The Importance of Early Detection: Grabbing the Low Hanging Fruit

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Major risk factor for AD: Age

Age	Alzheimer's Dementia	All Dementias
< 60	0.07%	0.5%
60-64	0.3%	1%
65-69	0.9%	2%
70-74	2.0%	4%
75-79	4.1%	8%
80-84	11.7%	16%
85 & older	23-33%	30-45%

- Early onset AD represents 6-10% of all cases of AD.
- Only 45% of those aged 84 and older is cognitively normal - NIH, 2001

- Rates for each person vary depending upon your risk factors, genetic predisposition, etc., all of which can double, triple, or quadruple your risk.
  - Prevalence Rates from the most recent Report to the Surgeon General, 1999

MCI

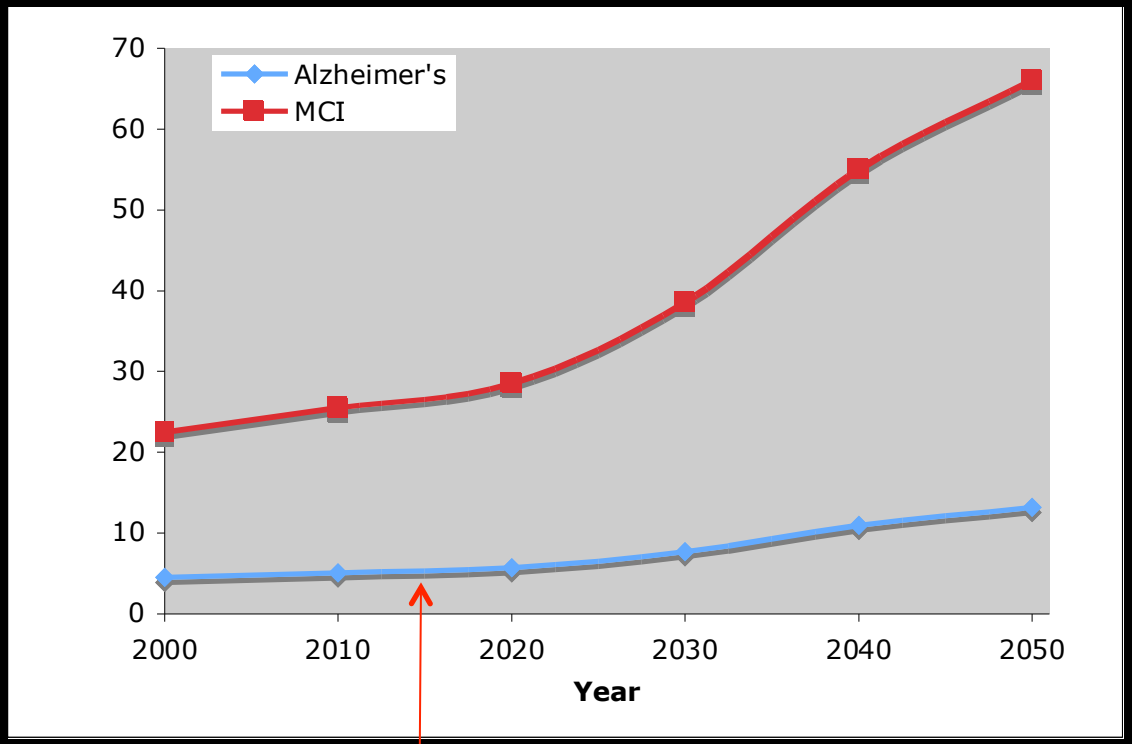
- AD pathogenesis precedes diagnosis by at least a decade (probably longer).

- Amnestic MCI is also considered as asymptomatic AD by 2011 NIH guidelines
  - Memory complaint and some localized impairment (no dysfunction in daily living)

- Everyone with AD had MCI first.

- A critical point for diagnosis and treatment

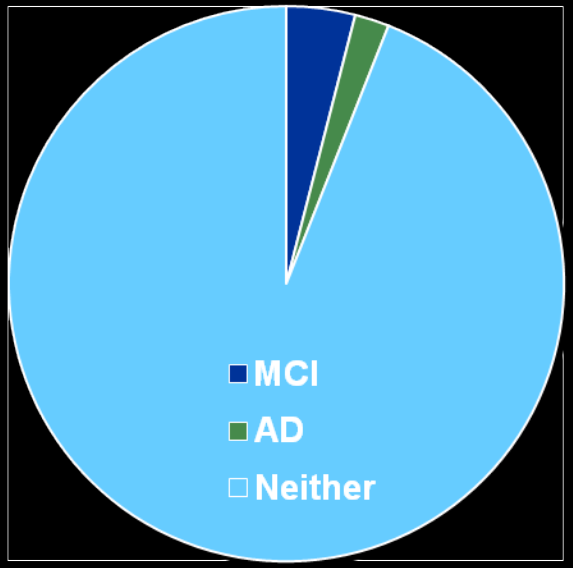
Incidence and Future Trends in MCI and AD



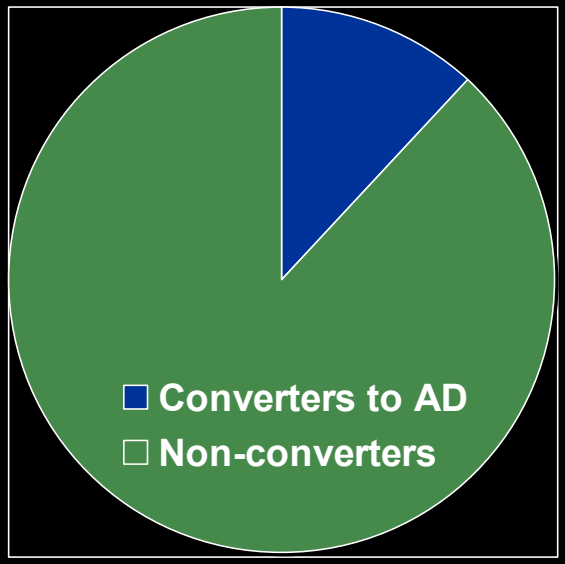
Unvergatz et al, 2001

66-92% increase in neurological disorders from 1979-2010, and this is not simply a function of longer lifespans; Pritchard, Mayers, & Baldwin, 2013

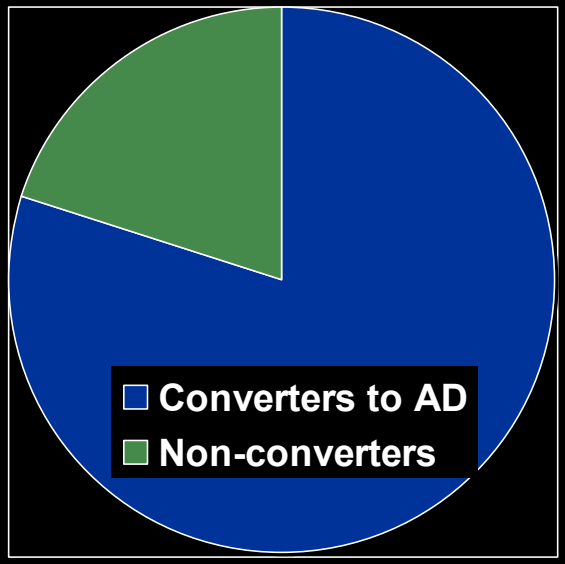
Prevalence MCI/AD



Annual % Conversion MCI to AD

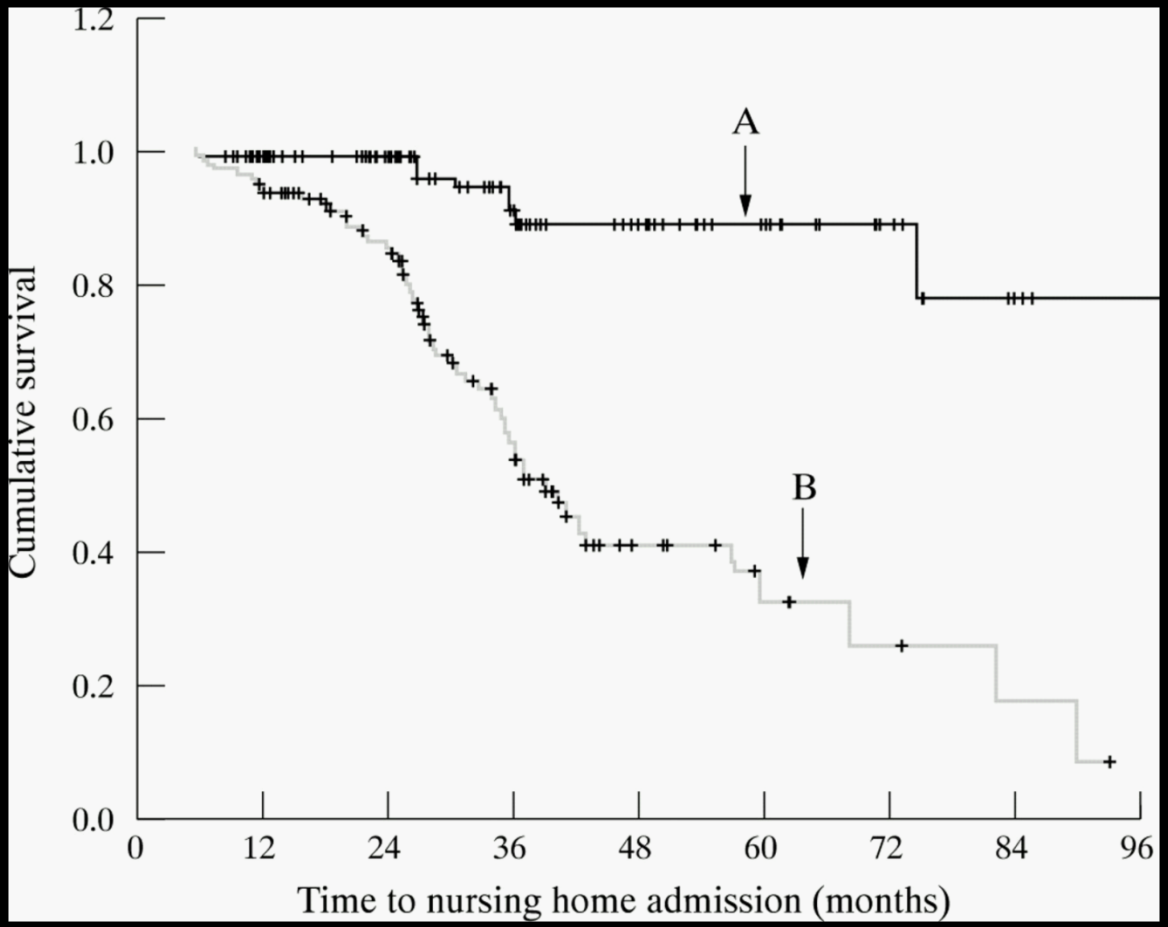


Six-Year % Conversion



Figures are for amnestic MCI.
Conversion rates for all forms of MCI are 6.8-8.1% annually .
(Mitchell & Shiri-Feshki, 2009).
- MCI as a risk factor

Early Treatment of Memory Loss Greatly Improves Quality of Life



Lopez et al., 2008. *Journal of the American Geriatric Society*

Benefits of early detection/intervention

- A one-month delay = $1 billion annually savings in Alzheimer's care costs in the U.S.

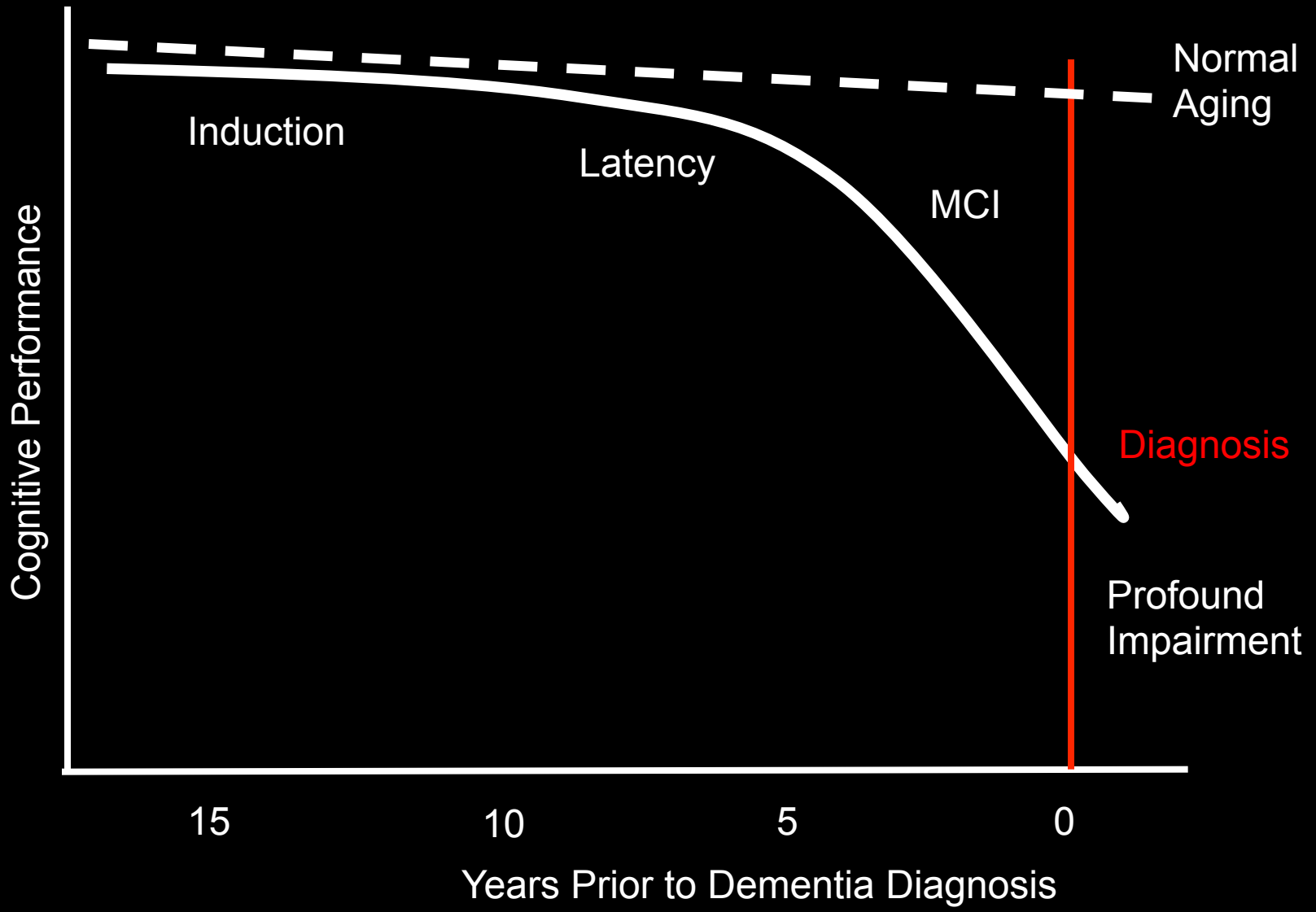
- A delay of five years = a 50% reduction in the number of people with AD in 50 years.

  Alzheimer's Association and the National Institute on Aging

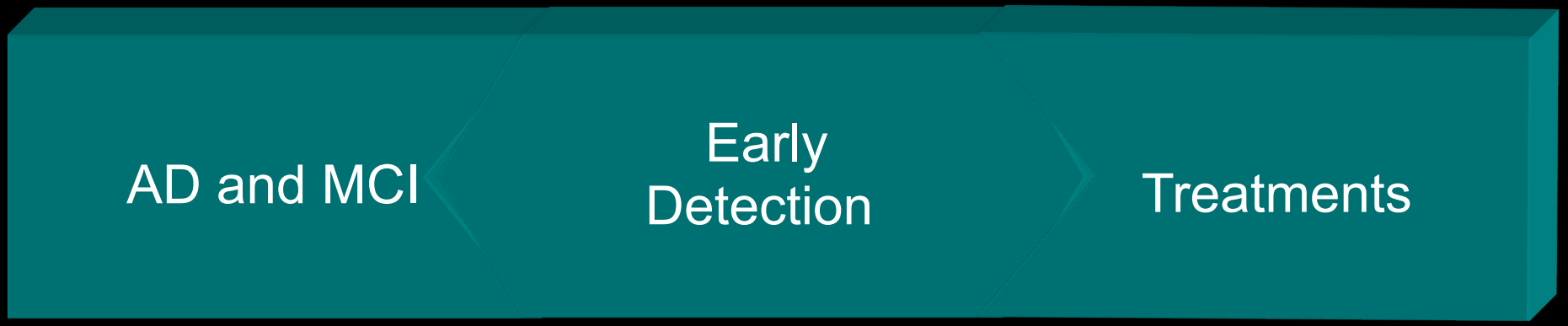
- 8-year delay = U.S. healthcare system savings of up to $4 trillion for cases arising between 2010 and 2050.

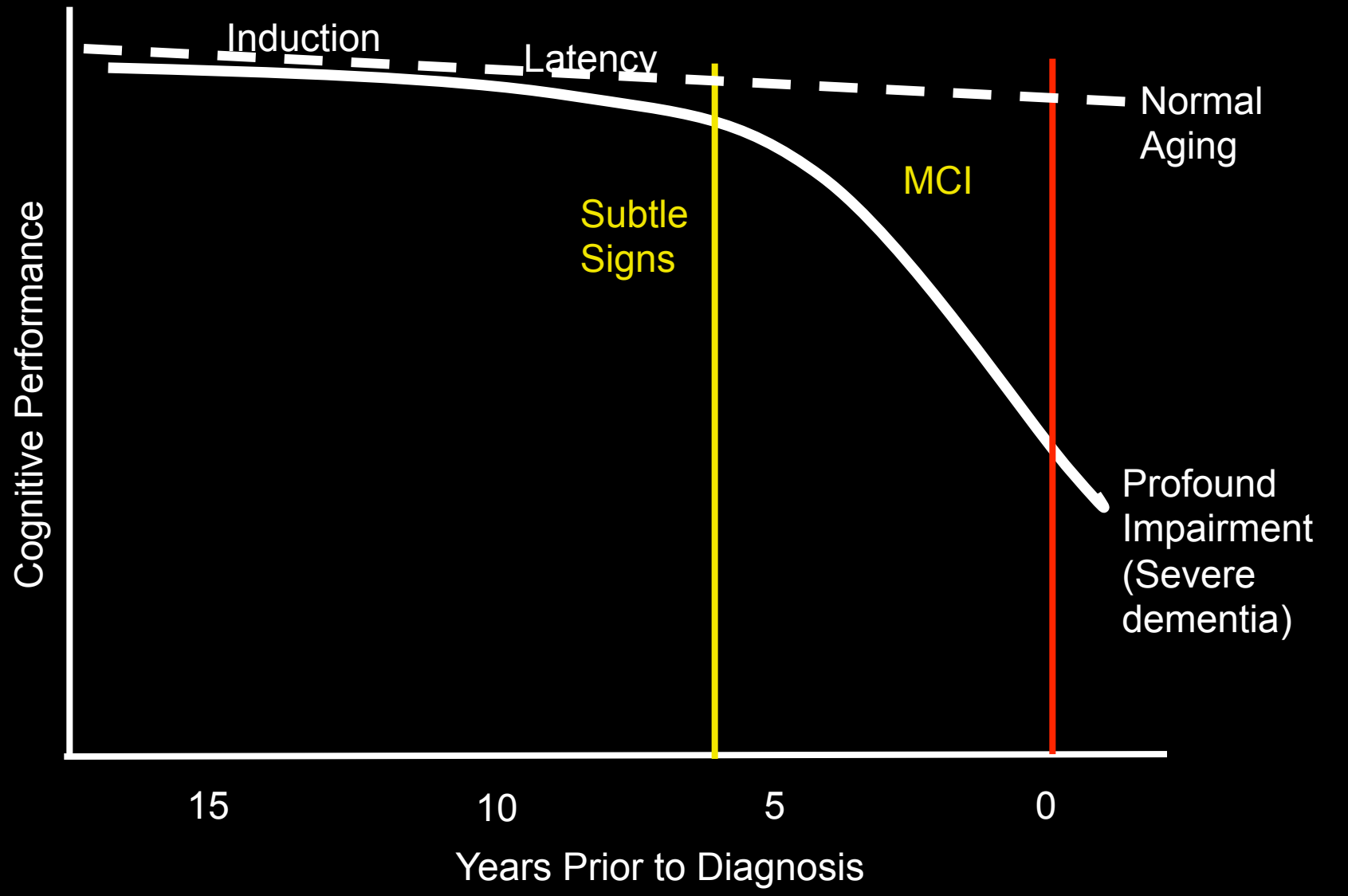
  Vernon & Goldberg, 2007

Typical pattern for diagnosis



Johnson, Storandt, Morris, & Galvin, 2009, Archives of Neurology


AD and MCI
Early Detection
Treatments


Induction
Latency
Normal Aging
MCI
Subtle Signs
Profound Impairment (Severe dementia)
Cognitive Performance
15
10
5
0
Years Prior to Diagnosis

Early Detection Failures

- Relying on self-assessments.
  - Common feature of AD is poor insight
  - Cognitive decline limits self assessment abilities

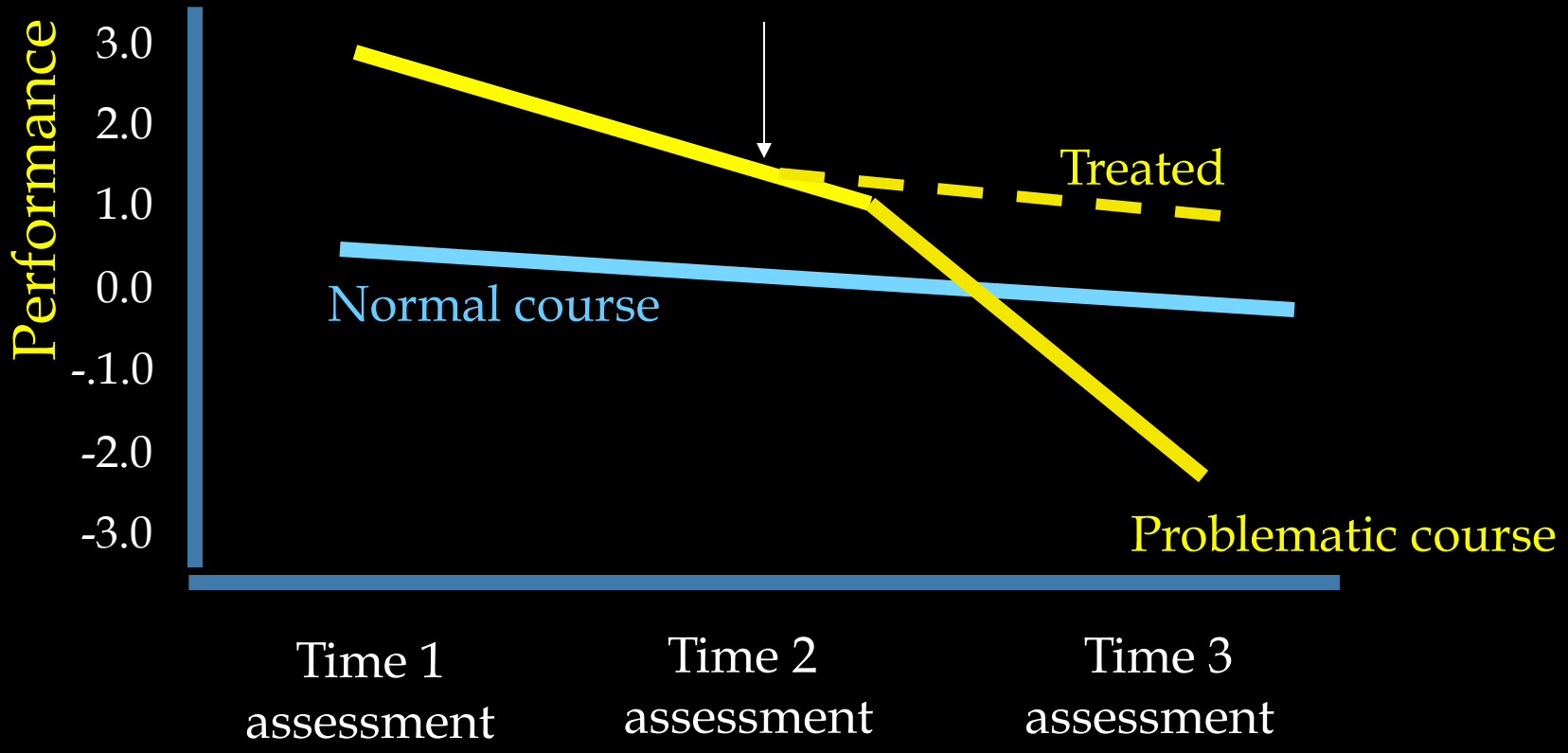
- Relying on routine primary care visits.
  < 3% of those with mild dementia
  < 25% of those with moderate to severe dementia

Report to the Surgeon General, 1999

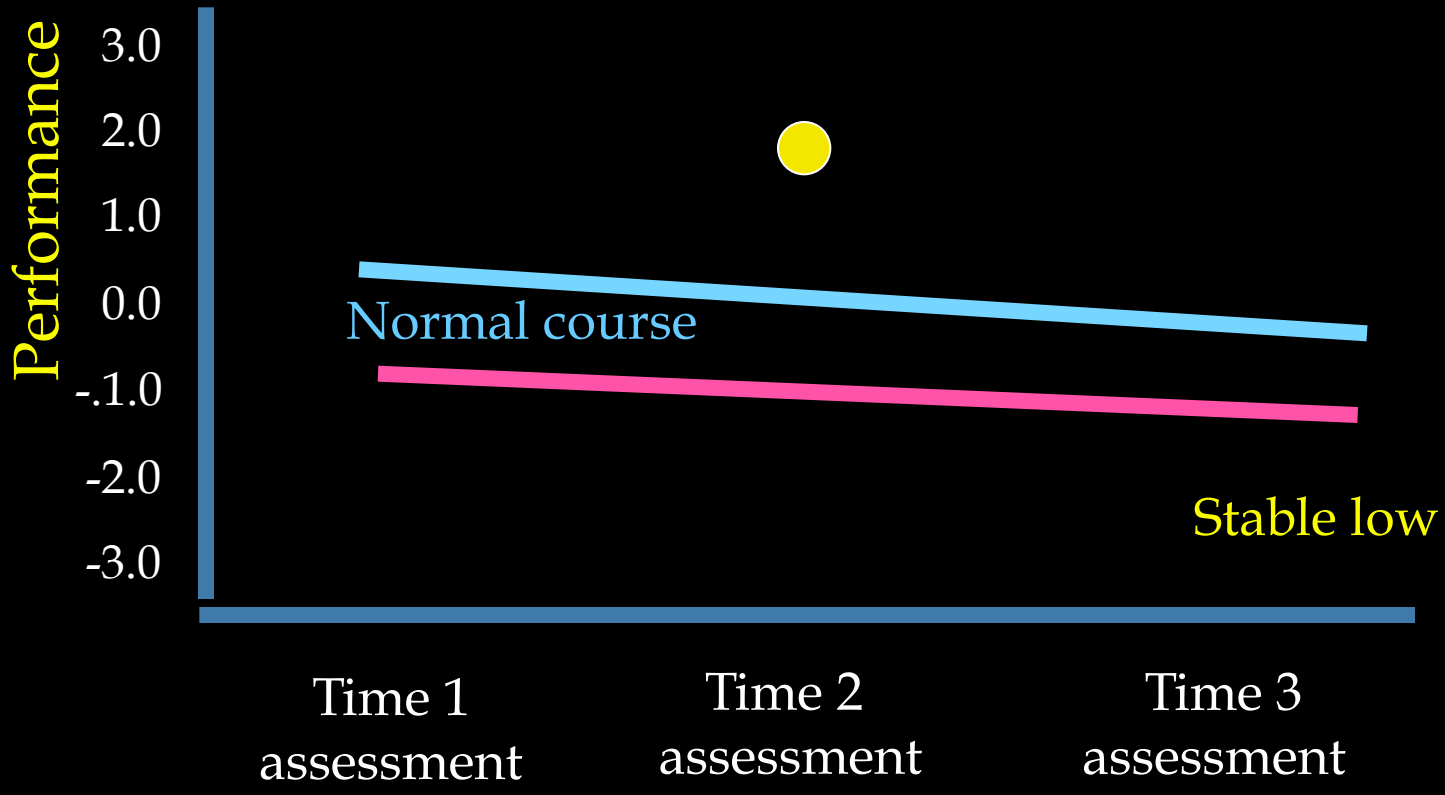
Methods for evaluating memory

- Using comprehensive, standardized, and validated tests to test for memory impairment
  - Assess memory from a multidimensional perspective
  - Compare scores with others of the same age
- Assess other areas of cognitive functioning
- Assess mood and personality

Optimizing Memory Evaluations: The Case of Mrs. H.



The case of Mr. C



Who should be tested?

Anyone 60 or older: Establish a baseline of functioning.

Additional Risk Factors for Testing Referral:

1) Family history of dementia (48% if parent with early onset)

2) Type II diabetes, high BP, high cholesterol

3) Known or suspected CNS dysfunction (stroke, tumor, etc.)

4) If undergoing treatment (medication, surgery) that may effect a cognitive or behavioral change

* Score on screening test

Summary

- Without formal testing, memory loss often goes undetected until profound dementia
  - Routine testing to establish baseline in general population; referrals for high risk or MCI
- Treatments can help slow the progression and maintain quality of life if diagnosed early
- Incidence of memory impairment is high for those >85, so routine medical care is needed (e.g., like prostate exams & mammograms)

Early Detection and Tiered Treatment

Tier 1: Ideal for Early Signs (less diagnostic certainty)

- *Diet (e.g., MIND, FINGER, etc.),*
- *Brain Games (e.g., POSIT science)*

Tier 2: FDA approved (more diagnostic certainty)

- Cholinergic Enhancers (e.g., Aricept/Donepezil, Razadyne/Galantamine, Exelon/Rivastigmine)
- Neuroprotectors/cell death blocker (Namenda/ Memantine)

- Primary goal is to slow progression (start early)

e.g., Lactot et al.*, (2009) Ther Adv Neurol Disorders*;

Raina et al. (2008) *Ann Intern Med.*