



**What are the
best
Dementia
Screening
Instruments
for General
Practitioners
to use?**

Henry Brodaty, Lee-Fay Low, Louisa Gibson, Kim Burns

Diagnosis of dementia

- **Dementia becoming more common as population ages**
 - 25m people in world with dementia
 - New case every 5-9 seconds
- **Many cases not detected**
- **Gap between first symptoms and diagnosis 10 - 32 months in European survey¹**

¹ **Bond et al. (2005). Inequalities in dementia care across Europe: key findings of the Facing Dementia Survey**
International Journal of Clinical Practice; 59:s146

GP diagnosis of dementia

- 74% of people consult a GP first after noticing symptoms of cognitive decline, and ...
- 79% consider GPs to be easily accessible¹
- GPs are in the best position to identify dementia early
- However, GPs miss up to 91% of mild cases^{2,3}

¹Wilkinson et al (2004);

²Valcour et al *Archives Int Med* 2000;160:2964-8

³Boustani et al *J Ger Int Med* 2005;20:572-7

Why do GPs miss dementia cases?

- A growing consensus recommends routinely screening patients when they are over 75 years, or when cognitive decline is suspected ^{1 2 3 4 5}
- Only 39%⁶ of Australian GPs and 26%⁷ of Canadian GPs routinely screen their patients for dementia
- Routine screening could double the number of dementia cases identified by GPs⁸

¹Brodaty et al. (1998); ²Brodaty et al. (1994); ³Knopman (1998);

⁴Doraiswamy et al. (1998); ⁵Small et al. (1997); ⁶Brodaty et al. (1994);

⁷Bush et al. (1997); ⁸Boustani et al. (2003)

Why don't GPs screen for dementia?

- **The MMSE is too lengthy for general practice (approx 10 mins) and shows education and language/cultural bias^{1 2}**
- **93% of GPs would use a brief (5 minutes) and simple screening instrument if made available to them³**
- **Is screening justifiable?**

¹Boise et al (1999); ²Black et al (1999); ³Bush et al (1997)

Ten reasons for screening

1. Reversible cause possible
2. A relief!
3. Legal planning
4. Financial planning/ protection
5. Medical planning - general Rx
6. Life planning
7. Work
8. Driving
9. Relations with the family
10. Medication for cognition

Barriers to diagnosis and management

- **Personal unawareness**
- **Personal reluctance to seek help**
- **Dementia not diagnosed**
- **Non referral**
- **Lack of management plans**
- **Medication not prescribed**

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Reasons not to diagnose early

- **Assertion that earlier diagnosis is beneficial has not been tested**
- **Alarm to patient and family**
- **Insurance/ work may penalise patient**
- **Benefits of early medication implied but not proven**

Aims

- **To review existing dementia screening instruments**
- **To choose suitable instruments based on their performance and practicability for general practice**
- **To survey GPs in NSW to determine the acceptability of instruments**



THE REVIEW

Inclusion Criteria

- **Full text, empirical papers reporting development, validation and/or psychometric properties of available dementia screening instruments**
- **Papers and instruments written in English or with an English version**
- **Articles using translation of an English-language scale excluded unless validated in GP, community or population sample**

The 16 Instruments reviewed

- **7 minute screen**
- **Short Form, Informant Questionnaire on Cognitive Decline in the Elderly (short IQCODE)**
- **Abbreviated Mental Test (AMT)**
- **Bowles-Langley Technology / Ashford Memory Test (BLT/Ash)**
- **Cambridge Cognitive Examination (CAMCOG)**
- **Clock Drawing Test (CDT)**
- **Memory Impairment Screen (MIS)**
- **Mental Alternation Test (MAT)**
- **Mini-Cog**

The 16 Instruments reviewed ^{ctd}

- **Mini-Mental State Examination (MMSE)**
- **Short and Sweet Screening Instrument (SASSI)**
- **Short Test of Mental Status (STMS)**
- **The 6 Item Cognitive Impairment Test (6CIT)**
- **The General Practitioner Assessment of Cognition (GPCOG)**
- **The Rowland Universal Dementia Assessment Scale (RUDAS)**
- **Time and change Test (T&C)**

The instruments *not* reviewed

- Human Figure Drawing
- Community Screening Interview for Dementia
- Hopkins Verbal Learning Test
- Observation List of possible early signs of Dementia
- Rapid Dementia Screening Test
- Neuropsychiatry Unit Cognitive Screen
- Cambridge Examination for Mental Disorders of the Elderly
- Short Cognitive Evaluation Battery
- Cognitive Abilities Screening Instrument
- Visual Association Test
- US Preventative Services Task Force Test
- Mental Test Score

The Review Process

- **Cochrane criteria relating to quality and applicability was obtained for each instrument (Cochrane Methods Group, 1996)**
- **The performance of each instrument was also obtained (e.g. sensitivity and specificity)**

2ND Stage Selection Criteria

- Validated in community, population, or general practice sample
- Simple to administer
- Administration time of ≤ 5 minutes
- Negative Predictive Validity (NPV) and misclassification rate \leq MMSE
- Positive Predictive Validity (PPV) not considered since all values low

Definitions

- **PPV = proportion of people who screen positive and have dementia. (*Higher = better*)**
- **NPV = proportion of people who screen negative and do not have dementia. (*Higher score = better*)**
- **Misclassification rate = percentage of times the instrument incorrectly identifies a person's dementia status. (*Lower score = better*)**

Definitions cont...

- **Sensitivity = true positives = proportion of people who have dementia who are detected by instrument. (*Higher score = better*)**
- **Specificity = true negatives = proportion of people without dementia who are not identified as having dementia. (*Higher = better*)**

Review Results

- The GPCOG^{1,2}, Mini-Cog^{2,3} and MIS⁵ were chosen as most suitable for use in general practice
- Instruments
 - fulfilled selection criteria
 - tested in GP or general populations, not distinct samples of normal & dementing pts.
 - dementia diagnoses validated
 - had high sensitivity and specificity (>80%), and
 - validated in studies showing reasonable quality and applicability to general practice

¹ Brodaty et al, *JAGS*, 2002; ²Brodaty et al, *IJGP* 2005;

³Borson et al, 2000; ⁴Borson et al, *JAGS*, 2005; ⁵Buschke et al, 1999

MMSE

- **Orientation time = 5**
- **Orientation place = 5**
- **Registration = 3**
- **Serial 7s or reverse spelling = 5**
- **Recall = 5**
- **Parietal and frontal tasks = 9**
- **Total score = 30. Time = about 10 minutes**

GPCOG

Cognition (/9)

- Learn name, address (5 items)
- Date = 1
- Clock numbers = 1
- Hands of a clock for 11.10 = 1
- Current event (detail) = 1
- Recall name and address = 5

If 9/9 → OK;

<5 → impaired; 5-8 → informant interview

Informant questions (/6)

Compared to 5 years ago

More difficulty:

- Memory
- Word finding
- Recalling conversations

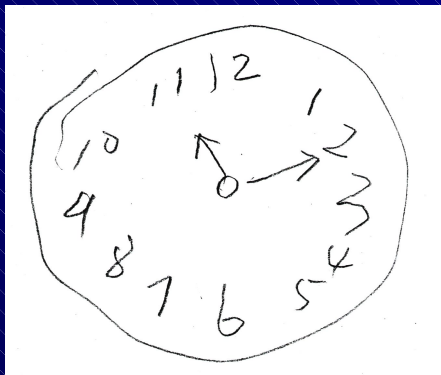
Less able to:

- Manage finances
- Manage transport
- Manage medications

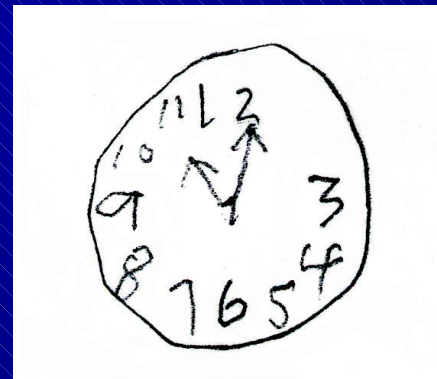
If ≤ 3 'No' → impaired

Mini-cog

- 3 words to remember
- Clock drawing task (2 points)
- Recall words (3 points)
- Score ≤ 2 = possible impairment
- Score > 2 = no impairment



Normal Clock (2 points)



E.g. abnormal clock (0 points)

Memory Impairment Screen

Administration

- 4 words to remember
- Category cue for each word
- Count from 1-20 and back for 2 min
- Free recall
- Cued recall

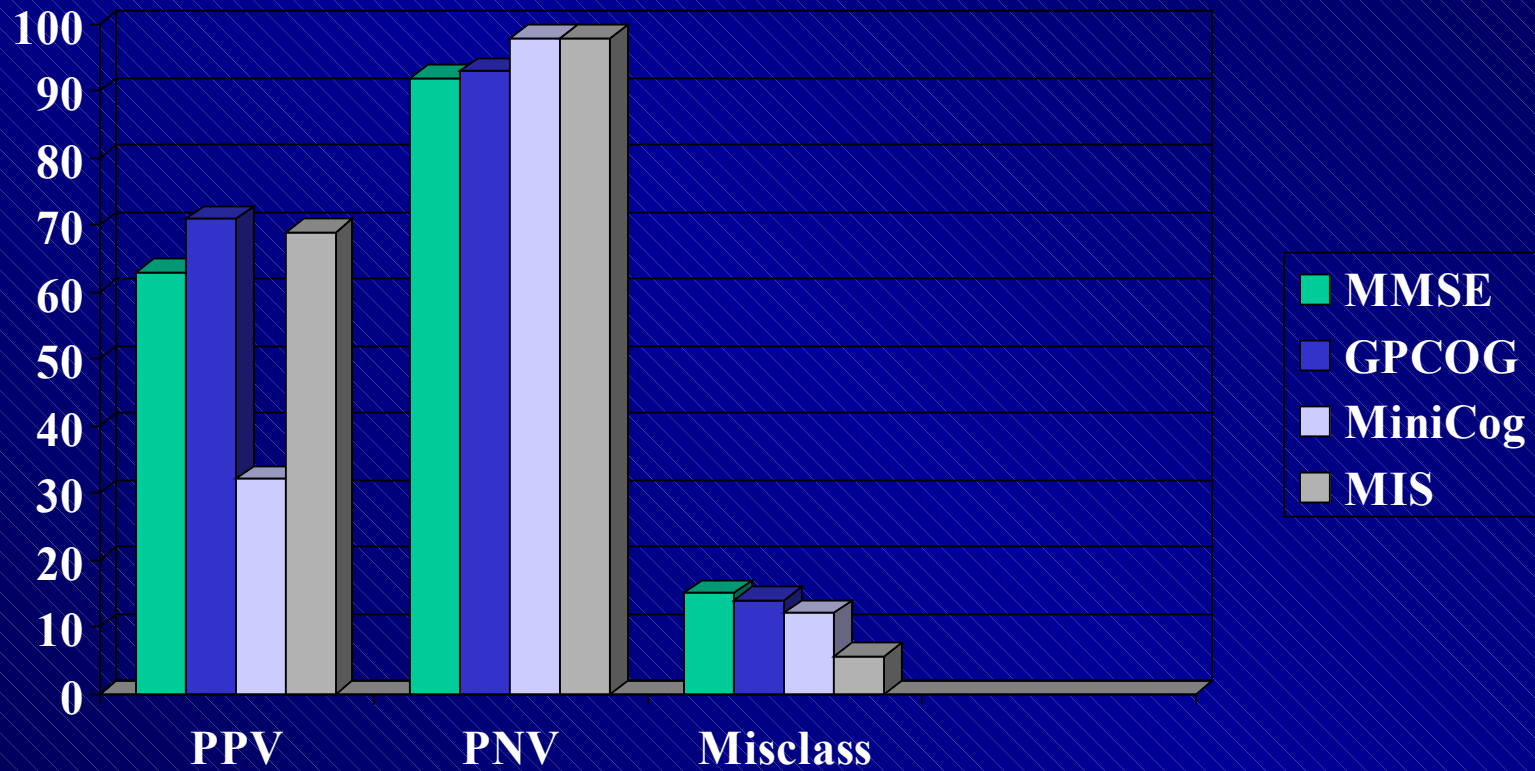
Score = (2 X Free Recall) + Cued Recall

- **MIS \leq 4 = possible dementia** (base rate 10%+)

Review Results

<i>Instrument</i>	<i>PPV</i>	<i>NPV</i>	<i>Misclassification Rate</i>
MMSE	0.63	0.92	15
GPCOG	0.71	0.93	14
Mini-Cog	0.34	0.98	12
MIS	0.70	0.98	5.6

Review Results



Review Results

<i>Instrument</i>	<i>Language/ Cultural Bias</i>	<i>Education Bias</i>	<i>Time (min)</i>
MMSE	Yes	Yes	10
GPCOG	Insufficient data	Yes	4.5
Mini-Cog	No	No	2-4
MIS	No	No	4



THE SURVEY

Survey Methods

- **Survey sent to all GPs listed by Northern Sydney, Western Sydney and Murrumbidgee GP divisions + ACAT team members in Mona Vale, Westmead and Murrumbidgee (743)**
- **GPs and ACAT were also sent summaries of the performance of instruments and copies of the instruments**
- **GPs and ACATs encouraged to trial instruments before returning surveys**

The Survey

- The survey asked 19 questions relating to the acceptability of the GPCOG, MIS, Mini-Cog *and* MMSE
 - e.g. “would you consider using this instrument in your practice?”
 - “please rate the ease of administration”
- Low response rate from GPs (80/722 = 11%) and ACATs (6/21 = 29%)

Results

- Too few ACAT responses to consider
- Of GPs who responded to each question:
 - >85% considered the GPCOG and Mini-Cog easy to administer; 53% MIS
 - >70% rated the GPCOG and Mini-Cog as acceptable to older and culturally diverse patients; 50% MIS
 - GPCOG, Mini-Cog, and MIS were considered applicable to general practice, and most GPs would consider using them

Results cont...

- GPCOG, Mini-Cog and MIS all less time consuming than MMSE**
- 63% of GPs would attend further training about routine screening**
- The GPCOG was the most preferred instrument of the 3, although MMSE favoured overall**

Why was the MMSE still preferred overall?

- **Comments from GPs suggested that**
 - **dissatisfied with the MMSE, but still preferred it, because of its**
 - **familiarity and**
 - **availability in ‘Medical Director’:**

“The MMSE is available on Medical Director. I am completely uninterested in any instrument NOT available in Medical Director.”

Why was the MMSE still preferred overall?

“I use the MMSE as I am familiar with it. It is time consuming and some patients get confused participating. The newer ones seem less complicated and easier to me and my patients and less taxing in terms of time and explanation.”

2005 tests

- **Quick and Easy Test¹**
- **5-item name and address and animal fluency²**
- **Novel interactive voice response systems³**
- **Animal fluency > Clock Drawing⁴**
- **AD8: Brief informant interview⁵**
- **5-item name & address and animal fluency⁶**
- **One trial 10-item free recall test (serial position)⁷**
- **NOSGER - behaviours⁸**

¹Dash P, Prevention conference, Washington DC, 16.06.05;

²Kilada S et al, *ADAD* 2005;19:8-16; ³Mundt et al, *ADAD* 2005;19:143-7; ⁴Connor et al *ADAD* 2005;19:119-127;

⁵Galvin et al *Neurology* 2005;65:559-564; ⁶Kilada et al *ADAD* 2005;19:8-16; ⁷Tractenberg et al *ADAD* 2005;20:239-47; ⁸Blasi et al *ADAD* 2005;20:151-8

Conclusions

- **More and more tests being published**
- **Does it matter which one?**
- **Common elements appear to be:**
 - **Test of verbal memory plus frontal task**
 - **Use of informant data appears helpful**

Conclusions

- **The GPCOG, MIS and Mini-Cog are acceptable to GPs**
- **They may be preferable to the MMSE...**
- **... if GPs are given further training, and**
- **... instruments are made available in commonly used physician desktop computer programs**

Conclusions

We recommend that GPs adopt routine screening using the GPCOG, Mini-Cog or MIS when patients are over the age of 75 years, or when cognitive impairment is suspected

Conclusions

Support from Departments of Health, GP divisions/colleges and pharmaceutical companies may also be beneficial in ...

- **encouraging GPs and**
- **increasing awareness of the advantages of routine screening with these instruments**



Questions?

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