



# The Dementia Epidemic: An Approach to Screening and Management

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**Highland Hospital Geriatric Teaching Day**  
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# Learning Objectives

At the conclusion of this presentation participants should be able to:

1. Review the characteristics and clinical findings of Alzheimer's disease and related dementias
2. Understand the current evidence base for pharmacologic interventions for dementia (including risks and benefits)
3. Outline a rational approach to screening for dementia and communicating with patients and families who are faced with the diagnosis

# Introduction: The Epidemic

- Dementia is common in aging population
- Medical interventions targeted at delaying onset or slowing progression of disease
- Without a curative treatment, dementia remains a ***chronic progressive medical condition and in later stages is a terminal illness***
- Phenotype: functional decline, dependency on caregivers, morbidity, and mortality
- Increasing costs: caregivers & health system

# Clinical Case

Mrs. S is a 94 year-old woman

- 5 year history of progressive memory loss
- Needs increasing assistance with daily activities
- New Incontinence of bladder
- 2 recent hospital admissions for dehydration, urinary tract infection, and pneumonia
- Now using walker, sustained fall one month prior
- Increased “agitation” and confusion at night

# Cognitive Dysfunction



**Dementia**

Normal  
Aging

Mild Cognitive  
Impairment

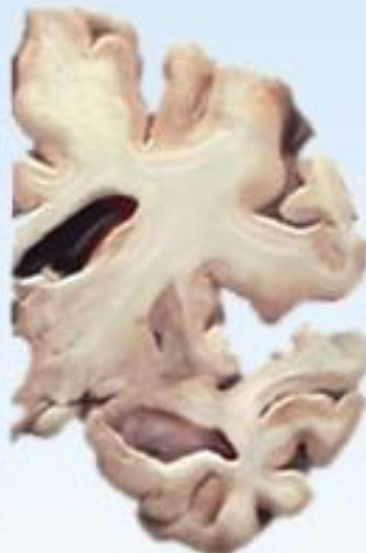
Alzheimer's  
Disease



Healthy Brain



Severe AD



Preclinical AD



Mild to Moderate AD



Severe AD



# Dementia: Medical Diagnosis

1. Progressive loss of intellectual abilities
2. Impairment in memory and at least one other cognitive domain
3. Interferes with daily functioning
4. Not due to other medical disorder

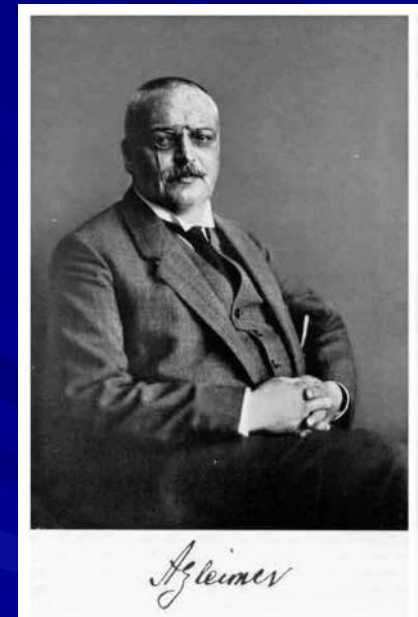
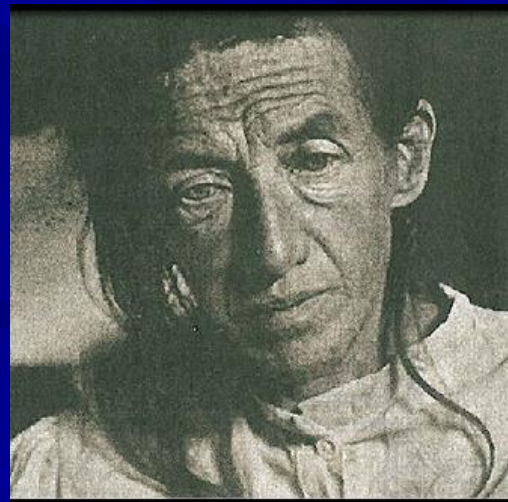
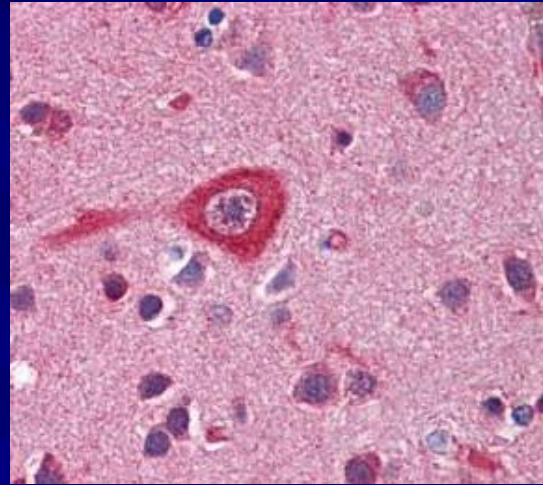
# Common Types of Dementia:

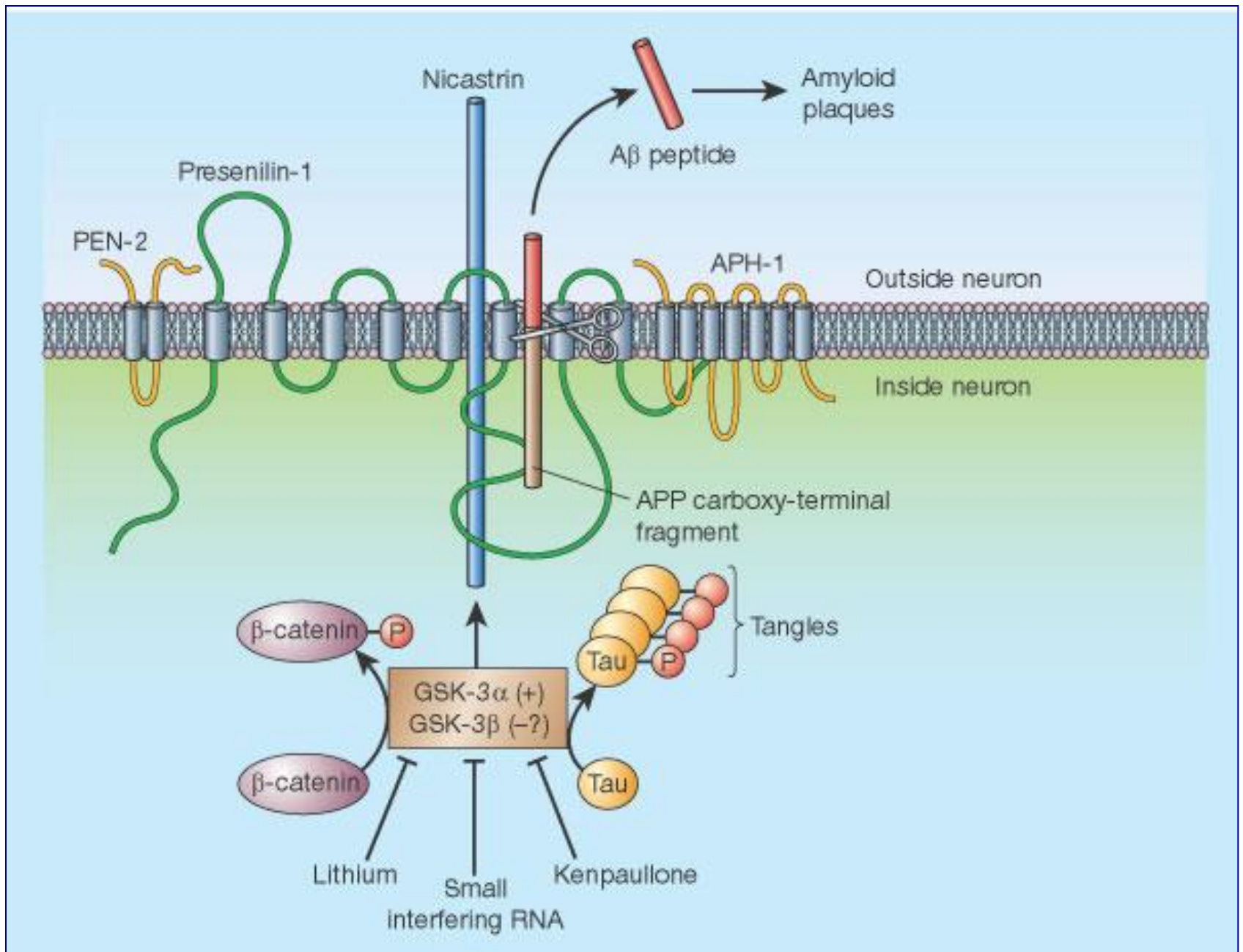
1. Alzheimer's Disease
2. Vascular Dementia
3. Dementia with Lewy Bodies
4. Fronto-Temporal Dementia
5. Parkinsonism (subcortical dementias)

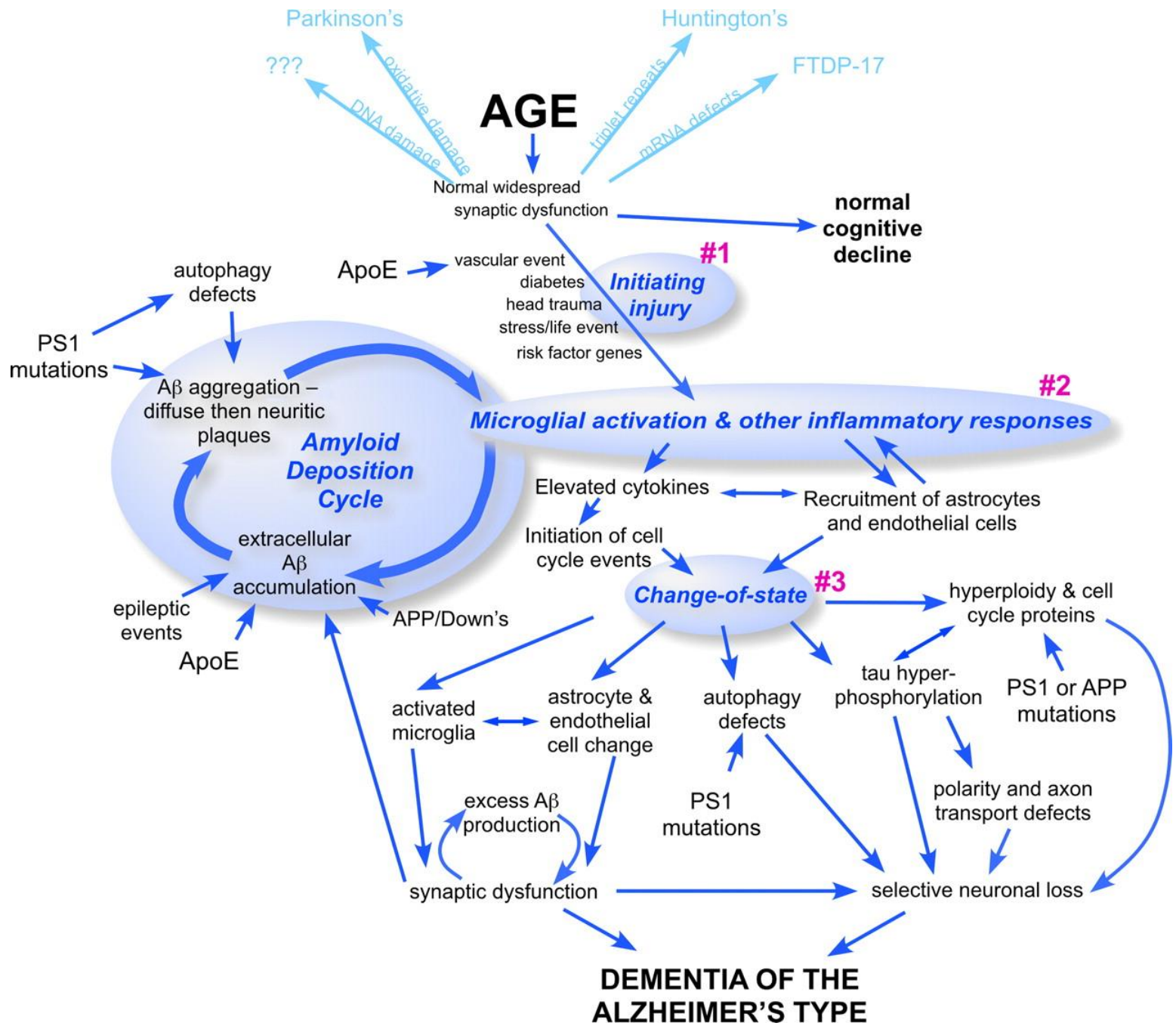


# Alzheimer's Disease

- Abnormality in amyloid protein metabolism in brain
- Formation of neurofibrillary tangles (dead neurons) and amyloid plaques
- Only definitive diagnosis is at autopsy







**DEMENTIA OF THE ALZHEIMER'S TYPE**



# Alzheimer's Disease

## Facts

- 5.2 million Americans with Alzheimer's disease
- One in 9 persons over age 65 and 1/3 over age 85
- Every 68 seconds someone develops Alzheimer's
- **1 in 3 older adults will die with dementia**

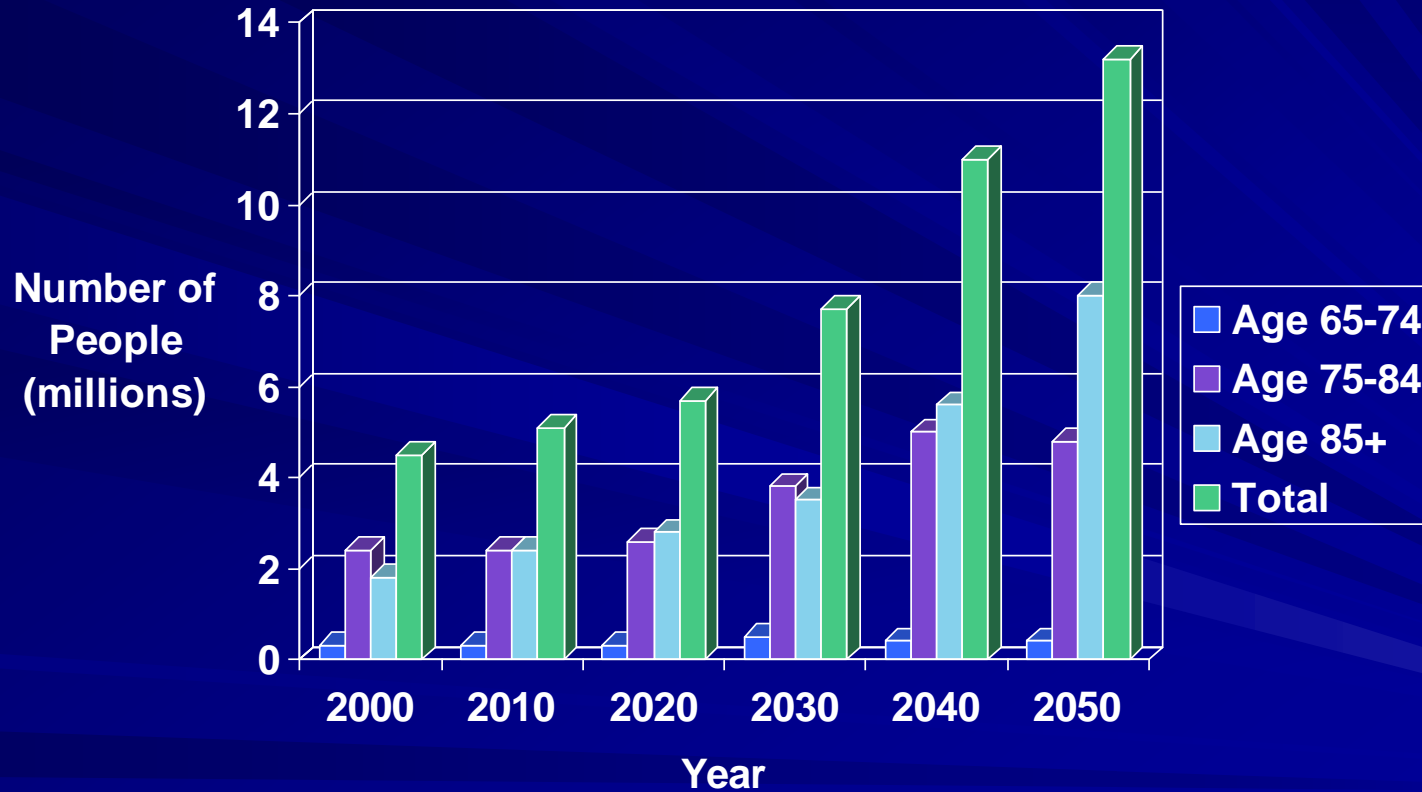
## Mortality

- Number of deaths: 83,494
- 400,000 people died *with* Alzheimer's disease
- Cause of death rank: 6

Source: Alzheimer's Disease Facts and Figures (Alzheimer's Association)

# Prevalence of Alzheimer's Disease

## Future Projections by Age Group



Data Source: Evans, DA *et al.* *Archives of Neurology* August 2003



# Alzheimer's Disease: Costs

- Total (Aggregate) Costs: \$226 billion  
(cost of \$17.5 million per hour to taxpayers)
- 70% of costs paid by Medicare and Medicaid
- 70% of those with dementia live at home
- 75% of home care provided by family and friends
- 50% nursing home residents have Alzheimer's or related dementias

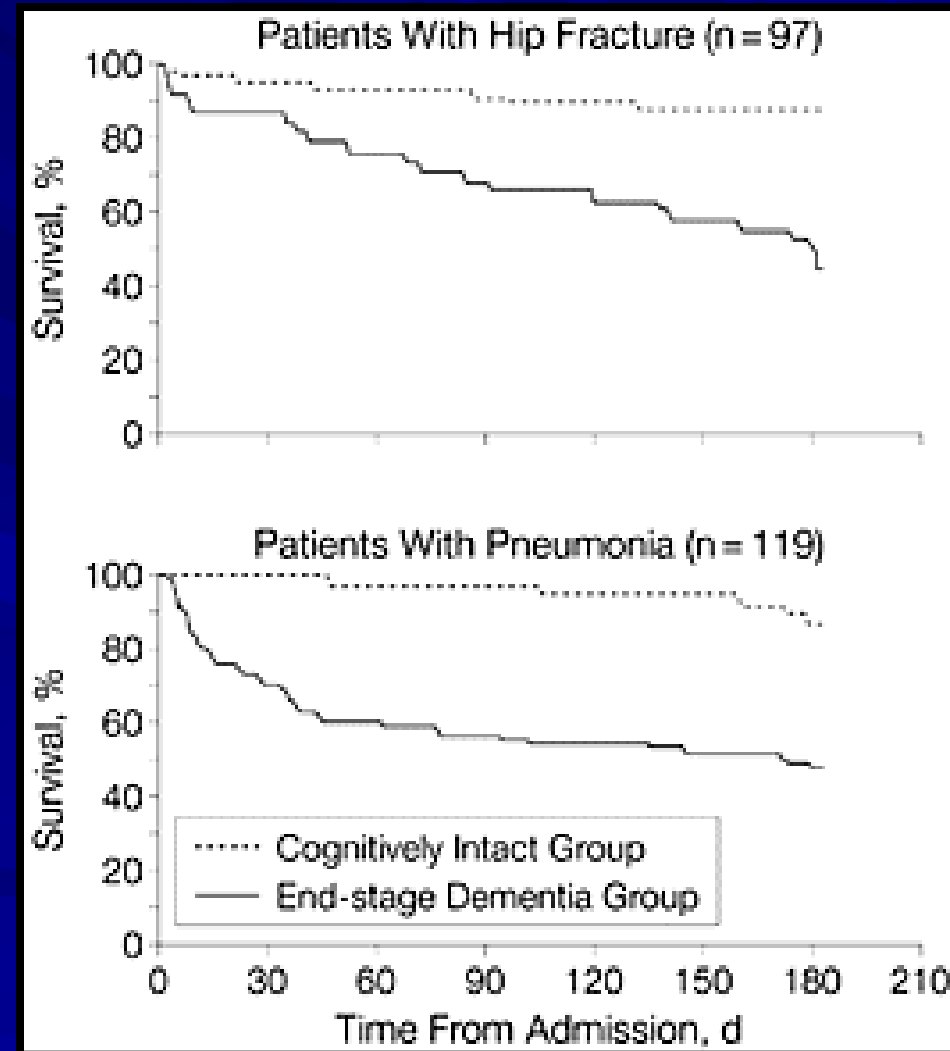
## Adverse Outcomes After Hospitalization and Delirium in Persons With Alzheimer Disease

Tamara G. Fong, MD, PhD; Richard N. Jones, ScD; Edward R. Marcantonio, MD, SM; Douglas Tommet, MS; Alden L. Gross, PhD, MHS; Daniel Habtemariam, BA; Eva Schmitt, PhD; Liang Yap, PhD; and Sharon K. Inouye, MD, MPH

1 in 8 hospitalized patients with AD who develop delirium will have at least one adverse outcome: death, institutionalization, or cognitive decline

# Alzheimer's Disease: Mortality

- Poor survival in advanced dementia following acute illness
- Survival after hip fracture or pneumonia
- 6 month mortality >50% (compared to 12% cognitively intact)



# Dementia Caregivers

- Reported at least 46 hrs/week assisting patient with daily personal care (n=217)
- 50% felt they were “on duty” 24 hrs/day
- High level of depressive symptoms

# Alzheimer's Phenotype: Early Stages

- Memory problems frequently first reported
- Earlier changes usually evident (months to years in advance of formal diagnosis)
- Common Problems: managing finances, household chores, shopping, cooking, taking medications, driving
- Early changes attributed to aging by family
- Short term memory mostly affected and distant (remote) memory often remains intact



# Alzheimer's Phenotype: Advanced Stages

- Loss of ability to perform activities of daily living (ADL):
  - Dressing (grooming)
  - Bathing (hygiene)
  - Toileting (incontinence)
  - Walking (mobility)
  - Eating (feeding)

# Other Common Changes

- Progressive personality change
- Behavior Changes (impulsivity, sexual disinhibition, anger, argumentative, hoarding)
- Poor judgment, insight, problem-solving
- Later stages: Agitation, Restlessness, and Wandering
- Apathy is common in early stages (social withdrawal, loss of interest)

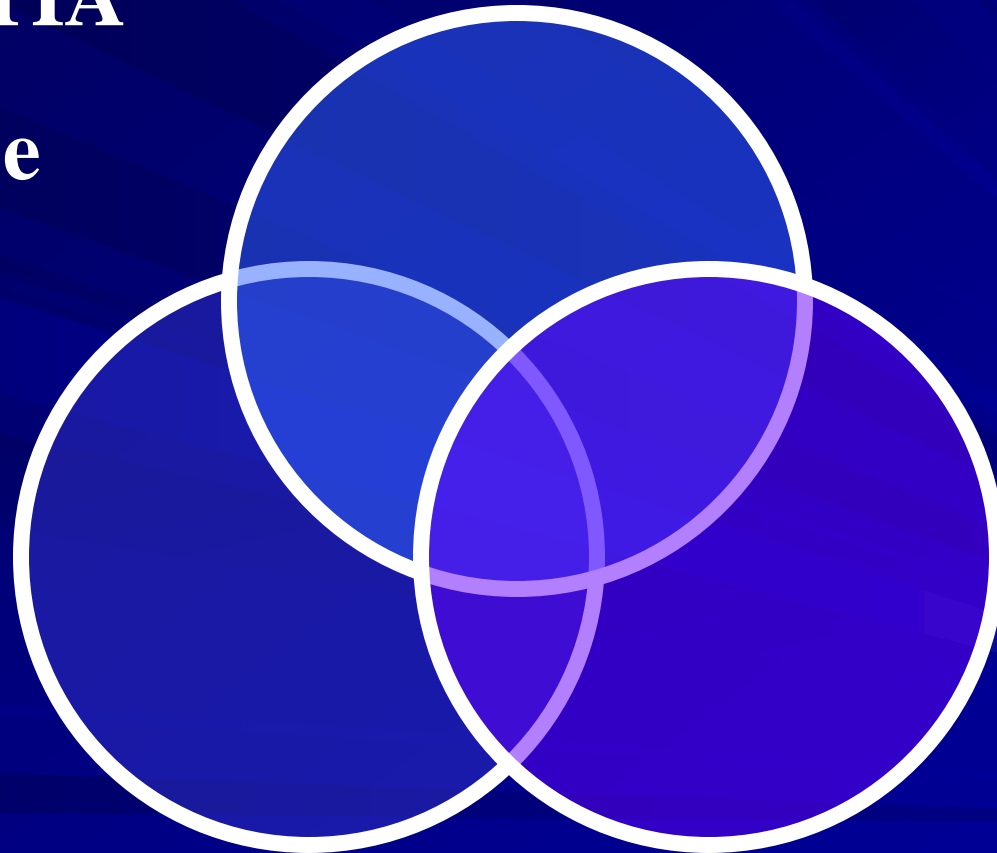
# DEMENTIA

## Phenotype

Cognition

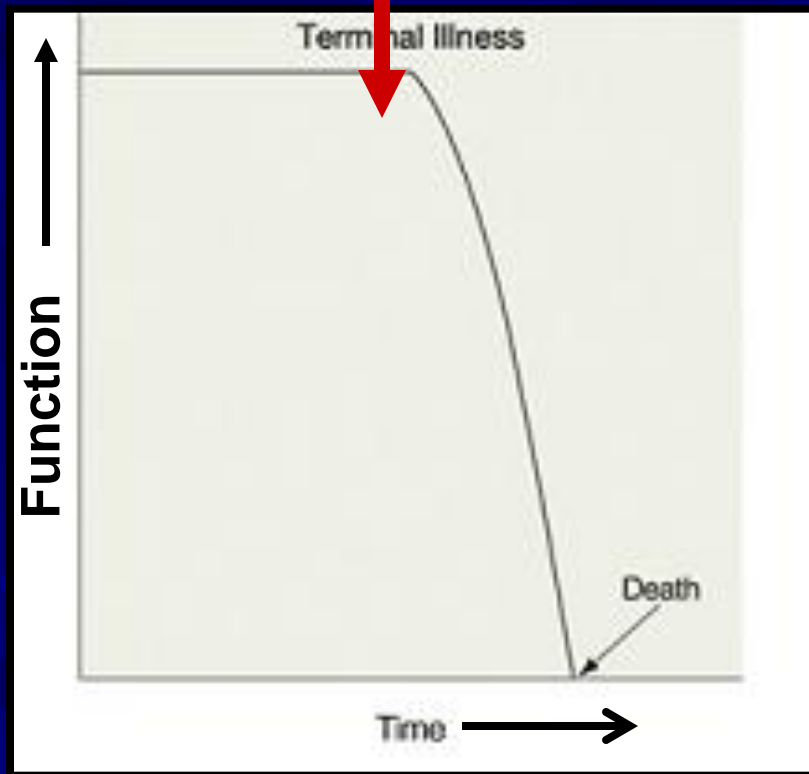
Behavior

Function

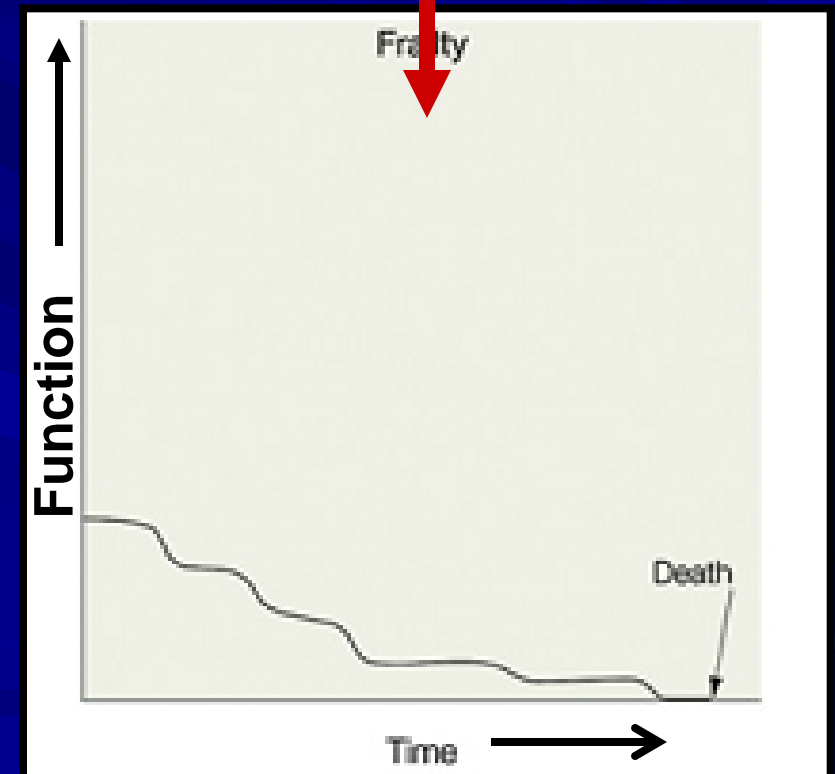


# End-of-Life Care: Trajectories of Dying:

## Cancer



## Dementia



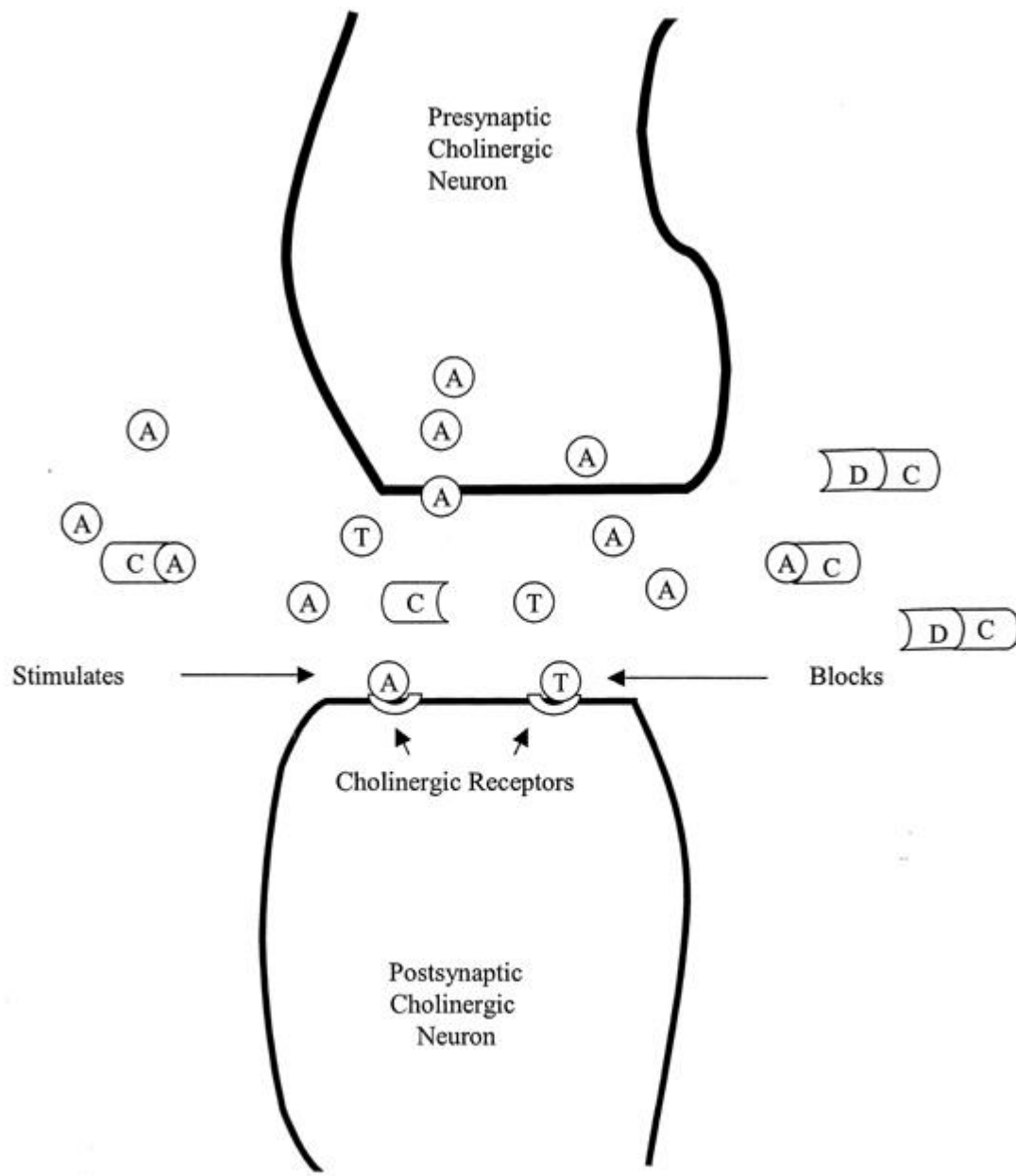
# Dementia Treatment

- No “cure” exists for Alzheimer’s
- Medications may slow the progression and/or improve some symptoms of the disease
- Advertising suggest greater benefit than likely exists for most patients



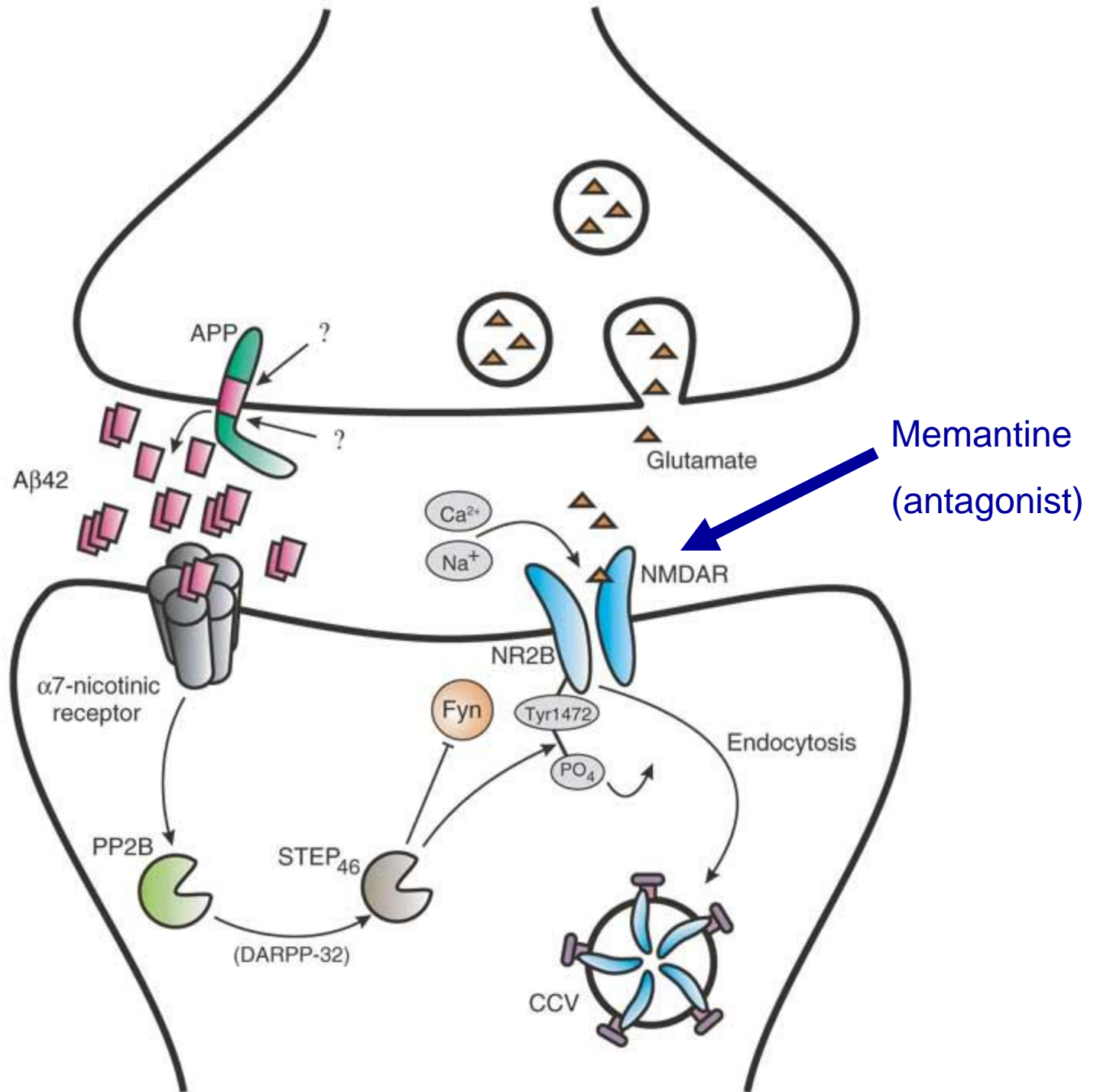
# Cognitive Enhancers?

- Two main medication types:
  - 1) Acetylcholinesterase inhibitors
    - Aricept (donepezil)
    - Exelon (rivastigmine)
    - Razadyne (galantamine)
  - 2) Namenda (memantine)



Ⓐ = acetylcholine  
 ⓁⒹ = donepezil

Ⓣ = tolterodine  
 ⓁⒸ = cholinesterase

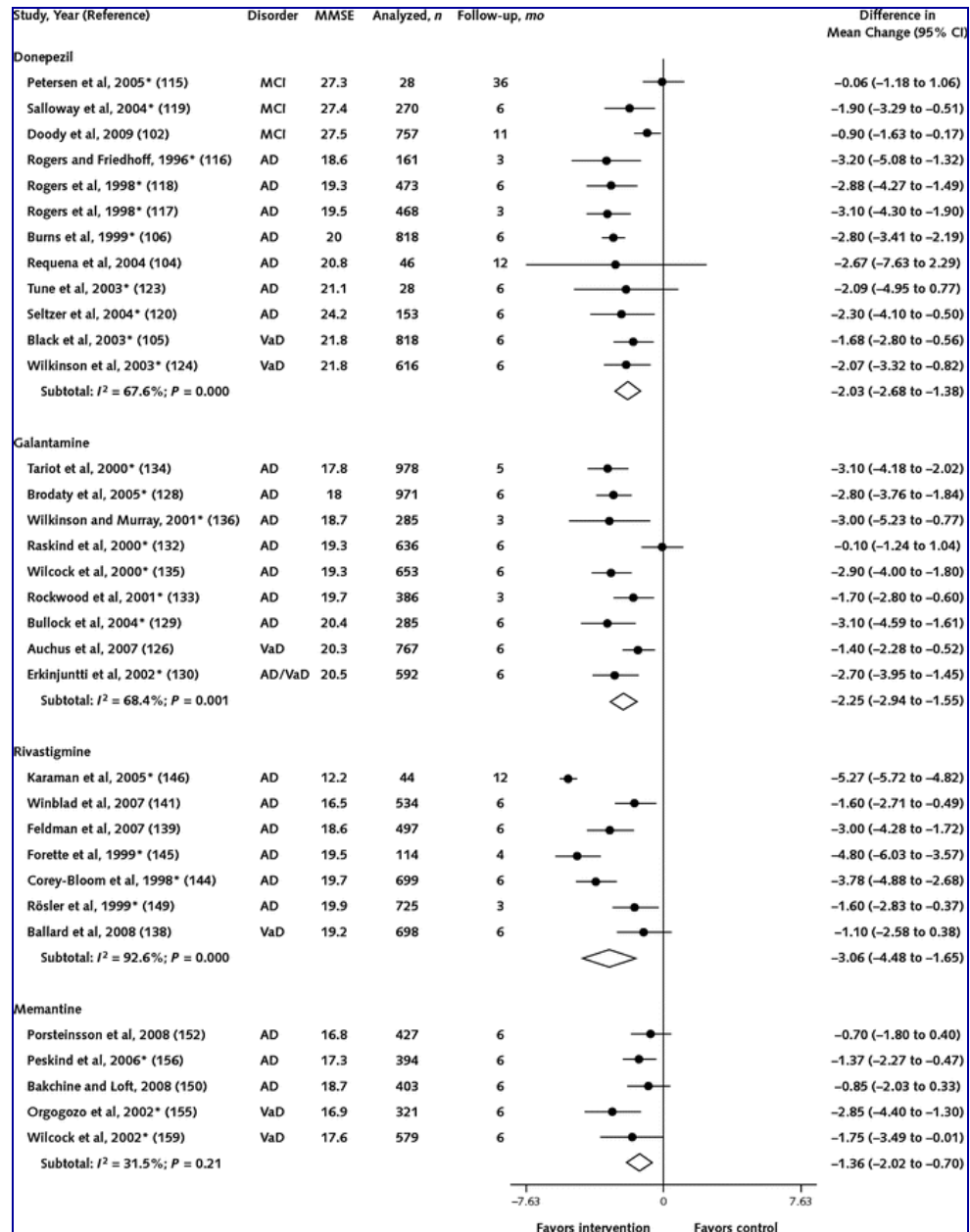


•Pooled evidence to date for Acetylcholinesterase inhibitors favor drug intervention for aggregate outcomes

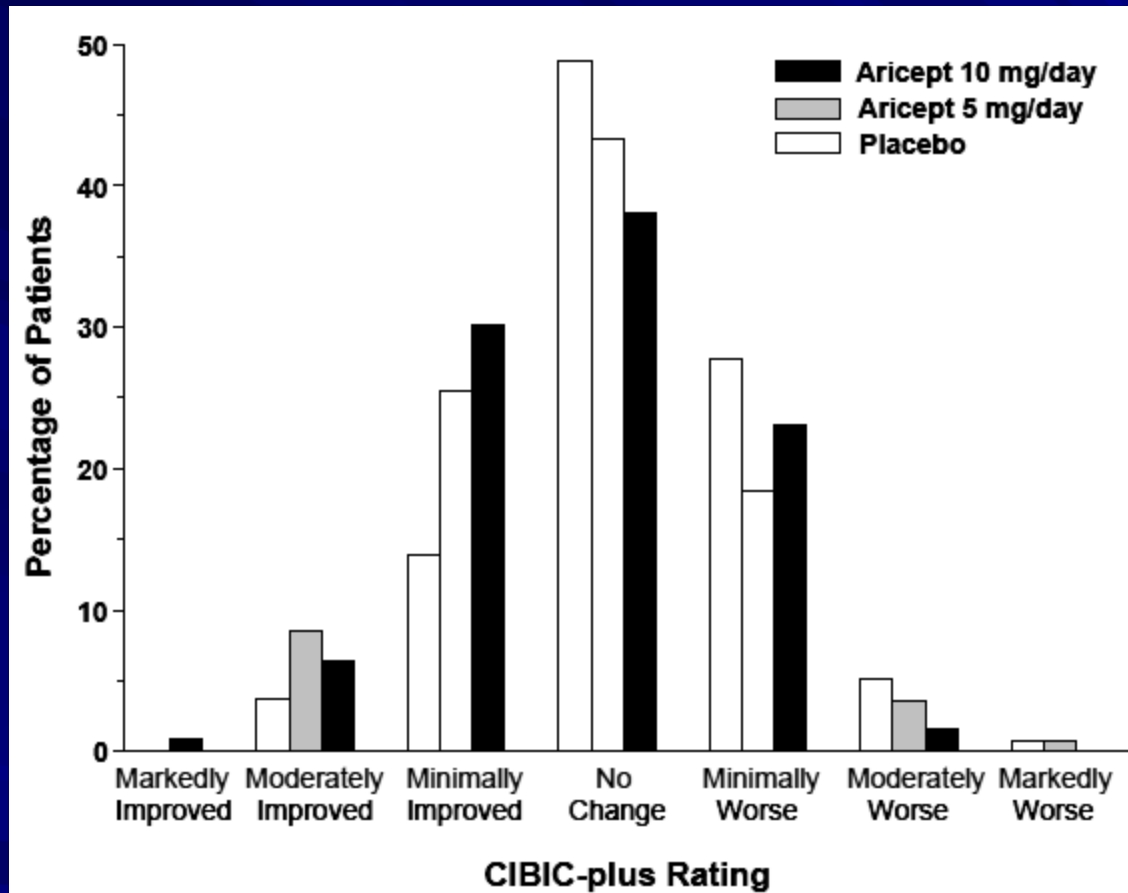
•But are measures clinically relevant?

•Are the patients all the same?

•Reference: JS Lin, et al. *Ann Intern Med.* 2013;159(9):601-612



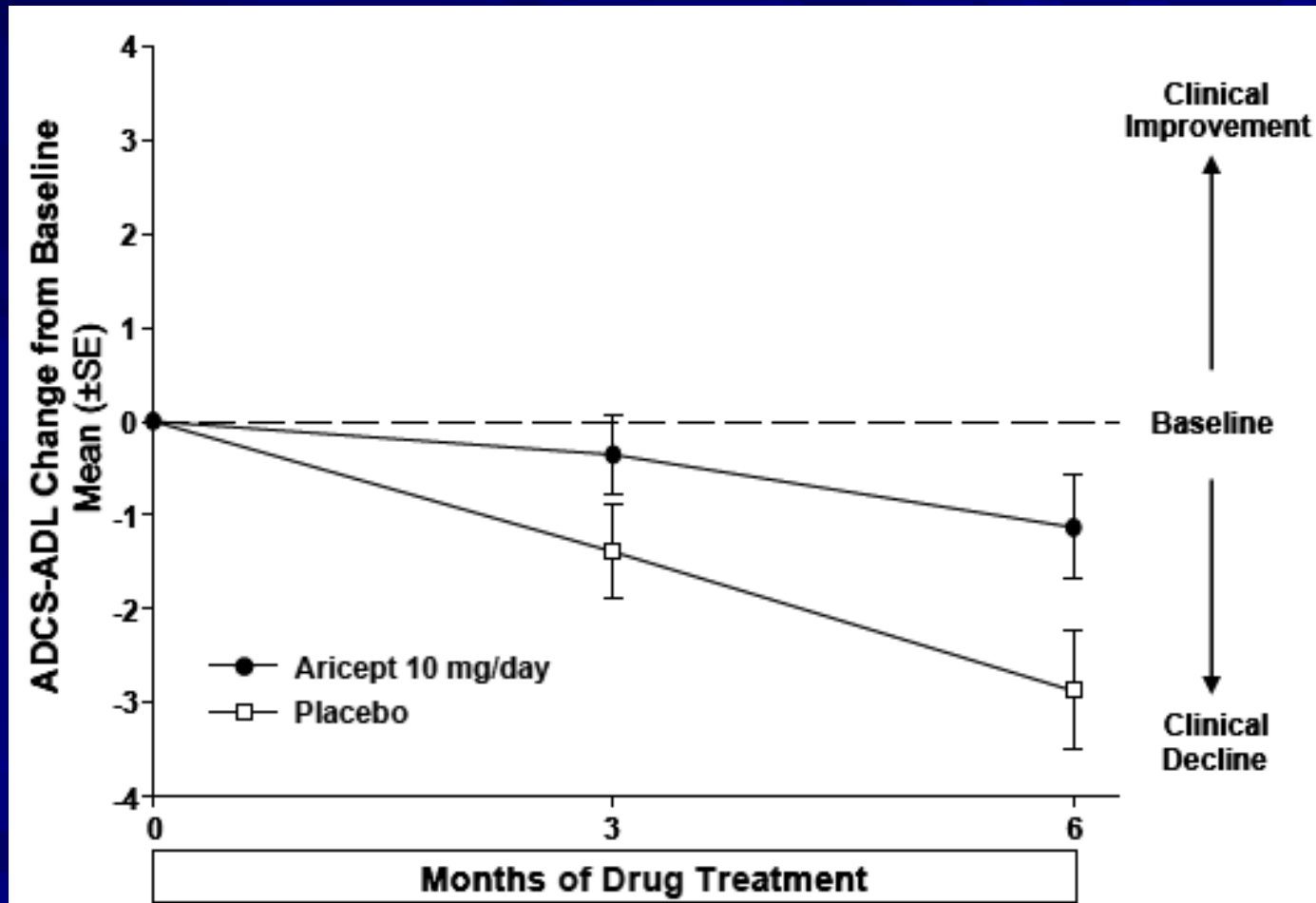
# Donepezil (Aricept)



Frequency Distribution of CIBIC plus Scores at Week 12.  
(Clinician's Interview Based Impression of Change plus caregiver input scale)

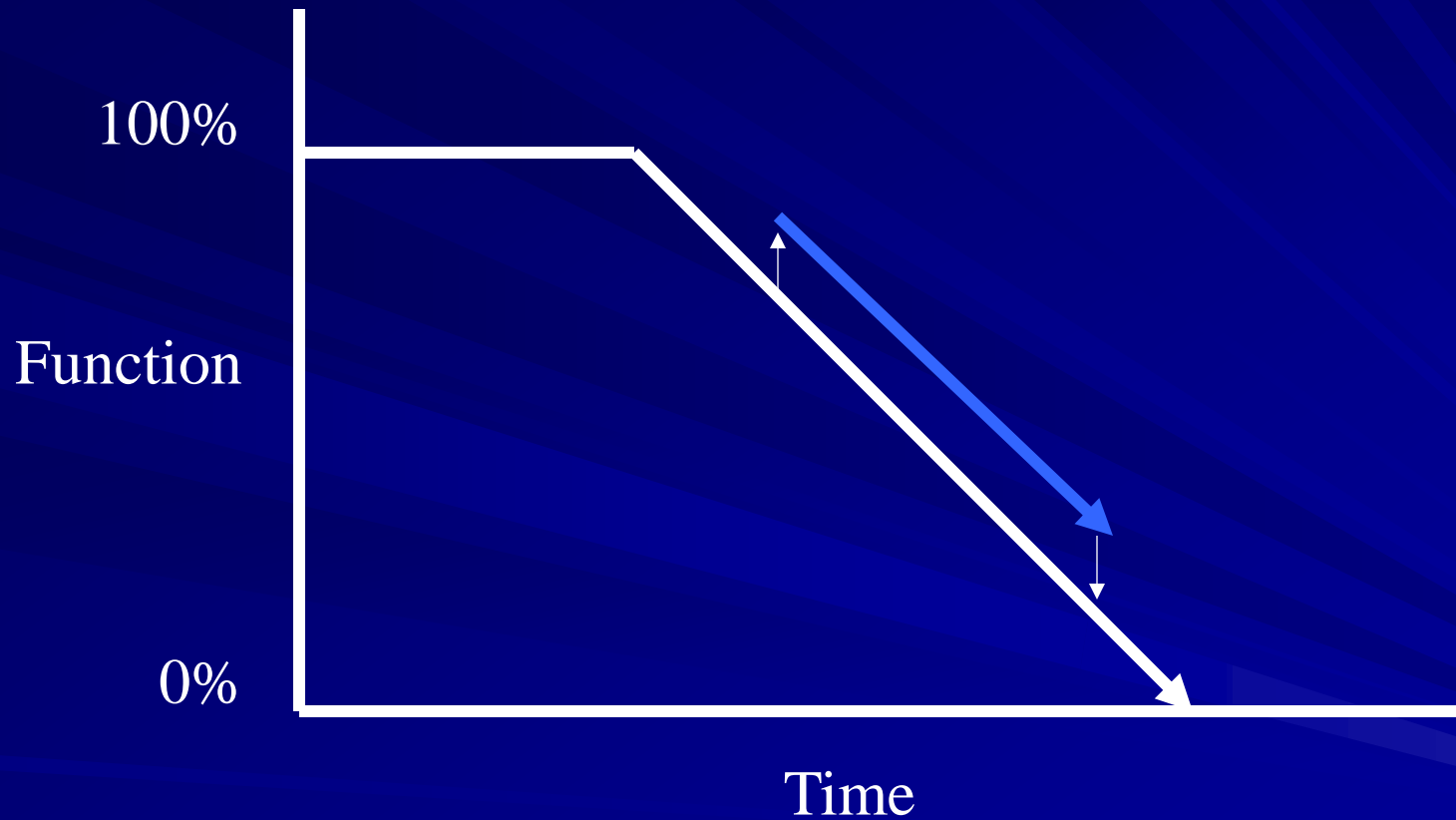


# Donepezil (Aricept)

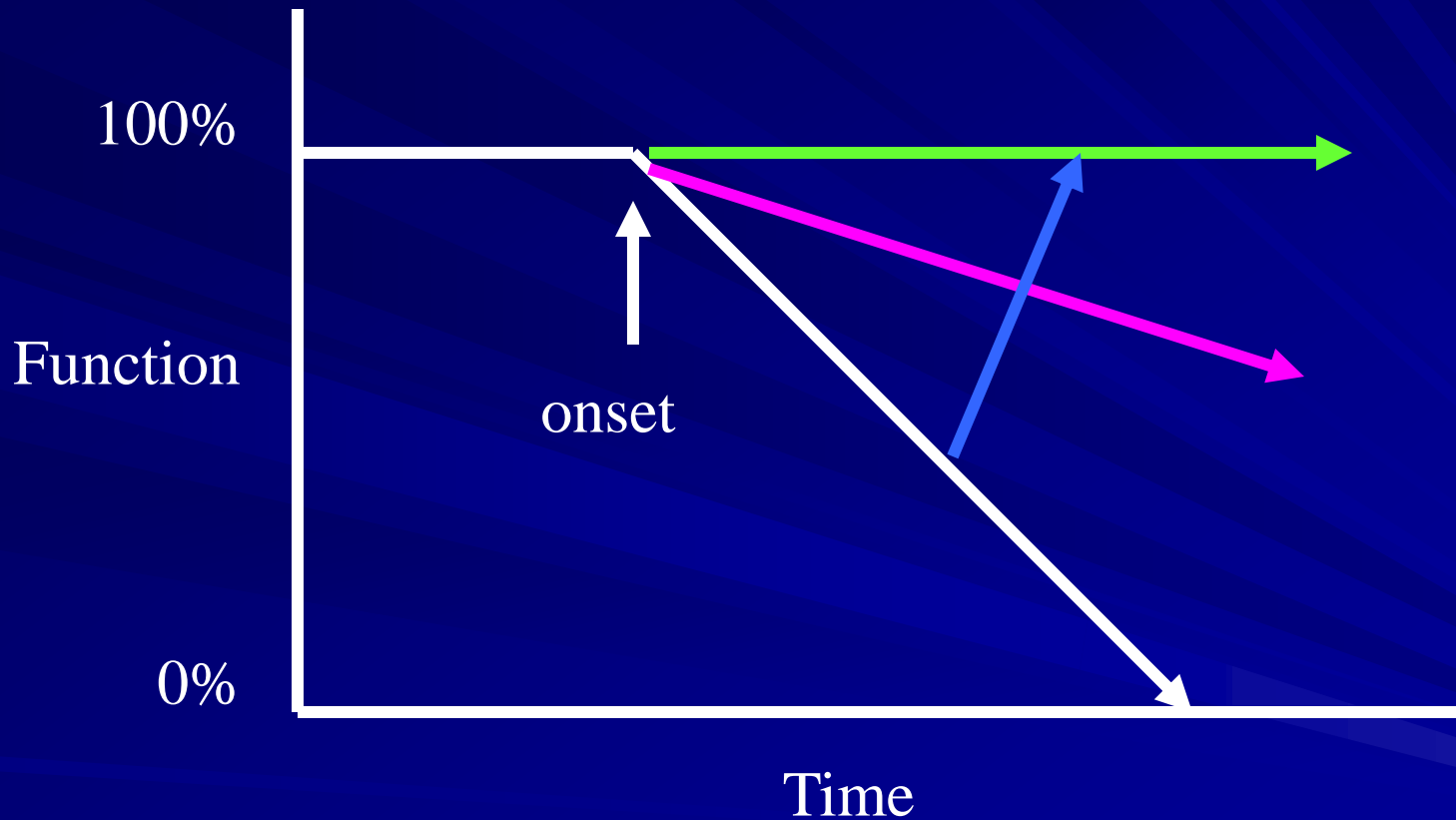


Time Course of the Change from Baseline in ADCS-ADL-Severe Score for Patients Completing 6 Months of Treatment

# Current Treatment: Symptom Management



# Dementia Challenge: Bending the Curve



Courtesy: Frederick J. Marshall, M.D.

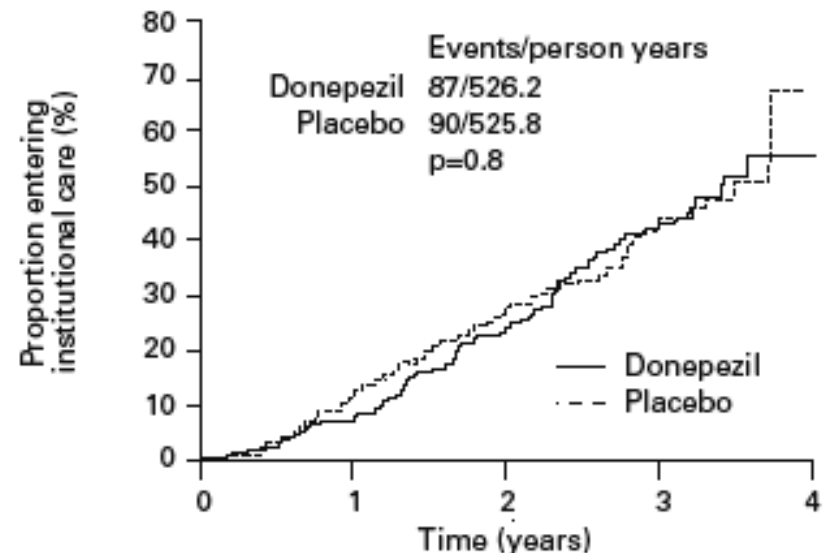
# Long term donepezil did not delay institutionalisation or progression to disability in patients with Alzheimer's disease

AD2000 Collaborative Group. Long-term donepezil treatment in 565 patients with Alzheimer's disease (AD2000): randomised double-blind trial. *Lancet* 2004;363:2105-15.

- 3 years
- 566 subjects
- Double blinded RCT
- Intention to treat analysis
- No delay in nursing home placement with donepezil

Fig. 1

## Entry to institutional care



### Number at risk

Donepezil	282	212	134	57	1
Placebo	283	209	135	60	0

# Potential Side Effects: Acetylcholinesterase Inhibitors

- Nausea/Vomiting
- Weight loss
- Peptic Ulcer/GI bleed
- Dizziness/falls
- Obstructive uropathy
- Seizures
- Asthma exacerbation
- Cardiac (heart block)



If no good treatment or cure even exists, should we even be screening for dementia?

## Screening for Cognitive Impairment in Older Adults: U.S. Preventive Services Task Force Recommendation

**Annals of Internal Medicine**



### SCREENING FOR COGNITIVE IMPAIRMENT IN OLDER ADULTS CLINICAL SUMMARY OF U.S. PREVENTIVE SERVICES TASK FORCE RECOMMENDATION

Population	Community-dwelling adults who are older than 65 years and have no signs or symptoms of cognitive impairment
Recommendation	No recommendation. Grade: I statement
Risk Assessment	Increasing age is the strongest known risk factor for cognitive impairment. Other reported risk factors for cognitive impairment include cardiovascular risk factors (such as diabetes, tobacco use, hypercholesterolemia, and hypertension), head trauma, learning disabilities (such as the Down syndrome), depression, alcohol abuse, physical frailty, low education level, low social support, and having never been married.
Screening Tests	Screening tests for cognitive impairment in the clinical setting generally include asking patients to perform a series of tasks that assess 1 or more cognitive domains (memory, attention, language, and visuospatial or executive functioning). The most widely studied instrument is the Mini-Mental State Examination.  Other instruments with more limited evidence include the Clock Drawing Test, Mini-Cog Test, Memory Impairment Screen, Abbreviated Mental Test, Short Portable Mental Status Questionnaire, Free and Cued Selective Reminding Test, 7-Minute Screen, Telephone Interview for Cognitive Status, and Informant Questionnaire on Cognitive Decline in the Elderly.
Treatment	Pharmacologic treatments approved by the U.S. Food and Drug Administration include acetylcholinesterase inhibitors and memantine. Nonpharmacologic interventions include cognitive training, lifestyle behavioral interventions, exercise, educational interventions, and multidisciplinary care interventions. Some interventions focus on the caregiver and aim to improve caregiver morbidity rates and delay institutionalization of persons with dementia.
Balance of Benefits and Harms	The evidence on screening for cognitive impairment is lacking, and the balance of benefits and harms cannot be determined.
Other Relevant USPSTF Recommendations	The USPSTF has made recommendations related to several of the risk factors for cognitive impairment, including counseling on tobacco cessation, alcohol use, healthful diet, physical activity, and falls prevention and screening for high cholesterol, hypertension, and depression. These recommendations are available at <a href="http://www.uspreventiveservicestaskforce.org">www.uspreventiveservicestaskforce.org</a> .

For a summary of the evidence systematically reviewed in making this recommendation, the full recommendation statement, and supporting documents, please go to [www.uspreventiveservicestaskforce.org](http://www.uspreventiveservicestaskforce.org).



JAMDA

journal homepage: [www.jamda.com](http://www.jamda.com)



Special Article

## Brain Health: The Importance of Recognizing Cognitive Impairment: An IAGG Consensus Conference



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Soo Borson MD<sup>d</sup>, Brian D. Carpenter PhD<sup>b</sup>, Natalia del Campo PhD<sup>e</sup>, Bruno Dubois MD<sup>f</sup>,  
Keith Fargo PhD<sup>g</sup>, L. Jaime Fitten MD<sup>h</sup>, Joseph H. Flaherty MD<sup>i</sup>,  
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Ronald D. Petersen PhD, MD<sup>m</sup>, Carroll Rodriguez BSW<sup>n</sup>, Andrew J. Saykin PsyD<sup>o</sup>,  
Philip Scheltens MD<sup>p</sup>, Eric G. Tangalos MD<sup>q</sup>, Joe Verghese MBBS<sup>r</sup>,  
Gordon Wilcock MD<sup>s</sup>, Bengt Winblad MD<sup>t</sup>, Jean Woo MD<sup>u</sup>, Bruno Vellas MD<sup>v</sup>

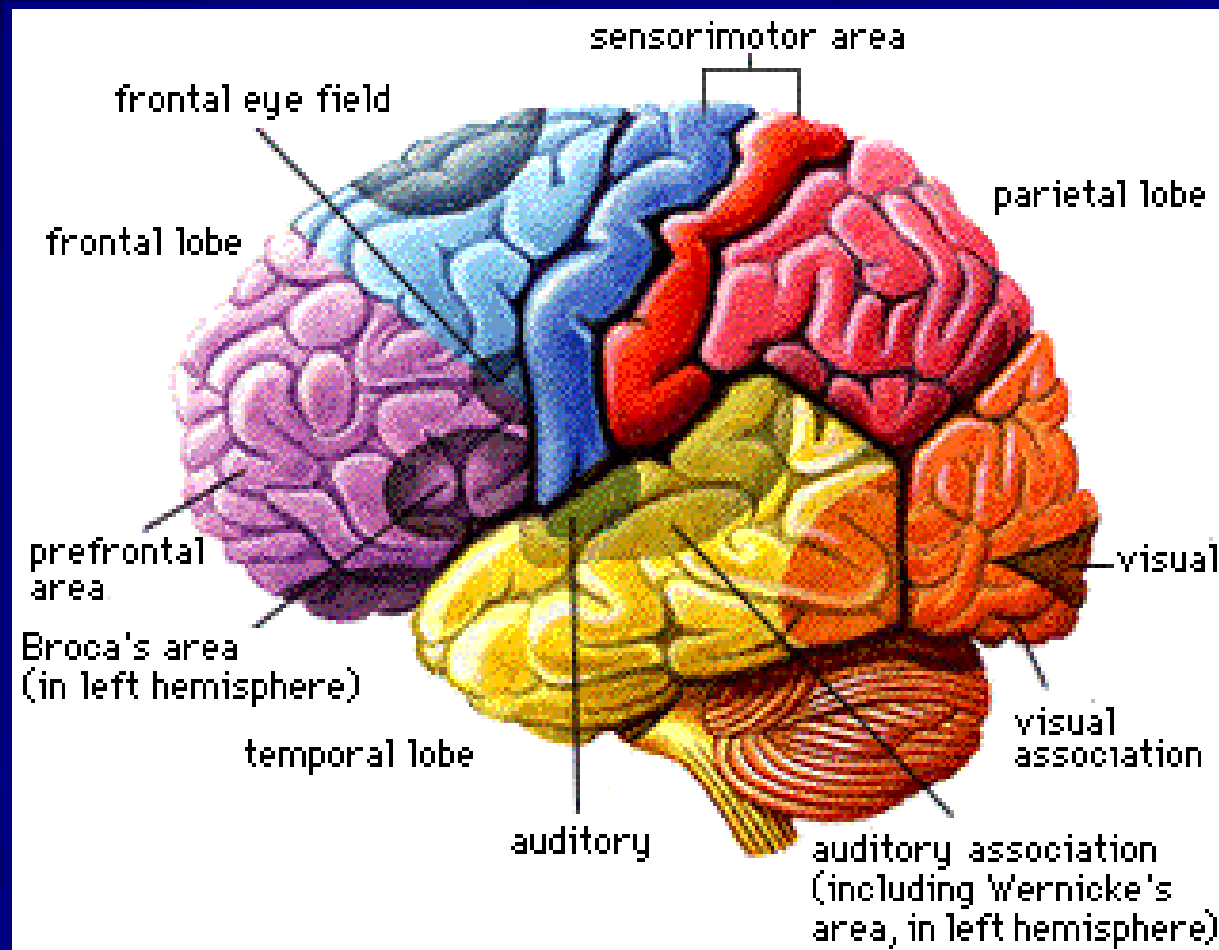
International Association of Gerontology and Geriatrics (IAGG) and its Global Aging Research Network (GARN) expert consensus panel

August 2015

## Consensus Panel in Support of Screening:

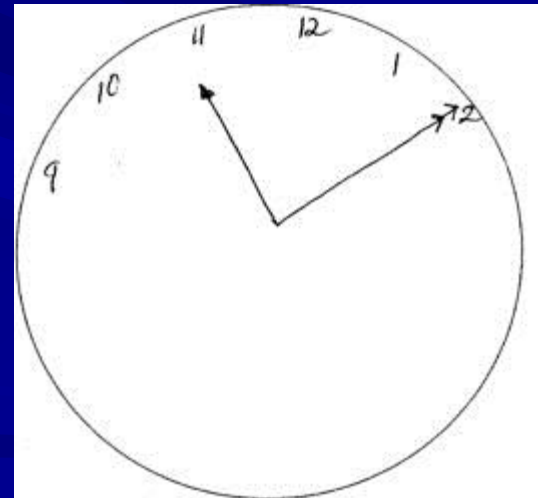
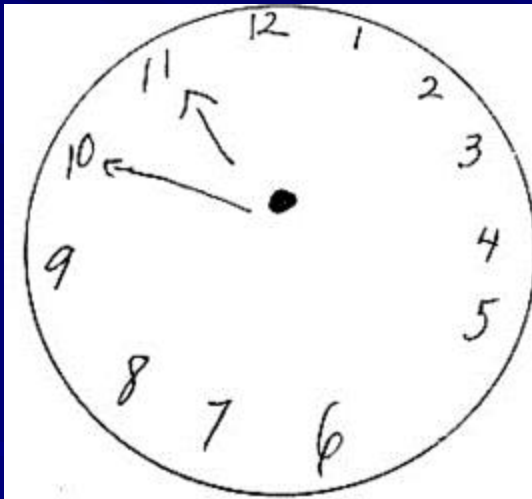
1. Validated screening tests are available that take 3 to 7 minutes to administer
2. Combination of patient- and informant-based screens is the most appropriate approach for identifying early cognitive impairment
3. Early cognitive impairment may have treatable components
4. Emerging data support a combination of medical and lifestyle interventions as a potential way to delay or reduce cognitive decline

# Cognitive Assessment



# Mini-Cog Assessment

1. 3 Item (word recall)
2. Clock-Drawing – “ten minutes after eleven”

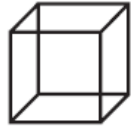
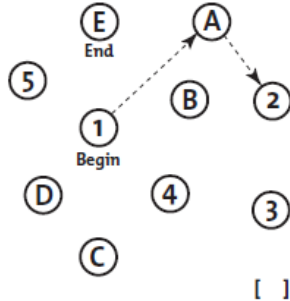




**MONTREAL COGNITIVE ASSESSMENT (MOCA)**

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

**VISUOSPATIAL / EXECUTIVE**



Copy cube

Draw CLOCK (Ten past eleven)  
(3 points)

POINTS

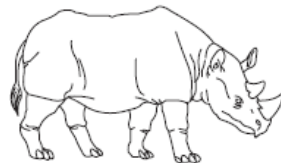
[ ] [ ] [ ]  
 Contour Numbers Hands

\_\_\_/5

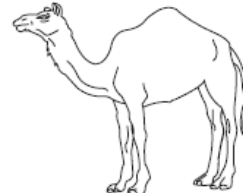
**NAMING**



[ ]



[ ]



[ ]

\_\_\_/3

**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

**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  
 [ ] FBACMNAAJKLBFAFKDEAAAJAMOF AAB

\_\_\_/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

**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. [ ]

\_\_\_/2

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
	[ ]	[ ]	[ ]	[ ]	[ ]	
Optional						

\_\_\_/5

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

\_\_\_/6

Montreal Cognitive Assessment (MoCA)

www.mocatest.org

# AD8 Dementia Screening Interview

Patient ID#: \_\_\_\_\_

CS ID#: \_\_\_\_\_

Date: \_\_\_\_\_

Remember, "Yes, a change" indicates that there has been a change in the last several years caused by cognitive (thinking and memory) problems.	YES, A change	NO, No change	N/A, Don't know
1. Problems with judgment (e.g., problems making decisions, bad financial decisions, problems with thinking)			
2. Less interest in hobbies/activities			
3. Repeats the same things over and over (questions, stories, or statements)			
4. Trouble learning how to use a tool, appliance, or gadget (e.g., VCR, computer, microwave, remote control)			
5. Forgets correct month or year			
6. Trouble handling complicated financial affairs (e.g., balancing checkbook, income taxes, paying bills)			
7. Trouble remembering appointments			
8. Daily problems with thinking and/or memory			
<b>TOTAL AD8 SCORE</b>			

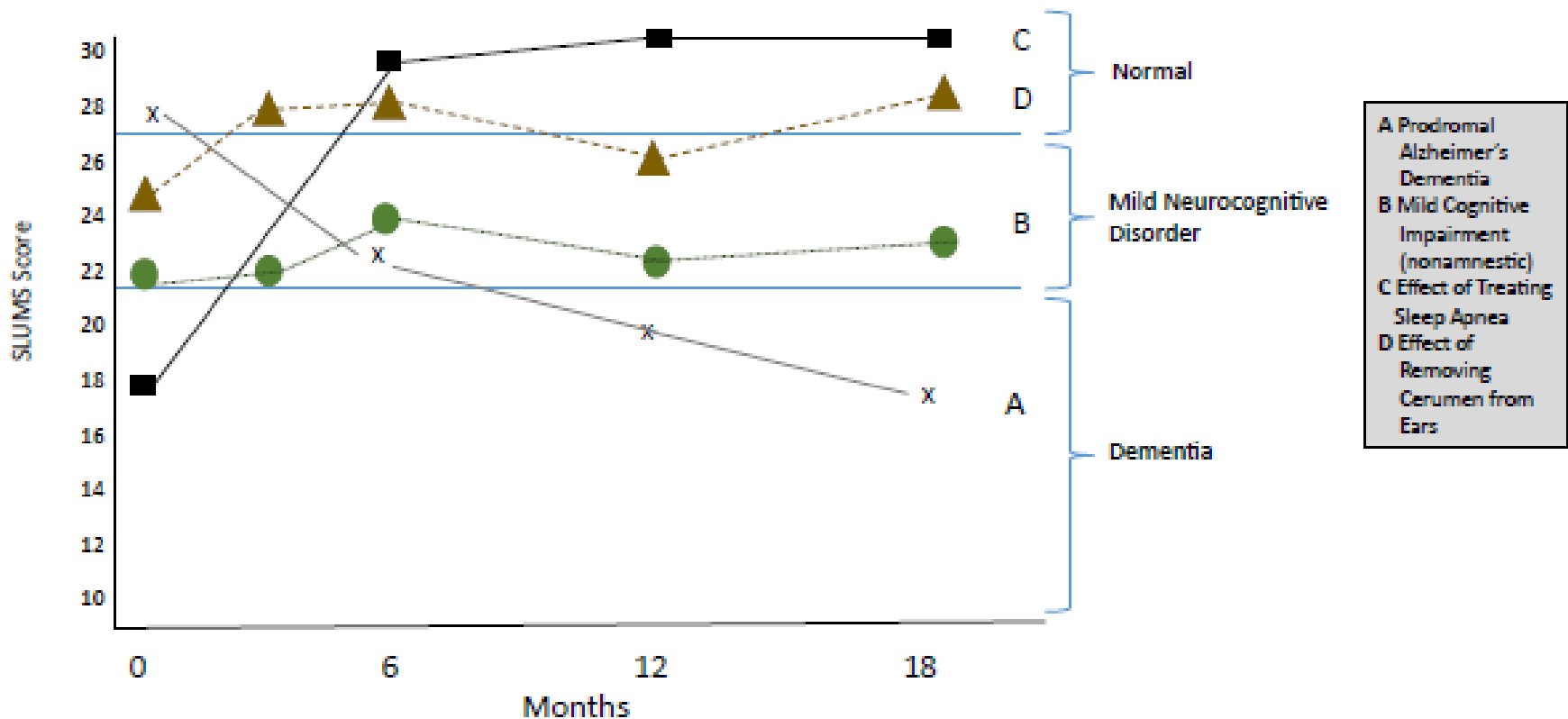
Informant Based  
Instruments for  
cognitive impairment:

AD8

Completed by  
caregiver

# Cognitive Change: Treatable Components

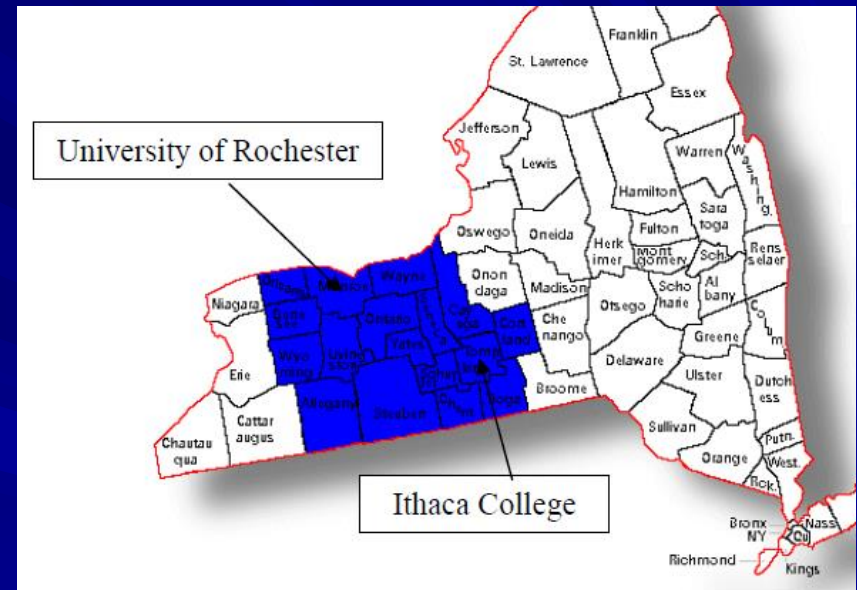
*J.E. Morley et al / JAMDA 16 (2015) 731–739*



# Primary Care Support & Training

## Finger Lakes Geriatric Workforce Enhancement Program

- Collaborations with: URMC, Finger Lakes Performing Provider System (FLPPS), Lifespan, Ithaca College, Finger Lakes Health System Agency, and Alzheimer's Association
- Meet education and training needs related to Alzheimer's Disease and related dementia (ADRD) for families, caregivers, direct care workers, and health professionals/trainees



# Mrs. S

Mrs. S is a 94 year-old woman

- 5 year history of progressive memory loss
- Needs increasing assistance with daily activities
- New Incontinence of bladder
- 2 recent hospital admissions for dehydration, urinary tract infection, and pneumonia
- Now using walker, sustained fall one month prior
- Increased “agitation” and confusion at night

# Reasons to Screen

- Management of comorbid conditions, behaviors, and medications
- Risk-benefit discussion regarding pharmacologic therapy and therapeutic expectations
- Anticipatory guidance and long-term planning
- Access to community services and caregiver support, risk for institutionalization
- Prognostication (End-Life-Care)
- Risk stratification for adverse outcomes:
  - Delirium
  - Morbidity/Mortality



# Conclusions

- Dementia incidence/prevalence is the modern health crisis
- Efficient cognitive screening tools exist but application must be targeted based upon risk
- Therapies have modest benefit and carry real risk to patients
- Treatment goals and therapeutic expectations need to be discussed
- Caregiver support, anticipatory guidance, and therapeutic relationship is key