

Patient (last name, first name): _____

Patient questions

Say to the patient: **“I would like to ask you three questions. Please try to answer them with ‘yes’ or ‘no’.”**

- | | | YES | NO |
|---|--|--------------------------|--------------------------|
| 1 | “Have you experienced a recent decline in your ability to memorize new things?” | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 | “Have any of your friends or relatives made remarks about your worsened memory?” | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 | “Do your memory or concentration problems affect your everyday life?” | <input type="checkbox"/> | <input type="checkbox"/> |

Clock Drawing Test (see Clock Drawing Test form on page 2)

Place the form with the Clock Drawing Test in front of the patient. Say: **„Please draw a clock with all the numbers and hands.”** Do not indicate a specific time; the patient should decide him-/herself which time to draw. When the patient has finished, point to the box below and say: **„Now, please write the time on your drawn clock down in numbers, as if it would be on a train schedule or in a TV guide.”**

- | | | YES | NO |
|---|--|--------------------------|--------------------------|
| 4 | Are there two distinguishable clock hands (length or thickness)? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 | Is the clock, including “time in numbers”, perfect?* | <input type="checkbox"/> | <input type="checkbox"/> |

*** Clock drawing is perfect when the following criteria are fulfilled:**

- All 12 numbers are roughly equidistant.
- The numbers 3, 6, 9, and 12 are placed correctly.
- The two hands (for hour and minutes) are clearly distinguishable.
- Analog clock time and digital clock time correspond (you may check this by covering the box and read the drawn time yourself).

Examples for correct „time in numbers” are:

15.00 15 00 15:00 15⁰⁰ 1500 15h
 15h00 03.00 a.m. 3.00 P.M. 3:00 A/M 03:00 PM

Informant questionnaire (see form on page 3)

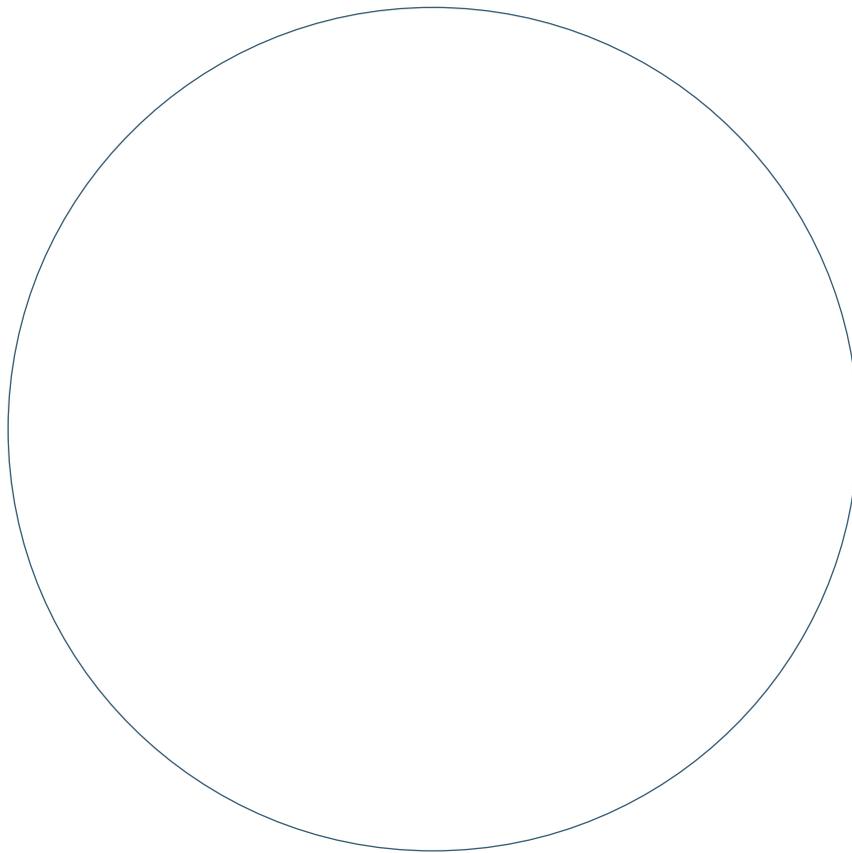
Please have the patient’s informant complete the informant questionnaire. Add up the numbers (questions A to G) for total points.

Total points: _____

Date: _____ Examiner: _____

Patient (last name, first name): _____

Please draw a clock:



Patient (last name, first name): _____

Informant questionnaire on change in cognitive performance

We would like you to remember what the patient was like **about two years ago, and to compare it with what he is like today**. The following questions are about situations in which the patient had to use her/his memory or intelligence. Please tell us whether her/his behavior in these situations has **improved, got worse, or stayed the same** compared to two years ago.

The comparison of her/his behaviour today with her/his behavior **two years ago is very important**. For example, if she/he did not know how to take care of financial issues two years ago, and still does not know how to do it, please indicate this with "no change".

Please indicate the changes you have observed by marking the appropriate answer with a cross.

Please answer all questions. If you do not know the answer to a question, please indicate your best guess.

I am: spouse/partner daughter/son friend neighbor
 other

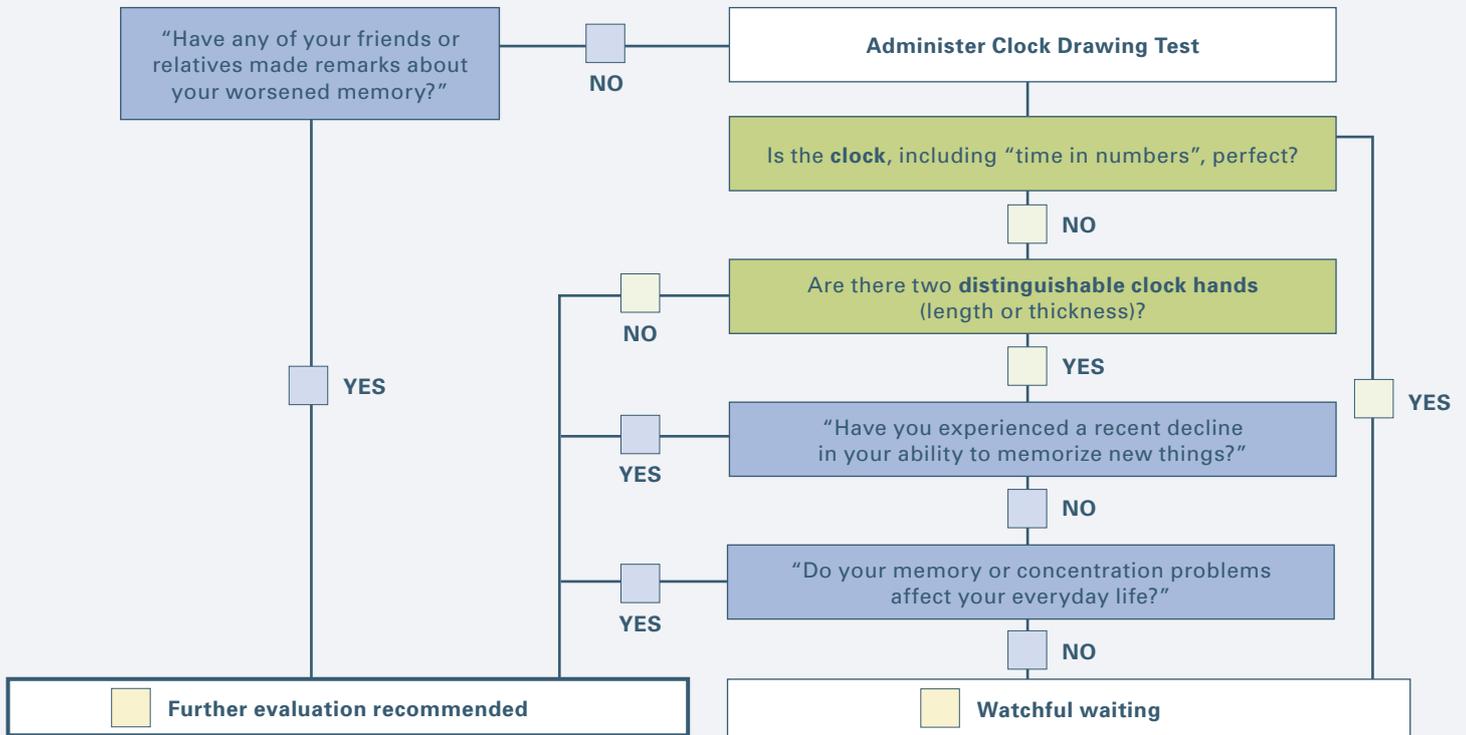
Last name, first name: _____ Date of birth: _____

Compared to two years ago how is this person at:	Points/question:	MUCH IMPROVED	A BIT IMPROVED	NO CHANGE	A BIT WORSE	MUCH WORSE
		1	2	3	4	5
A Remembering things about family and friends, e.g. occupations, birthdays, addresses		<input type="checkbox"/>				
B Remembering things that have happened recently		<input type="checkbox"/>				
C Recalling conversations a few days later		<input type="checkbox"/>				
D Remembering what day and month it is		<input type="checkbox"/>				
E Remembering where to find things which have been put in a different place from usual		<input type="checkbox"/>				
F Learning new things in general		<input type="checkbox"/>				
G Handling financial matters e.g. the pension, dealing with the bank		<input type="checkbox"/>				

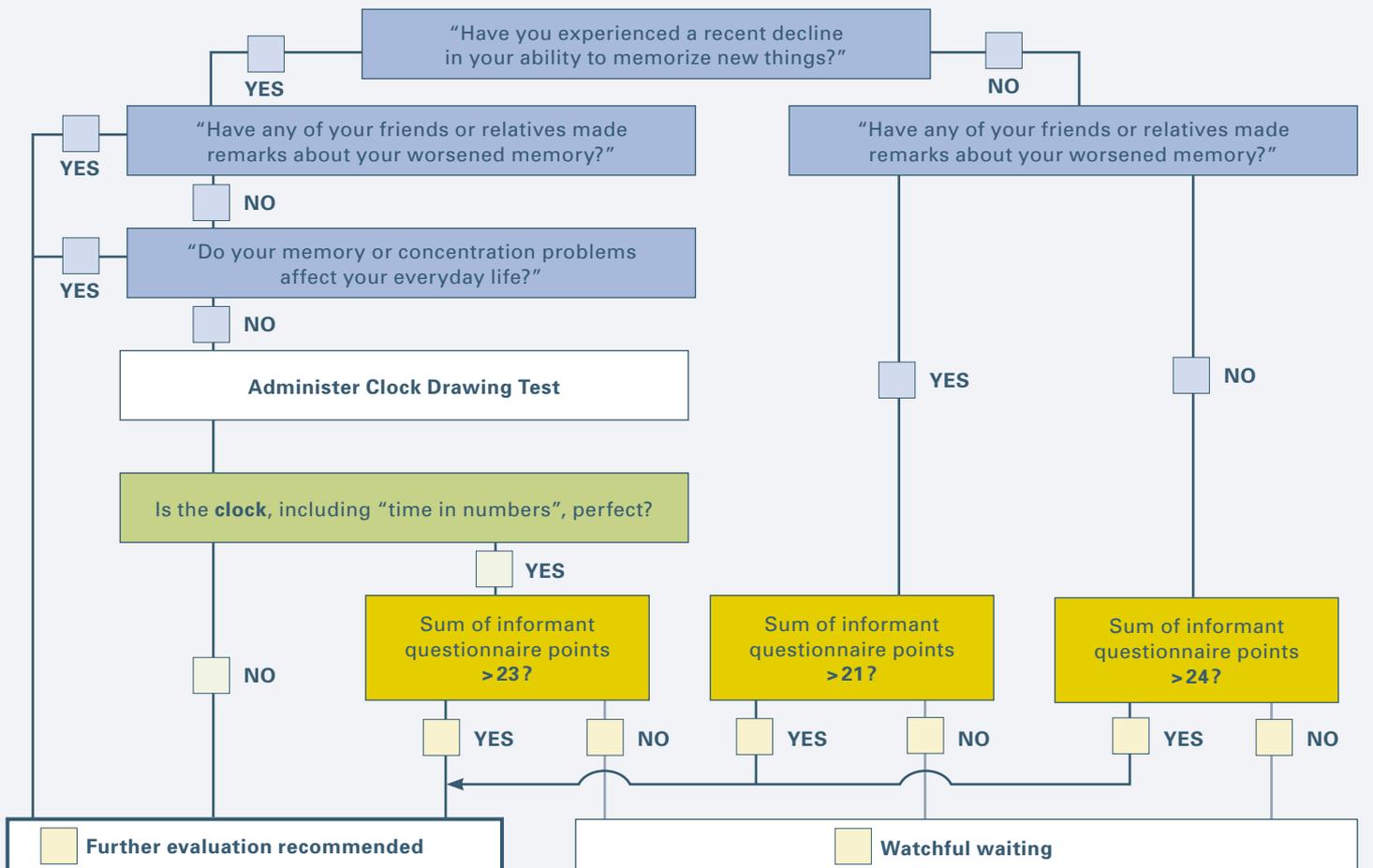
Comments: _____

Patient (last name, first name): _____

BrainCheck evaluation without informant information



BrainCheck evaluation with informant information



What is BrainCheck and when is it used?

BrainCheck is a case-finding tool for use in primary care in case of first cognitive signs or symptoms. BrainCheck is not a diagnostic tool. It was designed to help decide whether additional diagnostic procedures are indicated.

BrainCheck is indicated in the following situations: Patient or informant reports cognitive symptoms or the physician suspects cognitive worsening.

BrainCheck is composed of three questions for the patient, the Clock Drawing Test, and seven questions for the patients' informant.

The development of BrainCheck, the feasibility and validation studies are reported in :

Ehrensperger MM, et al. BrainCheck – a very brief tool to detect incipient cognitive decline: optimized case-finding combining patient- and informant-based data. *Alzheimer's Research and Therapy* 2014;6:69. doi:10.1186/s13195-014-0069-y

Abstract:

Introduction: Optimal identification of subtle cognitive impairment in the primary care setting requires a very brief tool combining (1) patients' subjective impairments, (2) cognitive testing, and (3) information from informants. The present study developed a new, very quick and easily administered case-finding tool combining these assessments ('BrainCheck') and tested the feasibility and validity of this instrument in two independent studies.

Methods: We developed a case-finding tool comprised of patient-directed (1) questions about memory and depression and (2) clock drawing, and (3) the informant-directed 7-item version of the Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE). *Feasibility study:* 52 general practitioners rated the feasibility and acceptance of the patient-directed tool. *Validation study:* An independent group of 288 Memory Clinic patients (mean \pm SD age = 76.6 \pm 7.9, education = 12.0 \pm 2.6; 53.8% female) with diagnoses of mild cognitive impairment (n = 80), probable Alzheimer's disease (n = 185), or major depression (n = 23) and 126 demographically matched, cognitively healthy volunteer participants (age = 75.2 \pm 8.8, education = 12.5 \pm 2.7; 40% female) partook. All patient and healthy control participants were administered the patient-directed tool, and informants of 113 patient and 70 healthy control participants completed the very short IQCODE.

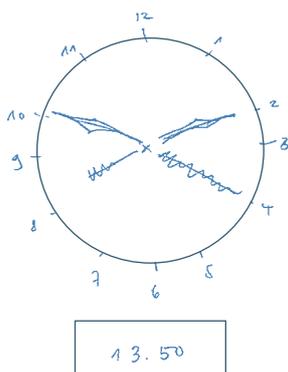
Results: Feasibility study: General practitioners rated the

patient-directed tool as highly feasible and acceptable.

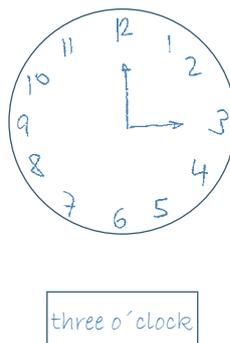
Validation study: A Classification and Regression Tree analysis generated an algorithm to categorize patient-directed data which resulted in a correct classification rate (CCR) of 81.2% (sensitivity = 83.0%, specificity = 79.4%). Critically, the CCR of the combined patient- and informant-directed instruments (BrainCheck) reached nearly 90% (i.e. 89.4%; sensitivity = 97.4%, specificity = 81.6%).

Conclusion: A new and very brief instrument for general practitioners, 'BrainCheck', combined three sources of information deemed critical for effective case-finding (i.e., patients' subject impairments, cognitive testing, informant information) and resulted in a nearly 90% CCR. Thus, it provides a very efficient and valid tool to aid general practitioners in deciding whether patients with suspected cognitive impairments should be further evaluated or not ('watchful waiting').

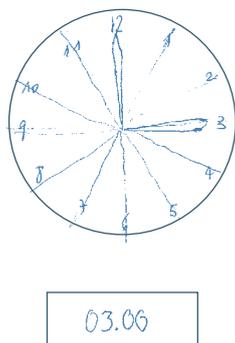
Clock Drawing Test – Examples



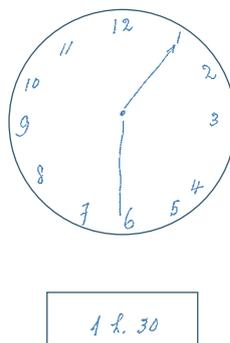
Completely correct
Numbers outside the circle are correct. Self-corrections are allowed as long as the valid result is clearly indicated.



Not completely correct
Time is not indicated in numbers.



Completely correct
Auxiliary lines are allowed as long as they are helpful and clearly distinguishable from the hands.



Not completely correct
The time cannot be read clearly. It could be 12.30 or 01.30 or 6.05.

Evaluation

On page 4 you can find a flow chart leading to the results “further evaluation recommended” or “watchful waiting”.

Further evaluation recommended

It is highly probable that the patient is suffering from cognitive impairment that should be evaluated more intensively. Depending on the primary care situation, a referral to a memory clinic or another interdisciplinary team is recommended; or further evaluation can take place in the doctor’s office.

Watchful waiting

Perhaps there are suspicious facts concerning cognitive symptoms even though the BrainCheck result is negative. It is therefore reasonable to repeat BrainCheck within about 6-12 months.

In addition, the following measures may be proposed to the patient:*

- correction of known risk factors
- physical activity
- social and cognitive stimulation
- prevention of social withdrawal
- treatment of affective symptoms
- review of medication, especially substances which can cause cognitive problems (e.g. benzodiazepines)
- consider the following treatments and evaluate their subjective clinical efficacy: Ginkgo biloba, omega-3, antioxidants, vitamins B6 and B12

* Kressig R, et al. Empfehlungen zur Diagnose-Eröffnung eines Mild Cognitive Impairment. Hausarzt Praxis 2009;15:2-3.
<http://www.memoryclinic.ch/content/view/42/62/>