THE INTERNATIONAL CLASSIFICATION OF IMPAIRMENTS, DISABILITIES, AND HANDICAPS (ICIDH): ITS USE IN REHABILITATION

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When considering areas that could benefit from the International Classification of Impairments, Disabilities, and Handicaps (ICIDH), one of the first that comes to mind is rehabilitation (1).

Definition of rehabilitation

The best known definition of the term “rehabilitation” seems to be the “Vienna” definition (1955), which reads as follows: “Rehabilitation is the complex of measures and activities aimed at raising the physical, mental, social, occupational and economic possibilities of a handicapped person to the highest possible level he can achieve and/or at maintaining them at this level”.

The United Nations World Programme of Action concerning Disabled Persons (2) established in 1983, developed the following definition taking into account the ICIDH definitions:

“Rehabilitation means a goal-oriented and time-limited process aimed at enabling an impaired person to reach an optimum mental, physical and/or social functional level, thus providing her or him with tools to change her or his own life. It can involve measures intended to compensate for a loss of function or a functional limitation (for example by technical aids) and other measures intended to facilitate social adjustment or readjustment”.

Rehabilitation activities are clearly focused on (potential) consequences of diseases, accidents and conditions from birth. This explains why the ICIDH is of interest to all those involved in rehabilitation.

Since the publication of the ICIDH in 1980 several types of application in the rehabilitation field have been reported in the literature. This article aims to provide an overview of the application of the ICIDH in the field of rehabilitation, showing possibilities and giving examples of actual use. The authors hope to stimulate the use of the classification and the exchange of information; this may avoid duplication of effort and could lead to improvements in the classification.

This article is confined to experiences with respect to rehabilitation facilities, which means a somewhat restricted area of rehabilitation. A broader overview of applications, including other areas, is given by de Kleijn & Muller (3) and by the Dutch National Council for Public Health (4), from which some parts of this article are derived.

Possibilities of the ICIDH

Why are classifications important? Using the same classification means speaking a common language and using a common framework. This leads to better understanding and communication, which in turn can result in improved services. A classification also means structuring a certain area, thus facilitating policy formulation, data collection, statistics and documentation of information. Comparability of data and exchange of information can both be enhanced.

This also holds for a classification such as the ICIDH, within the area of rehabilitation (5-7).

Depending on the user’s aim, the IDH classification can be used to different extents (basic concepts, some details/codes/categories, one of the three sub-classifications or all parts/details) and at different levels. At the micro level (individual), the classification can be used directly in patient care: for diagnosis, problem ascertainment and evaluation of treatment. At the meso level (organizations) its uses are to be found within institutions. Data collected at the micro level can serve as a source of information for policy making and planning, for example, to define priorities for allocating available resources among different sections and functions of the institutions, and to determine the number of staff required for certain purposes. The macro levels include all those which exceed the level of the institution: local, regional, national, federal and international levels. On each of these levels, consistency is needed for policy formulation and for data collection. Following are some examples of actual use of the ICIDH for various purposes to different extents and at different levels, in a number of countries.

General applications of the ICIDH

Micro level

Most examples of ICIDH use in general rehabilitation seem to be at the micro level (individual).

At Rotterdam University Hospital (8) the ICIDH is used in the daily routine of the rehabilitation department (diagnostics), in the curricula of medical students and specialists in rehabilitation medicine, as well as in postgraduate education. It is also being used in a research project involving 1,000 patients, the purpose of which is to check the usefulness of
I and D codes in classifying rehabilitation diagnoses and evaluating rehabilitation practice. The latter project of the ICIDH contributes considerably to the elaboration of concepts in the philosophy and methodology of rehabilitation. Adequate training of physicians and other personnel is however necessary in order to obtain reliable findings, and use of the ICIDH appears to be very time-consuming; essential items are missing in some chapters and in other chapters the classification of items is not practical.

Lankhorst et al. (9) report on a feasibility study conducted in the Centre for Rheumatology and Rehabilitation, Amsterdam (The Netherlands) in the early 1980s: 1,148 patients were classified by their physicians, the opinion of the physiotherapist. Feasibility of the ICIDH was recorded, and 21 patients were classified twice to assess reliability. The results suggest that the I code is suitable for patients with locomotor disorders. The use of the D code presented several problems (very time-consuming, and low reliability of D code assignments). The H code seemed to allow for simple meaningful scoring (taking it tempting to use it as a substitute for the IBD code), and as a result of this project, the Centre used only the H code for some time. In the opinion of Lankhorst, the resulting handicap profile turned out to be a useful summary of the patient's disabilities but not a measure of the social consequences of disablement, which was the original aim of the classification. Another criticism concerns the absence within the ICIDH of subjective perception of impairments and disabilities.

Because of these experiences the Centre later started a project (10) aiming at the development of an instrument based on the ICIDH which can be used in the daily practice of rehabilitation medicine. The use of the D code can be advantageous. The instrument is an adapted version of the (Disability) list, consisting of 28 items in five fields (mobility, self-care, social activities, psychological status and communication). Four-point severity scales were used for rating disabilities and related perceived problems. The instrument has been used for screening and problems in 400 patients. Feasibility was excellent, and the average amount of time needed was 3 minutes per patient. A computerized data-base structure was developed for evaluation of serial data from individuals or patient groups during the rehabilitation process. Analysis of disabilities and related problems shows that adaptive processes are relevant in rehabilitation medicine. Perceived problems are often less severe than objectively assessed disabilities in a chronic phase of disease; this may influence the action taken.

Minaire (11) reports on ICIDH use in France for individual assessments in rehabilitation, and for the education and training of staff. In the rehabilitation centre of Coubert (France) the ICIDH has been in use since 1982. Charpentier mentions some experiences based on the analysis of 953 case files in this centre. For each admission and discharge diagnoses are included: 1 main diagnosis, up to 5 secondary diagnoses, up to 8 impairments, up to 10 disabilities, up to 5 handicaps. The impairments recorded appeared to be mainly skeletal and disfiguring impairments. Within the disability area of personal care, locomotor and body disposition disabilities are most often reported. A significant difference in the social area of most disabilities is found between admission and discharge, providing an indication of the effectiveness of treatment. At the handicap level significant differences between admission and discharge have been found only for physical independence and mobility handicaps. Charpentier concludes that the ICIDH makes it possible to identify rehabilitation needs of patients and to evaluate the services required.

Nadeau et al. (12) announced the introduction of the ICIDH in a computerized hospital information system. In Montreal, Putterman describes intake forms used by nurses, the preparation of a treatment plan, the introduction of such systems and related problems. Particularly in the area of ethics.

The ICIDH as a framework for documenting small gains is described by Nieuwenhuijsen. The Michigan Commission for the Blind wanted to create an instrument that allowed for quantitative measures of small gains in functional ability. These small gains must be measured in order to demonstrate programme effectiveness. The instrument, now in use, is based on the ICIDH including most of the D codes.

In Australia, Ford carried out a project in Caulfield Hospital which involved a number of exercises to educate staff about the principles and projected uses of the ICIDH. Within selected units of the hospital, the possibilities of the classification to serve as a summary of the patient's physical, intellectual and social status at the time of discharge from hospital were examined. The main difficulties encountered were logistical. The routine use of the classification as part of a patient's discharge status was abandoned because of the time needed for consultation and discussion between disciplines.

A more optimistic report has been given by Last (14) who has described experiences with the ICIDH in Australia's largest nursing home. Coding has been undertaken for 102 residents using the ICIDH. This has proved simple and effective as a means of categorizing impairments and disabilities. A computer program allows for the storage and retrieval of up to 8 ICD diagnoses, 6 impairments, 30 disabilities and 6 handicaps per resident. Experienced nurses...
can code a person in half an hour. Periodic review every six months is now planned for all residents. This has been abandoned because its usefulness was less obvious. The system will allow for efficient surveillance of the progress of individual residents, will highlight those calling for clinical review, and will identify those who may benefit from specific management and research programmes.

Macro level

Most of the examples mentioned above concern the use of the ICIDH at the micro level (individual), although some are tending to serve at the meso level (organization). To our knowledge, only a very few examples exist at macro level. One of them is the UN programme already mentioned (2). The Council of Europe (15) used the ICIDH concepts in a similar way in its policy statements on the rehabilitation of disabled people.

L'Office des personnes handicapées du Québec, a provincial government agency mandated to oversee and, if necessary, enforce the application of legislation concerning the rights of handicapped persons in Québec, has proposed a comprehensive policy aiming at the social integration of disabled persons through the elimination of factors contributing to an eventual impairment (e.g. chemical agents, rubella, alcohol and drug abuse), an intervention model to prevent or minimize the impact of impairment or disability as well as the elimination of physical and social barriers (e.g. convenience of buildings, access to the workforce, adequate income). In January 1984 the Québec government officially adopted On equal terms (16) which is based on the conceptual model of the ICIDH.

In another sense, but still at the macro level, the use of the ICIDH concepts and categories is reported within the framework of community-based rehabilitation in Punjab, Pakistan (see Finnstam et al. (17) and Grimby et al. (18)). Van der Meulen used the ICIDH concepts in a comparable way in Guinea-Bissau (Community-based rehabilitation in Guinea-Bissau, personal communication, 1988).

In the area of training, Der Wegweiser für Ärzte (19) is another example of the use of ICIDH concepts, terms and categories in an informative booklet sent to all medical doctors in the Federal Republic of Germany.

Use of the ICIDH for the rehabilitation of special groups

Children and adolescents

Pfeiffer (20) compared the current register of consequences of disease in children and young people in Czechoslovakia with the ICIDH. He examined the medical records of children with locomotor disorders and made use of the majority of items from the ICIDH. For some disabilities he developed special severity scales, which are derived to some extent from the I code. He also consulted a group of specialists interested in the problems of children with deafness, blindness and psychiatric disabilities.

Ferngren et al. (21) tested the ICIDH on the admission records of 60 mentally-retarded children in Sweden. They compared the results with, medical, psychological and social data and found a positive correlation between the scores of the ICIDH and the records; they divided the mentally retarded children into two groups: one with mild and the other with severe mental retardation, and were especially interested in the severity of disabilities to see whether it was possible to identify progress in people moving from a big institution to smaller group homes. The conclusion was that the D code was useful in some aspects concerning personal care. Ferngren modified the handicap code of ICIDH for a study of 6-7 year-old mentally-retarded children and concluded that it is possible to use it for children in this age group.

In the German Democratic Republic, Seidel & Tscherner (22) examined 480 physically or mentally impaired children in the age group 12-16 years, including 208 with moderate mental retardation, and classified them with the help of the D code. Especially for severely physically-impaired children in this age group, selected items are suitable to specify degrees of disability. Good differentiating items (based on factor analyses) are “self-care”, “manual skill” and “locomotion”. For children with moderate mental retardation most scales are only of limited value because of lack of reliable data on the degree of disability.

In Portugal, Andrada et al. (23) made a retrospective study of a group of 98 children with spinal cord lesions using the D and H codes, in view of the rehabilitation efforts and problems connected with these children’s integration into the community. They selected D code scales (locomotion, excretion and mobility) and H code scales (physical independence, social integration, school and occupational integration) and used condensed severity scales. The authors emphasize that the detail for quantification provided by the ICIDH must be used to improve evaluation records.

Kamczuk & Martinow (USSR) tested 197 cerebral palsy children aged 7-14 years by means of ICIDH scales. The examination provided data about the type of disability and the problems facing these children and their families. The data are suitable for making complex medicosocial proposals for rehabilitation in order to solve the social problems of the children’s families.

Patients in rehabilitation

At the Cologne rehabilitation centre (Federal Republic of Germany) headed by Jochheim, several doctoral theses have studied the applicability of the
ICIDH to special diagnostic groups. Volkmann (23), Pohlmann (24) and Wassenberg (25) investigated the need for rehabilitation among cancer patients. They used two questionnaires they had designed with the ICIDH in mind. The authors concluded that the handicap instrument can serve only as a rough but very easily applicable tool for the detection of severe handicaps in larger populations. The disability classification provides a larger amount of information on the exact assessment of disabled persons and can be useful for the analysis of rehabilitation needs as well as for medical certificates.

Grimby et al. (26) followed 76 consecutive stroke patients in a rehabilitation ward over a period of 18 months in Sweden. The authors believe that the WHO system can be useful in describing the type and pattern of disablements in a group of patients admitted to a rehabilitation ward and that it provides information on staffing demands and criteria for admittance and discharge. The authors propose to restrict the ICIDH to two categories of consequences of disease or trauma: impairments and disabilities.

The conclusions of Alaranto & Kallio (27) are based on 212 patients who were evaluated one year after an operation for lumbar disc herniation in Finland, using the ICIDH concepts. The severity of disorders, impairments and disabilities was scaled into four classes. Handicap was evaluated by a team consisting of a physician, a social worker and a psychologist. The discerning analysis of these data items revealed a high correlation with the classes of occupational handicap. The severity scale for disability was not suited to most patients with low back pain. Assignment to the different scale categories of occupational handicap was relatively easy. The authors found it helpful to combine the ICIDH with the model proposed by Purola (28) who defined illness as "a disturbance in the equilibrium between the individual's internal psychobiological system and the state of his external system of social connections". Using both models it becomes easier to define the aim of medical rehabilitation of patients with chronic low back pain and to overcome social problems.

Two Cuban investigations (29) confirm the necessity of applying the D code. 94 case reports of an orthopaedic hospital were analysed and 115 patients were examined whose severity of disability and prognosis had been assessed by a team of physicians. The authors make a differentiated item analysis and develop proposals on changes in some scales.

**Elderly people**

In Denmark Dalgaard & Horwitz (29) assessed 50 geriatric patients, inpatients as well as outpatients. The authors reached the following conclusions. The I code is useful in assessing treatment strategies for geriatric patients, for checking all the organ systems, and for determining priority of treatment in a relevant range. The D code is useful in everyday clinical practice. The outcome and efficiency of treatment can be evaluated from admission to discharge. The D code is also used for assessing and evaluating the need for aids and assistance.

The H profile is noted as the best overview measure for evaluating the need for institutional care, and for aids and support services.

In the German Democratic Republic, 500 residents of an old people's home were interviewed. The object was to find a method suitable for measuring disabilities in the elderly. The aim of the first stage of the investigation was to construct appropriate scales of the D code by means of Guttman's scalogram analysis (30). Five different scales for problems were found enabling the interviewer to specify what a person can and cannot do. A substantial reduction in the number of D code items can, therefore, be made.

The Cologne rehabilitation centre also tested older people using the ICIDH. Scheele (31) assessed 107 residents of an old people's home and tested modified classifications of disabilities and handicaps. Compared with other questionnaires of handicaps in elderly people, the one developed by the Cologne rehabilitation centre makes possible a substantially more differentiated registration. The prognostic assessment provides important indications of deficits and seems promising for therapy and improvement. The H code enables a summarizing overview of the consequences of disabilities for social life. Both classification systems may serve as a basis for planning various intervention measures.

**Conclusions**

The examples mentioned above illustrate that the ICIDH has been applied by workers in the field of rehabilitation in many countries. The conceptual model is perceived as a helpful tool, although most authors make critical remarks and suggestions for improvement, which should be taken into account in case of revision of the classification. Most of the examples given above relate to ad hoc applications or research, only a few to implementation in routine use. The latter should be stimulated and experiences reported.

Regarding the level of application, many of the users apply the ICIDH at the micro level. In some cases the complete classification is chosen (codes or terms in medical records and discharge summaries), in other cases an instrument (form, questionnaire, scale) based on selected items of the ICIDH has been developed. Applications should be analysed in depth to find out whether frequently-used applications or instruments could be standardized.

Very few applications relate to the meso level, which explains the lack of statistical data in this contribution. More research in this area should be encouraged, and the results published, both at meso and macro levels. In order to stimulate use and to improve the quality of communication and data, ICIDH should be included in the curriculum of students and in the training of staff.

The ICIDH may also serve as the basis for obtaining better information on special groups, i.e. information...
on the degree of severity of disabilities, changes in severity and profile of disabilities, and consequently, rehabilitation health-care measures. The ICIDH can serve as a basis for differentiating between various health-care groups. Future research using the ICIDH should include aspects of age groups and specificity of impairment. The methodological basis of the disability and severity scales must be specified, and methods should be more closely linked to the process aspects of illness.

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SUMMARY
This article intends to show possibilities and examples of actual use of ICIDH in rehabilitation. Most of the examples concern the use of the classification at the individual level (patient profile, assessment of patient needs, evaluation of treatment, discharge status). Some can serve at meso level: aggregated data (statistics) for evaluation of treatment at institutional level, determination of numbers of staff required. A few other examples concern the use of the ICIDH at macro level in rehabilitation: national policy, education and training of professionals, community-based rehabilitation programmes. Special attention is given to examples of ICIDH use in rehabilitation of special groups such as children, the mentally retarded, cancer patients, elderly people, geriatric patients.

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