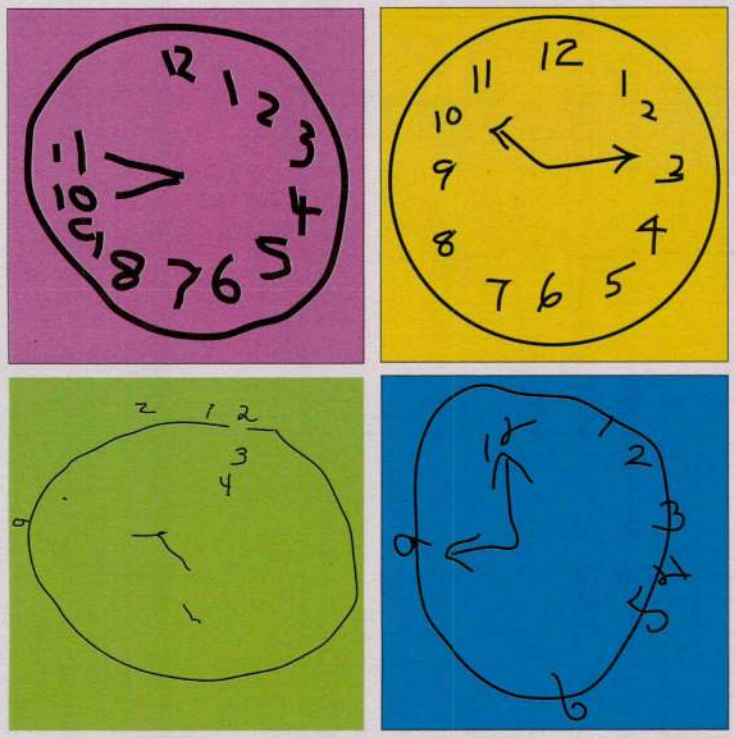

The Clock Drawing Test is sensitive to early cognitive changes, simple to conduct, and highly predictive of driver safety.

Cognitive Screening Tools

Freddi Segal-Gidan, PA-C, PhD

As the US population ages, the need grows for clinicians in all settings to be familiar with currently available cognitive screening tools. These tools, though not diagnostic, are useful in the early recognition of cognitive changes and of possible underlying dementia. No single cognitive screening tool is appropriate for use in all settings or with all populations. The components, scoring, and interpretation of the more commonly used cognitive screening tools are described here, with their respective benefits and limitations.

CE/CME INFORMATION

TARGET AUDIENCE: This activity has been designed to meet the educational needs of physician assistants and nurse practitioners in primary care with patients at risk for dementia, delirium, and other forms of cognitive impairment.

- **Original Release Date:** January 2013
- **Expiration Date:** January 31, 2014
- **Estimated Time to Complete This Activity:** 1 hour
- **Medium:** Printed journal and online CE/CME

PROGRAM OVERVIEW: The primary objective of this educational initiative is to provide clinicians in primary care with the most up-to-date information regarding currently available screening tools for cognitive impairment, in particular for use in elderly patients.

EDUCATIONAL OBJECTIVES: After completing this activity, the participant should be better able to:

- Discuss factors that contribute to the growing incidence of dementia in older adults and the ramifications of undiagnosed cognitive dysfunction in this age-group.
- Explain the importance of early detection of cognitive changes as a first step toward accurate diagnosis of dementia, delirium, or other forms of cognitive dysfunction.
- Describe at least eight currently available cognitive screening tools in terms of administration time, cognitive functions assessed, and associated benefits for specific patient groups or administrative settings.
- Discuss associated clinical instruments used to stage cognitive decline, assess function in cognitively impaired patients, and identify acute confusion and delirium.

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ACCREDITATION STATEMENT: PHYSICIAN ASSISTANTS

This program has been reviewed and is approved for a maximum of 1.0 hour of American Academy of Physician Assistants (AAPA) Category I CME credit by the Physician Assistant Review Panel. Approval is valid for one year from the issue date of **January 2013.** Participants may submit the self-assessment at any time during that period.

This program was planned in accordance with AAPA's CME Standards for Enduring Material Programs and for Commercial Support of Enduring Material Programs.

Successful completion of the self-assessment is required to earn Category I CME credit. Successful completion is defined as a cumulative score of at least 70% correct.

ACCREDITATION STATEMENT: NURSE PRACTITIONERS

This program has been approved by the Nurse Practitioner Association New York State (The NPA) for 1.0 contact hour.

DISCLOSURE OF CONFLICTS OF INTEREST

The faculty reported the following financial relationships or relationships to products or devices they or their spouse/life partner have with commercial interests related to the content of this CME activity: **Freddi Segal-Gidan, PA-C, PhD,** reported no significant financial relationship with any commercial entity related to this activity.

METHOD OF PARTICIPATION: There is ***no fee*** for participating in and receiving CME credit for *Clinician Reviews'* January 2013 CE/CME activity. During the period **January 2013** through **January 31, 2014,** participants must 1) read the learning objectives and faculty disclosures; 2) study the educational activity; 3) go to **www.clinicianreviews.com/CECourses.aspx** and follow links to the posttest for this activity; 4) complete the 10-question posttest by recording the best answer to each question; and 5) record their response to each of the additional evaluation questions.

If you have any questions, e-mail **CR.evaluations@qhc.com.** Upon successful completion of an online posttest, with a score of 70% or better, and the completion of the online activity evaluation form, a statement of credit will be made available immediately.

DISCLOSURE OF UNLABELED USE: This educational activity may contain discussion of published and/or investigational uses of agents that are not indicated by the FDA. AAPA, The NPA, and Quadrant HealthCom Inc. do not recommend the use of any agent outside of the labeled indications.

The opinions expressed in this educational activity are those of the faculty and do not necessarily represent the views of AAPA, The NPA, or Quadrant HealthCom Inc. Please refer to the official prescribing information for each product for discussion of approved indications, contraindications, and warnings.

DISCLAIMER: Participants have an implied responsibility to use the newly acquired information to enhance patient outcomes and their own professional development. The information presented in this activity is not meant to serve as a guideline for patient management. Any procedures, medications, or other courses of diagnosis or treatment discussed or suggested in this activity should not be used by clinicians without evaluation of their patient's conditions and the possible contraindications or dangers in use, review of any applicable manufacturer's product information, and comparison with recommendations of other authorities.

As our elderly population continues to grow, the issues of screening for cognitive impairment and early detection of dementia are becoming increasingly important. Cognitive impairment, particularly in individuals who live alone, contributes to loss of independence, decreased quality of life, and increased health care costs.[1] There are serious and costly implications of unrecognized dementia, including delayed treatment of reversible conditions, medication noncompliance for comorbid conditions, inaccurate and unreliable reporting by patients, safety concerns, potential catastrophes, and increased risk for victimization.

Clinicians in all settings can expect to care for increasing numbers of older adults—many with various degrees of cognitive difficulties. Such problems, especially if undetected, can significantly impact the ongoing management of both acute and chronic medical problems. In primary care settings, it has been reported, between 50% and 65% of patients found to have cognitive deficits meeting the criteria for dementia did not have a diagnosis of dementia noted in their medical record.[2]

>PRIMARYPOINT

Cognitive changes may herald early dementia (eg, Alzheimer's disease) or functional decline, or reveal an increased risk for delirium.

The annual wellness examination provided for under the Patient Protection and Affordable Care Act[3] (PPACA) for Medicare beneficiaries is required to include an assessment of cognitive function,[4] but the Centers for Medicare and Medicaid (CMS) have not, to date, recommended any specific screening instrument; examiners are expected to base their assessment on observation and reports from the patient and other informants.[5]

WHY DO TESTING?

The purpose of cognitive screening tests is to aid the clinician in early detection of cognitive change as a *first step* toward accurate diagnosis—a process that requires further assessment. Such changes may herald the beginning of a dementia, such as Alzheimer's disease, or may indicate an increased risk for delirium, such as in the postoperative setting,[6] or functional decline with accompanying safety concerns.[7] Early identification of cognitive changes provides an opportunity for case finding, crisis avoidance, and identification of patients for earlier intervention and management, including a discussion of goals with the patient, and assurance that advance directives are complete and accurate.

It is well documented that dementia remains underrecognized and may indeed be the "silent epidemic" of this century.[8] Current estimates are that the incidence of new cases of Alzheimer's disease will double by 2050.[9] Additionally, improvement in stroke survival rates means that there will likely be increases in vascular and poststroke dementia, as one-third of stroke patients have been found to develop a progressive dementia.[10]

The early detection of cognitive change offers benefits for both patients and providers. If early detection leads to a diagnosis of dementia (regardless of etiology), this can provide an explanation to patients and families regarding recent changes in function, mood, and behavior. A diagnosis of progressive dementia (eg, Alzheimer's disease, Lewy body disease, frontotemporal dementia) provides an opportunity for early medication management, review and simplification of ongoing chronic disease management, and prevention of problems commonly associated with mismanagement. More importantly, early diagnosis of dementia enables patients to be more involved in planning for their own future care needs, such as execution of advance directives.

Cognitive screening may also help in identification of the at-risk driver or those who should undergo further assessment for fitness to drive.[7]

TABLE 1
Comparison of Sensitivity and Specificity of Cognitive Screening Tools for Detection of Dementia[24-29]

Screening tool	Sensitivity	Specificity
Mini–Mental State Exam (MMSE)	69% – 91%	87% – 99%
Modified Mini–Mental State Exam (3MS)	83% – 94%	85% – 90%
Mini-Cog	76% – 99%	89% – 93%
Montreal Cognitive Assessment (MoCA)	100%	87%
Saint Louis University Mental Status (SLUMS)	92% – 95%	76% – 81%
General Practitioner Assessment of Cognition (GPCOG)	82%	83%
Memory Impairment Screen (MIS)	80%	96%
Clock Drawing Test	88%	71%

Sources: Cullen et al. *J Neurol Neurosurg Psychiatr.* 2007[24]; Smith et al. *Can J Psychiatr.* 2007[25]; Tariq et al. *Am J Geriatr Psychiatry.* 2006[26]; Brodaty et al. *J Am Geriatri Soc.* 2002[27]; Buschke et al. *Neurology.* 1999[28]; Lessig et al. *Int Psychogeriatr.* 2008.[29]

WHO SHOULD BE SCREENED?

There is no clear consensus on who should undergo cognitive screening or how frequently it should be carried out. Screening should be targeted at individuals who are at greatest risk for either progressive dementia or delirium. Advancing age is a known risk factor for dementia, but there is no agreement on a specific age at which to initiate cognitive screening. In patients older than 80, there is a 25% to 50% prevalence of dementia,[1,11,12] thus suggesting that cognitive screening should be initiated before this age. Furthermore, clinicians who provide medical care for patients of advanced age must be increasingly attentive to the possible presence of cognitive decline.

Individuals with subjective memory complaints and those with a history of depression have been identified as being at high risk for dementia.[13,14] The American Academy of Neurology recommends cognitive screening in any patient in whom cognitive impairment is suspected.[15] This usually occurs when a family member or other individual close to the patient (eg, employer, friend) becomes concerned about changes in the patient's thinking, behavior, or function. Additionally, older individuals who have recently undergone surgery or been hospitalized are a population at high risk for acute cognitive changes and should be considered candidates for mental status screening.[16-20]

Another population for whom cognitive screening may be appropriate is patients with certain medical conditions known to be associated with dementia, as well as any older person with unexplained functional decline. Examples of conditions associated with cognitive decline include

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TABLE 2
Brief Cognitive Assessment Instruments[26,30-34]

Name of instrument	Items	Maximum score	Time to administer	Cognitive functions assessed
Mini–Mental State Exam (MMSE)	19	30	10 min	Orientation, registration, attention and calculation; short-term verbal recall; naming; repetition; three-step command; reading; writing; visuospatial
Modified Mini–Mental State (3MS)	15	100	15 min	Orientation; registration; attention and calculation; short-term verbal recall; delayed recall; category fluency, executive function, naming; repetition; 3-step command; reading; writing; visuospatial
Clock Drawing Test	1	4 – 10	3 min	Visuospatial, executive functioning
Mini-Cog	2	5	3 – 5 min	Visuospatial, executive functioning, short-term recall; includes clock drawing
Montreal Cognitive Assessment (MoCA)	12	30	10 min	Visuospatial/executive functioning, naming, attention, repetition, verbal fluency, abstraction, short-term verbal recall, orientation; includes clock drawing
Saint Louis University Mental Status (SLUMS)	11	30	7 min	Orientation, verbal recall, calculation, naming, attention, executive function; includes clock drawing

Sources: Tariq et al. *Am J Geriatr Psychiatry.* 2006[26]; Folstein et al. *J Psychiatr Res.* 1975[30]; Teng and Chui. *J Clin Psychiatry.* 1987[31]; Sunderland et al. *J Am Geriatr Soc.* 1989[32]; Borson et al. *Int J Geriatr Psychiatry.* 2000[33]; Nasreddine et al. *J Am Geriatr Soc.* 2005.[34]

Parkinson's disease, a history of stroke, and diabetes mellitus.[21-23]

Most patients with memory difficulties and other cognitive problems do not report these complaints to their medical provider, and it is unrealistic to expect them to do so. Often it is a family member or a coworker who becomes aware of a problem and voices these concerns to the provider; however, the provider should not rely on this to ensure early detection.

Clinicians must be pro-active and maintain a high index of suspicion for cognitive difficulties, especially when treating adults older than 70 or 75. Becoming familiar with a variety of tools and using one or more regularly to determine whether an individual does or does not have cognitive changes that might warrant further assessment should be a routine part of care.

>PRIMARYPOINT

The ideal tool would have high sensitivity, specificity, and positive predictive value, take minimal time to conduct, and be easy to administer and score.

WHICH TEST TO USE?

There is no single, ideal cognitive screening tool that can be recommended for use in every clinical setting. However, the ideal tool would have high sensitivity (ie, the proportion of those with impairment correctly classified as impaired), high specificity (the proportion of those who are unimpaired correctly identified as not having cognitive problems; see Table 1,[24-29] page 13), and a high positive predictive value (proportion identified by screening as impaired who really have cognitive impairment). Additionally, such a tool should be easy to administer and score, and should take a minimum amount of time to conduct in our time-pressured clinical environment.

Many of the currently available cognitive screening tests overemphasize memory to the neglect of other areas of cognitive function, such as executive function, language, and praxis, which can be impacted in patients with various conditions.[24] One review of cognitive screening tests suggests that a comprehensive screening instrument should include six core neuropsychologic domains that are most commonly affected in the early stages of different dementias:

- Executive function
- Abstract reasoning
- Attention/working memory
- New verbal learning and recall
- Expressive language
- Visuospatial construction.[24]

LIMITATIONS OF CURRENT SCREENING TESTS

Cognitive screening does involve some risk, and every tool has known limitations. A significant barrier can be the administration time required, possibly ranging from five to 20 minutes. There is a potential for false-positive results, and there can be distress and stigma associated with a diagnosis of dementia, for both patients and families.

The majority of cognitive screening tests were developed and validated using cohorts of English-speaking patients. When used in other populations, such as those with English as a second (or third) language, or when used in translation, the results may not be valid. Similarly, many tests have an inherent educational bias, presuming attainment of an eighth-grade level or higher—again calling results into question when the test is conducted in people with less formal education. Further, most of the currently available tools are insensitive to small changes, as they were designed for screening, not to detect changes in a patient over time.

Screening tests may have a ceiling effect, that is, they may be insensitive to changes among patients with high intelligence or high levels of education premorbidity. Some tests may also have a floor effect, lacking the ability to assess for change in patients below a certain level of education or intelligence. The summary scores of these tests have cut-offs for *normal* and may allow broad-range classification of levels of impairment as mild, moderate, or severe; this is not very useful in distinguishing different *patterns* of cognitive loss.

COGNITIVE SCREENING TOOLS

A variety of tools are available for bedside/clinical assessment of cognition (see Table 2[26,30-34]). Their administration can be learned without difficulty, and they can be conducted with relative ease to provide insight into a patient's cognitive abilities and deficits.

Mini–Mental State Exam

The most commonly used cognitive screening tool is the Folstein *Mini–Mental State Exam* (MMSE).[30] With administration taking about 15 minutes, the MMSE includes assessment of attention, orientation, registration, recall/short-term memory, language, and visuospatial construction. Clinicians will find

this tool most useful in assessing the individual with suspected early dementia and to follow progression through the early and middle stages of cognitive decline in those with Alzheimer's disease and related dementing disorders.

The maximum score is 30 points, with impairment suspected in subjects whose score is 25 or lower. The MMSE is highly dependent on verbal memory, and it does not include any tests of executive function; performance can be influenced by education and cultural background. A formula has been developed that takes age and education into account, allowing for correction of the score[35] (see Table 3[35]). The MMSE is currently a proprietary document requiring payment for its use.

The *Modified Mini-Mental State Exam* (3MS)[31] expands upon the MMSE with the addition of items that address remote memory, delayed recall, list generation, and judgment and reasoning. With a maximum score of 100 points, it allows for partially correct responses to be scored. For example, on verbal recall, cuing and choices are provided, with subsequent correct answers awarded partial points (ie, 1 or 2 points out of a 3-point maximum score per recall item). Cognitive impairment is defined by a score of 85 points or less.

The 3MS may be more sensitive in identification of early dementia than is the MMSE. The 3MS's expanded item scoring may be helpful in differentiating between some of the clinical dementia subtypes, such as Alzheimer's versus vascular dementia.[36]

Clock Drawing Test

The *Clock Drawing Test* (CDT) is perhaps the simplest test to administer.[29,32] The patient is given a blank sheet of paper and asked to draw a large circle, then to write numbers inside the circle so that it resembles a face of a clock. Once this is completed, the patient is instructed to "draw the hands on the clock to read ten past eleven."

There are multiple scoring systems for the CDT,[29,32,37] with points given for accuracy of placement of the numbers and the size and position of the hands. Lower scores generally indicate greater impairment. The advantages of the CDT are that it is not very threatening, it is very sensitive to changes in early Alzheimer's disease, and its administration requires little training.[29] It has also been shown to be highly predictive of driver safety.[38]

The CDT is most appropriate for screening in busy practices and other settings (eg, health fairs) where further evaluation can be relied upon to identify any false-positive test results.

Mini-Cog Test

The *Mini-Cog Test* (with instructions available at http://geriatrics.uthscsa.edu/tools/MINICog.pdf) includes the clock-drawing task and a three-word recall, with a simple scoring algorithm.[33] Ability to recall all three words, or to recall one or two words with normal results on the clock test, represents a negative screening result for dementia. Conversely, an inability to recall any of the three words, or ability to recall only one or two words with an abnormal clock test, is considered a positive screen for dementia. The Mini-Cog is a good tool for identification of early dementia, but not useful for following changes in individuals identified with cognitive impairment.

➤PRIMARYPOINT

Though not diagnostic, these tools detect early cognitive change, representing a *first step* toward accurate diagnosis of dementia or other impairment.

The Mini-Cog has been shown to have sensitivity and specificity similar to those of the MMSE, but it is much briefer and easier to administer. It is also less prone to language or ethnic bias, making it appropriate for patients with a wide variety of backgrounds and educational levels, and it translates easily for use in other languages.[33,39]

TABLE 3
Formula Correction for MMSE (MMSE Adjusted, or MMSAdj)[35]

MMSAdj = Raw MMS – [0.471 x (education – 12)] + [0.131 x (age – 70)]
Example: A 78-year-old patient with 9 years of education scores 21/30 on MMSE.

MMSAdj	= 21 – [0.471 x (9 – 12)] + [0.131 x (78 – 70)]
	= 21 – [0.471 x (–3)] + [0.131 x (8)]
	= 21 – (–1.413) + (1.048)
	= 21 + 1.413 + 1.048
	= 23.461

Source: Mungas et al. *Neurology*. 1996.[35]

Montreal Cognitive Assessment

The *Montreal Cognitive Assessment* (MoCA) was originally designed as a brief screening instrument for mild cognitive impairment.[34] It is a single-page, 30-point test, available in multiple languages (with several versions in some languages) at www.mocatest.org. The MoCA includes assessment of short-term memory, visuospatial ability, executive function, attention, concentration, working memory, language, and orientation. A score of 25 or lower is considered subnormal.

By design, the MoCA is useful for detecting subtle deficits that may be missed in patients who are highly educated, who score within the normal range on MMSE (≥ 25), or who have prominent executive dysfunction. The test has been shown to have excellent sensitivity in identification of early/mild cognitive changes and high test-retest reliability, and it is considered an excellent screening tool for detection of cognitive impairment in a busy clinical setting.[40]

Saint Louis University Mental Status

The *Saint Louis University Mental Status* (SLUMS) has also been shown to have better sensitivity than the MMSE for early cognitive changes.[26] This 11-item tool, with a maximum score of 30 points, includes assessment of seven cognitive domains: orientation, recall, attention, calculation, fluency, language, and visuospatial construction. The five-item delayed recall in the SLUMS has been shown to be an excellent discriminator of those with normal cognition versus mild cognitive change. It is available for general use with no fee; currently, it is widely used by the Veterans Administration system.[41]

General Practitioner Assessment of Cognition

The *General Practitioner Assessment of Cognition* (GPCOG)[27] is a unique two-part tool that includes questions for the patient and for someone who knows the patient well ("informant"). The patient items include memory/recall, orientation, and visuospatial tasks. The six informant questions ask about recall, language, and functional abilities. The GPCOG has been shown to have sensitivity and specificity similar to those of the MMSE[27]; as its name indicates, it is designed and best suited for screening in a family medicine or general internal medicine practice.

Memory Impairment Screen

The *Memory Impairment Screen* (MIS)[28] uses a four-item mem-

TABLE 4
Clinical Dementia Rating Stages[47-49]

	Memory	Orientation	Judgment and problem solving	Community affairs	Home and hobbies	Personal care
None 0*	Little to no memory loss; slight, inconsistent forgetfulness	Fully oriented	Solves everyday problems, handles business/financial affairs well; judgment good in relation to past performance	Independent function at usual level in work, shopping, volunteering, social groups	Home life, hobbies, intellectual interests well maintained	Fully capable of self-care
Questionable dementia 0.5*	Consistent, slight ("benign") forgetfulness, partial recollection of events	Fully oriented except for slight difficulty with time relationships	Slight impairment in solving problems, similarities, and differences	Slight impairment in these activities	Slight impairment in home life, hobbies, intellectual interests	Fully capable of self-care
Mild dementia 1*	Moderate memory loss, more marked with recent events; defect interferes with everyday activities	Moderate difficulty with time relationships; oriented for space at examination, may have geographic disorientation elsewhere	Moderate difficulty in handling problems, similarities, and differences; social judgment usually maintained	Unable to function independently at these activities but may be engaged in some; appears normal to casual inspection	Mild but definite functional impairment at home; abandons more difficult chores, as well as hobbies and previous interests	Needs prompting
Moderate dementia 2*	Severe memory loss; only well-learned material retained; new material rapidly lost	Severe difficulty with time relationships; usually disoriented to time, often to place	Severe impairment in handling problems, similarities, and differences; social judgment usually impaired	No pretense at independent function outside the home; appears well enough to be accompanied to functions outside the home	Only simple chores preserved; very restricted interests, poorly maintained	Requires assistance in dressing, hygiene, maintaining personal effects
Severe dementia 3*	Severe memory loss; only fragments remain	Orientation to person only	Unable to make judgments or solve problems	No pretense of independent function outside the home; appears too ill to be taken to functions outside the home	No significant function in the home	Requires much help with personal care; frequent incontinence
Profound dementia 4*	Even fragments of memory generally lost; memory testing made difficult by unintelligible or irrelevant speech	Occasionally responds to own name	Unable to follow even simple instructions or commands	Unable to participate meaningfully in any social setting	Unable to participate meaningfully in any hobby or home activity	May attempt to dress or feed self; nonambulatory without assistance; mostly incontinent
Terminal dementia 5*	No meaningful memory function; often uncomprehending or obtunded	No recognition of self	Unaware of problems, no comprehension of surroundings	Completely unable to engage in any activity	Completely unable to engage in any activity	Needs to be fed; is bedridden, incontinent

* Numbers represent patient scores on the Clinical Dementia Rating.[49]

Sources: Morris. *Neurology.* 1993[47]; Hughes et al. *Br J Psychiatry.* 1982[48]; Heyman et al. *Neurology.* 1987.[49]

TABLE 5
Comparison of Cognitive Screening Tool Scores by Impairment Level/Stage[30,31,34,47]

Screening tool	Preclinical	Mild/early	Moderate/middle	Severe/late
Mini–Mental State Exam (MMSE)	26 – 30	19 – 25	10 – 18	< 10
Modified Mini–Mental State Exam (3MS)	92 – 100	80 – 91	61 – 79	< 61
Montreal Cognitive Assessment (MoCA)	22 – 26	16 – 21	5 – 15	< 5
Clinical Dementia Rating (CDR)	0.5	1.0	2.0	3.0

Sources: Folstein et al. *J Psychiatr Res.* 1975[30]; Teng and Chui. *J Clin Psychiatry.* 1987[31]; Nasreddine et al. *J Am Geriatr Soc.* 2005[34]; Morris. *Neurology.* 1993.[47]

ory recall with simple scoring of 0 to 8, based on the formula: 2x [the number recalled spontaneously) + (the number recalled with cuing). It takes less than five minutes to administer, making it a useful tool to screen for suspected memory problems in a busy setting, such as an emergency room. However, the sole reliance on memory, without screening for any other areas of cognition (especially executive function or visuospatial copying), significantly limits the usefulness of the MIS as a general cognitive screening tool.

Telephone Interview for Cognitive Status

The cognitive screening instruments described thus far were all designed to be administered in person in a medical setting (office, clinic, or hospital). The 11-item *Telephone Interview for Cognitive Status* (TICS)[42] was developed as a brief (taking less than 10 minutes) standardized test of cognitive function, specifically suited for situations in which in-person screening is not possible (eg, for patients who are unable to appear in person for clinical follow-up).[42-44] The modified TICS (TICS-M), which includes 13 items, has been shown to have less of a ceiling effect than the MMSE.[45] It has also been shown to be a cost-effective screening tool for mild cognitive impairment.[46]

ASSOCIATED CLINICAL INSTRUMENTS

The *Clinical Dementia Rating* (CDR) scale is a useful tool for staging cognitive decline, regardless of the patient's diagnosis.[47] It uses a 0-to-5 rating system in which 0 is considered normal and 5 represents profound impairment/total dependence (see Table 4,[47-49] page 16). The CDR rating system addresses three areas of cognition (memory, orientation, judgment) and three areas of function (community affairs, home and hobbies, personal care). This tool is very helpful to explain to families where an individual with cognitive impairment is in the course of the disease, and what to expect and plan for in the future as the condition progresses. A comparison of CDR level and cognitive screening test scores is presented in Table 5.[30,31,34,49]

The *Functional Assessment Staging Test* (FAST) focuses on the functional ability of the individual with cognitive deficits.[50] It is a 16-item scale with scores from 0 to 7. Included in this tool are subscales addressing the more severely impaired levels associated with advanced dementia (eg, 6: dressing, bathing, toileting; and 7: speech and locomotion). The FAST has been adopted by CMS for use in evaluating nursing home residents and hospice patients.

Another tool that should be familiar to clinicians who work with cognitively impaired individuals is the *Confusion Assessment Method* (CAM).[51] The CAM was developed to aid in identification and recognition of acute confusion and delirium, which often occur in older, hospitalized individuals. Four features are assessed in five minutes through observation and a brief in-person interview:

(1) Altered mental status from baseline (acute in onset or fluctuating)
(2) Inattention
(3) Disorganized thinking
(4) Altered level of consciousness (eg, hyperalert, lethargic, somnolent).

Delirium is considered present if there is evidence of features 1 and 2, and either 3 or 4 (or both).[51]

CONCLUSION

Clinicians in all settings need to become familiar with the use and interpretation of readily available instruments for cognitive screening. None of the tools reviewed is diagnostic in itself, and no one tool is appropriate for all patients in all settings. Familiarity with the components of the most commonly used cognitive screening tools and associated clinical instruments will aid the clinician in the appropriate use and interpretation of these to improve clinical care and outcomes for patients. **CR**

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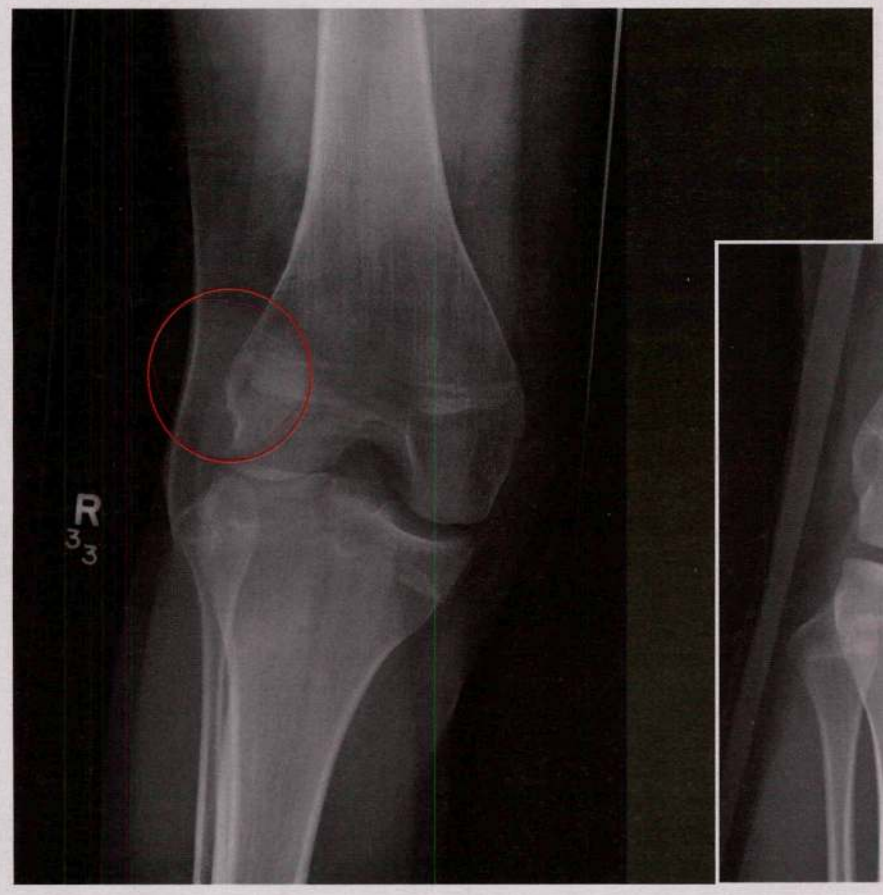
RADIOLOGYREVIEW

>> *continued from page 8*



ANSWER

The radiograph demonstrates lateral dislocation of the patella, with no evidence of an acute fracture of any surrounding bones. The patella was easily reduced in the emergency department, and the patient was placed in a knee immobilizer. Orthopedic consultation was obtained. **CR**