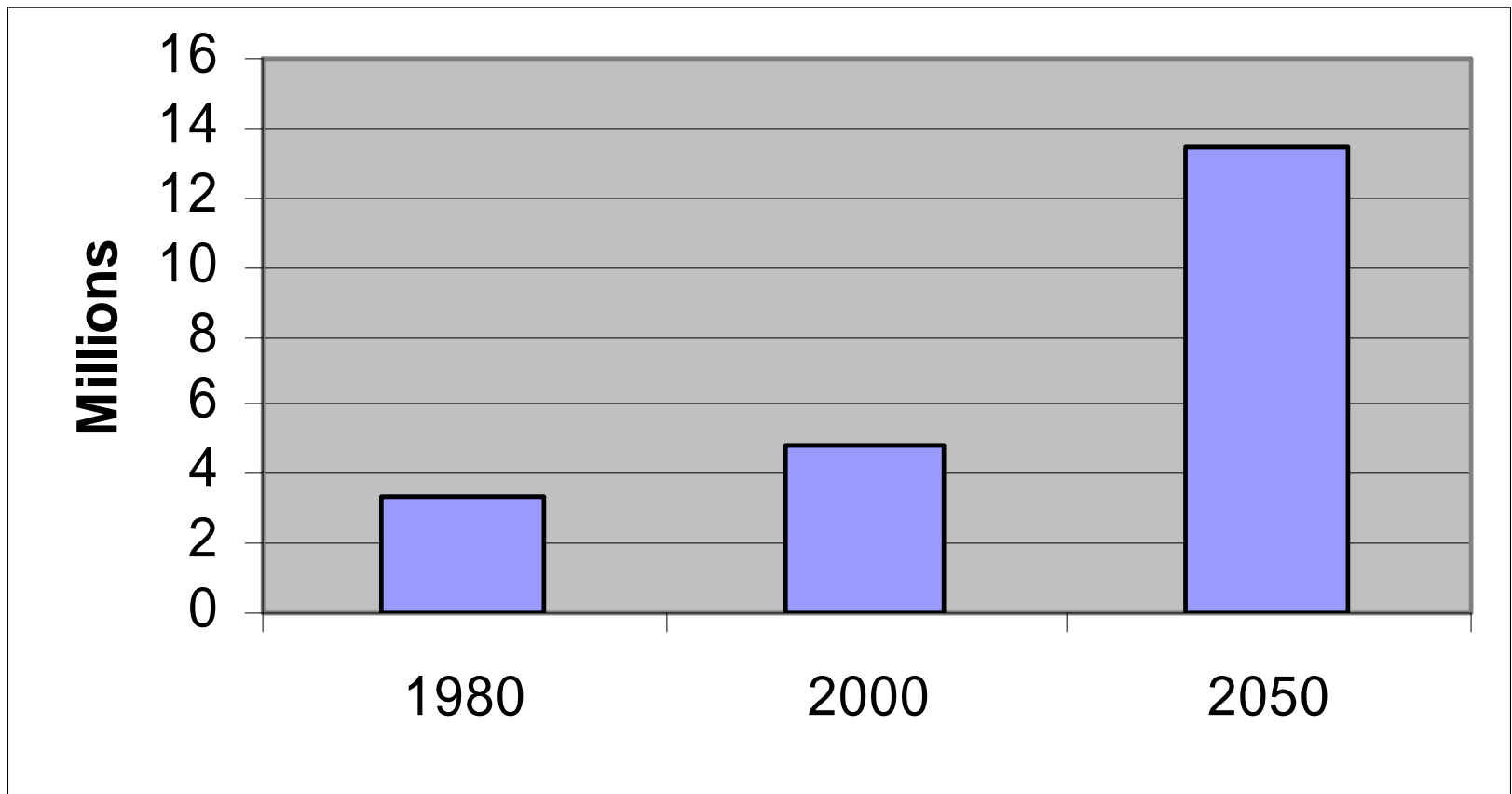


Cognitive Complaints in Primary Care

Bruce E. Robinson, M.D., M.P.H.

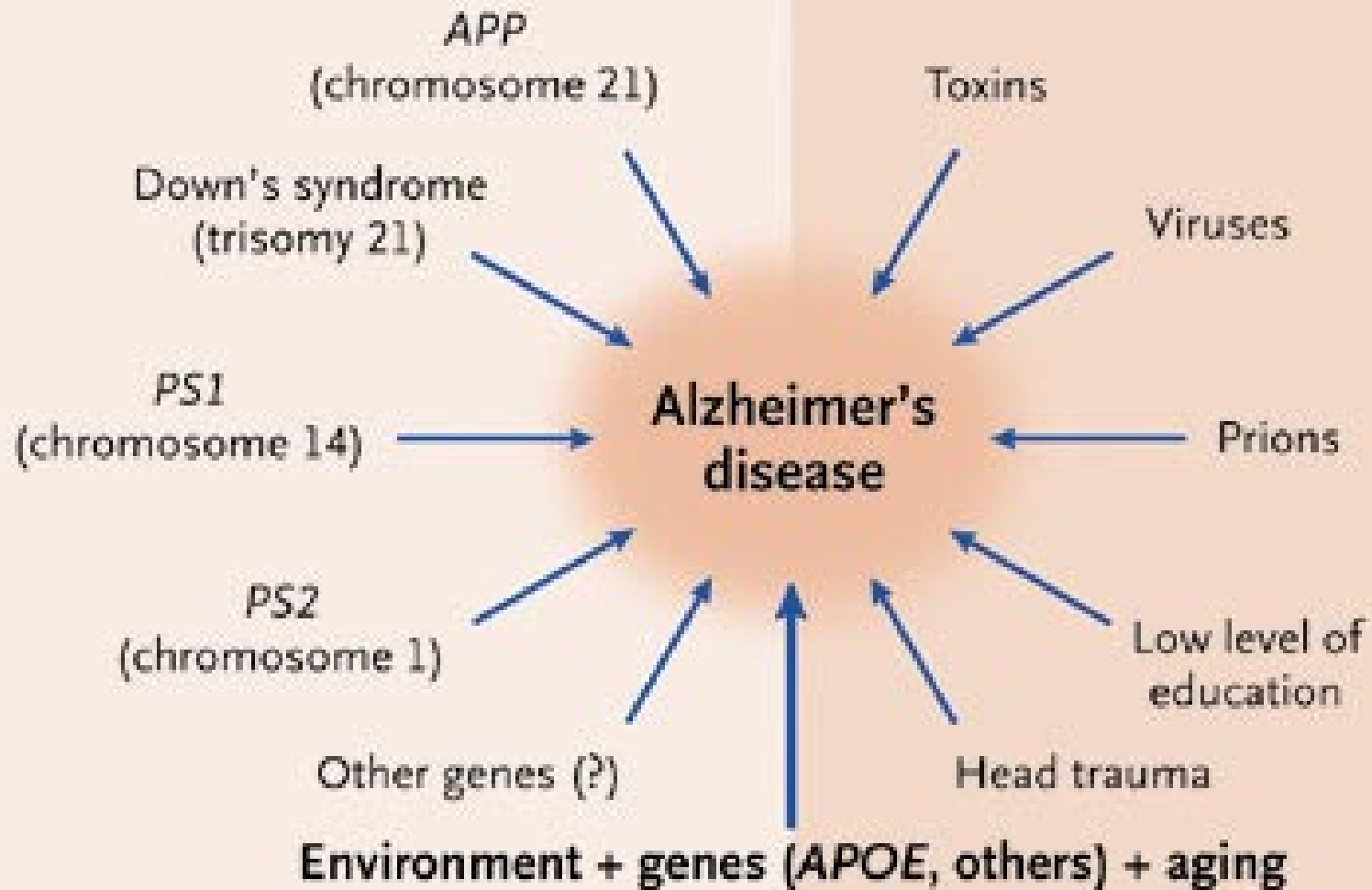
Prevalence of Alzheimer's



Evans, 1990

Genetic

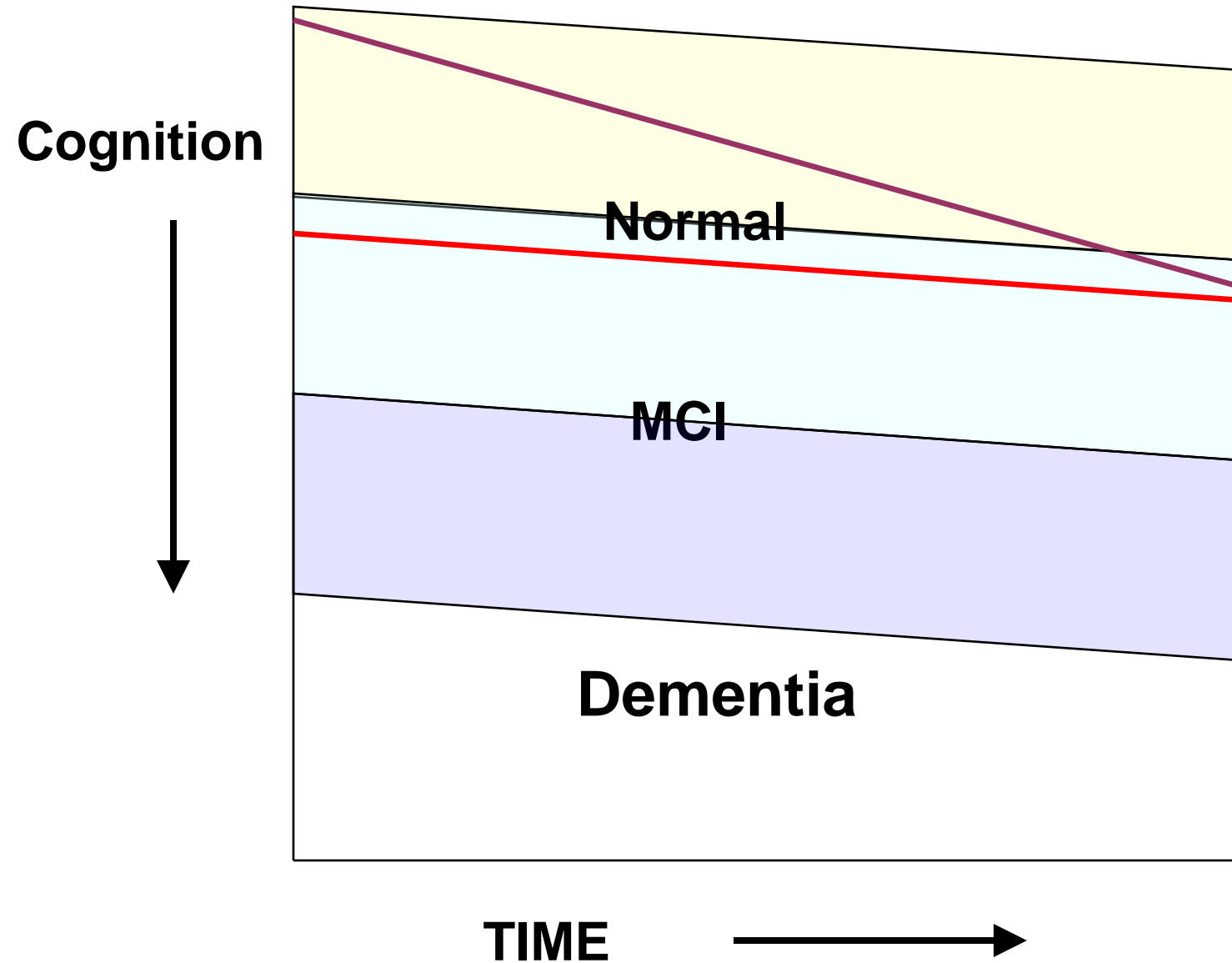
Nongenetic



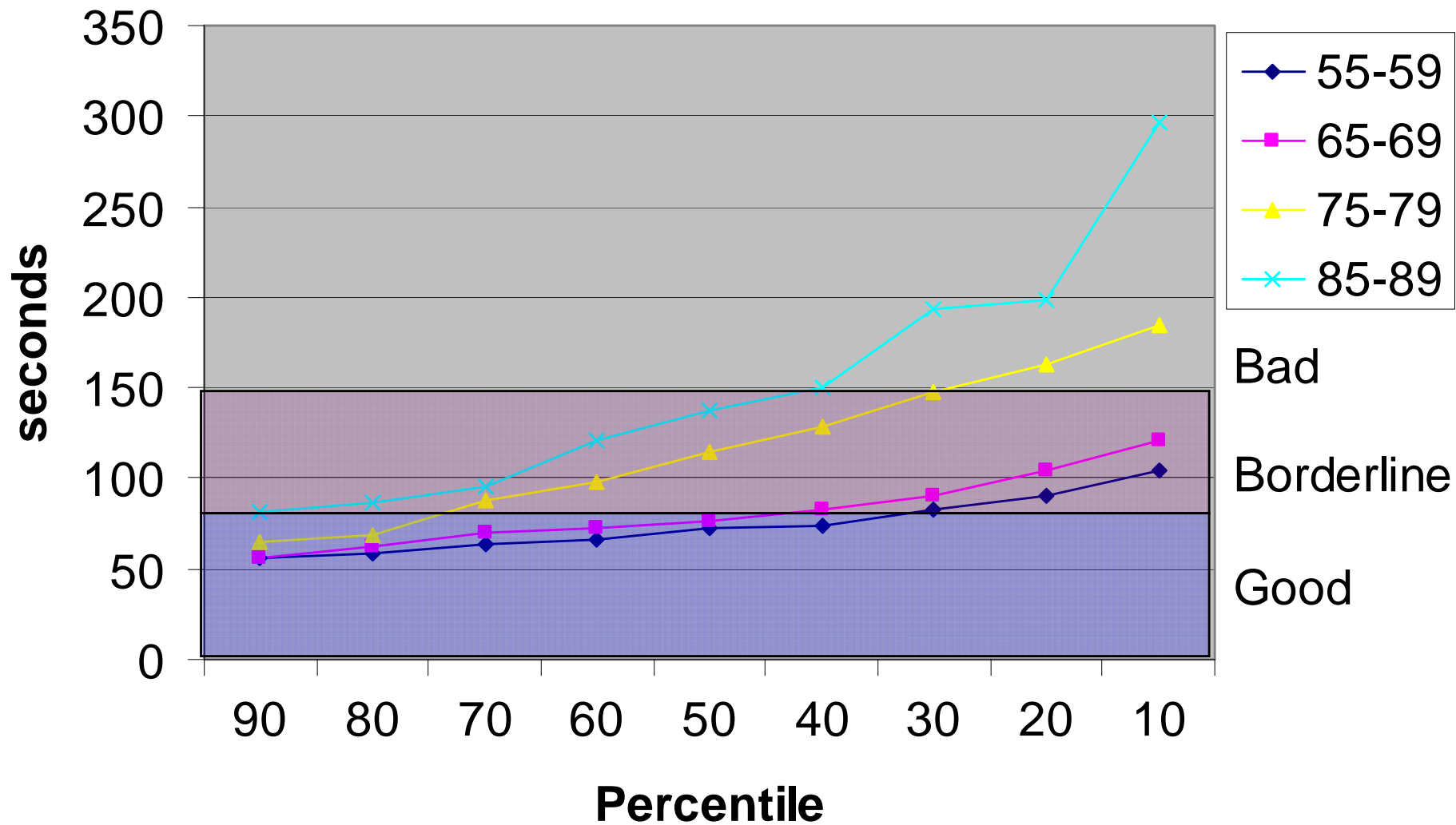
A 74 year old woman comes to your office accompanied by her husband. He states she recently was to pick him up after an appointment, and didn't show. She is having difficulty getting the groceries and preparing meals, has given up her previous bridge games, and often repeats questions.

She says she is just getting old, and doesn't think anything important is wrong.

Cognition: Aging and Disease



Trails B Performance and Aging



Cognitive Complaints: DDx

- Age Associated Memory Impairment
 - Reduced cognitive performance part of aging
- Mild Cognitive Impairment
 - Everything between normal for age/education/pre-morbid intellect and meeting criteria for a diagnosis of dementia
 - Most persons who develop dementia spend some time in this diagnostic category
 - The best time to evaluate for treatment
- Dementia- ? A useful construct ?

Changing the Paradigm

- Shift from threshold to continuum
- Intervene in early rather than late stages
- All cognitive loss does not progress: most with MCI do not reach dementia
- Importance of vascular risk in preserving brain function
- Lack of prognostic significance of labeling cognitive change

CMAJ 3/08: Evidence Based Recc

- Is Something Wrong?
 - A clinical history that explores the cadence of the illness is crucial
 - A separate history from a caregiver is needed
 - Most dementias preceded by MCI, a hi risk state for dementia (but not absolute)
 - Use diagnostic criteria for dementia (A recc)
 - Several tests are better than the MMSE at differentiating MCI/mild dementia from normal

Dementia: an acquired syndrome of progressive deterioration in global intellectual ability, which interferes with ability to function in social and occupational roles.

Office Dementia Diagnosis

Criteria

- memory impairment and one or more of: aphasia, apraxia, agnosia, executive
- significant decline, impaired function
- not due to CNS, systemic, psychiatric or toxic condition
- deficits not only during delirium

Measure

- Pt/Cgvr hx., brief cognitive screens, NP
- History, Functional Assessment Ques.
- Drugs, hx. physical, laboratory, imaging
- R/O delirium

Additional criteria (AD v Dem)

- Vascular
 - Neurologic or imaging evidence of CVD
- Alzheimer's
 - Gradual onset and continuing cognitive decline
 - Not caused by identifiable medical, psychiatric, or neurologic condition

Office Evaluation of Cognitive Loss

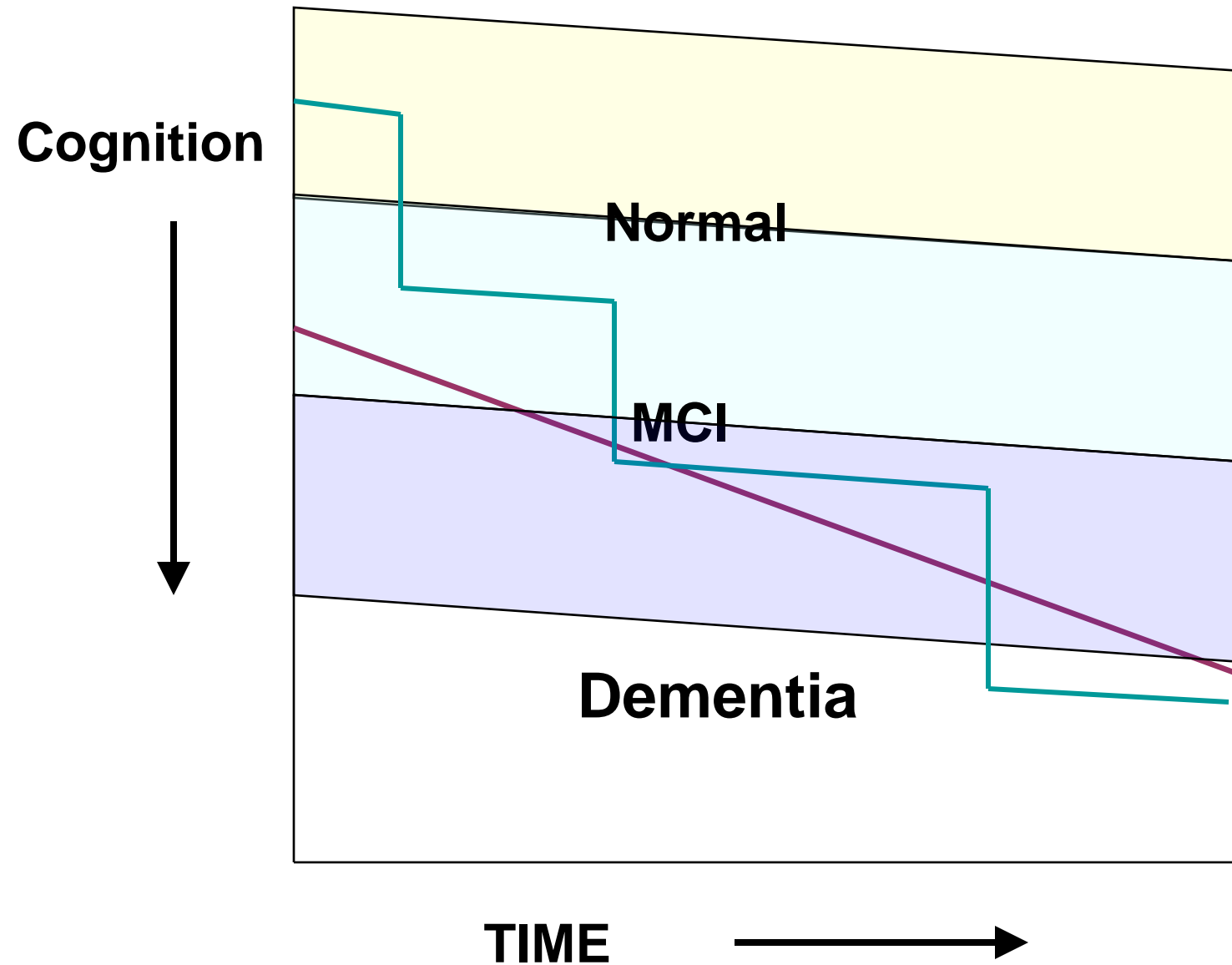
- History: story of illness, rule outs
- Physical: seeking alternate explanations/treatable causes
- Cognitive-behavioral exam
 - Functional Assessment
 - Cognitive screens
- Labs and imaging

Tools at www.gericareonline.net

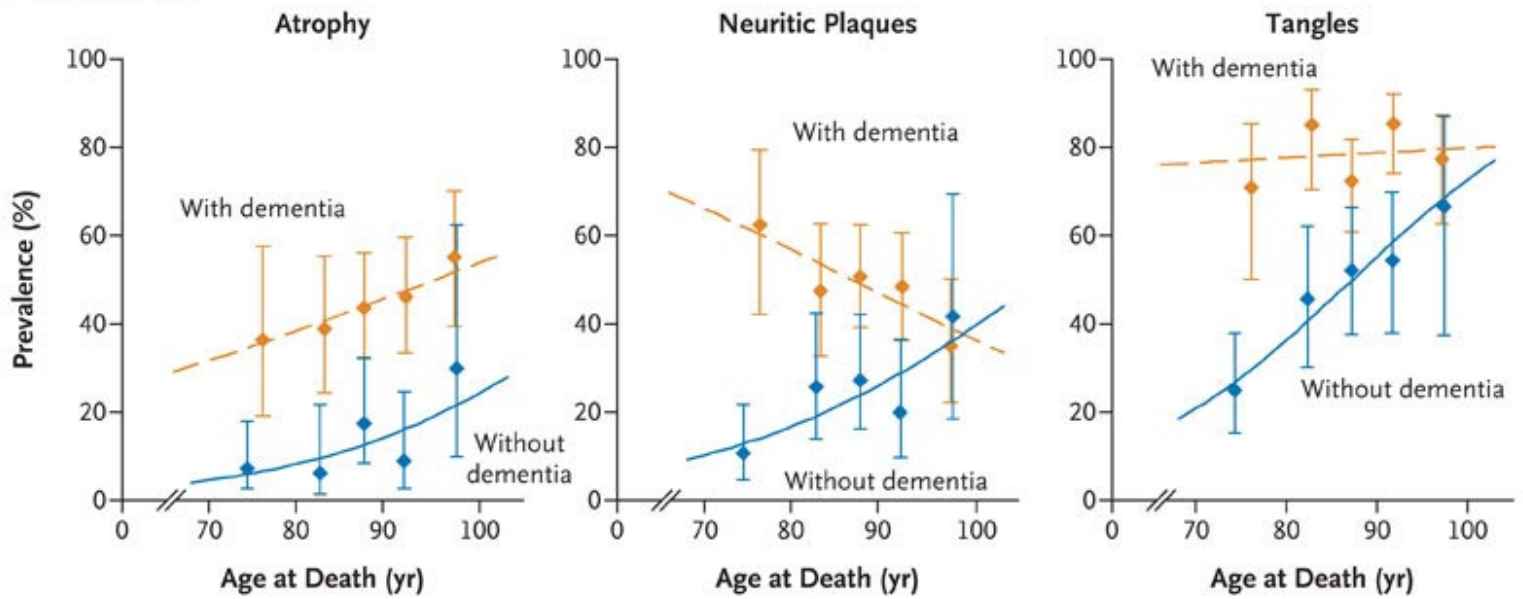
The Story (cadence) of the Illness

- onset (abrupt vs gradual)
- nature of progression (continuous, episodic, worsening, fluctuating)
- duration and timing of functional decline (focus on cognitive activities)
- social/ occupational history
- family hx of dementia or neuro disease

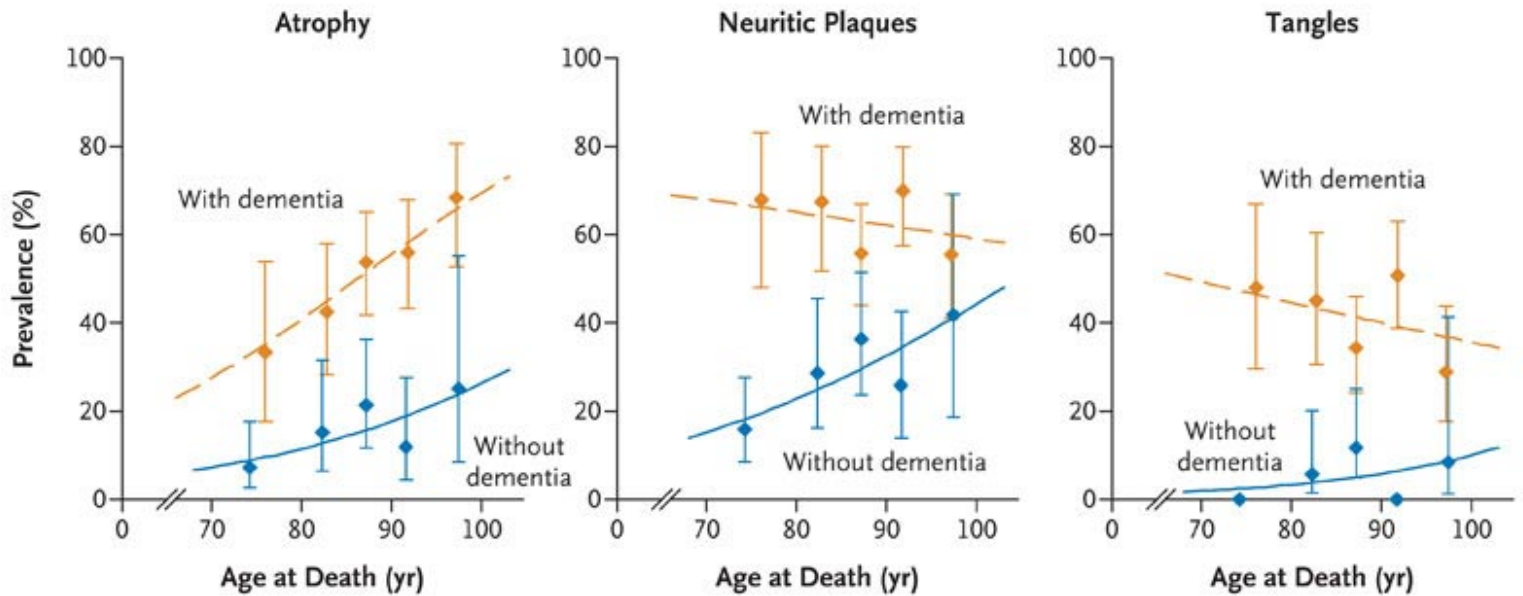
Cognition: Aging and Disease



A Hippocampus



B Neocortex



The husband has written a report that tells of the abrupt onset of mild forgetfulness three years ago during a hospitalization for cholecystectomy. She seemed better for a few months, then slowly declined in her memory and overall competence in her home responsibilities.

He scores her at 8/30 on the FAQ

Functional Assessment (FAQ)

- Writing checks, paying bills, balancing a checkbook
- Assembling tax records, business affairs
- Shopping alone for clothes, groceries
- Playing a game of skill, working on a hobby
- Heating water, making a cup of coffee, turning off the stove

Family Report: Patient Behavior

www.gericareonline.net/

The information provided in this questionnaire helps the doctor decide if an important memory problem is present. **It should be filled out by someone with close, frequent contact with the person with the memory problem.** Answer all questions to the best of your knowledge. If the person does not ever do the activity described, circle the answer that is your best guess as to what the person **could** do.

***The name of
the person is:***

Mrs. Smith

1. Does the person sometimes have trouble writing checks, paying bills, or balancing a checkbook?
 unable **needs help** **has trouble, but able** **normal**
2. Does the person sometimes have trouble assembling tax records, business affairs, or papers?
 unable **needs help** **has trouble, but able** **normal**

Measuring Cognitive Function

- Gold Standard: Neuropsychological testing (MCI particularly)
- MMSE
 - Alzheimer's in mind: watch out in vascular
 - Education/age correction
- MoCA www.mocatest.org/
 - Better sensitivity to mild disease
 - Better spread across cognitive domains

Her score on a Folstein MMSE is 26/30, with three errors on recall and one on the subtraction task. Her MoCA score is 19/30, with difficulty on the memory, clock draw, and trails tests. She is a college graduate.

MMSE Norms by Age/Education

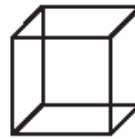
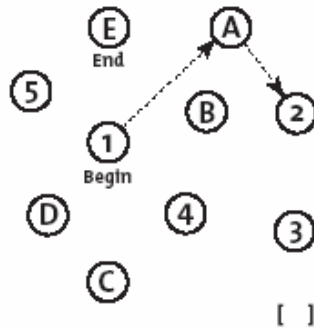
-2: an issue, -4: problem for sure

Education Age	0-4	5-8	9-12	>12	Age Mean
65-69	22	28	28	29	28
70-74	21	26	28	29	27
75-79	21	26	27	28	26
80-84	19	25	26	28	25
>=85	20	24	26	28	25
Education Mean	22	26	29	29	

MONTREAL COGNITIVE ASSESSMENT (MOCA)

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

VISUOSPATIAL / EXECUTIVE



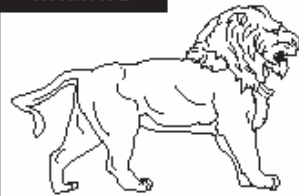
Copy
cube

Draw CLOCK (Ten past eleven)
(3 points)

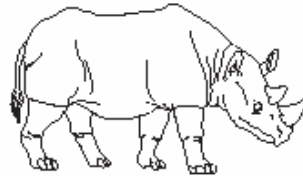
POINTS

[] [] []
Contour Numbers Hands ___/5

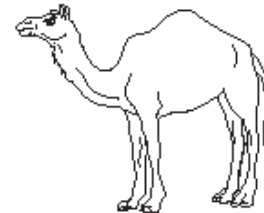
NAMING



[]



[]



[]

___/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
 [] FBACMNAAJKLBAFAKDEAAAJAMOF 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
	[]	[]	[]	[]	[]
Optional Category cue					
Multiple choice cue					

Points for UNCUED recall only

___/5

ORIENTATION

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

___/6

Montreal Cognitive Assessment

- MoCA available with research/norms on the web, and is free
- Better sensitivity to MCI and to cognitive loss from non-Alzheimer's causes
- Performs much better as a screen for cognitive loss needing evaluation

MoCA scores

	Normal Controls (NC)	Mild Cognitive Impairment (MCI)	Alzheimer's Disease (AD)
Number of subjects	90	94	93
MoCA average score	27.4	22.1	16.2
MoCA standard deviation	2.2	3.1	4.8
MoCA score range	25.2 - 29.6	19.0 – 25.2	21.0 – 11.4
Suggested cut-off score	≥ 26	< 26	< 26 [‡]

‡ Although the average MoCA score for the AD group is much lower than the MCI group, there is overlap between them. The suggested MoCA cut-off score is thus the same for both. The distinction between AD and MCI is mostly dependent on the presence of associated functional impairment and not on a specific score on the MoCA test.

Sensitivity and Specificity (%) MoCA and MMSE

Cut-off	≥ 26	< 26	< 26
Group	Normal Controls	Mild Cognitive Impairment	Alzheimer Disease
(n)	(90)	(94)	(93)
MoCA	87	90	100
MMSE	100	18	78

Can You Prevent/Cure: History

- systemic illnesses (esp. cardiovascular, diabetes, thyroid, HIV)
- psychiatric disorders (esp. alcoholism, substance abuse)
- neurological problems (head trauma, stroke, TIA, seizures)
- medication history
- Depression screen

Physical/testing Exam: seeking alternate causes

- BP, P, carotids, PVD
- Sensory function
- Cardiac, pulmonary function
- Signs of chronic hepatic dysfunction
- Neurologic exam:
 - focal findings, parkinsonism, neuropathy
 - gait

Common Treatable Causes of Cognitive Loss

- Depression
- Alcohol abuse
- Drug side effects (benzo, narc, antichol)
- Vascular cognitive impairment
- Delirium
- B12 deficiency
- Thyroid disease
- Hyperparathyroidism

The patient provides a history of 22 years of treatment for hypertension. She is on a statin for the past 7 years. She smoked 2 ppd from age 18 until 7 years ago. She has a family history of diabetes and premature heart disease.

She began taking alprazolam when she stopped smoking, and continues to use it a couple of times a day.

Her current medicines are atenolol, lisinopril, simvastatin, and alprazolam. She drinks two martini's a night.

Her exam shows diminished pulses, brisk reflexes, positive palmomentals, and trace cogwheeling

Laboratory Tests

- All Patients: B12, thyroid screen
- Most patients
 - CBC, BMP, Ca⁺⁺
- Some patients
 - creatinine, liver function
 - HIV screen

Brain Imaging Studies

- Structural Images
 - Computerized Axial Tomography (CT or CAT)
 - Magnetic Resonance Imaging (MRI)
- Functional Images
 - Single Photon Emission Computerized Tomography (SPECT)
 - Positron Emission Tomography (PET)

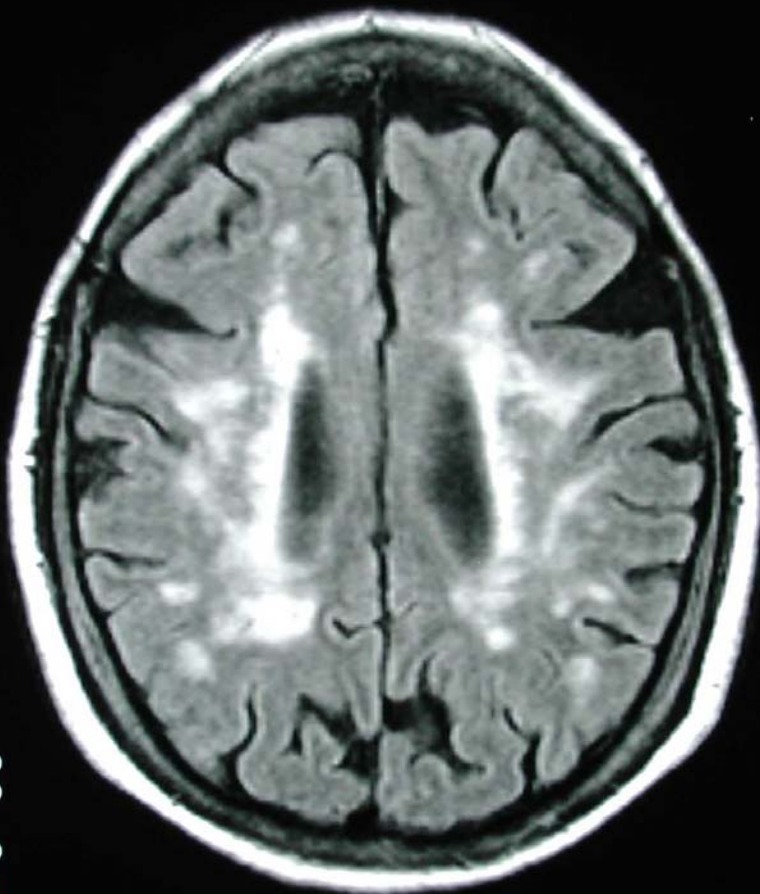
Imaging Recommendations

- US Neurology- once
- Canadian task force
 - CT for atypical and those with sx/findings increasing structural risk
 - CT/MRI to rule in cerebrovascular disease if management would be changed

14-56N-1928
08:39
16-MAY-2001
IMAGE 47
SER 1-4

+ : F A L

R



tirm1 180
*R D 2400
TR 8000.0
TE 105.0/1
TA 03:20
AC 1

SP -37.1
SL 5.0
FoV 165*220
168 *256os
Tra

W 674
C 383

Office Evaluation of Cognitive Loss

- History
 - Progressive, one step, vasculopath, benzo's
- Physical
 - vascular
- Cognitive-behavioral exam
 - Functional Assessment- abnormal
 - Cognitive screens- abnormal
- Labs and imaging
 - White-matter disease only

Tools at www.gericareonline.net

Communicating a Diagnosis

- This woman's cognitive screen and hx suggest a disorder affecting thinking is present, likely outside of normal aging
- MCI or early dementia are likely
- A vascular contribution to cause is identified. Degenerative disease (Alzheimer's) is not excluded
- Treatment can proceed without a specific diagnostic label. Don't need the A word.

Management Recommendations

- Vascular risk factor management
 - Blood pressure, cholesterol, ? Aspirin
 - Healthy lifestyle: mental and physical exercise
- Alcohol in moderation (or none)
- Alprazolam?
- Monitor for progression (CMAJ 2008)
- Advance directives discussion
- Safety
 - Driving evaluation?

Referral

- Neuropsychology
 - detailed cognitive performance information
 - Could help with safety decisions (driving)
- Neurology
 - familiar with uncommon causes. Variable neuropsych skills. Etiologic focus
- Psychiatry
 - primary psychiatric etiol., behavioral problems

Common Phenotypes

- Mild Cognitive Impairment
- Alzheimer's Disease
- Dementia with Lewy Bodies
- Frontotemporal variants
- Vascular dementia
- Parkinson's-dementia complex
- Alz. dementia with cerebrovascular disease

Mild Cognitive Impairment

- Requires neuropsychological testing to label
- Variability in clinical use
- “pre-Alzheimer’s” will generally show memory impairment first
- Threshold issue- phenotypic dementia lags behind the biology and anatomy
- Minor deficits can be due to other things- uncertainty remains

Alzheimer's Disease

- Generally slow progression (years)
- No motor signs
- Bright, alert, quick, glib
- Casual contacts may see as unimpaired
- Anosagnosia
- Usually good physical health

Dementia with Lewy Bodies (DLB)

- ? Second most common cause of degenerative dementia
- Lewy body- round, pink blob in the brain cell (or sometimes outside) that is most specifically found in the deep brain
- Alzheimer's changes also found in brains of persons with DLB

DLB- Clinical Features

- Variability of attention and alertness
- Memory less affected early on
- Hallucinations/delusions (well-formed)
- Neuroleptic sensitivity
- Stiffness (Parkinsonism)
- Falls and passing out
- Disturbed REM sleep
- Cholinesterase inhibitors useful

Fronto-temporal Dementia (FTD)

- Third most common cause of degenerative dementia
- Frontal lobe degeneration on imaging
- Two types
 - Pick's disease- familial form where brain contains ballooned nerve cells with inclusion bodies
 - Non-specific degeneration of frontal lobes

FTD- Clinical Features

- Subtle onset, long course
- Easily distracted, inattentive
- Loss of initiative, motivation
- Disinhibited (sex, behavior)
- Memory not an early problem (false negatives common)
- Later in the disease, all brain functions are affected

Vascular dementias: NINDS-AIREN criteria

- Dementia
- Evidence of at least two strokes by exam/imaging, or one stroke and a clear temporal relationship between the stroke and the onset of impairment
- Abrupt onset
- Fluctuating, stepwise course
- Binswanger's: subtle onset, early onset incontinence, extensive subcortical white matter changes consistent with ischemia

Parkinson's-dementia

- Dementia usually a late development in Parkinson's disease
- Pattern: visual spatial, executive loss, recognition memory better
- Many persons with other diagnostic causes of dementia develop motor stiffness late
 - Vascular dementia
 - Alzheimer's disease

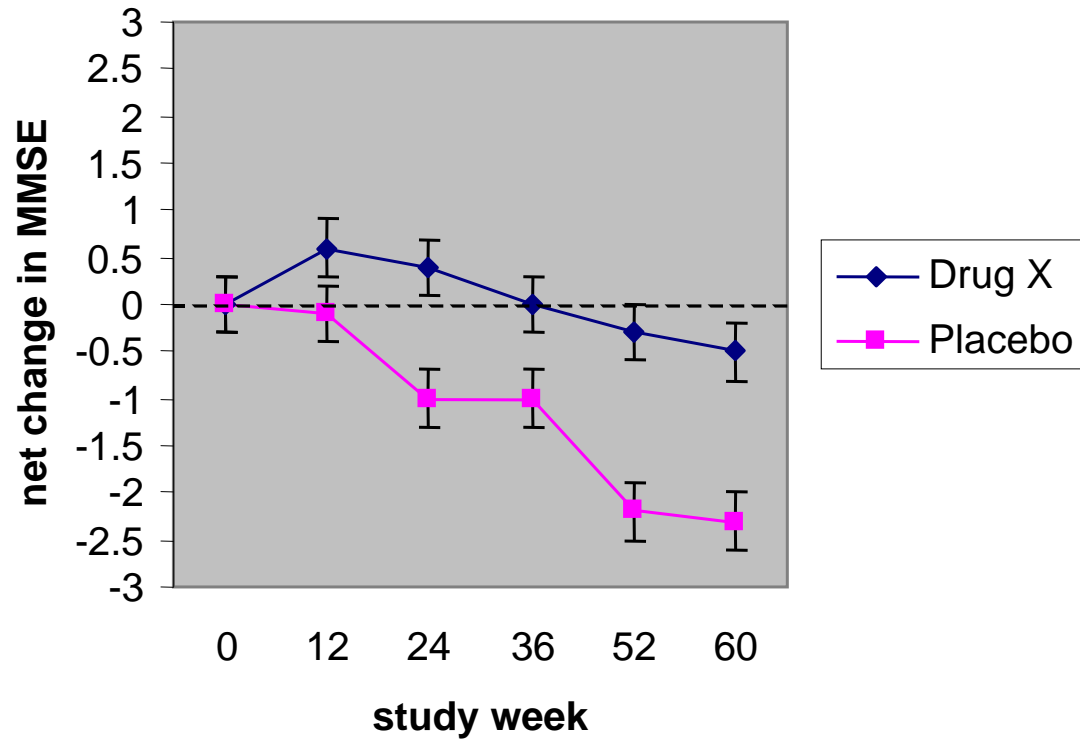
Goals of Treatment

- Maintain function
 - cognitive enhancement
 - intervention for mood disturbances
 - minimize disordered behavior and its impact
- Maintain quality of life
 - promote early discussion of values
 - support caregiver's skills and role

Cholinesterase Inhibitors

- donepezil (Aricept) and rivastigmine (Exelon), galantamine (Razadyne)
- Benefits: small boost in cognition: no evidence of disease modifying effect, MCI trial showed no effect at three years
- Burdens: 1/4 stop due to adverse effects: nausea, diarrhea (patch?), vivid dreams
- Trial in AD with option of stopping makes sense

A TYPICAL STUDY



Memantine

- NMDA receptor antagonist
- Clinical trial evidence of improved cognition in AD/VD
- FDA approved in advanced AD (MMSE <10)
- Can be taken with cholinesterase inhibitor

Drug Tx of Dementia: ACP-AAFP Recommendations

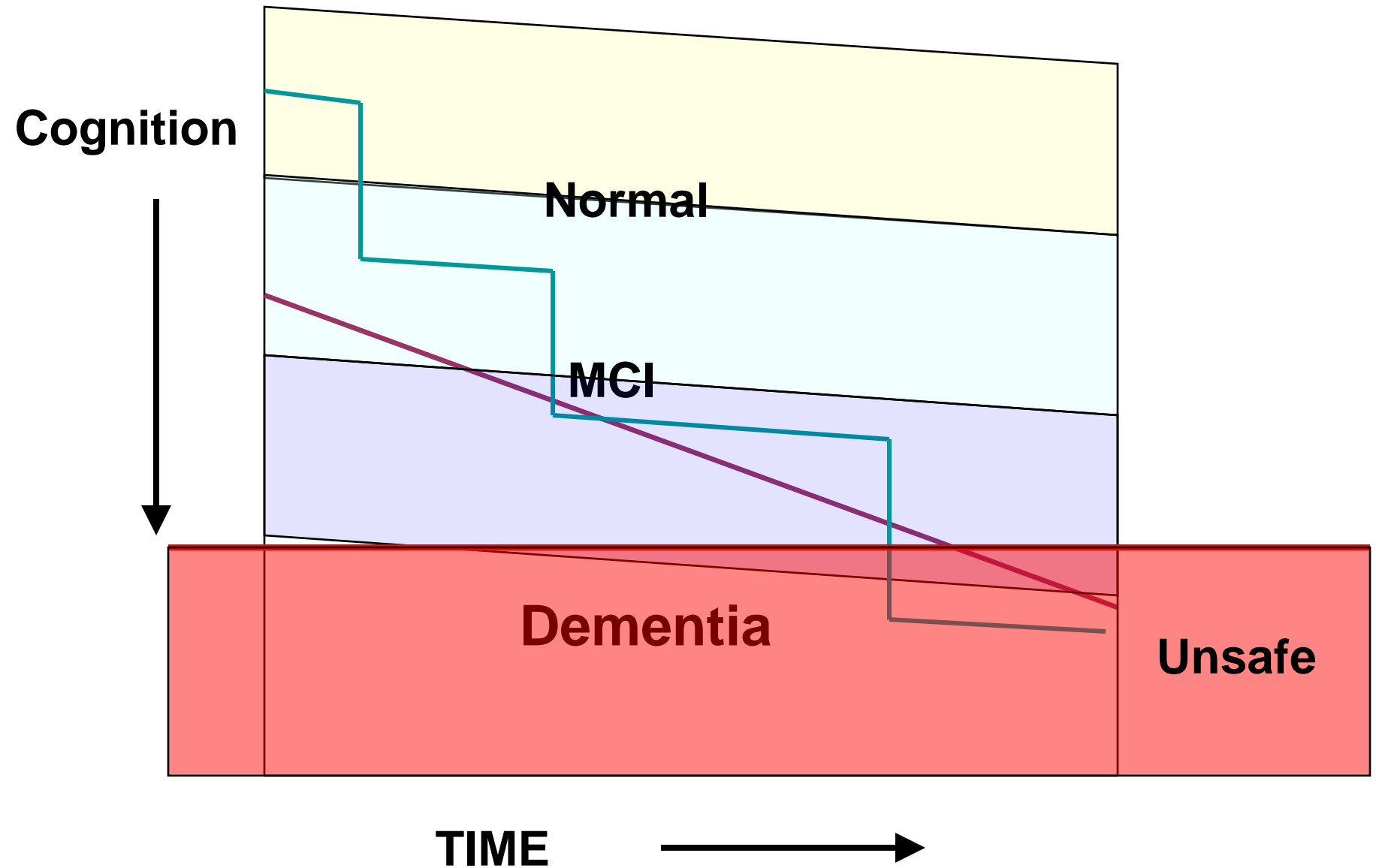
most trials show statistically significant improvements in measures of thinking and memorytoo small to lead to clinically important improvements in daily life”

Ann Intern Med 2008 (summary for pts.)

DON'T FORGET SAFETY ISSUES!

- **Driving**
- **Firearms**
- **Power tools**
- **Smoking in bed**
- **Poisons, medications**
- **Fall risk**

Cognition: Aging and Disease



Driving and Cognition

- Risk based on cognition, not dx.
- Aging changes as important as disease
- If you do drive with cognitive loss
 - Consider driving evaluation
 - Daytime, familiar routes, don't go alone
 - Be aware of legal risks
 - Plan for not driving

Advanced Directives

- Find out what the AD patient would want if unable to communicate and irreversibly impaired:
 - CPR
 - Life saving medical care
 - Life preserving surgery
 - Tube feedings
- Complete Living Will, appoint surrogate

Information for Caregivers and Patients with Dementia

- Books
 - The 36 Hour Day, Mace and Rabins
 - The Loss of Self. Cohen and Eisdorfer
- Organizations
 - SMH MCI Support Group
 - Alzheimer's Association
 - Alz. Disease Education and Referral Center
 - Local Alzheimer's Support Groups