This report contains the collective views of an international group of experts and does not necessarily represent the decisions or the stated policy of the World Health Organization.

WORLD HEALTH ORGANIZATION

TECHNICAL REPORT SERIES

No. 419

WHO EXPERT COMMITTEE ON MEDICAL REHABILITATION

Second Report

WORLD HEALTH ORGANIZATION

GENEVA

1969

PRINTED IN SWITZERLAND

CONTENTS

WHO EXPERT COMMITTEE ON MEDICAL REHABILITATION

Geneva, 12-18 November 1968

Members : *

Dr B.O.A. Adebonojo, Consultant in Physical Medicine and Rehabilitation with the Federal Government of Nigeria, Royal Orthopaedic Hospital, Igbobi, Yaba, Nigeria

Miss M. Fish, Training Consultant, Social and Rehabilitation Services, Department of Health, Education, and Welfare, Washington, D.C., USA (*Vice-Chairman*)

Dr G. Gingras, Executive Director, Rehabilitation Institute of Montreal, Canada (*Rapporteur*)

Dr P. Houssa, Medical Director, Traumatology and Rehabilitation Centre, Brugmann University Hospital, Brussels, Belgium

Dr A. S. Manugian, Medical Director, Lebanon Hospital for Mental and Nervous Disorders, Asfuriyeh, Lebanon (*Chairman*)

Dr M.V. Sant, Director, All-India Institute of Physical Medicine and Rehabilitation, Mahalaxmi, Bombay, India

Dr Trân-Ngoc-Ninh, Professor of Orthopaedics, Faculty of Medicine, University of Saigon, Viet-Nam

Professor M. Weiss, Chief, Rehabilitation Institute, Warsaw School of Medicine, Konstancin, Poland

Representatives of other organizations :

United Nations :

Mr Esko Kosunen, Chief, Rehabilitation Unit for the Disabled, Social Development Division, UN, New York, USA

International Labour Office :

Mr N. E. Cooper, Manpower Planning and Organization Branch, ILO, Geneva, Switzerland

Dr N. Gavrilescu, Occupational Safety and Health Branch, ILO, Geneva, Switzerland

International Federation of Physical Medicine :

Dr A. P. M. van Gestel, Honorary Secretary, Rehabilitation Centre, Eindhoven, Netherlands

International Social Security Association :

Dr G. Espejo, Chief, Rehabilitation Clinic, Research Hospital, Puerto de Hierro, Madrid, Spain

International Society for Rehabilitation of the Disabled :

Dr G. Harlem, Medical Director, State Rehabilitation Institute, Refstad, Oslo, Norway

Secretariat :

Dr R. F. Bridgman, Chief Medical Officer, Organization of Medical Care, WHO (*Secretary*)

---

* Unable to attend : Professor T. P. Bogdanov, Head, Orthopaedics and Traumatology Department, Ukrainian Research Institute of Orthopaedics and Traumatology, Kiev, USSR.

Wld Hlth Org. techn. Rep. Ser., 1969, No. 419

WHO EXPERT COMMITTEE ON MEDICAL REHABILITATION

Second Report

1. INTRODUCTION

The WHO Expert Committee on Medical Rehabilitation met in Geneva from 12 to 18 November 1968.

The meeting was opened by Dr P. Dorolle, Deputy Director-General, who welcomed the participants on behalf of the Director-General. He emphasized that the rehabilitation of the disabled was a problem relevant to people of all ages and to countries at every level of development. In developed countries, the condition of all victims of accidents and crippling diseases could now be alleviated to some extent by the use of advanced rehabilitation techniques and modern aids and appliances, but steady increases in chronic degenerative diseases among the aged and in traffic accidents were swelling the demand for rehabilitation services. Rapid industrialization and greater longevity were giving rise to similar problems in most developing countries, where disability as a result of communicable diseases had always been high.

The previous WHO Expert Committee on Medical Rehabilitation,[1] which met in 1958, confined itself to discussing general principles and practices of basic importance. It recommended further study and the precise definition of terms used in connexion with rehabilitation. It also stressed the need for statistical studies concerning the magnitude and nature of the problem, co-ordination of rehabilitation machinery with social security schemes, closer co-ordination between medical rehabilitation and related services, further examination of training programmes for medical and allied personnel, and the continuation of research work.

2. DEFINITIONS

Taking into consideration the recommendations contained in the 1958 report,[1] the vast development of rehabilitation medicine, and the necessity for proper co-ordination of all important aspects of rehabilitation, the following definitions were agreed upon:

---

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1958, No. 158.

Rehabilitation

As applied to disability, this is the combined and co-ordinated use of medical, social, educational, and vocational measures for training or re-training the individual to the highest possible level of functional ability.

Medical rehabilitation

The process of medical care aiming at developing the functional and psychological abilities of the individual, and, if necessary, his compensatory mechanisms, so as to enable him to attain self-dependence and lead an active life.

> The current view is that medical rehabilitation should be considered very early in the process of medical treatment, and should start as soon as the patient's general condition allows. Techniques such as physiotherapy, occupational therapy, and speech therapy are prescribed in order to accelerate the natural regeneration processes and to prevent or reduce sequelae.
>
> For disabled persons with morphological or functional destruction, medical rehabilitation must concentrate on the promotion of all physiological processes essential to the development of compensatory mechanisms.
>
> Psychiatric rehabilitation starts at the time of the patient's first contact with the medical services, and continues until he is fully reintegrated into society, and in certain cases even longer. The process of psychiatric rehabilitation differs in different cultures and in different communities within the same culture, depending upon the facilities available for continuing the rehabilitation process when the patient leaves hospital.
>
> The Committee stresses that the concepts and principles of rehabilitation outlined in this report apply equally well to psychiatric rehabilitation. The difference in psychiatric cases lies essentially in the way the basic principles of rehabilitation are applied.

Social rehabilitation

That part of the rehabilitation process aimed at the integration or re-integration of a disabled person into society by helping him to adjust to the demands of family, community, and occupation, while reducing any economic and social burdens that may impede the total rehabilitation process.

Vocational rehabilitation

" The provision of those vocational services, e.g. vocational guidance, vocational training and selective placement, designed to enable a disabled person to secure and retain suitable employment." [1]

---

[1] International Labour Conference, Thirty-eighth Session (1955) *Recommendation No. 99 : Vocational rehabilitation of the disabled*, Geneva, ILO.

Handicapped person

A person whose physical and/or mental well-being is temporarily or permanently impaired, whether congenitally or through age, illness, or accident, with the result that his self-dependence, schooling, or employment is impeded.

Impairment

A permanent or transitory pathological condition resulting in a diminution of functions.

Disability

The reduction of functional ability to lead a fruitful daily life. It is the result not only of mental and/or physical impairment but also of the individual's adjustment to this.

Invalidity

A measure of the diminution of the individual's capacities.

Physiotherapy

Physiotherapy, or physical therapy, is " the art and science of physical treatment by means of therapeutic exercise, heat, cold, light, water, massage and electricity. Among the aims of treatment are the relief of pain, the increase of circulation, the prevention and correction of disability, and the maximum return of strength, mobility and co-ordination. Physiotherapy also includes the performance of electrical and manual tests to determine the amount of impairment of nerve supply and the strength of muscles ; tests to determine functional abilities ; measurement of range of joint movement, and measurement of vital capacity as diagnostic aids for the physician and for recording progress. " [1]

Occupational therapy [2]

Medically directed treatment of the physically and/or mentally disabled by means of constructive activities designed and adapted by a professionally

---

[1] World Confederation for Physical Therapy (1967) *The training of physical therapists*, London.

[2] This section has been adapted from : Council of the World Federation of Occupational Therapists (1963) *Establishment of a program for the education of occupational therapists*, Philadelphia, Pa.

qualified occupational therapist to promote the restoration of useful function.

The patient may be referred for occupational therapy by his physician for one or more of the following purposes :

(1) In the case of psychiatric patients, (*a*) to create suitable opportunities for the development of more satisfying relationships ; (*b*) to assist in releasing or sublimating emotional drives ; or (*c*) to aid in diagnosis.

(2) To obtain specific treatment for restoration of physical function : to increase joint motion, muscle strength, and coordination.

(3) To make the patient less dependent by teaching everyday activities, such as eating, dressing, and writing, and the use of adapted equipment and prostheses.

(4) To help the disabled housewife readjust to home routines, providing advice and instruction on adaptations of household equipment and work simplification.

(5) To improve work tolerance and to preserve any special skills required by the patient for his job.

(6) To determine the patient's physical and mental capacities, social adjustment, interests, work habits, skills, and employment potential.

(7) To help the patient accept and utilize constructively a prolonged period of hospitalization or convalescence.

(8) To redirect recreational interests.

Speech therapy

" The study, examination, appreciation and treatment of defects of the voice, of speech and of spoken and written language, as well as the utilization of corresponding substitutional devices and therapeutic treatment. " [1]

Audiology

" The study, examination, appreciation and treatment of hearing defects, as well as the utilization of auditory substitutional devices and therapeutic treatment. " [1]

Vocational counselling

The process of assisting an individual to choose an occupation, taking into account his characteristics and their relation to employment opportunities. It is based on free and voluntary choice ; the primary objective

---

[1] Speech Therapists and Audiologists Act, dated 16 July 1964 (*Statutes of Quebec, 1963-1964*, 1964, Chap. 58, pp. 321-326).

is to give the individual full opportunity for personal development and satisfaction from work, having due regard for the most effective use of national manpower resources.

Selective placement

The process aiming at placing disabled people in employment suited to their age, experience, qualifications, and physical and mental capacities. It should make use of all the normal resettlement services and provisions, in the light of the known and carefully assessed needs of each disabled person. This is the final stage of rehabilitation, and includes three distinct processes: (*a*) knowing the worker, (*b*) knowing the job, and (*c*) matching the worker to the job.

> Although placement is normally the last stage of rehabilitation, the patient should be referred to the placement officer as early as possible during medical rehabilitation.
>
> The placement officer should not act merely as an intermediary between the candidate and the employer. Personal contacts and follow-up are expected to be part of his normal duties. Unfortunately, because of the shortage of placement officers and the large number of cases that each one has to deal with, the time that can be devoted to the social and psychological problems of the individual is often insufficient.

3. CLASSIFICATION, REGISTRATION, AND STATISTICS

The Committee, noting that the section of the International Classification of Diseases dealing with impairments [1] was no longer included in the 1965 Revision,[2] expressed the hope that further studies would be made in order to arrive eventually at a classification for disability.

Several members of the Committee pointed out that the preparation of useful and informative statistical studies involving disabled persons was often impracticable, not only because of the lack of proper research facilities but also because of the high cost. However, in view of the importance of such statistics in the determination and projection of services, construction and personnel for rehabilitation medicine, cross-section studies of the population in representative parts of the world should be encouraged, as should the collection of data from rehabilitation centres and other institutions where patients with physical and/or psychiatric disabilities are

---

[1] World Health Organization (1957) *Manual of the international statistical classification of diseases, injuries, and causes of death*, 1955 Revision, Geneva.

[2] World Health Organization (1967) *Manual of the international statistical classification of diseases, injuries, and causes of death*, 1965 Revision, Geneva.

cared for. Information should also be obtained from workmen's compensation boards, social security organizations, war veteran administrations, government agencies, and private insurance companies.

It seems that very few countries have practical experience of disability registers. Such registers are very expensive to establish and maintain, and can be considered only by countries where all the necessary administrative machinery is already available. Furthermore, experience in certain areas has shown that information gathered through disability registers does not always help in assessing future rehabilitation needs. Taking censuses of disabled persons may be unwise, especially in developing countries, where little or no practical action is likely to follow. Such a course can only raise false hopes and lead to frustration among the disabled and those around them. In any case, the problems created by physical and mental disability are so great and so urgent that rehabilitation programmes should be initiated long before statistical data and information gathered by a disability register become available.

4. ORGANIZATION OF MEDICAL REHABILITATION SERVICES

Legislation, administration, and financing

In several countries there is no law governing rehabilitation. In others decrees, sometimes contradictory, originate from a number of ministries. As a result, the disabled and the population at large are in a state of confusion and ignorance concerning their rights and obligations. Proper legislation needs to be introduced in countries where it does not exist, while in those countries where the decrees promulgated intermittently to solve local or individual problems as they arise sometimes run into hundreds, present legislation needs to be reviewed and rationalized.

The Committee recognized that it would be helpful to follow up and enlarge the study already initiated by the United Nations,[1] since a simple framework for classifying existing laws and decrees would be most useful for international comparison. It is strongly suggested that developing countries adopt a single code incorporating all legislative measures concerning disabled persons and their rehabilitation.

Since rehabilitation is expensive, its cost must be borne by governments, with the help and co-operation of social security agencies where these exist. In certain areas, however, the responsibility for rehabilitation services is at present almost entirely assumed by voluntary groups. To end the confusion

[1] United Nations, Department of Social Affairs (1964) *Study on legislative and administrative aspects of rehabilitation of the disabled in selected countries*, New York.

that results from a large number of ministries and government agencies sharing the organizational and financial responsibility for rehabilitation services, priority should be given in all countries to the creation of an inter-ministerial commission including representatives of government agencies, social security organizations, workmen's compensation boards, etc.

The Committee did not wish to specify the ministry or agency under which rehabilitation services should function, for this decision will depend on the political make-up of the country. However, the ministry of health plays a very important part during the entire process of medical rehabilitation and sometimes beyond it, and this should be taken into consideration.

The setting up of national advisory boards for the rehabilitation of disabled persons is also strongly recommended. These boards should include representatives of voluntary agencies, universities, the medical and allied health professions, employers, trade unions, and other groups with the experience and knowledge to contribute to the betterment of rehabilitation services. Advisory committees of this type established several years ago in certain countries have proved most efficient, and invaluable during the planning phase of rehabilitation programmes.

Committees should also be created at regional and local levels to assess problems and refer them to the national body. This system has the immense advantage that it creates increased interest and spreads the knowledge of rehabilitation to all strata of the population.

In planning rehabilitation, the problem of financing the relevant services has to be considered. Funds should be available for rehabilitation services provided in hospitals, rehabilitation centres, and other institutions dealing with in-patients or out-patients, and also for services provided at home, prosthetic and orthotic appliances, social welfare services, and transportation. Arrangements should be made for the periodic review of rehabilitated patients, so as to ensure that the physical, psychological, and social benefits are permanent. Only through some such system will it be possible to achieve the immense financial and social advantages that can accrue from well-conducted rehabilitation measures.

Rehabilitation is generally financed from a variety of sources. In many countries, workmen's compensation funds deal with victims of industrial accidents, war veteran administrations are responsible for disabled exservicemen, and different types of insurance cover the cost of comprehensive medical care, including rehabilitation, for victims of accidents where court decisions are involved. For patients who cannot benefit from any of these sources, rehabilitation services should be available as an integral part of medical care. Efforts should be made to secure maximum financial support from government agencies, social security organizations, and voluntary bodies.

The Committee recognized that the complex financial machinery outlined above can only be set up in countries enjoying a certain level of economic

development and where the proportion of gainfully employed persons is sufficiently high for health insurance or social security schemes to be organized.

However, since many disabled persons of productive age will remain disabled without proper rehabilitation, it is desirable for the cost of rehabilitation to be covered right from the start by social security schemes.

The role of agricultural co-operatives and small mutual funds should never be overlooked, and their creation should be encouraged.

Relationship with other parts of the health service

The principle of regionalization in the field of rehabilitation is accepted by the Committee.

Now that rehabilitation is a recognized specialty in many countries, and an increasing number of patients need to be provided with proper care, it is essential that regional hospitals, in co-operation with faculties of medicine, set up independent rehabilitation departments under the direction of specialists in rehabilitation medicine. Beds should be available for patients still in need of other general hospital services. Conversely, a system of consultation should be created whereby patients still under the supervision of other departments can be seen and provided with rehabilitation services. The establishment of out-patient rehabilitation services in such hospitals is advocated for the benefit of patients with minor disabilities who do not need to be referred to specialized centres, and particularly for patients who do not require reorientation. Similar services should be provided in intermediate hospitals.

In small local hospitals where proper rehabilitation services cannot be introduced, arrangements must be made for the transfer of patients to special, regional, or intermediate rehabilitation centres, according to the type and severity of the case.

Pilot rehabilitation centres must be established in strategic areas. In large cities with several general and intermediate hospitals, it is uneconomic and unrealistic to build rehabilitation centres adjacent to each of these institutions. Arrangements must be made whereby one pilot centre serves several referring hospitals.

Services of rehabilitation medicine at general and intermediate hospitals should have available not only the appropriate accommodation and equipment but also the personnel essential for the proper application of the rehabilitation process : the specialist in rehabilitation medicine, the physiotherapist, the occupational therapist, the speech therapist, and the social worker.

Clinical psychologists, prosthetists, orthotists, and members of other allied health professions should be prepared to render services on request, but need not be actual members of the hospital rehabilitation team.

Medical rehabilitation centres

Multipurpose pilot rehabilitation centres should be established regionally to receive patients referred from regional, intermediate, and local hospitals. These centres should include facilities for both in-patients and out-patients. As soon as in-patients have been rehabilitated sufficiently to cope with home life, they should become out-patients; they should be provided with transportation if they are unable to use public transport.

Pilot rehabilitation centres should be affiliated to universities through faculties of medicine, and should be used for demonstration and for educational and research purposes.

The staff of a centre should consist of qualified specialists in rehabilitation medicine, nurses with additional training in rehabilitation, physiotherapists, occupational therapists, speech therapists and audiologists, clinical psychologists, prosthetists, orthotists, and social workers. In order to prevent children undergoing treatment from falling behind with their schooling, educational services of the tutorial type should also be provided.

Pilot rehabilitation centres will be expected to provide full prosthetic and orthotic services, and in certain cases highly specialized appliances. However, it is presumed that centres without hospitalization facilities, devoted to the treatment of out-patients only, will also form part of the rehabilitation network.

In order to preserve close contact between the physician, his team, and the patient, there should be a limit to the number of beds and facilities available in each centre. Whenever possible, moreover, the patient should be rehabilitated near his home, for the influence and support of the family greatly assist the rehabilitation process.

There is something to be said for centres specializing in the treatment of a single pathological condition. Sometimes such centres owe their existence to the special interest of individuals or voluntary organizations. Needless to say, it is difficult to have centres of this type accredited for educational purposes.

Experience has shown, however, that nurses, physiotherapists, and other health workers who treat one ailment only over a period of years become too narrow in their outlook and not infrequently over-protective. From the economic and educational standpoint, moreover, centres where all types of patients are treated together would appear more practical.

Some patients suffering from extensive and multiple disabilities, or who for psychosocial reasons cannot be reintegrated into the family, need special attention. Consequently, institutions providing such patients with adequate general medical care, including high-quality nursing and minimum physiotherapy services, must be provided. These institutions may

serve several regional and intermediate hospitals as well as the regional or intermediate rehabilitation centres.

It is of the utmost importance that rehabilitation units in general hospitals and all types of rehabilitation centres have full authority to decide which of the patients referred shall be admitted. If they are not able to refer long-term cases to other institutions they will soon become overburdened with chronic patients.

Of course, the programme described above will more often than not be impracticable in developing countries, but the pattern may serve as a guideline for the future.

The Committee nevertheless stressed the importance of creating international pilot rehabilitation centres, both for demonstration purposes and for the education of personnel. For the benefit of the developing countries in particular, it is suggested that inter-country rehabilitation centres be created with the help of intergovernmental agencies. The fact that in many developing countries the vast majority of the population is engaged in agriculture creates special problems that are best solved locally. Not infrequently, experts suggest solutions that are similar to those adopted in their own countries but are scarcely suited to the cultural and socio-economic background of the disabled in developing countries.

Relationship with related services (prosthetics, orthotics)

Prosthetic and orthotic services need to be fully integrated with rehabilitation services and closely linked to medical care; they should be placed on the same level as physiotherapy, occupational therapy, etc.

It is of the utmost importance that physicians prescribing prosthetic and orthotic appliances be free to observe the results of their recommendations and prescriptions and that patients be fully trained to utilize the appliances by competent therapists, under the general supervision of the physicians. No patient using an appliance should leave a rehabilitation centre unless the physician who initially prescribed the appliance has certified that its fitting and utilization are satisfactory.

Prosthetic and orthotic departments should make every effort to stimulate the standardization of components and spare parts. Materials used should be simple, to facilitate manufacture and assembly.

The need to provide skilled technicians is extremely urgent in developing countries. It was also stressed that international agencies should improve the exchange of information concerning standardization and maintenance of appliances.

It was suggested that inter-country prosthetic and orthotic centres be created in developing countries with the help of intergovernmental agencies. Recent achievements in prosthetics and orthotics manufacture have made possible the large-scale use of local materials, supplemented by

plastics and inexpensive foreign materials. Experts should be asked to advise on techniques for the mass production of appliances.

Relationship with social, educational, and vocational rehabilitation services

Close co-ordination should be established between intergovernmental and voluntary agencies. Measures should be taken to ensure that medical supervision is not overlooked in the pretreatment and posttreatment of amputees and other disabled persons requiring prosthetic or orthotic appliances.

The Committee endorsed the comments on co-operation contained in a recommendation of the ILO Conference :

" (1) There should be the closest co-operation between, and the maximum co-ordination of, the activities of the bodies responsible for medical treatment and those responsible for the vocational rehabilitation of disabled persons.

(2) This co-operation and co-ordination of activities should exist —

(*a*) to ensure that medical treatment and, where necessary, the provision of appropriate prosthetic apparatus are directed to facilitating and developing the subsequent employability of the disabled persons concerned ;

(*b*) to promote the identification of disabled persons in need of, and suitable for, vocational rehabilitation ;

(*c*) to enable vocational rehabilitation to be commenced at the earliest and most suitable stage ;

(*d*) to provide medical advice, where necessary, at all stages of vocational rehabilitation ;

(*e*) to provide assessment of working capacity.

Wherever possible, and subject to medical advice, vocational rehabilitation should start during medical treatment. " [1]

5. THE REHABILITATION TEAM

Ideally, the rehabilitation team should consist of (*a*) physicians and nurses trained in the field of rehabilitation medicine, and (*b*) physiotherapists, occupational therapists, speech therapists and audiologists, social workers, clinical psychologists, vocational counsellors, prosthetists and orthotists, placement officers, special educators, and recreational therapists.

---

[1] International Labour Conference, Thirty-eighth Session (1955) *Recommendation No. 99 : Vocational rehabilitation of the disabled*, Geneva, ILO.

From time to time, depending on the case, representatives of social and voluntary agencies may also be called upon. The patient himself and members of his family may, in certain circumstances, become essential adjuncts to the team. Consultants in specialties closely associated with rehabilitation must also be available: orthopaedic, neurological, and plastic surgeons; internists; psychiatrists; neurologists; orthodontists; etc.

Functions

It appears natural that the physician specializing in rehabilitation, as the person responsible for diagnosis, treatment, and rehabilitation prognosis, should be the team leader in medical rehabilitation centres. However, in centres where the emphasis is not on medical rehabilitation, such as vocational workshops and special schools, the physician's position is that of a consultant.

The rehabilitation team should meet frequently, not only to review general policies, administrative problems, and the co-ordination of treatment, but also to discuss individual cases. This policy has the advantage of creating a healthy atmosphere among the team members and gives each one the opportunity of expressing his views. Of course, it is hardly possible for all cases referred to be submitted to an extensive review, and only those displaying unusual medical and social problems are likely to be studied in depth.

The Committee felt that the team should have full-time medical supervision. Success in rehabilitation appears to depend on the extent to which physicians are present and take an active part. The physician devoting his life to rehabilitation must not limit his activities to diagnosis, prognosis, and the prescription of treatments. He must also take the chair at meetings of the rehabilitation teams and make himself available for consultation with individual members of the staff and interviews with the patients and their families. Clearly, teaching and research must also be considered part of the normal day-to-day activities of the team leader.

Education and training

Specialists in rehabilitation medicine

For many years medical rehabilitation has been conducted and supervised by orthopaedic and neurological surgeons, rheumatologists, neurologists, and others. Particularly since the Second World War, however, rehabilitation medicine has emerged as a specialty in its own right, and its practitioners, free from time-consuming operating-room responsibilities and other duties, are able to devote all their time and energy to the organization of hospital services, pilot rehabilitation centres, the education of personnel at all levels, and in a few instances to research. From the viewpoint

of efficient utilization of manpower it would seem best if the rehabilitation of disabled persons is left to full-time specialists, although due recognition must be given to the efforts and dedication of those physicians who founded this new specialty.

Departments of rehabilitation medicine led by qualified specialists have already been established in a large number of universities, particularly in North America, and have achieved considerable success, not only in the treatment of patients, but also in the training of medical and paramedical personnel and sometimes even in the field of clinical investigation and research.

The Committee believes that every faculty of medicine should create a Chair of Rehabilitation Medicine, since this is the only way of encouraging young and interested doctors to opt for this specialty.

At present the specialist in rehabilitation medicine seems best qualified to deal with musculoskeletal dysfunctions. However, in the highly specialized field of cardiorespiratory diseases and other pathological entities, where the general condition is not static, the primary responsibility for the patient's care, rehabilitation, and follow-up should be left to the internist, cardiologist, or pneumologist, with the specialist in rehabilitation medicine acting as a consultant.

Not every country is in a position to start a 4–5-year training programme in rehabilitation medicine. It is therefore suggested that general practitioners from developing countries be sent abroad for short courses of 1–2 years' duration to acquaint themselves with the basic principles. This will enable rehabilitation medicine under medical supervision to be introduced at an earlier stage. Refresher courses should be available subsequently to give these physicians the opportunity to qualify fully.

The training of the specialist in rehabilitation medicine could take the following form:

(1) One year in internal medicine or paediatrics.

(2) One year which could include hospital residence to gain experience in some of the following specialties: orthopaedic surgery, neurology, rheumatology, cardiology, pneumology, dermatology, etc.; the choice would be influenced by local circumstances and prevailing pathological conditions (e.g., leprosy, tuberculosis).

(3) At least 2 years in rehabilitation medicine; in order to gain wider experience the candidate could spend one year in the rehabilitation medicine unit of a general hospital and one year in a rehabilitation centre.

In developing countries, a start could be made by introducing practice in rehabilitation as an integral part of the medical student's training programme. Later, rehabilitation medicine could be taught as part of such specialties as orthopaedics, cardiology, and neurology. The final stage would be to train specialists in rehabilitation medicine.

In order to propagate knowledge of rehabilitation medicine, it is of the utmost importance to introduce it at an early stage, during undergraduate medical studies. It is recognized that the best method of teaching rehabilitation medicine at this level is through clinical demonstration. Indeed, the student should be taught early that the individual is a social and biological complex, not merely a morphological entity. The specialist in rehabilitation medicine seeks combined social and physical recovery, and must consider the lesions not alone, but in the context of the human being affected.

In medical schools where rehabilitation departments have not yet been organized, arrangements might be made with professors of orthopaedic surgery, internal medicine, neurology, etc., to emphasize whenever possible the important role of rehabilitation in their particular specialty. Sometimes professors have been willing to " lend " a certain number of hours so that students can be acquainted with the basic principles of rehabilitation medicine related to the specialty concerned.

In any case, rehabilitation programmes should be started at the earliest possible moment with the staff and facilities available, however limited.

Nursing personnel

Nurses and auxiliary nursing personnel should be made aware of the important role of nursing throughout the entire rehabilitation process, including home care as an aspect of the follow-up of patients. The principles and techniques relating to all aspects of rehabilitation should be taught to all nurses early in their training and during post-basic education in such specialties as orthopaedic nursing, paediatric nursing, and psychiatric nursing.

Because of the universal shortage of nurses, they must not be assigned to activities such as those performed by physiotherapists, occupational therapists, speech therapists, social workers, or any other health workers engaged in rehabilitation. Nevertheless, their duties must be co-ordinated so that they complement the activities of the rehabilitation team. Nurses and auxiliary nursing personnel must attend staff conferences, visit rehabilitation clinics, and take part in any other activities that directly or indirectly concern them.

In nursing education programmes, rehabilitation should be taught as follows :

(1) The principles and techniques of rehabilitation should form an integral part of the curricula of basic nursing education programmes.

(2) In post-basic programmes, rehabilitation nursing should form part of the training in clinical specialties and public health nursing.

(3) Special post-basic courses in rehabilitation nursing should be organized for future specialists in this field, teachers in nursing schools,

supervisors in hospital and public health nursing services, and consultants or advisers to governments in the planning of nursing and rehabilitation programmes.

Allied health personnel

The Committee advocates the establishment in developing countries of schools of physiotherapy and occupational therapy. Whenever possible, these schools should form part of schools of allied medical sciences, so that common basic courses appropriate to several professions can be given, bringing a considerable saving of financial and manpower resources. The schools should be affiliated to faculties of medicine. It is an accepted principle that anatomy, physiology, psychiatry, and all other basic medical sciences are best taught under the direct supervision of the appropriate departments of the university's faculty of medicine.

If and when courses in occupational therapy and physiotherapy are initiated, they should follow the recommendations of the World Federation of Occupational Therapists [1] and the World Confederation for Physical Therapy.[2] Although the aims of these federations are rather high, and it is not always possible for developing countries to reach them, they should be considered as guidelines for future action.

Sending young or recent graduates for training abroad is always a risk, but the Committee feels safe in recommending courses in other countries for trained, experienced, and senior nurses, therapists, and other members of the rehabilitation team so that they can further their studies and obtain teachers' certificates, specialization certificates, or degrees. Bursaries for such studies should be available from international agencies.

The possibility of developing schools to serve a group of countries is worth considering. Sometimes, however, it is extremely difficult to arrange the administration, general organization, and teaching programmes of schools based on inter-country co-operation, and it might be preferable to establish national centres that would be open to candidates from neighbouring countries through bilateral agreements and with the help of international organizations.

Because of the shortage of personnel in the allied health professions, particularly in physiotherapy and occupational therapy, the training of assistants is of the utmost importance. However, countries must be warned of the danger of allowing such assistants to occupy posts for which they are not sufficiently qualified and in which they are not under proper supervision.

---

[1] Council of the World Federation of Occupational Therapists (1963) *Establishment of a program for the education of occupational therapists*, Philadelphia, Pa.

[2] World Confederation for Physical Therapy (1967) *The training of physical therapists*, London.

In-service training is recommended. Many personnel have been trained to assist in the various sections of rehabilitation departments, e.g., hydrotherapy, electrotherapy, and workshops, and have been able to relieve more highly qualified staff of routine duties.

Certain countries have a long-standing tradition of providing training at two levels. The first level is mainly technical, and recruitment is based on need so as to guarantee a career to selected applicants. After they have completed their training and spent a period of time working in hospitals, the most promising candidates are selected for the second level. They take refresher courses in the technical aspects, and more advanced courses leading to a diploma or university degree. This method has been most successful in providing much needed personnel and university graduates of high standard, and may be the answer to personnel shortage in many countries.

Prosthetics and orthotics

This field is becoming more and more complex. In addition to prosthetic and orthotic technicians, there are workers who study longer and become fitters dealing directly with the patients. It is of the utmost importance to recruit engineers, particularly those trained in biomedical engineering, to act as consultants in prosthetic and orthotic workshops and to participate in research.

Attention is drawn to a seminar [1] in Denmark, where minimum training standards for prosthetists/orthotists (a 4-year course, plus one year of practical internship training) and for prosthetic/orthotic technicians (18–24 months) were advocated. Participants also stressed the need for establishing regional prosthetics centres, and for eliminating customs barriers so as to facilitate the importation of orthotic and prosthetic appliances. They recommended the preparation of standard lists of tools and equipment for a prosthetics laboratory, as well as a model plan for such a laboratory. An ethical code for prosthetists/orthotists should also be developed.

Speech therapists

Loss of the ability to communicate is a serious consequence of certain congenital and acquired defects. It is extremely difficult, however, to transpose speech therapy techniques from one language or family of lan-

---

[1] A Seminar on Standards for the Training of Prosthetists, organized by the United Nations and the Government of Denmark with the co-operation of the International Committee on Prosthetics and Orthotics of the International Society for Rehabilitation of the Disabled, was held in Holte, Denmark from 1 to 19 July 1968. The report of the Seminar has not been published.

guages into another. To do this, it is necessary to master the specialty in one language, then adapt all the techniques and methods to the other. Where a language problem exists, therefore, only selected and extremely well-prepared individuals can be expected to train and practise as speech therapists. Nevertheless, the importance of speech therapy in medical rehabilitation must not be underestimated, and studies and research in this field are recommended.

Continuous education

It is important that medical and nursing personnel and members of allied professions associated with rehabilitation keep constantly abreast of recent developments. The Committee recommends that courses be arranged at intercountry level for the training of teachers, who will in turn be able to train all types of rehabilitation personnel in their own countries.

Short refresher courses under international sponsorship should also be available, whenever possible, to general practitioners and specialists.

6. RESEARCH

Research in rehabilitation medicine and allied subjects is still at an early stage in many parts of the world. Of course, it must be remembered that the specialty is relatively new and that so far its advocates have been concentrating mainly on the establishment of facilities and the training of personnel for both treatment and teaching purposes. It is noted with satisfaction that a considerable amount of work has been accomplished with regard to clinical investigation, and psychosocial and psychiatric reactions to disability, and that a number of publications are now exclusively devoted to rehabilitation medicine.

Nevertheless, the Committee wishes to stress the importance of basic research and feels that research centres should be established in conjunction with pilot rehabilitation centres, especially those affiliated to or in close liaison with universities.

The following list of projects, by no means exhaustive, is suggested as a guide :

(1) Research on ergonomics and automation as applied to the handicapped.

(2) The employment of the handicapped in the age of automation.

(3) Psychosocial problems created by an increasing number of disabled persons in all strata of society.

(4) Research in the field of biomedical engineering as applied to prosthetics and orthotics.

(5) Studies on the economic value of rehabilitation, comparing the cost of medical care and rehabilitation techniques with the potential productivity of those in need of these services.

7. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The Committee is convinced that the need for rehabilitation services will increase very rapidly in the near future as a consequence of the development of basic health services, the integration of medical care in national health programmes, industrialization and urbanization, and lengthening expectation of life. With the steady rise in the number of victims of industrial and traffic accidents and the aged sick, it is to be expected that more and more disabled persons will seek rehabilitation as soon as services are made available.

When a government requests assistance with a specific type of rehabilitation activity, it is desirable to consider such action in relation to other rehabilitation needs, and if possible to arrange a co-ordinated programme between non-governmental organizations, intergovernmental agencies, and voluntary bodies.

WHO has an important part to play because the first stage of rehabilitation is purely medical, and further stages cannot be undertaken until the medical aspect has been dealt with. Nevertheless, any action taken to assist governments must encompass the whole field of rehabilitation, from medical care to the resettlement of the individual in society ; each victim of a disabling disease or accident needs to be treated, rehabilitated, and reinstated in society by the most favourable medical, social, educational, and vocational procedures.

Recommendations

Considering the importance of medical rehabilitation in health programmes, the Committee makes the following recommendations for future action :

(1) More information should be collected on the legislative aspect, structure, and functions of medical rehabilitation services. It is also suggested that information be collected concerning research on rehabilitation, and disseminated periodically to research institutes and other interested bodies.

(2) Psychological and psychiatric aspects of the physically disabled should always be considered together, and closer co-operation should be

established in medical rehabilitation programmes between the physiological and psychological services.

(3) In order to promote education in rehabilitation, faculties of medicine should create chairs of rehabilitation medicine and establish schools for allied health and rehabilitation personnel.

(4) In regional and intermediate hospitals, independent medical rehabilitation units should be created. Pilot medical rehabilitation centres should be established in co-ordination with social and educational services.

(5) Rehabilitation procedures should be initiated in developing countries, in spite of the fact that statistical data are still not available, and priority should be given to the establishment of disability registers as soon as it is practicable.

(6) All governmental and voluntary bodies concerned should make a co-ordinated approach to the various aspects of rehabilitation.

(7) As soon as social security organizations develop they should participate financially and technically in in-patient and out-patient rehabilitation services for victims of disease or accident who are not covered by other organizations.

WORLD HEALTH ORGANIZATION
TECHNICAL REPORT SERIES

Recent reports :

No.		Price s.d.	Price $	Price Sw.fr.
391	(1968) **Pesticide Residues** Report of the 1967 Joint Meeting of the FAO Working Party and the WHO Expert Committee (43 pages)	6/–	1.00	3.—
392	(1968) **Organization of Services for the Mentally Retarded** Fifteenth Report of the WHO Expert Committee on Mental Health (55 pages)	6/–	1.00	3.—
393	(1968) **Smallpox Eradication** Report of a WHO Scientific Group (52 pages)	6/–	1.00	3.—
394	(1968) **Streptococcal and Staphylococcal Infections** Report of a WHO Expert Committee (56 pages)	6/–	1.00	3.—
395	(1968) **Hospital Administration** Report of a WHO Expert Committee (29 pages)	4/–	0.60	2.—
396	(1968) **Immunology of Malaria** Report of a WHO Scientific Group (50 pages)	6/–	1.00	3.—
397	(1968) **Intra-Uterine Devices: Physiological and Clinical Aspects** Report of a WHO Scientific Group (32 pages)	4/–	0.60	2.—
398	(1968) **Cytogenetics of Vectors of Disease of Man** Report of a WHO Scientific Group (41 pages)	6/–	1.00	3.—
399	(1968) **Microbiological Aspects of Food Hygiene** Report of a WHO Expert Committee with the Participation of FAO (64 pages)	8/–	1.25	4.—
400	(1968) **Paediatric Research** Report of a WHO Scientific Group (26 pages)	4/–	0.60	2.—
401	(1968) **Screening for Inborn Errors of Metabolism** Report of a WHO Scientific Group (57 pages)	8/–	1.25	4.—
402	(1968) **Genetics of the Immune Response** Report of a WHO Scientific Group (52 pages)	6/–	1.00	3.—
403	(1968) **Principles for the Clinical Evaluation of Drugs** Report of a WHO Scientific Group (32 pages)	6/–	1.00	3.—
404	(1968) **Water Pollution Control in Developing Countries** Report of a WHO Expert Committee (38 pages)	6/–	1.00	3.—
405	(1968) **Nutritional Anaemias** Report of a WHO Scientific Group (37 pages)	6/–	1.00	3.—
406	(1968) **Research into Environmental Pollution** Report of Five WHO Scientific Groups (83 pages)	8/–	1.25	4.—
407	(1969) **WHO Expert Committee on Drug Dependence** Sixteenth Report (28 pages)	4/–	0.60	2.—
408	(1969) **Respiratory Viruses** Report of a WHO Scientific Group (100 pages)	10/–	1.75	5.—
409	(1969) **Planning and Evaluation of Health Education Services** Report of a WHO Expert Committee (32 pages)	6/–	1.00	3.—
410	(1969) **Urban Air Pollution, with Particular Reference to Motor Vehicles** Report of a WHO Expert Committee (53 pages)	6/–	1.00	3.—
411	(1969) **Comparative Studies of American and African Trypanosomiasis** Report of a WHO Scientific Group (39 pages)	6/–	1.00	3.—
412	(1969) **Health Factors Involved in Working under Conditions of Heat Stress** Report of a WHO Scientific Group (32 pages)	6/–	1.00	3.—