Cognitive Performance Test (CPT) & Intervention Profiles

Theressa Burns, OTR Clinical Specialist
Geriatric Research, Education and Clinical Center (GRECC)
Minneapolis VA Medical Center
Multiple Client Factors Drive Function

Occupational Profile – Daily Abilities and Change

*Co-morbidities are a client factor*

Client
- Brain pathology
- Self-awareness

FUNCTION

Caregiver
- Capacity/Resources

Performance – CPT

*Focal deficits are a client factor*

(visual; language; motor)
What is CPT?

- Standardized (performance-based) ecological measure of cognition *in function*
- Differs markedly from traditional OT assessments that highlight specific tasks the client can or cannot perform
- CPT measures working memory & the executive skills that underlie performance
Standardized Test

- Designed that the questions, conditions for administering, scoring procedures, and interpretations are consistent
- And are administered & scored in a predetermined, standard manner
- Advantage – results can be empirically documented – scores have relative validity & reliability; results are generalizable and replicable
CPT Subtasks

- Shop  4.5/6
- Phone  4.5/6
- Medbox  5.0/6
- Toast  4.0/5
- Wash  5.0/5
- Dress  4.0/5
- Travel  6.0/6

CPT Total: 33/39 = 4.7/5.6

CPT 5:
- Eliminates: Dress, Travel
- Yields lower total score

Concurrent validity with 7 tasks (-0.01 bias)
(potential for score to ↑↓
Schaber et al., 2013)
Episodic, Semantic, Procedural and Working Memories (pgs. 6-7)

- **Working**: info kept in mind for current reasoning; ability to remember & process at same time

- **Episodic**: memory of experiences (specific events in serial time)

- **Semantic**: universal knowledge abstract & relational memory (social customs; functions of objects; vocabulary & math)

- **Procedural**: unconscious (implicit) memory of skills/how to do things (use objects; body movements)

Barriers to Implementing CPT

- Space (a private clinic set up with the environmental properties)
- OT Time (Billing code – use 96125 = 1 hour)
- Using too few subtasks to average; or just one, as a direct measure of that ADL
- Wanting to change/substitute, or “update” props (object properties are standardized; meant to be universal/basic/simple)
CPT Wash (pg. 28)

☑ Soap with distracter props
☑ Sink is behind to assess
Non-visual concept formation

Can Adapt for Visual Impairment
What are CPT Profiles?

- There’s a difference between the score on the test vs. the profile.
- CPT total scores lead to a half-level profile system (5.0; 4.5; 4.0; 3.5; 3.0; 2 and 1).
- Profiles are evidence-based for predicting functional level and change over time.
  - Includes level of care needed at each profile.
CPT Cognitive-Functional Profiles

5.0 - Mild deficits in working memory/executive control
- IADL concerns if complex
  - Performance versus behavior (social cognition)

4.5 - Significant executive dysfunction
- Needs IADL assist (PHN; DPHCA; POA; Family)
- Learning impaired (Rehab implications)
- Inherent safety concerns
- At risk living alone

4.0 - IADL done by others; ADL impairments
- Completes concrete tasks with cues and reminders
- Routine oriented
- Unsafe living alone

3.5 - ADL directed by others
- Uses procedural memory for use of objects, familiar tasks
- Needs visual and manual cues; hands on care
- 24 hour supervision for safety

Schaber et al. (2013) Studied 57 Memory Care Tenants:

- Significant relationship between CPT score & ADL performance (dressing, showering, eating, tooth brushing)

CPT accounted for: 51% - 62% of variability in performance
What are Allen Levels?

- There’s a difference between CPT Profiles and Allen Levels.
- Allen Levels use a decimal-mode interpretive system (6.0; 5.8; 5.6; 5.4; 5.2; 5.0; 4.8 etc.).
- Modes describe discrete cognitive processes and functional capacities at each even mode.
  - Mode descriptions do not align with CPT scores.
  - In particular with CPT Profiles 5 and 4.
Large Allen Cognitive Level Screen
a quick screen
for cognitive impairment
(0.5 bias with CPT)

Ewald, 2009
Major Neurocognitive Disorder

- Significant cognitive decline from a previous level
- Deficits interfere with independence in everyday activities (at minimum - assist with IADL)

Mild Neurocognitive Disorder

- Modest cognitive decline from a previous level
- Deficits do not interfere with capacity for independence
  - May require more effort, compensatory strategies, accommodation

- Deficits do not occur exclusively in context of Delirium
- Deficits not better explained by another mental disorder
Specify whether due to:

- Alzheimer’s disease
  - > 60% of Dementia cases
- Vascular disease
- Frontotemporal lobar degeneration
- Lewy body disease
- Traumatic brain injury
- Substance/medication use
- HIV infection
- Prion disease
- Parkinson’s disease
- Huntington’s disease
- Another medical condition
- Multiple etiologies
- Unspecified
Neuropsychological Profile
Identifies impairments in cognitive domains:
- Memory; Spatial; Executive
Provides a differential diagnosis
## Consensus Diagnosis by Clinical Measure

<table>
<thead>
<tr>
<th>Consensus Diagnosis</th>
<th>CPT&lt;sup&gt;abc&lt;/sup&gt; N=91</th>
<th>CPT5&lt;sup&gt;abc&lt;/sup&gt; N=91</th>
<th>CPT-Toast N=91</th>
<th>LACLS N=57</th>
<th>MMSE N=55</th>
<th>MoCA N=36</th>
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<tbody>
<tr>
<td>CIND&lt;sup&gt;a&lt;/sup&gt;</td>
<td>N=9</td>
<td>N=9</td>
<td>N=9</td>
<td>N=7</td>
<td>N=3</td>
<td>N=5</td>
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<tr>
<td>Mean (SD)</td>
<td>5.01(.11)</td>
<td>4.94(.20)</td>
<td>4.77(.44)</td>
<td>4.87(.41)</td>
<td>26.0(1.0)</td>
<td>20.6(3.2)</td>
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<tr>
<td>95% CI</td>
<td>4.94 - 5.10</td>
<td>4.79 - 5.10</td>
<td>4.44 - 5.12</td>
<td>4.48 - 5.26</td>
<td>23.5</td>
<td>16.6 - 24.6</td>
</tr>
<tr>
<td>MCI&lt;sup&gt;b&lt;/sup&gt;</td>
<td>N=13</td>
<td>N=13</td>
<td>N=13</td>
<td>N=8</td>
<td>N=11</td>
<td>N=3</td>
</tr>
<tr>
<td>Mean(SD)</td>
<td>4.97(.23)</td>
<td>4.85(.26)</td>
<td>4.69(.48)</td>
<td>4.88(.32)</td>
<td>25.3(2.9)</td>
<td>23.0(2.0)</td>
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<tr>
<td>95% CI</td>
<td>4.84 - 5.11</td>
<td>4.69 - 5.02</td>
<td>4.40 - 4.98</td>
<td>4.61 - 5.16</td>
<td>23.4</td>
<td>18.0 - 28.0</td>
</tr>
<tr>
<td>AD&lt;sup&gt;c&lt;/sup&gt;</td>
<td>N=52</td>
<td>N=52</td>
<td>N=52</td>
<td>N=32</td>
<td>N=26</td>
<td>N=26</td>
</tr>
<tr>
<td>Mean(SD)</td>
<td>4.58(.35)</td>
<td>4.48(.36)</td>
<td>4.38(.58)</td>
<td>4.60(.42)</td>
<td>21.0(6.0)</td>
<td>18.0(3.3)</td>
</tr>
<tr>
<td>95% CI</td>
<td>4.49 - 4.68</td>
<td>4.39 - 4.59</td>
<td>4.22 - 4.54</td>
<td>4.45 - 4.76</td>
<td>18.6</td>
<td>16.7 - 19.4</td>
</tr>
<tr>
<td>Dementia</td>
<td>N=17</td>
<td>N=16</td>
<td>N=16</td>
<td>N=10</td>
<td>N=15</td>
<td>N=2</td>
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<tr>
<td>Mean(SD)</td>
<td>4.62(.33)</td>
<td>4.53(.28)</td>
<td>4.53(.56)</td>
<td>4.52(.40)</td>
<td>21.2(4.6)</td>
<td>21.0(1.4)</td>
</tr>
<tr>
<td>95% CI</td>
<td>4.45 - 4.80</td>
<td>4.38 - 4.69</td>
<td>4.23 - 4.83</td>
<td>4.23 - 4.81</td>
<td>18.6</td>
<td>8.3 - 30</td>
</tr>
</tbody>
</table>

<sup>a</sup>p<0.001 vs. AD and p=0.003 vs. Dementia

<sup>b</sup>p<0.001 vs. AD and p=0.003 vs. Dementia

<sup>c</sup>p<0.001 vs. MCI and Cognitive Impairment Not Demented (CIND)
CPT Average Score (N=91)

Sensitivity - 89% Specificity - 75% below 4.7
Sensitivity - 78% Specificity - 86% below 4.6

Mean Restrict/Go – 4.8 (.24)
Mean Retire – 4.3 (.33)

ON-Road exam
Results by CPT score
CPT Administration

- Begin with the whole task and its details
  - Includes task context and implied cues
- Grade down as difficulty with performance is observed (Follow the “Ifs” in the manual)
  - Sequential elimination or inclusion of cues
- End the task when the performance pattern is identified (Know when you are done)
<table>
<thead>
<tr>
<th>Score</th>
<th>CPT Task Performance Patterns</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 or 5</td>
<td>Client demonstrates efficient and error-free execution of the task</td>
</tr>
<tr>
<td>5 (out of 6)</td>
<td>Client can process multiple written, verbal, visual, and contextual cues, but with relatively mild working memory/executive function impairments, performance is inefficient with overt errors the person can correct.</td>
</tr>
<tr>
<td>4.5 or 4.0</td>
<td>Executive dysfunction manifests in testing: Client cannot act on multiple task details and contextual directions without task reductions and cues. Although the person retains the main goal of each task, they can’t pay simultaneous attention to the details, nor inhibit the distracter props.</td>
</tr>
<tr>
<td>3.5 or 3.0</td>
<td>Severe working memory/executive function impairments: The person relies on implicit procedural recognition cues to use the objects, but loses sight of the intended outcome of the task.</td>
</tr>
<tr>
<td>2</td>
<td>Client touches or holds the props but cannot perform the associated actions.</td>
</tr>
</tbody>
</table>

Each CPT task is rated with a gross level score, then totaled for the average score ranging from intact abilities (5.6) to profound disability (2.0)
DRESS (pg. 38)
Task details:
- Cold
- Rain
- Coat made for men vs women
- Head protection

Score 5: Completes task with all details
Score 4: Attention to some/not all details; selects a coat
Score 3.5: Not able to process details of task or clothing; Selects/dons bathrobe
Score 3.0: Not able to select; Able to don clothing when handed
CPT Phone (simulated call – pg. 34)

Score 6
Able to process complex written cues (episodic & semantic)
Locates section & number; Makes the call

Score 5
Inefficient use of complex written cues
- Locates number with cue to section or takes excessive time
Makes the call and retains specific purpose (price of paint)

Score 4
Not able to locate number
Makes the call with number given
Asks something about paint

Score 3
Not able to make the call
Able to dial/push buttons
- Performs action on object
CPT Toast (pg. 31)

Score 5 –
Able to process concrete details & complete the task

Score 4 –
Errors in learning/generalizing task in clinic environment:
  Needs cue to plug in toaster
  Needs cue to find toaster lever
  Butters the bread instead of toasting

Score 3 –
Apraxia:
  Needs cues to sequence the task
  Able to use the objects
CPT Medbox: (pg. 18)
Not a direct measure of clients’ regime management
(not meant to be used alone to predict capacity)
Artifact of 4.5 Score
Task set-up reduces the complex processing requirements

Overlapping scoring system with full task:

- 4.5 score with accurate set up (may make errors but can correct)
Medbox Performance Patterns

Score 6: Tracks AM vs. PM Box; Sets up the simple & 3/3 complex meds

Score 5: Tracks AM vs. PM Box; Sets up the simple & 3/3 complex meds; Makes errors; Corrects with cues

Score 4.5: Tracks AM vs. PM Box well enough to set up the simple med; Makes errors; Gets Fluidia right or corrects; not able to correct all complex meds; Dysexecutive

Score 4.0: Places pills in the box; Or needs direction to place a pill in each slot

Score 3.5: Reads words on label or puts bottle in box
Hazelann & George

- **Practice Setting:** Outpatient (one hour)

- **OT Role:**
  - Provide Functional Diagnosis
    - Occupational Profile (pg. 45)
  - Educate Client, Family, Staff
    - Explain & Predict Function
  - Identify capacity & needs
Give the initial directions
- Allow client to setup all 4 bottles
- If client starts & stops or gets stuck—
  Can repeat directions
  Can say “do what you think” and “we’ll talk when you’re all done”
- Always confirm client’s correct thinking
  Say “Yes” and “that’s right”

Go to task set up (2 easy bottles) if client can’t start or proceed (attend to all 4 bottles)
Initial directions (pg. 19)

- This test is to see how you do with new medications
- Here are 4 new medications (pan across) and here are the pillboxes
- This one is for morning (point out & show); and this one is for evening (point out & show)
- Set up one week of medications
- Follow the directions on the bottles
- Start with this one (point to or hand Fluidia)
Medbox Corrections (pg. 20)

- Ask client to check the bottle and correct what they did (First Cue)
- If unable, tell client what to fix (Specific Cues):
  - Correct the days of the week
  - Correct the time of day
  - Correct the # of pills
  - "What does as needed mean, would you use a box meant for scheduled medicine?"
- Here are 4 new medications (pan across)
- This is the morning box; and this is the evening box
- Set up the medications for one week
- Follow the directions on the bottles (or can say label)
CPT Shop (pg.23)

CPT 6 – Simultaneous attention to details
  - (sizes, prices, and money)
CPT 5 – Inefficient simultaneous attention/
  - Makes errors and corrects
CPT 4 – Difficulty with simultaneous attention
  - Various behaviors manifest
  - Has basic goals to select and pay
    (may need step by step assist)
CPT 3 – Performs familiar actions on objects

- Belts for clinic assessment -
  All validity studies used belts
- Gloves for home assessment or
  Visual impairment or W/C short or
  Clients already in CPT 3
WALK OUT OF THE ROOM.
TAKE A RIGHT, WALK STRAIGHT AHEAD.
TAKE A RIGHT AT THE FIRST HALLWAY.
WALK STRAIGHT AHEAD, GO THROUGH
THE FIRE DOOR TO GET TO THE STAIRS.
Thank you

Please contact me for more info:
theressa.burns@va.gov
612-467-3338