Models of Disability

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Models: Heuristic Value

- Define domains of interest
- Establish common nomenclature
- Predict outcomes
Which Models Provide a Useful Approach to Compensation?

- Review models of interest
  - Identify salient features related to work disability
- Nagi
- Disablement
World Health Organization

- Health:
  - state of complete physical, mental and social well being..not absence of disease
  - June 1946

WWW.WHO.INT
Evolution of Thinking About Disability

- WHO definition of Health
  - Disability resides in individual
  - Disability results from environmental and societal barriers
  - Disability results from the interaction between an individual and his/her environment
Each Model

- Definition of Terms Used
  - Operational definitions
- Assumptions of the Model
- Constructs Used to Elaborate Model
- Applications
Nagi Model: Disablement Model

| International Classification of Impairments, Disabilities, and Handicaps (ICIDH) |
|----------------------------------|-------------------------------------------------|
| **"DISEASE"**                   | **IMPAIRMENT**                                  |
| (the intrinsic pathology or disorder) | (loss or abnormality of psychological, physiological, or anatomical structure or function at organ level) |
| **DISABILITY**                  | **HANDICAP**                                    |
| (restriction or lack of ability to perform an activity in normal manner) | (disadvantage due to impairment or disability that limits or prevents fulfillment of a normal role (depends on age, sex, sociocultural factors) for the person) |

**Nagi Scheme**

<table>
<thead>
<tr>
<th><strong>ACTIVE PATHOLOGY</strong></th>
<th><strong>IMPAIRMENT</strong></th>
<th><strong>FUNCTIONAL LIMITATION</strong></th>
<th><strong>DISABILITY</strong></th>
</tr>
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<tbody>
<tr>
<td>(interruption or interference with normal processes, and efforts of the organism to regain normal state)</td>
<td>(anatomical, physiological, mental, or emotional abnormalities or loss)</td>
<td>(limitation in performance at the level of the whole organism or person)</td>
<td>(limitation in performance of socially defined roles and tasks within a sociocultural and physical environment)</td>
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For the ICIDH, see [4]. Definitions above are simplified from the ICIDH text. For the Nagi scheme, see [7-9]. The IOM scheme [10] has the same concepts but different defining language (Pathology: "interruption or interference of normal bodily processes or structures"; Impairment: "loss and/or abnormality of mental, emotional, physiological, or anatomical structure or function: includes all losses or abnormalities, not just those attributable to active pathology; also includes pain"; Functional Limitation: "restriction or lack of ability to perform an action or activity in the manner or within the range considered normal that results from impairment"; Disability: "inability or limitation in performing socially defined activities and roles expected of individuals within a social and physical environment").

Fig. 1. Two conceptual schemes for disablement.
NAGI: Definition of Disability

- “Disability is an expression of a physical or mental limitation in a social context”

  Conceptually, it is the fit between a person’s abilities and the demands of the physical/social environment

NAGI Model of Disability

- Assumptions:
  - Disability is derived from a health condition
    - Not all cause disability
    - The same condition may result in different levels of (or no) disability
    - Different health conditions can cause the same disability
  - Disability is a result of an interaction between an individual and his/her environment
Nagi Model: Constructs

- Disability is predicated on an individual’s roles and the importance of interactions
- Lack of strict mapping between functional limitations and disability
  - Not all functional limitations would result in work disability
  - The same functional limitation will not necessarily result in the same work disability
Nagi Model: Applications

- Commissioned by Social Security Administration to assist with the Social Security Disability Insurance program
  - Define disability
  - Distinguish disability from disease/diagnosis, malfunction of organs and systems
Disablement/Enablement

- Elaboration of the Nagi model
- Introduced factors likely to influence outcome of an impairment or functional limitation
- Evolved from a “disease driven” or medical model to a biopsychosocial one
  - Present the view that this is more likely to identify factors influencing disability, of which work disability is a subset
Verbrugge and Jette, 1994: Biopsychosocial Model
Verbrugge/Jette

- **Risk Factors:**
  - Phenomena that antedated the disability process and influence its severity (eg age, education, smoking)

- **Intra-individual factors**
  - Pertaining to the individual, (eg coping)

- **Extra-individual**
  - Access to health care, social network
Institute of Medicine Model: Enabling America (1997)

- Elaboration of the Nagi Model and integration with the biopsychosocial model
  - Secondary conditions
    - Any additional physical or mental health condition that occurs as a result of having a primary disabling condition (e.g., depression, cardiovascular disease)
  - Importance of quality of life
    - The perception of physical and mental health over time (CDC)
Conceptual Overview of Enabling-Disabling Process

Enabling America
Brandt and Pope, 1997
Model of Human Occupation

- The model of human occupation provides theory aimed at explaining aspects of healthy occupation and problems that arise in association with life transitions including illness and disability.

- Four domains:
  1. motivation for occupation, (volition)
  2. routine patterning of occupational behavior, (habituation)
  3. the nature of skilled performance, (performance),
  4. the influence of environment (environment)

Kielhofner, G; Am J Occup Ther, 1980
Applications

- Provides framework for assessment and identification of areas for potential intervention
- Application to AIDS patients
International Classification of Functioning, Disability and Health

A disability framework designed to provide a comprehensive view of health related states, allowing for dynamic interactions between the personal and environmental factors. World Health Organization, 2001

**Functioning:**
- Body function
- Activity
- Participation

**Disability:**
- Impairment
- Limitations of Activity
- Participation

**Contextual factors**
- Environmental Factors
- Personal Factors

**Health condition**
(disorder or disease)

**Body Functions & Structure**

**Activity**

**Participation**

**Personal Factors**
ICF

- Definitions and operational definitions have both descriptive and quantitative difficulties
- ICF is a classification system and not a rating of disability
- Conceptual problem in differentiating:
  - Activity: individual
  - Participation: involvement in roles
Compensation System

- Social Security
- VA
- Disability insurance
Requirements for Compensation Systems

- Causality: what do we need to show?
  - a temporal or a mechanistic relationship
  - SSA: Work related: disability must have impact on work performance
  - VA: Service connected or service aggravated a pre-existing disease or injury
- Loss of performance, function or capacity
- Loss of quality of life and satisfaction
Social Security

- System is geared toward how injury/illness pertains to ability to function in a work environment
  - Requirement for compensation
    - Unable to participate in gainful activity (all or none)
    - Medical evidence for impairment
    - Included in SSA listings
    - 12 months or more and projected to be ongoing
      - With respect to past work or any job
For **disability** resulting from personal **injury** suffered or disease contracted in line of duty, or for aggravation of a preexisting injury suffered or disease contracted in line of duty, in the active military, naval, or air service, during a period of war, the United States will pay to any veteran thus disabled and who was discharged or released under conditions other than dishonorable from the period of service in which said injury or disease was incurred, or preexisting injury or disease was aggravated, compensation as provided in this subchapter, but **no compensation shall be paid if the disability is a result of the veteran’s own willful misconduct or abuse of alcohol or drugs.**
Key Points

- Service connection
- Disability
  - The definition of this is an operational one based upon ratings (14 systems, 700 codes)
  - Rating results in a single number thought of as a % loss of ability or severity of disability
Veterans Disability Benefits

- Based on ratings
  - Organ-system or diagnosis based
  - Impairments with some allowance for pain
  - Ratings assigned by administrators based on a medical assessment
  - Permanent
    - Has independent living allowance
Veteran’s Compensation: Work-Related Disability
Title 38, Chapter 31, section 1301

“To provide for all services and assistance necessary to enable veterans with service-connected disabilities to achieve maximum independence in daily living and, to the maximum extent feasible, to become employable and to obtain and maintain suitable employment”
The Statutes

- The statutes contain important and somewhat distinct components.
  - veterans are entitled to compensation for disability (diagnoses, impairments, injuries) (chapter 11)
    - Health benefits
  - all services and assistance to achieve the statutory goals (chapter 31)
    - achieve maximum independence in daily living
      - Independent living
    - become employable
    - maintain employment
Means by Which these Goals are Accomplished

- VA has been committed to achieving this through the provision of
  - Diagnostic assessments
  - Medical, social, psychological treatments
  - Independent living resources
  - Economic compensation
  - Educational, vocational, and employment services
Intent and Extent of Compensation

- For medical impairment
- For lost employment and restoration of earnings
- Societal integration, participation, quality of life, maximal potential for function
Must Use Appropriate Measures for Intent

- If use an index measure of disability, based on rating, (e.g., VA listings, SSA or AMA Guidelines) creates several problems:
  - Outcome not necessarily aligned with measures. For example, rating based on amputation, provide limb. Is this compensation for lost limb? Impact is on function, not on limb... which currently we cannot restore.
  - For example, rating based on presumption of impact of lost limb on earnings lost. Likely a poor correlation between lost limb and earning capacity.
Measures Continued

- Index rating misses measures of key parameters influencing disability
  - Mood, behavior, social integration and participation
  - Most rapidly growing area for disability
Several Models of Disability

- Need to select one with features that meet intent of the evaluation scheme
- Measure disability, health related work disability and incorporate current thinking about disability (biopsychosocial model)
  - Data suggest impairments and work capacity not highly correlated
Summary

- Beyond an Index Measurement System: Using a Rehabilitation Model
  - The necessary component: standardized rating
    - Permanent
  - The sufficient component: disability assessment
    - Mix of objective and self-report
    - Not permanent
    - Re-evaluated periodically