Rating of Behavior, Personality and Comportment domain #7 and Language #8 of CDR for UDS

David Knopman et al
Sandra Weintraub et al
Rationale for additional domains

• While standard CDR is excellent for typical amnesic MCI and AD, it is less sensitive to:
  – Behavioral variant FTD
  – Progressive aphasias
How new domains add to informativeness of CDR

• In NACC FTLD study baseline data
  – Among 18 bvFTD patients with standard CDR-SOB <4
    • 7 had BPC domain =1
    • 6 had BPC domain of >1
  – Among 20 PNFA patients with standard CDR-SOB <4
    • 16 had Language >1
Assessment of behavior, comportment and personality

• Should be assessed by a skilled clinician, who is familiar with FTD
• Evaluation should include both interview of knowledgeable informant and interview of patients
Core features for diagnosis of bv-FTD & for CDR rating

- Loss of insight
- Disinhibition
- Apathy
- Restlessness
- Emotional lability
- Easily distracted
- Reduced empathy
- Impulsivity
- Social withdrawal and disengagement
- Poor self-care
- Appetite disturbance or Hyperorality
- Compulsive or stereotypic behaviors
# Rating Scheme for Domain of Behavior, Personality and Comportment

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Socially appropriate behavior</td>
</tr>
<tr>
<td>0.5</td>
<td>Questionable changes in comportment, empathy, appropriateness of actions</td>
</tr>
<tr>
<td>1</td>
<td>Mild but definite changes in behavior – behaviors of <em>commission or omission</em> (apathy)</td>
</tr>
<tr>
<td>2</td>
<td>Moderate behavioral changes, affecting interpersonal relationships &amp; interactions in a significant manner</td>
</tr>
<tr>
<td>3</td>
<td>Severe behavioral changes making interpersonal interactions all unidirectional</td>
</tr>
</tbody>
</table>
CDR rating =1

- Behavioral and personality changes occur regularly according to knowledgeable informant.
- Behavior and comportment, while definitely abnormal some of the time, not pervasive.
- The patient may be socially appropriate at times.
- In casual, brief interactions with patient, the behavior changes might not be evident.
Catalog of Aberrant Behaviors

• lack of empathy for the feelings of others,
• loss of insight into how one’s behavior is perceived by others
• impulsiveness (the tendency to act without regards to consequences),
• mental rigidity and inflexibility,
• loss of interest (apathy) in prior pastimes,
• loss of interest in and indifference to interpersonal relationships causing social withdrawal,
• easy distractability
Catalog of Aberrant Behaviors

- emotional lability such that the patient switches from sadness to elation, or friendliness to hostility rapidly and without warning or provocation,
- laughing or other actions that are incongruent with situation,
- rude or socially inappropriate speaking to strangers,
- socially inappropriate touching of strangers,
- speaking in a caustic or unkind way to family or strangers,
- loss of modesty around family or strangers,
stimulus-bound behaviors and utterances such as commenting on the appearance of things or people without regard to the propriety of such comments,

loss of interest in personal appearance and hygiene such that the patient appears in public in dirty or soiled clothing,

failure to bathe with attendant body odor, and

loss of table manners such as using one’s hands to eat instead of utensils.
<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No Language Difficulty</td>
</tr>
<tr>
<td>0.5</td>
<td>Consistent mild word finding difficulties; simplification of word choice; circumlocution; decreased phrase length and/or mild comprehension difficulties</td>
</tr>
<tr>
<td>1</td>
<td>Moderate word finding difficulty in speech; cannot name objects in environment; reduced phrase length or agrammatic speech; or reduced comprehension in conversation and reading</td>
</tr>
<tr>
<td>2</td>
<td>Moderate to severe impairments in either speech or comprehension; has difficulty communicating thoughts; writing may be slightly more effective</td>
</tr>
<tr>
<td>3</td>
<td>Severe comprehension deficits; no intelligible speech</td>
</tr>
</tbody>
</table>
Elements of Language domain assessment

• Should be completed by physicians skilled in language assessment

• Components
  – Spontaneous speech
  – Auditory comprehension
  – Object naming
  – Reading
  – Writing
Spontaneous Speech Evaluation

- articulation and motor speech – may or may not be language deficits
- Words per minute
- Phrase length
- Paraphasic errors
- Grammatical form and content
Auditory Comprehension

• Ability to understand questions during interview
• Impairment of single word comprehension
• Impairment of sentence comprehension
• Inability to follow commands
Correlations between CDR 7, 8 and other measures at baseline NACC FTLD study

<table>
<thead>
<tr>
<th></th>
<th>CDR7</th>
<th>CDR8</th>
<th>CDRSOB (6 item)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAQSUM</td>
<td>.51</td>
<td>.04</td>
<td>.84</td>
</tr>
<tr>
<td>FBISUM</td>
<td>.71</td>
<td>.08</td>
<td>.76</td>
</tr>
<tr>
<td>MMSE</td>
<td>-.00</td>
<td>-.39</td>
<td>-.40</td>
</tr>
<tr>
<td>Boston Nam</td>
<td>-.05</td>
<td>-.44</td>
<td>-.08</td>
</tr>
<tr>
<td>Digit Sym S</td>
<td>.12</td>
<td>-.16</td>
<td>-.19</td>
</tr>
</tbody>
</table>
Focus on BPC Domain in NACC study

Distribution of Ratings

- Numerically
  - Baseline 0.74 + .98
  - One Yr 1.23 + .89

Number of Patients

- 3
- 2
- 1
- 0.5
- 0

Baseline vs One Year

CDR Rating
Matrix of score changes from baseline to year 1

One Year CDR

<table>
<thead>
<tr>
<th>Initial CDR</th>
<th>0</th>
<th>0.5</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Drop-out</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>14</td>
<td>8</td>
<td>8</td>
<td>2</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>0.5</td>
<td>0</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>15</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>