

# Falls prevention in dementia

Dr Morag Taylor

NSW Falls Network Forum

31 May 2019



# NeuRA

*Discover. Conquer. Cure.*



# UNSW

THE UNIVERSITY OF NEW SOUTH WALES



THE UNIVERSITY OF  
**SYDNEY**



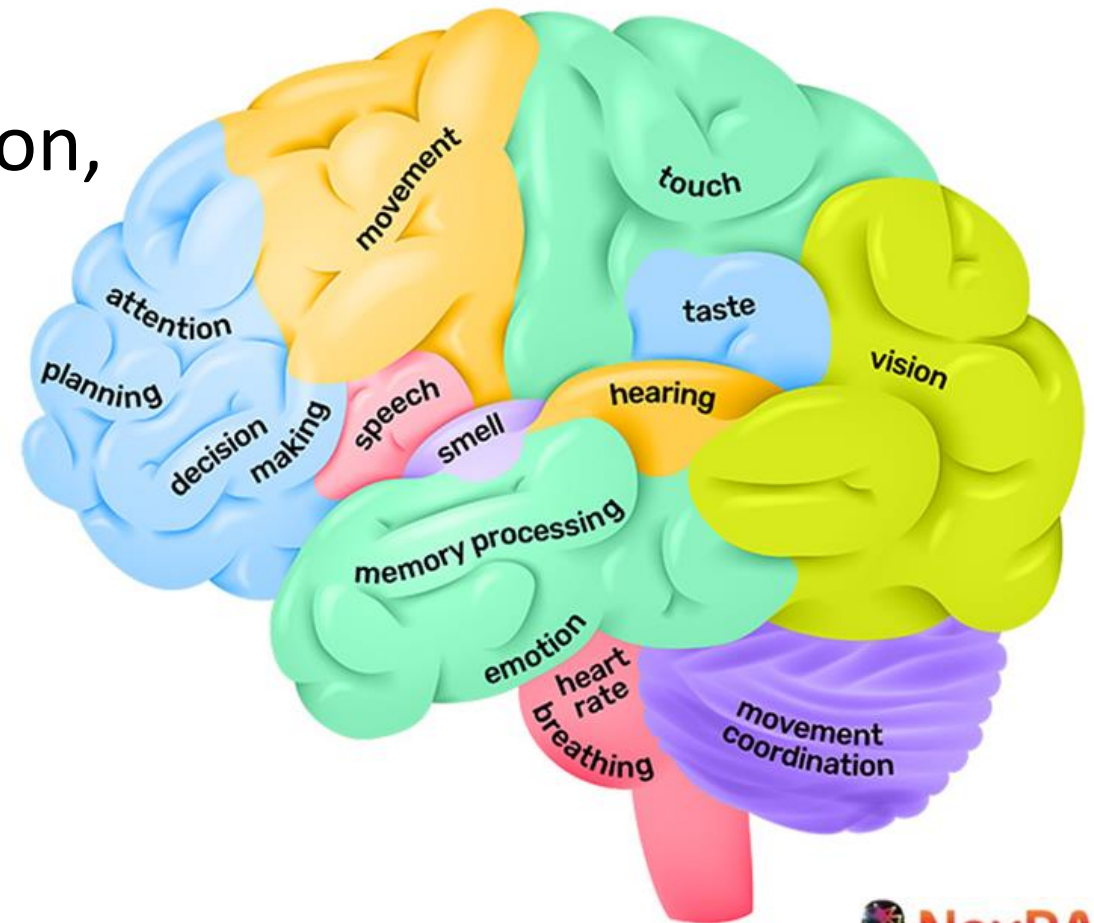
COGNITIVE  
DECLINE  
PARTNERSHIP  
CENTRE

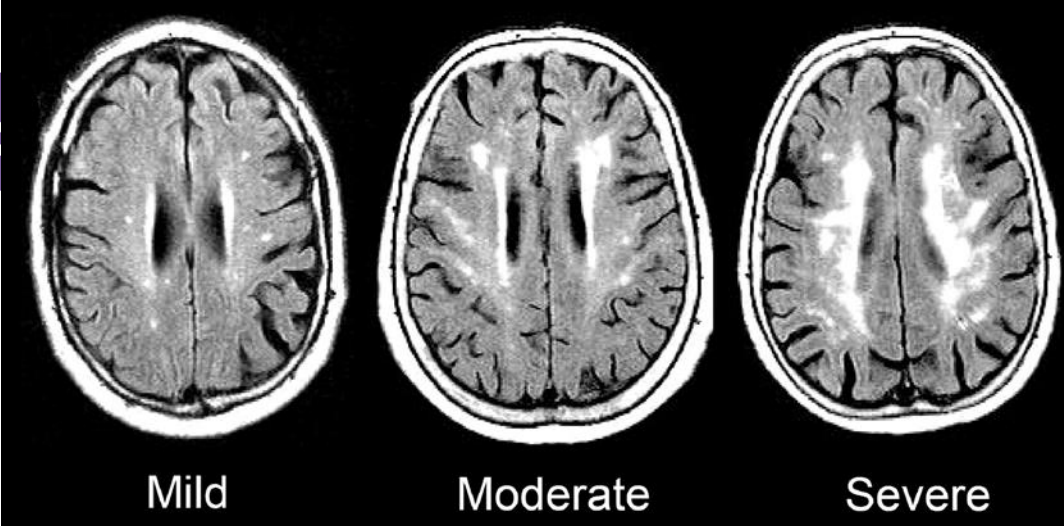
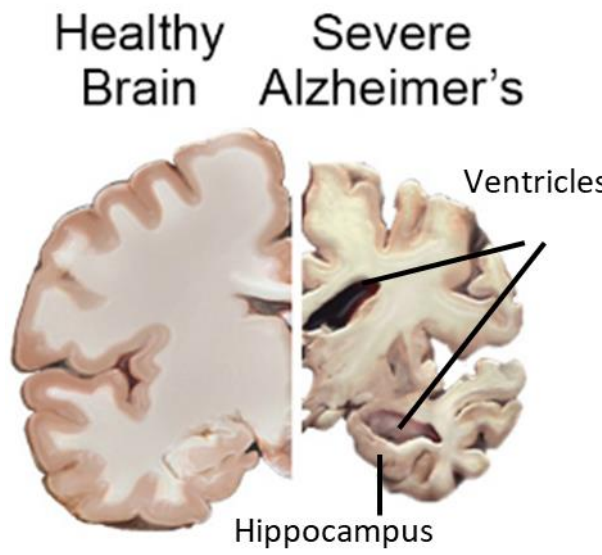
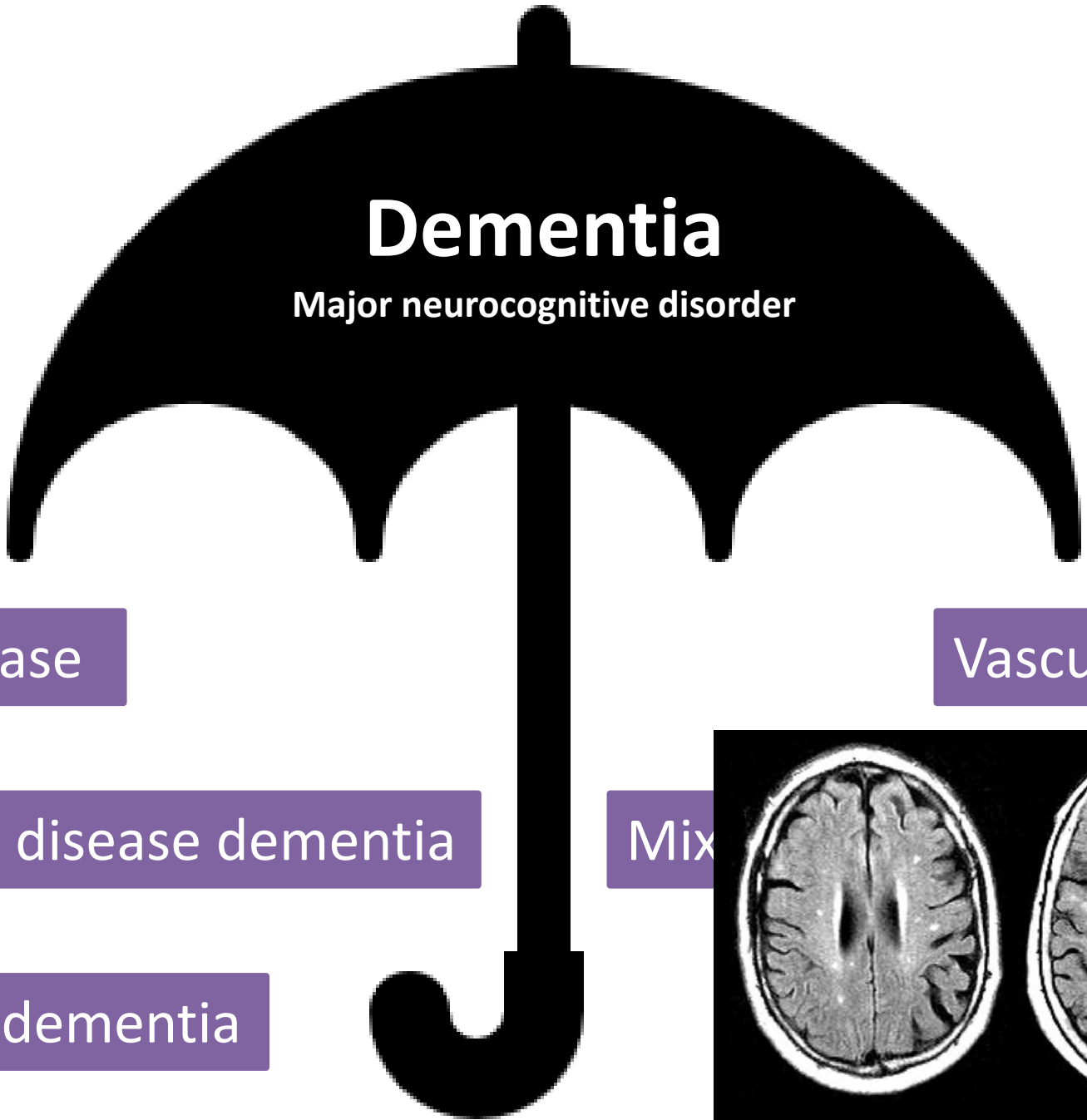
# Outline

1. Background
2. Risk factors for falls (brief)
3. Fall prevention
  - a) Community
  - b) Hospital
  - c) RACF
4. Practical strategies
5. Summary

# Dementia (major neurocognitive disorder)

- Progressive neurodegenerative disorder affecting cognition and as a result ability to function
- Cognitive decline: complex attention, executive function, learning and memory, language, perceptual-motor, or social cognition
- Cognitive deficits not better explained by another condition
  - E.g. delirium, depression





Hippius, H., & Neundörfer, G. (2003). The discovery of Alzheimer's disease. *Dialogues in Clinical Neuroscience*, 5, 101-108  
Inzitari, D, et al. (2009). Changes in white matter as determinant of global functional decline in older independent outpatients: three year follow-up of LADIS study cohort. *BMJ*, 339

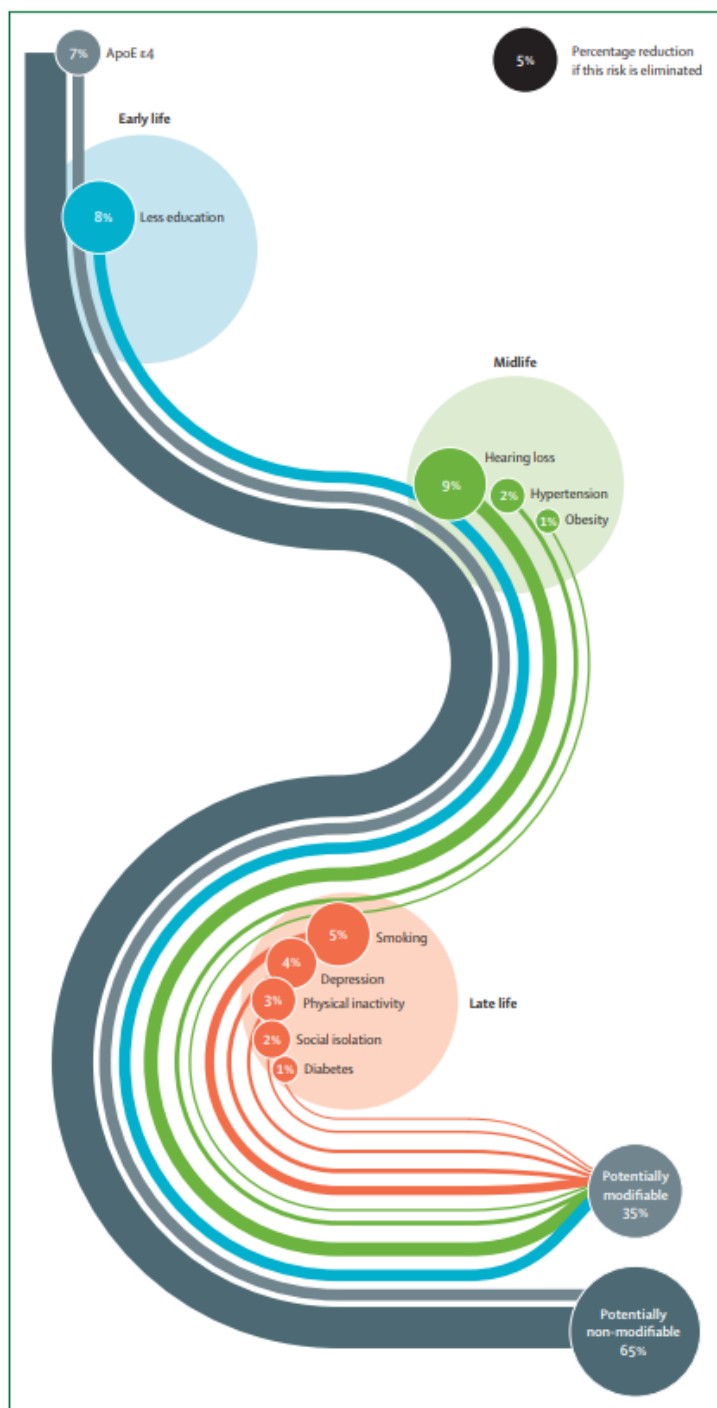
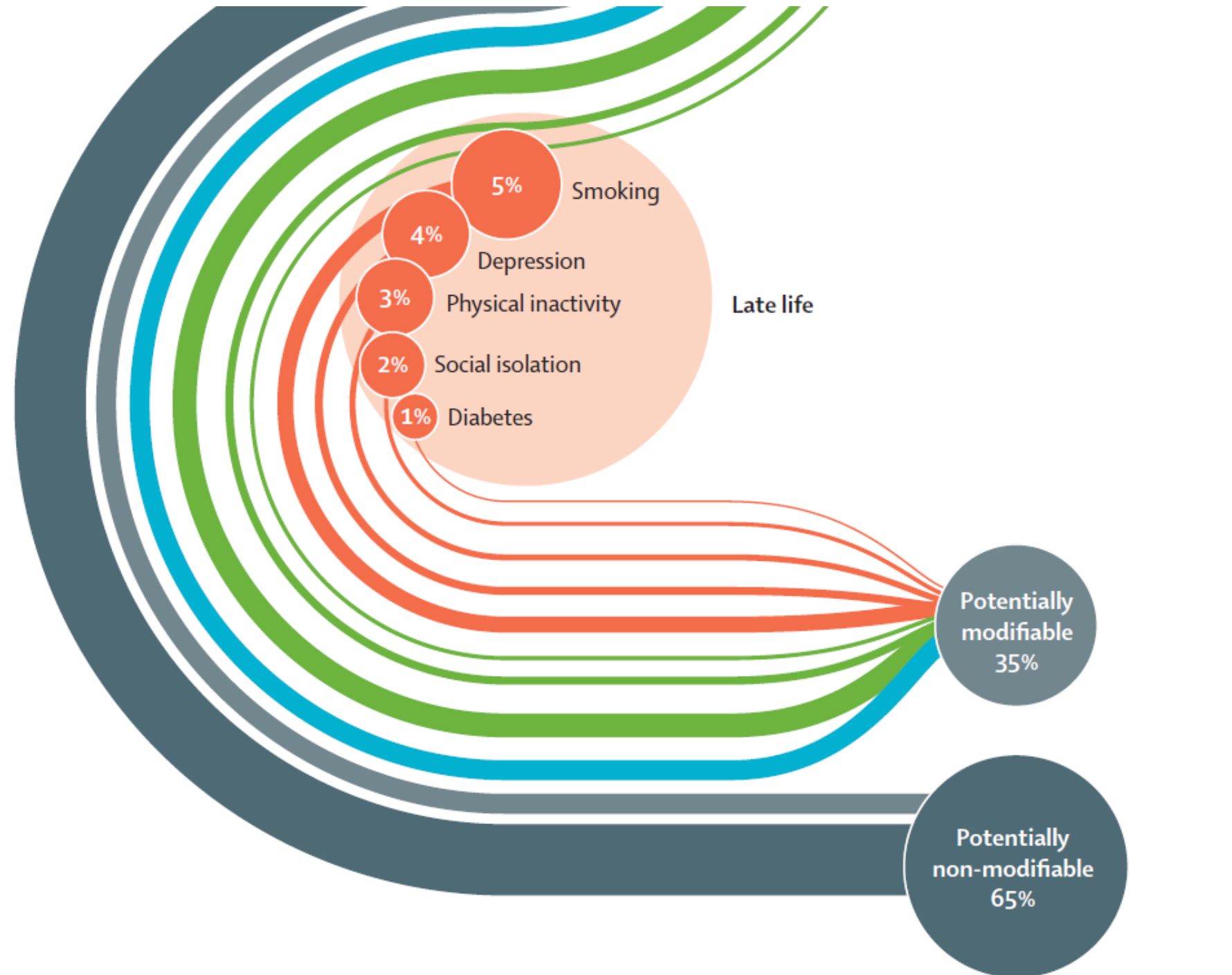


Figure 4: Life-course model of contribution of modifiable risk factors to dementia



# Dementia prevalence and incidence

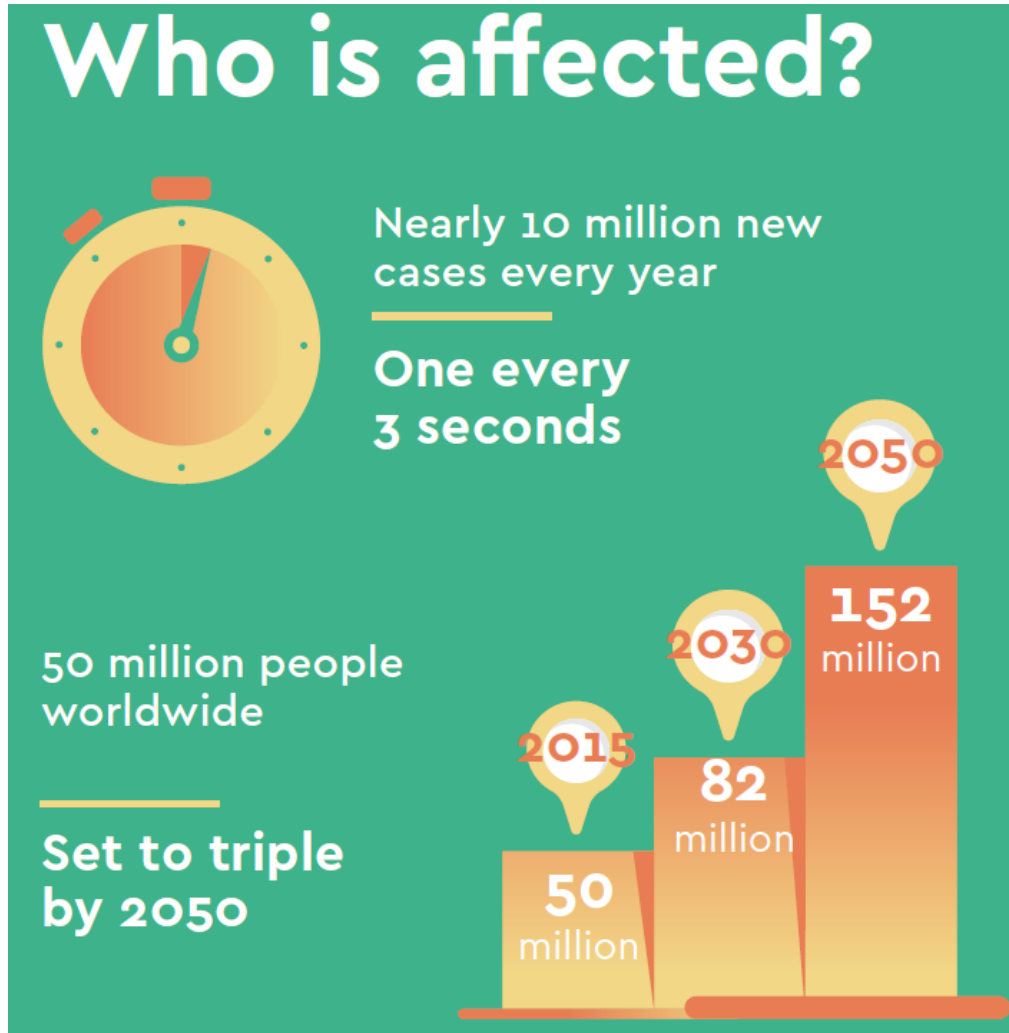
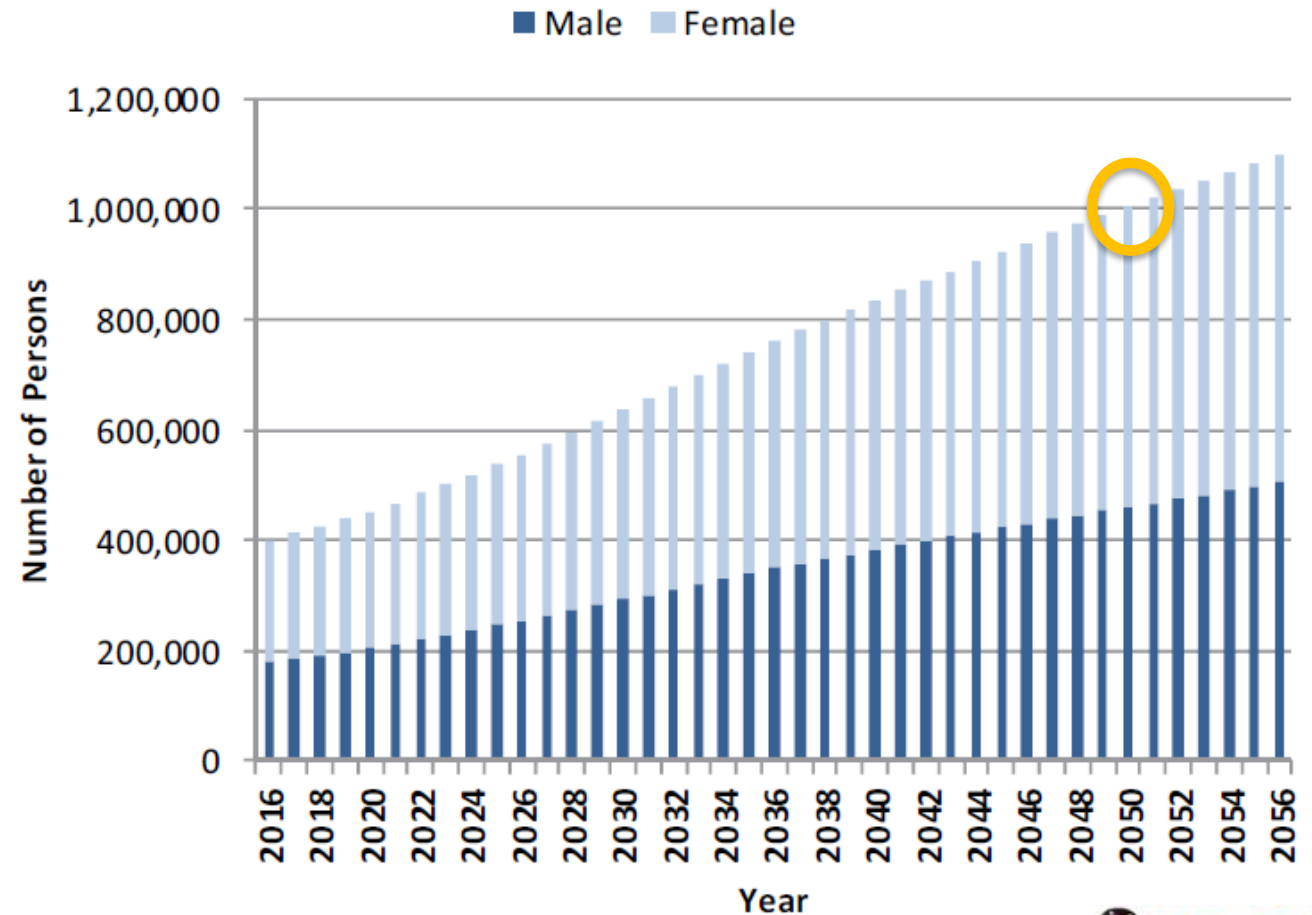
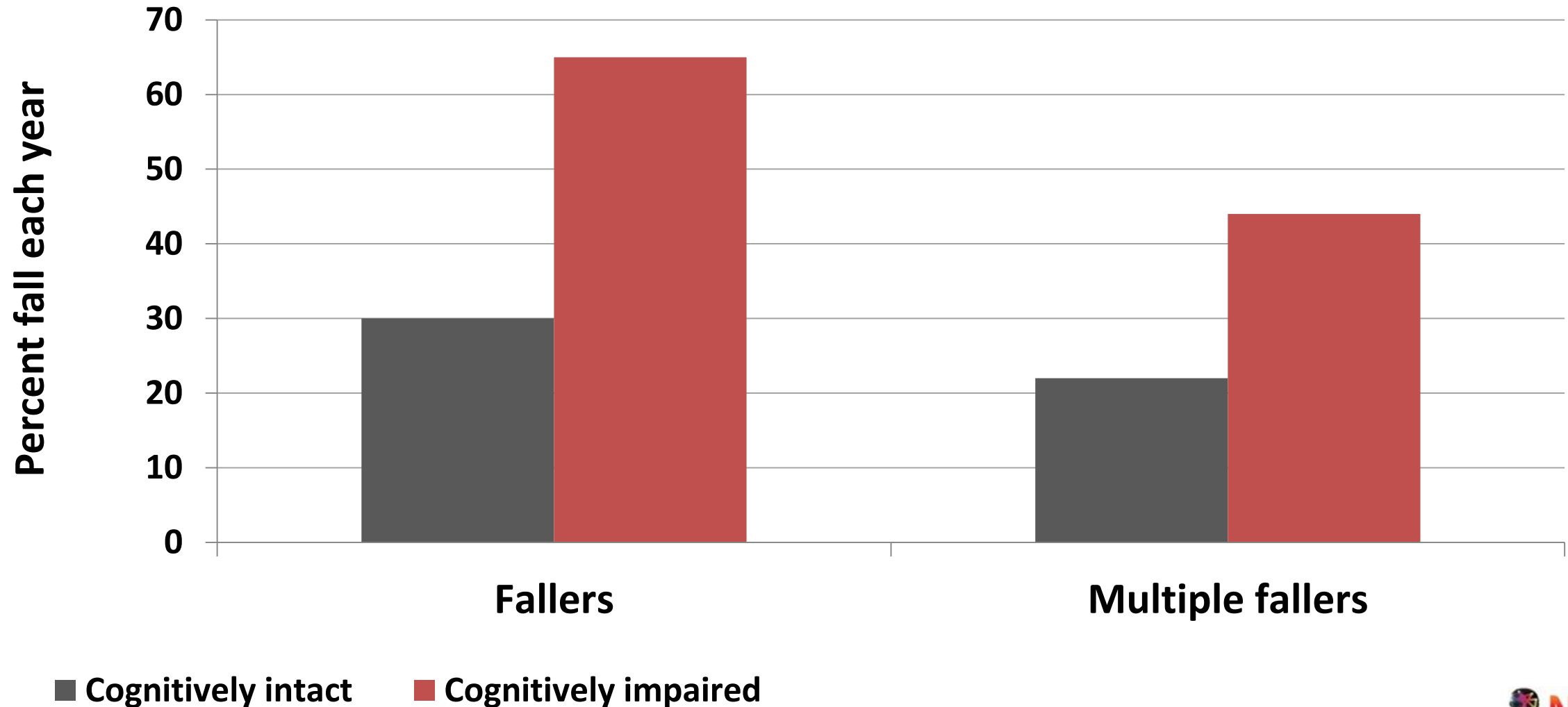


Figure 2 Estimated number of Australians with dementia, 2016-2056

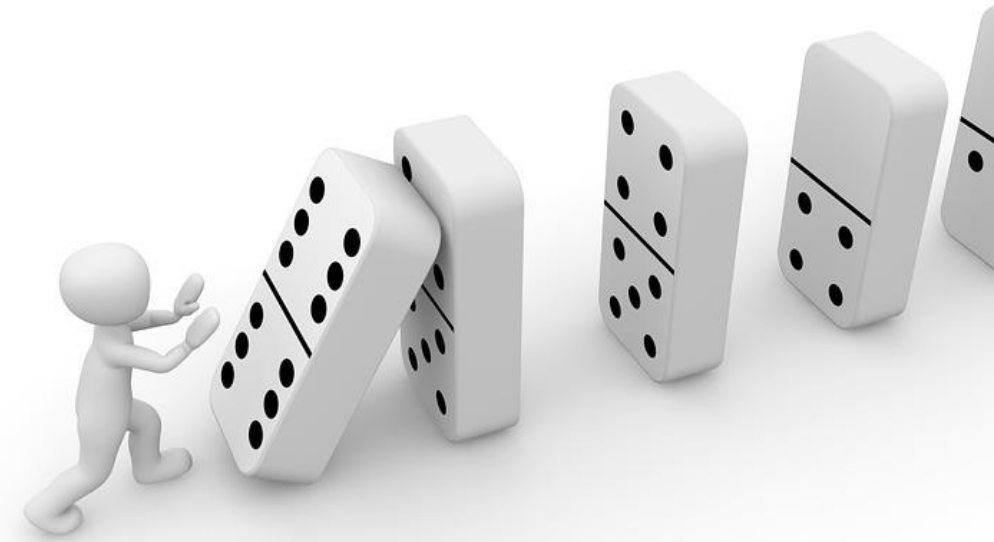


# Dementia and falls



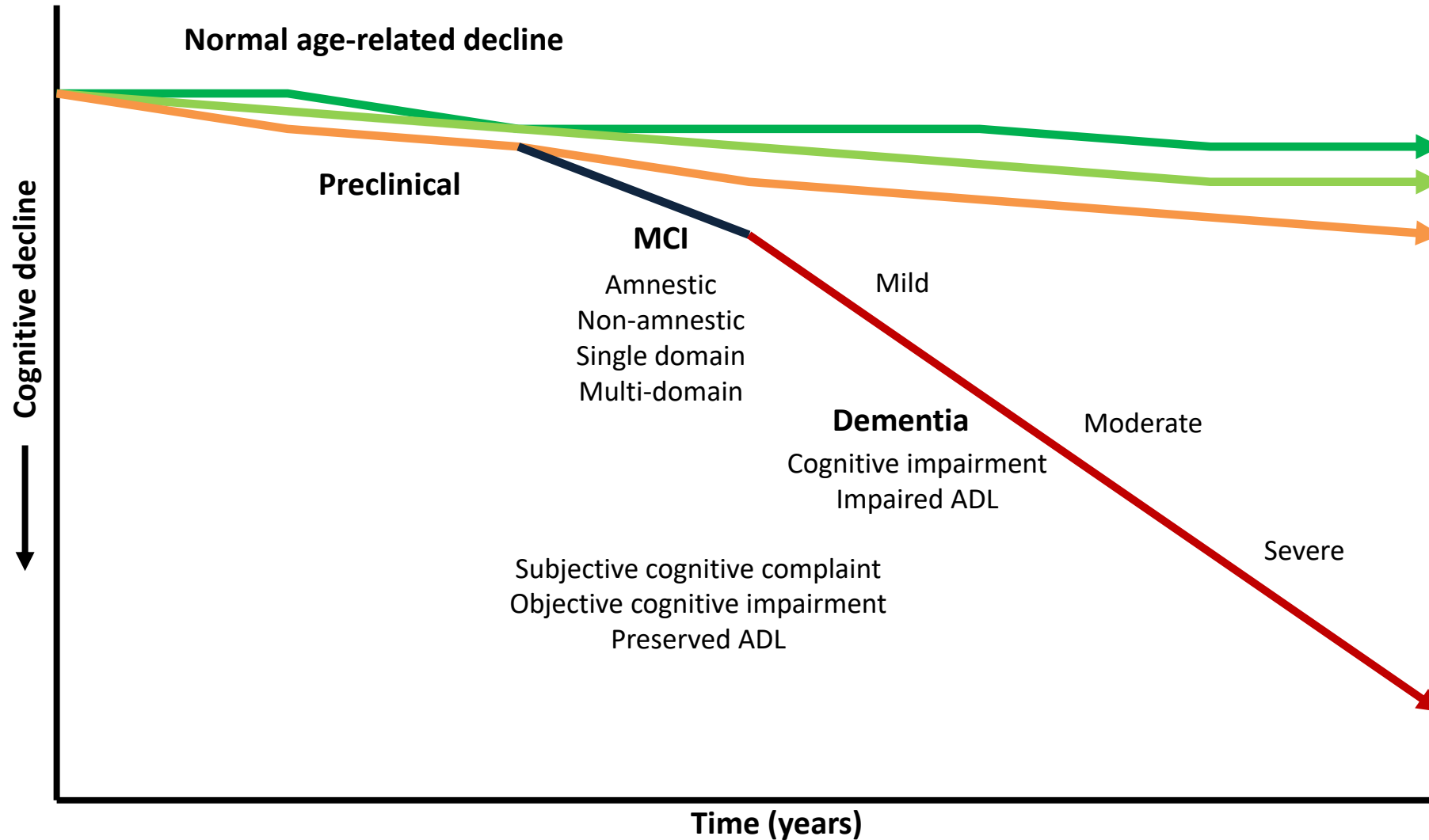
# Fall consequences: dementia

- Increased risk fall-injury
  - 2-3 fold increased risk of hip fracture
  - 2-fold increased risk of head injury
- Higher morbidity
- Higher mortality (2-fold)
- Less likely to receive rehab
- More likely to be placed in residential care

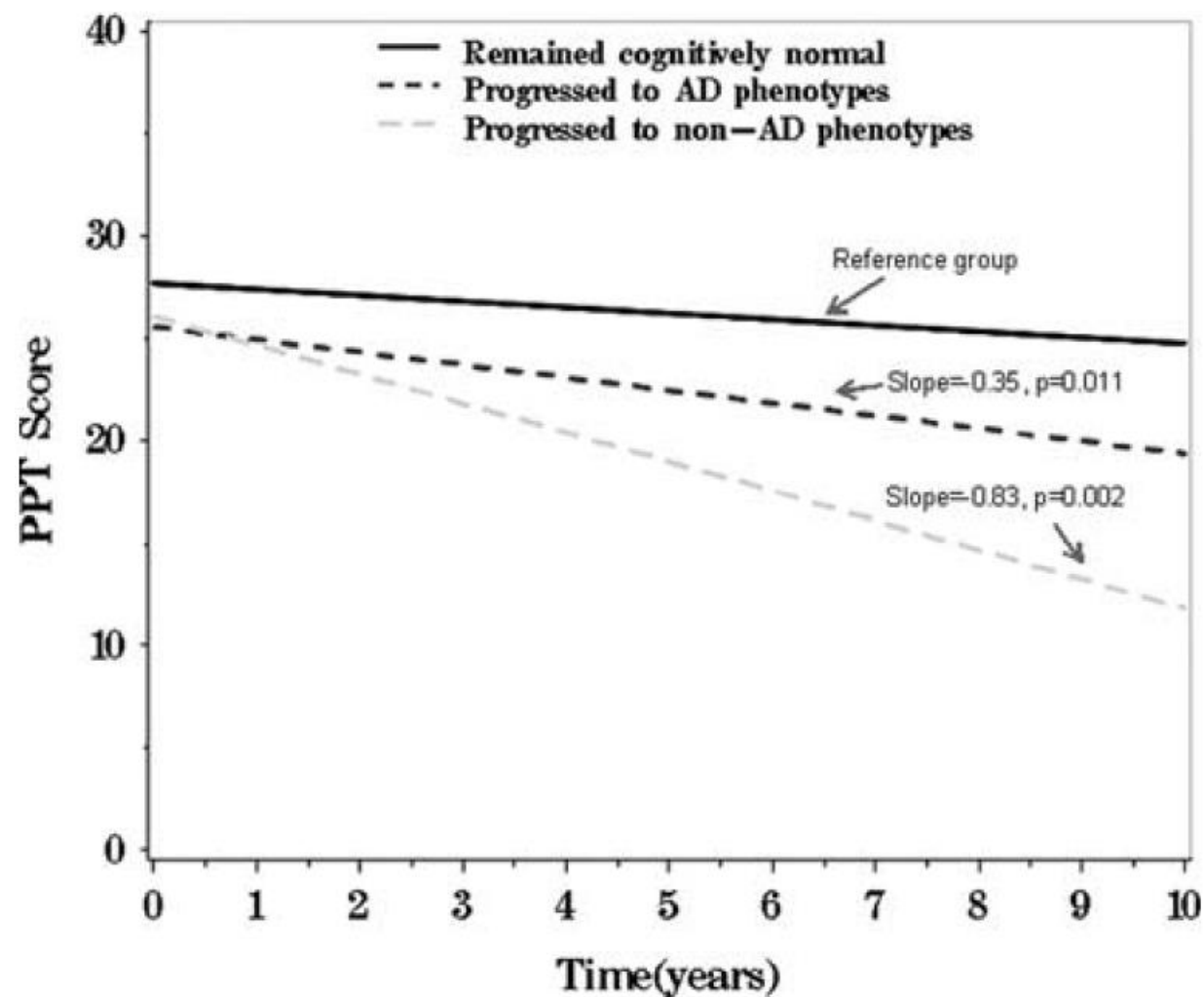
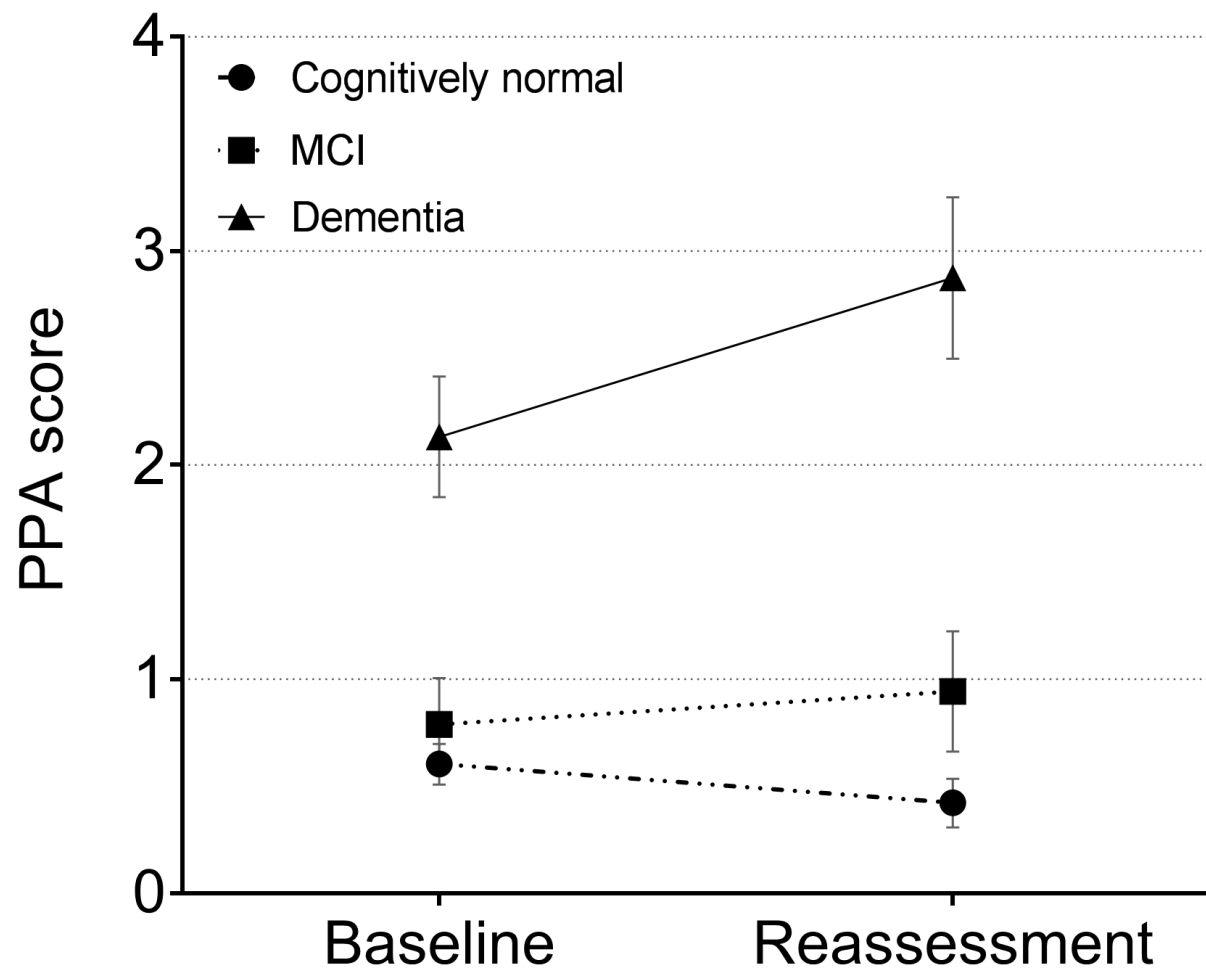




# Cognitive decline



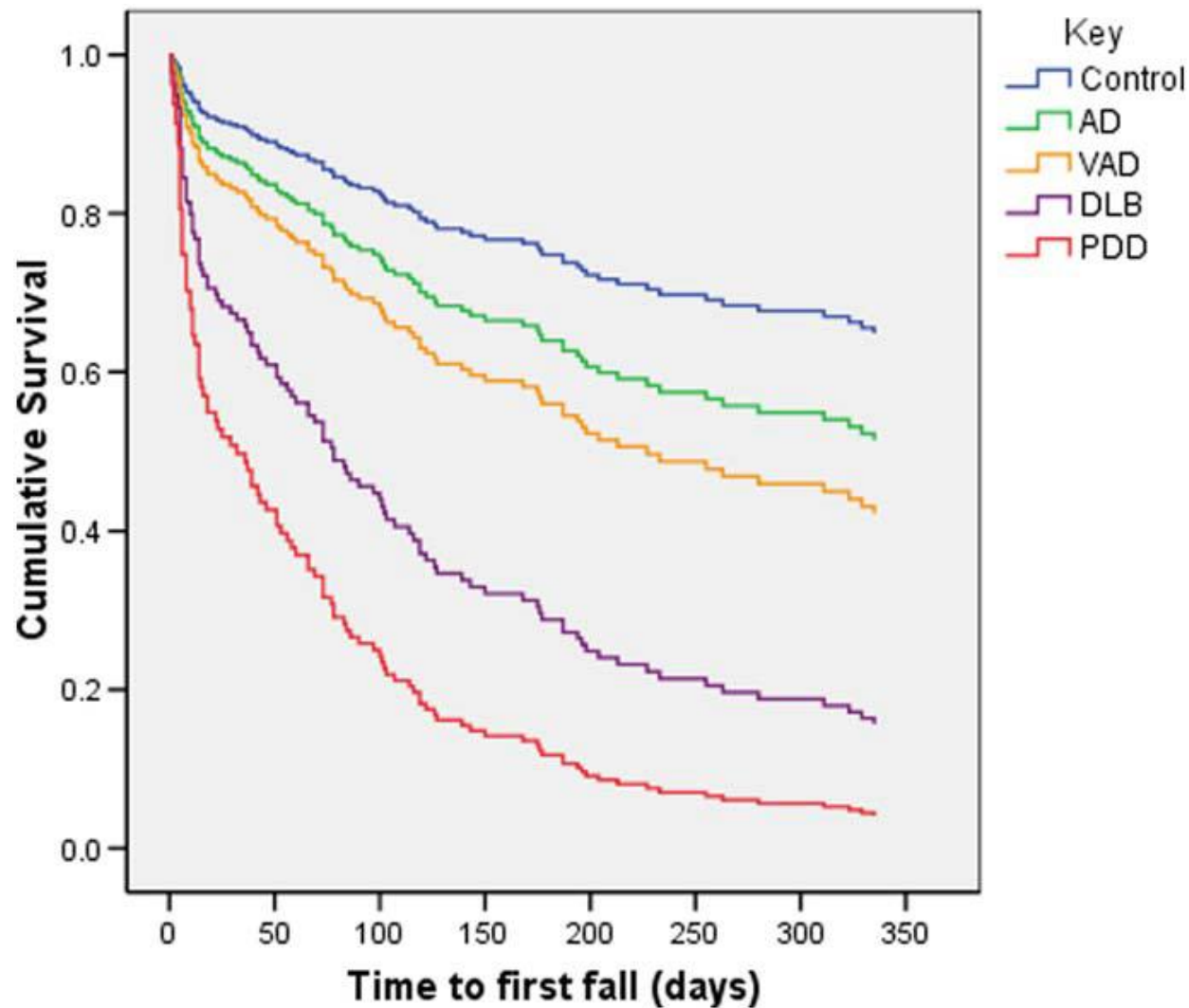
# Physical decline



# Fall risk factors

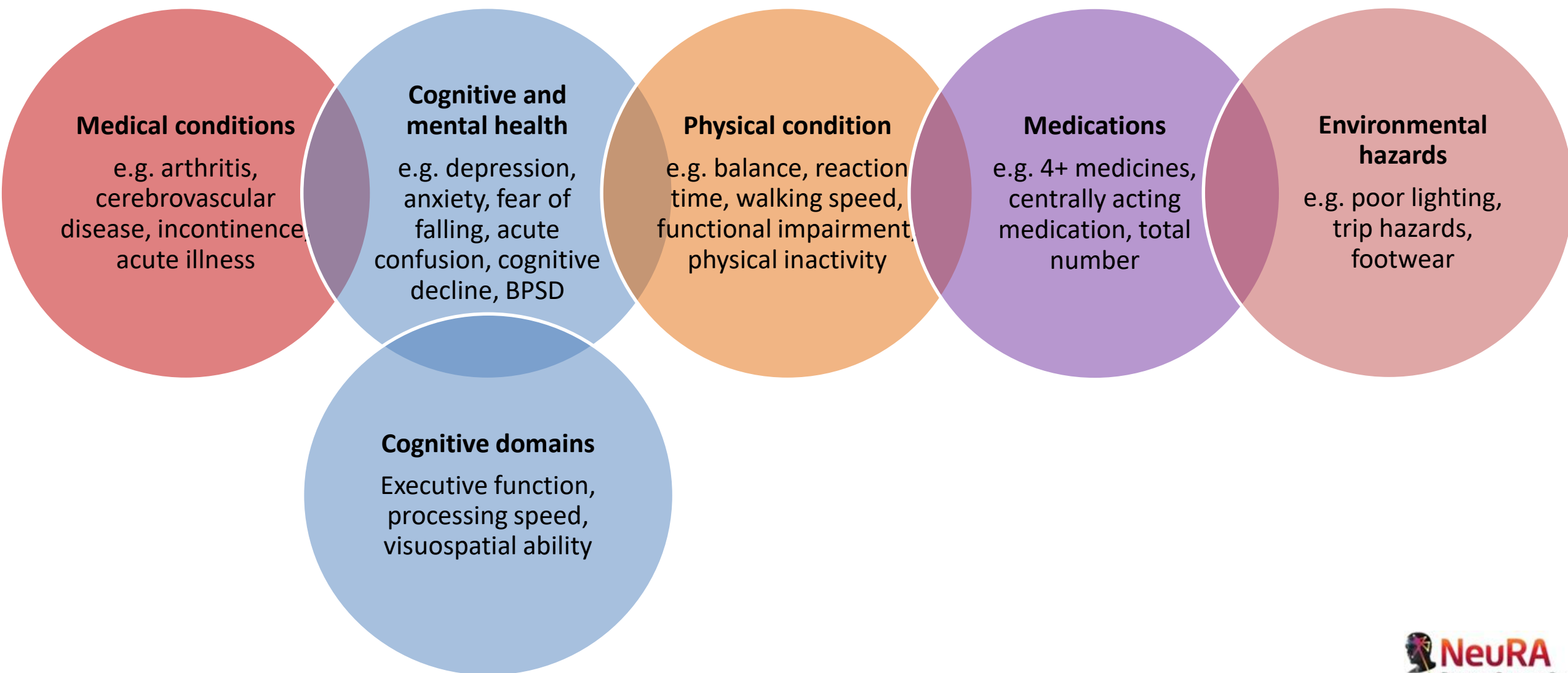
# Incidence and Prediction of Falls in Dementia: A Prospective Study in Older People

May 2009 | Volume 4 | Issue 5 | e5521



Predominantly community-dwelling (83%)

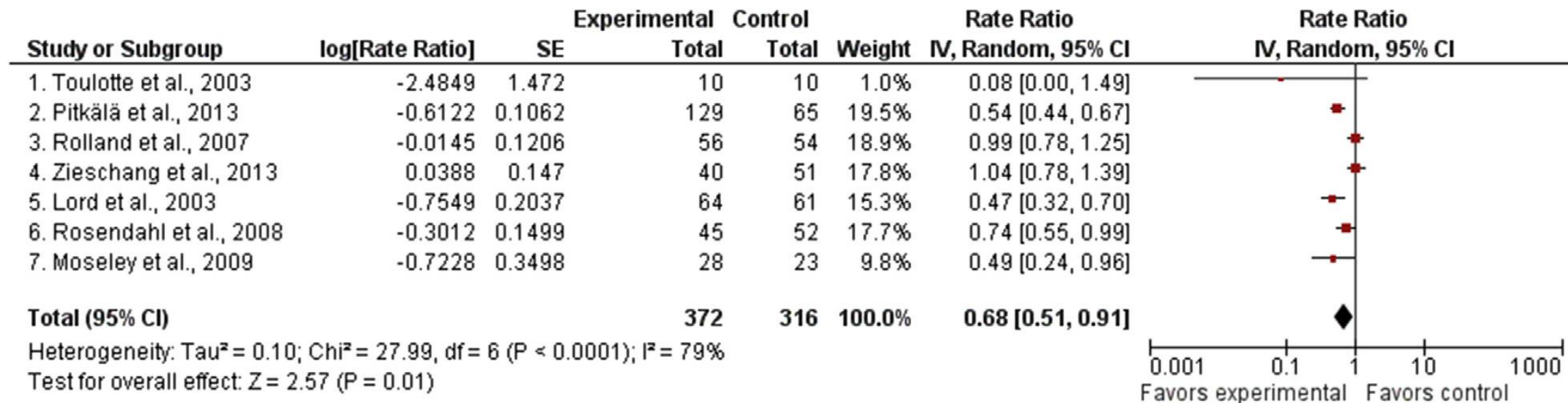
# Summary of fall risk factors



# Fall prevention

# Efficacy of Physical Exercise in Preventing Falls in Older Adults With Cognitive Impairment: A Systematic Review and Meta-Analysis






Wai Chi Chan MRCPsych<sup>a,\*</sup>, Jerry Wing Fai Yeung PhD<sup>b</sup>,



Effects of **physical exercises** on preventing falls in older adults with cognitive impairment

**Overall, 32% reduction in rate of falls**

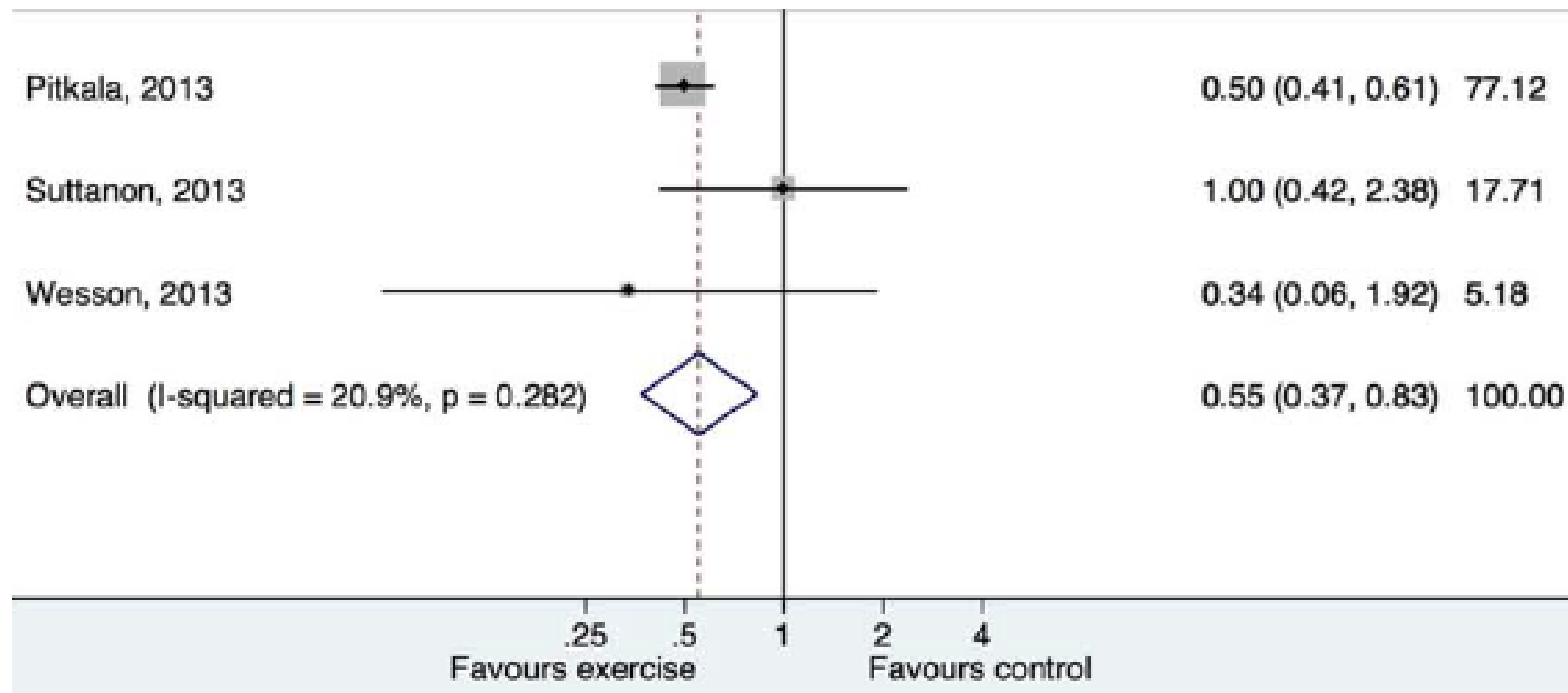
# Community

Study	Intervention	Fall Outcome
Shaw 2003, RCT, n=274, 22% community	Multifactorial, 3m supervised exercise	
Suttanon 2013, feasibility RCT, n=40 AD	Home-based exercise and walking program, 6m	
Wesson 2013, pilot RCT, n=22 dyads	Home-based exercise and home hazard reduction, 3m	
Zieschang 2013, RCT, n=91	Progressive resistance and functional training (group), 3m	
Pitkala 2013, RCT, 3-arm, n=210 AD + spouse	Group exercise, 12m Home exercise, 12m	
Zieschang 2017, RCT, n=110, 84% Community	Progressive resistance and functional training (group), 3m	 
Lamb 2018, RCT, n=494	Aerobic and strength training, 4m	



# Exercise to prevent falls in older adults: an updated systematic review and meta-analysis

Sherrington C, et al. *Br J Sports Med* 2016;0:1–10. doi:10.1136/bjsports-2016-096547



**45% reduction in rate of falls**

# Coming soon....

Close et al. *BMC Geriatrics* 2014, **14**:89  
<http://www.biomedcentral.com/1471-2318/14/89>



**STUDY PROTOCOL**

**Open Access**

Can a tailored exercise and home hazard reduction program reduce the rate of falls in community dwelling older people with cognitive impairment: protocol paper for the i-FOCIS randomised controlled trial

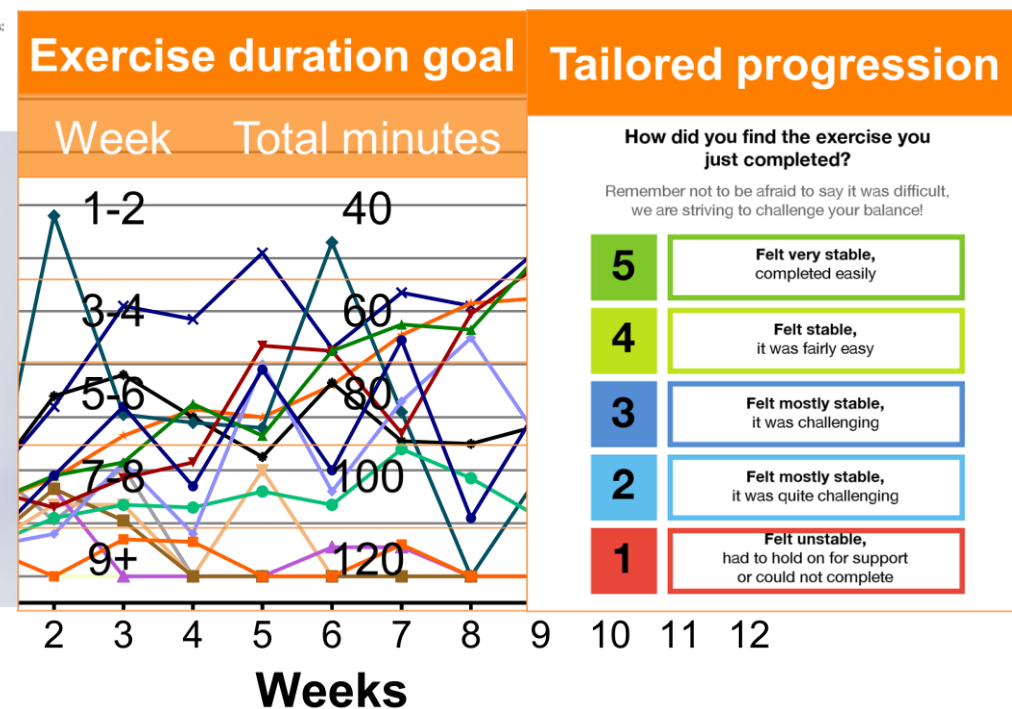
Jacqueline CT Close<sup>1,2\*</sup>, Jacqueline Wesson<sup>1,3</sup>, Catherine Sherrington<sup>4</sup>, Keith D Hill<sup>5</sup>, Sue Kurrle<sup>6</sup>, Stephen R Lord<sup>1</sup>, Henry Brodaty<sup>7</sup>, Kirsten Howard<sup>8</sup>, Laura N Gitlin<sup>9</sup>, Sandra D O'Rourke<sup>1</sup> and Lindy Clemson<sup>3</sup>

# StandingTall – iPad app





## Median (IQR) adherence



## Individual adherence



# Hospital

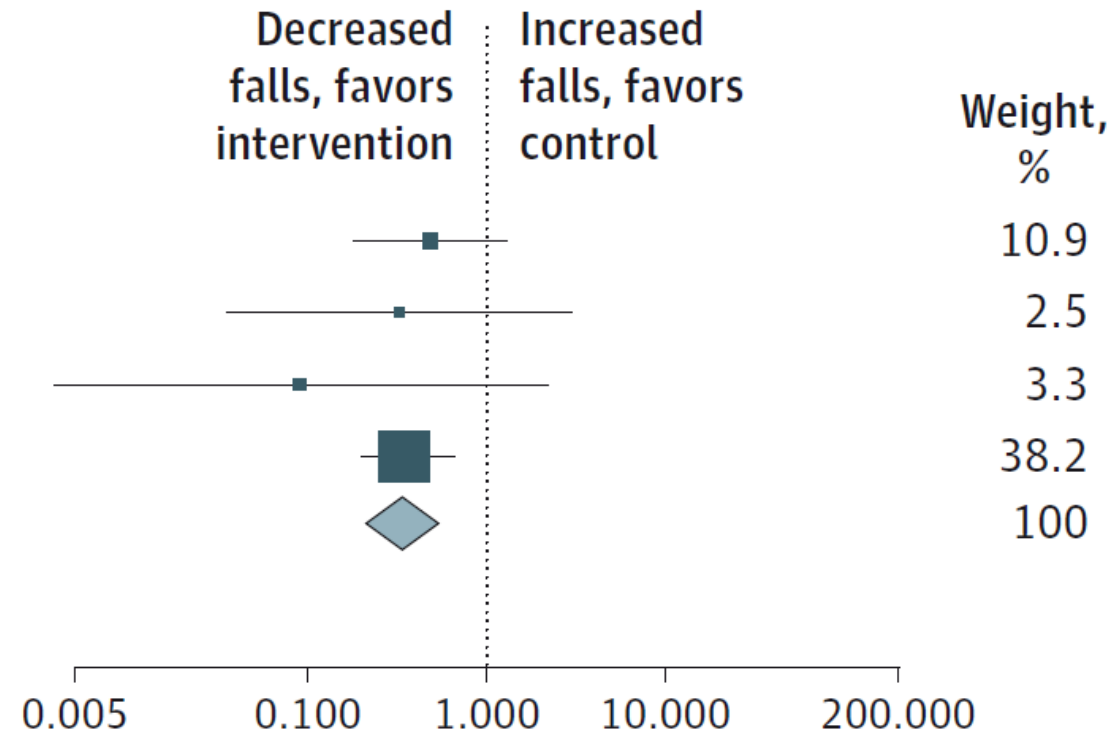
Study	Intervention	Fall Outcome
Mador 2004, pragmatic RCT, n=71, pt w confusion	Extended practice nurse, non-pharmacological approaches	
Stenvall 2007, RCT, n=64	Geriatric unit specialising in geriatric orthopaedic management post NOF	
Haines 2011, RCT, n=300	Patient education: materials +/- physio	
Hill 2015, Stepped- wedge, cluster RCT, rehab wards, n= 1676	Patient education: materials +/- physio for ppts with MMSE >23, combined with staff training and feedback	

# Multicomponent non-pharmacological delirium prevention interventions (Hshieh 2015)

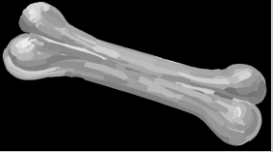




- N=519 total, 119 falls (total)
- Predominantly medical patients
- Not dementia specific
- RCTs and non-RCTs

Falls	Odds Ratio (95% CI)
Babine et al, <sup>14</sup> 2013	0.49 (0.19-1.27)
Caplan and Harper, <sup>20</sup> 2007	0.33 (0.04-2.93)
Martinez et al, <sup>32</sup> 2012	0.11 (0.01-2.05)
Stenvall et al, <sup>18</sup> 2007	0.38 (0.23-0.65)
Fixed-effect model: $P < .001$	0.38 (0.25-0.60)




Heterogeneity:  $I^2 = 0\%$ ,  $P = .78$



# Residential Care

Study	Intervention	Fall outcome
Jensen 2003, RCT, n=170 MMSE <19, n=171 MMSE ≥ 19	Multifactorial, 11w	
Shaw 2003, RCT, n=274	Multifactorial designed for community	
Toulotte 2003, RCT, n=20, 15 residents	Group exercise, 4m	
Rolland 2007, RCT, n=134 AD	Group exercise, 12m	
Rosendahl 2008, RCT, n=191, 50% dementia Dx	High intensity functional group exercise, 3m	
Rapp 2008, RCT, n=148	Multifactorial, 12m	
Neyens 2009, RCT, n=518	Multifactorial, 12m	

# Residential Care

Study	Intervention	Fall outcome
Chenoweth 2009, RCT 3-arm, n=289	Dementia care mapping and person-centred care, Person-centred care, 4m	 
Klages 2011, RCT, n=24	Snoezelen sensory room, 6w	
Kovacs 2013, RCT, n=86	OTAGO, supervised walk, multimodal, 12m	
van de Ven 2014, RCT, n=318	Dementia care mapping, 4m	
Whitney 2017, pilot cluster RCT, n=191	Multifactorial, 6m	

# Interventions for preventing falls in older people in care facilities and hospitals (Review)



Cochrane  
Library

Cochrane Database of Systematic Reviews

- Residential care
- Multifactorial vs usual care
- Cognitively impaired participants (sub-group analysis)
- No clear benefit on rate or risk of falls
  - Non-significant 17% reduction in rate of falls
    - RR 0.83 95%CI 0.57 – 1.40
  - Non-significant 21% reduction in risk of falls
    - RR 0.79 95%CI 0.57 – 1.12



# Progressive Resistance and Balance Training for Falls Prevention in Long-Term Residential Aged Care: A Cluster Randomized Trial of the Sunbeam Program

Jennifer Hewitt BAppSc, MHealthSc<sup>a,\*</sup>, Stephen Goodall PhD<sup>d</sup>, Lindy Clemson PhD<sup>a</sup>,  
Timothy Henwood PhD<sup>c</sup>, Kathryn Refshauge PhD<sup>a</sup>



Pedro 8/10

- 49% with diagnosed cognitive impairment, 56% in the intervention group (ACE-R baseline mean = 72)

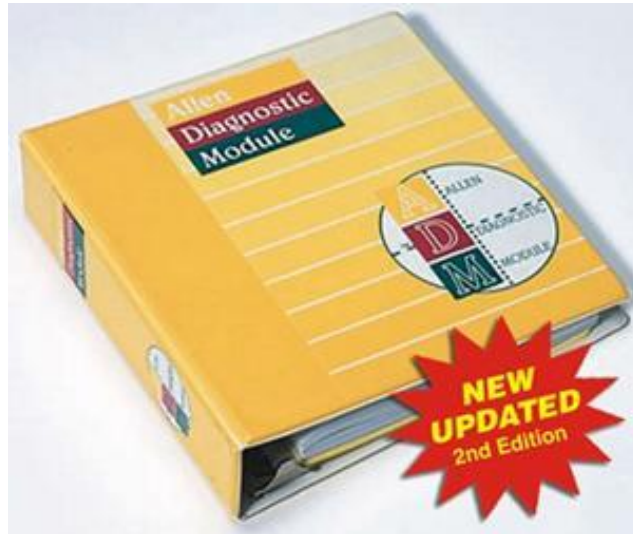
**Coming up next!!!!**

# Practical strategies

The background features a dark grey area on the left and a dark red area on the right, separated by a diagonal line. A lighter red area is visible in the top right corner.

# Identify, assess and consider cognitive impairment

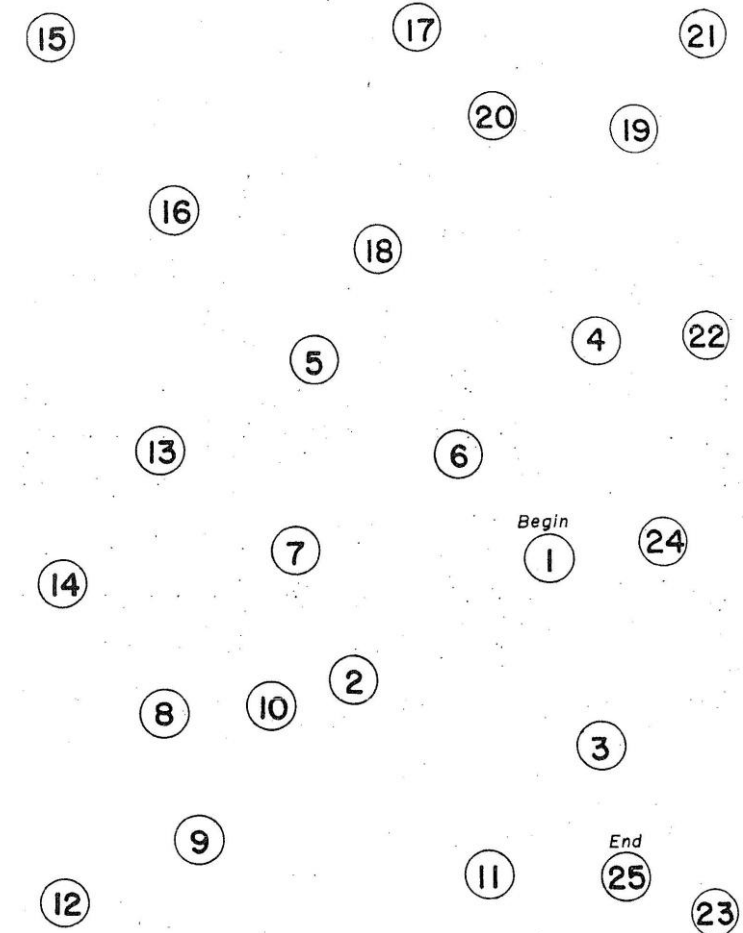
## Functional cognition



## Global cognition, language, visuospatial

ADDENBROOKE'S COGNITIVE EXAMINATION – ACE-III Australian Version A (2012)						
Name: _____			Date of testing: ____/____/____			
Date of Birth: _____			Tester's name: _____			
Hospital No. or Address: _____			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	Suburb	State	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
FLUENCY						
> 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

## Processing speed and executive function



# Prevent, recognise and treat delirium:

## Delirium clinical care standard



If at risk of delirium: screen for cognitive impairment on admission



If acute change in behaviour or cognitive function: assess for delirium



If at risk of delirium: delirium prevention strategies implemented



If delirium: comprehensive intervention to treat causes



If delirium: care based on fall and pressure risk



Non-pharmacological management always first line, pharmacological (e.g. antipsychotics) last resort



Leaving hospital: individualised care plan developed in collaboration and communicated (GP, carer, pt) , delirium information

within 48 hours of discharge.



- Cognitive screening
- Delirium risk identification and preventive measures
- Assessment of older people with confusion
- Management of older people with confusion
- Effective communication to enhance care
- Staff education
- Supportive care environment



## PRINCIPLE 1: Cognitive screening

Patients aged 65 years and over will be screened for confusion on admission or within 24 hours of admission using a validated screening tool.



## PRINCIPLE 2: Delirium risk identification and prevention strategies

Older people will be assessed for delirium risk. Interventions will be put in place for prevention of identified risks. Identified risks will be communicated to the older person, their carer, family and staff involved in their care.



## PRINCIPLE 3: Assessment of older people with confusion

Older people who are confused will be assessed. The cause of their confusion will be investigated to determine the appropriate management.



## PRINCIPLE 4: Management of older people with confusion

NSW hospitals will have programs in place for older people with confusion that align with these principles. The implementation will be in partnership with the older person, their carer and family.



## PRINCIPLE 5: Communication processes to support person centred care

Communication processes and tools will support person-centred care for the older person throughout their hospital journey and at their transfer of care to the community.



## PRINCIPLE 6: Staff education on caring for older people with confusion

Staff are supported through training, education and leadership to enable them to deliver skilled, timely and knowledgeable care to the older person with confusion.



## PRINCIPLE 7: Supportive care environments for older people with confusion

NSW hospitals will provide a supportive care environment for the older person with confusion.

# Person-centred care

- Care centred around the persons' needs as an individual
- Shared goals based on persons' values and experiences
- Past lived experiences
- Likes/dislikes
- Cultural and religious beliefs
- Precipitants to behaviours
- Specific behaviours are often a result of unmet needs
- Respect, dignity and compassion

## Through the person's eyes

People here speak so quickly  
I need time to think of what I am going to say

I'm afraid; I don't know what is happening to me  
I don't know the people here

I can't sleep on my own  
I miss my wife

I'm bored and I miss my garden  
These people here are not my friends

I hear things at night. Lights are on during the night  
I can't find my glasses

People here are too busy to help me

## Through the clinician's eyes

Confuses words

Tries to hit out

Tries to get out of bed

Withdrawn/doesn't join in with others

Convinced someone is stealing things from his room

Resists when staff try to assist him with his shower

## Patient within a health service



### Interpersonal interactions

I am heard

---

I am cared about

---

I am informed

---

I am known

---

I am treated as a human being

---

I understand what professionals say

### Clinical quality interactions

I can get the right care at the right time

---

I experience high quality and safe clinical care

### Care delivery interactions

I have confidence in the professionals treating me

---

I am discharged at the right time with the right plan

---

My personal care needs are attended to

---

My care is tailored to my needs

---

My hospital is clean and welcoming

---

Different parts of my care are co-ordinated

---

I am treated equally no matter who I am

### Administrative interactions

My hospital puts the needs of patients first

---

My hospital is well managed overall

---

My appointments and waits are well managed

---

My feedback is welcome and acted upon

---

My health records are well managed

# Carer engagement

- Work in partnership and acknowledge their expertise
- Source of information
- Get to know the person e.g. TOP 5
- Communicate about the person with dementia's needs
- Consider impact of intervention on carer
- Education and support for the carer
- Practical examples
- Focus on the individuals strengths
- How to help them keep doing what they can do

T

**Talk to the Carer**

O

**Obtain the information**

P

**Personalise the care**

5

**5 strategies developed**



# Communication

- Respect, empathy, listen
- Body language and tone of voice
- Body position e.g. eye contact
- Speak slowly, clearly, no jargon
- Short sentences/break down instructions
- Allow processing/response time
- Clarify meaning and understanding
- Minimise competing noise
- Hearing and vision aids
- Use personal references

Talk by Prof Anne-Marie Hill

<http://fallsnetwork.neura.edu.au/wp-content/uploads/2019/02/Hill-Webinar.pdf>



# Exercise practical considerations

- **Supervision and safety**
- Focus on strengths
- Tailored and progressive
- Instructions and communication
- Co-morbid conditions
- Current level of function/activity/fall risk
- Achievable
- Sustainable
- Enjoyment
- Environment (noise, set-up)
- Group vs individual



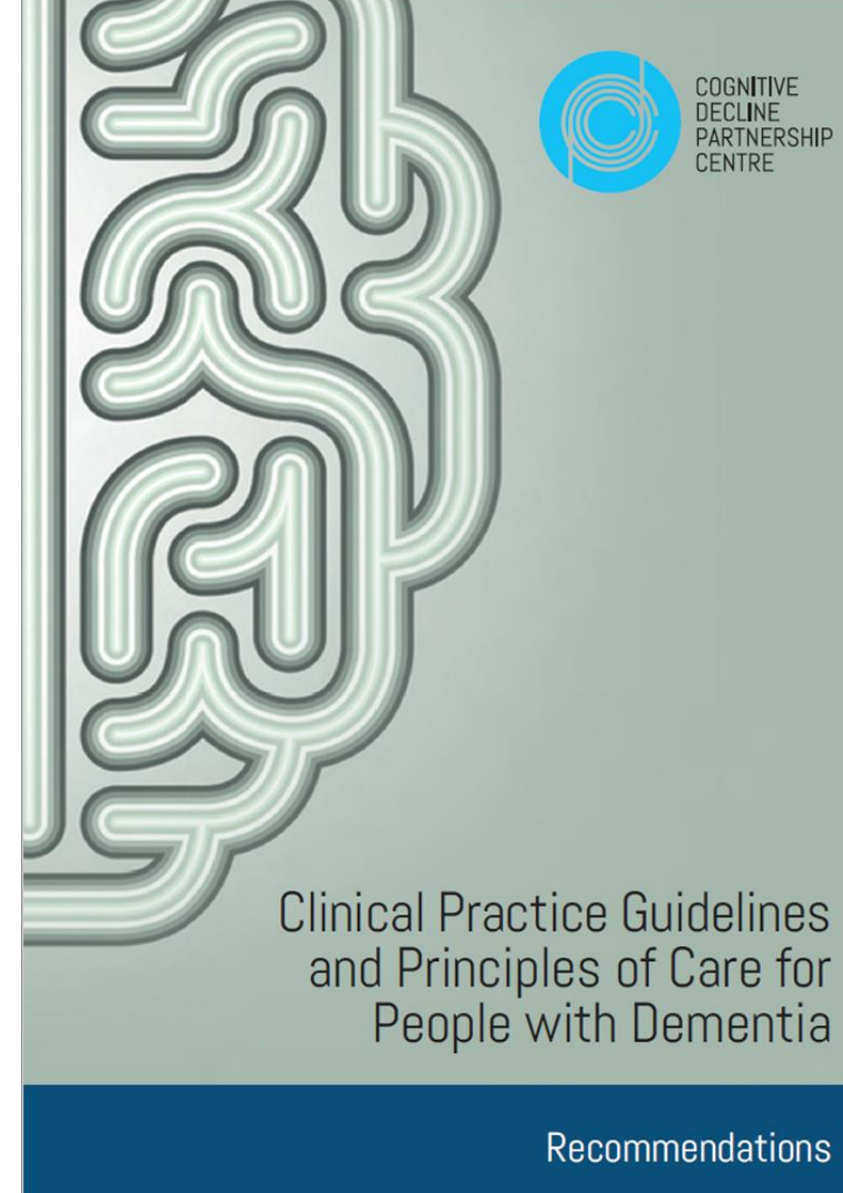
# Summary

- Older people with dementia are at increased risk of falls and fall-related injury
- A number of modifiable risk factors have been identified
  - e.g. balance, mood and anxiety, physical activity, CNS medications
- Exercise potentially prevents falls in community-dwelling older people with dementia
  - Good quality, large RCTs needed to confirm/strengthen evidence



# Summary

- Hospital
  - ? Multifactorial interventions for the hospital setting
  - ? Patient (cognitively healthy) and staff education in rehab units
- Residential care
  - ? Some multifactorial
  - ? Vitamin D
- Many other positive effects of exercise
  - Physical function, CVD, diabetes, weight control, mood, cognition
- We need more evidence/research in this population
- Until then strive for high quality, person-centred, comprehensive care



# Resources

Active and Healthy (NSW Health; can search for appropriate exercise classes in local area) <http://www.activeandhealthy.nsw.gov.au/>

NSW Falls Prevention Network <http://fallsnetwork.neura.edu.au/>

Australian and New Zealand Falls Prevention Society (ANZFPS) <http://www.anzfallsprevention.org/>

Otago Exercise Program training course <http://www.aheconnect.com/newahec/cdetail.asp?courseid=cgec3>

Life Exercise Program training course <http://fallspreventiononlineworkshops.com.au/>

Physiotherapy Exercises <http://www.physiotherapyexercises.com/>

Care of confused hospitalised older persons <https://www.aci.health.nsw.gov.au/chops>

Clinical practice guidelines and principles of care for people with dementia [http://sydney.edu.au/medicine/cdpc/documents/resources/CDPC-Dementia-Recommendations\\_WEB.pdf](http://sydney.edu.au/medicine/cdpc/documents/resources/CDPC-Dementia-Recommendations_WEB.pdf)

ACI Allied Health and dementia <https://www.aci.health.nsw.gov.au/resources/aged-health/allied-health/allies-in-dementia>

Assessment and Management of people with BPSD [https://www.ranzcp.org/Files/Publications/A-Handbook-for-NSW-Health-Clinicians-BPSD\\_June13\\_W.aspx](https://www.ranzcp.org/Files/Publications/A-Handbook-for-NSW-Health-Clinicians-BPSD_June13_W.aspx)

CEC fall prevention <http://www.cec.health.nsw.gov.au/patient-safety-programs/adult-patient-safety/falls-prevention>

Pedro (Physiotherapy Evidence Database) <https://www.pedro.org.au/>

The Australian Commission on Safety and Quality in Healthcare (The Commission) developed the National Safety and Quality Health Service (NSQHS) Standards <https://www.safetyandquality.gov.au/our-work/assessment-to-the-nsqhs-standards/>  
<https://www.safetyandquality.gov.au/our-work/cognitive-impairment/>

Reablement guides <http://sydney.edu.au/medicine/cdpc/resources/reablement.php>

Dementia Australia <https://www.dementia.org.au/>

# Supporting independence and function in people living with dementia

A technical guide to the evidence supporting reablement interventions

