

WHAT STANDARDIZED TOOLS CAN YOU USE TO ASSESS COGNITIVE, COMMUNICATION AND PERCEPTUAL MOTOR FUNCTION IN ADULTS AND CHILDREN WITH TBI?

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Objectives

Participants will:

- Become updated about the various standardized assessments available
- Gain a better understanding of the strengths and weaknesses of each tool
- Be better able to select and use standardized tests and deficits post injury, to plan treatment and to identify client strengths

Who Are We?

- Neuro-Rehab Services:
 - Established 1987 by Marie Hren and Harriette Brown, OT's
 - Specializing in adult and pediatric brain injury
 - Servicing Southern Ontario

Independence

School



Work



- Services Offered:
 - Medical/Legal Assessments
 - Case Management
 - Occupational Therapy
 - Physiotherapy
 - Speech and Language Therapy
 - Social Work
 - Nutrition
 - Rehab Coaching

Research Conducted

- ABI Network Best Practices Committee
- OSLA:
 - Best Practice Guidelines
 - Brain Injury Brain Storming Workshop, Toronto, October 2006
- OSOT and CAOT (consult and literature search)
- U of T (consult with Diedre Dawson and Debbie Hubert, professors, Adult Neurology, U of T)
- TRI- consult with Chris Pita, OT, Day-Patient Program
- Survey:
 - NRS OTs (n= x) SLPs attending xx (n=10)

ABI Network

- Best Practice Reports:
 - Development of a Best Practice Brain Injury Model, Best Practice Report Phase I, Nov. 2000
 - Outcome Measurement in the Toronto ABI Network, Best Practices Report Phase II, May 2002
 - Pilot and Implementation of Outcome Measurement in the Toronto ABI Network, Best Practices Report Phase III, Jan. 2003
- Consult with Current Best Practices Committee

Current Focus of the ABI Network Best Practices Committee

- Group of service providers using the MPAI-4
 - Using as Outcome Measure- COTA
 - Using as one time assessment- CHIRS, Toronto CCAC, York Simcoe Brain Injury Services, March Of Dimes, BloorviewKids (Dr. Rumney)
- Strengths
 - Objective measurement of wide range of impairments and how these impairments affect function
 - Includes measurement of other conditions that can affect recovery (e.g. alcohol use)
 - Can be administered by one person, half an hour. Team admin. is ideal.

Current Focus of the ABI Network Best Practices Committee

- Current focus is on developing a method of collecting aggregate data and make it available to all agencies
- Manual and materials available through COMBI website- free download

Canadian Association of Occupational Therapy

- No guidelines
- Website
 - List of Tests
 - Cognitive Competency Test (CCT)
 - Safety Assessment of Function and the Environment for Rehabilitation (SAFER and newer SAFER-Home)
 - Canadian Occupational Performance Measure (COPM)

Canadian Association of Occupational Therapy

- OT Education Finder- Search "Assessments" as key word
 - ADL Profile
 - Up to 7 hours to administer. 36 Page Assessment Form. Five day training recommended.
 - Articles on the COPM
 - Handicap Assessment Resource Tool (HART)
 - Physical Housing Environment: Self Assessment Instrument

University of Toronto

- Diedre Dawson/ Debbie Hubert: general comments:
 - They advocate for standardized administration
 - They use a list of tests in their clinical teaching based upon:
 - Availability
 - Not protected (so OTs can use them)
 - Clinical usefulness

U of T Con't- Tests Used in Teaching

- Canadian Occupational Performance Measure (COPM) (Law et al, 1998)
- Activity Card Sort (ACS) (Baum et al, 2001)
- Behavioural Assessment of Dysexecutive Syndrome (BADS) (Wilson et al, 1996) (TRI)
- PRO-EX (Braswell et al, 1992) (TRI)
- Rivermead Behavioral Memory Test- Extended Version) (Wilson et al, 1999) (TRI)
- Contextual Memory Test (Toglia (OT), 1993) (TRI)

U of T Con't- Tests Used in Teaching

- Awareness Questionnaire (COMBI, check website)- not standardized
- Patient Competency Rating Scale
- Attention Process Training Questionnaire/ APT Test- Second Version (Sohlberg, 2001) (TRI)
- Rivermead Behavioural Inattention Test (Wilson et al, 1987) (TRI)
- Multiple Errands Test- Hospital Version (not at TRI- unknown)

Other Tests Used at TRI

- MVPT and newer MVPT3 (Colarusso et al, 2003)
- The Test of Everyday Attention (TEA) (St Edmunds, 1994)
- Brain Injury Visual Assessment Battery Vaba (Warren, OT, 1998)
- Bells Test (Gauthier et al, 1989)
- LOTCA Assessment of Motor and Process Skills (AMPS)

OT Survey Results

- A total of 15 OTs were surveyed
- A total of 10 responses were received (66% response rate)
- Demographics
 - OTs surveyed currently, or in the past, have worked with NRS
 - Experience: 3 to 33 years (peds and adults)
- Number of standardized tools ever used: 3 to 8
- Gaps
 - 50% said none
 - 40% said gap in memory tests for individuals with mild to mod. TBI

OT Survey Results

- Choice of tests
 - Varied amongst therapists
 - Varied by client/situation (e.g. client's level of functioning, time restrictions)

OT Survey Results: Common Themes

- Timing/administration/scoring not modified
- Therapists provide additional instructions and check for understanding
- Therapists do testing over a period of sessions
- Therapists stress importance of non-standardized tests (e.g. OSOT battery) and clinical observations during testing
- Old versions of tests commonly used

**Commonly Used Cognitive Tests:
*Woodcock Johnson Test of Cognitive Abilities (Mather & Woodcock, 2001)***

- Old Version cited only (New Version cited by SLPs)
- Normed from Age 2 to 32 (but used mainly with adolescents and adults)
- Subtests Administered:
 - Fluid Reasoning Tests
 - Analysis Synthesis
 - Concept Formation
 - Spatial Relations
 - Verbal Analogies

Woodcock Johnson Con't

- Processing Speed
 - Visual Matching
 - Cross Out
- Long Term Retrieval Subtests (less frequent)
 - Memory for Names and Delayed Recall Memory for Names
 - Visual Auditory Learning and Delayed Recall-Visual Auditory Learning

Woodcock Johnson Con't

- Strengths:
 - Easy
 - Thorough
 - Assesses higher level skills
- Weaknesses:
 - Time to administer (2 hours or more)
 - Too challenging for many clients

**Commonly Used Cognitive Tests:
*Rivermead Behavioural Memory Test***

- Old Version cited by 80% of therapists (Wilson et al, 1991)
 - New Version cited by 20% (Wilson et al, 2003)
- Normed from Age 16 to 96
- Children's version normed from age 5 to 11
- All Subtests Administered

Rivermead Behavioral Memory Test (RBMT) Con't

- Strengths:
 - Easy
 - Practical/ Functional
- Weaknesses:
 - Too low level for a lot of clients

Other Cognitive Tests Mentioned

- Cognitive Competency Test
- Raven Progressive Matrix
- The Cognitive Assessment of Minnesota

Commonly Used Perception Tests: *Test of Visual Perceptual Skills*

- TVPS (Gardner, 1996) and TVPS, Upper Level Revised
- Normed on ages 4 to 13 respectively
- All subtests administered
- Strengths:
 - Easy to administer
 - Comprehensive (all skills assessed)
- Weaknesses:
 - Time to administer (up to one hour)

Motor Free Visual Perception Test *Con't*

- MVPT-3 (Calarusso & Hammil, 2003)
- Normed on ages 4 to 95
- All subtests administered
 - add

Motor Free Visual Perception Test *Con't*

- Strengths:
 - Quick and Easy
 - Good screening Test
- Weaknesses:
 - Sensitivity

Commonly Used Physical/Sensory Motor Tests: *Ontario Society of OT's* *Perceptual Evaluation (OSOT Battery)*

- OSOT Battery (xxauthor, xxyear)
- Not normed (check), not standardized
- Apraxia subtests cited most frequently
 - Also tests agnosias/body image/scanning etc.
- Strengths:
 - Useful if apraxia suspected
- Weaknesses:
 - Too low level

Other Physical/Sensory Motor Tests Cited

- Perdue Pegboard (xxauthor, xxyear)
- Crawford's Small Parts Dexterity Test (Crawford, 1985)

Activities of Daily Living Tests Mentioned:

Safety Assessment of Function and the *Environment for Rehabilitation* *(SAFER)*

- Old Version Cited (xx author, xxyear)
 - New Version SAFER-Home (Health Outcome Measurement and Evaluation) (xx author, xxyear)
- Normed on xx
- All subtests administered- 2 to 4 hours
- Strengths:
 - Practical/functional

Activities of Daily Living Tests Mentioned: *SAFER*

- Weaknesses:
 - Time to administer/length of report
 - One therapists has adapted it into a short chart

ADL Tests Mentioned: *Canadian Occupational Performance Measure (COPM)*

- COPM (Law et al, 1991)
- Normed ??
- All subtests administered
- Strengths:
 - Client centered
 - Well known
- Weaknesses:
 - Too subjective

Developmental Tests Mentioned: *Beery Test of Visual Motor Integration*

- Beery VMI (Beery et al, 1989)
- Normed on 4 years to 17 years, 11 mos.
- Strengths:
 - Easy and quick/children enjoy it
 - Good measure of VMI
 - Good observations e.g. pencil skills, attention, scanning/visual neglect/persistence
- Weaknesses:
 - Not normed on adults

Developmental Tests Mentioned: *Bruininks Oserestky Test of Motor Proficiency*

- BOT (Bruininks, 1978)
- Normed on children ages 4 to 21 (BOT-2)
- Subtests Administered:
 - Upper Limb Coordination
 - Response Speed
 - Visual Motor Control
 - Upper Limb Speed and Dexterity
 - (GM Subtests in for mild TBI, if no PT)

Developmental Tests Mentioned: *Brigance Diagnostic Inventory of Early Development*

- BDIED (Brigance, 1978)
- Normed on children from birth to 7 years
- All parts administered
- Strengths:
 - Comprehensive
 - Developmental norms
 - Uses input from family
- Weaknesses:
 - Long time to administer (3-4 hours plus)
 - Hard to engage child for this time
 - Hard to know what level to start

Developmental Tests Mentioned: *Peabody Developmental Scales*

- PDMS (Folio & Fewell, 2000)
- Normed from birth to 6 years
- All subtests administered:
- Strengths:
 - Usefulness for very young children with TBI
 - Comprehensive
 - Developmental norms
 - Children enjoy it
- Weaknesses:
 - Used infrequently so therapist needs to borrow materials

OT Survey Summary

- There is some variability in the nature of assessment practice
 - The number and selection of tests varies widely
 - Almost none of the tests taught at U of T are being used by this sample of community therapists
- There is a need for the profession to develop Best Practice Guidelines
- There are practical and useful tests available (e.g. Woodcock Johnson, Rivermead, MVPT, TVPS, TVPS Upper Level Revised, Beery VMI, Bruninks Oseretsky, Peabody) check out SAFER

OT Survey Summary Con't

- OTs seem unaware of newer versions of some tests (e.g. Woodcock Johnson, SAFER)
- Some "OT" Tools not used frequently (CCT, COPM)
- Non-standardized tools like the OSOT Battery remain very important (Apraxia, Agnosias, Body Image)

Speech Language Pathology: Current Assessment Practices

- Preferred Practice Guidelines for Cognitive-Communication Disorders approved by the College of Audiologists and Speech language Pathologists of Ontario in September 2002.
- Provides a detailed description of the Assessment, including History, the Assessment Plan, Assessment Measures, Areas of Assessment, Interpreting Results and Identification of Cognitive-Communication Disorder

Preferred Practice Guidelines

- "Assessment measures must include standardized tests and qualitative measures (checklists, observations, questionnaires, interview, rating scales etc.).
- There is an obligation on the part of the SLP to be aware of the standardized tests that are available and to use and interpret them properly".

Planning the Assessment and Appropriate Measures

- Must consider the goals of the assessment and level of the client when determining measures
- Goals of assessment may range from determining readiness to move from acute care to inpatient rehab through to determining readiness to return to work or school
- Assessment measures (both formal and functional) dictated by the goals of the assessment, and what cognitive-communication skill are we trying to measure

Survey of Current Practice

- A total of 43 surveys were distributed to SLP's attending the OSLA seminar "Brainstorming Brain Injury", held in Toronto on October 27, 2006.
- A total of 10 surveys were completed and returned (23% response rate).

Demographics

- Level of experience ranged from 1.5 years to 22 years
- Practitioners from across the province from Sudbury to Kingston to London and Toronto were represented.
- A mix of hospital, inpatient or day patient rehabilitation and community practice were represented.

Survey Results

- All practitioners reported using the Preferred Practice Guidelines as a guide to their assessment practice.
- Several respondents did feel that the PPG's could be somewhat more specific in terms of HOW each of the areas could be measured.

SLP Survey Results

- 8/10 respondents reported that time and budgetary constraints affected their assessment practice.
- Constraints included lack of funds to replace tests with updated versions, having a full comprehensive battery of tests, not enough financial assistance for hospital based SLP's, funding and time restraints imposed by WSIB and some auto-insurers.

Challenges to Assessment

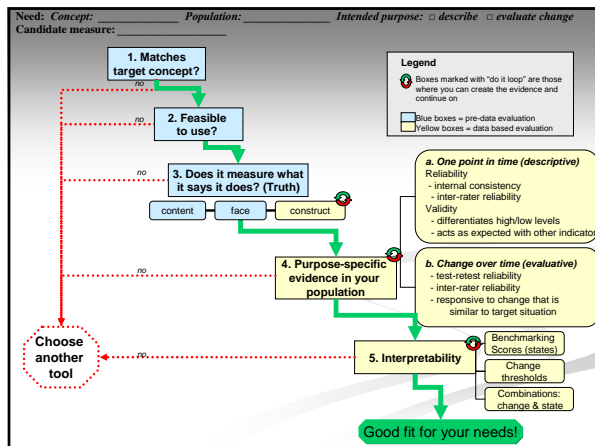
- “Many cognitive-communication deficits are subtle or “higher level” in that they may be apparent during the complex activities of daily life, but are not always apparent on structured standardized testing”. (MacDonald 2005, Freund et al 1994).
- In most testing situations, the examiner controls for frontal lobe function by setting the pace, providing clear instructions etc...this may compromise ecological validity of the testing situation.

Challenges to Assessment Con't

- “One reason why cognitive-communication deficits may appear subtle, is that they emerge only when the cognitive, linguistic, emotional and social demands of the situation are sufficiently challenging”. MacDonald 2005
- “Communication competence decreases with increased social and cognitive demands”. Ylvisaker and Feeney 1998

Challenges to Assessment Con't

- “Communication exists at the interface of cognitive, linguistic and psychosocial/emotional abilities. It is at this interface that traumatic brain injury seems to have the greatest impact on daily functioning”. Gillis 1996 as cited in MacDonald 2005
- A major challenge of assessment is to identify tests/tasks with sufficient integration and complexity of cognitive, linguistic and social demands such that subtle cognitive-communication deficits are apparent. MacDonald 05



How do we address these challenges?

- “The Functional Assessment of Verbal Reasoning and Executive Skills (FAVRES) Sheila MacDonald 2005, is a standardized test of subtle (and not so subtle!) cognitive-communication difficulties designed specifically for those with acquired brain injuries”.
- “A primary goal of the FAVRES is to maximize ecological validity while maintaining the objectivity of standardized testing”.

MacDonald 2005

Functional Assessment of Verbal Reasoning & Executive Skills (FAVRES) (MacDonald, 2005)

- Strengths
 - Measures higher level executive functioning
 - Good assessment of reasoning
 - Shows how one thinks to derive answers
- Weaknesses
 - Relies on reading skills
 - Scoring is time consuming and confusing
- Modifications
 - May need to read through with client

Scales of Cognitive Ability for Traumatic Brain Injury (SCATBI) (Adamovich & Henderson, 1992)

- Strengths
 - Recall and reasoning scales
 - Stories and oral directions
 - Word fluency measure
 - Administer at bedside if needed
 - Good for low level
 - The deduction ‘puzzle’ for low level

SCATBI cont.

- Weaknesses
 - Levels are sometimes too difficult
 - Overlooks a lot of problems seen in inpatient rehab
 - Long test/time constraints
 - Score is better than functioning level
- Modifications
 - Not all subtests can be completed

Test of Adolescent/Adult Word Finding (TAWF) (German, 1990)

- Strengths
 - Good review of word finding skills
 - Breaks down specific areas of word finding to identify deficit areas
 - Helps identify useful strategies
- Weaknesses
 - Not culturally sensitive (hard with ESL/multi-cultural population)

Clinical Evaluation of Language Fundamentals (CELF-3) (Semel et al.)

- Strengths
 - Word association
 - Listening to paragraphs
 - Concepts/directions subtest
- Weaknesses:
 - Norms stop at age 21
- Modifications:
 - Instructions may need to be repeated more than the allotted time

Clinical Evaluation of Language Fundamentals (CELF-4) (Semel et al, 03),

- Strengths:
 - Covers many different areas of language
- Modifications:
 - may need to repeat test items beyond time limits in order to take into account slow processing or if repetitions facilitates performance
 - Performance discussed in terms of standardized scores but also clinical observations made during testing

Test of Language Competence (TLC) (Wiig & Secord)

- Strengths
 - looks at higher level, abstract language forms
 - the sub #3 'confirms' informal observations that the client has verbal organization problems
- Weaknesses
 - American content is outdated
 - Norms end at age 18
- Modifications
 - Information may need to be reread because clients can't recall

Test of Language Competence (TLC-2)

- Strengths
 - Good review of higher level language
- Weaknesses
 - Not standardized for ABI population

Test of Language Competence (TLC-E)

- Strengths
 - testing ability to make inferences - state propositions and figurative language
 - Good deal of information to predict social language/pragmatics
- Weaknesses
 - Clients find it long

Ross Information Processing Assessment (RIPA) (Ross-Swain, 1996)

- Strengths
 - good review of basic information processing
 - quick and easy to administer
 - reasonable norms
 - gives good cursory information
- Weaknesses
 - sometimes found that it is low level for outpatient ABI patients

Boston Diagnostic Aphasia Examination (BDAE) (Goodglass & Kaplan)

- Strengths
 - Pragmatics
 - Good standardized picture
- Weaknesses
 - Not specific to ABI
 - Not a lot of normative data for TBI

Reading Comprehension Battery for Aphasia (RCBA) (LaPointe & Homer, 1998)

- Strengths
 - quick
 - simple reading especially for patients with limited education
 - Breaks down areas of reading
- Weaknesses
 - Sometimes not suitable for high level and another test may be required

Discourse Comprehension Test (DCT) (Brookshire & Nicholas)

- Strengths
 - Good level for general reading
 - Reading and listening comparables
 - Looks at both main ideas and supporting details
 - Looks at both stated and inferred information
- Modification
 - More time if necessary

SLP Survey Summary

- There is some variability in the nature of assessment practice as a result of setting, goals of assessment, level of clinician experience and access to assessment instruments.
- The Preferred Practice Guidelines are an important guide for all SLP's working in the ABI field, and can be sent to hospital administrators, insurers etc. (all those who externally influence our assessment practice).
- We play a very important role, and are doing a good job of providing individualized assessments for the unique needs of our clients! We need to support each other to continue to keep current and provide the best quality service to our clients whose lives we impact!!!!

Neuro-Rehab Services

*Helping redefine and
rebuild lives.
Celebrating success.
One day at a time.*

