

**5<sup>th</sup> Congress of the European Academy of Neurology**

**Oslo, Norway, June 29 - July 2, 2019**

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**Teaching Course 18**

**Testing of cognitive functions by the neurologist (Level 1)**

**Clinical dementia testing: methods and meaning**

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**Testing of cognitive functions by the neurologist (Level 1)**  
**Clinical Dementia testing: methods and meaning**

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**Clinical Dementia testing: methods and meaning**

Nothing to disclose

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## Clinical Dementia testing: methods and meaning

Dementia is diagnosed when there are cognitive or behavioral (neuropsychiatric) symptoms that:

**1. Interfere with the ability to function at usual activities;**

**2. Represent a decline from previous levels of functioning and performing;**

**3. Are not explained by delirium or major psychiatric disorder;**

4. Cognitive impairment is detected and diagnosed through a combination of (1) **history-taking** from the patient and a knowledgeable informant and (2) an objective **cognitive assessment**

5. The cognitive or behavioral impairment involves a minimum of two of the following domains:

- 5.1. Impaired ability to acquire and **remember** new information—symptoms include: repetitive questions or conversations, misplacing personal belongings, forgetting events or appointments, getting lost on a familiar route.
- 5.2. Impaired reasoning and **handling of complex tasks**, poor judgment— symptoms include: poor understanding of safety risks, inability to manage finances, poor decision-making ability, inability to plan complex or sequential activities.
- 5.3. Impaired **visuospatial abilities**—symptoms include: inability to recognize faces or common objects or to find objects in direct view despite good acuity, inability to operate simple spatial organisation, or orient clothing to the body.
- 5.4. Impaired **language** functions (speaking, reading, writing)—symptoms include: difficulty thinking of common words while speaking, hesitations; speech, spelling, and writing errors.
- 5.5. Changes in personality, **behavior**—symptoms include: uncharacteristic mood fluctuations such as agitation, impaired motivation, initiative, apathy, loss of drive, social withdrawal, decreased interest in previous activities, loss of empathy, compulsive or obsessive behaviors, socially unacceptable behaviors.

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## Clinical Dementia testing: methods and meaning

**Memory is the most frequent complaint**  
**Different memory systems**

Procedural memory (ex: biking)

Semantic memory (ex: second war)

Short term/working memory (ex: code for e-banking)

Episodic memory (ex: yesterday breakfast)

Robust versus fragile systems

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## **Clinical Dementia testing: methods and meaning**

### **Interview: Subjective Cognitive Decline**

Do you complain about your cognition?

Do you worry about it?

Did you have a good cognition before?

Since when do you complain?

How do you behave compare to others?

Ask for daily examples of instrumental activities (IADL: administrative tasks, medication, transportation, phone)

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## **Clinical Dementia testing: methods and meaning**

### **Interview: the judgment of a relative**

Do you have other examples of cognitive difficulties?

Did you observe a change in behaviour?

The difference between patient's and relative's report allows to assess anosognosia for cognitive impairment

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## **Clinical Dementia testing: methods and meaning**

### **Clinical syndromes**

Subjective Cognitive Decline

Mild Cognitive Impairment (objective cognitive decline with few repercussions on daily activities)

Dementia (objective cognitive decline with repercussions on daily activities)

**There is a need to specify the underlying pathology to provide adapted recommendations**

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## **Clinical Dementia testing: methods and meaning**

### **Clinical Dementia testing**

**There a multiple short batteries to test cognition or daily activities (we made choices)**

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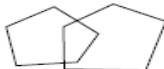


# Clinical Dementia testing: methods and meaning

## Mini Mental State Exam

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ONE POINT FOR EACH ANSWER					DATE	
<b>ORIENTATION</b>						
Year	Month	Day	Date	Time		___/5
Country	Town	District	Hospital	Ward		___/5
<b>REGISTRATION</b>						
Examiner names 3 objects (eg apple, table, penny) Patient asked to repeat (1 point for each correct). THEN patient to learn the 3 names repeating until correct.						___/3
<b>ATTENTION AND CALCULATION</b>						
Subtract 7 from 100, then repeat from result. Continue 5 times: 100 93 86 79 65 Alternative: spell "WORLD" backwards - dlrow.						___/5
<b>RECALL</b>						
Ask for names of 3 objects learned earlier.						___/3
<b>LANGUAGE</b>						
Name a pencil and watch.						___/2
Repeat "No ifs, ands, or buts".						___/1
Give a 3 stage command. Score 1 for each stage. Eg. "Place index finger of right hand on your nose and then on your left ear".						___/3
Ask patient to read and obey a written command on a piece of paper stating "Close your eyes".						___/1
Ask the patient to write a sentence. Score if it is sensible and has a subject and a verb.						___/1
<b>COPYING</b>						
Ask the patient to copy a pair of intersecting pentagons.						___/1
						___/1
<b>TOTAL</b>						___/30

Episodic & Semantic memory

Working memory

Working memory, executive & Semantic

Episodic memory

Language, Semantic & Working memory

Visuoconstructive,  
Procedural & Working memory

## Clinical Dementia testing: methods and meaning

### Clinical interest: discussion on driving

Concerns about cognitive functioning & driving:

Procedural memory versus working and episodic memory

Automatic versus controlled behaviour

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## Clinical Dementia testing: methods and meaning

### Clinical interest: discussion on driving

Orientation: could you complete an accident report

Working memory: could you immediately remember a traffic sign

Working memory & executive: could you keep your attention on  
multiple informations

Semantic: could you complete an accident report

Visuoconstructive: if you do not master 2 dimensions, could you  
master 3D?

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# Clinical Dementia testing: methods and meaning

## Montreal Cognitive Assessment Scale

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VISUOSPATIAL / EXECUTIVE		Copy cube		Draw CLOCK (Ten past eleven)		POINTS	
		<input type="checkbox"/> Contour <input type="checkbox"/> Numbers <input type="checkbox"/> Hands		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		___/5	
NAMING							
		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		___/3	
MEMORY							
Read list of words, subject must repeat them. Do 3 trials. Do a recall after 5 minutes.		FACE	VELVET	CHURCH	DAISY	RED	No points
1st trial							
2nd trial							
ATTENTION							
Read list of digits (4 digit/ sec.). Subject has to repeat them in the forward order		[ ] 2 1 8 5 4		[ ] 7 4 2		___/2	
Subject has to repeat them in the backward order		[ ] 2 1 8 5 4		[ ] 7 4 2		___/2	
Read list of letters. The subject must tap with his hand at each letter A. No points if 2 or more errors		[ ] FBACMNAAJKLBAFAKDEAAAJAMOF AAB		[ ] FBACMNAAJKLBAFAKDEAAAJAMOF AAB		___/1	
Serial 7 subtraction starting at 100		[ ] 93	[ ] 86	[ ] 79	[ ] 72	[ ] 65	___/3
		4 or 3 correct subtractions: 3 pts, 2 or 3 correct: 2 pts, 1 correct: 1 pt, 0 correct: 0 pt				___/3	
LANGUAGE							
Repeat: I only know that John is the one to help today. [ ]		[ ]		[ ]		___/2	
The cat always hid under the couch when dogs were in the room. [ ]		[ ]		[ ]		___/2	
Fluency / Name maximum number of words in one minute that begin with the letter F		[ ]		[ ]		___/1	
(N ≥ 11 words)		[ ]		[ ]		___/1	
ABSTRACTION							
Similarity between e.g. banana - orange - fruit		[ ] train - bicycle		[ ] watch - ruler		___/2	
DELAYED RECALL							
Has to recall words WITH NO CLUE		FACE	VELVET	CHURCH	DAISY	RED	Points for UNCLUED recall only
Category cue		[ ]	[ ]	[ ]	[ ]	[ ]	
Multiple choice cue		[ ]	[ ]	[ ]	[ ]	[ ]	
ORIENTATION							
[ ] Date		[ ] Month	[ ] Year	[ ] Day	[ ] Place	[ ] City	___/6
© Z.Nasreddine MD Version November 7, 2004		Normat 2 26 / 30		TOTAL		___/30	
www.mocatest.org				Add 1 point if 5-12 yr old		___/30	

Visuospatial, executive & attention



# Clinical Dementia testing: methods and meaning



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<b>VISUOSPATIAL / EXECUTIVE</b>		Copy cube		Draw CLOCK (Ten past eleven) (5 points)		POINTS			
				<input type="checkbox"/> Contour <input type="checkbox"/> Numbers <input type="checkbox"/> Hands			___/5		
<b>NAMING</b>						___/3			
<b>MEMORY</b>		Read list of words, subject must repeat them. Do 3 trials. Do a recall after 5 minutes.		FACE	VELVET	CHURCH	DAISY	RED	No points
<b>ATTENTION</b>		Read list of digits (1 digit/ sec.). Subject has to repeat them in the forward order [ ] 2 1 8 5 4 Subject has to repeat them in the backward order [ ] 7 4 2		<input type="checkbox"/> 93 <input type="checkbox"/> 86 <input type="checkbox"/> 79 <input type="checkbox"/> 72 <input type="checkbox"/> 65		4 or 3 correct subtractions: 3 pts, 2 or 2 correct: 2 pts, 1 correct: 1 pt, 0 correct: 0 pt		___/3	
<b>LANGUAGE</b>		Repeat: I only know that John is the one to help today. [ ] The cat always hid under the couch when dogs were in the room. [ ]		<input type="checkbox"/> (Niz in words)		<input type="checkbox"/>		___/2	
<b>ABSTRACTION</b>		Similarity between e.g. banana - orange - fruit [ ] tram - bicycle [ ] watch - ruler [ ]		<input type="checkbox"/>		<input type="checkbox"/>		___/2	
<b>DELAYED RECALL</b>		Has to recall words WITH NO CLUE		FACE	VELVET	CHURCH	DAISY	RED	Points for UNCLUED recall only
Optional		Category cue Multiple choice cue		<input type="checkbox"/>		<input type="checkbox"/>		___/5	
<b>ORIENTATION</b>		<input type="checkbox"/> Date <input type="checkbox"/> Month <input type="checkbox"/> Year <input type="checkbox"/> Day <input type="checkbox"/> Place <input type="checkbox"/> City		<input type="checkbox"/>		<input type="checkbox"/>		___/6	
© Z.Nasreddine MD Version November 7, 2004		Normal 2-26 / 30		TOTAL		<input type="checkbox"/>		___/30	
www.mocatest.org						Add 1 point if 5-12 yr old			

Visuospatial, executive & attention

Semantic memory

Working memory & Episodic memory

Working memory, attention, executive & Semantic

Language & WM, executive

Executive & semantic

Episodic memory (free & cued recall) & Semantic memory

## Clinical Dementia testing: methods and meaning

**Fluency:** name a maximum number of words in one minute that begin with the letter « F » (> 11 words)

In the Frontal Assessment Battery: “Say as many words as you can beginning with the letter „S,“ any words except surnames or proper nouns.”

Patient should be stimulated. The time allowed is 60 seconds.

> 9 words: 3 6 -9 words: 2 3 -5 words: 1 < 3 words: 0

[The FAB, Dubois et al, Neurology 2000;55:1621–162]

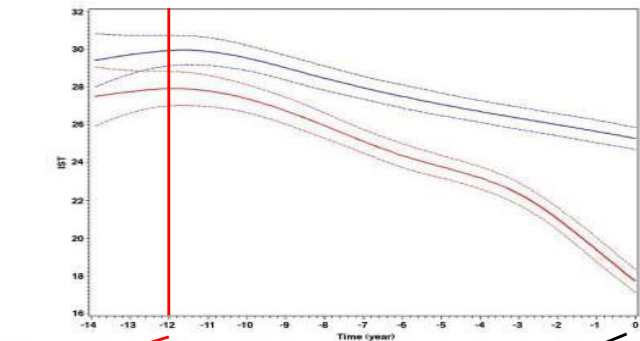
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## Clinical Dementia testing: methods and meaning

Clinical interest:  
Subjective cognitive  
decline

Decreased Verbal Fluency  
12 years before dementia diagnosis  
(compared to Healthy controls)



dementia

[Adapted from Amieva et al, Ann Neurol 2009]

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## Clinical Dementia testing: methods and meaning

### Multiple causes of cognitive or behavioral difficulties

Motivation  
Fatigue & Sleep (sleep apnea, ...)  
Stress, depression, psychiatric diseases  
Medication & toxic substances  
Metabolic & Systemic pathologies  
Different types of dementia

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## Clinical Dementia testing: methods and meaning

### Probable clinical AD dementia (McKhann et al, 2011)

Insidious onset. Symptoms have a gradual onset over months to years, not sudden over hours or days;

- a. **Amnestic** presentation is the most common syndromic presentation of AD dementia. The deficits should include impairment in learning and recall of recently learned information.
- b. **Nonamnestic** presentations:
- **Language** presentation: The most prominent deficits are in word-finding
  - **Visuospatial** presentation: spatial cognition, including object agnosia, impaired face recognition
  - **Executive dysfunction**: impaired reasoning, judgment, and problem solving.

The diagnosis of probable AD dementia **should not** be applied when there is evidence of (a) substantial concomitant **cerebrovascular disease**, defined by a history of a stroke temporally related to the onset or worsening of cognitive impairment; or the presence of multiple or extensive infarcts or severe white matter hyperintensity burden

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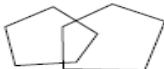
# Clinical Dementia testing: methods and meaning

## Case 1

Men, 70y, former teacher;  
 Complaints about memory since 2 years, forgets what he read, less attentive when playing cards, asking for repetition of recent information; needs help for handling finances (spouse);  
 Depressed since 1 year, poor sleep, irritability (spouse).  
 His father was diagnosed with major depression.

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ONE POINT FOR EACH ANSWER		DATE	
<b>ORIENTATION</b>			
Year	Month	Day	Time
			___/5
Country	Town	District	Hospital Ward
			___/5
<b>REGISTRATION</b>			
Examiner names 3 objects (eg apple, table, penny) Patient asked to repeat (1 point for each correct). THEN patient to learn the 3 names repeating until correct.			___/3
<b>ATTENTION AND CALCULATION</b>			
Subtract 7 from 100, then repeat from result. Continue 5 times: 100 93 86 79 65 Alternative: spell "WORLD" backwards - dlrow.			___/5
<b>RECALL</b>			
Ask for names of 3 objects learned earlier.			___/3
<b>LANGUAGE</b>			
Name a pencil and watch.			___/2
Repeat "No ifs, ands, or buts".			___/1
Give a 3 stage command. Score 1 for each stage. Eg. "Place index finger of right hand on your nose and then on your left ear".			___/3
Ask patient to read and obey a written command on a piece of paper stating "Close your eyes".			___/1
Ask the patient to write a sentence. Score if it is sensible and has a subject and a verb.			___/1
<b>COPYING</b>			
Ask the patient to copy a pair of intersecting pentagons.			___/1
			
<b>TOTAL</b>			___/30

Depression  
 Versus  
 Early stage dementia?

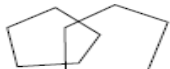
# Clinical Dementia testing: methods and meaning

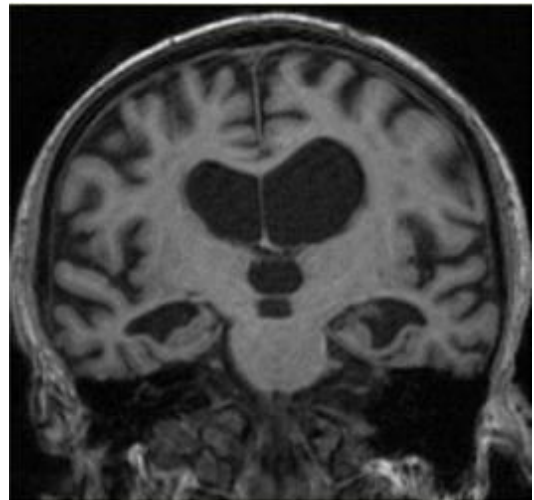
## Case 1

Men, 70y, former teacher;  
 Complaints about memory since 2 years, forgets what he read, less attentive when **playing** cards, **asking** for repetition of recent information; **cannot remember bad recent information**;  
 Depressed since **1 year (first episode)**, poor sleep, irritability.  
 His father was diagnosed with depression.

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ONE POINT FOR EACH ANSWER		DATE	
<b>ORIENTATION</b>			
Year	Month	Day	Time
			___/5
Country	Town	District	Hospital Ward
			___/5
<b>REGISTRATION</b>			
Examiner names 3 objects (eg apple, table, penny) Patient asked to repeat (1 point for each correct). THEN patient to learn the 3 names repeating until correct.			___/3
<b>ATTENTION AND CALCULATION</b>			
Subtract 7 from 100, then repeat from result. Continue 5 times: 100 93 86 79 65 Alternative: spell "WORLD" backwards - dlrow.			___/5
<b>RECALL</b>			
Ask for names of 3 objects learned earlier.			___/3
<b>LANGUAGE</b>			
Name a pencil and watch.			___/2
Repeat "No ifs, ands, or buts".			___/1
Give a 3 stage command. Score 1 for each stage. Eg. "Place index finger of right hand on your nose and then on your left ear".			___/3
Ask patient to read and obey a written command on a piece of paper stating "Close your eyes".			___/1
Ask the patient to write a sentence. Score if it is sensible and has a subject and a verb.			___/1
<b>COPYING</b>			
Ask the patient to copy a pair of intersecting pentagons:			___/1
			
<b>TOTAL</b>			___/30



Medial temporal lobe atrophy as a biomarker of AD neurodegeneration

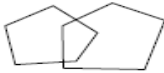
# Clinical Dementia testing: methods and meaning

## Case 2

Woman, 60y, working in public administration  
 Progressive difficulty for putting objects at the right place, loss of usual objects, forgets information, difficulties using home appliance, difficulties with spatial orientation (stopped driving).  
 No toxic, no neurological story, spectacles;  
 No familial story;  
 Hesitation for sitting down, no parkinsonian sign

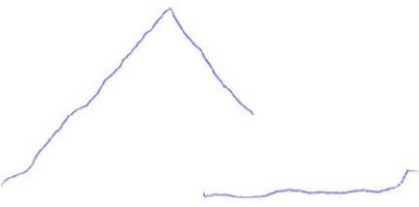
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ONE POINT FOR EACH ANSWER		DATE	
<b>ORIENTATION</b>			
Year	Month	Day	Time
			___/5
Country	Town	District	Hospital Ward
			___/5
<b>REGISTRATION</b>			
Examiner names 3 objects (eg apple, table, penny) Patient asked to repeat (1 point for each correct). THEN patient to learn the 3 names repeating until correct.			___/3
<b>ATTENTION AND CALCULATION</b>			
Subtract 7 from 100, then repeat from result. Continue 5 times: 100 93 86 79 65 Alternative: spell "WORLD" backwards - dlrow.			___/5
<b>RECALL</b>			
Ask for names of 3 objects learned earlier.			___/3
<b>LANGUAGE</b>			
Name a pencil and watch.			___/2
Repeat "No ifs, ands, or buts".			___/1
Give a 3 stage command. Score 1 for each stage. Eg. "Place index finger of right hand on your nose and then on your left ear".			___/3
Ask patient to read and obey a written command on a piece of paper stating "Close your eyes".			___/1
Ask the patient to write a sentence. Score if it is sensible and has a subject and a verb.			___/1
<b>COPYING</b>			
Ask the patient to copy a pair of intersecting pentagons.			___/1
			
<b>TOTAL</b>			___/30

4 (cannot read date on her watch)
5
3
2
(3)
2
2 (takes watch in hand before naming)
1
2 (not ear)
1
0
0
0
22

# Clinical Dementia testing: methods and meaning

## Case 2

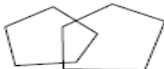
Woman, 60y, working in public administration  
 Progressive difficulty for putting objects at the right place, loss of usual objects, forgets information, difficulties using home appliance, difficulties with spatial orientation (stopped driving).

No toxic, no neurological story, spectacles;  
 No familial story;

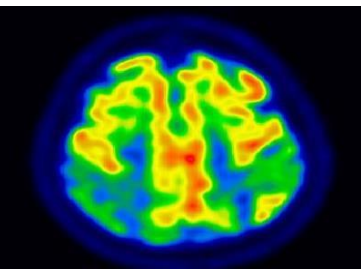
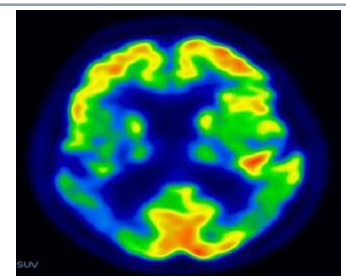
**Hesitation for sitting down, for taking the pencil,**  
 no parkinsonian sign

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ONE POINT FOR EACH ANSWER		DATE	
<b>ORIENTATION</b>			
Year	Month	Day	Time
			___/5
Country	Town	District	Hospital Ward
			___/5
<b>REGISTRATION</b>			
Examiner names 3 objects (eg apple, table, penny) Patient asked to repeat (1 point for each correct). THEN patient to learn the 3 names repeating until correct.			
			___/3
<b>ATTENTION AND CALCULATION</b>			
Subtract 7 from 100, then repeat from result. Continue 5 times: 100 93 86 79 65 Alternative: spell "WORLD" backwards - dlrow.			
			___/5
<b>RECALL</b>			
Ask for names of 3 objects learned earlier.			
			___/3
<b>LANGUAGE</b>			
Name a pencil and watch.			
			___/2
Repeat "No ifs, ands, or buts".			
			___/1
Give a 3 stage command. Score 1 for each stage. Eg. "Place index finger of right hand on your nose and then on your left ear".			
			___/3
Ask patient to read and obey a written command on a piece of paper stating "Close your eyes".			
			___/1
Ask the patient to write a sentence. Score if it is sensible and has a subject and a verb.			
			___/1
<b>COPYING</b>			
Ask the patient to copy a pair of intersecting pentagons.			
			___/1
			
<b>TOTAL</b>			___/30

- 4
- 5
- 3
- 2
- (3)
- 2
- 2
- 2
- 1
- 1
- 2
- 1
- 1
- 0
- 0
- 0
- 22



Posterior cortical atrophy

## Clinical Dementia testing: methods and meaning

### Case 3

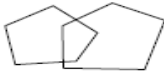
Woman, 58y, bank employee

2 hypo-manic episodes, changes in her social behavior, changes in her personality, inadapted emotion, unaware of the behavioral anomaly

Drug treatment (carbamazepine), forgetfulness, lack attention, cannot organize her daily activities, cannot go back to work.

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	DATE		
ONE POINT FOR EACH ANSWER			
<b>ORIENTATION</b>			
Year    Month    Day    Date    Time			___/5
Country    Town    District    Hospital    Ward			___/5
<b>REGISTRATION</b>			
Examiner names 3 objects (eg apple, table, penny) Patient asked to repeat (1 point for each correct). THEN patient to learn the 3 names repeating until correct.			___/3
<b>ATTENTION AND CALCULATION</b>			
Subtract 7 from 100, then repeat from result. Continue 5 times: 100 93 86 79 65 Alternative: spell "WORLD" backwards - dlrow.			___/5
<b>RECALL</b>			
Ask for names of 3 objects learned earlier.			___/3
<b>LANGUAGE</b>			
Name a pencil and watch.			___/2
Repeat "No ifs, ands, or buts".			___/1
Give a 3 stage command. Score 1 for each stage. Eg. "Place index finger of right hand on your nose and then on your left ear".			___/3
Ask patient to read and obey a written command on a piece of paper stating "Close your eyes".			___/1
Ask the patient to write a sentence. Score if it is sensible and has a subject and a verb.			___/1
<b>COPYING</b>			
Ask the patient to copy a pair of intersecting pentagons.			
			___/1
<b>TOTAL</b>			___/30

4 (impulsivity)  
5

3

4 (distractibility)  
(5)

3 (quick answer)

2

1

2 (impulsivity)

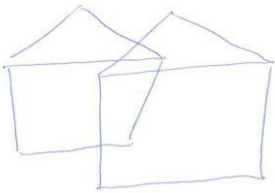
1

1

0 (quick)

26

Mania  
or  
Drug  
or  
Dementia?





## Clinical Dementia testing: methods and meaning

### Case 3

Woman, 58y, bank employee

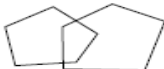
2 hypo-manic episodes, changes in her social behavior, changes in her personality, inadapted emotion, unaware of the behavioral anomaly

Drug treatment (carbamazepine), forgetfulness, lack attention, cannot organize her daily activities, cannot go back to work.

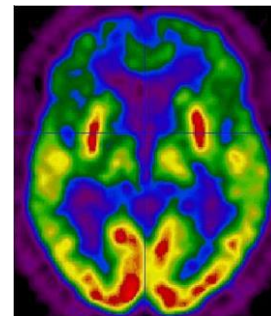
**Impaired sequences of tapping, impaired fluency (errors), loss of social inhibition during testing**

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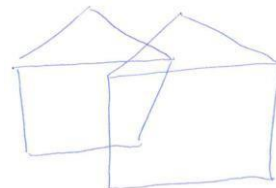


	DATE
ONE POINT FOR EACH ANSWER	
<b>ORIENTATION</b>	
Year Month Day Date Time	___/5
Country Town District Hospital Ward	___/5
<b>REGISTRATION</b>	
Examiner names 3 objects (eg apple, table, penny) Patient asked to repeat (1 point for each correct). THEN patient to learn the 3 names repeating until correct.	___/3
<b>ATTENTION AND CALCULATION</b>	
Subtract 7 from 100, then repeat from result. Continue 5 times: 100 93 86 79 65 Alternative: spell "WORLD" backwards - dlrow.	___/5
<b>RECALL</b>	
Ask for names of 3 objects learned earlier.	___/3
<b>LANGUAGE</b>	
Name a pencil and watch.	___/2
Repeat "No ifs, ands, or buts".	___/1
Give a 3 stage command. Score 1 for each stage. Eg. "Place index finger of right hand on your nose and then on your left ear".	___/3
Ask patient to read and obey a written command on a piece of paper stating "Close your eyes".	___/1
Ask the patient to write a sentence. Score if it is sensible and has a subject and a verb.	___/1
<b>COPYING</b>	
Ask the patient to copy a pair of intersecting pentagons.	___/1
	___/1
<b>TOTAL</b>	___/30

- 4 impulsivity
- 5
- 3
- 4 distractibility (5)
- 3 quick answer
- 2
- 1
- 2 impulsivity
- 1
- 1
- 0
- 26



**FDG-PET**  
frontal hypometabolism



## Clinical Dementia testing: methods and meaning

### Frontotemporal dementia – behavioural variant

Raskovski et al. Sensitivity of revised diagnostic criteria for the behavioural variant of frontotemporal dementia. Brain 2011; 134: 2456-2477

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## Clinical Dementia testing: methods and meaning

### Possible bvFTD

Three of the following behavioural/cognitive symptoms (A–F) must be present to meet criteria.

A. Early behavioural disinhibition

Socially inappropriate behaviour or Loss of manners or decorum or Impulsive, rash or careless actions

B. Early apathy or inertia

C. Early loss of sympathy or empathy

Diminished response to other people's needs and feelings or Diminished social interest, interrelatedness or personal warmth

D. Early perseverative, stereotyped or compulsive/ritualistic behaviour

Simple repetitive movements or Complex, compulsive or ritualistic behaviours or Stereotypy of speech

E. Hyperorality and dietary changes

Altered food preference or Binge eating, increased consumption of alcohol or cigarettes or Oral exploration or consumption of inedible objects

F. Neuropsychological profile: executive/generation deficits with relative sparing of memory and visuospatial functions

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## Clinical Dementia testing: methods and meaning

### Case 4

Woman, 66y, merchant

Sudden vertigo followed by comatose

Back to consciousness at the hospital, agitation, euphoria, manic behaviour

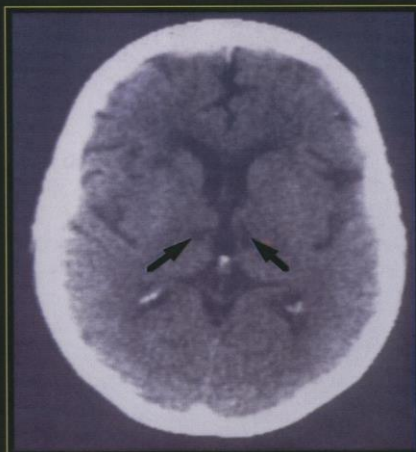
During the **next weeks**, disoriented, memory impairment and confabulations, apragmatism, disorganised, fluctuating alertness

Dementia? Pathology?

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Vascular thalamic dementia



## Clinical Dementia testing: methods and meaning

### Case 5

Woman, 68y, grandmother

Fluctuating forgetting of recent events; fluctuating attention to discussion; fluctuating difficulties in preparing meals or cakes, episodes of visual hallucinations (criticized).

Poor sleep (frequent movements) > benzodiazepine

MMSE from 25 to 13 (on different days, GP versus neurologist)

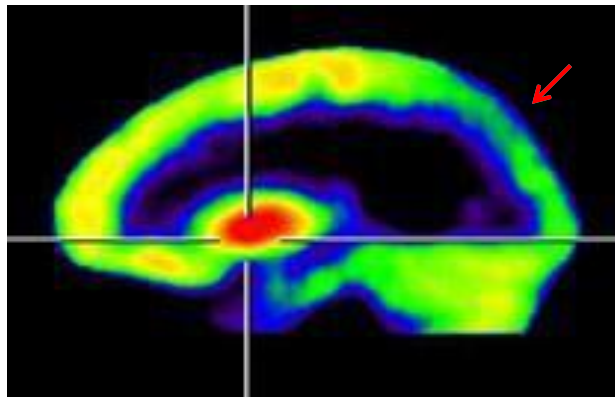
Micrography

Dementia? Characteristics? Pathology?

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## Clinical Dementia testing: methods and meaning



**PET-FDG : occipital hypometabolism**

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## Clinical Dementia testing: methods and meaning

Revised criteria for the clinical diagnosis of probable and possible **dementia with Lewy bodies (DLB)** (McKeith et al, 2017)

Dementia. Prominent or persistent memory impairment may not necessarily occur in the early stages but is usually evident with progression. Deficits on tests of attention, executive function, and visuo-perceptual ability may be especially prominent and occur early.

**Core clinical features** (The first 3 typically occur early and may persist throughout the course.)

Fluctuating cognition with pronounced variations in attention and alertness.

Recurrent visual hallucinations that are typically well formed and detailed.

REM sleep behavior disorder, which may precede cognitive decline.

One or more cardinal features of parkinsonism: bradykinesia, rest tremor, or rigidity.

**Supportive clinical features**

Severe sensitivity to antipsychotic agents; postural instability; repeated falls; syncope or other transient episodes of unresponsiveness; severe autonomic dysfunction, e.g., constipation, orthostatic hypotension, urinary incontinence; hypersomnia; hyposmia; hallucinations in other modalities; systematized delusions; apathy, anxiety, and depression.

**Indicative biomarkers**

Reduced dopamine transporter uptake in basal ganglia demonstrated by SPECT or PET.

Abnormal (low uptake) <sup>123</sup>Iodine-MIBG myocardial scintigraphy.

Polysomnographic confirmation of REM sleep without atonia.

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## Clinical Dementia testing: methods and meaning

### Take home message

**Interview, observation and relative**

**Short cognitive testing (> neuropsychological evaluation)**

**Biomarkers**

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## Clinical Dementia testing: methods and meaning

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- McKeith et al. Diagnosis and management of dementia with Lewy bodies. Fourth consensus report of the DLB Consortium. *Neurology* 2017;89:88–100

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## Clinical Dementia testing: methods and meaning

### Useful information

Dementia Revealed Toolkit, NHS England (<https://www.england.nhs.uk/wp-content/uploads/2014/09/dementia-revealed-toolkit.pdf>)

NICE guidelines: Dementia: assessment, management and support for people living with dementia and their carers (<https://www.nice.org.uk/guidance/ng97/resources/dementia-assessment-management-and-support-for-people-living-with-dementia-and-their-carers-pdf-1837760199109>)

Alzheimer Society cognitive assesment toolkit  
([https://www.alzheimers.org.uk/sites/default/files/migrate/downloads/alzheimers\\_society\\_cognitive\\_assesment\\_toolkit.pdf](https://www.alzheimers.org.uk/sites/default/files/migrate/downloads/alzheimers_society_cognitive_assesment_toolkit.pdf))

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