# THE APPLICATIONS OF INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH (ICF) BY WORLD HEALTH ORGANIZATION (WHO) IN REHABILITATION MEDICINE PRACTICE

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**ABSTRACT:**
***Context:*** Rehabilitation Medicine is dedicated to optimise patients function and health in the most comprehensive manner. ICF, the latest International Classification by World Health Organization (WHO) is a conceptual framework for the assessment of functioning, disability and health. The purpose of this paper is to describe the applications of ICF in Rehabilitation Medicine practice in the Medical Rehabilitation Unit, University of Malaya Medical Centre (UMMC), Kuala Lumpur. ***Issues:*** ICF consists of body function, structure, activity, participation and environmental factor. ICF categories are exhaustive, but are not practical to be used entirely and not applicable in clinical practice on their own. How is ICF used from the clinical perspective? It has to be adapted to make it usable. In Rehabilitation Medicine settings, the following are ways ICF is applied in clinical practice: research in terms of validating the use of available ICF Core Sets and development of new ICF Core Set; clinical practice based on the ICF-based sheet; and educational tools. ***Conclusion:*** The practice of Rehabilitation Medicine is in line and compatible with the concept of ICF and can serve as a new important language that can improve the practice of Rehabilitation Medicine. It can be a universal language in functioning, disability and health and can improve understanding in addressing issues on disability within the medical community, improve multi professionals' communication among patients, healthcare providers and stakeholders. *(JUMMEC 2007; 10 (2):16-21)*

**KEYWORDS:** ICF, Clinical application, rehabilitation medicine

## Introduction

The work on International Classification of Functioning, Disability and Health (ICF) has generated worldwide interest including here in Malaysia. It has provided a platform for international collaboration in research for academic excellence and clinical practice. ICF is a multipurpose classification designed to serve the various aspects of health. ICF belongs to the 'family' of International Classification developed by World Health Organization (WHO) (1). The collaboration work on ICF in Malaysia started in 2004 spearheaded by the Department of Rehabilitation Medicine, Faculty of Medicine, University of Malaya (UM), the official study centre for ICF in Malaysia.

Rehabilitation Medicine is dedicated to optimise patients' function and health in the most comprehensive manner. Rehabilitation Medicine is the medical specialty concerned with the diagnosis, evaluation and treatment of persons with limited function as a consequence of disease or injury. It has been recognised as an integral component of modern health care and is one of the recent medical specialties emerging in Malaysia. It is fairly established in many parts of the world, especially in developed countries. Rehabilitation is a dynamic process that aims to: *limit impairment*, decrease activity limitation (*disability*) and prevent participation restriction (*handicap*). Rehabilitation management is dedicated to optimise not only patients but other factors that may influence patients' well-being or health. Attention is given to potentially disabling behaviours and

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environmental factors that can increase disablement. At the same time, attention is also given to potentially beneficial behaviours and environmental factors that help to minimise symptoms and disability. It involves identification of problems and needs, the relation of problems to impaired body functions and structures and factors of the person and environment. In rehabilitation practice, patients can present with arrays of problem, e.g., medical issues, diagnostic issues, psychological issues and functional issues. It is thus necessary to set priorities by selecting target problems, define goals and to get a realistic time frame to achieve them. Rehabilitation should start early. The rehabilitation cycle can be summarised as follows:

1 Phase 1: Evaluation
   (a) Identify problems and needs

2 Phase 2: Goal-setting
   (a) Define treatment targets
   (b) Relate problem to modifiable and limiting factors

3 Phase 3: Delivery of rehabilitation management
   (a) Select appropriate measures
   (b) Plan, implement and coordinate intervention

4 Phase 4: Assess effects and re-evaluate

The perspective of functioning and health is different when viewed from the medical and the rehabilitation perspectives. From the rehabilitation perspective, a patient's function and health are associated with but not merely a consequence of a condition or disease. Furthermore, functioning and health are not only seen in association with a condition but also in association with personal and environmental factors and the rehabilitation context. From the medical perspective, functioning and health are seen primarily as a consequence of a disease or condition. Measures are thus typically disease-specific. Health indicators have traditionally focused on the mortality and diagnosis of the disease (2). While these are important data, they do not adequately capture health outcomes of individuals or populations. Diagnosis alone does not explain patient's ability or disability. Other information such as level of care, cost of treatment, discharge destination and functional outcome can only be postulated inaccurately from the diagnosis. The previous conceptual frameworks in the field of disability by WHO was the International Classification of Impairment, Disabilty and Handicap (ICIDH). In ICIDH, the framework illustrate a unidirectional interaction between the disabling process which in the true sense, is multidirectional. The classification did not include personal and environmental factors as part of disabling process. Therefore, it was not comprehensive and the term used (e.g., handicap) are also negative. Hence, WHO has developed a new classification known as International Classification of Functioning, Disability and Health (ICF) to provide an improved version and common framework for health outcome assessment. This paper aims to describe the applications of ICF in Rehabilitation Medicine practice in the University of Malaya Medical Centre (UMMC), Kuala Lumpur.

### *International Classification of Functioning, Disability and Health (ICF)*

ICF is a multipurpose classification designed to serve various aspects of health. ICF belongs to the 'family' of International Classification developed by World Health Organization (WHO). It was endorsed in May 2001 by the World Health assembly and replaced the International Classification of Impairment Disabilities and Handicap (ICIDH). The ICF was designed to record and organise a wide range of information about health and health related issues in standardised common language thereby facilitating communication about functioning, disability, health and health care across the world. Its specific aims can be summarised as follows:

1. to provide a scientific basis for understanding and studying health and health-related states, outcomes and determinants;
2. to establish a common language for describing health and health related states in order to improve communication between different users, such as patients, health workers, researchers, policy-makers and other stake holders;
3. to permit comparison of data across countries, health care disciplines, services and health conditions; and
4. to provide a systematic coding scheme for health information systems.

ICF is a comprehensive conceptual framework for assessment of function, disability and health. The ICF has two parts, each containing two separate components. Part 1 covers Functioning and Disability and includes the components: body function (b) and structures (s) and activities and participations (d). Part 2 covers Contextual Factors and includes the components: environmental factors (e) and personal factors. The abbreviations (b), (s), (d) and (e) are used in the ICF coding system. Body functions are the physiological and psychological functions of the body system. Body structure represents the anatomical parts of the body, such as organs, limbs and their components. Activities and participations are given in the ICF in a single list that covers the full range of life area, from basic learning or watching, to composite areas

such as interpersonal interaction or employment. Environmental factors consist of the physical, social and attitudinal environment in which people live and conduct their lives. Personal factors are of an individual's life and living and comprise features of the individual that are not part of the health states. These factors may include gender, race, age, marital status, habits and many others. The personal factors are not yet classified in the ICF. The total ICF categories listed is 1454.

ICF categories are exhaustive and not practical to be used on its own. It has to be adopted to make it practical and usable for clinical practice and research across all specialties and disciplines (3). The ultimate aim is to make ICF meaningful and can be utilised by various consumers for health policy, quality assurance and outcome evaluations. In view of this, the ICF Core Sets were developed by a multiprofessional team of The ICF Research Branch Munich of the WHO Collaboration Centre of the Family of International Classifications at the Ludwig-Maximilian University, Germany, together with the Classification, Assessment and Survey (CAS) Team at WHO, with partner's organisation around the world including Malaysia (4).

### *The Application of ICF in Rehabilitation Medicine at the UMMC, Kuala Lumpur*

*Research*

1 Validation of available ICF Core Sets

ICF Core Sets are an abbreviated list of the ICF categories. They are developed with the intention of making the ICF feasible in clinical practice, research, education or any other prospective areas for it to be use. To implement the ICF in medicine and other fields, practical tools need to be developed.

ICF Core Sets are the shorter version of ICF designed specifically to be used to assess the functioning and disability levels of a specific condition. Currently, ICF Core Sets have been developed for 12 common health conditions as follows:

(a) Low back pain
(b) Chronic widespread pain
(c) Osteoarthritis
(d) Osteoporosis
(e) Rheumatoid Arthritis
(f) Chronic Ischemic Heart Disease
(g) Obstructive Pulmonary Disease
(h) Diabetes Mellitus
(i) Obesity
(j) Depression
(k) Stroke
(l) Breast cancer

The use of ICF Core Sets in clinical practice, is currently undergoing multicentre validation testing worldwide.

2 Development of New ICF Core Sets

ICF Core Sets are being developed for many other conditions commonly seen in Rehabilitation Medicine practice such as spinal cord injury (SCI), traumatic brain injury, amputation and few others. These involved three main stages:

(a) Worldwide Expert Survey
This involved expert from various health professions (therapists, social officers, nurses, etc) and physicians with different specialisations to identify relevant issues in the ICF for the selected condition. This process is known as the Delphi exercise. Following this, the ICF Core Sets are derived for the condition.

(b) Worldwide Empirical Study
The ICF Core Sets that have been developed is then tested on patients for validation purpose. All WHO regions are involved in data collection. For example, in the development of ICF Core Sets for spinal cord injury patients, 40 individuals with SCI in early post-acute rehabilitation and 40 individuals with SCI in the chronic/post-acute rehabilitation were involved. The ICF Core Sets that have been developed is then tested on the patients through direct interview. The study designed is a cross sectional multicentre international validation study.

(c ) Worldwide Qualitative Study
The final stage involves a qualitative study in each WHO region of the specific condition. These involved conducting Focus Group or individual interviews with patients in different settings. The patients that were selected were of the 12 conditions mentioned earlier. The aim was is to examine patients problem in subsets including in different countries, social economic factor (age, gender and other variables) disease characteristics and patients' outlook to their disease.

Based on the biopsychosocial model of functioning and disability by WHO, the rehabilitation assessment is of the most comprehensive assessment that follows this model. The ICF-based Sheet (Figure 1) is designed by the research team in Munich using the components of ICF. The sheet summarises the components of ICF. In UMMC, the ICF-based Sheet is used during

**Clinical Practice**
ICF-based Sheet

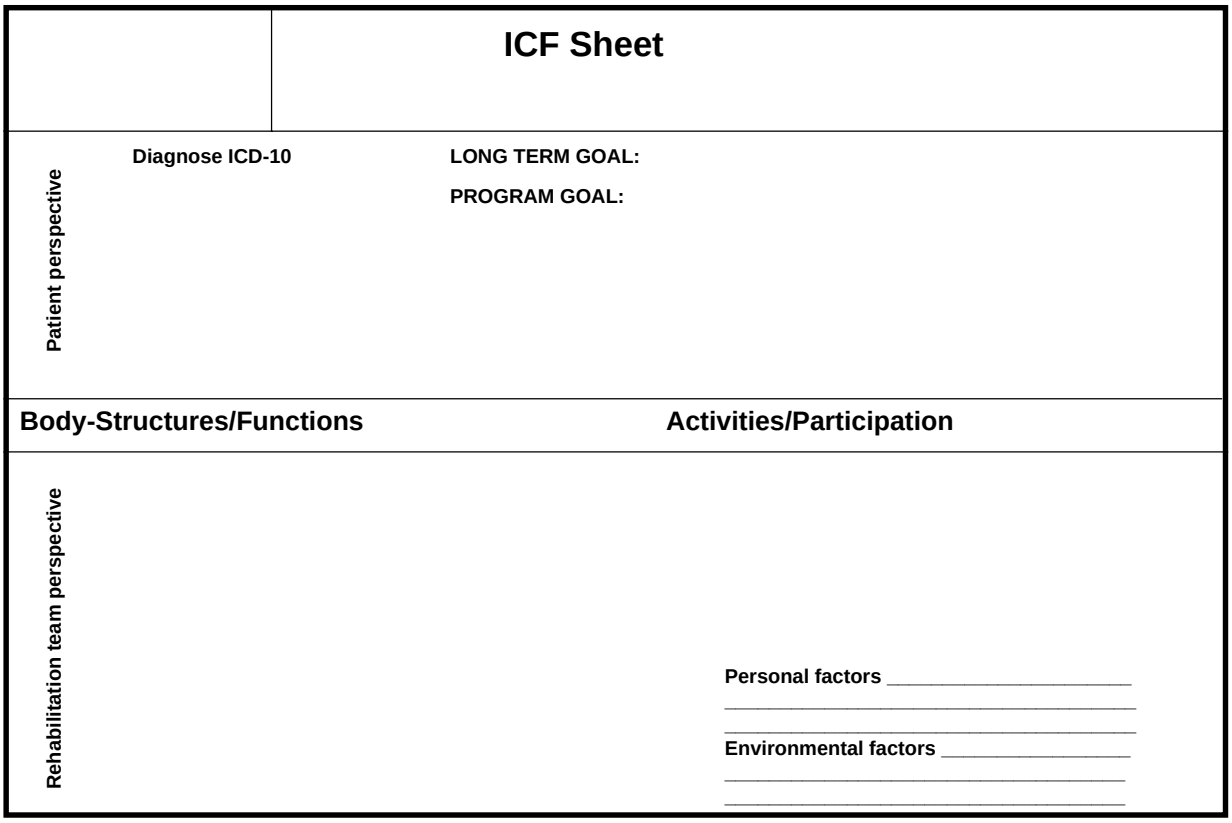


**Figure 1.** ICF-based Clinical Sheet. Obtained with permission from the ICF Research Branch, Munich

interdisciplinary team meeting of the Rehabilitation Medicine unit. The interdisciplinary team members include the Rehabilitation Physician, Medical Officers, Nurses, Physiotherapist, Occupational Therapist, Prosthetist and orthotist, Medical Social Workers and other relevant members. Using the ICF-based sheet it is easy to determine: what are the patients' problems from his and hers perspective, what are the patients' problems from the rehabilitation team's perspective and to determine the target problem. Figures 2 and 3 illustrate the use of the clinical-based sheet and the relationship of the ICF components in a patient with low back pain with radiculopathy due to discogenic pain. Using the form, it is easier to understand the relationship of patient's symptoms, body structures/function, activity limitation and participation restriction. Apart from these, it can also determine personal and environmental factors that are related to the target problem as shown. Following the assessment as illustrated in the clinical sheet, hence it is easier for the rehabilitation team to determine the treatment goals. Finally, with the completed sheet, the coding of the ICF can be applied.

The ICF-based Sheet is also used in case summary to describe level of functioning of the patient and also in case report of the Masters' students. This clinical sheet can be used across diseases and conditions. ICF-based sheet is currently being used in the Medical Rehabilitation Unit of the University of Malaya Medical Centre, Kuala Lumpur.

## Education

The concept of ICF is used to teach and promote the issues of functioning and disability to student, health care professional and others. The concept is easily understood during the teaching of rehabilitation medicine especially to the medical student. Using the ICF, the definition of terms describing impairment and disability are clearer. It gives a clearer description on the level of functioning of the patients. The staff and students are encouraged to use the proper terms when describing patients' level of functioning. Furthermore, when the students write case reports, they are

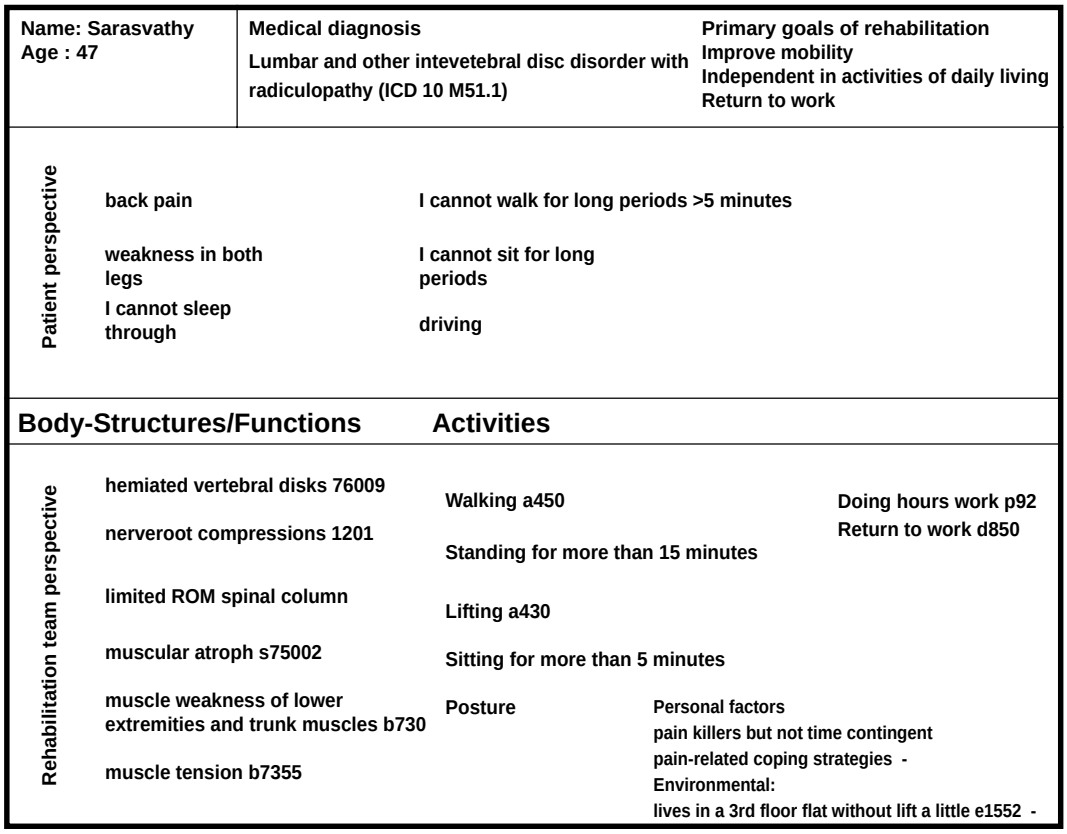


**Figure 2.** ICF-based clinical sheet for patient with low back pain with the ICF coding of the components

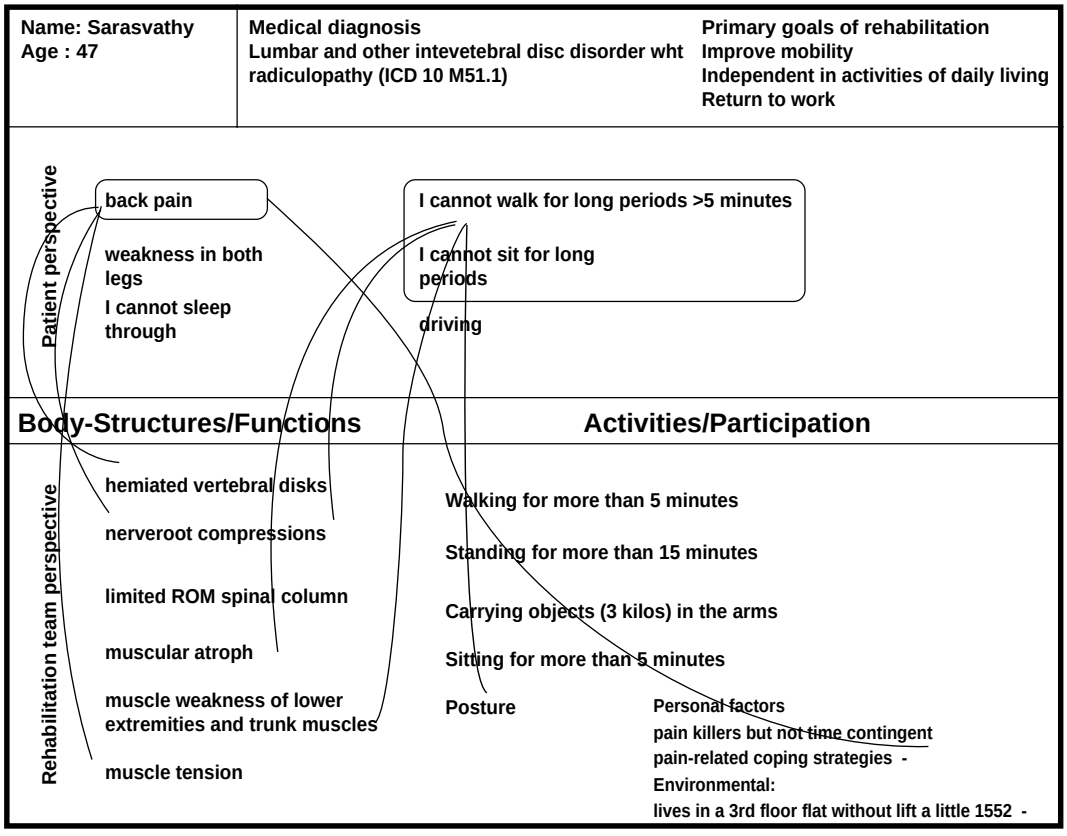


**Figure 3.** ICF-based clinical sheet for patient with low back pain showing how the ICF components can be used to structure patient's problems, findings and observation by rehbailitation team. Lines between patient's target problem, impaired body structure and function, personal and environmental factors.

encouraged to use the ICF to summarise the patients kevel of functioning, Hence, from the case reports that use ICF, apart from the disease and treatment process, the level of functioning of patients can be clearly derived. This will promote the concept of holistic management of the patient instead of only focussing on treating the disease only.

## Conclusion

ICF has the potential to be a new important language that can improve the practice of rehabilitation medicine. The approaches in rehabilitation medicine are in line with the concept of ICF. International Classification of Functioning, Disability and Health (ICF): It can provide a new platform that may lead to a universal language in functioning disability and health. It can also lead to a better understanding of rehabilitation medicine practice within the medical community; improve multi-professional communication between patients, healthcare professionals, policy-makers and other stakeholders.The future use of ICF will be based on the outcomes of the study before definite conclusions can be made.

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