AGED SPECIFIC ASSESSMENT TOOLS

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Issues in assessing the Elderly

Association between biological, psychological, social and cultural issues

For example:

- Delusions and major psychosis, depression, dementia, and delirium
- Depression and cognitive impairment
- Dementia and psychological symptoms
Establishing a supportive and trusting relationship

- Careful listening and observation
- Patience
- Familiar environment, if possible
- Physical comfort maximised
- Sensory deficits identified
MSE – age specific issues

- Increasing prevalence of dementia
- Prevalence & reversibility of delirium
- Close association between clinical symptoms of confusion and depression
- Frequency with which physical problems present with symptoms of confusion (eg, thyroid disorders, electrolyte
**Appearance and Behaviour**

- Age, grooming, cleanliness, eye contact, reaction to examiner
- Eg, appropriate for weather, garments inside out, multiple layers, dirty, dishevelled, unkempt
- Eg, friendly, hostile, guarded, cooperative, withdrawn

**Speech**

- In dementia syndromes - fluency?, dysarthria (disordered articulation)?, word finding difficulties?, misuse of words (paraphasias)?
Mood and Affect

- Changes in affect frequently among the earliest features heralding onset of dementia (especially FTD)

Thought

- Onset of delusions in elderly, previously well person suggests organic issues, (eg, dementia)
Motor

- Slow and reduced movement, expressionless face, shuffling gait, and tremor often associated with Parkinson’s disease and other subcortical conditions (eg, Huntington’s, lacunar state)

Perception

- Hallucinations and brain abnormalities, including dementia, Lewy Body Dementia & Parkinson’s disease
- Hallucinations in delirium
- Capgras syndrome
Insight & Judgement

- Loss of insight & impaired judgement often an early sign in dementia

Cognition

- Quick screen of potential problems, further testing may be required (delirium, dementia)
- Disorientation and obvious memory problems would be indicators of further assessment, as may be associated with delirium or dementia
Mini Mental State Examination (MMSE)

Issues in administration:
- Education level
- Serial 7’s versus WORLD backwards
- Choice of words for 3 word recall
- Right versus left hand on comprehension task
- Visual or hearing aids
- Rapport building
Standardized Administration

- Ask each question a max of 3 times
- Do not hint, prompt, or provide physical cues
- Do not explain questions or engage in conversation
Orientation
Registration
Attention and Calculation
Recall
Language
Copying
Scoring of MMSE

- 24/30 - 30/30 - normal
- 20/30 - 24/30 - mild cognitive impairment
- 10/30 - 20/30 - moderate cognitive impairment
- 0/30 - 10/30 - severe cognitive impairment
Normative Data - issues

- Relationship b/w MMSE and premorbid intelligence, educational attainment
- High MMSE scores for particular types of dementia (FTD)
- Bias towards verbal items
- Lack of executive items
- Less ideal for some conditions
- Fundamentally a screening tool only
Clock Drawing Task

- Frequently used as a screen for dementia
- Involves visual-spatial, constructional, and executive functions
- Free drawing versus pre drawn circle
- Times used (ten past eleven)
- Scoring can be quantitative or qualitative
understand, but no other help should be given. The time
taken to complete the task may be noted.

If using a pre-drawn circle, provide a clock with a circle
about 4 in. (10 cm) in diameter (Shulman, 2000) and say:
"This circle represents a clock face. Please put in the numbers to
make it look like a clock and then set the time to 10 minutes past
11." Shulman (2000) recommended that the tester should not
use the word “hands” in the instructions.

The instructions for administering the CLOX test (Royall
et al., 1998) are provided in Figure 12-6.

Children

According to Cohen et al. (2000), the child is provided with a
piece of paper and instructed to “draw the face of a clock and
make the clock say 3:00.” After this, the child is presented with
two precision clocks and is asked to indicate the times of 9:30 and
10:30 (Cohen et al., 2000).

ADMINISTRATION TIME

 Approximately 5 min is required.

SCORING

Quantitative Systems

Scoring systems range from a 3-point system (Goodglass &
Kaplan, 1983, 2007) to more complex systems (e.g., a 20-point
scale by Meador et al., 1992). The 10-point scoring system, adapted
from Sanderletter et al. (1989) and Libon et al. (1992), is
currently used for the hand-drawn version and is shown in
Table 12-5. The Shulman scoring system is simple and appears
to be quite useful (see Vaillant). It is shown in Table 12-6. The system
(CLOX) proposed by Royall et al. (1998) is

presented in Figure 12-6.

By children, Cohen et al. (2000) recommended scoring
clock construction and clock setting separately (see Table 12-7).
Clock construction has a maximum score of 15, and clock setting
has a maximum score of 60.

Qualitative Systems

In addition to the quantitative score, a number of authors
(e.g., Cocozza et al., 2004; Libon, 1996; Bezdien et al., 1982; Seher et al., 1995; Toth et al., 2002) have developed
directional scoring systems that include evaluation of clock
dimensions, graphic difficulties, and other errors. (e.g., numbers
left over, telephone numbers in the hands, time on the
10), conceptual (e.g., setting the time on the clock rather than
time on the clock), or conceptual (e.g., setting the hands
beyond 12h), and spatial planning (e.g., neglect, bias in
classification, bias in number spacing, numbers outside the clock
circle, or circular). Types of errors.

Table 12-5 Criteria for Evaluating Free-Drawn Clock Drawing
in Adults

<table>
<thead>
<tr>
<th>Error Type</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Normal drawings, numbers in approximately</td>
<td></td>
</tr>
<tr>
<td>correct positions, hands in slightly different</td>
<td></td>
</tr>
<tr>
<td>minute hand and approaching 6 clockside.</td>
<td>10</td>
</tr>
<tr>
<td>2. Slight errors in placement of hands—not only</td>
<td>9</td>
</tr>
<tr>
<td>on the 8 and 4, but not on one of the adjacently</td>
<td></td>
</tr>
<tr>
<td>hour numbers on one side of the clock.</td>
<td></td>
</tr>
<tr>
<td>3. More noticeable errors in placement of hour and</td>
<td>8</td>
</tr>
<tr>
<td>minute hand by one more than 30 degree spacing.</td>
<td></td>
</tr>
<tr>
<td>4. Placement of hands significantly off course (more than one</td>
<td>7</td>
</tr>
<tr>
<td>number), e.g., inappropriate spacing of numbers (e.g., all</td>
<td></td>
</tr>
<tr>
<td>even number).</td>
<td></td>
</tr>
<tr>
<td>5. Inappropriate use of clock hands (e.g., digital display or</td>
<td>6</td>
</tr>
<tr>
<td>counting of numbers despite repeated instructions)</td>
<td></td>
</tr>
<tr>
<td>6. Inaccurate or inappropriate arrangement of</td>
<td>5</td>
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<tr>
<td>hands (e.g., hands indicated by dots). Hands must</td>
<td></td>
</tr>
<tr>
<td>be represented but do not clearly point at a number</td>
<td></td>
</tr>
<tr>
<td>7. Numbers absent, written outside of clock, or in distorted</td>
<td>4</td>
</tr>
<tr>
<td>sequence. Inappropriate clock face, missing; hands not clearly</td>
<td></td>
</tr>
<tr>
<td>represented or drawn outside of clock face.</td>
<td></td>
</tr>
<tr>
<td>8. Number and clock face no longer connected in the drawing.</td>
<td>3</td>
</tr>
<tr>
<td>Hands not recognizable.</td>
<td></td>
</tr>
<tr>
<td>9. Overall scoring may be seen.</td>
<td>2</td>
</tr>
<tr>
<td>1. Irrelevant, uninterpretable figure as an attempt.</td>
<td></td>
</tr>
</tbody>
</table>

Note: Numbers are scores and symbols below the clock clock face depicted on excerpt page.

Adapted from Cocozza et al., 2004, and Libon, 1996.

DEMOGRAPHIC EFFECTS

Age

Cross-sectional studies reveal that age affects clock drawing in
adults (e.g., Freedman et al., 1996; Marsolais et al., 1997;
Toth et al., 1995) with performance declining particularly
after age 70 years (Cocozza et al., 2004; Marsolais et al., 1997;
but see Cohen & Kaplan, 1997, who suggested that clock
drawing performance remains fairly preserved from age 70 to 90 years).

Longitudinal examination reveals slight declines with ad-
vaning age. Randell et al. (2005) examined 1238 elderly
community-living individuals in southern Pennsylvania, aged
65 to 94 years, using the entire clock drawing test. The testing
was repeated every 2 years. The results indicated a small but
significant decline in performance (7.70 to 6.70 for "survivors"
who participated in all five tests over the 10-year period.
A study of children, the ability to draw a clock improves significantly
with age (Cohen et al., 2000; Edmonds et al., 1991).

7. Numbers written on the outside of the clock: numbers written either around the perimeter of the circle or on the circle itself.

8. Numbers written counterclockwise: arrangement of the numbers with 12 at the top of the clock face and the numbers continuing around in a counterclockwise fashion.

Each patient's clock was scored for the presence or absence of each error type. Group differences in error types were evaluated through a χ² analysis. Inter-rater reliability for this scoring system has previously been shown to be very high, with the quantitative scoring procedure showing an inter-rater reliability of 0.90, and the qualitative scoring procedure showing an inter-rater reliability ranging from 0.8 to 1.0. The two independent raters in the current study demonstrated excellent inter-rater reliability (κ = 1.0) for the quantitative CDT score. There were discrepancies on only two of the eight qualitative features assessed for all of the clocks evaluated. Consensus was derived and a final rating was made on these two variables.

Examples of several error types are displayed in Figure 1.

RESULTS

Group Differences on Global CDT Score

The difference between the three subject groups on the global measure of CDT performance approached, but did not reach statistical significance (F(2,58) = 2.4, p < 0.10, n² = 0.09). The mean scores of the AD, PD, and DLD groups on the CDT were 7.2 (±2.1), 6.3 (±2.7), and 5.7 (±2.0), respectively.

Group Differences on CDT Errors

The percentage of AD, PD, and DLD subjects that made each type of error on the CDT is shown in Table 2.
are just as important in the ability of the test to detect the cognitively impaired as the former. If an elderly patient draws a normal clock or one with minor spacing abnormalities, the patient has a good chance of being cognitively normal. Finding 'normal' clock drawing ability in elderly, recently admitted patients reasonably excludes significant cognitive impairment. It is a test that is easy to use and easy to remember. Finding 'abnormal' clock drawing ability necessitates further assessment of cognition and affect. The difficult classification of many of the clearly abnormal clocks is not necessary. A minor spacing abnormality or a spontaneously corrected spacing abnormality is all that needs to be recognized.

The method described is easy for the visually impaired to follow: a large thick circle rather than their own hand writing. The instruction used by Wolff-Klein et al. was modified because quite reasonable questions are generated by just instructing the patient to 'draw a clock'. Still there were 11 cognitively normal patients without evidence of cerebral insult who could not do this seemingly
Studies have found improvement in clock drawing from command to copy conditions in Alzheimer’s and not in vascular dementia (reflects greater deficits in semantic memory systems).

Greater executive impairments in vascular dementia, Huntington’s and Parkinson’s disease.

Impact of depression controversial.

Impact of schizophrenia on performance.
A clock-drawing test with a pre-drawn circle 10 cm in diameter performed by a 70-year-old woman with Alzheimer's disease. Her Mini Mental State Examination score was 17, she belonged to Katz index scale grade III (11) and was classified as severity class 3 (needs assistance to function but can respond appropriately to interaction) on the Berger scale (34). She had seven error scores according to the method of Wasser et al. (17).

Clock drawing (score range 1–6) also correlates significantly with the MMSE (11). Clock drawing (score range 1–10) could correctly classify 96% of patients with Alzheimer's disease and 92% of elderly controls in an outpatients clinic. Both outpatients and hospitalized patients with and without dementia, the test (score range 1-10) could correctly classify 77% of patients with Alzheimer's disease, 90% of patients with multi-infarct and mixed dementias and 79% of normal elderly people (4). There have been fewer clock-drawing studies in patients with vascular dementia than in patients with Alzheimer's disease (4, 12). Patients with vascular dementia, diagnosed by the Hachinski ischemic score (21), the Dementia Rating Scale (22) and the MMSE, made more errors in spacing, while patients with Alzheimer's disease showed a wider variety of errors (score range 1–10) (12). In cases of very mild Alzheimer's disease, the clock-drawing test (score range 1–10) can be normal (23). The sensitivity of the test that may vary according to the level of cognitive impairment (33).

In a study of poorly educated people, Amato and Mantini (2) found that the value of the test as a single screening instrument for dementia was questionable. In that study, three different scoring systems were used—those of Shulman et al. (9) (score range 1–5), Suter-Mann et al. (13) (score range 1–10) and Wolf-Klein et al. (12) (score range 1–10). The scoring method of Wolf-Klein et al. was least affected by education and measured specifically, but it had low sensitivity. On the other hand, Ferrucci et al. (24) found the clock-drawing test (score range 1–10) to be a sensitive and specific tool for the detection of patients with mild cognitive impairment as diagnosed with the MMSE and the Dementia Rating Scale (22).

The test (score range 1–5) can be used during follow-up as a sensitive measure of deterioration of dementia (25), diagnosed using the MMSE and the Short Mental Status Questionnaire (26). Examples of the test are shown in Figures 1 and 2.

Neglect

Constructive apraxia may occur with lesions in either the left or right parietal lobe, although it is more frequent after right parietal damage (14). It can also be observed early in the course of Alzheimer's disease (14). The clock-drawing test correlates strongly with tests of constructional apraxia and to a global deterioration scale (10).

The clock-drawing test is a part of a visual neglect battery of six pencil and pen tests from the Behavioral Inattention Test (27). Many authors (19, 28-31) have
Delirium - assessment

- Reliable diagnosis comes from careful and deliberate examination
- Also important to gain information from carers and nursing staff
- Rating Scales
- Physical examination and work-up
Confusion Assessment Method (CAM) Inouye et al 1990

- Compatible with DSM-1V
- Quick and easy to administer
- Evaluates for evidence of delirium based on observations made before, during or after interview, and based on clinical features of delirium (e.g., course, inattention, disorganised thinking, altered consciousness, disorientation, memory impairment, psychomotor changes, sleep changes)
1: Acute Onset and Fluctuating Course
2: Inattention
3: Disorganised thinking
4: Altered Level of Consciousness
5: Disorientation
6: Memory Impairment
7: Perceptual Disturbances
8A: Psychomotor Agitation
8B: Psychomotor Retardation
9: Altered sleep/wake cycle
CAM Diagnostic Algorithm

- Feature 1: Acute onset & fluctuating Course
- Feature 2: Inattention
- Feature 3: Disorganised thinking
- Feature 4: Altered level of consciousness

The diagnosis of delirium requires the presence of 1 and 2, and & either 3 or 4.
Delirium Rating Scale

1. Temporal onset of symptoms
2. Sensory disturbances
3. Hallucination Type (visual, auditory, tactile)
4. Delusions
5. Motor Behaviour
6. Clarity of Thinking
7. Physical illness
8. Sleep Wake cycle
9. Lability of Mood
10. Variability of Symptoms