

## REHABILITATION IN PRACTICE

# The system for medical rehabilitation in Croatia

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### Abstract

**Purpose.** To describe the framework for medical rehabilitation in Croatia and to discuss its influence on the practice of the specialty.

**Methods.** Collection, analysis and interpretation of data pertaining to the need for medical rehabilitation in the country and to its elements of structure, process and outcome of care.

**Results.** The practice of medical rehabilitation in Croatia has evolved without strategic planning on the national level and therefore without a designed system. This lack in the present framework causes shortcomings in all three elements of rehabilitation care and impedes the advancement of the specialty.

**Conclusion.** Medical rehabilitation in Croatia needs a national strategic plan for a three-level system that incorporates inpatient, outpatient and community-based rehabilitation.

**Keywords:** Croatia, rehabilitation system, organization of rehabilitation, structure, process and outcome of rehabilitation care

### Introduction

There is broad consensus that governments have the responsibility for the health care of their people. They can fulfill this responsibility by providing adequate health and social measures through a framework of services, preferably through a system of health care.

A system is an organization composed of inter-related and interdependent parts designed to achieve predetermined goals. It has structure, properties, functions, input, output and feedback mechanisms and its components work for the overall objective of the whole. It connotes order as opposed to chaos, a logical rather than haphazard approach to problems and a global instead of a local point of view. A system can further be divided into subsystems, each having

its own objectives, role, structure, activities and processes. Hence, a health care system is a set of interrelated and interdependent parts organized to provide services necessary for attaining a set of predetermined health-related goals. In a health care system, people and other resources may be grouped together into subsystems for the purpose of delivering various services. Thus, there are subsystems of emergency health or mental health service, as well as a subsystem for providing rehabilitation care. The latter can, in turn be composed of subsystems for specific rehabilitation care, such as stroke, spinal cord or brain injuries system. Models of systems for rehabilitation, their settings and contents, vary greatly among countries and poor design may adversely affect the effectiveness and quality of the care provided. The purpose of this paper is to review

and discuss the system for the delivery of medical rehabilitation in Croatia.

Croatia is a country in Central Eastern Europe (CEE) with 4,437,460 inhabitants, 80% of them Roman Catholic Croats and 15.7% of this population is aged 65 and above [1]. The country extends in an arc from the Danube river in the north to Istria in the west and from there south along the Adriatic coast; it has a surface area of 56,538 km<sup>2</sup> and an Adriatic Sea coastline of 5800 km of which 1,185 km consist of cliffs, reefs and islands, 67 of the latter inhabited. The average population density is 79.2/km<sup>2</sup>. The country is divided into 21 counties and has 419 municipalities, 65 towns and 4 cities: Zagreb, the capital, in the northwest with just over 700,000 inhabitants, Split in the south, on the coast (265,000), Rijeka in the west (206,000) and Osijek in the north east (160,500). There is a medical school in each of the four cities, the oldest and largest in Zagreb. Croatia was a socialist republic within Yugoslavia until its declaration of independence in 1991, which provoked a war of aggression against Croatia lasting until 1995 and causing 9941 deaths, 28,734 severely wounded and a total war damage of 20 billion US\$ [2]. Since its independence, it has been a country in transition from a one-party system to a pluralistic democracy, from controlled to free market economy, and from state to private ownership of health care facilities. Reform of the health care system which was one of the first decisions of the multiparty parliament [3] has undergone a number of modifications since then. Morbidity and mortality are similar to those in other CEE countries, with 50% of deaths attributable to diseases of the circulatory system [2], among which the most frequent cause of death is stroke [4]. There is an increased male mortality compared to the West, probably due to alcohol consumption and smoking [5]. In 1998, 8.5% of the GNP was spent on health care but when measured by the amount of real money spent on health expressed in parity purchasing power, it was US\$ 302 yearly per capita, compared to the world average of US\$ 525 [5]. Primary care is provided in integrated health institutions called "homes of health", which are health centres with a primary care physician and a nurse health visitor as key personnel. In the near future, the physician is projected to become a private entrepreneur, renting space in the centre or establishing his/her own clinic.

Secondary care is still part of public health services but some forms of privatization are appearing and becoming more prevalent. There are 6.1 hospital beds per 1000 population. Hospitals operate as public services either by a county or by the state (teaching hospitals), except for special rehabilitation hospitals (former spas) that are allowed to operate

privately [2]. Health care is financed mainly by mandatory health insurance administered by the Croatian Institute for Health Insurance (CIHI), which is under the direct control of the government and is responsible for implementing its policy of health care services financing and control [6]. Primary care is funded according to capitation fee adjusted for age, secondary care on the basis of fee for service and hospitals by a calculated combination, but only for beds contracted by the CIHI for a specific purpose [2]. The insurance applies to a restricted standard of health services and providers are paid only for the determined standard. Cost sharing has been introduced (with exemption made, among others, for people with disability with very low income). Voluntary health insurance has also been established, either as a supplement to mandatory insurance or as a complete programme of private insurance, which is limited to the US\$ 35,000 and above annual income group [6]. Epidemiological data necessary for estimating rehabilitation need are scarce and not always current. Stroke is the most common cause of impairment [7]. With an incidence of 250/100,000 and case fatality rate of 30% [8] more than 8500 survivors of the acute phase may be expected, 7000 in need of inpatient rehabilitation [9]. One hundred individuals survive SCI annually and require inpatient rehabilitation [10] and 700 persons following trauma to the head may be expected to remain brain impaired, 10% in coma [11]. Nearly 1000 lower limb amputations are performed annually, 75% in men aged over 60, due to diabetes or peripheral vascular disease and among those surviving surgery for a year, 400 can be rehabilitated prosthetically [12,13]. The prevalence rate of osteoarthritis is 11% [14], that of rheumatoid arthritis 4% [15] and nearly 300 elderly women with osteoporosis sustain a hip fracture annually [16]. The needs of patients with Parkinson's disease, multiple sclerosis, polyneuropathies, congenital anomalies, severe compound fractures of limbs, as well as those of patients following total hip or knee transplantation should be added. This considerable need for rehabilitation may be expected to increase due to the ageing of the country's population [17], the increasing life span of persons with disability, the rising incidence of road and other accidents as well as due to advances of medicine that save lives but leave many survivors with severe impairment.

## Methods

Data were collected that pertain to the need for medical rehabilitation in the country and its availability from publications by Croatian authors in the international and local medical literature, as well as from the Croatian Health Services Yearbook for the

year 2003 [1] and from the Croatian Institute for Health Insurance (also for the year 2003) [18]. These data were then analysed and interpreted in terms of structure, process and outcome of rehabilitation care.

This was based on the knowledge that medical rehabilitation is concerned with all three dimensions of disability (impairment, activity limitation and participation restriction) and their interaction. Medical rehabilitation therefore needs adequately staffed and equipped inpatient facilities that provide comprehensive treatment in order to reduce impairment and to prevent or at least minimize its resulting in activity limitation. Further toward that goal and for maintenance of the attained functional improvement and for prevention of complications, continuity of rehabilitation care in the community is required. For minimization of participation restriction, rehabilitation on the community level should include provision of assistive technology, home adaptations and support in social reintegration for persons with disability and their families. Rehabilitation goals, with age and co-morbidity playing an important role in goal-setting, vary from partial independence in self-care to return to school, work and leisure activities. Therefore, because of the described complexity, medical rehabilitation demands a national strategy that incorporates inpatient, outpatient and community-based care in one system that works as an integrated whole and provides services appropriate to the disability, its severity, dimension and stage of development.

## Results

In Croatia, as in other CEE countries, rehabilitation services emerged from three sources of origin, orthopaedics, balneotherapy and physical medicine [19,20] and evolved following local or sectorial initiatives, without strategic planning on the national level and without the creation of a system. This resulted in a haphazard framework. Beds for inpatient rehabilitation are available in teaching hospitals and in 10 special hospitals for medical rehabilitation (SHMRs). The latter are former spas (called in Croatian "toplice"), which have gradually expanded and upgraded their facilities and activities, and since 1993 bear their present name. They have a total of 3588 beds, but only 1635 are contracted by the CIHI for inpatient rehabilitation, while the remaining 1863 may be marketed to private insurance schemes for balneotherapy and health tourism [21]. Six teaching institutions have a total of 239 beds [22] contracted by CIHI for inpatient rehabilitation. Thus, Croatia has 1874 rehabilitation beds, or 0.42 per 1000 inhabitants.

This is more than abundant since the minimum standard is 0.10 and the ratio is 0.12 in The Netherlands and 0.13 in Sweden [23]. Indeed, in SHMRs the average annual bed occupancy rate is 65%. The bed occupancy rate in rehabilitation departments of teaching institutions is around 90%, however some lack rehabilitation resources and focus on rheumatology rather than rehabilitation. On the national level there exists no institution for comprehensive rehabilitation and facilities for complex impairments are dispersed: The institute for prosthetic rehabilitation of lower limb amputees is situated in Zagreb, the centre for TBI in Krapinske Toplice and the one for SCI in Varaždinske Toplice with no coordination between the three facilities and no cooperation in education or research. Two teaching and 20 general hospitals include institutes for physical therapy and rehabilitation which serve as consultants to other departments, maintain outpatient services that focus on rheumatology and provide physical and kinesiotherapy to ambulatory patients [22]. However, these services are institution-based and city centred and thus not accessible to those living in rural areas or on islands where the proportion of elderly is high with 80% suffering from several chronic conditions [24]. Out of 47 health homes, only 5 provide physical and kinesiotherapy [22]. Following the 1991–1995 war, community-based rehabilitation was introduced by a general hospital as an outreach service to a health home in Zagreb [25] but with the cessation of support from abroad, the project faded away.

In 2003 there were 385 specialists in physical medicine and rehabilitation (called physiatrists) who undergo training that lasts 4 years and have to pass a specialist examination). Of these, 225 are actively practicing in the profession, meaning that there are 4.76 physiatrist per 100,000 inhabitants, the highest ratio in Europe, which ranges from 0.40 in the UK to 4.67 in the Czech Republic [26]. However, they are unevenly distributed with 70% working in teaching or special hospitals and 30% in county facilities [27]. Of the 2000 registered physiotherapists, 1600 were active in rehabilitation settings, while 237 occupational and 254 speech therapists worked in psychiatric or ear, nose and throat settings, and only a few were employed in rehabilitation facilities because these lacked positions for them. Consequently, in most facilities nurses and physiotherapists provide all treatment, nurses teaching basic ADL, sphincter control and skin hygiene, and physiotherapists providing modalities of physical therapy and kinesiotherapy. The interdisciplinary approach is not used and extended ADL is taught only to SCI, TBI and postamputation patients.

Referral for inpatient rehabilitation is regulated by the CIHI rulebook, which defines 3 categories of patients/beds:

- (1) Beds for patients with complex impairments, for which the CIHI pays 40 Euro per patient per day for amputees, 32–48 Euro for TBI mobile patients and 72 for those in coma or vegetative state, and 90 Euro per SCI patient per day;
- (2) Beds for “patients with acute illness, in need of treatment with physical medicine and rehabilitation” (as defined by the rulebook) who are referred to teaching hospitals, CIHI paying 50 Euro per patient, per day; in reality these beds are used for the diagnosis and medical treatment of arthritis;
- (3) Beds in SHMRs intended for “patients with chronic illnesses in need of treatment by physical medicine and for whom the CIHI pays 40 Euro per patient per day, while on the market a SHMR can obtain at least 30% more.

SHMRs are paid according to a monthly budgetary limit and when this is exhausted, contracted beds remain unoccupied in spite of long waiting lists. The CIHI demands the use of the Barthel Index (BI) for functional status in applications for admission to or prolongation of inpatient rehabilitation with a cut-off score of 79. The CIHI does not distinguish between programmes as to content, availability of personnel and equipment, effectiveness and quality. It further does not regard the rehabilitation potential of patients and has no criteria for referral of patients, except those with SCI or amputation of limbs. The disregard of these important aspects leads to referrals to institutions not appropriate to the patients’ need and to an incorrect definition of actual treatment provided.

Within the above framework many patients do not receive adequate rehabilitation treatment. Patients with stroke are admitted to acute care hospitals, which – except for a few – do not provide organized initial rehabilitation. Those in need of rehabilitation are, after a long waiting period, referred to SHMRs or to rehabilitation departments of other hospitals, but only two of these settings are able to provide comprehensive care and can admit only 20% of stroke survivors while other settings lack occupational, speech and other cognitive therapists essential for adequate treatment. Patients after lower limb amputation are discharged to SHMRs for stump healing, prevention of contractures, and initial walking exercises and are admitted to the institution for prosthetic rehabilitation several weeks after surgery, with contractures and in wheelchairs [13].

The centre for SCI annually admits 200 patients, half of them new. These are transferred from the site of the accident to traumatology and only 14 days after surgical stabilization of the vertebral column reach the centre. Patients with TBI, mostly due to closed injuries sustained in road accidents, spend 10–20 days in neurology or neurosurgery and are then transferred to the centre for TBI which admits 150 new cases annually, including those in coma. However, 20–30% of TBI patients are referred to SHMRs, which are not competent to care for them, while beds at the centre are not fully occupied.

Although the CIHI does not require measurements of rehabilitation progress and outcome, most institutions use a variety of updated measures but there is a dearth of documentation of this fact. There is also insufficient follow-up, no information on long-term outcomes such as the extent of prosthesis use or mortality after prosthetic rehabilitation. The TBI centre follows patients discharged in vegetative state but has no information on others, such as data of social integration of this predominantly, young, male population. The SCI centre followed patients rehabilitated during the 1991–1995 war [28] and conducts follow-up at present but documentation of it is not available.

## Discussion and conclusion

Medical rehabilitation in Croatia has advanced when compared to 1992 [29], particularly thanks to changes that occurred during the 1991–1995 war [30]. However, although individually often excellent, facilities are geographically unevenly distributed and with no coordination between them. They show great differences in professional competence and many have a surplus of bed capacity while many patients in need of rehabilitation are waiting for treatment. There is no organized rehabilitation system, only a framework of non-integrated, uncoordinated parts, which is not appropriate to the need and shows many shortcomings in the structure, process and outcome elements of rehabilitation care. It further does not provide adequate care to all who could benefit from it and leads to a wastage of resources. Most of these deficiencies are caused by the absence of a system for medical rehabilitation, resulting in inappropriate referral to inpatient rehabilitation (and the mode for payment), shortage of facilities for rehabilitation of stroke (the reason for most frequent impairment), inadequate use of interdisciplinary teamwork, lack of rehabilitation therapists other than physiotherapists, lack of rehabilitation on community level and more. Hence, further advancement in the effectiveness and quality of medical rehabilitation in Croatia is possible only with an organizational change based on national

strategy and policy. The establishment of systems for rehabilitation or related issues has proved elsewhere to contribute to the improvement of service delivery and advancement of the scientific basis of medical rehabilitation.

The national strategy in Croatia should aim at incorporating inpatient, outpatient and community-based rehabilitation into one three-level system *The community-based level* integrating rehabilitation into the day-by-day practice of primary care as well as providing domiciliary rehabilitation, assistive technology and home adaptations. *The secondary or regional level* providing ambulatory care, short or medium-term inpatient rehabilitation, consultative service to other clinicians, remedial therapy services to patients of other disciplines, and engaging in education and research. *The tertiary level* requires a central, national institution for longer inpatient, comprehensive rehabilitation of complex impairments, specialization in rehabilitation medicine and research, the conduct of registers and epidemiological studies and the preparation of clinical performance guidelines.

Professional criteria for patient referral to elements of the three levels, particularly to inpatient care, its type and length must be determined and adhered to, tasks and responsibilities of the system's components must be defined and activities coordinated to ensure integration without duplication of work.

Since different funding and cost-control mechanisms may affect rehabilitation practice, the way of payment in Croatia should be reconsidered. Functional Independence Measure (FIM) and Functional-related Groups (FRG) modules may be used in parallel to study interaction between resource use and quality achieved and could lead to initiating a retrospective payment system for rehabilitation inpatients [31] that could give the provider an incentive to improve patient outcomes. Providers of medical rehabilitation should start documenting their use of outcome measurements, in order to have evidence-based effectiveness of rehabilitation. Employment positions for sufficient occupational and speech therapists in rehabilitation facilities must be secured.

Other countries in transition, e.g., the Czech Republic [20], Slovakia [32], and Lithuania [33] face a similar challenge of establishing a medical rehabilitation system, and we hope that this article may have some interest for colleagues in these and other countries.

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