Use of Functional Status and Self-Management Measures: The International Classification of Functioning, Disability and Health (ICF)

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Classifications and Public Health Data Standards Section
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Objectives

• Introduce the *International Classification of Functioning, Disability and Health* (ICF).

• Describe the ICF-based “PAR-PRO,” the “Participation Patient Reported Outcome” assessment instrument.

• Describe the ICF-based “AM-PAC,” the “Activity Measure for Post-Acute Care,” an assessment instrument with scales that provide an estimate of a patient’s functional ability.

• Describe the ICF-oriented opportunities associated with the new CMS Minimum Data Set for Nursing Home Residents, Version 3.0, a conventional instrument for assessing quality.

• Suggest areas for future ICF-oriented research.
“The overall aim of the ICF classification is to provide a unified and standard language and framework for the description of health and health-related states” (2001, pg. 3).
How Should I Think About the ICF?

• A Conceptual Framework
  - Applying the conceptual framework without using ICF coding is fine, and encouraged.
  - Simple applications of the conceptual framework are as valuable as complex applications.

• A Coding Structure
  - The conceptual framework is substantially enhanced when ICF coding is applied; this is even more encouraged.
  - ICF coding is designed to work in tandem with ICD coding.
  - ICF coding can be either simple or complex.
  - A set of straightforward Coding Guidelines governs the ICF Coding Structure.
What ICF Is Not

- Not an assessment or measurement instrument.
- Not a tool for disabled peoples’ advocacy.
- Not electronically transmittable at this time.
- Not easily applicable to population-level statistics.
- Not easy to explain among lay audiences.
- Not entirely finished or, admittedly, completely researched (in re: today’s absence of “Personal Factors”).
ICF Domains

- Body Functions
- Body Structures
- Activities & Participation
- Environmental Factors
## ICF Domains

### Body Functions
- **Chapter 1:** Mental functions
- **Chapter 2:** Sensory functions and pain
- **Chapter 3:** Voice and speech functions
- **Chapter 4:** Functions of the cardiovascular, hematological, immunological, and respiratory systems
- **Chapter 5:** Functions of the digestive, metabolic, and endocrine systems
- **Chapter 6:** Genitourinary and reproductive functions
- **Chapter 7:** Neuromusculoskeletal and movement-related functions
- **Chapter 8:** Functions of the skin and related structures

### Activities & Participation
- **Chapter 1:** Learning and applying knowledge
- **Chapter 2:** General tasks and demands
- **Chapter 3:** Communication
- **Chapter 4:** Mobility
- **Chapter 5:** Self-care
- **Chapter 6:** Domestic life
- **Chapter 7:** Interpersonal interactions and relationships
- **Chapter 8:** Major life areas
- **Chapter 9:** Community, social and civic life

### Body Structures
- **Chapter 1:** Structures of the nervous system
- **Chapter 2:** The eye, ear, and related structures
- **Chapter 3:** Structures involved in voice and speech
- **Chapter 4:** Structures of the cardiovascular, immunological and respiratory systems
- **Chapter 5:** Structures related to the digestive, metabolic, and endocrine systems
- **Chapter 6:** Structures related to the genitourinary and reproductive systems
- **Chapter 7:** Structures related to movement
- **Chapter 8:** Skin and related structures

### Environmental Factors
- **Chapter 1:** Products and technology
- **Chapter 2:** Natural environment and human-made changes to the environment
- **Chapter 3:** Support and relationships
- **Chapter 4:** Attitudes
- **Chapter 5:** Services, systems and policies
The ICF Relies on an Interactive Model

Health Condition (disorder or disease)

Body Functions
Body Structures (Impairment)

Activities (Limitation)

Participation (Restriction)

Environmental Factors (Barriers, Facilitators)

Personal Factors
Anatomy of an ICF Code

Activities and Participation can be coded using 4 Qualifier digits

- “d” represents A&P
- “4” represents A&P Chapter 4, “Mobility”
- Code Stem = d4500
- “Walking short distances”

- First Qualifier: Performance with assistance
  “What a person does in his environment”
  2 = Moderate difficulty

- Second Qualifier: Capacity without assistance
  “A person’s ability to execute a task”
  3 = Moderate difficulty

- Third Qualifier: Capacity with assistance
  1 = Mild difficulty

- Fourth Qualifier: Performance without assistance
  4 = Complete difficulty

Environmental Factors can be coded with Barriers [.] or Facilitators[+]

- “e” represents EF Chapter 1, “Products and Technology”

- Code Stem: e1500
  “Design, construction, and building products and technology for entering and exiting buildings for public use”

- Qualifier digit: 3 = Substantial Facilitator

- Qualifier Sign: A “point alone” [.] denotes “Barrier.” A “plus sign” [+] denotes “Facilitator.” There are no minus signs in ICF.
Body Structures
s7302.413  Structure of hand; Complete impairment, Total absence, Both sides

Environmental Factors
e1151+4  Assistive products for personal use in daily living; Complete Facilitator
Activities & Participation

d4402.14  Fine hand use: Manipulating; Mild restriction in Performance with assistance; Complete limitation in Capacity without assistance
Vision Impairment: Macular Degeneration

Macular degeneration
ICD-9-CM: 362.50
ICD-10: H35.3

Impairments
b2101.3 Visual field functions, severe impairment
s2203.3 Retina, severe impairment

Activity Limitations
d110.33 Watching, severe limitation in performance, severe limitation in capacity

Participation Restrictions
d845.2 Acquiring, keeping, and terminating a job, moderate restriction in performance

Barriers & Facilitators
e350+3 Domesticated animals, substantial facilitator

Personal Factors
10 years with the condition, 3 years with severe impairment, yields substantial coping skills.
Multiple Sclerosis

ICD-9-CM: 340
ICD-10: G35.

Impairments
- b4552.4 Fatiguability, complete impairment

Activity Limitations
- d540.34 Dressing, severe limitation in performance, complete limitation in capacity

Participation Restrictions
- d630.4 Preparing meals, complete restriction in performance

Barriers & Facilitators
- e1201+4 Assistive products & technology for personal indoor and outdoor mobility and transportation, complete facilitator

Personal Factors
- 50-year-old college-educated Caucasian female with 4-year history of MS; low resilience to difficult challenges
Mapping to a Newly-Developed Functional Assessment Instrument

- Example: “PAR-PRO©,” a trademarked product of the Uniform Data System for Medical Rehabilitation.

- A 20-item instrument of home and community participation.

- “The development of the PAR-PRO was guided by the principles, definitions and domains of the ICF and designed for use in both disabled and nondisabled populations” (Ostir, et al., 2006).
# Alignment of ICF A&P Chapters with Selected PAR-PRO© Items

Source: Adapted from Ostir, et al., 2006, Table 1.

4. **Mobility**

| Moving around, using transportation | Public transportation; Traveling/sightseeing; Driving a vehicle |

[5. **Self-care**]

6. **Domestic Life**

| Acquisition of goods and services | Shopping for food, necessities |
| Household tasks | Meal preparation/cooking; Light housework; Heavy housework; Yard work/home maintenance |
| Assisting others | Caregiver activities |

7. **Interpersonal Interactions and relationships**

| Particular interpersonal relationships | Socializing inside/outside the home; Intimate relationship with significant other |

8. **Major Life Areas**

| Education | School/education |
| Work and employment | Work/employment; Volunteer/public service |
| Economic life | Money management/home finances |

9. **Community, Social and Civic Life**

| Recreation and leisure | Hobbies / arts & crafts; Playing sports / exercising |
| Religion and spirituality | Movies / theater / concerts / sporting events; Religious / spiritual activities |
Screenshot of the PAR-PRO® Participation Form

Source: Ostir, et al., 2006, pg. 1051.

### Appendix 1: Assessment Form

**I. Patient/Case Identification**

1. UDSMR-Provided Facility Code __________________________
2. Unique Patient Tracking Number _________________________
3. Patient Age in Years at Admission __________ 4. Gender _______ (M/F)
5. Rehabilitation Impairment Group Code
   (See Appendix A in IRF-PAI Training Manual for definitions)
6. Follow-up assessment period: If follow-up assessment was performed, please indicate the number of days between the discharge assessment and the follow-up assessment: __________ days

Who was the Respondent? (Check only one for each assessment)
- Patient
- Other*

7. Admission __________________________
8. Discharge __________________________

* Other respondent may include caregiver, family member, significant other or person knowledgeable of patient.

**II. Patient Satisfaction**

Note: All satisfaction items reflect the patient's perspective on the inpatient rehabilitation experience, either directly from the patient or, if necessary, from a knowledgeable respondent.

<table>
<thead>
<tr>
<th>Satisfaction Items - Scoring</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The information I received about the rehabilitation facility was accurate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I was satisfied with my involvement in setting the goals for this rehabilitation stay</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I was satisfied that the treatment I received matched my rehabilitation goals</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. The staff treated me with dignity and respect</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**III. Home and Community Participation Profile**

Ask the patient to rate his/her participation in the situations listed below. If the patient cannot provide a reliable response, ask a knowledgeable caregiver to complete this section.

**Assessment at Admission (Retroactive - What patient used to do):**
- Rate patient's typical degree of participation in these life situations in the year prior to this hospitalization or episode of illness.

**Assessment at Discharge (Prospective Goals - What patient would like to do in the future):**
- Optional
  - At the time of the discharge assessment, ask patient to rate his/her expected level of participation in these life situations at the time of follow-up (i.e., what activities does the patient realistically expect to be participating in at 3 to 6 months after discharge).

**Assessment at Follow-up (Concurrent - What patient is actually doing at follow-up):**
- Rate patient's level of participation in these life situations during the 30 days prior to the date of the follow-up assessment.

<table>
<thead>
<tr>
<th>Participation Profile - Scoring</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>0. Did not participate in this life situation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Participated Monthly (Once every 3 - 4 weeks)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Participated Bi-weekly (Once every 2 weeks)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Participated Weekly (1-4 days per week)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Participated Daily/Almost Daily (5 or more days per week)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Admission**

1. Work / Employment
2. School / Education
3. Volunteer / Public Service
4. Meal Preparation / Cooking

**Discharge**

5. Light Housework
6. Heavy Housework
7. Caregiver Activities
8. Money Management / Home Finances
9. Shopping for Food, Necessities...
10. Yard work / Home Maintenance
Mapping to a Newly-Developed Functional Assessment Instrument

- Example: “AM-PAC©,” a trademarked product of Boston University.

- A functional outcomes system that can be used across post-acute care settings, consisting of a comprehensive list of 240 functional activities (i.e., “the item bank”).

- “Unlike traditional functional outcome measures which are disease, condition, or setting-specific, the AM-PAC was designed to be used across patient diagnoses, conditions and settings where post-acute care is being provided; therefore, the AM-PAC is the ideal measure for developing benchmarks and for examining functional outcomes over an episode of post-acute care, as patients move across care settings” (Jette & Haley, 2007).
Expected Performance at Each Stage
Basic Mobility Domain

- Cannot do
- A lot difficulty
- Some/Little difficulty
- None difficulty

**Cut score**
- Stage 1: 34
- Stage 2: 52
- Stage 3: 66
- Stage 4: 84
ICF and LOINC in Mapping to a Functional Assessment Instrument

• Utilizing an existing LOINC database, researchers can apply ICF concepts and codes to the existing CMS “Minimum Data Set for Nursing Home Residents Version 3.0” (“MDS 3.0”).

• MDS 3.0 data are conventionally collected for quality improvement and as supporting documentation for reimbursement.

• Expanding the ability to transpose existing MDS 3.0 data to ICF-oriented descriptions of clinical situations represents a “shovel-ready” approach toward applying the ICF in patient-focused measurements or outcomes.
CMS’s Goals for MDS 3.0

- Introduce advances in assessment measures.
- Increase the clinical relevance of items.
- Improve the accuracy and validity of the tool.
- *Increase the resident's voice by introducing more resident interview items.*
- Providers, consumers, and other technical experts in Nursing Home care requested that MDS 3.0 revisions focus on improving the tool's clinical utility, clarity, and accuracy.
- CMS also wanted to shorten the tool while maintaining the ability to use MDS data for quality indicators, quality measures, and payment.
Sample MDS 3.0 Assessment Sheet: “Preferences for Customary Routine”

<table>
<thead>
<tr>
<th>Section F</th>
<th>Preferences for Customary Routine and Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>F0300. Should Interview for Daily and Activity Preferences be Conducted?</strong> - Attempt to interview all residents able to communicate. If resident is unable to complete, attempt to complete interview with family member or significant other</td>
<td></td>
</tr>
<tr>
<td>Enter Code</td>
<td>0. No (resident is rarely/never understood and family/significant other not available) → Skip to and complete F0800, Staff Assessment of Daily and Activity Preferences</td>
</tr>
<tr>
<td></td>
<td>1. Yes → Continue to F0400, Interview for Daily Preferences</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F0400. Interview for Daily Preferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Show resident the response options and say: “While you are in this facility...”</td>
</tr>
<tr>
<td>Enter Codes in Boxes</td>
</tr>
</tbody>
</table>

**Coding:**
1. Very important
2. Somewhat important
3. Not very important
4. Not important at all
5. Important, but can't do or no choice
6. No response or non-responsive

- **A.** how important is it to you to choose what clothes to wear?
- **B.** how important is it to you to take care of your personal belongings or things?
- **C.** how important is it to you to choose between a tub bath, shower, bed bath, or sponge bath?
- **D.** how important is it to you to have snacks available between meals?
- **E.** how important is it to you to choose your own bedtime?
- **F.** how important is it to you to have your family or a close friend involved in discussions about your care?
- **G.** how important is it to you to be able to use the phone in private?
Summing Up

• The ICF represents a conceptual framework, and a hierarchical coding structure, that can induce and express characteristics of patient-oriented functional status most meaningful to patients.

• The PAR-PRO and AM-PAC are two representative newly-developed functional assessment instruments that rely on the ICF conceptual framework.

• The CMS MDS 3.0 data collection instrument provides an outstanding research opportunity for linking ICF concepts with existing quality-of-care data on persons in nursing home settings.

• More “mapping” studies using the ICF are warranted.