The ICF-CY and Goal Attainment Scaling: Benefits of their Combined Use for Pediatric Practice

Janette McDougall, PhD Virginia Wright, PhD

Outline of Session

- Overview of ICF and child/youth version (ICF-CY)
- Summary of some initial research on goal setting and outcomes practices by OACRS clinicians
- Overview of Goal Attainment Scaling (GAS)
- Review of the process of linking the ICF-CY and GAS
- Practice with the ICF-CY/GAS process

The International Classification of Functioning, Disability and Health (ICF) Model

ICF Focus for Measurement ...

The ICF framework embraces the notion that interventions can be directed toward making changes in the child and/or to changing the people, systems, and environments that are connected with the child

The ICF

- Published in 2001, ICF has been accepted by numerous countries as an international standard for describing disability and for coding functional data
  - Web-link is: http://www.who.int/classifications/icf/en/
- Provides a common language for describing disability, not only medical but social, educational and functional needs of individuals
- The units of the ICF classification are called categories that are identified by unique alphanumeric codes
- Within each ICF component Body Functions (b), Body Structures (s), Activity &Participation, (d) and Environmental Factors (e), categories are organized in a hierarchically nested structure

ICF Website Screen: Mobility Example
The ICF’s Structure

Within each component BF (b), BS (s), A&P (d), and environmental factors (e), categories are organized in a hierarchically nested structure such as:

- d5 - Self-care (first/chapter level)
- d570 - Looking after ones health (second level)
- d5702 - Maintaining ones health (third level)
- d57021 - Seeking advice or assistance from caregivers (fourth level)

The ICF Child and Youth (ICF-CY)

Published in October 2007, ICF-CY is based on ICF, but designed for use with children and youth:

- ICF-CY allows more developmental aspects of functioning to be coded
- Focuses more attention on learning and child-specific environmental factors
- Changes included modifying or expanding descriptions or inclusion/exclusion criteria, adding new content to existing codes or adding new codes

Example from ICF-CY

D8 - Chapter 8: Major Life Areas

d880 Engagement in play - purposeful, sustained engagement in activities with objects, toys, materials or games, occupying oneself or with others
  - d8800 solitary play
  - d8801 onlooker play
  - d8802 parallel play
  - d8803 shared cooperative play

d816 Preschool life

Some Initial Research

Wright [1] conducted a study in 2006/2007 (funded by the Ontario Ministry of Children and Youth Services) to produce an inventory of current outcome measurement practices across OACRS Centres

- Summarized key goal domains clinicians identified as the focus of their intervention work (goal setting is a key element of practice in Ontario’s children’s centres)
- Identified clinicians’ methods of measuring change for their client and family goals
- Summarized the value of identified measures for evaluating change

Study Sample

- Representation from all areas in Ontario (18 OACRS centres) and 400 clinician interviews
- The work represented various clinician groups, diagnostic groups, and program/service areas
- 60% of clients seen in treatment facility/satellite centre, 30% in community, and 10% in both locations
- Balanced sample of active intervention and consultation clients

Results: ICF-CY Goal Areas

- 29% body functions/structure
- 29% activity
- 29% participation
- 3% environment

N=408
Examples of Goals within ICF areas

**Body Functions/Structures**
- Develop lateral tongue movement
- Increase hand strength
- Improve lower extremity alignment in standing
- Decrease muscle pain in legs

**Activity**
- Ability to use a voice output device
- Increase left hand use through instrument playing
- Improve ability to ascend stairs
- Dribble tennis ball with right hand

Examples of Goals...

**Participation**
- Participate in a girl’s group
- Shop with friends at the mall
- Play dodge ball with friends on street after school
- Participate in band class at school

**Environment**
- Increase family’s understanding of a sensory diet
- Inform mother of community resources and supports
- Provide a seating and mobility system that is safe
- Adaptations in classroom to make it accessible

Methods of Measuring Change

- A wide variety of standardized measures were seen as useful to establish a baseline and set goals across a variety of ICF areas

**BUT**
- Clinicians frequently highlighted the lack of fit of standardized measures with a child’s or family’s unique characteristics, issues and goals
- Thus, they had to find other ways to measure change, including often adapting measures

Methods of Measuring Change

- Both clinical observation and reports/interviews were seen as pragmatic and quite useful for initial assessment and tracking change in clients’ goals
- However, for accountability, these approaches may need to be supplemented with more formal goal setting and rating techniques that provide sound measurement and a consistent method of documentation of important outcomes

Measurement Approaches

\[(n = 1,610 \text{ listings})\]

- Clinical observation: 37%
- Standardized measures: 26%
- Report/interview: 27%
- In-house measures: 4%
- Other approaches: 6%
ICF-CY and GAS

- Types of goals set for clients in pediatric rehabilitation practice reflect ICF-CY content.
- ICF-CY can be used by service providers to help clients and families identify needs related to all aspects of child functioning and the environment.
- This can facilitate the collaborative setting of measurable, functional goals using an individualized approach like GAS, thus providing a quantifiable, reliable, and valid assessment of change in individual client outcomes following service delivery.

GAS

- GAS was first developed in the 1960s [3] and has been used to evaluate health, educational, and social services [4-6].
- In past 20 years, GAS has been used in research work on effects of pediatric therapy services for children with developmental, physical, and communication needs [7-15].
- Reliability, validity, and responsiveness to change have been noted [7,12,14].
- The use of GAS for clinical purposes in pediatric practice is limited [1,16].

GAS

- GAS can be time-consuming, with scale development taking up to 45 minutes per child [15].
- However, all articles included in a review of GAS use in pediatric rehabilitation reported high family and service provider satisfaction with procedure [15].
- Considering its acceptable “social validity” and clinical benefits, it appears to be worth the additional time and effort and may be associated with greater efficiency of treatment by leading to a more streamlined, focused intervention approach.

Merits of GAS

- GAS is criterion-referenced, rather than norm-referenced, making it responsive to minimal clinically significant changes.
- Useful for measuring individual goals.
- Useful for evaluating functional goals.
- Promotes collaborative goal setting.
- Reflects a client/family-centred perspective to service delivery.
- Enhances accountability for services.
- Provides a numeric score for analysing group performance (program evaluation).

Criteria for Writing Goals in GAS Format

- Six Basic Requirements of GAS Goals:
  - Relevant
  - Understandable
  - Measurable
  - Behavioral
  - Attainable
  - Time Frame
Criteria for Writing Goals in GAS Format

- As a whole, the scale should meet the following criteria:
  - Aim for clinically equal intervals between all scale levels
    - e.g. The jump from +1 to +2 should not require a much larger change in attainment than the jump from -2 to -1
  - Amount of change between levels needs to be clinically relevant

- Improvement should be measured using only one variable of change (as long as the goal remains meaningful), keeping other variables constant
  - e.g. -2 The child walks 100m with platform walker in 8 minutes with two hands on walker to assist with steering
  - the above goal includes 3 variables: distance, time, and level of assistance
  - Decide on 1 variable by which to measure change in performance, say time, and hold other variables constant
  - e.g. 0 The child walks 100m with platform walker in 6 minutes with two hands on walker to assist with steering

Criteria for Writing Goals in GAS Format

- Each level on the scale should meet the following criteria:
  - All rating scale levels should be phrased in the present tense
    - e.g. The child can …
  - All scale levels should be achievable or realistically possible
  - All scale levels should be written as clearly as possible, in concrete behavioural term
  - All scale levels should specify an observable behaviour

Rating Goals after Intervention

- Each person’s performance/changes to the environment is/are observed either naturally or realistically (at home, in the classroom, hallway, etc.) or on a specific assigned task, depending on nature of goal
- It is recommended service providers confer with the child and his/her parents and, when appropriate, other relevant parties, to reach consensus on goal attainment
  - Discussion of progress on goals becomes part of therapeutic process
  - Confering with others about goal attainment will give assurance of rating accuracy

ICF-CY and GAS

- When an initial assessment is conducted, the domains of the ICF-CY can act as a good starting point to help clients and families collaborate to identify functional/environmental concerns [17,18]
- Visual tools [18], questionnaires [19], or abbreviated and modified checklists similar to the ICF Checklist that include a ‘core set’ of codes appropriate for use in pediatric rehabilitation settings [20] are formats that can be used to present the ICF-CY

ICF-CY and GAS

- The ICF-CY and GAS are complementary in a number of ways:
  - Like the ICF-CY, GAS allows for difference in ability by facilitating the setting of goals that are unique to an individual
  - Also, like the ICF-CY, GAS facilitates the assessment of children’s development over time
  - Moreover, GAS can be adapted to any ICF-CY domain [21]
The use of GAS allows the integration of impairment, activity, participation, or environmental goals within the same evaluation template [1].

Goals may be set collaboratively that target change in impairment, activity limitations, or the environment as short term goals with change in participation as a longer term goal.

- ICF-CY and GAS

Goal Attainment Scaling Goals

<table>
<thead>
<tr>
<th>GOAL 1:</th>
<th>GOAL 2:</th>
<th>GOAL 3:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ICF-CY Component:</strong> Environmental Factors</td>
<td><strong>ICF-CY Component:</strong> Activity Limitation</td>
<td><strong>ICF-CY Component:</strong> Participation Restriction</td>
</tr>
<tr>
<td>Time Line: One Month</td>
<td>Time Line: Two Months</td>
<td>Time Line: Five Months</td>
</tr>
<tr>
<td><strong>-2:</strong> No arrangements for therapy</td>
<td><strong>-2:</strong> Cannot walk with walker in school hallway</td>
<td><strong>-2:</strong> Does not participate in hall monitoring duties with other students absent</td>
</tr>
<tr>
<td><strong>-1:</strong> Receives therapy once a month</td>
<td><strong>-1:</strong> Walks with walker 250 metres in school hallway in 8 minutes</td>
<td><strong>-1:</strong> Participates in hall monitoring duties for ½ the time at recess once a week</td>
</tr>
<tr>
<td><strong>0:</strong> Receives therapy twice a month</td>
<td><strong>0:</strong> Walks with walker 250 metres in school hallway in 6 minutes</td>
<td><strong>0:</strong> Participates in hall monitoring duties for ½ the time at recess twice a week</td>
</tr>
<tr>
<td><strong>+1:</strong> Receives therapy three times a month</td>
<td><strong>+1:</strong> Walks with walker 250 metres in school hallway in 4 minutes</td>
<td><strong>+1:</strong> Participates in hall monitoring duties for ½ the time at recess once a week and for the entire recess once a week</td>
</tr>
<tr>
<td><strong>+2:</strong> Receives therapy once a week</td>
<td><strong>+2:</strong> Walks with walker 250 metres in school hallway in 2 minutes</td>
<td><strong>+2:</strong> Participates in hall monitoring duties for the entire recess two times a week</td>
</tr>
</tbody>
</table>

- ICF-CY and GAS

Goal Attainment Scaling Goals – Occupational Therapy

<table>
<thead>
<tr>
<th>GOAL 1:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ICF-CY Component:</strong> Activity Limitation and Environmental Factors</td>
</tr>
<tr>
<td>Time Line: Four Months</td>
</tr>
<tr>
<td><strong>-2:</strong> Can print 4 of 8 letters of first name with hands on assistance and verbal cueing</td>
</tr>
<tr>
<td><strong>-1:</strong> Can print 6 of 8 letters of first name with hands on assistance and verbal cueing</td>
</tr>
<tr>
<td><strong>0:</strong> Can print 8 of 8 letters of first name with assistance and verbal cueing</td>
</tr>
<tr>
<td><strong>+1:</strong> Can print 8 of 8 letters of first name without assistance and verbal cueing</td>
</tr>
<tr>
<td><strong>+2:</strong> Can print 8 of 8 letters of first name independently</td>
</tr>
</tbody>
</table>

- ICF-CY and GAS

Goal Attainment Scaling Goals – Speech-Language Pathology

<table>
<thead>
<tr>
<th>GOAL 1:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ICF-CY Component:</strong> Activity Limitation</td>
</tr>
<tr>
<td>Time Line: Ten Months</td>
</tr>
<tr>
<td><strong>-2:</strong> Can read a short passage aloud, making 10 or more pronunciation errors</td>
</tr>
<tr>
<td><strong>-1:</strong> Can read a short passage aloud, making between 9 and 7 pronunciation errors</td>
</tr>
<tr>
<td><strong>0:</strong> Can read a short passage aloud, making between 6 and 4 pronunciation errors</td>
</tr>
<tr>
<td><strong>+1:</strong> Can read a short passage aloud, making between 3 and 1 pronunciation errors</td>
</tr>
<tr>
<td><strong>+2:</strong> Can read a short passage aloud, pronouncing all words correctly</td>
</tr>
</tbody>
</table>

- ICF-CY and GAS

Goal Attainment Scaling Goals – Physical Therapy

<table>
<thead>
<tr>
<th>GOAL 1:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ICF-CY Component:</strong> Participation Restriction</td>
</tr>
<tr>
<td>Time Line: Three Months</td>
</tr>
<tr>
<td><strong>-2:</strong> Can take part in gym class for 10 to 14 minutes</td>
</tr>
<tr>
<td><strong>-1:</strong> Can take part in gym class for 15 to 19 minutes</td>
</tr>
<tr>
<td><strong>0:</strong> Can take part in gym class for 20 to 24 minutes</td>
</tr>
<tr>
<td><strong>+1:</strong> Can take part in gym class for 25 to 29 minutes</td>
</tr>
<tr>
<td><strong>+2:</strong> Can take part in gym class for 30 minutes</td>
</tr>
</tbody>
</table>

- ICF-CY and GAS

Goal Attainment Scaling Goals – Physical Education

<table>
<thead>
<tr>
<th>GOAL 1:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ICF-CY Component:</strong> Environmental Factors</td>
</tr>
<tr>
<td>Time Line: Three Months</td>
</tr>
<tr>
<td><strong>-2:</strong> participates in physical education for 15 to 19 minutes</td>
</tr>
<tr>
<td><strong>-1:</strong> participates in physical education for 20 to 24 minutes</td>
</tr>
<tr>
<td><strong>0:</strong> participates in physical education for 25 to 29 minutes</td>
</tr>
<tr>
<td><strong>+1:</strong> participates in physical education for 30 minutes</td>
</tr>
</tbody>
</table>

- ICF-CY and GAS

It is also possible within a single goal to target a variable for change at both the individual functional level and the level of the environment.

This allows goals for environmental modification to be directly linked with goals of the client and family for functional change in the child, thereby facilitating practice that is holistic and family-centred [1].
ICF-CY and GAS

GOAL 1: Social Work

**INFANT**

1. Family has understanding/knowledge about child’s condition but cannot explain their needs to others
2. Family has understanding/knowledge about child’s condition and can explain their needs to others
3. Family has understanding/knowledge about child’s condition and can communicate self-statements

GOAL 2: Environmental Factors

1. Family has understanding/knowledge about child’s condition and can access services
2. Family has understanding/knowledge about child’s condition but cannot access services

**Six Months**

ICF-CY Component: GOAL 1: Social Work

**GOAL 1:** Family has understanding/knowledge about child’s condition and can communicate self-statements

GOAL 2: Environmental Factors

**GOAL 2:** Family has understanding/knowledge about child’s condition but cannot access services

**GOAL 2:** Family has understanding/knowledge about child’s condition and can access services

**GOAL 3:** Family has understanding/knowledge about child’s condition but cannot explain their needs to others

**GOAL 3:** Family has understanding/knowledge about child’s condition and can explain their needs to others

**GOAL 4:** Family has understanding/knowledge about child’s condition and can communicate self-statements

**ICF-CY and GAS**

Considering the benefits, it may be worth the effort to use the ICF-CY together with GAS in pediatric clinical practice.

Important to have managers/administrators’ support.

Given the newness of the ICF/ICF-CY and lack of general knowledge about GAS, centres interested in using these would need to provide training to staff.

For a description of how to train therapists to use GAS, see King et al. [23]

**References**

Your turn!