

This is a **Sample** version of the
**Addenbrooke's Cognitive
Examination (ACE-R)**

The **full version** of the Addenbrooke's Cognitive Examination (ACE-R) comes without 'sample' watermark

The full complete version includes –

- ACR-R Review
- User Manual
- Scoring Guide
- Test/ Questionnaire

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Addenbrooke's Cognitive Examination (ACE-R) - REVIEW

The ACE-R has been reported to have excellent sensitivities and specificities (>0.8) for the diagnosis of dementia at cut-off scores of 88/100 and 82/100 in the setting of a university hospital clinic.

- Maximum score of 100 weighted as follows:
 - Orientation 10
 - Attention 8
 - Memory 35
 - Verbal fluency 14
 - Language 28
 - Visuospatial ability 5
- Raw scores are used for all items except for verbal fluency where a scaled scoring system for the letter and category fluency is utilized. (1)
- Cut off score 88 or 83 (88 has higher sensitivity though). (1)
- Able to differentiate between Alzheimer's Disease (AD) and Frontotemporal Dementia (FTD) using VLOM ratio – if >3.2 likely AD, if <2.2 likely FTD. (1)

Clinical Advantages of the ACE-R

- Incorporates the questions on the MMSE and expands on the domains of memory, language and visuospatial concepts and adds tests of verbal fluency. (1)
- Unlike other assessments (eg. CAMDEX or DRS) does not require specialized equipment or trained assessors. (1)
- 15-20 minutes to administer. (4)
- Sensitive to the early stages of Alzheimer's (amnesic syndromes) and isolated frontal or linguistic deficits found in early frontotemporal dementia ie. Able to differentiate between AD and FTD, and in early stages of the disorders. (1)
- Able to distinguish between patients with progressive degenerative disorders and those with affective disorders (eg. Major Depression.) The affective groups showed very little impairment in the total ACE scores, only mild deficits in memory and verbal fluency. (4)
- Can detect cognitive impairment in atypical parkinsonian syndromes (Progressive Supranuclear Palsy, Multiple System Atrophy, Corticobasal Degeneration), opposed to MMSE, which cannot. Is as sensitive as DRS for this population. (3)

Clinical Disadvantages of ACE-R

- Paucity of tests of executive functions. (2)
- Some questions are associated with UK and countries with similar government systems (eg. asks for name of prime minister, leader of opposition.) (2)

Psychometric Properties

- High internal consistency – all its component scores contribute to the measurement of cognitive functions and correlate well with the composite score, which in turn determines the presence or absence of dementia. (1)
- Construct validity was best for memory and verbal fluency showing good concordance with standard neuropsychological tests. (1)
- Good construct validity for the diagnosis of dementia and had a high sensitivity, even with a lower cut-off score of 83. (1)
- Detected dementia in 79% of patients – a third more than the MMSE when a cut-off score of 83 was used. And sensitivity of 93% when the cut-off of 88 is used. (1)
- Particularly sensitive in the detection of FTD – nearly doubled the detection rate when compared with the MMSE. (1)
- Age, level of education or gender does not influence the predictive outcome, compared to the MMSE where both age and gender have influential power. (1)

REFERENCES

- (1) Mathuranath, P.S; Nestor P.J; Berrios, G.E; Rakowicz, W. & Hodges, J.R. (2000) A brief cognitive test battery to differentiate Alzheimer's disease and frontotemporal dementia. *Neurology* Vol 55 Issue 11, 1613-1620.
- (2) Cummings, J. (2000) New tests for dementia. *Neurology* Vol 55 Issue 11, 1601-1602.
- (3) Bak, T.H.; Rogers, T.T.; Crawford, L.M.; Hearn, V.C.; Mathuranath, P.S. & Hodges, J.R. (2005) Cognitive bedside assessment in atypical parkinsonian syndromes. *Journal of Neurology, Neurosurgery and Psychiatry* Vol 76, 420-422.
- (4) Dudas, R; Berrios, G. & Hodges, J. (2005) The Addenbrooke's Cognitive Examination (ACE) in the differential diagnosis of early dementias versus affective disorder. *American Journal of Psychiatry* Vol 13 Issue 3, 218-226

ADDENBROOKE'S COGNITIVE EXAMINATION – ACE-R

Administration and Scoring Guide - 2006

The ACE-R¹ is a brief cognitive test that assesses five cognitive domains, namely attention/orientation, memory, verbal fluency, language and visuospatial abilities. Total score is 100, higher scores indicates better cognitive functioning.

Administration of the ACE-R takes, on average, 15 minutes.

These instructions have been designed in order to make the questions and their scoring clear for the tester. Please read them carefully before giving the test.

If possible, leave the scoring until the end of the session, since the participant will not be able to check whether the tester is ticking for correct answers or crossing for wrong ones. This might avoid anxiety, which can disturb the participant's performance on the test.

O R I E N T A T I O N – score 0 to 10

Ask the participant for the day, date, month, year and season. Score one point for each correct answer.

Ask the participant for the name of the hospital (or building), the floor (or room), the town, county and country. Score one point for each correct answer.

Record responses. Allow mistakes for the date (+ or – 2 days). If assessing a participant at home, ask for the name of the place i.e. name of the house e.g. "The Gables", and for the floor you might ask for the name of the room (kitchen, living room, etc). If at a single storey health setting, ask about a local landmark. When the season is changing, e.g. at the end of August, and the participant says "autumn", ask them "could it be another season?". If answer is "summer", give one point, since the two seasons are in transition. Do not give one point if the answer is "winter" or "spring".

Seasons: spring - March, April, May; summer - June, July, August; autumn - September, October, November; winter - December, January, February.

R E G I S T R A T I O N – score 0 to 3

Ask the participant to repeat and remember the words lemon, key, and ball. Speak slowly. Repeat them if necessary (maximum 3 times). Tell the participant that you will ask for this information later. Record the number of trials. Score the first attempt only.

A T T E N T I O N & C O N C E N T R A T I O N – score 0 to 5

Calculation: Ask the participant to subtract 7 from 100, record the answer, then ask them to subtract 7 from that, record the answer. Do this 5 times. If the participant makes a mistake, carry on and check subsequent answers for scoring. Record responses (Example: 92, 85, 79, 72, 65, score 3).

Spelling: give this test if the participant makes a mistake on the calculation task. Start by asking the participant to spell "world". Then ask them to spell it backwards. Record responses.

Scoring for the spelling task:

- Score 1 point for each correct letter spelt. Correct sequence = D L R O W = 5 points
- Count one error for each omission, letter transposition (switching adjacent letters), insertion (inserting a new letter), or misplacement (moving W, O, R, L, D by more than one space).

ADDENBROOKE'S COGNITIVE EXAMINATION - ACE-R

Final Revised Version A (2005)

Name :
Date of birth :
Hospital no. :

Date of testing: / /
Tester's name:
Age at leaving full-time education:
Occupation:
Handedness:

Addressograph

ORIENTATION

➤ Ask: What is the	Day	Date	Season	[Score 0-5] <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	O R I E N T A T I O N
➤ Ask: Which	Town	County	Country	[Score 0-5] <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	

REGISTRATION

➤ Tell: 'I'm going to give you three words and i'd like you to repeat after me: lemon, key and ball'. After subject repeats, say 'Try to remember them because i'm going to ask you later'. Score only the first trial (repeat 3 times if necessary). Register number of trials	[Score 0-3] <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	A T T E N T I O N & O R I E N T A T I O N
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ATTENTION & CONCENTRATION

➤ Ask the subject: 'could you take 7 away from a 100? After the subject responds, ask him or her to take away another 7 to a total of 5 subtractions. If subject make a mistake, carry on and check the subsequent answer (i.e. 93, 84, 77, 70, 63 -score 4) Stop after five subtractions (93, 86, 79, 72, 65). ➤ Ask: 'could you please spell WORLD for me? Then ask him/her to spell it backwards:	[Score 0-5] <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <small>(for the best performed task)</small>	A T T E N T I O N & O R I E N T A T I O N
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MEMORY - Recall

➤ Ask: 'Which 3 words did I ask you to repeat and remember?'	[Score 0-3] <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	M E M O R Y
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MEMORY - Anterograde Memory

➤ Tell: 'I'm going to give you a name and address and I'd like you to repeat after me. We'll be doing that 3 times, so you have a chance to learn it. I'll be asking you later' Score only the third trial	[Score 0-7] <input style="width: 20px; height: 20px;" type="text"/>	M E M O R Y
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	1 st Trial	2 nd Trial	3 rd Trial
Harry Barnes
73 Orchard Close
Kingsbridge
Devon

MEMORY - Retrograde Memory

➤ Name of current Prime Minister ➤ Name of the woman who was Prime Minister ➤ Name of the USA president ➤ Name of the USA president who was assassinated in the 1960's	[Score 0 -4] <input style="width: 20px; height: 20px;" type="text"/>	M E M O R Y
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