

Appendix 2: Screening Tests for Cognitive Impairment

TEST	Indications	Accuracy	Comments and Cautions
Mini-Mental State Examination (MMSE)	Most commonly used and best studied test for assessing cognitive function, and it is valid and reliable in high-risk patients. ⁶⁵	Sensitivity 71% - 92% Specificity between 56% and 96%	MMSE scores, affected by age, education, literacy, social class, cultural background and language. ⁶⁶ Does not test insight or judgement. ⁹ Specific questions to assess these executive functions might include the following: <ul style="list-style-type: none"> • Are you having any difficulties now? • If you found an envelope with an address and stamp what would you do with it? • If you smelled smoke in your house or apartment, what would you do?
Mini-Cog	3-minute cognitive screen developed for use in primary care Consists of two tasks: 3-item recall and clock drawing.	Sensitivity of 99% and specificity of 96% in ethnolinguistically diverse patients. ⁶ Overall accuracy of 83% when classifying subjects in heterogeneous, primarily ethnic community sample. ⁶¹	In patients when developed, this test, performed at least as well as the MMSE with less confounding by education level or literacy. ⁶
Clock drawing:	Suggested as a rapid means of screening for Alzheimer disease. ^{9,67}	Sensitivity of the test has been reported to be 87%. ⁶⁸	Patient is given a blank sheet of paper and asked to draw the face of a clock, putting the numbers in the correct positions. The patient is then asked to draw in the hands indicating a time, such as 8:20 ("twenty minutes after eight") or 11:10
Time and change:	Useful in ruling out dementia, ⁶⁵ allows direct assessment of two important IADLs and tests calculation, conceptualization and visual spatial domains.	Sensitivity has been reported as 63% and specificity as 96%. The test has a negative predictive value of 93% and a positive predictive value of 77%. ⁶⁹	Consists of two tasks: telling time and making change. In the telling time task, patients must correctly read the time from a clock face set at 11:10. In the making change task, the patient is given 3 quarters, 7 dimes and 7 nickels and asked to select a group of coins that will add up to a dollar.
Word list:	Tests cognitive function and often part of assessment for mild cognitive impairment; useful to screen for frontotemporal dementia	An individual with normal cognitive function should be able to name at least 12 animals in one minute. ³⁷	The patient is asked to name as many 4-legged animals in 1 minute as possible.
Trails B test:	A test of executive function	Early manifestation of Alzheimer disease with AUC of 0.773 in presymptomatic patients ⁷⁰ and 0.89 in patients with dementia ⁷¹ (note: AUC is graph of sensitivity vs. specificity, in which 1 is perfect and 0.5 noninformative)	The patient is asked to connect alternating letters and numbers in sequence in 1 minute. ^{72,74} An individual with executive disfunction will take longer to complete this test or be unable to do so. ⁷⁴
Luria Hand Test:	Useful to screen for frontotemporal dementia	Unimpaired individual can accurately mimic alternating hand movements ⁷⁵	Demonstrate this test (slap, chop, fist) and ask the patient to perform it for 1 minute. ¹⁰
Abstraction exercise:	Useful to screen for frontotemporal dementia		Ask the following questions: What is the difference between a lie and a mistake? What is the similarity between an apple and an orange? ²⁵
Montreal Cognitive Assessment (MoCA)	Useful to screen for MCI	Sensitivity of 90% for MCI and 100% for mild AD. Specificity of 87%. ⁷⁶	10-minute test that includes tests of short-term memory; visuospatial abilities; executive function; attention, concentration and working memory; language; and orientation to time and place. ⁷⁶
DemTect	Useful to screen for MCI	Independent of age and education ⁷⁷ ; for MCI, sensitivity of 80% and specificity of 92%; for AD, sensitivity of 85-100% and specificity of 72-92%. ^{77,78}	8-10 minutes for administration and scoring ⁶ ; includes word list, a number transcoding task, a semantic verbal fluency task (supermarket), digit span reverse, and word list delayed recall

