# Brief Screening Instruments for Dementia in Primary Care

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This guide is one in a series that offers evidence-based tools to assist family physicians in improving their decision making at the point of care.

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## Clinical Question

What is the best brief screening instrument for dementia in the primary care setting?

## Evidence Summary

In addition to identifying patients who may benefit from pharmacotherapy, early detection of dementia helps families anticipate the patient's needs and helps physicians identify those in need of additional support. In a recent study of 371 community-dwelling older adults (231 had dementia or mild cognitive impairment), physicians correctly classified only 59 percent of all participants and only 41 percent of those with mild cognitive impairement.[1] Although the Mini-Mental State Examination (MMSE) has been widely recommended for identifying patients with dementia,[2] it is fairly lengthy. A recent systematic review found that the MMSE was 80 percent sensitive and 86 percent specific for dementia,[3] and a second systematic review estimated that it took seven to 10 minutes to complete.[4] Thus, there is a need for a brief, practical, and accurate alternative.

Several recent studies have reviewed brief screening instruments for dementia.[4-6] The first study identified 13 tests that could be performed in less than 10 minutes and that had been prospectively validated in at least one sample of older adults.[4] These tests assess cognition, function (by means of simple tasks), or both. Very short screening tests, taking less than two minutes to complete, include the clock drawing test, the time and change test, and a test in which the patient spells "world" backwards. In the clock drawing test, the patient draws a clock face set to a specific time. In the time and change test, the patient reads the time from a clock face and also makes change for a dollar. The study showed that, although the clock drawing test had the best accuracy among the very short tests, none were considered reliable or accurate enough for routine clinical use.[4] All of the studies concluded that among the tests taking between two and five minutes to administer, only the General Practitioner Assessment of Cognition (GPCOG), the Memory Impairment Screen (MIS), and the Mini-Cognitive Assessment Instrument (Mini-Cog) had accuracy similar to or better than the MMSE and had been validated in the primary care setting.[4-6]

The GPCOG screening instrument *(Figure 1)* consists of six items for the patient being evaluated, with an optional second set of six questions that are asked of someone who knows the patient well.[7] In a group of 283 community-dwelling older adults, the first part of the GPCOG was 82 percent sensitive and 70 percent specific (positive likelihood ratio [LR+] = 2.7, negative likelihood ratio [LR–] = 0.26), using a cutoff of 7 points or less for dementia. The two-part GPCOG was 82 percent sensitive and 83 percent specific (LR+ = 4.8, LR– = 0.22).[7]

In the MIS, patients are given a sheet of paper with the names of four items (an animal, a vegetable, a city, and a musical instrument). The paper is taken away after the patient reads the items aloud. The patient is then asked to recall an item from each category (e.g., "What was the vegetable?"). After a brief delay, during which the patient counts from one to 20 and back, the patient is asked to name all of the items. If the patient misses an item, the examiner cues the patient with the category (e.g., "What was the vegetable?"). The patient receives two points for each item recalled without cueing, and one point for each item recalled with cueing (maximum score of 8 points). In a study of 483 community-dwelling

## General Practitioner Assessment of Cognition (GPCOG)

**Part 1**

| | Correct | Incorrect |
|---|---|---|
| 1. "I am going to give you a name and address. After I've said them, I want you to repeat them. Remember the name and address because I'm going to ask you to repeat them again in a few minutes. John Brown, 42 West Street, Kensington." Allow the patient up to four attempts to repeat the name and address, but do not score yet. | | |
| 2. "What is the date?" Correct answer requires the exact date. | ❑ | ❑ |
| 3. Give the patient a piece of paper with a printed circle on it. "Please mark in all the numbers to indicate the hours of a clock." Correct answer requires that 3, 6, 9, and 12 are correctly placed, and that the other numbers have approximately the correct spacing. | ❑ | ❑ |
| 4. "Please mark in the hands on the clock to show 10 minutes past eleven o'clock (11:10)." Hands should point to the 11 and 2; do not penalize if the patient fails to distinguish between long and short hands. | ❑ | ❑ |
| 5. "Can you tell me something that happened in the news recently?" Correct answer demonstrates awareness of a specific event in the previous week; if a general answer is given, such as "war" or "a lot of rain," ask for details. | ❑ | ❑ |
| 6. "What was the name and address I asked you to remember?" Give one point each for first name, last name, street number, street name, and city (five points total). | ❑ | ❑ |

Scoring: Give one point for each correct answer (maximum score of 10 points). A score of 9 points or more makes dementia unlikely, whereas a score of less than 5 points suggests dementia. If the patient scores between 5 and 8 points, ask the following questions of someone who has known the patient for at least five years.

**Part 2**

| Compared with a few years ago: | Yes | No | Don't Know | N/A |
|---|---|---|---|---|
| 1. Does the patient have more trouble remembering things that have happened recently? | ❑ | ❑ | ❑ | ❑ |
| 2. Does the patient have more trouble recalling conversations a few days later? | ❑ | ❑ | ❑ | ❑ |
| 3. When speaking, does the patient have more difficulty in finding the right word or tend to use the wrong words more often? | ❑ | ❑ | ❑ | ❑ |
| 4. Is the patient less able to manage money and financial affairs (e.g., paying bills, budgeting)? | ❑ | ❑ | ❑ | ❑ |
| 5. Is the patient less able to manage his or her medication independently? | ❑ | ❑ | ❑ | ❑ |
| 6. Does the patient need more assistance with transportation (private or public)? | ❑ | ❑ | ❑ | ❑ |

Scoring: Give one point for each "No" answer, and add to the points from Part 1 (maximum score of 15 points). Patients with a score of 10 points or less should be evaluated further for dementia.

**Figure 1.** GPCOG screening instrument for dementia.

*Adapted with permission from Brodaty H, Pond D, Kemp NM, et al. The GPCOG: a new screening test for dementia designed for general practice.* J Am Geriatr Soc. *2002;50(3):534.*

older adults, a cutoff of 5 points or less was 86 percent sensitive and 91 percent specific for dementia (LR+ = 9.6, LR– = 0.15), and was 92 percent sensitive and 91 percent specific for Alzheimer dementia (LR+ = 10.2, LR– = 0.09).[8]

A study of 249 community-dwelling older adults (124 were non-English speakers) compared the Mini-Cog *(Figure 2)* with the MMSE.[9] The final clinical diagnosis, based on all available medical, cognitive, and laboratory data, was used as the reference standard. The MMSE was 91 percent sensitive and 92 percent specific for dementia, whereas the Mini-Cog was 99 percent sensitive and 93 percent specific (LR+ = 14.1, LR– = 0.01). The Mini-Cog was faster to administer than the MMSE (3.2 versus 7.3 minutes for patients with dementia, and 2.5 versus 5.6 minutes for patients without dementia).[9] Based on its speed, convenience, and accuracy, as well as the fact that it does not require fluency in English, the Mini-Cog is the preferred test for primary care practice.

## Applying the Evidence

A female patient's family is concerned about her memory. What is the best way to screen for dementia in a busy primary care practice?

*Answer*: You administer the Mini-Cog screening instrument for dementia. The patient can only recall one out of three items, places most of the numbers correctly on the right side of the clock, and incorrectly places the clock hands. Because she recalled only one out of three items and the result of her clock drawing test was abnormal, she screens positive for dementia. You perform a full evaluation for dementia, including a more detailed interview, to confirm the diagnosis and an assessment for secondary causes.

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### Mini-Cognitive Assessment Instrument (Mini-Cog)

Step 1. Ask the patient to repeat three unrelated words, such as "ball," "dog," and "television."

Step 2. Ask the patient to draw a simple clock set to 10 minutes after eleven o'clock (11:10). A correct response is a drawing of a circle with all of the numbers placed in approximately the correct positions, with the hands pointing to the 11 and 2.

Step 3. Ask the patient to recall the three words from Step 1. One point is given for each item that is recalled correctly.

*Interpretation*

| *Number of items correctly recalled* | *Clock drawing test result* | *Interpretation of screen for dementia* |
|---|---|---|
| 0 | Normal | Positive |
| 0 | Abnormal | Positive |
| 1 | Normal | Negative |
| 1 | Abnormal | Positive |
| 2 | Normal | Negative |
| 2 | Abnormal | Positive |
| 3 | Normal | Negative |
| 3 | Abnormal | Negative |

**Figure 2.** Mini-Cog screening instrument for dementia.

*Information from reference 9.*

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