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THE USE OF ICF IN THE NEUROREHABILITATION PROCESS

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ABSTRACT

INTRODUCTION: Rehabilitation is often described as a process that starts when the diagnosis is made and continues as long as the person needs interventions. This process comprises four steps: assessment, goal setting, interventions and outcome measurement. In each step, the WHO International Classification of Functioning, Disability and Health (ICF) can be used and the results can be summarized in a rehabilitation plan.

OBJECTIVES: In this brief review, we describe the use of the ICF in the neurorehabilitation process in the form of an ICF based rehabilitation plan and how the rehabilitation plan can facilitate interdisciplinary team work in each of the four steps that comprise the rehabilitation process.

CONCLUSION: An ICF based rehabilitation plan that comprises a common language, understood by team members, patients and their family, is a valuable tool in the rehabilitation of persons with injuries and diseases to the nervous system. The use of the ICF has thereby enabled the development of a common framework for our neurorehabilitation methodology, regardless of diagnosis or disability.

KEY WORDS

Disability evaluation; International Classification of Functioning, Disability and Health; Nervous system diseases; Outcome and process assessment (Health); Patient outcome assessment; Physical and rehabilitation medicine

1. Introduction

Injuries and diseases to the central and peripheral nervous system are among the world leading causes of life-long disabilities. Over the past decades, neurorehabilitation has evolved as a central part of the management of people with all types of neurological disabilities. Many improvements have been made in the understanding of the mechanisms underlying specific injuries and diseases and in the assessment of their consequences. A large number of controlled studies have been published that convincingly show the effects of various interventions aiming at improving anything from cellular function to social interactions. Many new outcome measures have been developed and are increasingly used to capture the importance of rehabilitation to improve lives for those with life-long neurological disabilities.

A central component in the neurorehabilitation practice is the use of the WHO International Classification of Functioning, Disability and Health (ICF) (World Health Organization, 2001). The ICF has become a universal framework and an international language for describing all aspects of a neurological disability (Stucki et al, 2007; Cieza et al, 2008). It can be used to facilitate the assessment and goal setting following an injury or a disease, as well as improve the selection of appropriate interventions and outcome measurements.

In this brief review, we will describe the use of the ICF in the neurorehabilitation process in the form of an ICF based rehabilitation plan and how the rehabilitation plan can facilitate interdisciplinary team work in each of the four steps that comprise the neurorehabilitation process. Much research remains, however, to show the benefits of using the ICF in the neurorehabilitation process, how to develop this use from a scientific perspective and how the ICF in itself can be refined to address limitations and challenges to the taxonomy when being used in neurorehabilitation.

2. The four steps of the neurorehabilitation process

Rehabilitation, regardless of diagnosis or disability, is often described as a process that starts when the diagnosis is made and continues as long as the person needs interventions (Lexell, 2012). This process comprises four steps: assessment, goal setting, interventions and outcome measurement (Figure 1). In each step, the ICF can be used and the results can be summarized in a rehabilitation plan. Over the past decade, we have developed and refined an ICF based rehabilitation plan in our clinic that comprises a common language, understood by team

members, patients and their family. The implementation of the ICF has helped us to create a common framework for the rehabilitation methodology in the neurorehabilitation process. In the following, the four steps and the use of ICF in each step are described.

Insert Figure 1 about here

2.1 Assessment

The initial step in the rehabilitation process – the assessment – comprises several specific components (Figure 1). This is where we make the rehabilitation diagnosis and a description of the consequences of a disease or injury for the person and his or her family. Without a thorough assessment, it is very difficult to plan the neurorehabilitation process appropriately, and without a structured plan we cannot provide appropriate interventions.

In this part of the process, we rely on the interdisciplinary teamwork and on the rehabilitation professionals, such as physiotherapists, occupational therapists, social workers, neuropsychologists and speech and language pathologists (among others). They contribute with their specific professional knowledge of the person and his/her disability. Given that we cover a broad range of competences and areas, the ICF can create the common language that enable us to form a holistic view of the person. A rehabilitation plan based on the ICF and using the ICF terminology is one way to ensure this holistic view.

The ICF based rehabilitation plan utilizes the terminology from the ICF (Figure 2) and provides us with a universal framework for describing all aspects of a disability (i.e., Impairments, and Activity limitations and Participation restrictions). In addition, the ICF also includes contextual factors, i.e., Environmental factors and Personal factors, which allow us to describe the impact of the environment on a person's functioning and disability. Even though Personal factors are not categorized in the ICF everyone is well aware that they are important for the outcome of rehabilitation process. We can still include them in the assessment in the same way as we do with Environmental factors, thereby describing facilitators and barriers for the next phases of the neurorehabilitation process.

Insert Figure 2 about here

2.2 Goal setting

Once the assessment is made, we then design the rehabilitation plan, the second step in the rehabilitation process (Figure 1). During this step, based on the initial assessment, we formulate an overarching goal in the rehabilitation plan and set specific short-term and long-term goals together with the patient, select appropriate interventions and decide on who in the team, including the patient himself/herself, is responsible for them (Figure 2). Setting goals is one of the more challenging and critical aspects in the rehabilitation plan, but one that will support the patients in their process towards independence and autonomy. This is often described in terms of what the person are able to do (capacity), what they actually do (performance), and to what extent they perceive their involvement in various life situations (participation); this translates into the Activities and Participation component in the ICF language. By taking the assessments and the limitations in activities and restrictions in participation, we can then form specific goals that are meaningful for the patient, as well as realistic, challenging and measureable. An important aspect in the involvement of patients and their family in the goal setting process is education (Cieza et al, 2002). In our experience, patients and family can learn how to use the ICF and thereby focus on goals set at the level of activities and participation.

2.3 Interventions

Once the setting of goals is done, the next step in the rehabilitation process is to carry out appropriate interventions (Figure 1). The selection of interventions is greatly facilitated using the ICF rehabilitation plan. It is not always clear to everyone outside of rehabilitation what type of interventions that can be provided. To many professionals from other disciplines, as well as patients, neurorehabilitation is synonymous with “training”; however, the definitions and descriptions comprise more than just improvement of function, which is the meaning of the term training to most people. It is clear that recovery is a major component of neurorehabilitation, in particular following an injury. But, with time, and in the case of progressive neurological diseases, such as Multiple sclerosis, Parkinson’s disease and Muscular dystrophies, other components are equally important. It is therefore important to describe our interventions in a broader way.

Using the ICF, we can state that our overarching goal is to improve “functioning”, but this can include interventions such as providing aids and equipment, strategies and compensatory

techniques, education and self-management principles, symptom management and the reduction of the impact of certain impairments, and so on. In practice, our interventions can be described as elimination, compensation or training (Figure 3). Again, the ICF can be used as reference and framework by which we define our interventions. In particular, we can define if an intervention is aiming at reducing impairment, activity limitation, participation restriction or a barrier in the environment. For example, we eliminate a symptom or an environmental barrier, or we reduce the consequences it has for overall functioning (for example, reducing spasticity may improve the use of the hand during meal preparations). Similarly, compensation provides disabled people with a technique, a strategy, equipment or an aid to perform an activity in a better way. For example, an orthotic device can improve walking and a memory aid can improve the ability to go shopping. Training, finally, includes task-specific, repetitive actions aimed at improving a body function, as well as a specific activity. Providing such a structure to our interventions using the ICF framework assists us in describing the neurorehabilitation process. More importantly, though, it may enable us to develop more effective interventions that can improve body functions and transfer into improved activity and participation.

2.4 Outcome measurement

The fourth and final step in the rehabilitation process is the outcome measurement (Figure 1). This is another area which has developed immensely over the past decade, and where the ICF has been a vital component. One important area is that of linking specific outcome measurements to the ICF (Cieza et al, 2005; Resnik et al, 2009). The rationale for developing such linkages is to provide a validation and better understanding of measures by describing the concrete human features and functions in the ICF to which these measures relate.

As our overarching goal is to improve functioning, outcome measures should capture recovery and restoration, and the results of the interventions we use. These outcome measures often focus on impairments (as defined in the ICF) and can be both objective (i.e. performed by staff) and self-report (i.e., based on the patient's subjective perception). As our focus is also upon the patient perspective during the neurorehabilitation process, we must use outcome measurements where the patient's perspective can be assessed, namely the assessment of participation, commonly referred to as an individual's subjective perception of their involvement in life situations (World Health Organization, 2001). There are, however, few instruments that

focus specifically on participation, as it is defined by the ICF, so this is an area where we can expect further developments.

Given the emphasis on the patient-centeredness in neurorehabilitation, using an ICF based rehabilitation plan can also facilitate aspects of goal attainment. By incorporating the ICF facilitates not only evaluation of goal attainment but also the measurement of how our patients and we achieve the goals that we together set.

3. Conclusion and clinical implications

Over the past decade, the use of the ICF in the neurorehabilitation process has developed and it can now be seen as a standard framework for different steps that comprise the process itself. An ICF based rehabilitation plan that comprises a common language, understood by team members, patients and their family, is a valuable tool in the rehabilitation of persons with injuries and diseases to the nervous system.

4. Future research

Even though the ICF has become a standard framework in the neurorehabilitation process, much work remains before we are at the level where the ICF is integrated into our daily routines, where we have implemented the ICF throughout the entire process and where we can show the scientific benefits of using the ICF. Some areas where we can expect an increasing endeavor is in the operationalization of ICF as a tool in rehabilitation plans, medical records, and objective outcome measurements as well as patient-reported outcome measurements (so called PROMS). Overall, though, it is clear that the ICF has many advantages in the neurorehabilitation process, enabling the design of rigorous research projects and realizing outcomes that demonstrate its value and potential.

5. Declaration of interest

Nothing to declare.

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Legends

Figure 1. The four principal steps of the neurorehabilitation process.

Figure 2. The ICF based rehabilitation plan.

Figure 3. The three main components of neurorehabilitation interventions.

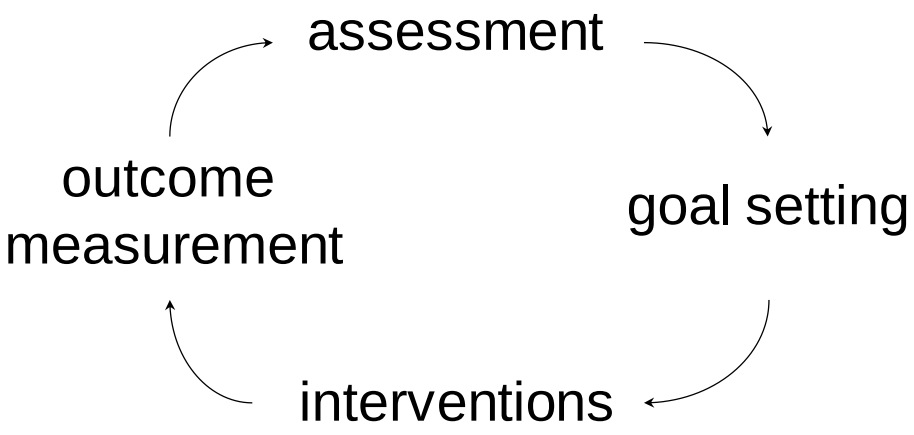
assessment
goal setting
interventions
outcome
measurement

Figure 1

REHABILITATION PLAN

Name N.N	Admission date and diagnosis
ASSESSMENT	
Disability	
Impairments	**Activity limitations and Participation restrictions**
Reduced somatosensation in the left side Muscle weakness and reduced motor function in the left side Inattention to the left Reduced balance when standing and moving Dysphasia Dysphagia	Difficulty getting dressed and toiletting Walking limitations indoors and outdoors Difficulty to communicate with others Difficulties to eat and drink
Contextual factors (environmental and personal factors)	
Facilitators	**Barriers**
Married Accesible house without stairs	Easily stressed and worried

Name N.N				
GOAL SETTING – INTERVENTIONS – OUTCOME MEASUREMENT				
Main goal				
To be independent in daily activities indoors and outdoors				
Short-term and long-term goals	**Interventions**	**Responsible person**	**Time frame**	**Goal attainment**
Toiletting and getting dressed independently	Balance and mobility training, neglect and task specific training	Phys Ther, Neuro Psych, Occ Ther, Ass Nurse		
Able to use the phone and talk to his wife	Speech and language training, task specific training	Speech/Language Path, Occ Ther, Ass Nurse		
Walk independently 500 meters with a cane	Balance and mobility training, prescription of walking aid, task specific training	Phys Ther, Ass Nurse,		
Able to eat and drink with minimal assistance	Task specific training at meal times, adapting drinks and meal portions	Speech/Language Path, Occ Ther, Ass Nurse		

Figure 2

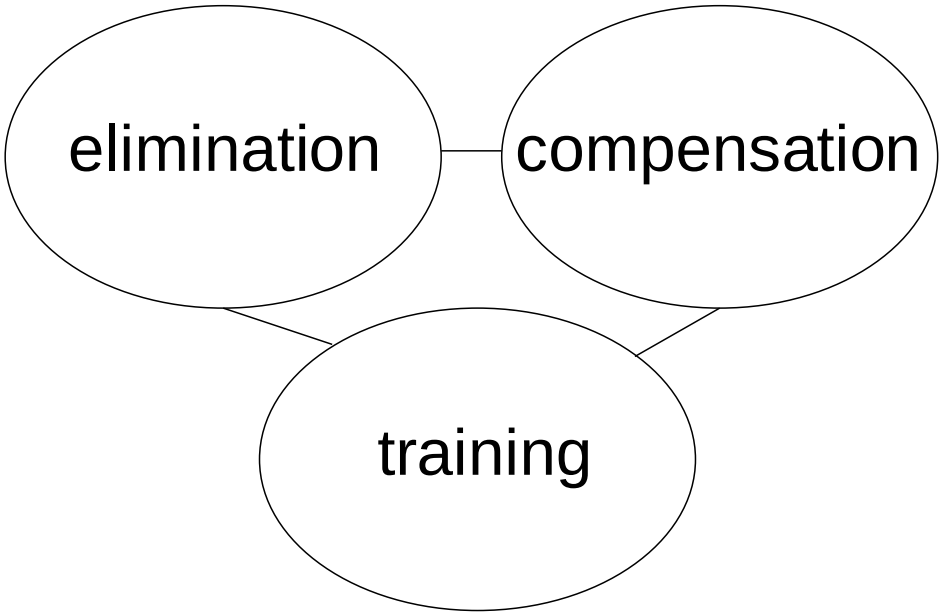

Figure 3