

# ICF in Physical Medicine and Rehabilitation

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## Introduction

The International Statistical Classification of Disease (ICD 10) and related health problems focuses on diagnosis, disorders, morbidity and mortality. The International Classification of Functioning, Disability and Health by World Health Assembly (ICF) augments and enriches the ICD 10 in a way of a multipurpose classification for description and measurement of a person's functional status and associated health condition. Together the ICF and ICD 10 form the WHO Family of International Classifications and provide a meaningful picture of health. In May 2001, the world health assembly ratified and approved the ICF for implementation in various fields.

## Aims of ICF

(i) To provide a scientific basis for understanding health, health-related states, outcomes and determinants. (ii) To establish a common language for describing health and health-related states, thereby improving communication between health care professionals, legislators, and the public. (iii) To allow comparison of data across countries, health care services, and time. (iv) To provide systematic coding scheme for health information systems.

## Applications of ICF

At the individual level: ICF helps in assessment of the individual level of functioning, intervention planning to maximize his functioning and further evaluation of the intervention itself to see how effective it was. At the

institutional level: ICF helps in resource planning, quality assurance and outcome evaluation of the services needed. At the social level: ICF is useful in assessment of the environment, socioeconomic analysis, and compensation systems.

ICF is a universally accepted framework to describe functioning, disability and health in persons with all kinds of diseases or conditions. Realizing that ICF's significance and power lies in its conceptualization of functioning and disability, there is an urgent call for creating ICF-based instruments that are more appropriate to clinical information needs.

Structurally, the ICF is based on three levels of functioning (body functions and structures, activities, and participation) with parallel levels of disability (impairments, activity limitations and participation restrictions). These are classified in terms of domains appropriate to each level, and can be seen in Table 1.

Table 1. Notice that the term 'disability' in the ICF refers to all three dimensions taken together.

Dimensions of Functioning	Dimensions of Disability
Body Functions & Structures	Impairments
Activities	Activity limitation
Participation	Participation Restrictions

Spinal cord injury (SCI) rehabilitation is an important area in which almost every physical medicine department across the country has been actively involved, and doing extensive work in bringing the best out of the persons with disability.

There may be similar protocols but no common outcome to measure the consequences of spinal cord injury. To describe, qualify and quantify consequences of SCI, a wide range of outcome measures has been used. Various functional independence measures have been used to assess the person's progress with intense rehabilitation programs. Many issues relating to the large variation in currently available measures need to be sorted out. There are also problems in comparing data of different persons at different stages of their recovery and rehabilitation process and after community reintegration

SCI is one chronic condition in which one faces limitations and challenges in physical, psychological and social domains of functioning, the more proximal the level of lesion, the greater the difficulty in functioning with the given personal factors in a specific environment.

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To facilitate a systematic and comprehensive description of an individual's functioning, ICF core sets have to be developed. A core set is a list of selected categories relevant for the specific health condition that serves as minimal standards for assessment and documentation of functioning and health in the related case.

A Brief ICF core set for a specific condition includes as few categories as possible for ideal and minimal health information system.

A longer Comprehensive ICF core set for a specific condition is a list of categories that are necessary to describe the limitations and challenges in functioning of the individual. All multidisciplinary team members will be required to be involved in the assessment of the various domains.

A stepwise approach explaining the use of ICF tools in the rehabilitation process of a spinal cord injured person in the various phases of the rehabilitation program is described below.

### Case Example

**History and background:** A 23 year male mason, hailing from a village, sustained injury after a fall from a height, following which he had complete loss of movement and sensations below his chest. He was initially shifted to the near-by government medical college where he was diagnosed to have thoracic spine 8/9 fracture dislocation compressing his spinal cord, causing complete paraplegia (T8 ASIA A). He was operated and the spine fracture was stabilized. Postoperatively there was no significant improvement in his neurological condition. After four weeks he was referred to a spine injury rehabilitation centre for further management. At the time of admission into the rehabilitation center, Gopi was completely dependant for all activities, with his mother and sister caring for him.

**Step 1:** The initial assessment: Based on history, the patient's perspective of his body structure, function, activity and participation are tabulated.

**Step 2:** Go to the ICF core set for spinal cord injury. If no corset is available, formulate a corset using the available ICF resources such as the ICF browser <http://apps.who.int/classifications/icfbrowser/>

Choose ICF categories from this core set relevant to a patient's case and make a profile of the patient's body structure and functioning.

**Step 3:** Rate each category using the ICF qualifiers, all categories in the classification should be quantified using the same generic scale (scored 0 - 4 and 8):

Table 2: Perspective of body structure, function, activity and participation and personal factors.

<b>Patient's Perspective:</b>	
<b>Body-Functions/Structures</b>	<b>Activity and participation</b>
Legs don't work	I can't walk,transfer
No sensations below chest	I can't return to work
Tightness in my legs	I can't be an earning member
Bladder bowel no control	I can't do my daily activities
Sleep is affected by pain in legs	

<b>Physician's Perspective:</b>	
<b>Body-Functions/Structures</b>	
s12004	Thoracic spinal cord
b265.4	Touch functions
b525.4	Defaecation functions
b620.4	Urination functions
b710.2	Mobility and joint functions
b730.4	Muscle power functions
b735.3	Muscle tone
b755.3	Involuntary movement reactions
b770.4	Gait pattern functions
b810.4	Protective functions of the skin

<b>Activity and participation</b>	
d410.4	Changing basic body functions
d415.4	Maintaining body posture
d420.4	Transferring oneself
d450.4	Walking
d465.4	Moving around using equipment
d510.4	Washing oneself
d520.4	Caring for body parts
d530.4	Toileting
d540.4	Dressing
d550.1	Eating
d560.1	Drinking
d850.4	Remunerative employment
d870.4	Economic self sufficiency
d910.4	Community life

<b>Environmental factors</b>	
e1559.3-	Living in a thatched hut
e115.4-	Assistive devices

<b>Personal factors</b>	
23 years old, male	
Living with mother and sister	
Has accepted his disability	
Wants to be independant	
Unemployed	
Disability pension	
Needs family and for support	

0 -	No problem (none, absent, negligible)	0-4%
1 -	Mild problem (slight, low)	5-24%
2 -	Moderate problem (medium, fair)	25-49%
3 -	Severe problem (high, extreme)	50-95%
4 -	Complete problem (total)	96-100%
8 -	not specified	
9 -	not applicable	

Environmental factors are quantified with a negative and positive scale that denotes the extent to which an environmental factor acts as barrier or a facilitator:

0 - No barrier	+0 - NO facilitator
1 - Mild barrier	+1 - MILD facilitator
2 - Moderate barrier	+2 - MODERATE facilitator
3 - Severe barrier	+3 - SUBSTANTIAL facilitator
4 - Complete barrier	+4 - COMPLETE facilitator

We now have an illustration of the functioning status of a patient at the time of initial assessment. Various categories are assigned to the rehabilitation team for further intervention. Each health professional sets a goal to be achieved within a specified time. Interventions, treatments, therapy are carried out. At the end of that specified time each team member rates the patient again to see whether the assigned goals were achieved or not. In the pre discharge meeting the team then goes on to decide whether the person is to be given more time, change certain goals or conclude the rehabilitation program.

## Discussion

The Central Bureau of Health Intelligence, DGHS, Ministry of Health and Family Welfare, India, had organized a workshop in 2008 for designing the strategy for Advocacy and implementation of International Classification of Functioning, Disability and Health (ICF) in which major recommendations included promotion of ICF in Medical colleges and National institutes of various disabilities and Needs-assessment to formulate a social policy or legislation which intern will be useful for state entitlements.

At the outset, the ICF as a tool may seem very intimidating and lengthy for clinicians and other allied health professionals, this is probably an important factor behind the slow progress in its implementation. Once ICF core sets are decided upon (a few are already available and validated), choosing the categories and rating them by the specific team members does not take much time. An ICF Core Set was developed to guide health professionals through rehabilitation management in clinical practice and scientists in the research of functioning and disability. This approach is an ongoing and worldwide process that will result in more and more ICF Core Sets in the future. ICF is a health and health-related classification system thus there is tremendous scope for its use by sectors like insurance, labor, education, economics, social policy, general legislation, development and environment modification. ICF provides an appropriate instrument for the implementation of stated international human rights mandates as well as national legislation. ICD as a tool is inadequate to predict service needs, level of care, functional outcomes, health planning and management. ICF is a tool, which measures and describes how people function with their health condition, applies to all decrements of health and disability.

Table 3. Comprehensive Core Set for Spinal Cord Injury Rehabilitation in the Long Term Context

<b>b</b>	<b>Body Functions</b>
b126	Temperment and personality
b130	Energy and drive function
b134	Sleep function
b152	Emotional function
b260	Proprioceptive functions
b265	Touch function
b270	Sensory function related to temperature and stimuli
b28010	Pain in head and neck
b28011	Pain in chest
b28012	Pain in stomach or abdomen
b28013	Pain in back
b28014	Pain in upper limb
b28015	Pain in lower limb
b28016	Pain in joints
b2803	Radiating pain in dermatome
b2804	Radiating pain in a segment or region
b420	Blood pressure functions
b440	Respiration functions
b445	Respiratory muscle functions
b455	Exercise tolerance function
b525	Defecation tolerance function
b530	Weight maintenance function
b550	Thermoregulatory functions
b610	Urinary excretory functions
b6200	Urination
b6201	Frequency of urination
b6202	Urinary incontinence
b640	Sexual function
b660	Procreation function
b670	Sensations associated with genital and reproductive fns.
b710	Mobility of joint functions
b715	Stability of joint functions
b720	Mobility of bone functions
b730	Muscle power functions
b740	Muscle tone functions Muscle endurance functions
b750	Motor reflex functions
b760	Control of voluntary movement functions
b770	Gait pattern functions
b780	Sensation related to muscle and movement function
b810	Protective functions of the skin
b820	Repair functions of the skin
b830	Other functions of the skin
b840	Sensation related to the skin
<b>s</b>	<b>Body Structures</b>
s12000	Cervical spinal cord
s12001	Thoracic spinal cord
s12002	Lumbosacral spinal cord
s12003	Cauda equina
s1201	Spinal nerves
s430	Structure of respiratory system
s610	Structure of urinary system
s720	Structure of shoulder region
s7300	Structure of upper arm
s7301	Structure of fore arm
s7302	Structure of hand
s7500	Structure of thigh
s7501	Structure of lower leg
s7502	Structure of ankle and foot
s760	Structure of trunk
s8102	Structure of upper extremity
s8103	Structure of pelvic region
s8104	Structure of lower extremity
s8105	Structure of trunk and back
<b>D</b>	<b>Activity and Participation</b>
d155	Acquiring skills
d230	Carrying out daily routine
d240	Handling stress and other psychological demands
d345	Writing messages
d360	Using communication devises and techniques
d4100	Lying down
d4102	kneeling
d4103	Sitting

d4104 Standing  
 d4105 Bending  
 d4106 Shifting the bodys centre gravity  
 d415 Maintaining bodys position  
 d420 Transferring oneself  
 d430 Lifting and carrying objects  
 d4400 Picking up  
 d4401 Grasping  
 d4402 Manipulating  
 d4403 Releasing  
 d4450 Pulling  
 d4451 Pushing  
 d4452 Reaching  
 d4453 Turning or twisting the hands or arm  
 d4454 Throwing  
 d4500 Walking short distances  
 d4501 Walking long distances  
 d4502 Walking on different surfaces  
 d4503 Walking around objects  
 d455 Moving around  
 d4600 Moving around within the home  
 d4601 Moving around within building other than home  
 d4602 Moving around outside the home and other buildings  
 d465 Moving around using equipment  
 d470 Using transportation  
 d475 Driving  
 d510 Washing oneself  
 d520 Caring for body parts  
 d5300 Regulating urination  
 d5301 Regulating defecation  
 d5302 Menstrual care  
 d540 Dressing  
 d550 Eating  
 d560 Drinking  
 d570 Looking after ones health  
 d610 Acquiring a place to live  
 d620 Acquisition of goods and services  
 d630 Preparing meals  
 d640 Doing house hold work  
 d650 Caring for house hold objects  
 d660 Assisting others  
 d720 Complex interpersonal relationships  
 d750 Informal social relationship  
 d760 Family relationship  
 d770 Intimate relationship  
 d810 Informal education  
 d820 School education  
 d825 Vocational training  
 d830 Higher education  
 d840 Apprenticeship(work prepration)  
 d845 Acquiring, keeping and terminating a job  
 d850 Remunirative employment  
 d870 Economic self sufficiency  
 d910 Community life  
 d920 Recreation and leisure  
 d940 Human rights

#### e Environment Factors

e110 Products and substances for personal consumption  
 e115 Products and technology for personal use in daily living  
 e120 Products and technology for indoor and outdoor mobility and transportation  
 e125 Products and technology for communication  
 e130 Products and technology for education  
 e135 Products and technology for employment  
 e140 Products and technology for culture, recreation and sport  
 e150 Design, construction and building products and technology of buildings for public use  
 e155 Design, construction and building products and technology of buildings for private use  
 e160 Products and technology of land development  
 e165 Assets  
 e310 Immediate family  
 e315 Extended family  
 e320 Friends  
 e325 Acquaintances, peers, colleagues, neighbours and commmunity members  
 e330 People in position of authority

e340 Personal care providers and personal assistants  
 e355 Health professionals  
 e360 Other professionals  
 e410 Individual attitudes of immediate family members  
 e415 Individual attitudes of extended family members  
 e420 Individual attitudes of friends  
 e425 Individual attitudes of Acquaintances, peers, colleagues,neighbours and community members  
 e440 Individual attitudes of personal care providers and personal assistants  
 e450 Individual attitudes of health professional  
 e455 Individual attitudes of health related professional  
 e460 Societal attitudes  
 e465 Social norms, practices,and ideologies  
 e510 Service systems and policies for the production of consumer goods  
 e515 Architecture and construction services systems and policies  
 e525 Housing services systems and policies  
 e530 Utilities services systems and policies  
 e535 Communication sevicees, systems and policies  
 e540 Transportation services systems and policies  
 e550 Legal services systems and policies  
 e555 Associations and organisational services systems and policies  
 e570 Social security services systems and policies  
 e575 General social support services systems and policies  
 e580 Health services systems and policies  
 e585 Education and training services systems and policies  
 e590 Labor and employment services systems and policies

Issues for consideration for the effective implementation of ICF: (i) Workshops to sensitize and train health professionals within departments, then district and state levels. (ii) Training of postgraduate in the field of Physical medicine and rehabilitation on ICF. (iii) Include ICF in the teaching schedule and syllabus of MBBS, and all postgraduate courses. (iv) Encourage research and multicentric studies on the use of ICF.

Our challenge ahead is to develop ICF core sets and categories specific for individuals in our country with SCI, ABI (acquired brain injury), neuromuscular disorders, chronic pain disorders, arthritis, amputations, and the list is never ending in our specialty!

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