An Australian Government Initiative

DCRC
Dementia Collaborative Research Centres

UNSW
THE UNIVERSITY OF NEW SOUTH WALES

14 essentials in the practice & art of diagnosis & management of dementia

Never Stand Still | Medicine

DCRC
Dementia Collaborative Research Centres

CHeBA
Healthy Brains Positive Ageing

Henry Brodaty

Multiple conflicts of interest

- **All drug companies interested in dementia**
- **Advisory Board, investigator, consultant, sponsored speaker**

1. Do not dismiss as “old age”

- **Prevalence of subjective cognitive complaints (SCC) in older people**
  - **Review of SCC prevalence, rate of 25-30%[1]**
  - **In Sydney Memory and Ageing Study 95.5% of participants (70+ yrs) or informants endorsed SCC *if asked* [2]**

[1]Jonker et al. 2000 *Int J Geriatr Psychiatry, 15, 983-991*
[2]Slavin et al. (2010). *Am J Geriatr Psychiatry,* 18:8, 701-710

2. Be alert to cognition in older pts

- **Especially those aged 75+; routinely ask about difficulties**
- **Cognitive complaints x-sectionally correlate w.**
  - **Neurotic personality, depression, anxiety**
  - **Poor QoL, Poor physical health**
- **Cognitive complaints longitudinally correlate w.**
  - **Cognitive decline and dementia**

Jorm et al. 2001; Mol et al. 2006; Slavin et al. 2010; Hohman et al, 2011; Lam et al, 2005; Mol et al, 2006; Jessen et al. 2010; Jungwirth et al. 2009; Reisberg et al. 2010

What is dementia?

- An umbrella term to describe a syndrome
- Usually progressive and irreversible
- Over 100 causes

1. Alzheimer's disease = most common
2. Vascular dementia (multi-infarct dementia; cerebrovascular disease)
3. Lewy body dementia
4. Fronto-temporal dementias

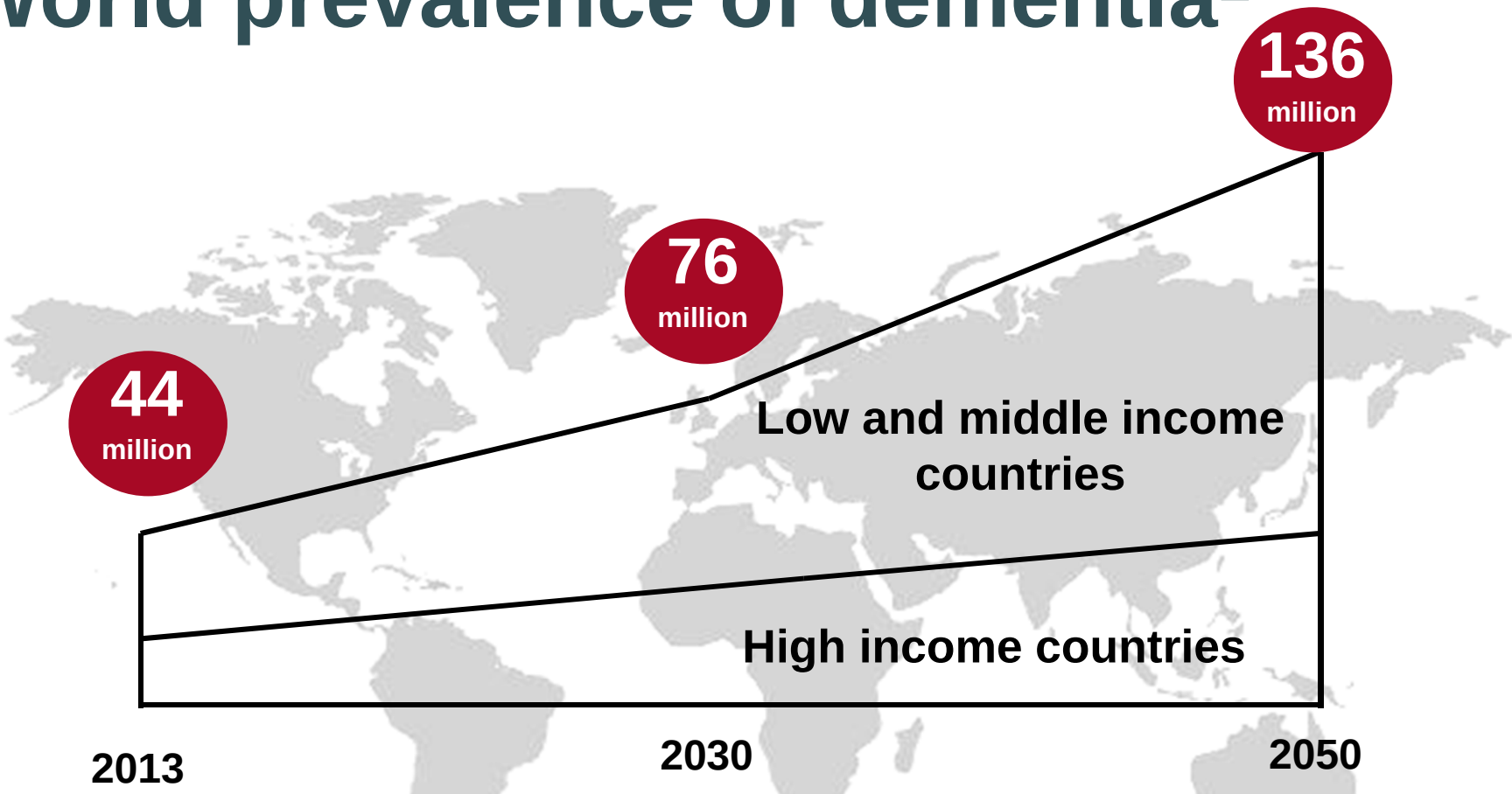
What is dementia - definition

- **Decline in at least one cognitive function:**
  - **Memory**
  - **Language**
  - **Executive abilities - planning, abstract thinking, organisation, conceptual shift**
  - **Visuo-spatial abilities**
- **Represents a decline**
- **Impairs daily function: occupational or social**

Prevalence of dementia

- **> 5% of population ≥ 65 years old**
- **20% of persons ≥ 80 years**
- **30% of ≥ 90 years old**
- **In Australia ≅ 330,000 people w dementia**
- **In 1000 GP practice, ≅ 200>65 → 10+ with dementia & ≅ 24-36 pre-dementia (MCI)**
  - **Approx. 2 new dementia cases per year**

World prevalence of dementia[1]



The Global Impact of Dementia 2013–2050. ADI, 2013

Dementia in NZ [1,2]

- **2011 ≈ 48,000**
- **2050 ≈ 147,000**
- **Maori, Pacific Island, Asian over-represented.**
- **NZ$955m cost to NZ**

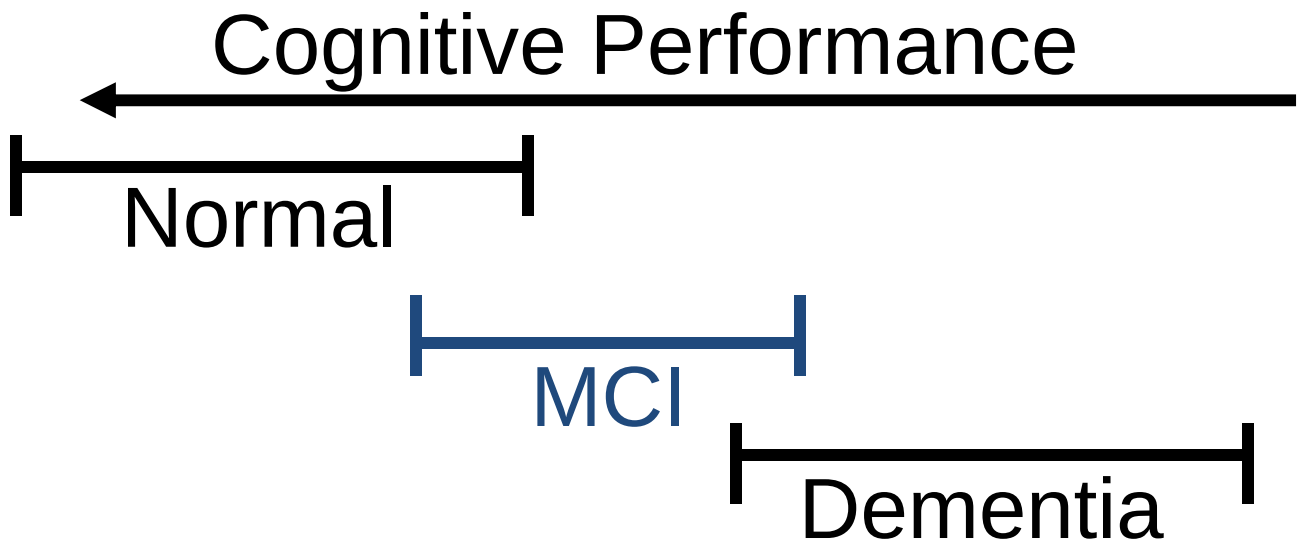
[1] **Dementia Economic Impact Report 2011**
[2] **Alzheimers NZ 23.08.14**

What is Mild Cognitive Impairment?

- **Petersen criteria revised [1, 2]**
  - **Not normal, not dementia**
  - **Self and/or informant report**
  - **Impairment on objective cognitive tasks and/or**
  - **Evidence of decline over time on objective cognitive tasks**
  - **Preserved basic ADLs and minimal impairment of complex function**
  - **Generally intact global cognition**

[1]Petersen et al, Arch Neurol 1999;56:303–308
[2]Winblad et al, J Intern Med 2004;256:240–246

Mild Cognitive Impairment (MCI)



Normal > MCI > AD

On all measures, MCI is intermediate between normal controls and AD:

- **Neuropsychology**
- **Neuroimaging**
- **Neuropsychiatry**
- **Neuropathology**

MCI – why the fuss?

- **Prevalence rate 3-25%[1]**
- **Progression to dementia 2.6% to 15%[1] p.a.**
  - **Higher than age matched population of 1.8%[2]**
- **Early diagnosis may identify those who would benefit from earlier treatment**

[1]Petersen et al. (2009). *Arch Neurol, 66*(12), 1447-1455.
[2] Petersen et al (2001). *Neurology,* 56(9),1133-1142.

3. Take history regarding cognition & function from informant

- **Clinical history**
- **Interview informant, assess carer needs**
  - **See informant separately if possible**
- **Activities of daily living – dress, wash, toilet, teeth, shave**
- **Instrumental ADLs – cooking, shopping, meds, finance, transport, telephone, driving, safety**
- **More complex activities – bridge, languages**

4. Assess cognition if any indication or suspicion of impairment

- **www.dementia-assessment.com.au**
- **MMSE *and* Clock Drawing Test**
- **GPCOG www.gpcog.com.au**
- **RUDAS**

www.dementia-assessment.com.au/cognitive/RUDAS_scale.pdf

- **If uncertain repeat over time**

GP diagnosis of dementia

- **74% of people consult a GP first after noticing symptoms of cognitive decline, and …**
- **79% consider GPs to be easily accessible[1]**
- **GPs are best placed to identify dementia early**
- **But, GPs do not diagnose about 50% (≤ 91%) of mild cases[2,3]**

[1]Wilkinson et al (2004); [2]Valcour et al *Archives Int Med* 2000;160:2964-8
[3]Boustani et al *J Ger Int Med* 2005;20:572-7

GP Screening for cognitive impairment

- **GPs screen for high blood pressure, cholesterol, diabetes, cancer**
- **Prevalence of dementia >10% in 75+**
- **Why not screen for dementia?**
  - **Because it takes too long, not sure how?**
  - **Because there is no treatment if diagnosed?**
  - **Because not sure of next steps?**
  - **Complicated rules for ChEIs**
  - **Low Positive Predictive Value (PPV)**

Why don’t GPs diagnose dementia?

- **Time**
- **No point**
- **Nihilism; “Terrible” Dx**
- **Unsure of skill**
- **Not sure of next step**
- **Lack of knowledge about guidelines**

Brodaty et al, MJA, 1994; Williams JS, Byrne J, Pond D (2009) *Gaps between practice and literature*

Why don’t GPs diagnose dementia?

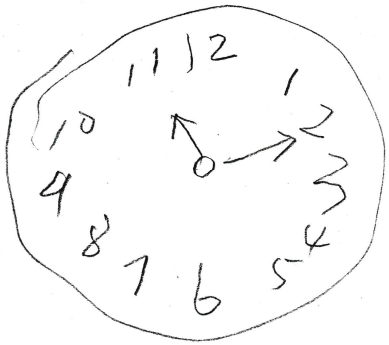
- **Poor remuneration**
- **Patients/families not presenting full picture**
- **Skill in breaking bad news**
- **Worry about effect on patient**
- **Worry about effect on family carer**

Brodaty et al, MJA, 1994

GPCOG

Cognition (/9)

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



9/9 → OK
<5 → impaired
5-8 → informant interview...

GPCOG: 6 informant questions
Compared to 5 years ago

More difficulty:

- **Memory**
- **Word finding**
- **Recalling conversations**

Less able to:

- **Manage finances**
- **Manage transport**
- **Manage medications**

If > 3 'Yes' → impaired

GPCOG

The GPCOG website:

A web-based assessment of cognitive impairment in the primary care setting

www.gpcog.com.au

www.gpcog.com.au

The General Practitioner assessment of COGnition

Home | Start Test | National Guidelines | GPCOG Information | Downloads | English

Downloads:

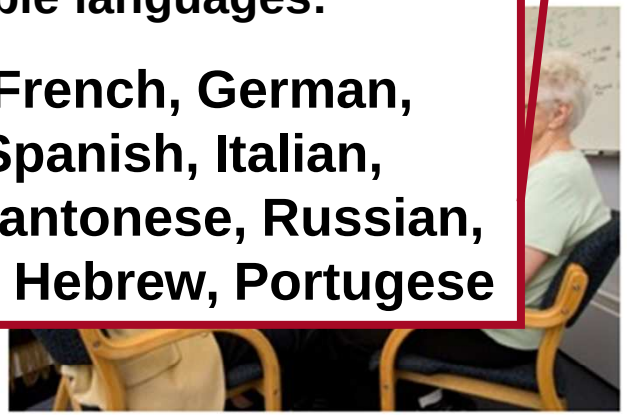
Recommended standard investiga

Printable versions of GPCOG

Papers about GPCOG

Available languages:

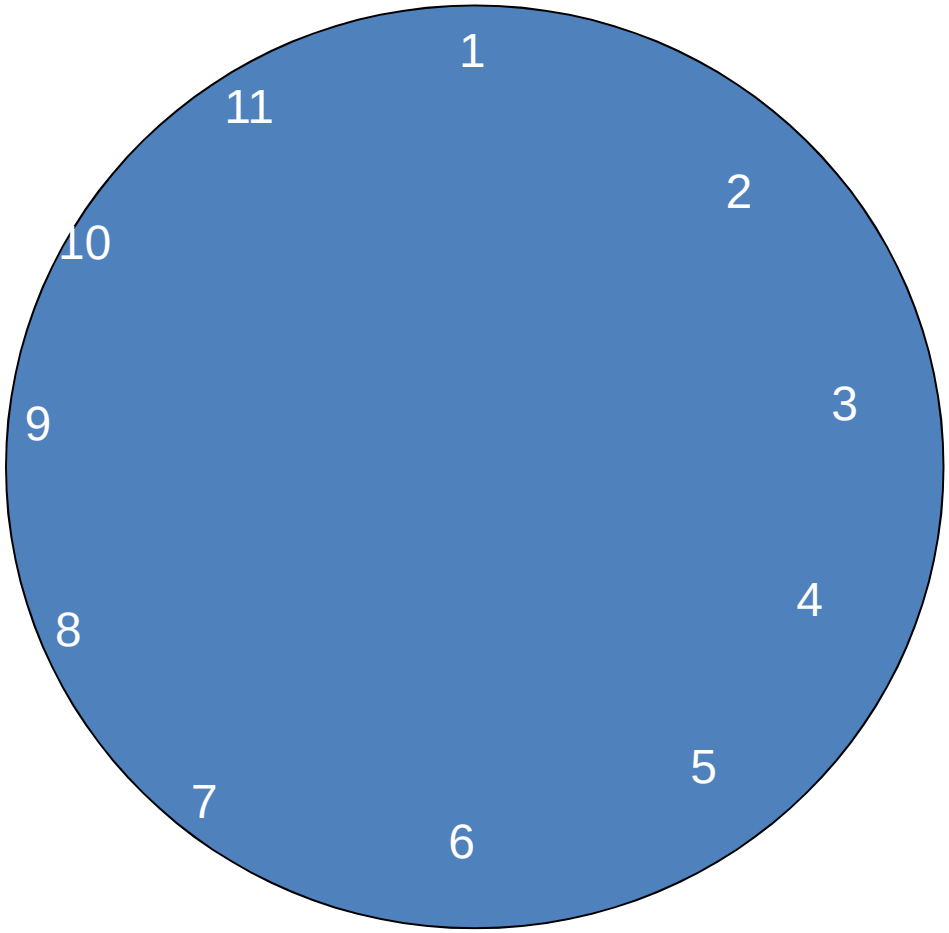
English, French, German, Greek, Spanish, Italian, Mandarin, Cantonese, Russian, Polish, Thai, Hebrew, Portugese



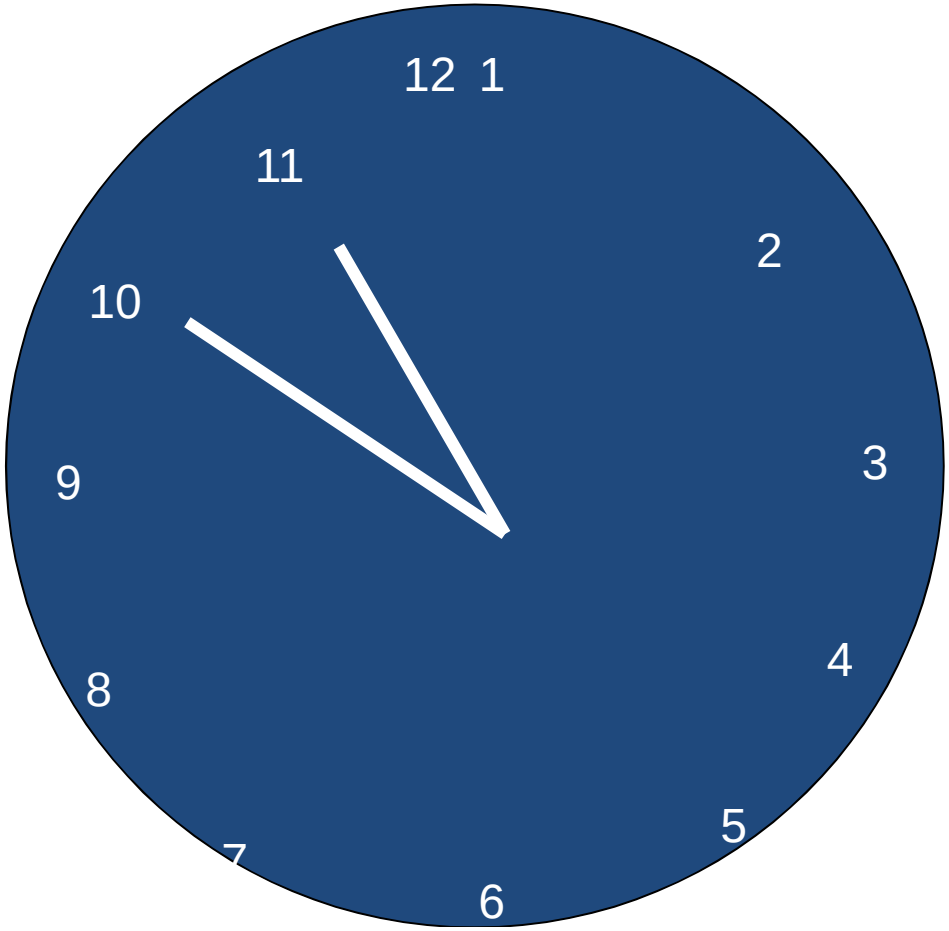
Start Test
Learn more about the test
Read national guidelines for dementia and standard investigations

DCRC Dementia Collaborative Research Centres | UNSW The University of New South Wales | ICCE | NICE

DCRC Dementia Collaborative Research Centres | CHeBA Healthy Brains Positive Ageing | UNSW The University of New South Wales



…and realises that the 12 is missing



Draw in the hands to show 10 past 11 o’clock or 11.10

Other frontal tasks

- **Tapping**
  - **When I tap once, I want you to tap twice**
  - **When I tap twice, I want you to tap once**
- **Explain proverbs – culture bias**
- **Verbal fluency: FAS, animals**
- **History – can't follow movies, lack of anticipation, change in sense of humour, disinhibition, change in personality**
- **Interview – trouble understanding**

5. Conduct mental state and physical examination

- **Look for specific conditions that mimic dementia (depression, delirium, drugs) or that can compromise cognition (eg cardiac failure, use of anti-cholinergic drugs)**
- **Check nutrition, hygiene, vision, hearing**

6. Investigate causes of cognitive decline

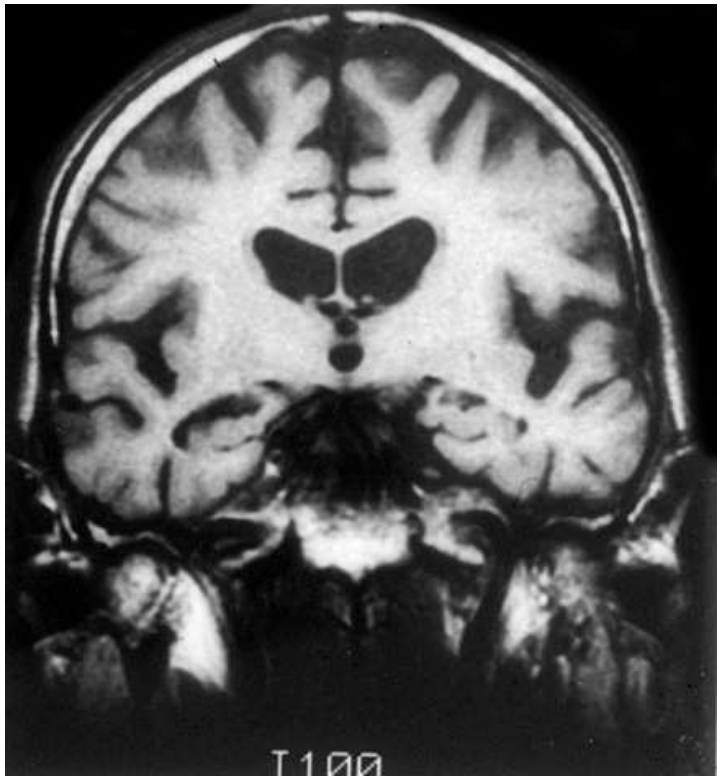
- **Rule out rare, but reversible causes eg. Abnormal thyroid, calcium or Vit B12, tumour**
- **See guidelines**
  http://www.gpcog.com.au/files/investigations.pdf

Investigations: Routine/ minimum

- **FBC, ESR or CRP**
- **Clinical chemistry *including calcium***
- **Thyroid function tests**
- **B12, folate**
- **CT scan of brain (*without contrast*)**

Investigations if indicated

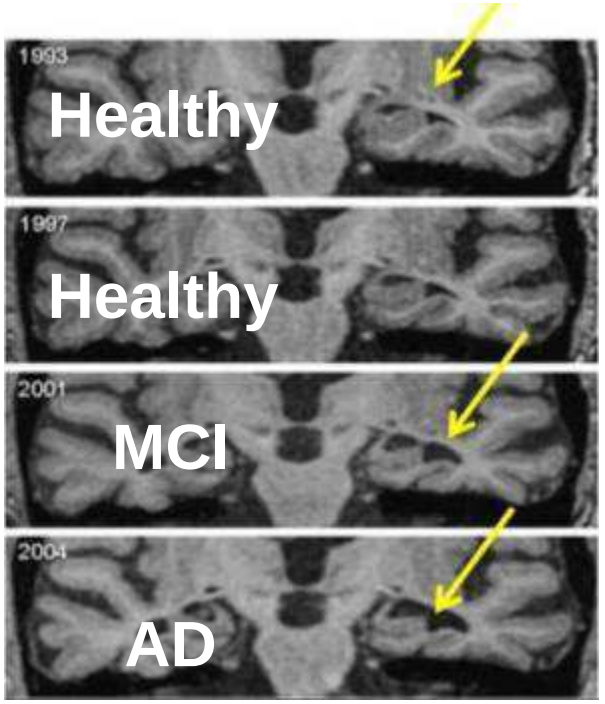
- ECG
- CXR
- EEG
- micro-urine
- Fasting glucose, lipids, HCy
- Serology for HIV, syphilis
- Neuropsychological Ax*
- MRI*
- PET scan* Amyloid scan*
- SPECT (?)*



* = specialist referral

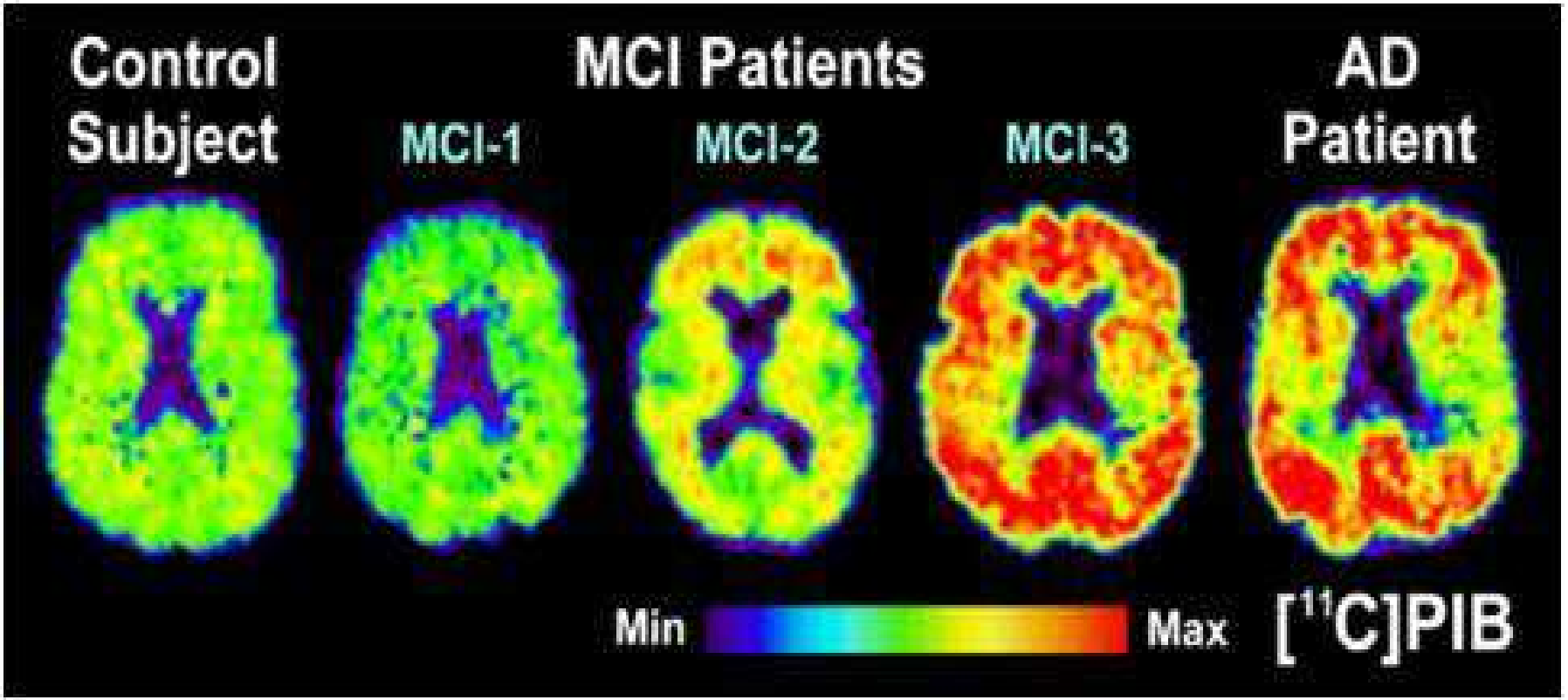
Advances in biomarkers

- **Cerebrospinal fluid**
  - **Amyloid β Protein (Aβ42) ↓**
  - **Tau Protein (τt and τp) ↑**
- **MRI scans – serial, fMRI**
- **SPECT scans + dopamine label**
- **PET Scans + amyloid ligands**



From the - online newspaper of Prof Yasser Metwally
http://yassermetwally.wordpress.com/dementia-alzheimer-type-and-others/neuroimaging-of-dementia/

PiB-PET Scans: AD vs MCI vs control



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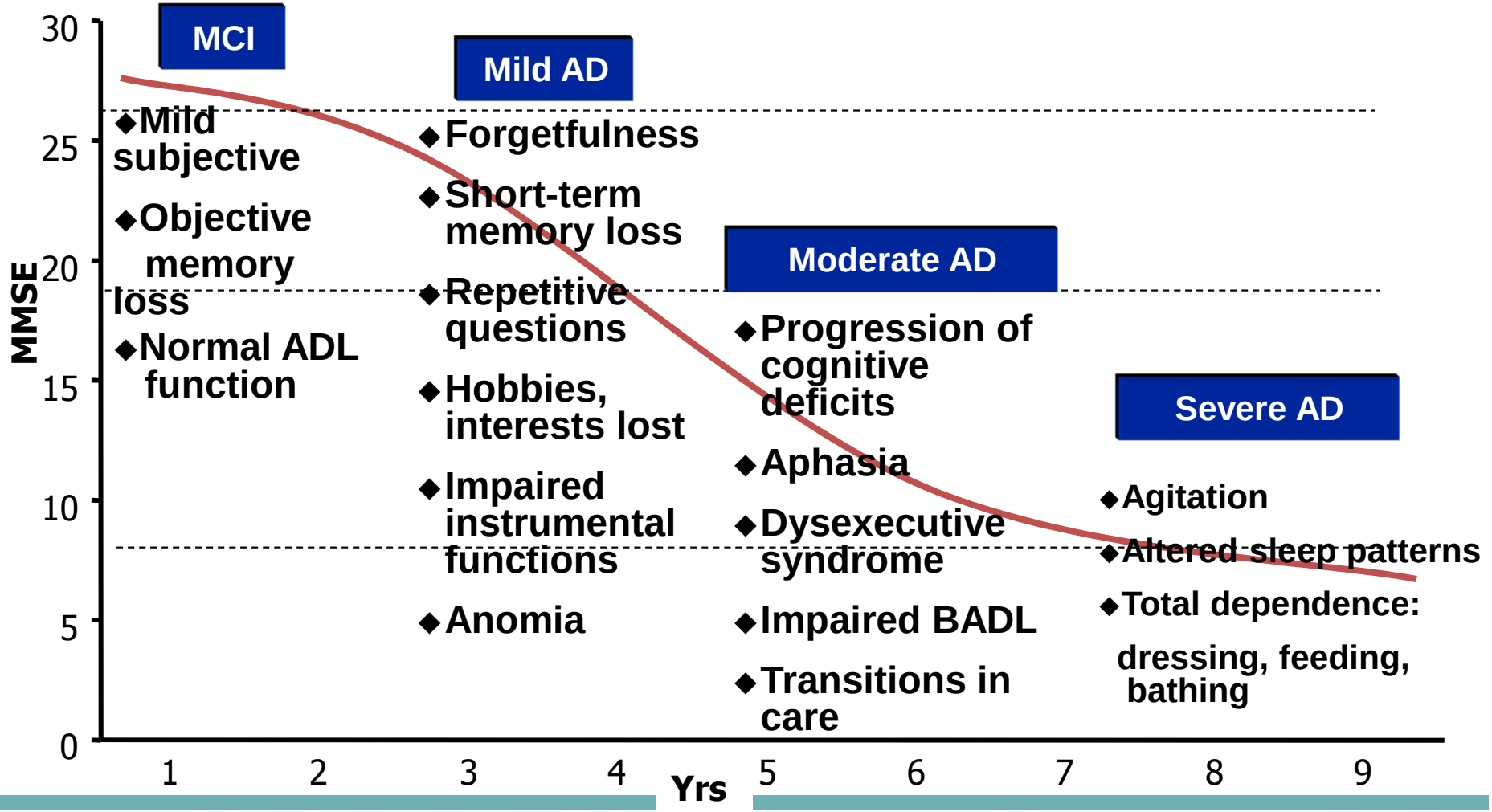
7. Diagnose cause

- **Exclude depression and delirium**
- **Diagnose type of dementia**
  - **Type of dementia**
    - **90% AD, vascular or mixed, then Lewy body and frontotemporal**
    - **Most older pts. have mixed dementia**
    - **Outline of clinical features of different dementias**

Clinical features: Alzheimer's disease

- **Prototype of dementia**
- **Insidious onset with gradual decline**
- **Death usually within 10 yrs (1-20+yrs)**
- **Some familial clustering**
- **Four stages: MCI, mild, moderate and severe**

Symptom Progression in AD



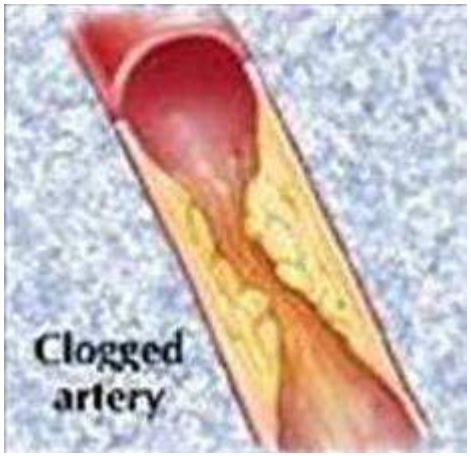
BADL=basic activities of daily living.

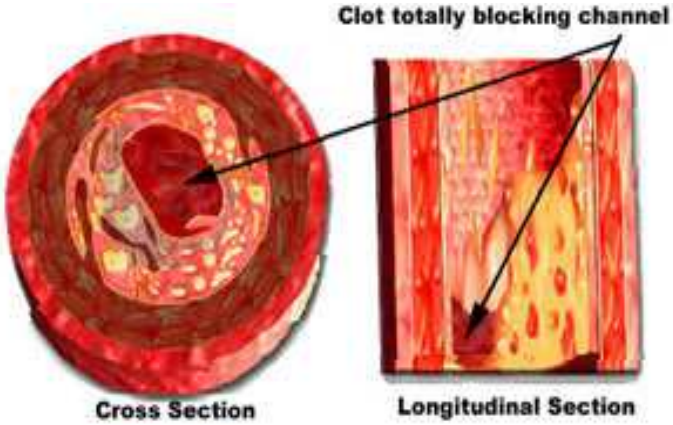
Modified from Feldman et al. *Clinical Diagnosis and Management of Alzheimer's Disease.* 1st ed. 1998.

Vascular dementia types

- **Single strategic stroke**
- **Multiple small strokes**
- **Thickening of walls of arterioles**
- **Haemorrhage**

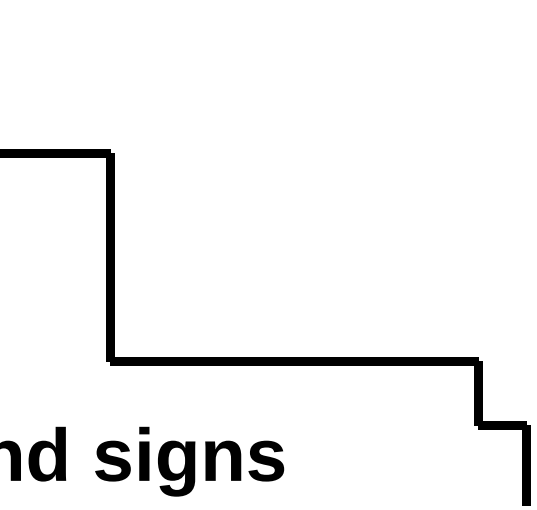
Plumbing and arteries





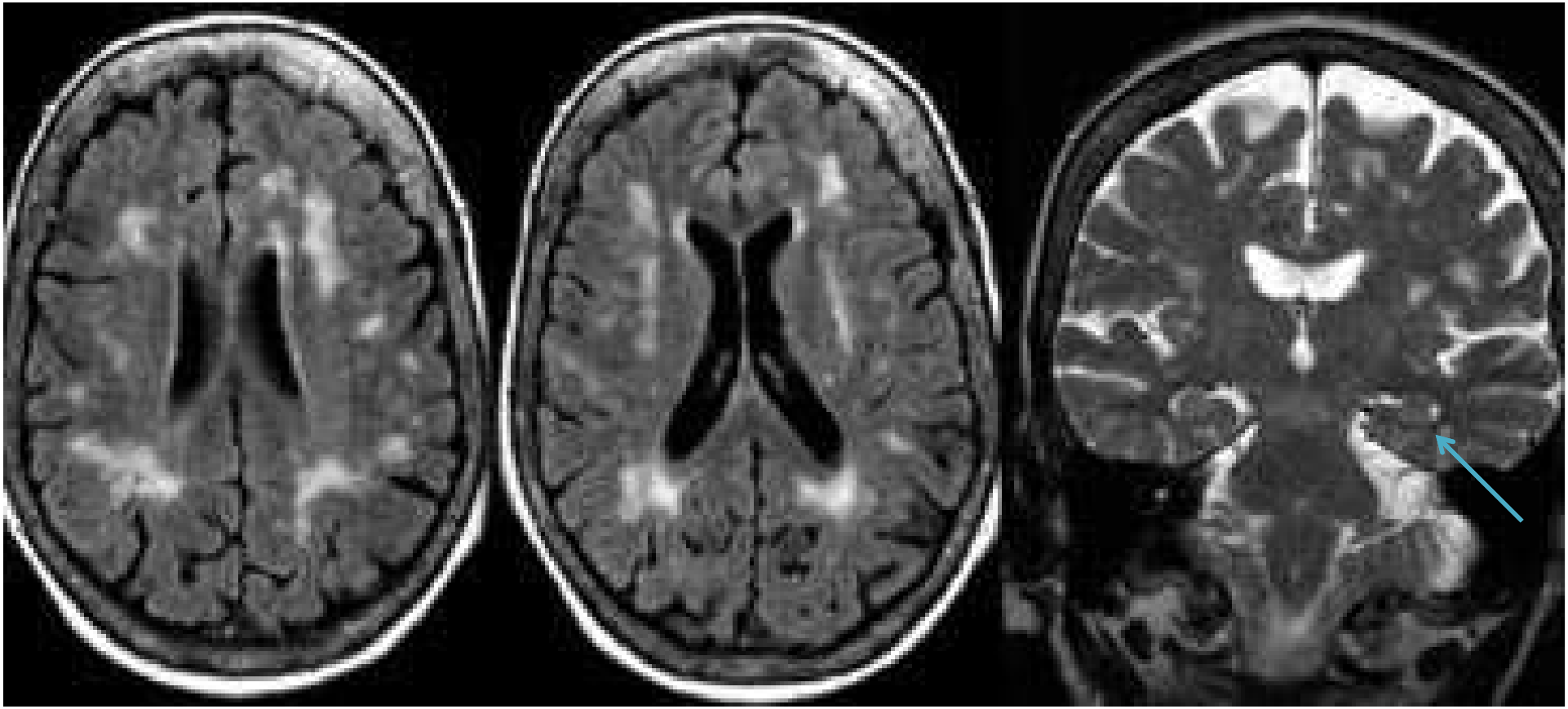
VaD clinical features

- **Sudden onset, step-wise deterioration, uneven steps, varying plateau**
- **Vascular risk factors**
- **Focal neurological symptoms and signs**
- **Impairment reflects damage deep in brain**
- **Abnormal brain scans**



VaD clinical features

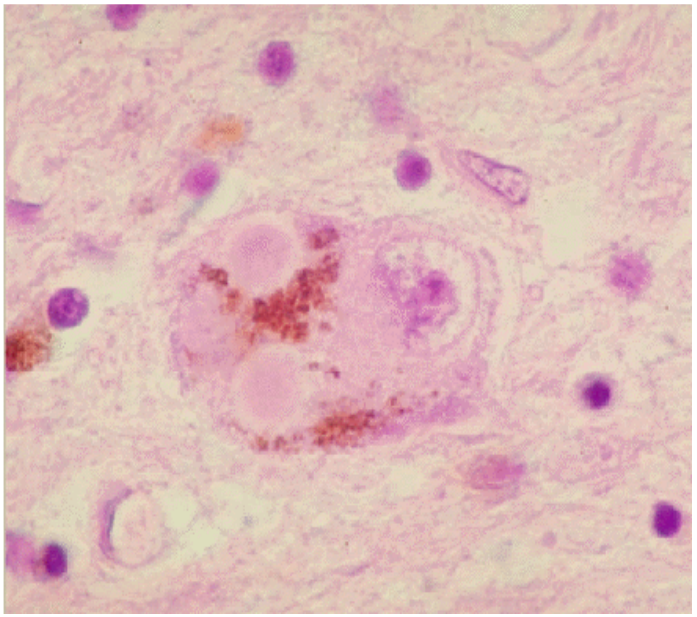
- **Many vascular dementias have slow gradual progression**
- **More slowing of mentation**
- **Difficulty with retrieval rather than learning**
- **Evidence of cardiovascular risk factors**
- **Gait Δ, depression**
- **MRI scan – DWMH++, lacunes, strokes, hippocampi not especially atrophic**



Vascular dementia with preserved hippocampi

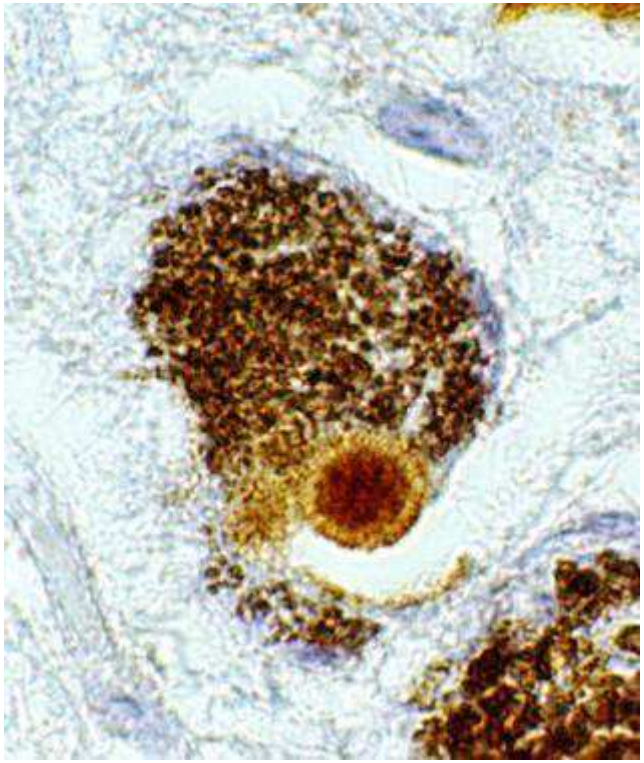
Dementia with Lewy Bodies

- **3rd most common dementia**
- **M > F; usually >65 yo**
- **Survival shorter than AD, mean 7yrs**

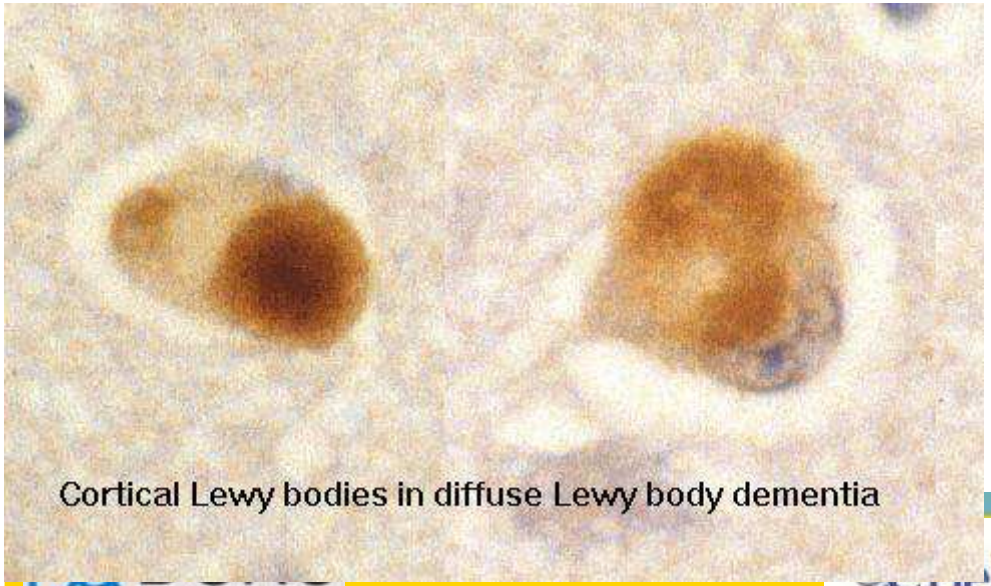


Lewy body disease

Synuclein stain



Cortical Lewy bodies



Cortical Lewy bodies in diffuse Lewy body dementia

Dementia with Lewy Bodies

- **Progressive cognitive decline that interferes …**
- **… with normal social and occupational function**
- **Fluctuating cognition (looks like delirium)**
- **Recurrent visual hallucinations (40-75%)**
- **Spontaneous features of parkinsonism**
- **Impaired attention, visuo-spatial, frontal-subcortical abilities**
- **Memory decline usually evident with time**

LBD supportive features

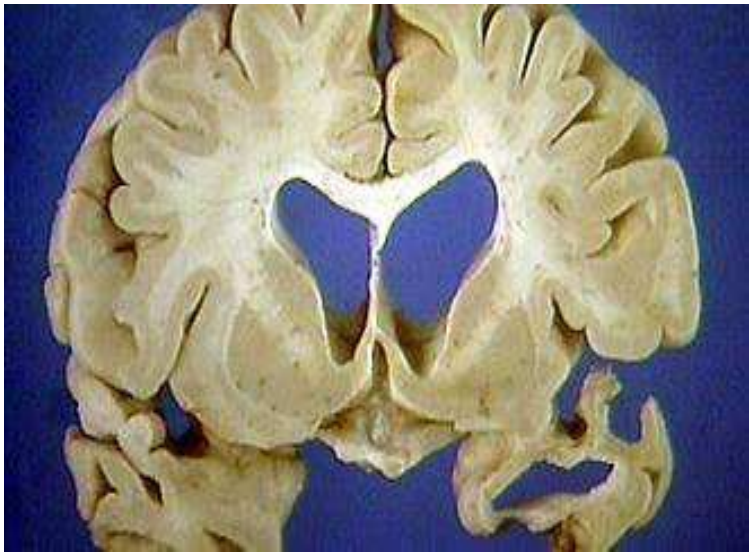
- **Repeated falls**
- **Syncope, transient loss of consciousness**
- **Neuroleptic sensitivity**
- **Systematised delusions**
- **Hallucinations in other modalities**
- **REM Sleep behaviour disorder**
- **Depression**

Fronto-temporal dementias (Pick syndrome/ complex)

- **2-5% of all dementing diseases**
- **In people aged <65 yrs, as common as AD**
- **Different presentation and issues**
- **Two main variants**
  - **Behavioural**
  - **Language**

Arnold Pick

Fronto-temporal dementias

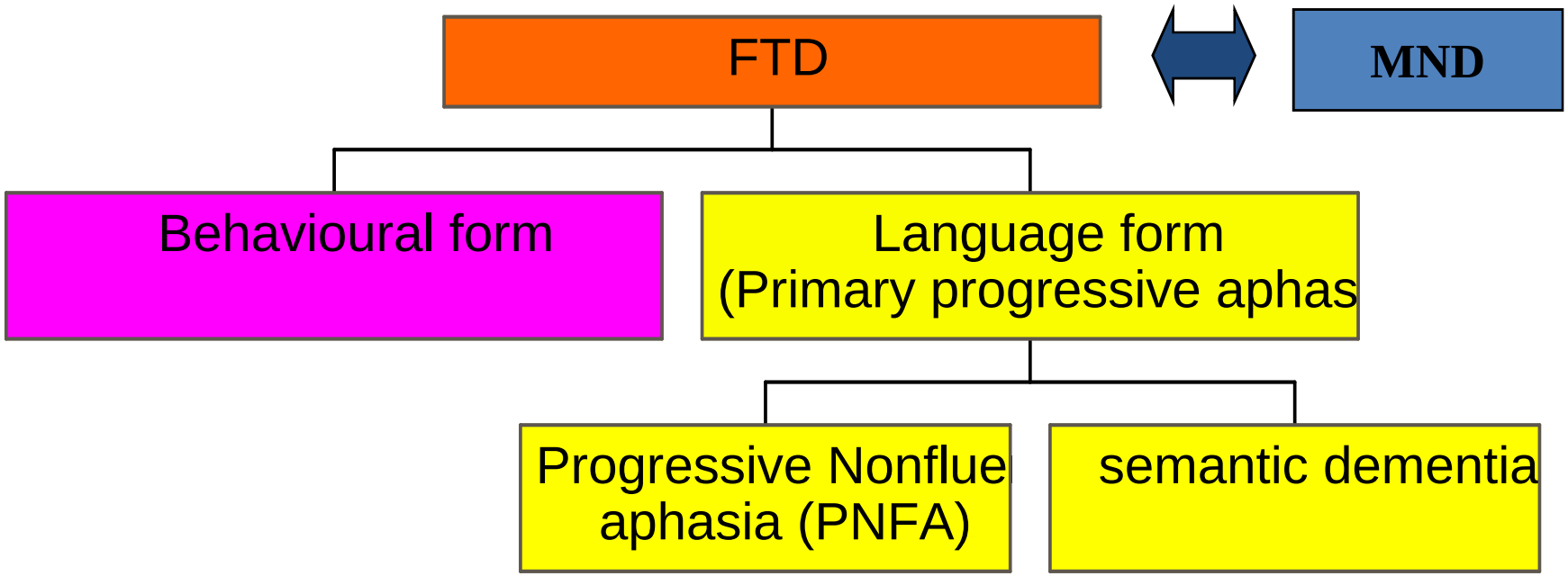


- **Atrophy only frontal and temporal areas (until late disease)**
- **Often asymmetrical**
- **Two different protein forms accumulate**
  - **Tau**
  - **Progranulin (Ubiquitin, TDP 43)**

Fronto-temporal dementias

- **Onset usually 50-60y.o. (20-80 y. range)**
- **Positive Family History in ≈15-30%**
- **Cases with autosomal dominant inheritance**
- **Death occurs within 2-15 years (6-12 yrs)**
- **Rare types**
  - **MND**
  - **CBD**
  - **C-17 mutation → tauopathy → FTD *and* parkinsonian Sx**

Frontotemporal Dementia



Slide from John Hodges

Fronto-temporal dementias

- Preservation of memory until late
- Early, prominent personality changes
- Apathy
- Irritability
- Jocularity and euphoria
- Loss of tact and concern
- Impaired judgement and insight
- Word finding difficulties; repetitive

FTD – clinical features

- **Compulsive behaviours**
  - **Repetitive acts, verbal or motor stereotypies**
  - **Collecting, hoarding**
  - **Rituals, superstitious acts**
- **Hyperorality, hypersexuality**

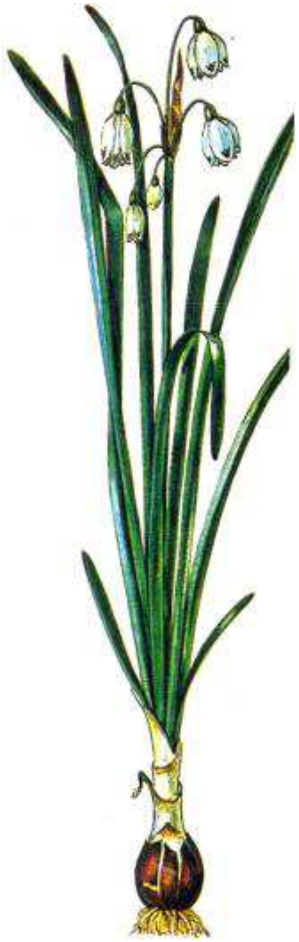
8. Refer to specialist if...

- **Unsure of diagnosis**
- **Patient is young or atypical**
- **Symptoms and signs are atypical**
- **Psychotic or severe behavioural disturbance**
- **Multiple, complex comorbidities exist; or**
- **Considering cholinesterase inhibitor Rx**

Drugs for AD

4 drugs approved - all symptomatic:

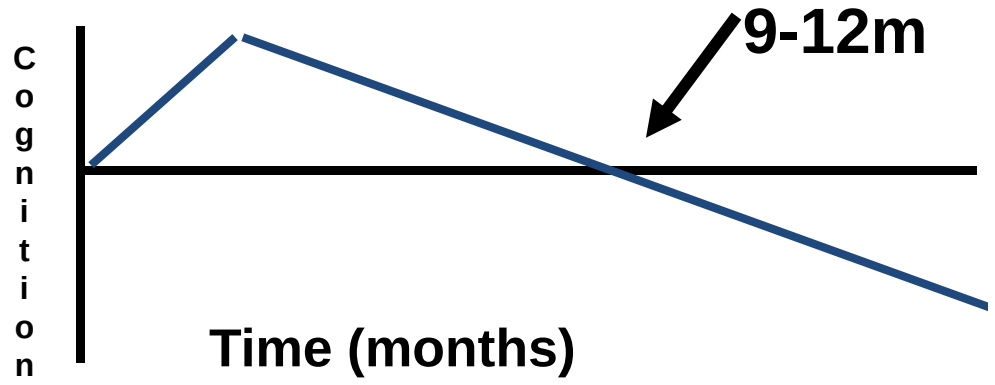
- **Aricept (donepezil) - cholinesterase inhibitor**
- **Exelon (rivastigmine) - cholinesterase inhibitor**
- **Reminyl (galantamine) - cholinesterase inhibitor**
- **Ebixa (memantine) - NMDA receptor antagonist**



snowdrop bulb, an original source of reminyl

Benefits of ChEIs

- Period of modest cognitive enhancement
- Symptomatic treatments not cures
- 2 in 3 maintain baseline or improve
- Functional and behavioural benefits
- Mean 38 to 52 weeks before patients cross baseline of cognitive decline



Contraindications

- **Active peptic ulcer**
- **Bradyarrhythmias eg sick sinus syndrome**
- **Asthma?**
- **Previous adverse response**

ChE Inhibitors: AEs

- **Nausea**
- **Anorexia**
- **Vomiting**
- **Insomnia**
- **Dizziness**
- **Muscle cramps**
- **Nightmares**

Brain AChEIs - what differences?

- **Acetyl cholinesterase inhibition - all**
- **Butyryl cholinesterase - rivastigmine**
- **Nicotinic receptors - galantamine**
- **Efficacy ? No difference**
- **Side effects, may be differences**
- **Duration of action - about same**

What dose do you start → titrate to?

Aricept

- **5mg → 10mg**

Reminyl

- **8mg PRC → 16mg PRC**

Exelon

- **Patch 5 → Patch 10**

All once per day – after breakfast

9. Inform patient and family of diagnosis, management plan and prognosis

- **How to break the news**
- **Truth telling**

- **What is your practice?**

The art of truth telling in dementia

- **Therapeutic privilege – withholding information justified if likely to injure the patient**
- **Depends on person's understanding**
- **Psychiatric symptoms influence decision**

Should family always be told?

- **Most clinicians do, *but…***
- **Should Drs ask patients for permission to tell family and/or other health professionals?**
- **Do patients retain equal status?**

Fears expressed by families

- ***Disclosing a diagnosis of dementia can lead to***
  - **Depression; anxiety**
  - **Stigma**
  - **“Leprosy syndrome”**
  - **Giving up; decompensationng**
  - **Family members acknowledging own vulnerability**
  - **Risk of suicide**

Family conflict and those who refuse to accept diagnosis

- ***Fighter or frightened?*** **Family member refuses to accept diagnosis**
- ***Families at war:*** **One side accepts and the other rejects diagnosis**
- ***Families:***
  - sibling rivalry (especially if estate or $$)
  - where will mum live?

Breaking bad news

Recommended strategies[1]

- **prepare patient for possible diagnosis**
- **include others that pt would like present**
- **assess patient's perceptions; correct misinformation[2]**
- ***And this requires real clinical skill:***
  - **give pt as much info as desired**
  - **let patient set pace of disclosure**

[1]Schofield P et al Annals of Oncology 2003; 14:48-56
[2]Mueller P, Postgraduate Medicine 2002 112(3):15-6, 18

Breaking bad news ctd

- Present information clearly
- Be reassuring and empathetic
- Encourage involvement in treatment decisions
- Discuss patients' questions on the same day
- Beware of overload and strong emotion
- Provide written information/ summary

[1]Schofield P et al Annals of Oncology 2003; 14:48-56
[2]Mueller P, Postgraduate Medicine 2002 112(3):15-6, 18

Breaking bad news ctd

- Acknowledge and discuss pt's feelings
- Provide realistic and honest hope
- Assure patient of doctor's availability[2]
- Summarise areas discussed[2]
- Offer second appointment shortly after

[1]Schofield P et al Annals of Oncology 2003; 14:48-56
[2]Mueller P, Postgraduate Medicine 2002 112(3):15-6, 18

My own practice

- **For assessment always see patient and informant separately**
- **Tell patient and family together but offer to see separately, or….**
- **Patient first and then family & then together**
- **Allow time**

Breaking the news by degrees

- **Memory problems confirmed; test results**
  - **Age related degeneration**
  - **Disease that causes this….?**
  - **Alzheimer's**
- **Strategies to compensate, practical issues**
- **Drug treatments, research**
- **Arrange follow-up for family and patient**

Compassionate honesty is the best policy

- Most people want to know their diagnosis
- Attitudes over time are changing (cf cancer)
- Families often protective
- Formulae do not work
- Need to tailor information to person
- Follow-up visits/ contacts

10. Discuss key issues with patient and family

- **Legal issues**
- **Medication for AD if appropriate**
- **Lifestyle – regular exercise, mental stimulation, establish routine**
- **General health – blood pressure, other health conditions**

Legal Issues

- **Enduring Power of Attorney**
- **Enduring Guardianship**
- **Advance Directives**
- **Informed consent for medical treatment**
- **Capacity to drive**
- **Capacity to work**

Enduring Power of Attorney

- **PoA relates to money and estate, *not* health, etc**
- **Recommend for all persons diagnosed with dementia (and for all persons >50)**
- **Tests for capacity?**
- **EPoA applications vary by jurisdiction**
- **May come into effect immediately or when triggered**

Enduring Guardianship

- **Proxy decision maker for services, accommodation, health**
- **Triggered by loss of decision making capacity**
- **Flexible: 1 or more guardians, severally or jointly, different guardians different powers**
- **Prudent to arrange early in dementia**
- **Prudent for us all to consider this *now***

Advance Directives

- **Treatment**
- **Withholding treatment**
- **Participation in research**
- **Disposal of body, tissue donation at death, funeral arrangements**

Informed Consent for Medical Treatment

- **Person must understand**
  - **the nature of the treatment**
  - **the possible effects**
  - **the potential side effects**
  - **the alternatives**
- **Understanding varies with complexity**
- **Person must be able to communicate understanding and wishes**

Informed Consent for Medical Treatment

- **Dementia *will* affect understanding; holding information in head while weighing up pros & cons; and communication**
- **Loss of capacity is a point on a sliding slope**
- **If unable to give consent, then proxy consent**
- **Who can give proxy consent varies by jurisdiction. In NSW = *person responsible***
- **If no proxy, Guardianship Tribunal may appoint Public Guardian or similar**

Capacity to Drive

- **Mentally incompetent can be danger to self and others**
- **Level of cognitive impairment poor correlation with capacity to drive**
- **Best test is on road**
- **“Co-pilot”, familiar routes only, day time only – help but not sufficient**
- **Better for specialist to bear blame**

Capacity to Drive

- **No person with dementia can have uncondtional licence**
- **All persons with dementia will lose ability time**
- **If person already obviously incompetent cancel licence immediately**
- **Approach 1: cancel licence immediately**
- **Approach 2: graded restrictions and warning about cessation “later”**
- **Approach 3: send for *On-road Assessment***

  **Note*:* Poor correlation between cognitive testing and driving performance

Capacity to Work

- **Capacity vs Competency**
- **Capacity vs Safety**
- **Decision for employer usually**
- **May become legal matter**
  - **doctor, lawyer, architect**
  - **judge, politician**

11. Develop Care Plan

- **Include legal/financial matters**
- **Make follow-up appointments**
- **Example care plan:**

www.dementia-assessment.com.au/health_plan

12. Refer patient and family for further information & support

- **Alzheimer's NZ**
  - **http://www.alzheimers.org.nz/**
- **Alzheimer's NZ Auckland**
  - **http://www.alzheimers.org.nz/auckland**
- **Community services**

Comorbidities

- **Falls/ gait disorder**
- **Delirium**
- **Weight loss**
- **Frailty**
- **Oral health**
- **Epilepsy**
- **Vision**
- **Sleep disorders**
- **BPSD**

Kurrle S, Brodaty H, Hogarth R. ***Physical Comorbidities of Dementia***
Cambridge University Press, 2012

Behavioural & psychological Sx

- **Citalopram may help agitation, delusions, hallucinations**
- **Antipsychotics have a place**
  - **for aggression**
  - **For psychosis**
  - **but ↑CVA & Mortality Rate**
- **Antidepressants - disappointing**
- **Informed consent from pt. or proxy in writing**
- **Review regularly, ≥ 3rd monthly**

14. Regularly review care plan

- **Medications**
- **Physical health**
- **Carer health and stress levels 3 – 6 monthly**
- **Cognitive testing at least 12 monthly**
- **Behavioural symptoms – assess and manage**

Novel treatments

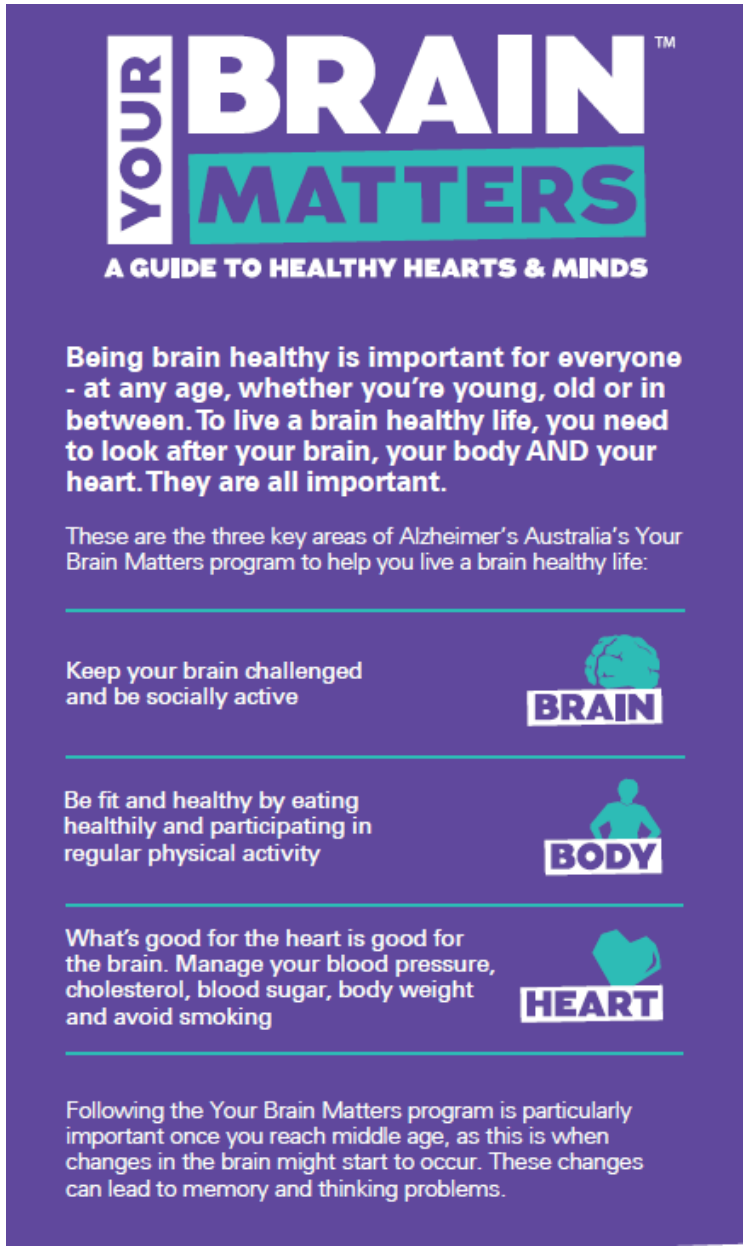
- Many trials have failed
  - Semagecestat
  - IV Ig
- For AD
  - β-secretase inhibitors
    - Merck
  - Antibodies to Aβ
    - Roche
    - Lilly
  - Intranasal insulin
- For MCI
  - Many of same Rxx
  - Computer cognitive training programs eg Lumosity, Posit Science
  - CCT + tDCS
  - Exercise programs

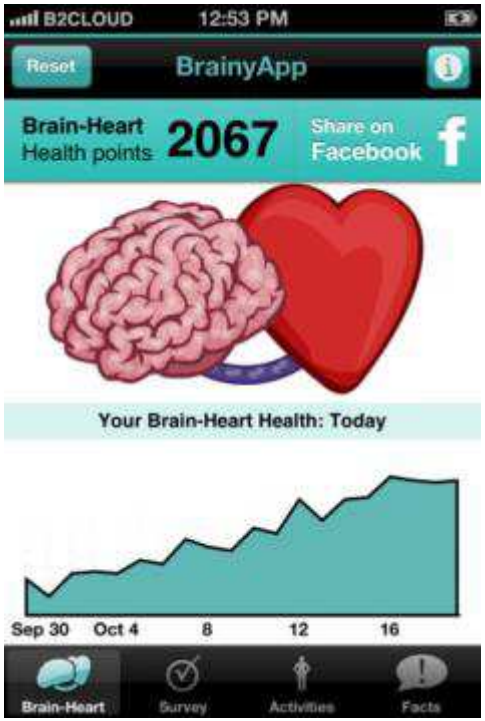
Role for GPs in prevention

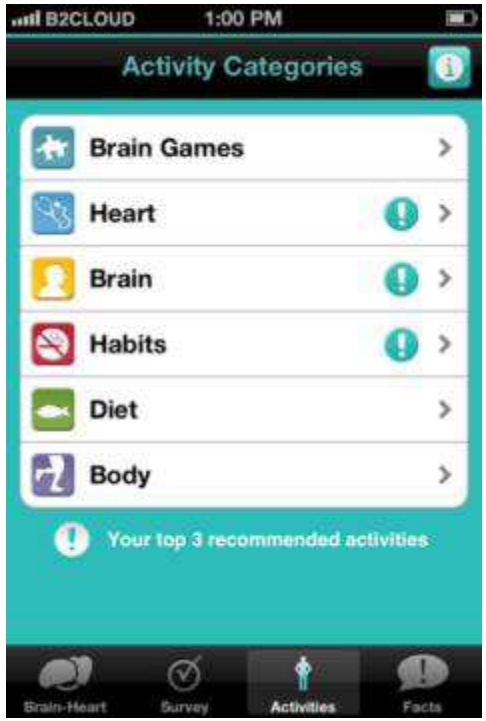
- **Physical Exercise 30'/ day, ≥ 5days per week**
  - **More may be better, aerobic + resistance**
- **Mentally active**
- **Socially engaged**
- **Diet - Mediterranean; antioxidants**
- **Alcohol – moderate**
- **Blood pressure, cholesterol, weight – mid-life**
- **Depression**

Alzheimer's Australia

- http://yourbrainmatters.org.au







DCRC Dementia Collaborative Research Centres

CHeBA Healthy Brains Positive Ageing

UNSW THE UNIVERSITY OF NEW SOUTH WALES

- **Brodaty H et al.**
  - **Dementia: 14 essentials of assessment and care planning *MedicineToday* 2013; 14(8): 18-27**
  - **Dementia: 14 essentials of management *MedicineToday* 2013; 14(9): 29-41**

Conclusions

- **You will have more patients presenting with memory problems**
- **Assessment is good medicine**
- **Case for screening the very old is debatable**
- **Assessment is manageable...**
- **... and there is good business model**
- **14-step model presented**
- **www.dementiaresearch.org.au**
- **www.cheba.unsw.edu.au**
- **www.fightdementia.org.au**