Health
Hunter New England
Local Health Network

Applications and Limitations of Cognitive Screening

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With thanks to Jody Kamminga and Mark Howland

Northern Cognition and Memory Service

- Based in Armidale Community Health
- Comprised of:
  - **CNC Dementia** – Mark Howland- Tablelands/Mehi
  - **Clinical Neuropsychologist** – Tablelands/Mehi/Peel
  - **Dementia Support Workers**

Northern Cognition and Memory Service

- We provide assessment, diagnosis, management of dementia:
  - **CNC Dementia –** home visit, comprehensive screening of cognition, obtain preliminary background information from patient and caregivers and GP
  - **Clinical Neuropsychologist –** if dementia is suspected and further clarification is required (e.g. diagnosis unsure, complex), referral is then made for neuropsychological assessment
  - **Dementia Support Worker –** once diagnosis has been made, or in cases where diagnosis is previously known, support worker meets with patient and family to discuss diagnosis, assist with future planning and maintain ongoing involvement as required
- In **consultation** with **<u>treating doctor</u>**

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Today's learning outcomes

1. Understand the utility of cognitive screening- why screen?

2. Differentiate between cognitive screening measures and their applicability in various circumstances

3. Recognise limitations to cognitive screening (e.g. delirium, differential diagnosis of dementia)

4. Recognise the role of cognitive screening in older adult patient care pathway

5. Understand the consequences for management and discharge planning (e.g. driving, decision making)

What is cognition?

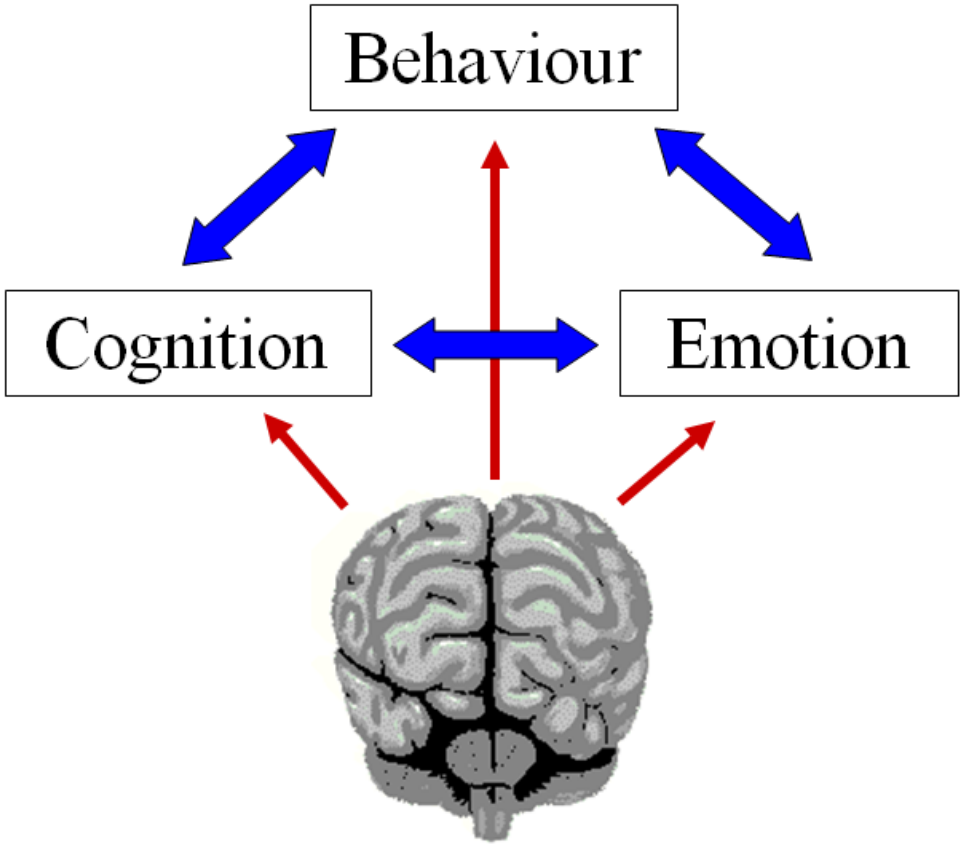
Mental process of acquiring knowledge and understanding through thought, experience, senses

Thinking

Knowing

Remembering

What is neuropsychology?



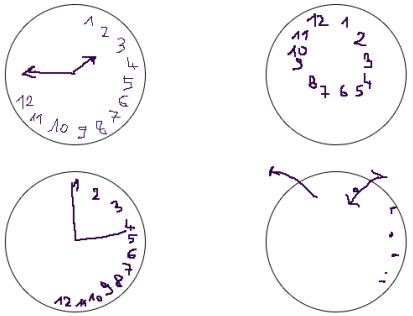
Cognitive Domains

Commonly assessed:

- Basic attention
- Working memory
- Speed of information processing
- Learning and memory
- Executive functions
- Language
- Visuospatial abilities

Assessing cognition: WHY screen?

- Implications for patient care and management
- Self-report is **unreliable** and **confounded**:
  - "do you remember if you have memory problems?"
  - "are you aware of any issues with self-awareness?"
- **Objective** assessment of cognition is crucial
- Neuropsychological assessment = **gold standard** for objective cognitive assessment
- Efficient to use **cognitive screen** to objectively evaluate an individual's cognitive status



Cognitive screens: WHAT to use?

E.g.

- MMSE
- AMTS
- MoCA
- MoCA-B
- SMMSE
- RUDAS
- ACE
- ACE-R
- ACE-III
- FAB
- CAMCOG
- CDT
- GPCOG
- IQCODE
- CAM
- 4AT
- GDS
- SIS

Cognitive screens: WHAT to use?

- Which cognitive screens do you use for which setting?

Emergency Dept (ED)

vs

Inpatient ward

vs

Community

?

Cognitive screens: WHAT to use?

Emergency Dept

AMTS (1972)

- 5 mins
- 10 questions
- ≤ 7 suggests cognitive impairment

Abbreviated Mental Test Score (AMTS)

Establish baseline cognition by completing the Abbreviated Mental Test OR SMMSE for all presentations 65 years + (45+ ATSI). Repeat with any change in cognition behaviour of LOC. Score 1 for each correct answer.

QUESTION Time Date	__/__/__	__/__/__	__/__/__	__/__/__
1. How old are you				
2. What is the time (nearest hour)				
Give the patient an address and ask them to repeat it at the end of the test E.g. 42 Market St Queanbeyan				
3. What year is it?				
4. What is the name of this place				
5. Can the patient recognise two relevant persons (eg. Nurse/doctor or relative)				
6. What is your date of birth?				
7. When did the second world war start? (1939)				
8. Who is the current Prime Minister?				
9. Count down backwards from 20 to 1				
10 Can you remember the address I gave you?				
TOTAL SCORE				
Signature				

- **A score of 7 or less indicates cognitive impairment**
- **All patients require a Delirium Risk Assessment using (DRAT)** over page

Does the person have a history of any recent / sudden change in behaviour, cognition, loss of consciousness or functional abilities (inc Falls)?

☐ Yes - Please do CAM ☐ No - Please do DRAT

Cognitive screens: WHAT to use?

Emergency Dept

6 Item Screener (SIS)

- 3 orientation
- 3 recall
- ≤ 3 cutoff

(approx 88% sensitivity and specificity for dx dementia)

Box 7.1 Six-Item Screener

This tool is a sensitive, brief cognitive assessment tool that has been validated in the ED. Questions are asked of a reliable caregiver. False-positive rate, however, is 23% (reprinted with permission from [6]).

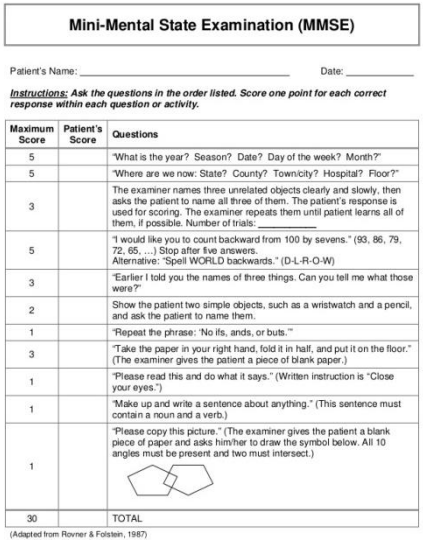
Instructions to the patient: I would like to ask you some questions that may ask you to use your memory. I am going to name three objects. Please wait until I say all three words, then repeat them. Remember these words for me: GRASS – PAPER – SHOE. (May repeat names 3 times if necessary, repetition not scored).

1. What year is this?
2. What month is this?
3. What is the day of the week?
4. After one-minute. What are the three objects that I asked you to remember?
5. [Grass]
6. [Paper]
7. [Shoe]

Each correct response is awarded one-point. Two of more errors is considered high-risk for cognitive impairment.

Cognitive screens: WHAT to use?

Inpatient ward



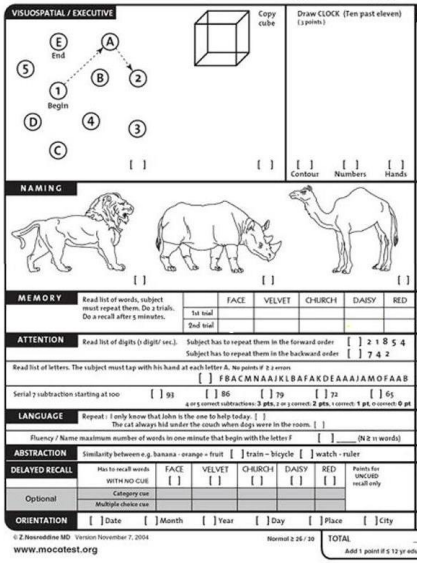
Mini-Mental State Examination (MMSE)

Patient's Name: _____ Date: _____

Instructions: *Ask the questions in the order listed. Score one point for each correct response within each question or activity.*

Maximum Score	Patient's Score	Questions
5		"What is the year? Season? Date? Day of the week? Month?"
5		"Where are we now: State? County? Town/city? Hospital? Floor?"
3		The examiner names three unrelated objects clearly and slowly, then asks the patient to name all three of them. The patient's response is used for scoring. The examiner repeats them until patient learns all of them, if possible. Number of trials: _____
5		"I would like you to count backward from 100 by sevens." (93, 86, 79, 72, 65, ...) Stop after five answers. Alternative: "Spell WORLD backwards." (D-L-R-O-W)
3		"Earlier I told you the names of three things. Can you tell me what those were?"
2		Show the patient two simple objects, such as a wristwatch and a pencil, and ask the patient to name them.
1		"Repeat the phrase: 'No ifs, ands, or buts.'"
3		"Take the paper in your right hand, fold it in half, and put it on the floor." (The examiner gives the patient a piece of blank paper.)
1		"Please read this and do what it says." (Written instruction is "Close your eyes.")
1		"Make up and write a sentence about anything." (This sentence must contain a noun and a verb.)
1		"Please copy this picture." (The examiner gives the patient a blank piece of paper and asks him/her to draw the symbol below. All 10 angles must be present and two must intersect.)
30		TOTAL

(Adapted from Rovner & Folstein, 1987)



MONTREAL COGNITIVE ASSESSMENT (MOCA)

NAME : Education : Sex : Date of birth : DATE :

VISUOSPATIAL / EXECUTIVE — Copy cube — Draw CLOCK (Ten past eleven) (3 points) — Contour — Numbers — Hands

NAMING

MEMORY — Read list of words, subject must repeat them. Do 2 trials. Do a recall after 5 minutes. — FACE VELVET CHURCH DAISY RED — 1st trial — 2nd trial

ATTENTION — Read list of digits (1 digit/ sec.). Subject has to repeat them in the forward order [ ] 2 1 8 5 4. Subject has to repeat them in the backward order [ ] 7 4 2. Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors: [ ] F B A C M N A A J K L B A F A K D E A A A J A M O F A A B. Serial 7 subtraction starting at 100: [ ] 93 [ ] 86 [ ] 79 [ ] 72 [ ] 65. 4 or 5 correct subtractions: 3 pts, 2 or 3 correct: 2 pts, 1 correct: 1 pt, 0 correct: 0 pt

LANGUAGE — Repeat : I only know that John is the one to help today. [ ] The cat always hid under the couch when dogs were in the room. [ ]. Fluency / Name maximum number of words in one minute that begin with the letter F [ ] _____ (N ≥ 11 words)

ABSTRACTION — Similarity between e.g. banana - orange = fruit [ ] train – bicycle [ ] watch - ruler

DELAYED RECALL — Has to recall words — FACE VELVET CHURCH DAISY RED — WITH NO CUE [ ] [ ] [ ] [ ] [ ] — Points for UNCUED recall only — Optional: Category cue; Multiple choice cue

ORIENTATION [ ] Date [ ] Month [ ] Year [ ] Day [ ] Place [ ] City

© Z.Nasreddine MD Version November 7, 2004 — Normal ≥ 26 / 30 — TOTAL — Add 1 point if ≤ 12 yr edu

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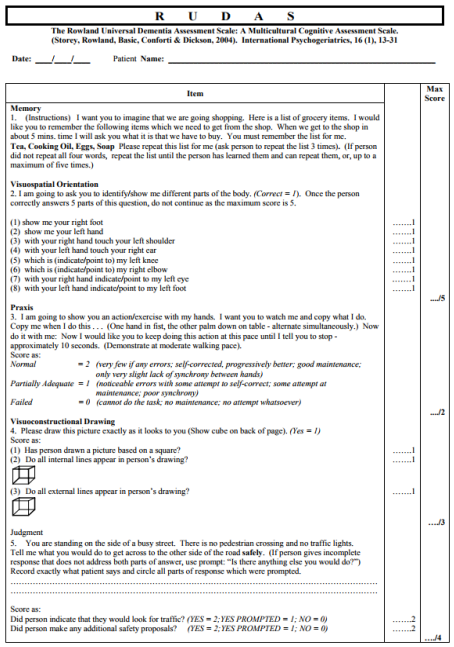
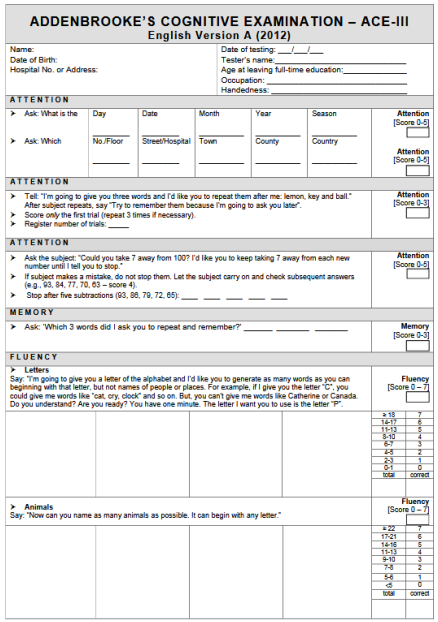


R U D A S

The Rowland Universal Dementia Assessment Scale: A Multicultural Cognitive Assessment Scale. (Storey, Rowland, Basic, Conforti & Dickson, 2004). International Psychogeriatrics, 16 (1), 13-31

Date: __/__/__ Patient Name: _____

Item		Max Score
Memory 1. (Instructions) I want you to imagine that we are going shopping. Here is a list of grocery items. I would like you to remember the following items which we need to get from the shop. When we get to the shop in about 5 mins. time I will ask you what it is that we have to buy. You must remember the list for me. **Tea, Cooking Oil, Eggs, Soap** Please repeat this list for me (ask person to repeat the list 3 times). (If person did not repeat all four words, repeat the list until the person has learned them and can repeat them, or, up to a maximum of five times.)		
Visuospatial Orientation 2. I am going to ask you to identify/show me different parts of the body. *(Correct = 1).* Once the person correctly answers 5 parts of this question, do not continue as the maximum score is 5.		
(1) show me your right foot	1	
(2) show me your left hand	1	
(3) with your right hand touch your left shoulder	1	
(4) with your left hand touch your right ear	1	
(5) which is (indicate/point to) my left knee	1	
(6) which is (indicate/point to) my right elbow	1	
(7) with your right hand indicate/point to my left eye	1	
(8) with your left hand indicate/point to my left foot	1	.../5
Praxis 3. I am going to show you an action/exercise with my hands. I want you to watch me and copy what I do. Copy me when I do this ... (One hand in fist, the other palm down on table - alternate simultaneously.) Now do it with me: Now I would like you to keep doing this action at this pace until I tell you to stop - approximately 10 seconds. (Demonstrate at moderate walking pace). Score as: *Normal = 2 (very few if any errors; self-corrected, progressively better; good maintenance; only very slight lack of synchrony between hands) Partially Adequate = 1 (noticeable errors with some attempt to self-correct; some attempt at maintenance; poor synchrony) Failed = 0 (cannot do the task; no maintenance; no attempt whatsoever)*		.../2
Visuoconstructional Drawing 4. Please draw this picture exactly as it looks to you (Show cube on back of page). *(Yes = 1)* Score as:		
(1) Has person drawn a picture based on a square?	1	
(2) Do all internal lines appear in person's drawing?	1	
(3) Do all external lines appear in person's drawing?	1	.../3
Judgment 5. You are standing on the side of a busy street. There is no pedestrian crossing and no traffic lights. Tell me what you would do to get across to the other side of the road **safely**. (If person gives incomplete response that does not address both parts of answer, use prompt: "Is there anything else you would do?") Record exactly what patient says and circle all parts of response which were prompted. .... Score as:		
Did person indicate that they would look for traffic? *(YES = 2; YES PROMPTED = 1; NO = 0)*	2	
Did person make any additional safety proposals? *(YES = 2; YES PROMPTED = 1; NO = 0)*	2	.../4



ADDENBROOKE'S COGNITIVE EXAMINATION – ACE-III
English Version A (2012)

Name: Date of Birth: Hospital No. or Address:
Date of testing: __/__/__ Tester's name: Age at leaving full-time education: Occupation: Handedness:

ATTENTION
- Ask: What is the — Day — Date — Month — Year — Season — Attention [Score 0-5]
- Ask: Which — No./Floor — Street/Hospital — Town — County — Country — Attention [Score 0-5]

ATTENTION
- Tell: "I'm going to give you three words and I'd like you to repeat them after me: lemon, key and ball." After subject repeats, say "Try to remember them because I'm going to ask you later". Attention [Score 0-3]
- Score *only* the first trial (repeat 3 times if necessary).
- Register number of trials: ____

ATTENTION
- Ask the subject: "Could you take 7 away from 100? I'd like you to keep taking 7 away from each new number until I tell you to stop." Attention [Score 0-5]
- If subject makes a mistake, do not stop them. Let the subject carry on and check subsequent answers (e.g., 93, 84, 77, 70, 63 – score 4).
- Stop after five subtractions (93, 86, 79, 72, 65): ____ ____ ____ ____ ____

MEMORY
- Ask: "Which 3 words did I ask you to repeat and remember?" _____ _____ _____ Memory [Score 0-3]

FLUENCY
- **Letters** Say: "I'm going to give you a letter of the alphabet and I'd like you to generate as many words as you can beginning with that letter, but not names of people or places. For example, if I give you the letter "C", you could give me words like "cat, cry, clock" and so on. But, you can't give me words like Catherine or Canada. Do you understand? Are you ready? You have one minute. The letter I want you to use is the letter "P". Fluency [Score 0 – 7]

≥ 18	7
14-17	6
11-13	5
9-10	4
6-7	3
4-5	2
2-3	1
0-1	0
total	correct

- **Animals** Say: "Now can you name as many animals as possible. It can begin with any letter." Fluency [Score 0 – 7]

≥ 22	7
17-21	6
14-16	5
11-13	4
9-10	3
7-8	2
5-6	1
≤ 5	0
total	correct

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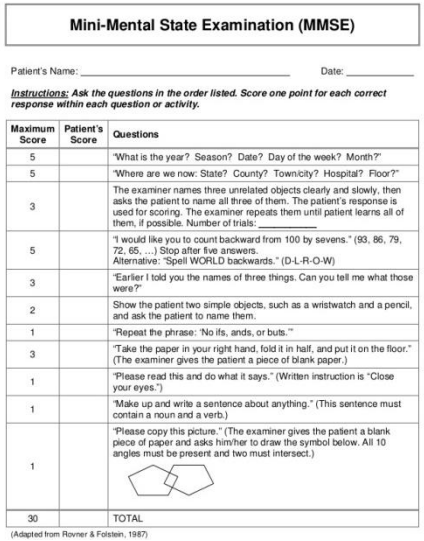
Cognitive screens: WHAT to use?

Community



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5		"I would like you to count backward from 100 by sevens." (93, 86, 79, 72, 65, ...) Stop after five answers. Alternative: "Spell WORLD backwards." (D-L-R-O-W)
3		"Earlier I told you the names of three things. Can you tell me what those were?"
2		Show the patient two simple objects, such as a wristwatch and a pencil, and ask the patient to name them.
1		"Repeat the phrase: 'No ifs, ands, or buts.'"
3		"Take the paper in your right hand, fold it in half, and put it on the floor." (The examiner gives the patient a piece of blank paper.)
1		"Please read this and do what it says." (Written instruction is "Close your eyes.")
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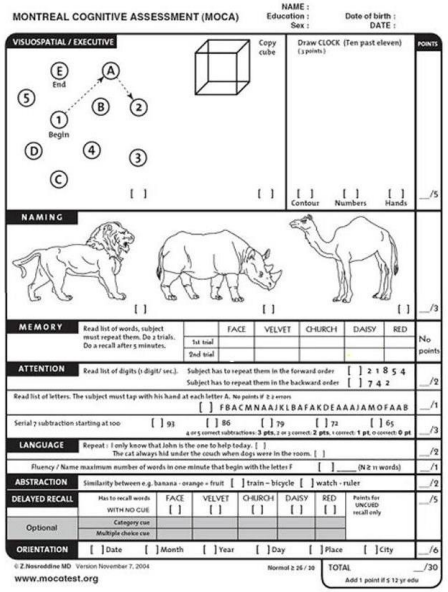

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MEMORY — Read list of words, subject must repeat them. Do 2 trials. Do a recall after 5 minutes. — FACE — VELVET — CHURCH — DAISY — RED — 1st trial — 2nd trial — No points — /5

ATTENTION — Read list of digits (1 digit/ sec.). Subject has to repeat them in the forward order [ ] 2 1 8 5 4 — Subject has to repeat them in the backward order [ ] 7 4 2 — /2

Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors — [ ] F B A C M N A A J K L B A F A K D E A A A J A M O F A A B — /1

Serial 7 subtraction starting at 100 — [ ] 93 — [ ] 86 — [ ] 79 — [ ] 72 — [ ] 65 — 4 or 5 correct subtractions: 3 pts, 2 or 3 correct: 2 pts, 1 correct: 1 pt, 0 correct: 0 pt — /3

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Fluency / Name maximum number of words in one minute that begin with the letter F [ ] ____ (N ≥ 11 words) — /1

ABSTRACTION — Similarity between e.g. banana - orange = fruit [ ] train – bicycle [ ] watch - ruler — /2

DELAYED RECALL — Has to recall words WITH NO CUE — FACE [ ] — VELVET [ ] — CHURCH [ ] — DAISY [ ] — RED [ ] — Points for UNCUED recall only — /5

Optional — Category cue — Multiple choice cue

ORIENTATION — [ ] Date — [ ] Month — [ ] Year — [ ] Day — [ ] Place — [ ] City — /6

© Z.Nasreddine MD Version November 7, 2004 — Normal ≥ 26 / 30 — TOTAL — /30 — Add 1 point if ≤ 12 yr edu

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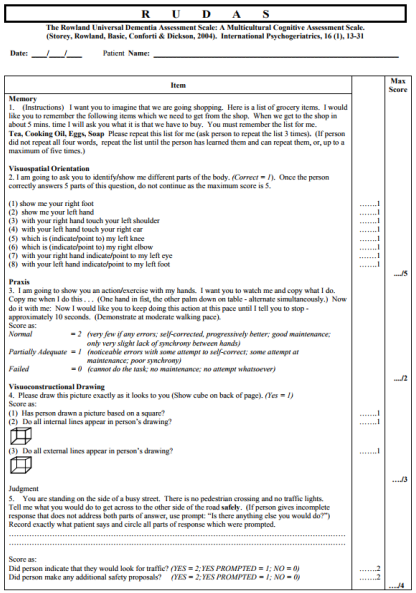

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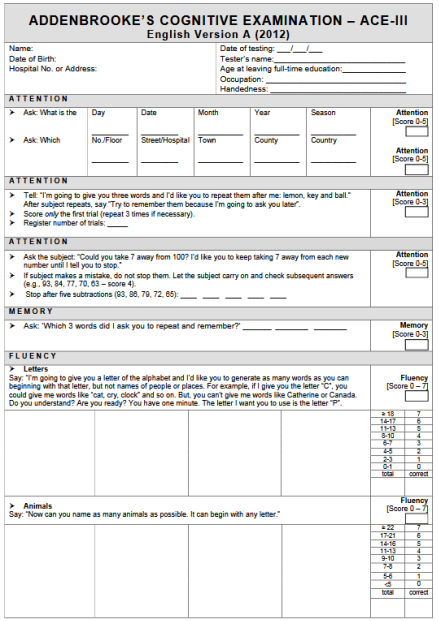

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English Version A (2012)

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Date of testing: ___/___/___ Tester's name: _____ Age at leaving full-time education: _____ Occupation: _____ Handedness: _____

ATTENTION

➤ Ask: What is the | Day | Date | Month | Year | Season — Attention [Score 0-5]

➤ Ask: Which | No./Floor | Street/Hospital | Town | County | Country — Attention [Score 0-5]

ATTENTION

➤ Tell: "I'm going to give you three words and I'd like you to repeat them after me: lemon, key and ball." After subject repeats, say "Try to remember them because I'm going to ask you later". — Attention [Score 0-3]
➤ Score only the first trial (repeat 3 times if necessary).
➤ Register number of trials: ____

ATTENTION

➤ Ask the subject: "Could you take 7 away from 100? I'd like you to keep taking 7 away from each new number until I tell you to stop." — Attention [Score 0-5]
➤ If subject makes a mistake, do not stop them. Let the subject carry on and check subsequent answers (e.g., 93, 84, 77, 70, 63 – score 4).
➤ Stop after five subtractions (93, 86, 79, 72, 65): ___ ___ ___ ___ ___

MEMORY

➤ Ask: 'Which 3 words did I ask you to repeat and remember?' _____ _____ _____ — Memory [Score 0-3]

FLUENCY

➤ **Letters** — Fluency [Score 0 – 7]
Say: "I'm going to give you a letter of the alphabet and I'd like you to generate as many words as you can beginning with that letter, but not names of people or places. For example, if I give you the letter "C", you could give me words like "cat, cry, clock" and so on. But, you can't give me words like Catherine or Canada. Do you understand? Are you ready? You have one minute. The letter I want you to use is the letter "P".

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14-17	6
11-13	5
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6-7	3
4-5	2
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0-1	0
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➤ **Animals** — Fluency [Score 0 – 7]
Say: "Now can you name as many animals as possible. It can begin with any letter."

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Cognitive screens: WHAT to use?

- When would you choose one over another?

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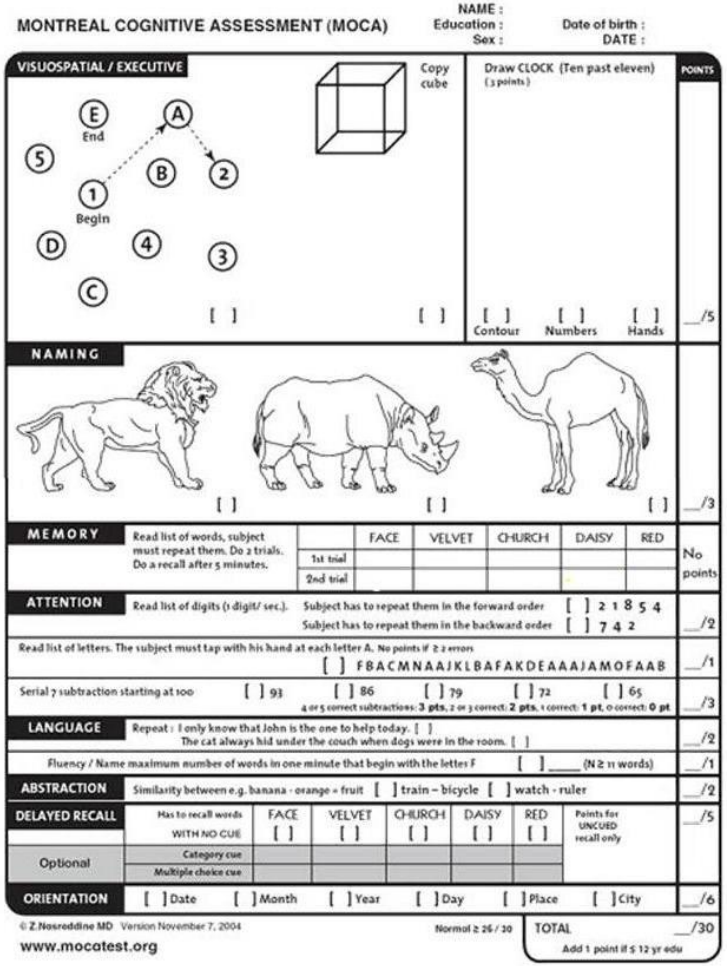
2		Show the patient two simple objects, such as a wristwatch and a pencil, and ask the patient to name them.
1		"Repeat the phrase: 'No ifs, ands, or buts.'"
3		"Take the paper in your right hand, fold it in half, and put it on the floor." (The examiner gives the patient a piece of blank paper.)
1		"Please read this and do what it says." (Written instruction is "Close your eyes.")
1		"Make up and write a sentence about anything." (This sentence must contain a noun and a verb.)
1		"Please copy this picture." (The examiner gives the patient a blank piece of paper and asks him/her to draw the symbol below. All 10 angles must be present and two must intersect.) 
30		TOTAL

(Adapted from Rovner & Folstein, 1987)



Cognitive screens: WHAT to use?

- When would you choose one over another?
  - **Culturally and linguistically diverse (CALD)**

R U D A S

The Rowland Universal Dementia Assessment Scale: A Multicultural Cognitive Assessment Scale.
(Storey, Rowland, Basic, Conforti & Dickson, 2004). International Psychogeriatrics, 16 (1), 13-31

Date: ___/___/___ Patient **Name:** _____

Item		Max Score
Memory 1. (Instructions) I want you to imagine that we are going shopping. Here is a list of grocery items. I would like you to remember the following items which we need to get from the shop. When we get to the shop in about 5 mins. time I will ask you what it is that we have to buy. You must remember the list for me. **Tea, Cooking Oil, Eggs, Soap** Please repeat this list for me (ask person to repeat the list 3 times). (If person did not repeat all four words, repeat the list until the person has learned them and can repeat them, or, up to a maximum of five times.)		
Visuospatial Orientation 2. I am going to ask you to identify/show me different parts of the body. *(Correct = 1)*. Once the person correctly answers 5 parts of this question, do not continue as the maximum score is 5.		
(1) show me your right foot	1	
(2) show me your left hand	1	
(3) with your right hand touch your left shoulder	1	
(4) with your left hand touch your right ear	1	
(5) which is (indicate/point to) my left knee	1	
(6) which is (indicate/point to) my right elbow	1	
(7) with your right hand indicate/point to my left eye	1	
(8) with your left hand indicate/point to my left foot	1	..../5
Praxis 3. I am going to show you an action/exercise with my hands. I want you to watch me and copy what I do. Copy me when I do this . . . (One hand in fist, the other palm down on table - alternate simultaneously.) Now do it with me: Now I would like you to keep doing this action at this pace until I tell you to stop - approximately 10 seconds. (Demonstrate at moderate walking pace). Score as: *Normal* = 2 *(very few if any errors; self-corrected, progressively better; good maintenance; only very slight lack of synchrony between hands)* *Partially Adequate* = 1 *(noticeable errors with some attempt to self-correct; some attempt at maintenance; poor synchrony)* *Failed* = 0 *(cannot do the task; no maintenance; no attempt whatsoever)*		..../2
Visuoconstructional Drawing 4. Please draw this picture exactly as it looks to you (Show cube on back of page). *(Yes = 1)* Score as: (1) Has person drawn a picture based on a square? (2) Do all internal lines appear in person's drawing?	.....1 1	
 (3) Do all external lines appear in person's drawing? 	1	..../3
Judgment 5. You are standing on the side of a busy street. There is no pedestrian crossing and no traffic lights. Tell me what you would do to get across to the other side of the road **safely**. (If person gives incomplete response that does not address both parts of answer, use prompt: "Is there anything else you would do?") Record exactly what patient says and circle all parts of response which were prompted. .... Score as: Did person indicate that they would look for traffic? *(YES = 2; YES PROMPTED = 1; NO = 0)* Did person make any additional safety proposals? *(YES = 2; YES PROMPTED = 1; NO = 0)*	.....2 2	..../4

Cognitive screens: WHAT to use?

- Would you ever combine more than one?

Mini-Mental State Examination (MMSE)

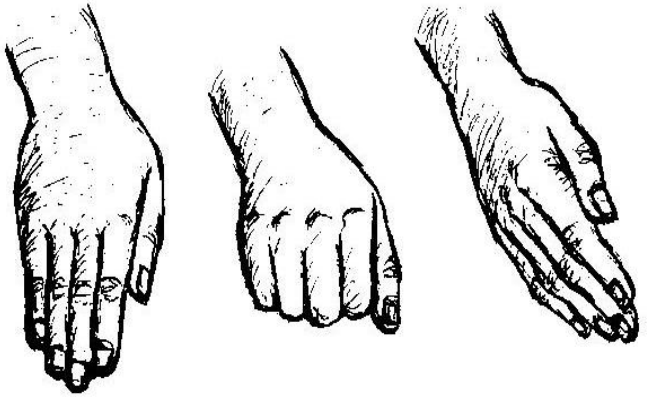
Patient's Name: _____ Date: _____

Instructions: ***Ask the questions in the order listed. Score one point for each correct response within each question or activity.***

Maximum Score	Patient's Score	Questions
5		"What is the year? Season? Date? Day of the week? Month?"
5		"Where are we now: State? County? Town/city? Hospital? Floor?"
3		The examiner names three unrelated objects clearly and slowly, then asks the patient to name all three of them. The patient's response is used for scoring. The examiner repeats them until patient learns all of them, if possible. Number of trials: _____
5		"I would like you to count backward from 100 by sevens." (93, 86, 79, 72, 65, ...) Stop after five answers. Alternative: "Spell WORLD backwards." (D-L-R-O-W)
3		"Earlier I told you the names of three things. Can you tell me what those were?"
2		Show the patient two simple objects, such as a wristwatch and a pencil, and ask the patient to name them.
1		"Repeat the phrase: 'No ifs, ands, or buts.'"
3		"Take the paper in your right hand, fold it in half, and put it on the floor." (The examiner gives the patient a piece of blank paper.)
1		"Please read this and do what it says." (Written instruction is "Close your eyes.")
1		"Make up and write a sentence about anything." (This sentence must contain a noun and a verb.)
1		"Please copy this picture." (The examiner gives the patient a blank piece of paper and asks him/her to draw the symbol below. All 10 angles must be present and two must intersect.) 
30		TOTAL

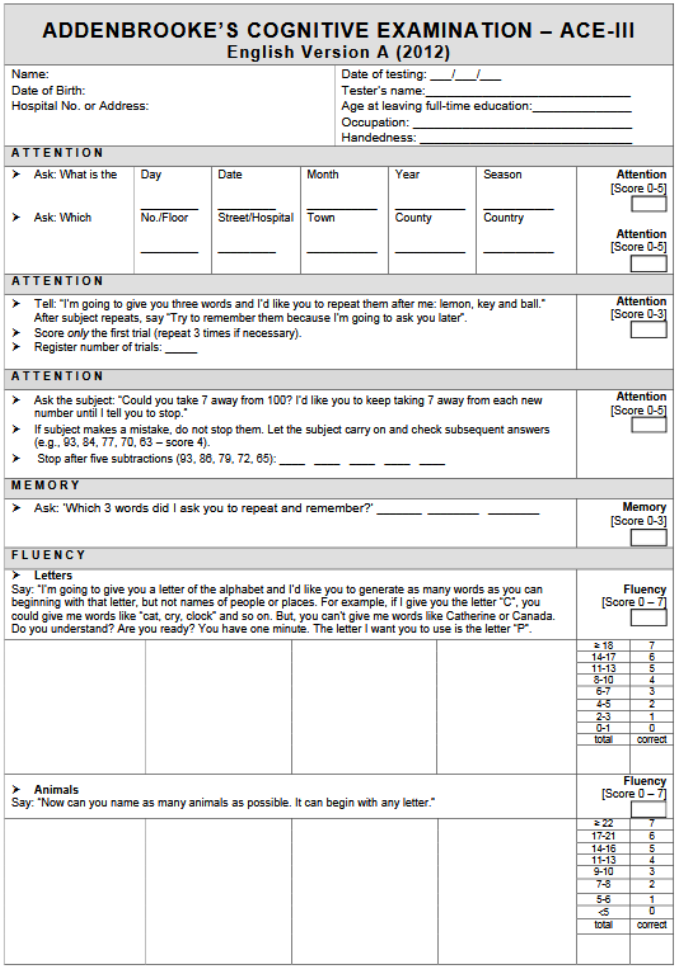
(Adapted from Rovner & Folstein, 1987)

Frontal Assessment Battery (FAB)



Cognitive screens: WHAT to use?

- When would you choose one over another?
  - **Dementia**



ADDENBROOKE'S COGNITIVE EXAMINATION – ACE-III
English Version A (2012)

Name:
Date of Birth:
Hospital No. or Address:

Date of testing: ___/___/___
Tester's name:_____
Age at leaving full-time education:_____
Occupation: _____
Handedness: _____

ATTENTION

➤ Ask: What is the	Day	Date	Month	Year	Season	Attention [Score 0-5]
➤ Ask: Which	No./Floor	Street/Hospital	Town	County	Country	Attention [Score 0-5]

ATTENTION

➤ Tell: "I'm going to give you three words and I'd like you to repeat them after me: lemon, key and ball." After subject repeats, say "Try to remember them because I'm going to ask you later".
➤ Score *only* the first trial (repeat 3 times if necessary).
➤ Register number of trials: _____

Attention [Score 0-3]

ATTENTION

➤ Ask the subject: "Could you take 7 away from 100? I'd like you to keep taking 7 away from each new number until I tell you to stop."
➤ If subject makes a mistake, do not stop them. Let the subject carry on and check subsequent answers (e.g., 93, 84, 77, 70, 63 – score 4).
➤ Stop after five subtractions (93, 86, 79, 72, 65): ___ ___ ___ ___ ___

Attention [Score 0-5]

MEMORY

➤ Ask: 'Which 3 words did I ask you to repeat and remember?' _____ _____ _____

Memory [Score 0-3]

FLUENCY

➤ **Letters**
Say: "I'm going to give you a letter of the alphabet and I'd like you to generate as many words as you can beginning with that letter, but not names of people or places. For example, if I give you the letter "C", you could give me words like "cat, cry, clock" and so on. But, you can't give me words like Catherine or Canada. Do you understand? Are you ready? You have one minute. The letter I want you to use is the letter "P".

Fluency [Score 0 – 7]

≥ 18	7
14-17	6
11-13	5
8-10	4
6-7	3
4-5	2
2-3	1
0-1	0
total	correct

➤ **Animals**
Say: "Now can you name as many animals as possible. It can begin with any letter."

Fluency [Score 0 – 7]

≥ 22	7
17-21	6
14-16	5
11-13	4
9-10	3
7-8	2
5-6	1
<5	0
total	correct

Cognitive screens: Administration

- No one else present; can be distracting/ distressing
- *If* family member present, make sit out of vision to pt and must stay quiet, no prompting or speaking
- Testing should be completed in a quiet environment free from distractions. If distractions present, note where this may have impacted pt. performance
- Okay to provide +ve reassurance to pt, but do not say if answers right/wrong
- Build rapport before testing to ensure anxiety is minimised and best effort maximised
- Follow administration instructions – it must be standardised otherwise the results can be invalidated
- Allow the pt. time to answer (important if slowed).

Cognitive screens: Scoring

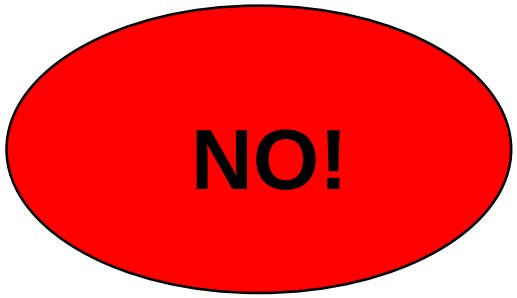
- Follow the respective scoring guide
- Make notes!
  - What prompts, cues, assistance was provided, what they said verbatim (esp. when incorrect)
  - Record info that hints at reason for difficulty (e.g., anxiety, slowed thinking, didn't learn at school etc)
  - Record unable/unwilling responses *vs* withdrew cooperation *vs* seemed to be engaged but did not achieve (i.e., true difficulty)

Cognitive screens: Interpretation

- All ***objectively*** evaluate cognition
- All use an **empirically derived "cut-off" score**:
  - Studies are conducted in population samples (e.g., older adults with + without different dementias) to statistically derive a score that provides the most optimal chance of:
    1. accurately detecting those with genuine cognitive impairment (**sensitivity**)
    2. accurately rejecting those with genuinely normal cognition (**specificity**)
- **CAUTION!:** screens are validated in strictly controlled populations (e.g., Alzheimer's vs frontotemporal dementia + healthy adults) and rarely reflect the true populations that we see in clinical practice (e.g., complex comorbidities, alcohol, depression, fatigue, delirium….)

Cognitive screens: Interpretation

- So what does **'impaired' cut-off** tell you?
- Can it tell you:
  - If someone has dementia?
  - If someone has had a stroke?
  - If someone has MS?



- In isolation, cognitive screens cannot determine the underlying ***cause*** of cognitive impairment

Cognitive screens: Interpretation

- How do you determine the **cause** of an abnormal cognitive screen?

- Context is everything!

Cognitive screen score is interpreted in the context of:

- Reliable background hx from patient & caregiver
- Qualitative observations
- MDT documentation in medical file (neurology, psychiatry, social work, nursing)
- Functional OT assessment

Many reasons for a poor score…

- **Organic**: e.g., neurodegenerative (e.g., dementia), or acute acquired brain injury (e.g., stroke, TBI)
- **Treatable/reversible** causes:
  1. **Delirium**
  2. **Other variables:**
     - Excessive & untreated pain, difficulty focussing
     - Drowsiness from pain medication
     - Extremely poor sleep, very tired
     - Highly anxious about testing
     - Severely depressed
- **Confounding factors:**
  - Low premorbid intellectual function

Cognitive screens: premorbid function

- **Premorbid function**: baseline or best ever level of function (incl. education, employment)

Example 1:

- MMSE 23/30 (cut off <26/30)
- BG: 6 yrs educ, difficulty learning to read/write, LD runs in family

Impaired?

Example 2:

- MMSE=27/30 (cut-off <26/30)
- BG: PhD, CEO of company

Intact?

Impaired cognition in context: Dementia

What is dementia?

A ***gradual decline*** in cognition, behaviour, and/or personality

+

sufficient to ***interfere with everyday function*** (work, social, domestic)

+

that represents a ***decline from previous level of function***

+

not due to reversible condition, medical, neurological, psychiatric or other

The evidence collected must be sufficient to determine dementia subtype
= differential dementia diagnosis (e.g. Alzheimer's, FTD ,Vascular, Lewy Body..)

Impaired cognition in context: Dementia

"The results from cognitive screening tools are not sufficient to make a diagnosis of dementia and should only be used as part of a comprehensive assessment"

(Smith et al., 2008)

Impaired cognition in context: Dementia

A process of inclusion + exclusion:

Reports from self + informant of decline in cognition/function over time

+

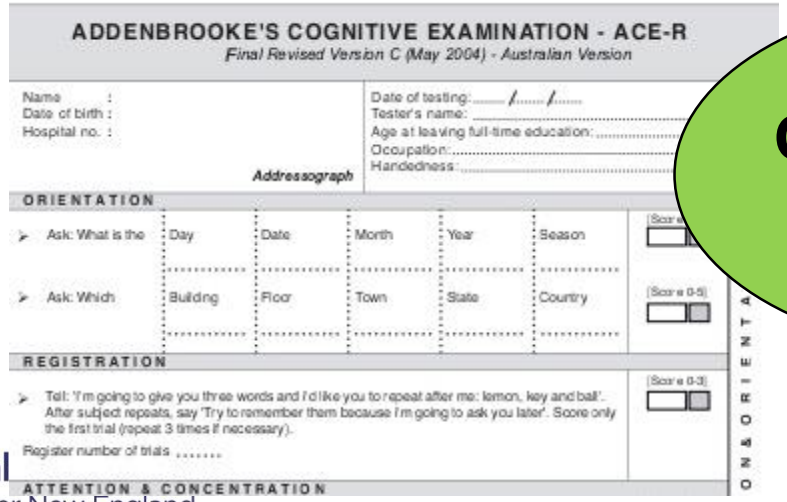
Objective evidence of impaired cognition (standardised cognitive assessment)

+

Evidence of impaired everyday function (self/informant report, standardised q, observation)

+

Rule out reversible/ nonorganic causes via dementia bloods, CT brain, delirium & mood screen



ADDENBROOKE'S COGNITIVE EXAMINATION - ACE-R

Final Revised Version C (May 2004) - Australian Version

Name :
Date of birth :
Hospital no. :

Addressograph

Date of testing: ..../..../.....
Tester's name: .....
Age at leaving full-time education: .....
Occupation: .....
Handedness: .....

ORIENTATION

Ask: What is the	Day	Date	Month	Year	Season	(Score ...)
Ask: Which	Building	Floor	Town	State	Country	(Score 0-5)

REGISTRATION

Tell: 'I'm going to give you three words and I'd like you to repeat after me: lemon, key and ball'. After subject repeats, say 'Try to remember them because I'm going to ask you later'. Score only the first trial (repeat 3 times if necessary). (Score 0-3)

Register number of trials .....

ATTENTION & CONCENTRATION

ORIENTATION

OT functional assessment

Dementia vs Delirium

Delirium

Impaired cognition: dementia vs delirium

Delirium: Altered consciousness and cognition, sudden onset, disturbed sleep /wake cycle, fluctuating across several hours

- >50% of people with dementia will also suffer a delirium during a hospital admission

4 subtypes:

1.Hyperactive: Restless, agitated, unable to sleep, loud

2.Hypoactive: Lethargic, difficult to wake, withdrawn

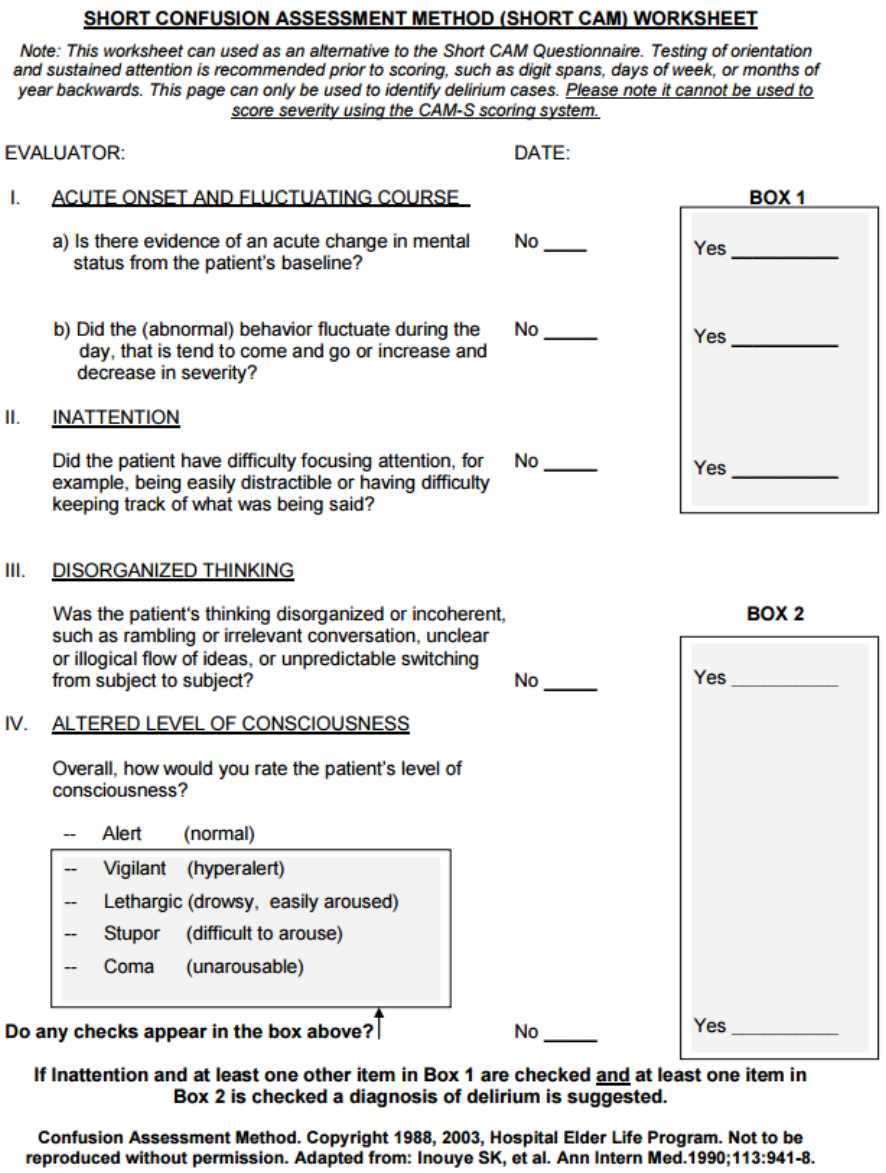
3.Mixed: Fluctuates between both types

4.Neither: Confusion present without agitation/withdrawal

Risk factors:
Pain
Infection
Nutrition
Constipation
Hydration
Medication
Environment

Screening for delirium: CAM

- Looking for clinical signs of delirium is necessary in screen for dementia
- Requires gathering information about **baseline mental status** (from informant)
- NB different forms of altered state of consciousness
- **?Delirium**
  - I + II + either III or IV
- CAMI + medical information



SHORT CONFUSION ASSESSMENT METHOD (SHORT CAM) WORKSHEET

Note: This worksheet can used as an alternative to the Short CAM Questionnaire. Testing of orientation and sustained attention is recommended prior to scoring, such as digit spans, days of week, or months of year backwards. This page can only be used to identify delirium cases. Please note it cannot be used to score severity using the CAM-S scoring system.

EVALUATOR: DATE:

I. ACUTE ONSET AND FLUCTUATING COURSE

a) Is there evidence of an acute change in mental status from the patient's baseline? No ____

b) Did the (abnormal) behavior fluctuate during the day, that is tend to come and go or increase and decrease in severity? No ____

II. INATTENTION

Did the patient have difficulty focusing attention, for example, being easily distractible or having difficulty keeping track of what was being said? No ____

BOX 1

Yes _____

Yes _____

Yes _____

III. DISORGANIZED THINKING

Was the patient's thinking disorganized or incoherent, such as rambling or irrelevant conversation, unclear or illogical flow of ideas, or unpredictable switching from subject to subject? No ____

IV. ALTERED LEVEL OF CONSCIOUSNESS

Overall, how would you rate the patient's level of consciousness?

-- Alert (normal)

-- Vigilant (hyperalert)
-- Lethargic (drowsy, easily aroused)
-- Stupor (difficult to arouse)
-- Coma (unarousable)

Do any checks appear in the box above? No ____

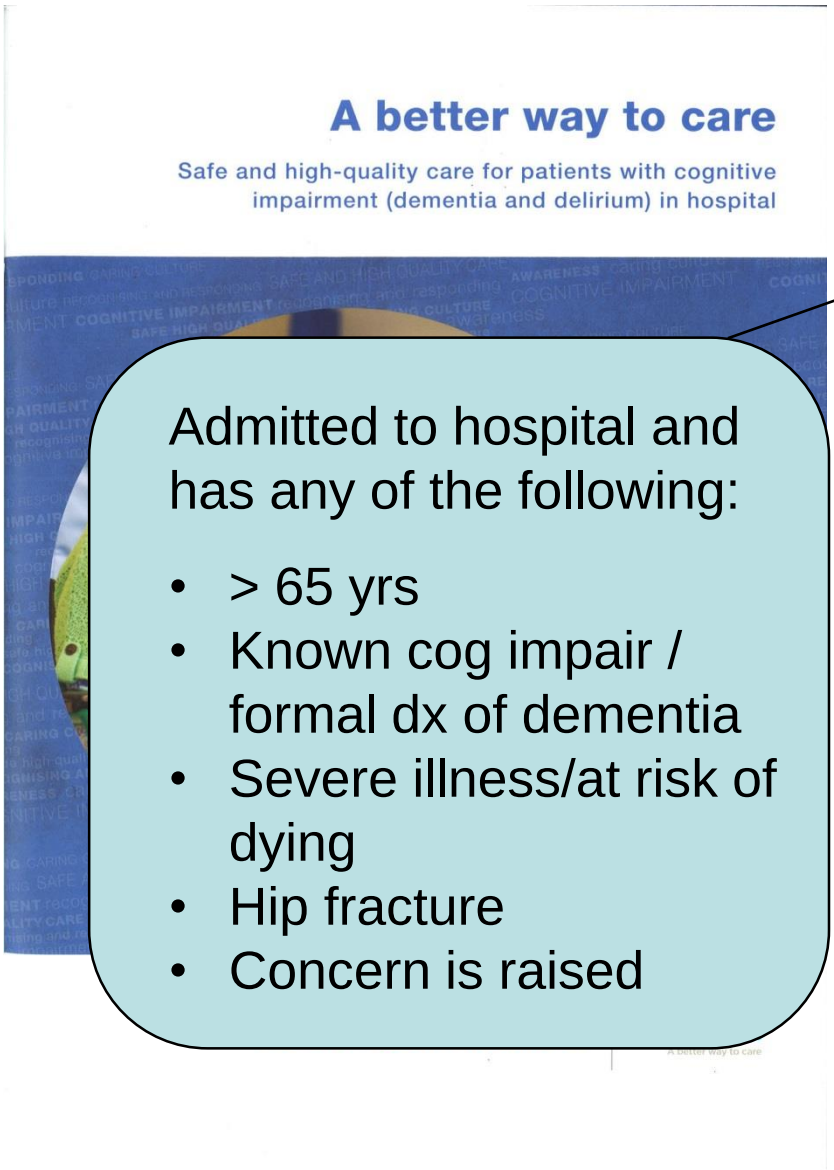
BOX 2

Yes _____

Yes _____

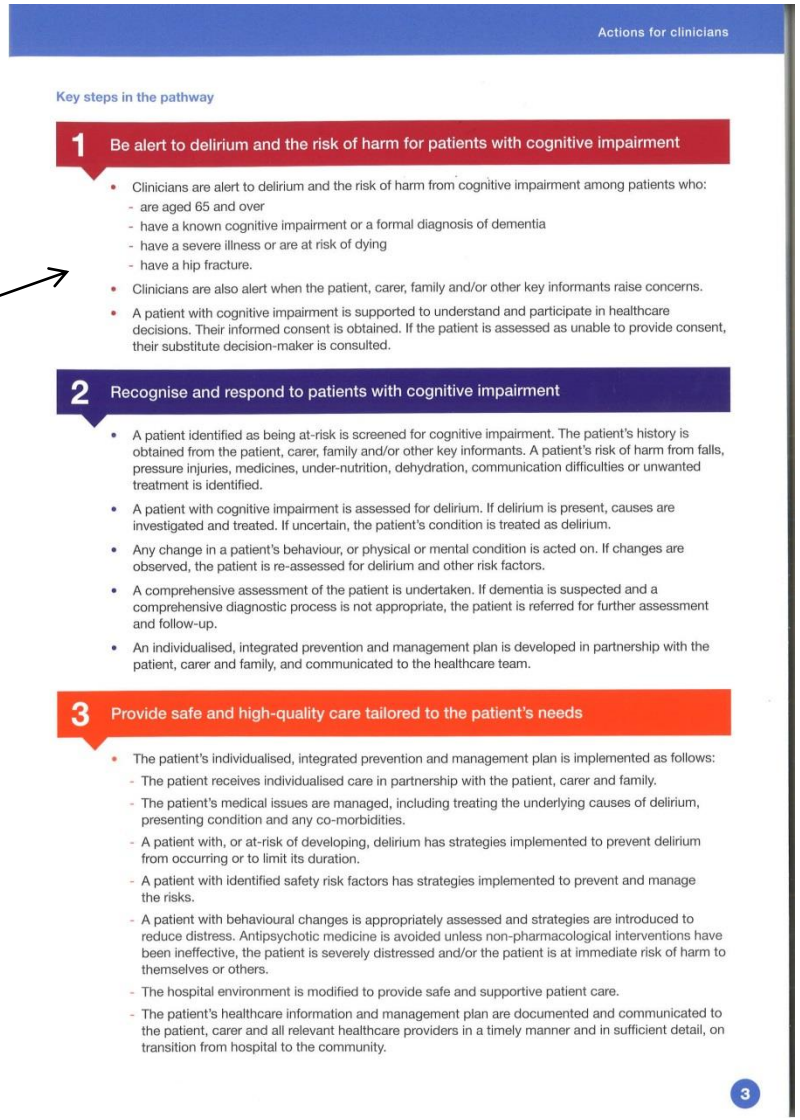
If Inattention and at least one other item in Box 1 are checked and at least one item in Box 2 is checked a diagnosis of delirium is suggested.

Cognitive Impairment: NSQHS standard



Admitted to hospital and has any of the following:

- > 65 yrs
- Known cog impair / formal dx of dementia
- Severe illness/at risk of dying
- Hip fracture
- Concern is raised



Actions for clinicians

Key steps in the pathway

1 Be alert to delirium and the risk of harm for patients with cognitive impairment

- Clinicians are alert to delirium and the risk of harm from cognitive impairment among patients who:
  - are aged 65 and over
  - have a known cognitive impairment or a formal diagnosis of dementia
  - have a severe illness or are at risk of dying
  - have a hip fracture.
- Clinicians are also alert when the patient, carer, family and/or other key informants raise concerns.
- A patient with cognitive impairment is supported to understand and participate in healthcare decisions. Their informed consent is obtained. If the patient is assessed as unable to provide consent, their substitute decision-maker is consulted.

2 Recognise and respond to patients with cognitive impairment

- A patient identified as being at-risk is screened for cognitive impairment. The patient's history is obtained from the patient, carer, family and/or other key informants. A patient's risk of harm from falls, pressure injuries, medicines, under-nutrition, dehydration, communication difficulties or unwanted treatment is identified.
- A patient with cognitive impairment is assessed for delirium. If delirium is present, causes are investigated and treated. If uncertain, the patient's condition is treated as delirium.
- Any change in a patient's behaviour, or physical or mental condition is acted on. If changes are observed, the patient is re-assessed for delirium and other risk factors.
- A comprehensive assessment of the patient is undertaken. If dementia is suspected and a comprehensive diagnostic process is not appropriate, the patient is referred for further assessment and follow-up.
- An individualised, integrated prevention and management plan is developed in partnership with the patient, carer and family, and communicated to the healthcare team.

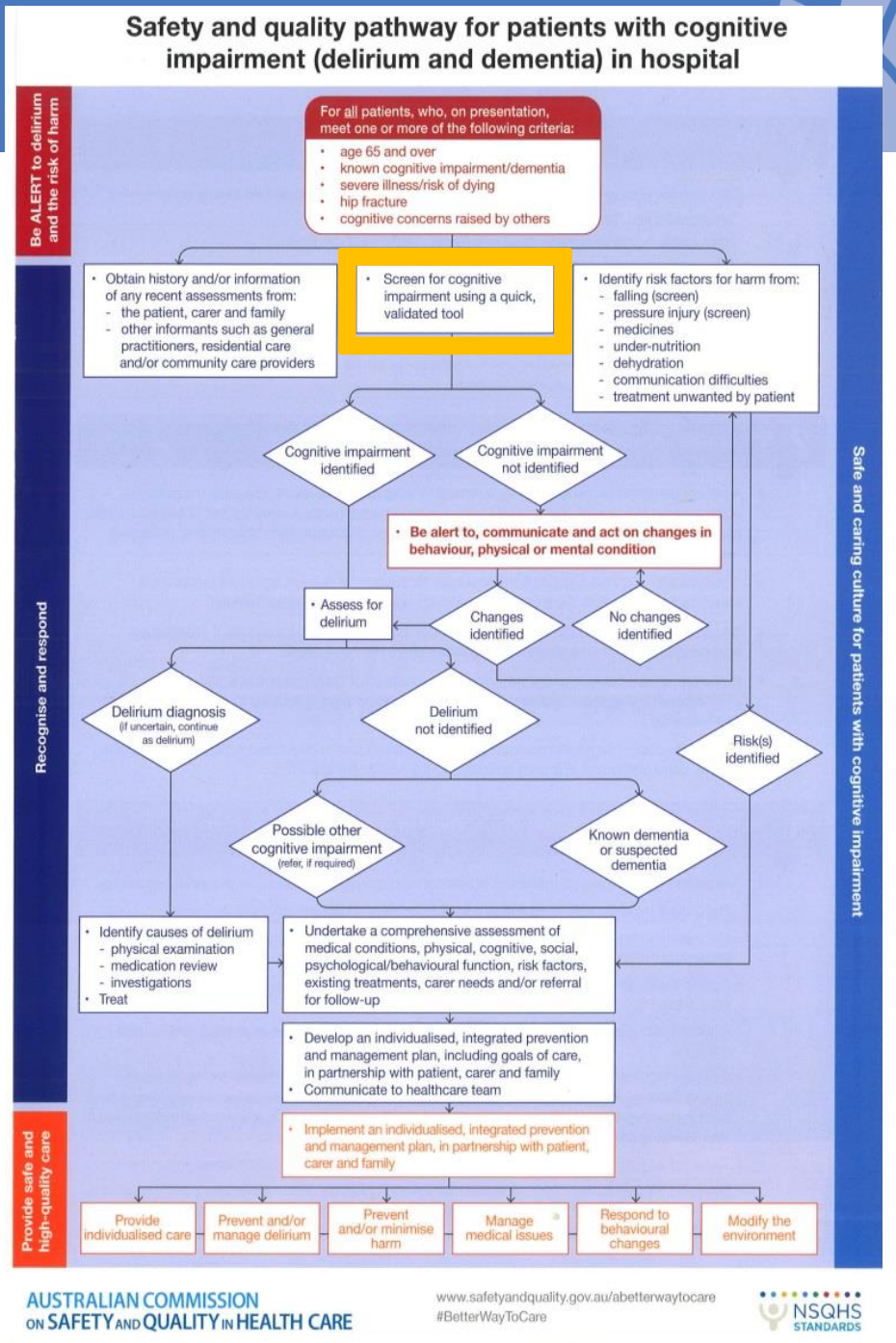
3 Provide safe and high-quality care tailored to the patient's needs

- The patient's individualised, integrated prevention and management plan is implemented as follows:
  - The patient receives individualised care in partnership with the patient, carer and family.
  - The patient's medical issues are managed, including treating the underlying causes of delirium, presenting condition and any co-morbidities.
  - A patient with, or at-risk of developing, delirium has strategies implemented to prevent delirium from occurring or to limit its duration.
  - A patient with identified safety risk factors has strategies implemented to prevent and manage the risks.
  - A patient with behavioural changes is appropriately assessed and strategies are introduced to reduce distress. Antipsychotic medicine is avoided unless non-pharmacological interventions have been ineffective, the patient is severely distressed and/or the patient is at immediate risk of harm to themselves or others.
  - The hospital environment is modified to provide safe and supportive patient care.
  - The patient's healthcare information and management plan are documented and communicated to the patient, carer and all relevant healthcare providers in a timely manner and in sufficient detail, on transition from hospital to the community.

NSQHS standard

Cognitive screen:

- **ED:** (AMTS)
- **Ward:** AMTS, (MMSE) etc

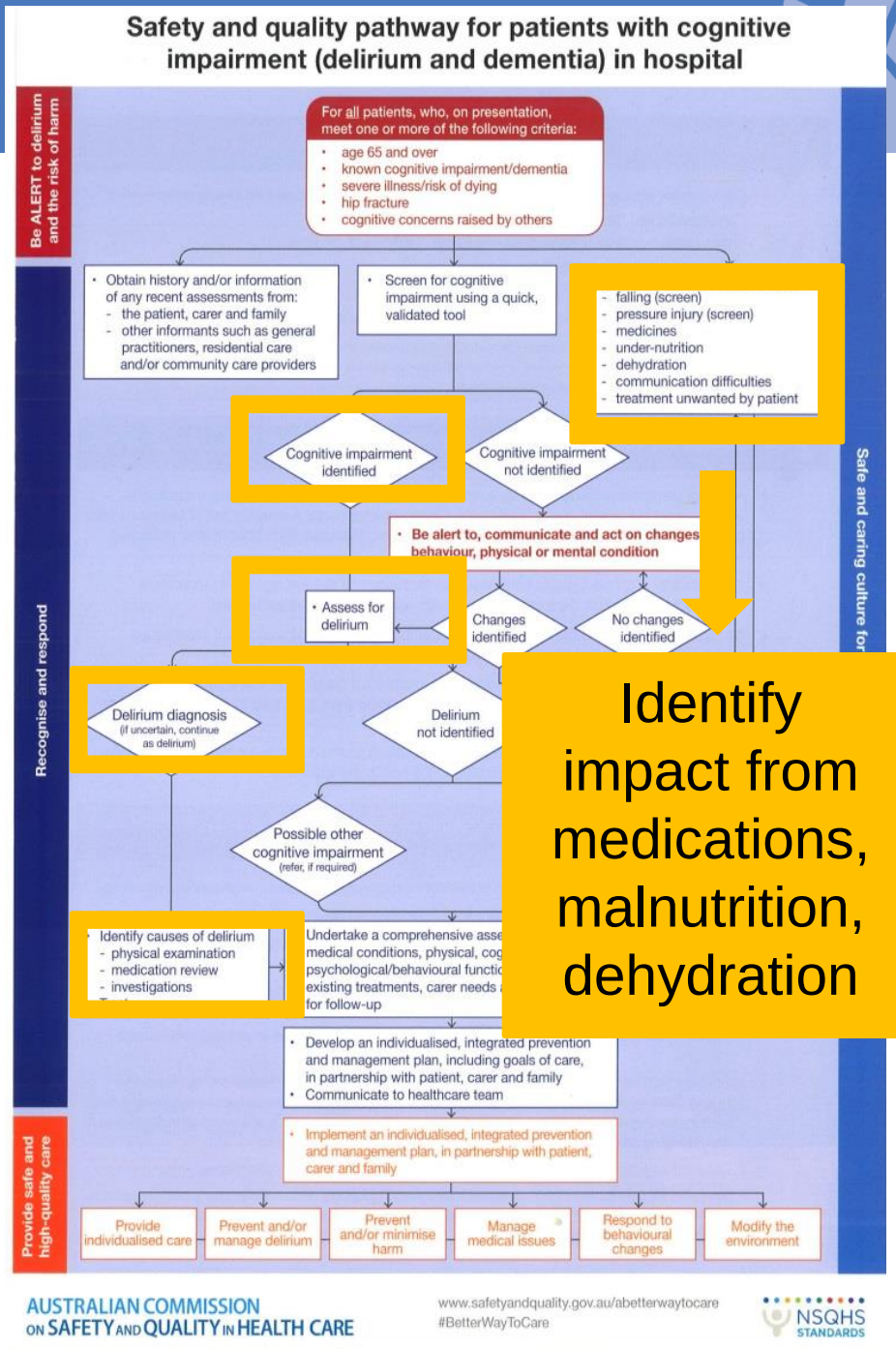


NSQHS standard

Impairment detected:
- AMTS ≤ 7
- MMSE ≤ 26

Screen for delirium (CAMI)

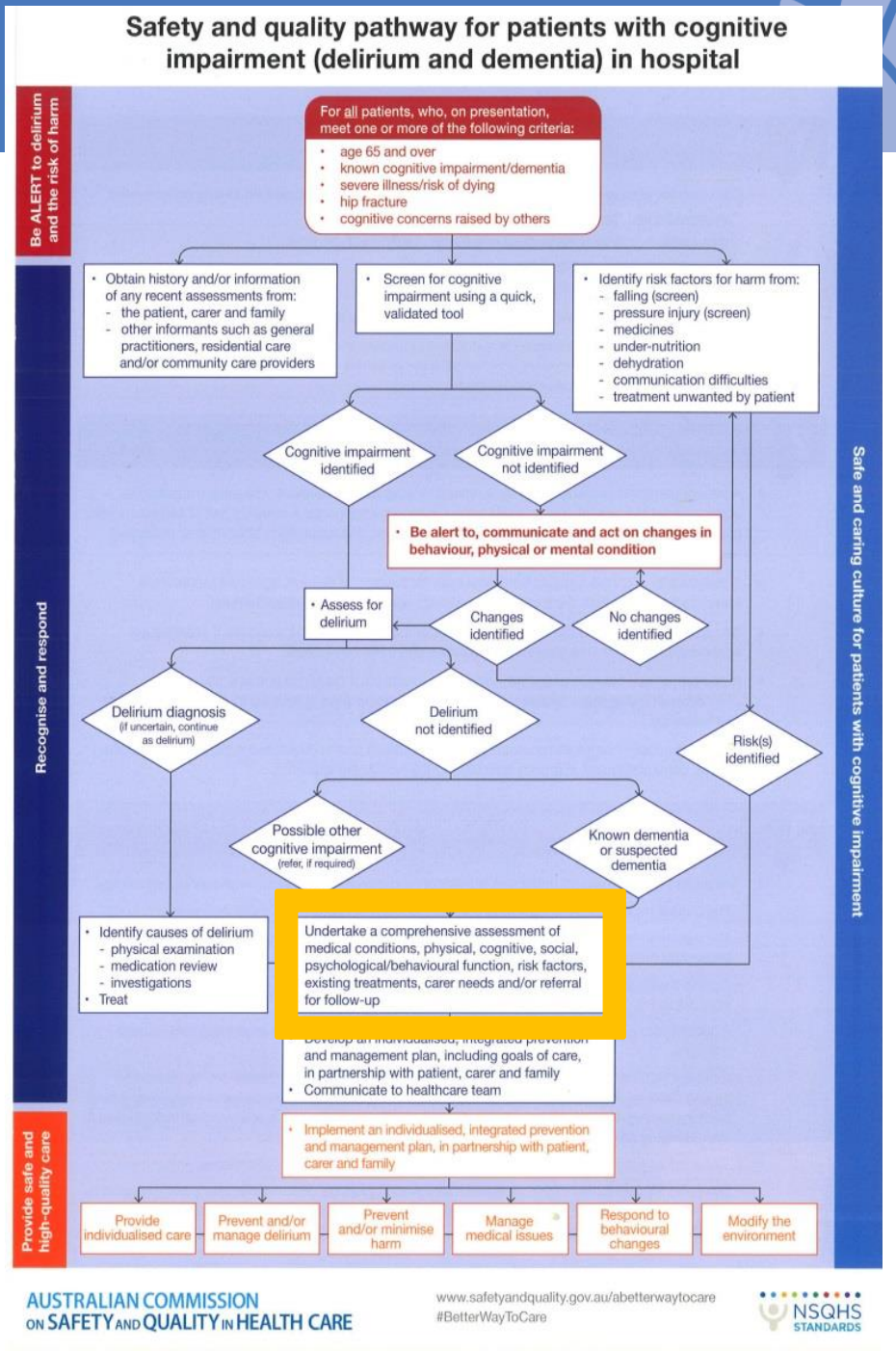
Identify cause of delirium and treat



Identify impact from medications, malnutrition, dehydration

NSQHS standard

Comprehensive assessment of:
Medical conditions, physical, cognitive, psychological, social function



Impaired cognition: Dementia

Further…..

The evidence collected must be sufficient to determine dementia subtype
= differential dementia diagnosis

Assists with understanding progression, management incl. medication trials

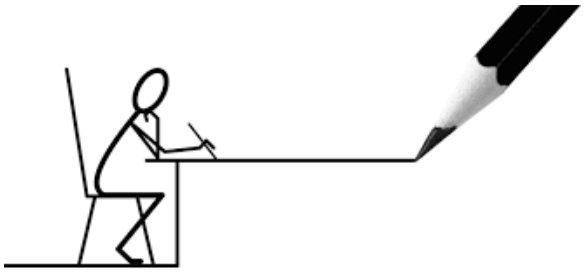
- **Alzheimer's dementia (typical or atypical visual or language variant), vascular dementia (small vessel disease, multi infarct dementia, stroke), dementia with Lewy Bodies, frontotemporal dementia (semantic dementia, primary progressive nonfluent aphasia), Parkinson's dementia, HIV-associated dementia, progressive supranuclear palsy, corticobasal syndrome….**

If not, neuropsychology may be warranted

Neuropsychological assessment:

Unlike a cognitive screen, neuropsychological assessment:

- Statistically controls for low/high premorbid function
- Can differentiate a range of cognitive syndromes and disorders (e.g., depression vs focal stroke vs dementia, dementia subtypes)
- Different outcomes for management and planning
  - Expected progression of symptoms and decline
  - Medication options
  - Different implications for decision-making capacity
- Most useful for ‘borderline’ or ‘complex’ cases



Common dementia subtypes

Alzheimer's Dementia

Vascular Dementia

Dementia with Lewy Bodies

Frontotemporal Dementias

Alzheimer's Dementia:

- Most common

Pathology: atrophy, neuronal loss, NFTs

Onset: >65 yrs, also YOD (30s)

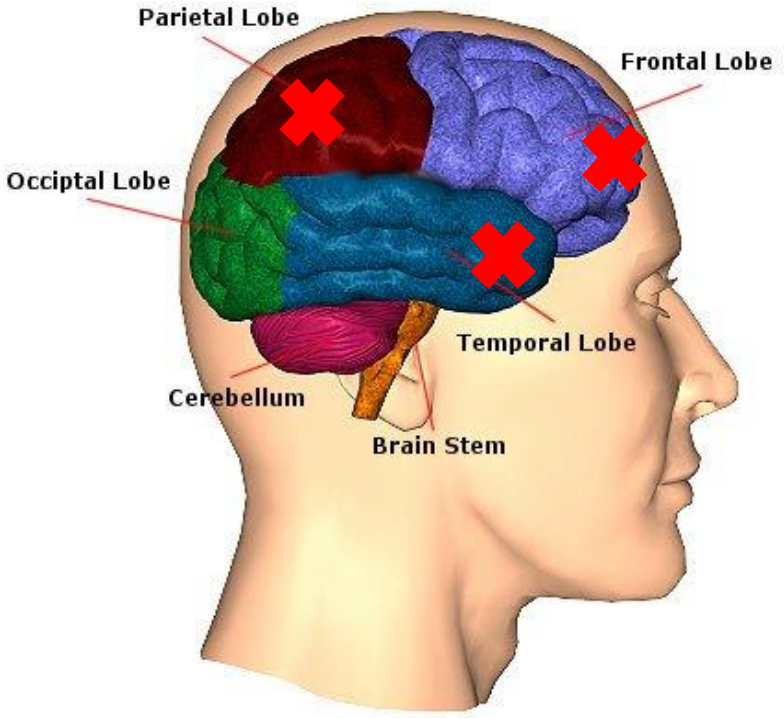
Brain Impairment: "cortical", all areas

- **Early** – medial temporal lobe
- **Moderate** – temporal, parietal, frontal

Cognitive deterioration:

- **Early** – memory (retro- antero- grade, rapid forgetting)
- **Moderate** – semantic knowledge, visuoconstruction, executive dysfunction

Treatment: acetylcholinesterase inhibitors, HRT, antioxidants, vit B



Vascular Dementia:

3 types: 1) strategic infarct dementia
2) multi infarct dementia
3) subcortical vascular dementia

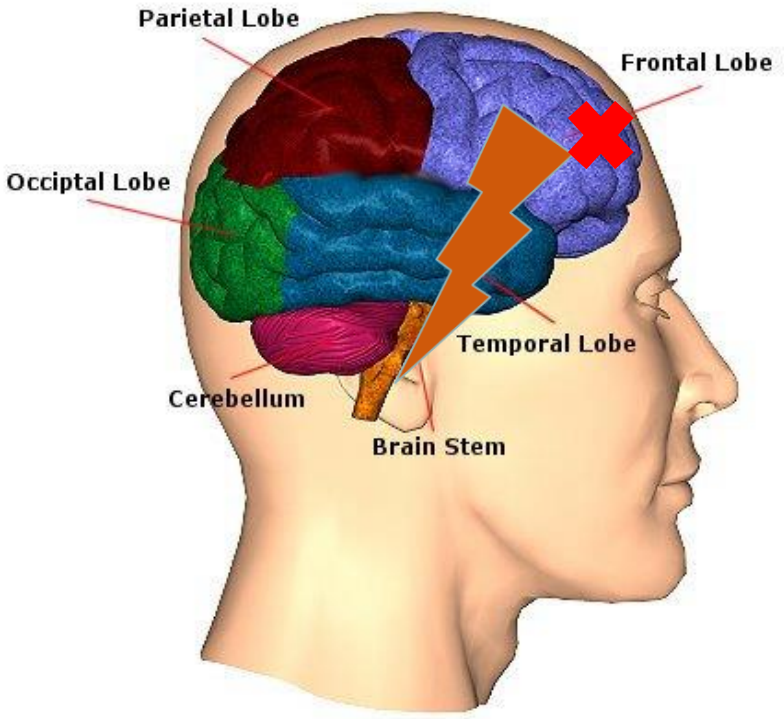
Pathology: depends on subtype

Onset: any age, older age more common

Brain impairment:
1, **2-** location dependant LH/ RH
3 – frontosubcortical

Cognitive deterioration:
1, 2- location dependent
3 – executive, WM, mental speed

Treatment: reduce vascular risk factors, anticoagulation therapy, warfarin



Dementia with Lewy Bodies:

Pathology: Lewy Bodies

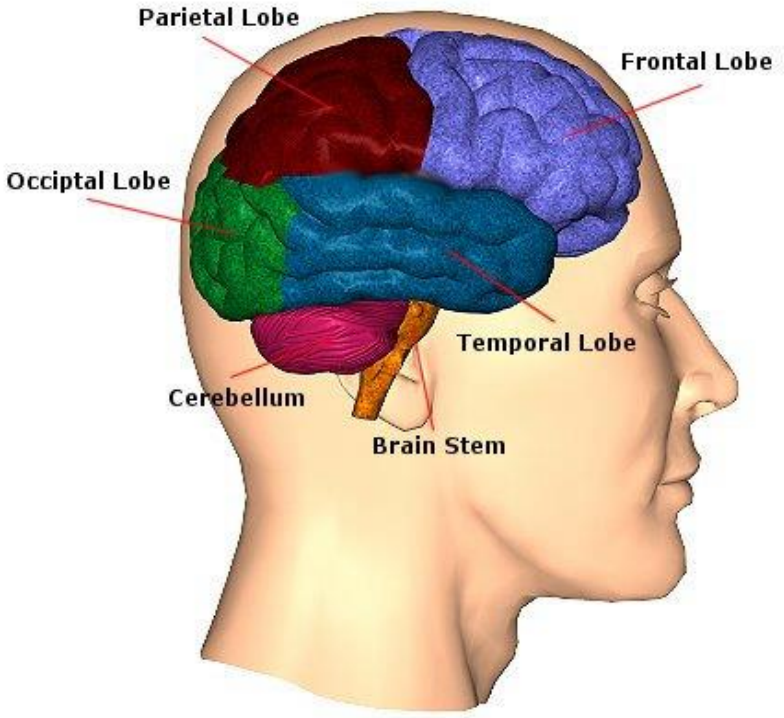
Onset: ~50-85 yrs

Brain impairment: Lewy Bodies widely distributed in cortex. CT often unremarkable.

Cognitive deterioration:

- **Early:** fluctuating cognition (attn, exec, WM, visuoconstruciton, visual hallucinations, ?memory)
- **Later:** Parkinsonism

Treatment: Antipsychotics can trigger severe extrapyramidal syndrome, so hard to treat hallucinations



Frontotemporal Dementias:

Pathology: FTLD-Tau & -TDP, Pick cells

Onset: younger (< 65 yrs)

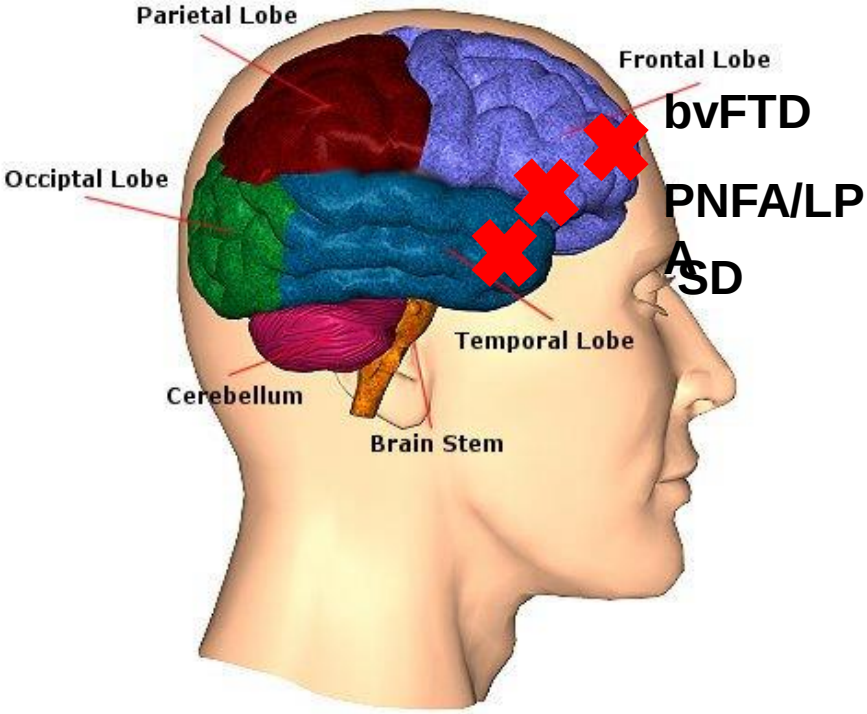
Brain impairment: left-sided fronto-temporal atrophy

Cognitive deterioration:

- **bvFTD:** behaviour, executive function
- **SD:** semantic knowledge
- **PNFA:** telegraphic speech
- **LPA:** poor repetition, not telegraphic

Treatment: SSRIs for symptoms (repetitive behaviours, amotivation)

- **bvFTD: behavioural variant frontotemporal dementia**
- **SD: semantic dementia**
- **PNFA: primary non-fluent progressive aphasia**
- **LPA: logopenic aphasia**



Differential profile of dementias

Cog. domain	Alzheimer's	Vascular (SVD)	Lewy Body	FTD (semantic)	FTD (behavioural)
Orientation	✘✘	✓	✓	✓	✓
Attn / WM	✘ / ✓	✘✘	✘✘	✓	✘✘
Processing speed	✓	✘✘	✓	✓	✓
Memory	✘✘ global	✘ recall ✓ recog	?	✘ verbal ✓ visual	✘ recall (2nd exec dysf) ✓ Recog
Exec fn	✘ / ✓	✘✘	✘✘	✓	✘✘
Language	✘ semantic	✓	✓	✘✘ comp. ✓ express	✘ naming ✓ all else
Visuo-construction	✘	✓	✘✘ + vis halluc	✓	✘ 2nd exec dysf

Implications of impaired cognition

Management & discharge planning

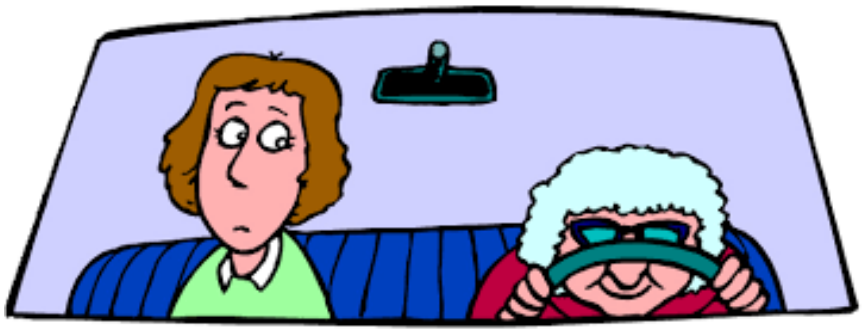
Impaired cognition and safe driving

- Driving is important for maintaining independence & wellbeing
- Cessation of driving is associated with:
  - Isolation and depression
  - In older adults, transition to RACF
- Just because an individual is cognitively impaired, does not mean they are unable to drive safely
  - Older drivers speed less, less likely to drink and drive
- Gold standard for assessing safe driving is On Road OT Driving Assessment
- As a neuropsychologist, there are certain red flags that would lead to a referral for On Road OT Driving Assessment

Impaired cognition and safe driving

Indications of possible unsafe driving:

- Difficulty finding and attending to relevant visual information
- Significantly slowed processing speed
- Impaired visuoconstruction
- Executive dysfunction
  - Impaired insight – can impact your self-belief about your driving capacity



Impaired cognition & DMC

Decision-making capacity

Decision-making capacity

Legal term

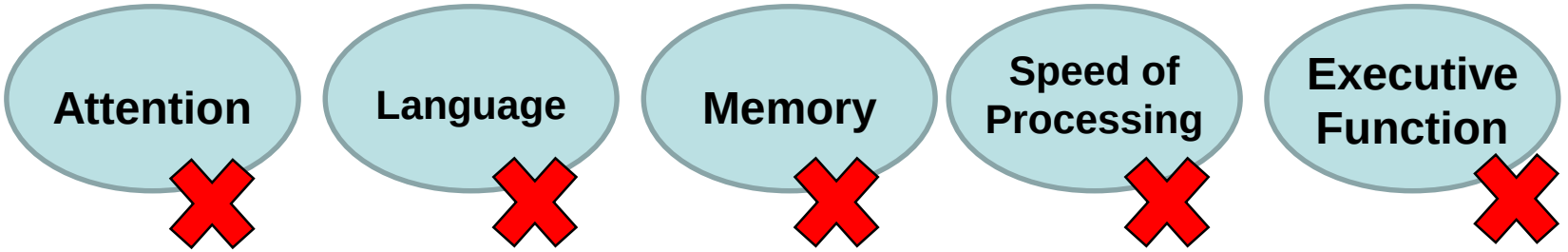
When making a decision, ability to:

- **Understand** the facts and choices involved
- **Weigh up** the consequences
- **Understand** the impact of the consequences
- **Communicate** the decision

'Substitute decision maker'

(Capacity Toolkit)

Impaired cognition & capacity



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Capacity is NOT a unitary construct:

Domain-Specific

- Accommodation
- Medical treatment
- Finances
- Other legal decisions:
  - Will, POA, marriage, contract

(Capacity Toolkit)

Capacity is NOT a unitary construct:

Domain-Specific

- Accommodation
- Medical treatment
- Finances
- Other legal decisions:
  - Will, POA, marriage, contract

(Capacity Toolkit)

Capacity is **Decision**-Specific:

Decision-Specific

- Capacity relates to the specific decision being made
- Findings about one decision cannot generalise to other decisions

Capacity is **Decision**-Specific:

Decision-Specific

- Findings about one decision made at **one point in time** cannot generalise to the same decision at a **future point in time**

Delirium: capacity can be regained

Dementia: Capacity can decline further

Neuropsychology & capacity

Unique contribution:

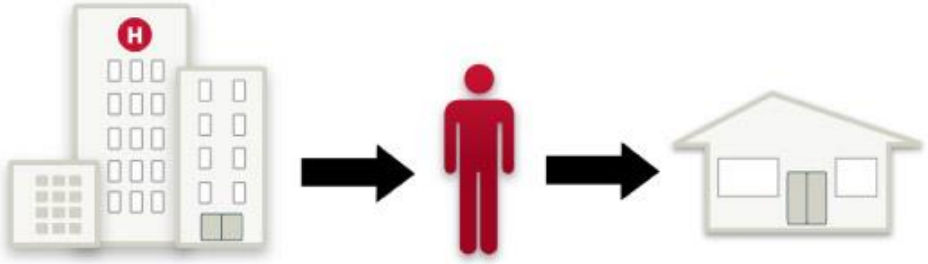
- Formal and specific capacity questioning; comprehensive and objective assessment of cognition
- Unlike a brief screen (MMSE), neuropsychology comprehensively assesses all domains of cognitive function that are likely to impact capacity
- Neuropsychology also compares the individual's performance to those of a similar age and education
- In doing so, we can **differentially diagnose** the **cause** of the cognitive impairment e.g., Alzheimer's vs. FTD vs Depression
- This diagnosis is key to understanding progression of cognitive impairment, & allows prediction of capacity in future

(Barry & Lonie, 2014)

Summary: Cognitive screening

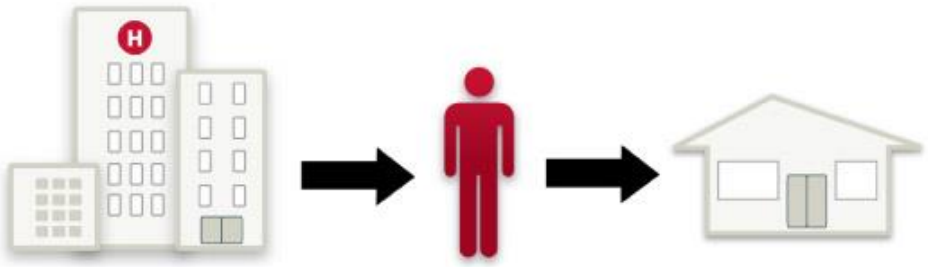
- Follow ‘A Better Way to Care’ guidelines for inpatients with suspected cognitive impairment—rule out delirium
- Select the cognitive screen that best suits the **setting** (ED, community), **patient** (?dementia, CALD), and the one you are **most comfortable administering, scoring, & interpreting**

- A score below the cut-off does not necessarily mean cognitive impairment, let alone dementia→ **Context** is everything!



Summary: Cognitive screening

- Diagnosis of **dementia** requires the ability to differentiate the **subtype**—implications for management & future planning
- Cognitive impairment *can* impact safe **driving,** cognitive testing can highlight issues, but on-road OT driving assessment is the gold standard
- Cognitive impairment *can* impact **decision-making capacity**, but this needs to be formally assessed
  - Capacity is not a unitary construct, and needs to be assessed for each specific decision at the time the decision needs to be made
  - Determining the cause of cognitive impairment is important, as capacity can be regained



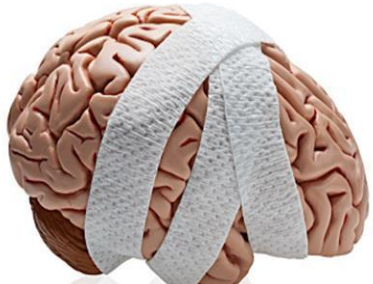
How to refer to Neuropsychology:

- Via Cognition and Memory Service
- Conducted in consultation with treating doctor

  (e.g., GP, Geriatrician, Psychogeriatrician, Neurologist)
- Referrals also via any health worker involved in care of individual

  (e.g. Community Nurse, Dementia Support Worker, Discharge Planning Nurse, OTs, Nursing Home manager)
- Direct referral to neuropsychologist
  - E: kia.pfaeffli@hnehealth.nsw.gov.au
  - Ph: 6776 9752
  - Fax: 6776 9750

As long **as treating doctor is aware and has approved**.



NSW GOVERNMENT Health
Hunter New England Local Health Network

Resources:

- ACARS Network Portal – Dementia & Delirium

  (Cognitive screening, how to use tools, links and resources)
- A Better Way to Care- Actions for Clinicians https://www.safetyandquality.gov.au/wp-content/uploads/2014/11/A-better-way-to-care-Actions-for-clinicians.pdf
- ACE-III administration, scoring training:

  http://www.nes.scot.nhs.uk/education-and-training/by-discipline/psychology/multiprofessional-psychology/psychology-and-psychological-interventions-in-dementia/ace-iii-trainer.aspx
- Capacity Toolkit: http://www.publicguardian.justice.nsw.gov.au/Documents/capacity_toolkit0609.pdf
- Alzheimer's Australia: https://fightdementia.org.au/
  - Excellent resource for all aspects of dementia assessment, diagnosis, management for patient and clinicians