT-fatigue, Mastery list (coping) and TAMPA. Patient satisfaction was assessed in a semi-structured interview at the end of the programme. The total pilot will consist of 5 groups of 10 participants. Till now, only the start and end data of the first three groups (n = 30) could be analysed.

The mean age of the participants of the first three groups was 45.7 years (SD 13) and 87% were female. Most participants suffered from breast cancer (40%), followed by M. Hodgkin (20%) and bowel cancer (10%). Mean time between the end of primary treatment and start of the programme was 1 year and 7 months (SD 2 years and 1 month). Results of 9 persons (30%) could not be analysed for various reasons.

Results of the exit interviews are summarized here (n = 21). The goal of the programme is well understood. More attention should be paid on residual symptoms and long term effects of cancer and cancer treatment (chemo and radiotherapy). Almost all programme parts are valued ‘sufficient’ or ‘good’. Everyone was very satisfied with the contact they had with their therapists. All participants think that the programme is ‘useful’ to ‘very useful’ for themselves and for other cancer patients. About two-thirds think their physical and mental functioning and the way they deal with their problems has improved.

All quality of life aspects measures with the EORTC and the SF-36 were improved at the end of the programme. The dimensions ‘emotional/mental functioning’, ‘general health’ and ‘vitality’, improved significantly. Fatigue measured with the EORTC and the FACT-fatigue decreased significantly. Feeling of control (coping) and also the physical activity in different areas increased significantly. There was a (not significant) decrease in use of care (doctors visits, hours care/treatment) at the end of the programme.

These preliminary result are very encouraging but must be interpreted with care. Due to the lack of control data, the positive results can not yet be attributed to the effect of the programme. At the end of the pilot all data (n = 50), including the waiting list data, will be analysed.

CHANGES OF QUALITY OF LIFE BY MODERATE INTENSITY EXERCISE TRAINING IN PATIENTS WITH SEVERE CHRONIC HEART FAILURE

B. Sturm,* M. Quittan, R. Pacher, G. Wiesinger and B. Stanek
Department of Cardiology; Department of Physical Medicine and Rehabilitation, University of Vienna, Austria; e-mail: michael.quittan@akh-wien.ac.at

Purpose: The present study was designed to evaluate whether a specific programme of moderate intensity training may be sufficient to improve the exercise tolerance, and to determine the impact on quality of life perception of patients with severe chronic heart failure. In the past, studies have shown that high intensity exercise training can improve exercise tolerance and increase peak oxygen uptake in patients with stable mild chronic heart failure. Only few data are available on changes in quality of life by regular physical exercise in patients with chronic heart failure.

Methods: We randomized 26 patients (22 men, 4 women; mean age 54 (9 years)) with a history of severe chronic heart failure (left ventricle ejection fraction of 18 (7.9%)) into two groups. The trained group underwent a low intensity (50% of the peak oxygen uptake)) 12 weeks training programme. The control group continued their activities of daily living without any additional exercise. For assessment of quality of life we used the self-administered MOS –SF 36. This questionnaire consists of 36 items related to 8 scales. These scales covered three domain health attributes: functional status, well-being and overall health.

Results: A significant increase in peak oxygen uptake (15.9 (0.9 to 18.5 (0.8; p < 0.01)) and work load (77 (7.3 to 99 (8.6; p < 0.0001)) were obtained only in the trained group at the exercise test. The greatest improvement after training compared to the control group was seen in the domain of physical role functioning (44.9 vs 4.4 points; p = 0.001), social behaviour (17.8 vs −0.6 points; p = 0.0002) and perception of vitality (17.6 vs −2.9 points; p = 0.0001).

Conclusion: The study demonstrated that a low intensity exercise training is not only effective to increase the peak VO2 and work load, but also results in a significant improvement in quality of life in patients with severe chronic heart failure.

* Author for correspondence.
Moderate intensity exercise conditioning in early period after surgical revascularization of myocardium

A. Arak,†* J. Maaroos,† J. Eha‡ and T.-A. Sulling‡
† Department of Sports Medicine and Rehabilitation, University of Tartu, Puusepa 1a, Tartu, Estonia; e-mail: aef.arak@cut.ee
‡ Mustamäe Hospital, Sütiste tee 19, Tallinn

Purpose: The exercise capacity needed to obtain favourable and optimal results after surgical revascularization of myocardium has been under discussion for years. The aim of the study was to evaluate the effect of moderate intensity exercise conditioning during shorter and longer duration (resp. 6 and 12 weeks) to the indices of cardiorespiratory function in patients after coronary artery bypass grafting (CABG), or percutaneous transluminal coronary angioplasty (PTCA).

Methods: Thirty-two patients who have undergone surgical revascularization of the myocardium either by CABG and/or PTCA were randomized 3–6 weeks after surgical procedure into two groups of which the first was supposed to have exercise therapy for 6 weeks and the second, for 12 weeks, three times a week, each with a duration of 40 minutes. Exercise therapy was characterized by energy expenditure of moderate-intensity (approximately 60% of maximal oxygen consumption) gained at the pre-training exercise test. The patients underwent bicycle cardiopulmonary testing before and after a conditioning programme while functional indices of cardiorespiratory system were measured ECG registration in 12 standard leads and arterial blood pressure were simultaneously registered at each 1 minute.

Results: The statistically significant indices (p < 0.05) characterizing change in cardiorespiratory fitness are shown in Table 1. Peak VO₂—peak oxygen consumption (ml/min/kg), RRsys—systolic arterial pressure at rest (mm/Hg), RRDia—diastolic arterial blood pressure at rest, (mm/Hg). RRDiast max—maximal diastolic blood pressure (mm/Hg), W AnT—workload at anaerobic threshold (watts), W max—maximal workload (watts).

Conclusions: Supervised exercise therapy of moderate intensity has favourable effects on several indices of cardiorespiratory fitness and aerobic capacity in patients after surgical revascularization of myocardium. The results are comparable and even similar after passing a 6 week and a 12 week programme. The described exercise training was safe even for deconditioned persons and for those with advanced coronary artery disease.

Outcome measurements in rehabilitation of musculo-skeletal disorders II

H. Snekkevik,†* A. Anne‡ and J. K. Stanghelle‡
† Sunnaas Rehabilitation Hospital, Nesodden, Norway; e-mail: hildegun@sunnaas.no
‡ Department of Physical Medicine and Rehabilitation, University Hospital of Tromsø, Norway

Purpose: The aim of this study was to evaluate the stability of the sense of coherence (SOC) after multiple trauma, and to study the relationship between the sense of coherence and psychological distress, measured by GHQ-20 and HAD. SOC’s influence on later self-perceived life satisfaction was also studied.

Methods: Twenty six patients with severe multiple trauma, consecutively admitted to Sunnaas Rehabilitation Hospital, were included. The subjects answered questionnaires regarding life satisfaction (The Life Satisfaction Scale), sense of coherence (Antonovsky’s Sense of Coherence Scale(SOC)) and psychological distress (GHQ-20 and HAD) at three points of time; at admission, before discharge and median 27 months post-injury, respectively.

Results: The median SOC-scores showed fairly stable values at the three times registered, while the individual

* Author for correspondence.
Abstracts

Scores showed partly large variations. The proportion of subjects with psychological distress, anxiety and depression was almost the same before and after trauma. There was a significant association between simultaneously registered SOC-scores, HAD-anxiety-scores and global life satisfaction, respectively, and also between global life satisfaction and HAD depression scores. SOC-scores at discharge were associated to anxiety at follow up, while SOC-scores at admission could not predict global life satisfaction at follow up. The number of patients satisfied with life as a whole was considerably decreased from 22 subjects (85%) before trauma to eight subjects (31%) at follow up median 24 months post-injury.

Conclusions: The stability of SOC is low in individual patients after multiple trauma. The predictive value of SOC on self-perceived global life satisfaction was also low, indicating that the use of SOC as a prognostic factor in the individual patient with multiple trauma is not possible.

INTERDISCIPLINARY QUALITY INDICATORS FOR OUTPATIENT REHABILITATION AFTER TRAUMASURGERY

W. Hackhausen
Verband Deutscher Rentenversicherungsträger, Eysseneckstrasse 55, D – 60322, Frankfurt am Main, Germany

The contribution presents analysis and evaluation of 35 cases of traumatic patients. All cases are classified according to diagnosis groups S00 to S99 or T00 to T14 (ICD-10).

Immediately after inpatient traumasurgery the patients participated in a defined exercise programme given by physiotherapists. Average exercise time per day was between 45 and 120 minutes. The training programme (called Extended Outpatient Physiotherapy (EAP)) was completely performed within the outpatient setting, and the duration depended on the severity of injuries, type of surgery and status of consolidation after inpatient treatment.

Internal secondary diseases were of minor importance, and the ensuing patient training programme took average 6 to 36 weeks. Convalescence rates (function of the injured extremities and the respective skeleton part, endurance and activities of daily life) significantly increased provided the patient took part in therapy units and exercises continuously. Applying a graduated, defined therapy concept may yield augmented reintegration rates of traumalogic patients if quality indicators are consequently observed.

Therefore, intensive pre- and post-operative outpatient therapies should be preferred to rehabilitate patients after traumalogic surgical interventions. Thus, shortest duration of rehabilitation including excellent functional results at reasonable cost can be gained.

COST-EFFECTIVENESS OF INPATIENT AND OUTPATIENT REHABILITATION AFTER TOTAL HIP ARTHROPLASTY - A PRELIMINARY REPORT

P. Bak* and U. Smolenski
Inst. für Physiotherapie, FSU Jena, Kollegiengasse 9, D – 07740 Jena, Germany

The effectiveness of total hip arthroplasty (THA) in relieving pain and improving function has been well documented over the past 20 years. Orthopaedic surgeons have traditionally used disease-specific scoring systems for assessment of localized pain and physical functioning. Health-related quality of life encompasses not only pain and physical functioning, but other domains such as social functioning, mental health, vitality and general health. Outcome measures offer the opportunity to determine treatment efficacy, to compare treatment options, and guide patient selection when a variety of different rehabilitation procedures are available from which to choose. This information may be important, when cost containment and scarcity of resources force decisions to be made regarding the allocation of healthcare expenditures.

The rationale for economic evaluation in general and cost-effectiveness evaluation in particular is that in the society of limited resources, each successive health intervention should produce a benefit that is worth its additional costs. A cost-effectiveness analysis is a formal procedure of economic evaluation which estimates the cost per unit of health outcome.

The aim of the present study is to estimate the functional improvement of THA patients as well as to compare the inpatient and outpatient rehabilitation procedures in regard to their cost-effectiveness. Consecutive subjects who had undergone a primary total hip arthroplasty due to severe idiopathic osteoarthritis (OA) volunteered for this study. Functional status was estimated on admission (prior to the surgery) and at discharge. Additionally, quality of life was assessed using generic and disease-specific outcome measurements. The Medical Outcomes Study Short Form-36 (SF-36) was used for assessment of general and Western Ontario and McMaster universities Osteoarthritis Index (WOMAC)

* Author for correspondence.
of disease-specific health perception both as patient-administered questionnaires. The patients were assigned into the experimental group, which underwent a standardized indoor rehabilitation programme of three weeks duration and the control group which performed an outpatient rehabilitation programme. The experimental group was assessed on admission and at discharge of the rehabilitation facility, the control group 3 and 6 weeks after surgery. 3 months as well as 12 months follow-up will have been performed for both groups.

For evaluation of the inpatient rehabilitation per day mortgages payed by the appropriate health or social insurance were used. Cost-effectiveness analysis was performed using the cost-effectiveness ratio, which estimates the net change in cost divided by the net change in effectiveness as measured by the outcome instruments. Additionally the correlation between the generic and disease-specific outcomes will have been calculated. The relationship between the treatment benefit or cost-effectiveness and demographic data, social parameters as well as the time interval between discharge in the primary care hospital and admission in the rehabilitation facility will have been estimated.

According to the first results the cost-effectiveness analysis seems to allow the policy makers a comparison of the investigated rehabilitation interventions and help to allocate resources in a fixed budget to maximize the impact that expenditures have on functional status and quality of life by patients after THA.

Results showed that TKA patients achieve significant improvements in all 8 domains of the SF-36 at 3 months. At 6 months, additional significant improvements in physical functioning, role function, and mental health occur. No significant improvements are made after 6 months.

In the THA sample, significant improvements in all 8 domains of the SF-36 are achieved at 3 months. In contrast, at 6 months, total hip patients achieve significant improvement in role functioning and general health. Only role function continues to improve significantly at 1 year.

Each patient who is having TKA or THA surgery is supplied this information to assist in setting and attaining their personal goal for rehabilitation. Postoperatively, each patient is given his or her own results as compared to the others in the database (matched by age). They use the data to determine how well they have attained their goals. Establishing and maintaining realistic goals for their outcome.

Efficacy of Physical Therapy after Total Hip Replacement - A Single Blind, Prospective Pilot Study

W. Halder,†* M. Fischer,‡ M. Foidl,§ R. Biedermann,† H. P. Rhomberg† and C. Gartner.§
† A. Ö. Landeskrankenhaus Hochzirl, A-6170 Zirl, Austria
‡ University Hospital Innsbruck, Department of Orthopedics, Austria
§ Academy of Physiotherapy, AZW Innsbruck, Austria

Patients after total hip replacement at the University hospital of Innsbruck have the opportunity 10 days after operation and after an initial physical therapy to decide whether they go home or participate in a rehabilitation programme. Till now there is no direct evidence about the efficacy of this rehabilitation programme. The aim of the study was to find out whether there is any difference between the two groups. We evaluated 26 patients of whom 14 (mean age 67, 71% female—Group A) participated in the rehabilitation programme and 12 (mean age 60, 8% female—Group B) decided to go home 10 days after operation.

A blinded investigator examined passive hip mobility and pain rating by a VAS 8 days and 7 weeks after hip replacement and patients answered a questionnaire focusing on activities of daily life before and 7 weeks after the operation.

Patient Functional Outcomes One Year After Total Hip and Total Knee Arthroplasty Using the SF-36

C. Arslanian
Tucson Orthopaedic Institute, 2424 N Wyatt Drive, Tucson, AZ, USA

Measuring patient outcomes after orthopaedic surgery has become increasingly common in the US. The purpose of this particular study was to measure patient outcomes after total knee (TKA) and total hip arthroplasty (THA) using the SF-36, which is considered highly rebate and valid. Patients complete an SF-36 preoperatively, and at 3 months, 6 months, and annually postoperatively. A database of 276 patients (152 TKA and 124 THA) patients was analysed, examining the 8 domains of the SF-36: physical functioning, role functioning, bodily pain, general health, vitality, social functioning, role emotions and mental health. T-tests were used to determine the differences between the scores at each time point.

* Author for correspondence.
We found a mean improvement of hip flexion of 28.93% in group A and 12.09% in group B, both significant and with significant difference between the two groups. In hip abduction we found no significant difference in both groups.

Pain rating by VAS showed a mean reduction of 2.07 cm in group A ($p = 0.0030$) and of 0.84 cm in group B ($p = 0.1246$).

Concerning activities of daily life it seems that patients of group A have fewer problems than patients of group B.

It seems that the older the patients are, the more pain they have, the worser the joint mobility is after total hip replacement and the more problems the have in activities of daily life the greater is the benefit of a rehabilitation programme.

Outcome measurements in sports medicine - is physical performance enough?

A. Wicker,* W. Matschi, B. Hohenfellner, T. Riedhardt and M. Burger-Rafael
Department of Physical Medicine and Rehabilitation, LKA Salzburg, Müllner Haupstrasse 48, A–5200 Salzburg, Austria

In the rehabilitation of competitive sportsmen and women we are confronted with the problem that the rehabilitation period is usually too short. The decision for the return to training or competition lies with the medical expert, which needs an exact evaluation of the patient’s situation.

Besides the clinical parameters such as muscular function, palpation, stability, mobility, pain and subjective status of health the objectively measurable parameters make decision easier. Sports medicine without outcome measurements is no longer state of the art. Those outcome measurements enable to evaluate rehabilitation, to influence, to control and to optimize it.

Our aim should be to create methods of measurement with a high reference to sports. Functional diagnostic systems of measurement for recording neuromotoric deficits:

- Isokinetic: Measurement of muscular dysbalance: e.g. knee injury: flexors-extensors-ratio. Comparison healthy–injured leg, measurement of strength in comparison to sport-specific standard data, assessment of the strength-time course.

- Measurement plate: The measurement of ground reaction force allows qualitative and quantitative conclusions to the course of motion such as contact time or strength-time course. For practical use: drop jumps and gait analysis.

- Electromyography: Electromyography is an examination technique that deals with beginning, recording and analyses of bioelectrical signals. It brings information concerning function and changing state of the human skeletal muscles.

- Videosystems: Videosystems make the documentation and analysis of complex motional courses such as walking or running on a treadmill easier.

- Measurement insoles: show the distribution of pressure on the foot during axial work.

For a perfect care in extreme sports it is necessary to evaluate functions and their course with the help of exact measurement and consequently to control the rehabilitation development. Muscular misbalance, strength deficits or bad neuromuscular systems can mostly only be detected and corrected after careful technical analysis. An excellent performance in sports and a good physical health status are no guarantee for non existent deficits.

Carpal tunnel syndrome: an ideal model to compare patient, physician and neurophysiologic orientated outcomes - Italian multicentric study of CTS (1123 hands)

R. Padua,* E. Romanini, I. Aprile and L. Padua
‘Italian CTS Study Group’, Dept. of Orthopaedics, Dept. of Neurology, UCSC Rome, Italy
A.Fa.R. Osp. Fatebenefratelli Isola Tiberina – Rome, Italy

Carpal tunnel syndrome (CTS) is a very common disease (10% life-time risk of developing this pathology) and has a particular clinical-instrumental pattern: clinical diagnosis is usually easy and sensitive, so is considered the gold standard test, but in the most cases, clinical diagnosis is only based on history and on referred symptoms while clinical examination is normal; on the other hand neurophysiological evaluation is a very sensitive diagnostic method (95%) and it is now considered fundamental to confirm the clinical diagnosis.

The ‘Italian CTS Study Group’ has performed a wide multicentric study (20 centres) on 1123 idiopathic CTS hands through a large and multi-prospective evaluation.

* Author for correspondence.
A thorough assessment was obtained through: (1) the patient-oriented measurement by a validated self-administered questionnaire (Boston Carpal Tunnel Questionnaire—using the validated Italian version); (2) the physician-oriented evaluation (an historical-objective scale was used); and (3) the neurophysiological evaluation (according to the neurophysiological classification and following the American Association of Electrodiagnostic Medicine guidelines).

New and interesting data were observed: male and female CTS differences, the different behaviours of symptoms and hand function in relation to the nerve impairment etc.

Some of the results have confirmed some commonly-accepted data, conclusively assessing it with a well-represented population and using validated measurements. Moreover, such an amount of data disclosed new interesting relationships. The clinical-neurophysiological assessment, never performed before in such a wide population, appeared extremely consistent and especially the patient-oriented measurement of CTS provides interesting information. Vice versa, CTS appeared as an ideal model to evaluate the importance of different parameters for outcome assessment.

**Outcome measurements in rheumatological rehabilitation**

PRELIMINARY RESULTS OF A QUALITY MANAGEMENT IN AMBULATORY PATIENTS WITH MUSCULOSKELETAL PAIN OF NON-INFLAMMATORY ORIGIN

M. Offenbaecher,* H. Szika and P. Schoeps

Department of Physical Medicine and Rehabilitation, University Hospital, 80336 Munich, Germany

*Author for correspondence.*

**Purpose:** All over the world health care systems are undergoing major changes. Every physician has to consider not only the patients symptoms, diagnosis and therapy, but also the cost-effectiveness and quality of his work. In rheumatology and physical medicine the exact analysis of the patient’s outcome and prognosis of the disease is not only important for the patient himself, but also for the health professionals, including physicians, physical and occupational therapists, nurses and social workers. To achieve this goal, medicine offers either technical data e.g. erythrocyte sedimentation rate, X-rays, measurement of physical function or patient-centered disease specific or global health questionnaires, e.g. the Stanford Health Assessment Questionnaire (HAQ), the SF-36 and others. These instruments have been validated and have been found to be useful in short and long-term outcome studies.

Our objective was to assess disease variables and consequences of the disease in our ambulatory patients with musculoskeletal pain of non-inflammatory origin and eventually to evaluate the effect of an individualized therapy programme.

**Methods:** We administered a questionnaire consisting of pain variables (10 cm Visual Analog Scale, the McGill-Pain Questionnaire, a pain drawing), duration of symptoms, the HAQ, and the SF-36 to 40 out-patients of the Department of Physical Medicine and Rehabilitation at first contact. A diagnosis was made by one of the physicians in the department and a therapy programme was prescribed including physiotherapy, massage, electrotherapy and medication depending on the disorder diagnosed. After therapy a second questionnaire was sent to the patients to evaluate the outcome.

**Results:** The age range was between 26 and 84 years (mean 53). Ten patients were diagnosed with a disorder of the upper extremity (DUE) (including shoulder, elbow and cervical spine disorder), 11 with disorders of the lower extremity (DLE) (hip and knee osteoarthritis), 9 with a disorder of the thoracic spine (DTS) (including osteoporosis) and 10 patients with a disorder of the lower back (DLB). The questionnaire variables (means) in the diagnostic groups (DUE/DLE/DTS/DLB) were distributed as follows: duration of symptoms (in months) 74/96/209/77, pain today 4/5.4/5.6/3.7, and the HAQ scores 0.31/0.57/0.54/0.63. After therapy self-reported improvement on a 5-point Likert scale was found in 72% of the patients in global health, 61% in pain variables, 61% in stiffness and range of motion and in 61% in quality of life.

**Conclusion:** We found this approach of measuring outcome in ambulatory patients with musculoskeletal pain of non-inflammatory origin with a patient-centered questionnaire feasible and valuable in documenting the patient’s symptoms and disabilities in daily life.
Abstracts

NON-PHARMACOLOGICAL TREATMENT IN OSTEOARTHRITIS: A NEED FOR STANDARDIZED GUIDELINES FOR MEASURING OUTCOMES OF THERAPY IN PHYSICAL MEDICINE AND REHABILITATION

B. Szebenyi,† G. Bálint† and J. R. Kirwan‡
† National Institute of Rheumatology and Physiotherapy, Budapest, Hungary
‡ Rheumatology Unit, University of Bristol, UK

Non-pharmacological therapies in osteoarthritis represent probably the oldest treatment in medical history, in the forms of hot bath, warm and cold packs. They can be divided into management with different physical energies (physiotherapy), or appliances (occupational therapy), and they also address the various psychosocial issues.

Therapeutic exercises improve muscle strength, endurance and aerobic capacity of the patients, decrease their pain and increase the range of movements of joints. Weight loss is of proven benefit in obese patients with osteoarthritis of the knee. Orthotics, including a brace for an unstable joint, can be beneficial in certain forms of osteoarthritis. Patient education and the management of the psychosocial consequences are priority tasks. Other treatments, such as cold and heat, electrotherapy, ultrasound, acupuncture, hydrotherapy and spa treatment are widely used, although their physiological effects and clinical efficacy are not satisfactorily proven so far.

These therapies cover a wide range of medical specialities, such as rheumatology, physiotherapy, occupational therapy, psychology, experts in medical rehabilitation and health care workers of different backgrounds. The provision of a unified guideline-system for all these specific sub-specialities seems to be an impossible idea. In addition, the specific nature and heterogeneity of these therapeutic options sometimes make them difficult to compare with placebo treatment. Some of them – such as hydro-therapy, balneotherapy and pulsed electromagnetic fields – include the effects of a combination of different physical energies. Others – such as treatment at a bath or a spa resort – are a mixture of various physical and psychological effects. In spite of all these difficulties, in order to prove their efficacy, comparative experiments on non-pharmacological therapies should be undertaken as rigorously as those used in drug trials.

We propose that guidelines should be more evidence based in the future than they are today (table 1). In order to achieve this goal, their construct and content validity, as well as their practicability and clinical utility in the routine practice should also be analytically considered.

---

Table 1

| Validation measure       | Traditional guidelines                                                                 | Proposed guidelines                                                                 |
|--------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Construct validity       | Consensus between acknowledged experts                                                | Standardized and explicit data acquisition methods                                |
| Content validity         | Expert opinions                                                                       | Meta-analyses and systematic reviews of the literature, particularly of randomized controlled traits |
| Practicability           | Sometimes field tested                                                                 | Field testing in routine clinical practice                                          |
| Clinical utility-improvement of patients’ care | Assertion                                                                            | Randomized controlled trails of the use of guidelines                              |

---

EVALUATION AND IMPLEMENTATION THE CANADIAN OCCUPATIONAL PERFORMANCE MEASURE (COPM) IN REHABILITATION

N. L. U. van Meeteren,† ‡ † T. Effing, † I. Strato,† E. J. A. Sleegers† and P. J. M. Helders†
† Centre for Rehabilitation and Nutritional Sciences of the University Hospital Utrecht, Huispostnummer F00.810-POB 85500, NL-3508, GA Utrecht, The Netherlands
‡ Rudolf Magnus Institute for Neurosciences, Department of Medical Pharmacology, Faculty of Medicine, Utrecht University, The Netherlands; e-mail: n.vanmeeteren@pmbr.azu.nl

Purpose: Rehabilitation professionals intend to qualify and quantify self-perceptions of occupational performances of individual patients in areas of self-care, productivity and leisure. The COPM—a concept based, semi-structured interview—was constructed as such a measurement tool. Consequently, we wanted to evaluate its theoretical propositions and to investigate its cliniometric and methodologic properties in patients with acute and chronic pathologies, before implementation in rehabilitation practice.

Methods: In order to do so we: evaluated the theoretical concept of the COPM in relation to actual concepts

* Author for correspondence.
from: (1) movement sciences concerning ‘motor learning’ and ‘integrated behavioural theories’; (2) the ‘Beta- draft of the International Classification of Impairments, Disabilities and Handicaps-II’ (β-ICIDH-II); and (3) the ‘disablement process’. Described ‘activities’ related clinical characteristics of a group of 60 hemophilia patients, using the COPM with the Dutch-Arthritis Impact Scale as a reference, and evaluated their mutual contrasts. Monitored the clinical course of 17 post-traumatic plastic hand-surgery patients with help of the COPM, the Sequential Occupational Dexterity Assessment and the Action Research Arm test and subsequently analysed ‘change over time’ contrasts to estimate its responsiveness. Finally we implemented the COPM in regular clinical care of the Department of Occupational Therapy (OT) as a standard measurement tool to evaluate all patients entrusted to the OT over a 12 month period.

Results and conclusions: The COPM proved to fit best with the conceptual proposals of the recently published -ICIDH-II, although semantics differ. Still, explicit readjustment and thorough up date of its theoretical propositions is necessary. It was found that the COPM is an adequate tool to describe the perceptions of ‘activities’ of patients and to detect rather small, but relevant changes over time. We infer that the plasticity of the practical construct of the COPM grinds rehabilitation professionals the opportunity to use it as a tool for diagnosis of disablement and but also as an outcome measure device with good methodological properties (based on former research and ours), both in research as well as in clinical care. Implementation of the COPM in clinical (OT) care warrants patient directed and tailored diagnosis and intervention choices.

THE DISABILITIES OF THE ARM, SHOULDER, HAND (DASH) QUESTIONNAIRE : DO WE NEED IT AND CAN WE USE IT?

G. Germann, A. Harth* and G. Wind
Dept. of Burns, Plastic and Hand Surgery, BG Unfallklinik, D-67071 Ludwigshafen, Germany

In the current climate of restricted finances, the demand for information regarding health-status is greater than ever before, but if developments in the field of health-assessment are to proceed in an orderly fashion then the instruments used to evaluate outcome must be suitable and reliable. Furthermore, if health-care professionals claim to be removing barriers to independence, facilitating social re-integration and improving the quality of clients’ lives, then, in accordance with the International Classification of Impairments, Disabilities and Handicaps (ICIDH-2) it is necessary for them to identify outcome measures which account for this multi-dimensional concept of health. Within this context, this paper presents the structure and dimensions of the Disability of Arm, Shoulder and Hand (DASH Version 2.0, 1997) questionnaire, which also includes items from the SF-36.

Permission to translate this work into German was granted to the authors by the American Academy of Orthopaedic Surgeons. An international/inter-disciplinary group consisting of a surgeon, occupational therapist and psychologist commenced this work in January 1997. The aims, therefore, were twofold: namely, first to translate the questionnaire and then secondly, to explore the usefulness of the measure in evaluating outcomes following clinical interventions among hand-injured patients. The procedure involved a forward/backward/forward method of translation; review by neutral reviewers, amendment to the first draft, pilot studies and, finally, inclusion in clinical trials. Testing was carried out together with an independent, generic disability index. Samples included patients who had suffered: (1) amputation of the second ray (n = 79); and (2) injuries of the proximal interphalangeal joint (n = 39). Mean values for the disability index and sub-scales of DASH were calculated and statistical analyses were carried out. Pearson’s correlation coefficient were computed and indicated a moderate to high correlation between the variables: disability index to DASH sub-scales of symptoms and functioning, for both clinical groups (group 1, r = 0.8, r = 0.7; group 2, r = 0.7, r = 0.7). A high correlation was also indicated between the sub-scales (r = 0.8). Responsiveness to changes in status was demonstrated by significant differences between baseline and follow-up assessments (p = 0.001).

Although the translation process was beset with challenges, both practical and methodological, we believe that the German version of DASH promises to be a useful adjunct in evaluating rehabilitation outcomes. It demonstrates validity, is responsive, easy to use and well accepted by patients and staff. However, adequate reliability studies have yet to be performed and normative data for comparative purposes collected, before fully endorsing this instrument to the scientific community.

* Author for correspondence.
Abstracts

Outcome measurements in hospital based rehabilitation and related topics

FACTORS CONTRIBUTING TO PROLONGED LENGTH OF STAY FOR REHABILITATION INPATIENTS - A QUALITY CONTROL APPROACH

F. Köhler* and H. G. Dickson
Department of Rehabilitation and Geriatric Medicine, Liverpool and Braeside Hospitals, NSW, Australia; e-mail: f.kohler@unsw.edu.au

One way of ensuring production of adequate standards in manufacturing is to analyse the product of the factory. A general guideline for quality control as suggested by Deming is that anything that falls outside three deviations of the mean requires explanation and is suggestive of a serious deficiency.

We analysed the length of stay of patients who were admitted to our rehabilitation unit according to these principles.

In our unit all rehabilitation admissions have data collected according to the Uniform Data Set for medical rehabilitation. Less than 2% of our patients stayed longer than three standard deviations above the mean lengths of stay.

We identified the need for a high level of independence, by patients who were alone for prolonged periods after discharge, time waiting for home modifications and intercurrent illnesses as factors contributing to the increased length of stay.

We conclude that while many of the factors resulting in a prolonged stay in a rehabilitation ward are outside the control of the rehabilitation unit it is worthwhile to identify these factors. It is worthwhile to review these patients to ensure that there are factors, which can explain their prolonged hospital stay.

EVALUATION OF THE SATISFACTION OF PATIENTS AND THE QUALITY OF CARE IN A UNIVERSITY REHABILITATION UNIT

P.-A. Waridel* and D. Uebelhart
Clinic of Rehabilitation Medicine, University Hospital, Geneva, Switzerland

The rationale of our study was to assess the overall degree of satisfaction of stationary patients hospitalized in one of the units of our rehabilitation ward using a normalized blinded questionnaire of satisfaction used in western Switzerland. The objective was both to get a clear and objective picture of our care system in order to improve the provided services and to develop an easy tool with an optimal cost-benefit ratio to assess the level of satisfaction of our inpatients in a context of drastic controls of direct and indirect costs of the services. A complete list of patients who were referred to this rehabilitation unit during one year was initially established. A total of 216 patients could be identified and 214 were contacted by mail with an explanation letter and a questionnaire that had to fill up and to be sent back without any charge for the patient to our office for analysis. The sent questionnaire did ask each patient to provide data on age, sex, disease or accident and the length of the stay in the rehabilitation unit. In addition, a series of 7 questions did relate to the perception of the various services offered to the patient during his (her) period of hospitalization. More precisely, these questions did cover the quality of reception, the various cares, the informations provided on the disease, the treatments and the clinical evolution, the multidisciplinary meetings, the length of the hospital period, the food and rooms, the organization of the treatments after discharge and an overall evaluation of the whole period. For each question, the patients had to give their appreciation on a Visual Analogue Scale (VAS) and also to provide open comments on the best and the worst aspects.

Out of 214 questionnaires sent by mail, 14 came back incomplete because the address had changed or the patients were deceased. A total of 50 questionnaires (25%) were sent back to the office and could be analysed independently. The mean\(\pm\)sd age of the patients was 56\(\pm\)16 yrs, both sex were represented (F = 19; M = 31); most of the patients were admitted for a neurological or orthopaedic condition or disease (n = 38), whereas only few came as a consequence of an accident (n = 12). The mean\(\pm\)sd results of VAS were 7.87\(\pm\)3.11 for quality of reception, 8.19\(\pm\)3.06 for quality of care, 7.12\(\pm\)3.52 for the quality of information, but only 4.94\(\pm\)3.45 for length of stay. The overall satisfaction level rated at 8.19\(\pm\)2.84. The opinions expressed in the open comments were as follows: the most relevant positive points listed were the disposibility and the competence of the team of professionals, mostly the nurses and the physiotherapists; the most relevant negative points listed were the room comfort and available space, the number of bathrooms, the hospital food, and the length of stay (9 patients wanted it shorter, 12 longer).

This study was based on a questionnaire for the evaluation of the satisfaction of patients and the quality of care did provide the following information. Only 25% of the patients contacted by mail did answer and

* Author for correspondence. 

* Author for correspondence.
provide their opinion, which is low. The use of the questionnaire was well understood by the patients and both the results from the VAS and the open comments could be analysed. The improvement of quality seems to be linked to factors depending from the institution itself (rooms, food, bathrooms) and to factors depending on the rehabilitation team (length of stay, provided information). We do intend to initially correct those factors linked to the team of professionals and evaluate the results with a second questionnaire in one year. This issue addresses the necessity of a continuous improvement in the services provided to the patients.

ARE THE RATES OF ABSENTEEISM BECAUSE OF SICKNESS TRUE INDICATORS OF NEED OR EFFECT OF REHABILITATION?

C. M. Erben* and K. D. Vitt‡
† Biometisches Zentrum NORD beim Medizinischen Dienst der Krankenversicherung Schleswig-Holstein, Lübeck, Germany
‡ Medizinischer Dienst der Krankenversicherung Schleswig-Holstein, Katharinenstr. 11, Lübeck, Germany

In 1977 Wagner told us about epidemiological absenteeism trend. Following this concept Gerdes (1993) argued, that sickness-absence is no indicator for the outcome of medical rehabilitation. At least Stallmann (1996) could show the epidemiological trend to be identical with Galton’s ‘reversion’, just developed from the fundamental concept for regression and correlation.

We show, based on a sample of 50000 people whose absenteeism-times during 6 years were analysed: (1) that there is no trend sensu Wagner; (2) that there will be found a positive correlation between the absenteeism-times from one year to the other; (3) that we can detect the need of rehabilitation by analysing the history of absenteeism of a person; and (4) that there is an effect of rehabilitation, what can be measured by the rates of sickness-absenteeism.

The large size of the sample allows to analyse these effects for special diagnostic groups, so we can find really different behaviour for various diagnostic structure in sickness-absence. The effect of rehabilitation depends on both, the absenteeism-structure and the point of time in life-history, it started. Often, the decision to start a rehabilitation process, is to late and lowers the effect. The data indicate those circumstances, what increases or decreases the rate of absence-days before and after a rehabilitation process.

MANAGED CARE ELEMENTS IN THE GERMAN REHABILITATION SYSTEM

R. Seitz
University of Ulm, Department of Health Economics, D-89069 Ulm, Germany; e-mail: robert.seitz@mathematik.uni-ulm.de

Purpose: Health care systems are changing rapidly in all industrialized countries. In Germany the rehabilitation system is especially affected by cost containing measures such as global budgets and strict guidelines, e.g. for the length of stay and minimal time interval between two inpatient stays. From an economic point of view such undifferentiated measures lead to unsatisfactory results. More efficiency is expected from managed care (MC). The purpose of this study is to examine possible effects of the introduction of MC elements to the rehabilitation system. A central feature of MC is management that takes place at the micro level of single health plans in a competitive environment. Existing US and Swiss MC organizations usually are integrated health plans which are responsible for both providing health care and insuring their members.

Methods: We examine the current German rehabilitation system and compare it with theoretical hypotheses and empirical findings on MC. In particular, we examine: (1) which MC elements already exist in the current system; (2) which elements could be introduced to improve the system; (3) which risks could result from the introduction of MC instruments; and (4) the role of outcomes assessment in rehabilitation and MC.

Results: In Germany, mainly pension insurance funds (PIFs) are responsible for rehabilitation. These funds are financed through payroll taxes and, at the same time, have rehabilitation care provided in own clinics or in contracted private clinics. As a consequence, integration and selective contracting are much more pronounced than in the acute care sector. However, the insured (patients) do not have a free choice of PIFs and there is no competition between the PIFs. There is competition at the side of the providers of rehabilitative care. Outcomes research is routinely done in the rehabilitation clinics, but the remuneration (by per diems) is not related to outcomes and does not create incentives to improve efficiency. The variety of payers of health care services (e.g. sickness funds, PIFs, employers) and the strict separation of out-patient care and in-patient acute care lead to a poorly integrated care process. The main aim of

* Author for correspondence.
rehabilitation measures, to improve or maintain people’s work capacity, is therefore difficult to achieve.

**Conclusion:** The core principle of MC, i.e. active management policies carried out by competing health plans which at the same time act as insurers, is not compatible with the existing structure of the rehabilitation system in Germany. The co-ordination of the whole care process, e.g. through the introduction of patient-centred, sector transcending case management presupposes more integration (increased co-operation) of different payers and different segments of care. Assessment of long-term outcomes is complicated by the diversity of providers and payers.

Selected MC instruments such as prospective payment systems (PPS) could be implemented without changing the underlying structures in the in-patient sector. PPS should be related to functional characteristics of the patient and could be adapted according to the outcomes of care. Quality assurance measures are necessary to control negative side effects of incentive-based reimbursement schemes.

**OUTCOME EVALUATION OF COMPLEX REHABILITATION - MEANS OF PERFECTION OF REHABILITATION PROCESS**

V. Shestakov, A. Diskin and E. Starobina*
Saint-Petersburg Institute for Evaluation of Working Capacity of Disabled, Russia; e-mail: star@copper.hop.stu.neva.ru

For estimation of efficiency of federal rehabilitation service activity the authors develop the system of evaluation of its results.

In Russia according to the Law ‘About Social Protection of Disabled’ (1996) the individual rehabilitation programme is developed for every disabled person. It includes blocks of medical, professional and social rehabilitation. The individual programme is developed in accordance with the base programme, which is the standard, determining a complex rehabilitation measures taking into account disability of the person. It contains the recommended measures of medical, professional and social rehabilitation, forms and terms of their performance and results, which had to be achieved. By results of individual programme the quality of individual rehabilitation is determined on each block of the programme separately.

The developed system was approved in Saint-Petersburg main bureau of medico-social evaluation. Results of the rehabilitation of 537 disabled with various diseases was analysed twice: in the beginning of rehabilitation and in a year. The process of their rehabilitation was controlled by rehabilitologist. Our method allows to co-ordinate work of different services and to observe a sequence of rehabilitation stages, to get the better outcomes of rehabilitation. The method has high accessible information and allows direct optimally rehabilitation process.

**ASSESSMENT OF CAPACITIES IN DEALING WITH WORK SITUATIONS IN PSYCHOSOMATIC INPATIENTS PARTICIPATING IN A WORK HARDENING PROGRAMME: ON THE NECESSITY OF OBJECTIVE STANDARDS, PATIENTS’ VIEWPOINT AND SOCIAL REALITY**

A. Hillert,* U. Cuntz and M. M. Fichter
Medizinisch-Psychosomatische Klinik Roseneck, Centre for Behavioural Medicine, Am Roseneck 6, D-83209 Prien am Chiemsee, Germany

**Purpose:** Beside the experts measurement of patients capacities in dealing with work situations (CDWS) according to professional standards, an adequate estimation of ones own capacities and competence is a crucial requisite of a successful occupational performance. Especially in psychosomatic disorders symptoms as well as self-esteem might be impaired by severe problems at work. Differences between self-rating and rating by superiors may have great impact not only on satisfaction and performance at work but on the psychosocial situation of the patient as a whole. Because of this we compared patients self- and experts-rating and evaluated factors responsible for discordance.

**Methods:** 151 psychosomatic inpatients with different psychosomatic disorders and serious vocational problems were assigned to a work hardening programme. The participants worked half a day for about 4 weeks in a regular working field outside the hospital adapted to their education, previous occupation and needs. A questionnaire, measuring CDWS, coping, co-operation with colleagues and adequacy of requirements was administered simultaneously to the patients and their supervisors at the end of the working term.

**Results:** Within the participants subgroups could be distinguished. Patients striving for retirement and patients with a poor CDWS according to their own perception before the programme were of special interest. These groups rated their own coping during the programme significantly more negative than their supervisors did. Actually the supervisors didn’t perceive any difference between these groups and the other patients.
Diagnostic aspects (anxiety and/or depression) only inconsistently modified the self and expert assessments. Conclusion: In subgroups of psychosomatic patients self and experts assessments concerning the CDWS differs significantly. These patients present with predominantly low self-esteem or high expectations concerning their own work-performance and/or motivational aspects. In our study these factors were mainly influenced by personality-traits and the individual socio-economic situation. The patients expectation are assumed to be highly important for their long-term outcome. Therefore the therapists/experts and the patients self assessments should be evaluated simultaneously as a bi-dimensional measurement in psychosomatic rehabilitation.

The listed criteria are the most important aspects of efficiency of rehabilitation and also allow to estimate final outcome, i.e. to answer questions: what, how and by what means they are made, by what resources the planned purpose are achieved.

Rehabilitation potential and character of disability of 278 patients with cardiovascular diseases was evaluated. The rehabilitation programmes, including measures of medical, psychological, vocational and social rehabilitation was nominated. In 6 months after a course of intensive rehabilitation the following results were revealed. At 85 (31%) patients the high level of functional independence was established, at 44 (16%) – low, and at 147 (53%) – average. Low and the average levels was established basically because of insufficient efficiency of social and vocational measures. The further rehabilitation of these patients, and also improvement of rehabilitation service was carried out in directions of social and vocational rehabilitation.

The creation of system parameters of outcomes and of efficiency of rehabilitation allowed to develop a number of the practical recommendations on perfection of system of rehabilitation and organization of Russian state service of rehabilitation of the disabled.

POSTER PRESENTATIONS

Outcomes on general, neurological and cardiovascular rehabilitation

GENERAL REHABILITATION

METHODOLOGY OF A MEASUREMENT OF EFFICIENCY OF REHABILITATION

E. Starobina* and A. Riabokon
Saint Petersburg Inst. For Evaluation of Working Capacity of Disabled, Box 79, RUS–195067, St. Petersburg, Russia; e-mail: star@copper.hop.stu.neva.ru

Creating system of criteria, parameters, methods of a measurement of outcome and efficiency of rehabilitation the research was carried out.

Concepts of ‘the outcome of rehabilitation’ and ‘the efficiency of rehabilitation’ should be considered according to various levels of system of rehabilitation. The criterion of efficiency needs to be considered in domain of: (1) to system of rehabilitation in scales of the country, region, institution; and (2) rehabilitation of person. These concepts can not coincide even to be in opposite. Concrete purposes and tasks, criteria and parameters correspond to each level of system of rehabilitation

The purposes at various levels of system of rehabilitation should be concretized with an establishment of precise standards, which achievement can serve criterion of efficiency. The authors allocate three kinds of criteria of a measurement of efficiency of rehabilitation:

- the productivity (characterizes a degree of achievement put before system of rehabilitation of the purposes);
- the profitability (establishes allowable ratio of outcome of rehabilitation and expenses for its achievement); and
- the quality (assumes comparison of outcome of rehabilitation with planned and degree of allowable deviations from it).

* Author for correspondence.

THE STUDY OF EFFECTIVENESS OF COMMUNITY BASED REHABILITATION

A. Bobinac Georgievski,* M. Jakšić, A. Polovina and M. Katušić

Special Unit for Community Based Rehabilitation, ‘Sveti Duh’; General Hospital, Zagreb, Croatia

Purpose: The purpose of research was to compare the effectiveness of two different rehabilitation processes for patients with musculoskeletal impairments: community based rehabilitation (CBR) and institutional rehabilitation (IR) (based in Department of Physical Medicine and Rehabilitation in General Hospital ‘Sveti Duh’).

* Author for correspondence.