Alzheimer's Screening Tools

Sensitivity = true positive "hit" rate. (i.e., 90% sensitivity will correctly identify 90 out of 100 people with the disease, but miss 10).

Specificity = true negative "correct rejection" rate. (i.e., 90% specificity will correctly identify 90 out of 100 people as disease free, but have 10 false alarms).

Alzheimer's Association Recommendations

https://www.alz.org/professionals/health-systems-medical-professionals/cognitive-assessment

These cognitive screening tools are used to identify individuals who may need additional evaluation. No one tool is recognized as the best brief assessment to determine if a full dementia evaluation is needed. However, the expert workgroup identified several instruments suited for use in primary care based on the following:

- **Administration time ≤5 minutes**
- Validation in a primary care or community setting
- **Psychometric equivalence or superiority to the Mini-Mental State Exam (MMSE)**
- Easy administration by non-physician staff and relatively free of educational, language and/or cultural bias.
- For a definitive diagnosis of mild cognitive impairment or dementia, individuals who fail any of these tests should be evaluated further or referred to a specialist.

Note: These cognitive assessment tools are a suggestion of resources. The user may employ the tool of their choosing, as no one tool is recognized as the best brief assessment to determine if a full dementia evaluation is needed. For a definitive diagnosis of mild cognitive impairment or dementia, individuals who fail any of these tests should be evaluated further or referred to a specialist. Additional resources may be found on the Alzheimer's Association website or in the Alzheimer's Association recommendations for operationalizing the detection of cognitive impairment during the Medicare Annual Wellness Visit in a primary care setting (PDF).

Patient assessment tools

- **GPCOG**: The **General Practitioner Assessment of Cognition (Part 1)** is a screening tool for cognitive impairment designed for use in primary care and is available in multiple languages. Note: If the patient scores less than 8 on Part 1 of the test, additional information is needed and Part 2 of the test should be completed.
- The **Mini-Cog** is a three-minute test consisting of a recall test for memory and a scored clock-drawing test. It can be used effectively after brief training and results are evaluated by a health provider to determine if a full-diagnostic assessment is needed.

Informant tools (family members and close friends)

- **AD-8**: Eight-item Informant Interview to Differentiate Aging and Dementia is an eight-question interview used to distinguish between normal signs of aging and mild dementia. This tool assesses individual change and can be administered in the primary care setting.
- **GPCOG**: The **General Practitioner Assessment of Cognition (Part 1)** is a screening tool for cognitive impairment designed for use in primary care and is available in multiple languages. Note: If the patient scores less than 8 on Part 1 of the test, additional information is needed and Part 2 of the test should be completed.
- **Short Informant Questionnaire on Cognitive Decline in the Elderly** screening tool is an informant questionnaire designed to assess cognitive decline and dementia.

Short Cognitive Screening Tools (Primary Care & Quick Checks)

These are brief — often under 5 minutes — and can be administered by non-specialists to flag potential cognitive impairment:

- **Mini-Cog**: Combines a three-word recall and clock-drawing test. (~ 3 minutes), with good sensitivity (76-99%) and specificity (89-93%). Often used after brief training.
  - **No formal training required**:
    - T**ime Required for Training**
      - Often **~15–30 minutes** of instruction is sufficient.
      - Can be completed via short videos, written guides, or in-person demonstration.
      - Practice on a few patients is recommended to ensure consistency.
    - **Resources for Training**
      - **Official Mini-Cog website**: mini-cog.com
      - Guides, scoring sheets, and instructional videos are freely available.
      - Some institutions provide brief in-service sessions for staff.
- **GPCOG** (General Practitioner Assessment of Cognition): Designed for primary care settings. Includes a brief patient test and optional informant interview. (patient: ~4–6 minutes; informant: ~2–3 minutes). High sensitivity (~85%) and specificity (~86%).
  - **No formal training required**:
    - Designed for primary care clinicians, physicians, nurses, nurse practitioners, physicians assistants, or other health professionals.
    - T**ime Required for Training**
      - Often **~15–30 minutes** of instruction is sufficient.
      - Practice on 1-2 patients is recommended to ensure consistency.
    - **Resources for Training**
      - **Official GPCOG website**: gpcog.com.au
      - Free scoring sheets, instructions, and example videos.
- **AD8** (Eight-Item Informant Interview): Typically requires an informant. Very quick (~3 minutes) and captures intra-individual changes. Sensitivity >74%, specificity >71%.
  - **Benefits**
    - No patient burden, can be administered remotely or by phone
  - **Limitations**
    - Requires informant. Does not directly assess patient cognition.

- **No formal training required**:
  - Designed for primary care clinicians, physicians, nurses, nurse practitioners, physicians' assistants, social workers, or other health professionals.
  - Ti**me Required for Training**
    - Often **~10–15 minutes** of instruction is sufficient.
    - Practice on mock participant is recommended to ensure consistency.
  - **Resources for Training**
    - Official AD8 website: AD8 dementia screening
    - Free scoring sheets, question guides, and sample scripts are available.

- **MIS** (Memory Impairment Screen): Fast (~ 4 minutes). Recommended in population-wide screening contexts. Four items tested with free recall and category-cued recall. Good sensitivity (86-92%) and specificity (87-96%). Often used after brief training.
  - **Benefits**
    - Easy to administer, validated
  - **Limitations**
    - Focused only on memory, does not assess executive function, attention, visuospatial.
  - **No formal training required**:
    - Designed for primary care clinicians, physicians, nurses, nurse practitioners, physicians assistants, or other health professionals.
    - Ti**me Required for Training**
      - Often **~15–20 minutes** of instruction is sufficient.
      - Practice on 1-2 patients is recommended to ensure consistency.
    - **Resources for Training**
      - MIS manuals and scoring sheets are freely available online (alz.org).

Widely Used Multi-Domain Cognitive Tests (Non-primary care)

- **MMSE** (Mini-Mental State Examination): A 30-point questionnaire **(~5–10 minutes**) covering orientation, recall, language, and more.
  - Widely used, but less sensitive for mild cognitive impairment (MCI) and influenced by education level.
  - Best for identifying established dementia, less reliable for early detection.
  - Standard cutoff (< 24) leads to (sensitivity ~66%, specificity ~73%).
  - **Training required:**
    - No formal certification required, through proper background is expected. The MMSE itself does not require advanced training, but users should have:
      - Basic knowledge of cognitive functioning.
      - Familiarity with the test's structure, scoring, and interpretation.
      - Understanding of the limitations (e.g., education, language, culture).
      - Many clinicians learn as part of medical, nursing, or psychology training.
      - Short training modules, workshops, or in-service training sessions are often sufficient for competent use.
      - The MMSE is copyrighted (owned by PAR, Inc.). To purchase official forms and manuals, PAR requires users to have a certain professional qualification (e.g., graduate degree in psychology, medicine, or related field; or supervision by such a professional).
- **MoCA** (Montreal Cognitive Assessment): Covers multiple cognitive domains (**~10–15 minutes**). Superior to MMSE for detecting MCI (sensitivity ~82%, specificity ~78%), though educational and hearing factors can affect results.
  - **Training required:**
    - Mandatory official online training and certification program required before administering the test.
      - Training available through MoCA website
      - Takes about 1-2 hours online
      - Certification valid for 2 years.
    - Available for health professionals in medicine, nursing, psychology, occupational therapy, speech-language pathology, social work, etc. and graduate students or trainees under supervision.
- **SLUMS** (Saint Louis University Mental Status Exam): Free to use, sensitive to mild impairments, and useful where MMSE or MoCA may miss early changes. (**~7–10 minutes**).
  - The SLUMS has demonstrated **good diagnostic accuracy**, with sensitivity and specificity values comparable to other cognitive screening instruments.
  - It is **more sensitive than the MMSE** in detecting MCI, especially in populations with higher education levels.

- Good sensitivity and specificity (~80%)

Comprehensive comparison of seven common cognitive screening tools—MMSE, MoCA, SLUMS, Mini-Cog, GPCOG, AD8, and MIS—showing **administration time, sensitivity, specificity, and AUC**. This gives a single snapshot for clinical or teaching use.

Test	Administration Time	Sensitivity	Specificity	AUC / Accuracy	Notes / Strengths
MMSE	5–10 min	66–97%	70–99%	0.88–0.98	Global cognition; widely used; less sensitive for MCI; influenced by education
MoCA	10–15 min	74–94%	29–87%	~0.84	Sensitive for MCI; global cognition; slightly longer; cutoff <26 commonly used
SLUMS	7–10 min	74% (MCI), 93% (dementia)	65% (MCI), 96% (dementia)	Comparable to MMSE/MoCA	Education-adjusted; sensitive for both MCI and dementia; free to use
Mini-Cog	~3 min	76–99%	89–93%	~0.90–0.92	Very brief; combines 3-word recall + clock drawing; good for dementia detection
GPCOG	4–7 min (patient) + 2–3 min (informant)	85–95%	86–93%	~0.92	Patient + informant; practical for primary care; less influenced by education
AD8	~2–3 min (informant-based)	74–100%	71–84%	~0.90	Informant-based; highly sensitive for early dementia or MCI; minimal patient burden
MIS	~4 min	86–92%	87–96%	~0.90	Memory-focused; very brief; good early detection; minimal training

Key Takeaways

1. **Time vs. Accuracy Trade-Off**
   - **Fastest**: AD8 (~2–3 min), Mini-Cog (~3 min)

    - **Longest but most comprehensive**: MoCA (~10–15 min), SLUMS (~7–10 min)
2. **Sensitivity vs. Specificity**
    - **High sensitivity for MCI/dementia**: MoCA, SLUMS, GPCOG, AD8
    - **High specificity**: MIS, SLUMS (dementia), Mini-Cog
3. **Informant-based vs. Patient-based**
    - **AD8 & GPCOG (informant section)**: Useful if patient performance is unreliable
    - **Mini-Cog, MMSE, MoCA, SLUMS, MIS**: Direct patient testing
4. **Best for MCI Detection**
    - **MoCA, SLUMS, MIS** are more sensitive than MMSE and Mini-Cog
5. **Best for Quick Dementia Screening**
    - **Mini-Cog, AD8, GPCOG**: Excellent for brief office visits