Pediatric Outcome Measures

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-Selecting Outcome Measures-
Considerations in Pediatrics

Clinical, Research, Social Policy,
Educational, Statistical

• Age of client
• Reason for documentation
  – Justification for treatment
    • Insurance or funding agency
    • Facility driven
    • Family driven
    • Clinician Driven
  – Measurement or tracking of progress
    • Assess needs and POC
    • Evaluate interventions
Consider
Criterion Referenced Outcome Measures

CRITERION REFERENCED TEST
- Scores are interpreted on basis of absolute criteria; number of items answered/performed correctly
- Interpreted by considering directly whether child has met age appropriate functional demands
- Measures a person’s mastery of a set of “behavioral objectives”
- Developmental quotient is the ratio between the child’s actual score (developmental) age and the child’s chronological age

Consider
Norm Referenced Outcome Measures

NORM REFERENCED
- Use normative values as standard for interpreting individual score
- Compares a patient with the norm or average of a group of children (usually “typically developing”)
- Use percentile scores which indicate the number of children of the same age or grade level who would be expected to score lower than the child tested
- Compare score to scores obtained by large number of comparison children
Benefits of Outcome Measures

- Objective assessment
- Scaled subjective assessment
- Tracking Progress
- Comparison
- Guidelines for POC
- Research and data collection
- Established baseline for discussion with other professionals and family

International Classification of Functioning (ICF)
Component Parts of the ICF Defined for Pediatrics

- **Health Condition:** Diagnosis
- **Body Function (Systems)/Structure/Impairments:** Motor deficits, sensory, musculoskeletal, strength, balance, coordination
- **Activity/Limitations:** skills, unable to sit, unable to stand
- **Participation/Restrictions:** unable to play, family, friends, sports, ADL’s
- **Personal Factors:** age, gender, education, family, friends, cognition, social/emotional
- **Environmental Factors/Internal/External:** stress, anxiety, home, day care, church, school

Barriers To Use of ICF in Children

- **Challenges:** Children change every 6-12 months (sometimes in shorter timeframe), children are not small adults, environments and participation are different in children, maturation is a factor throughout growth
- **Does provide:** continuity of documentation, facilitates transition from child to adult and communication among professionals and parents, common language
Barriers to Use of Outcomes in a Therapy Setting

- Time
- Equipment
- Modifications
- Environment
- Lack of resources

Common Pediatric Outcome Measures by ICF Categories

*Follow the link above to the Pediatric Section of the APTA for a list of outcome measures*
### Common Pediatric Outcome Measures by ICF Categories

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<th>Personal/Contextual</th>
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### Case Example

- 4 year old with cerebral palsy: spastic diplegia
- Able to creep on all 4’s, pull to stand, cruise at furniture and just beginning to stand independently but falls frequently, not taking independent steps yet
- Walks with a push toy with a crouched gait pattern, falls to knees frequently
- She has difficulty maintaining elongation through her trunk while cruising and walking with push toy
- Inconsistent balance reactions (R/E/PE)
- Wears bilateral AFO’s
Selecting an Outcome Measure

- Family would like to know how she compares with typical kids her age and those children that have a similar disability
- Therapist would like to establish a POC
- Insurance requires objective measures for approval of POC
- Facility has no requirements or specifications for use of specific outcome measures

Things to Consider in an Outcome Measure Based on the ICF Model

Based on the history what categories should be documented?

**Body Structure/Function**
- ROM
- Muscle Tone/Spasticity
- Coordination
- Reflexes
- Posture/Balance (R/E/PE)

**Activity**
- Gait/Walking
- GM
- FM
- Play-observation and by report

**Participation**
- Quality of Life
- Observation and by report

**Personal/Contextual**
- History taking
- Observation
Appropriate Assessments
Body Function/ Structure and Activity

• **ROM**
  - Goniometric measurements and special tests for hips

• **Observation**
  - Handling, testing of postural reactions, other

• **Modified Ashworth Scale** [www.rehabmeasures.org](http://www.rehabmeasures.org)
  - Subjective measure of muscle tone
  - Frequently used in research and pre/post surgery
  - SEM: not established
  - MDC: documented in stroke with Botox use

  - Developed for children with CP and Down Syndrome
  - Assesses 5 categories
  - Describes current motor level, assist in determining POC
  - Confidence Interval of 95%
  - SEM and MDC published in the manual

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**Appropriate Assessments**
**Body Structure/ Function and Activity**

• **Peabody Developmental Motor Scales 2nd ed** [www.proedinc.com](http://www.proedinc.com)
  - Based on a typical population
  - GM/FM
  - Determine level of motor skill acquisition
  - Detect small changes motor abilities
  - Assist programming/POC
Appropriate Assessments
Participation, Environment, Personal

- Pediatric Quality of Life Inventory (PEDS QL)
  - http://www.pedsql.org/
  - Parent proxy forms
  - Disease specific modules for certain conditions
  - Child report available over age 5

- Environment and Personal
  - History Taking
  - Observation and Report (child and parent)

Summary Based on Assessment

- Janelle is a 4 year old with spastic diplegia. She is not walking yet independently however she is able to cruise, beginning to stand alone and walk with a push toy.
  - ROM:
    - Limited hip extension, tight hip flexors, tight heel cords, tight adductors, tight hamstrings
  - Modified Ashworth Scale:
    - Scored 3’s in most LE ms groups, indicating significant increases
  - GMFM
    - 100% in lying/rolling, 87% in sitting, 52% in crawling and kneeling, 54% in standing, 15% in walking, running, jumping,
  - PDMS-2
    - Locomotion = between 12-18 months
Summary Based on Assessment

- **Observations**...many
- **Postural and Balance**
  - Noted on assessment
    - *Righting reactions* of the head are present to midline
    - *Righting reactions* of the trunk are incomplete right > left with an inability to right the trunk to the midline with FROM and difficulty maintaining elongation of the trunk on the WBS
    - *Equilibrium reactions* are inconsistent on the ball in sitting with the same difficulty noted above with elongation and poor trunk rotation to the midline
    - *Protective reactions*: present in sitting side to side, forward, but not consistently backward. Positive downward parachute reaction. Inconsistent PE in standing

Plan of Care Based on Assessment

- **Management of Muscle Tone**
- **Improve ROM and prevent limitations**
- **Motor skills to target**: significant delay compared to other children of his age
  - Rolling/Lying → NO
  - Sitting → perhaps look at quality
  - Crawling/Kneeling → difficulty with reciprocal mvt
  - Standing → dissociated mvt
  - Walking → most delayed skills associated with this category
  - Postural Reactions → delayed and inconsistent for age
- **Participation, Personal, Environmental**
  - Monitor and assist family with resources
Goals Related to Assessment

Short Term Goals (3-6 months)

- Hip extension ROM will improve by 10 degrees
- Janelle will creep 10’ reciprocally with LE dissociation 2/5 trials
- Janelle will be able to attain ½ kneel at the furniture with UE support of furniture 3/5 trials
- Janelle will be able to stand independently and squat for a toy regaining her balance 3/5 trials
- Janelle will be able to take 3-5 steps independently 3/5 trials
- Janelle will be able to demonstrate PE when challenged in sitting in all directions 3/5 trials, 2/5 trials from standing
- Janelle will be able to bring her trunk to the midline when balance is challenged on the ball and in standing when small perturbations are given 3/5 trials

Goals Related to Assessment

Long Term Goals (6-12 months)

- Janelle will be able to walk independently without the use of an assistive device carrying a toy without falling 3/5 trials
- Janelle will begin to use arm swing on the treadmill with moderate assist for 1-2 minutes
- Janelle will be able to demonstrate Equilibrium tested on the ball in sitting all directions 3/5 trials with full elongation on the WB side
- Janelle will be able to demonstrate Equilibrium tested in standing with support provided at the pelvis 3/5 trials correcting trunk to midline without assistance at the trunk
- Janelle will pull to standing through ½ kneel 2/5 trials
Current Ongoing Research on Outcome Measures

- Jacqueline Flohr: collecting qualitative data on Pediatric Assessment Tools.
- The purpose: to investigate which standardized outcome tools are most often used by physical therapist within a pediatric setting.
- Questions focused on: use of different standardized assessment tools common in clinical practice and research literature.
- Findings: a better understanding what clinical practice measures are most common and what areas need further development.

Pediatric Special Section APTA

- Ongoing research continues comparing outcome measures, validating and establishing reliability. Development of psychometric measures in an ongoing process that is continuous.

Strengthening Pediatric Outcome Measures

1. Recognition/Inclusion on Rehab Measures and other sites that offer same type of information i.e. PTNow
2. Research and development of outcome measures
3. Outcome measures that document changes in quality of movement (GMPM- measure looking at quality)
4. Outcome measures that are more sensitive to change
5. Updated list of currently available tools with validity and reliability with SEM/MDC-available through Pediatric Section APTA
6. Resources that allow free access to outcomes that don’t require special training
7. Continued research on the comparison of outcomes for best results
References


Resources

1. Fact Sheets-Pediatric Special Section APTA
   https://pediatricapta.org/includes/fact-sheets/pdfs/13%20Assessment&screening%20tools.pdf
2. Rehab Measures: www.rehabmeasures.org
3. Can Child resource for GMFM, GMFP, GMCS:
   www.canchild.ca/en/measures/gmfm.asp
4. ProEd resource for PDMS-2: www.proedinc.com
5. Pediatric Quality of Life Inventory: http://www.pedsqol.org/

Questions