Mild Cognitive Impairment in the General Population: Occurrence and progression to Alzheimer's disease

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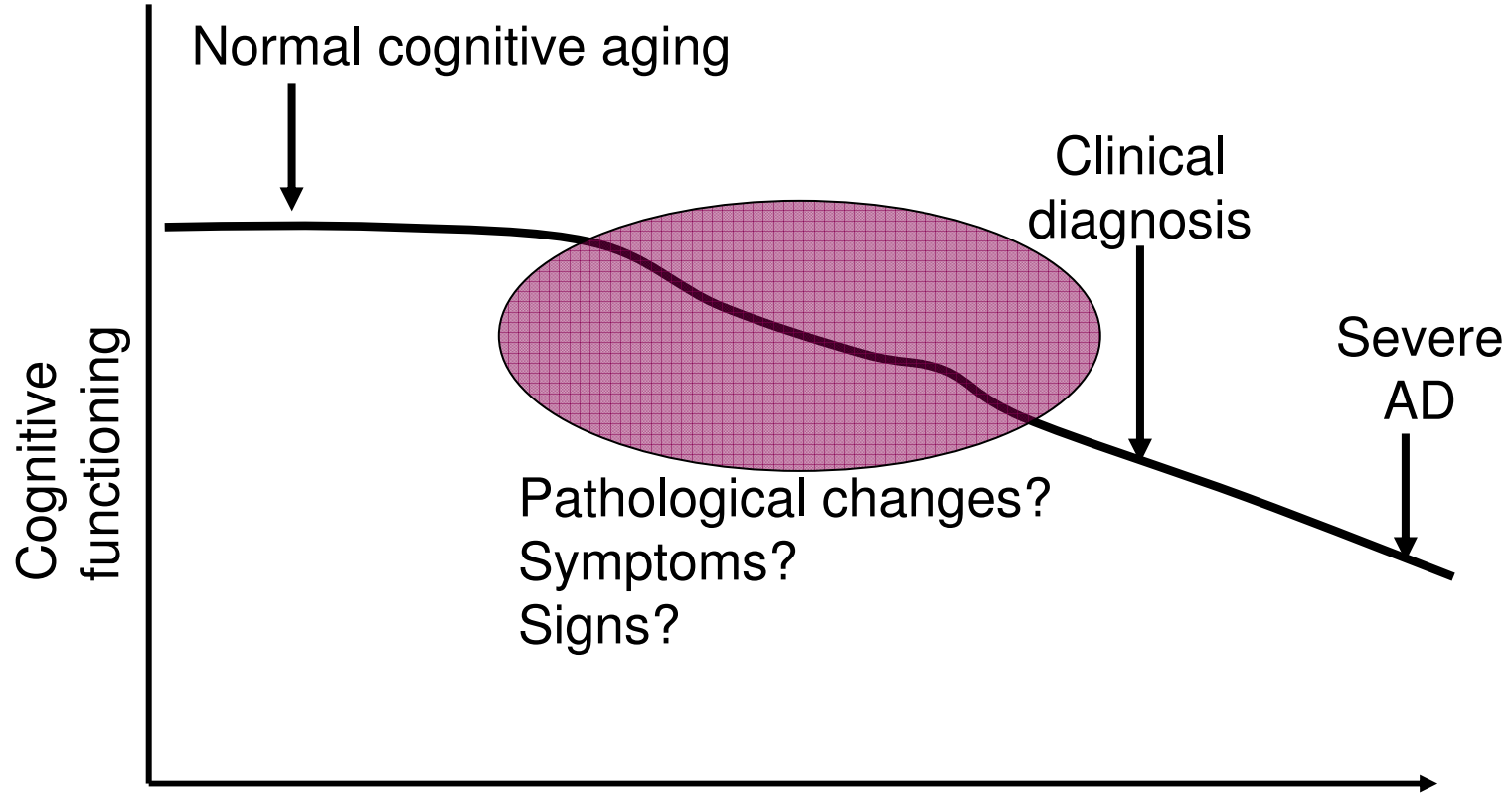
Gradual and progressive decline in Alzheimer's disease



Mild Cognitive Impairment (MCI)

Not normal, not demented

(Does not meet criteria (DSM IV, ICD 10) for a dementia syndrome)

Cognitive decline

-Self and/or informant report

-Objective cognitive testing

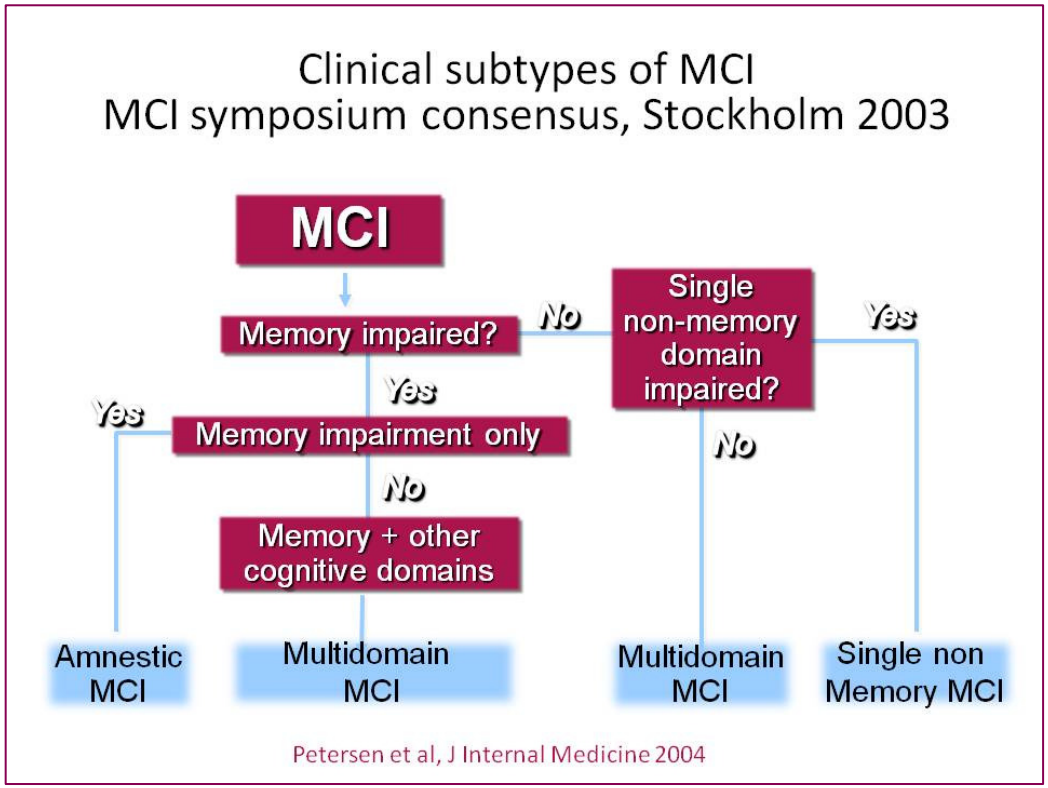
Preserved basic activities of daily living / minimal impairment in complex instrumental functions

Petersen et al, J Internal Medicine 2004

Winblad et al, J Internal Medicine 2004

Background

- MCI criteria have been continually revised over the past ten years
- The latest criteria propose different MCI subtypes depending on which cognitive domain is impaired



Background

- It is widely assumed that the MCI-amnestic is the most common subtype, and that MCI-amnestic often represents a preclinical phase of Alzheimer's disease
- Little data is available at the population level concerning the prevalence of MCI subtypes
- It has been suggested that different MCI subtypes have different etiologies, but data from the general population is limited concerning the predictive value of the MCI subtypes for identifying early prodromal dementia

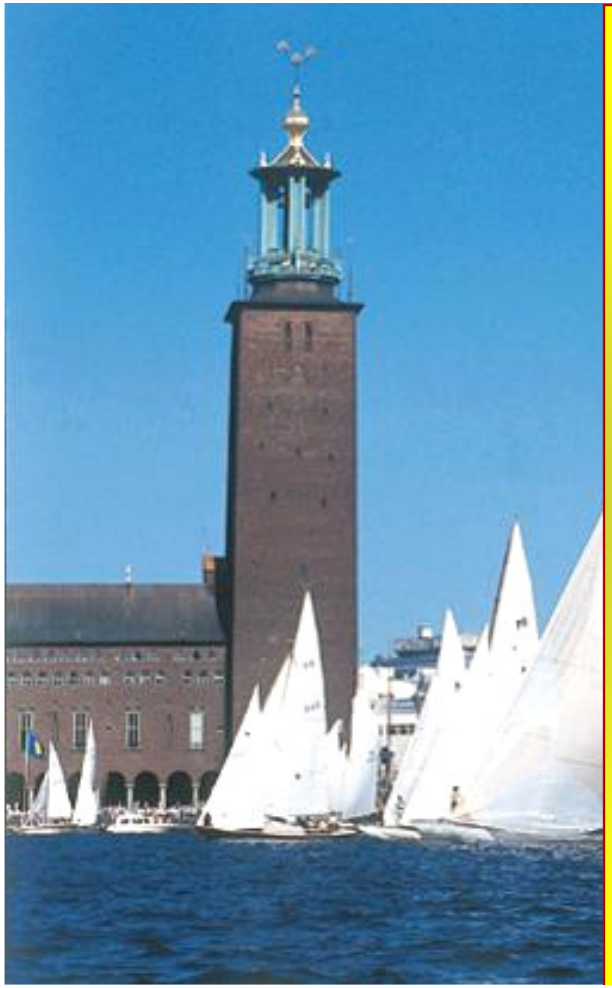
Aims

1) To detect the occurrence of three MCI subtypes in the general population

2) To identify cases of cognitive impairment which are not detected by current operational criteria for MCI

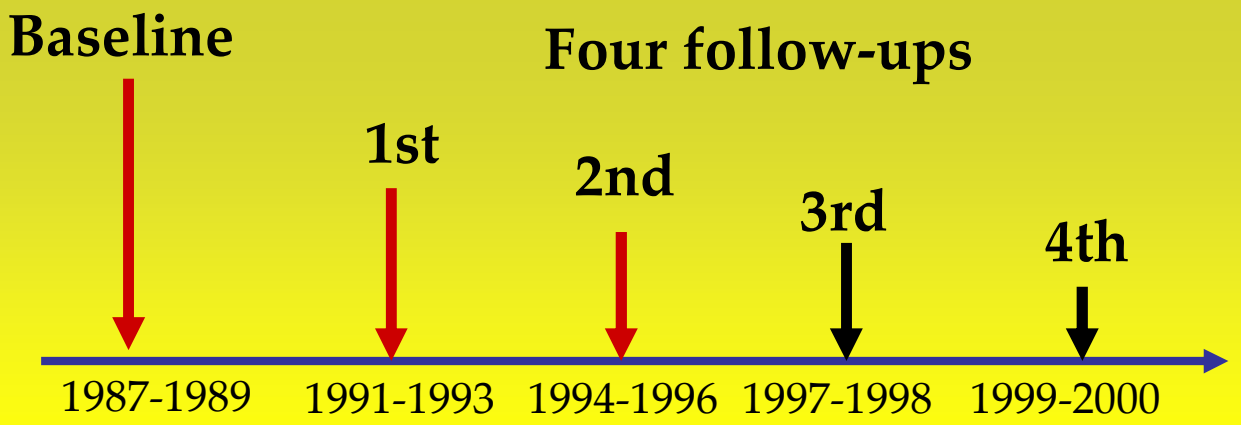
3) To determine the predictive value of the subtypes for identifying future Alzheimer's disease

The Kungsholmen Project, Stockholm, Sweden



The Kungsholmen Project

1810 participants at baseline
75+ years old
Living in Kunsgholmen



Method

1435 non-demented persons aged 75+ years

Standard MCI criteria

- Subjective complaints of memory problems
- Objective domain-specific cognitive deficits:
  Episodic memory, Visuospatial functioning, Verbal fluency
- Normal general cognitive functioning (MMSE >1SD within age/education norms)

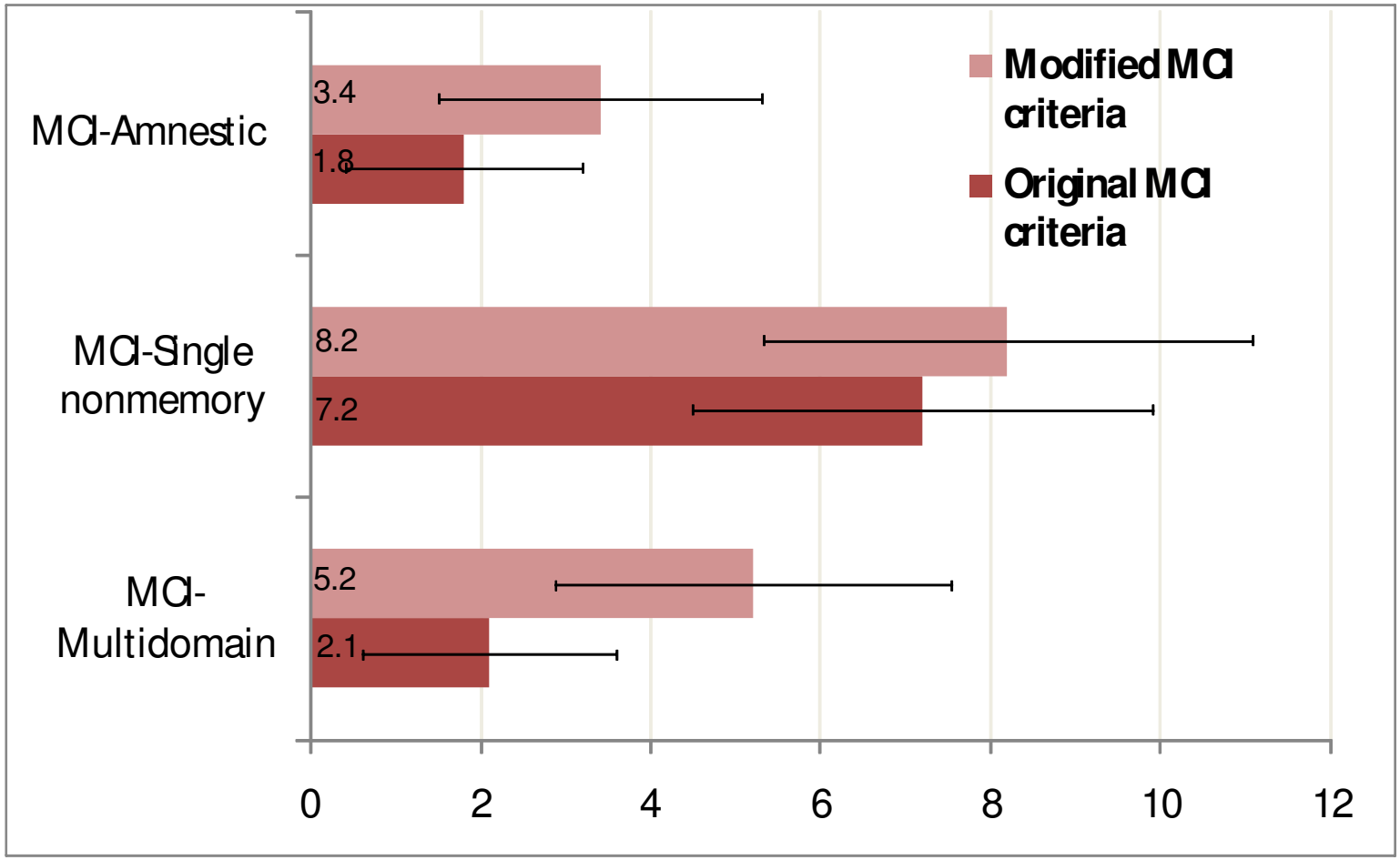
Modified MCI criteria

- As above with one exception: Definition includes any level of general cognitive functioning (any score on the MMSE)

Other cognitive impairment

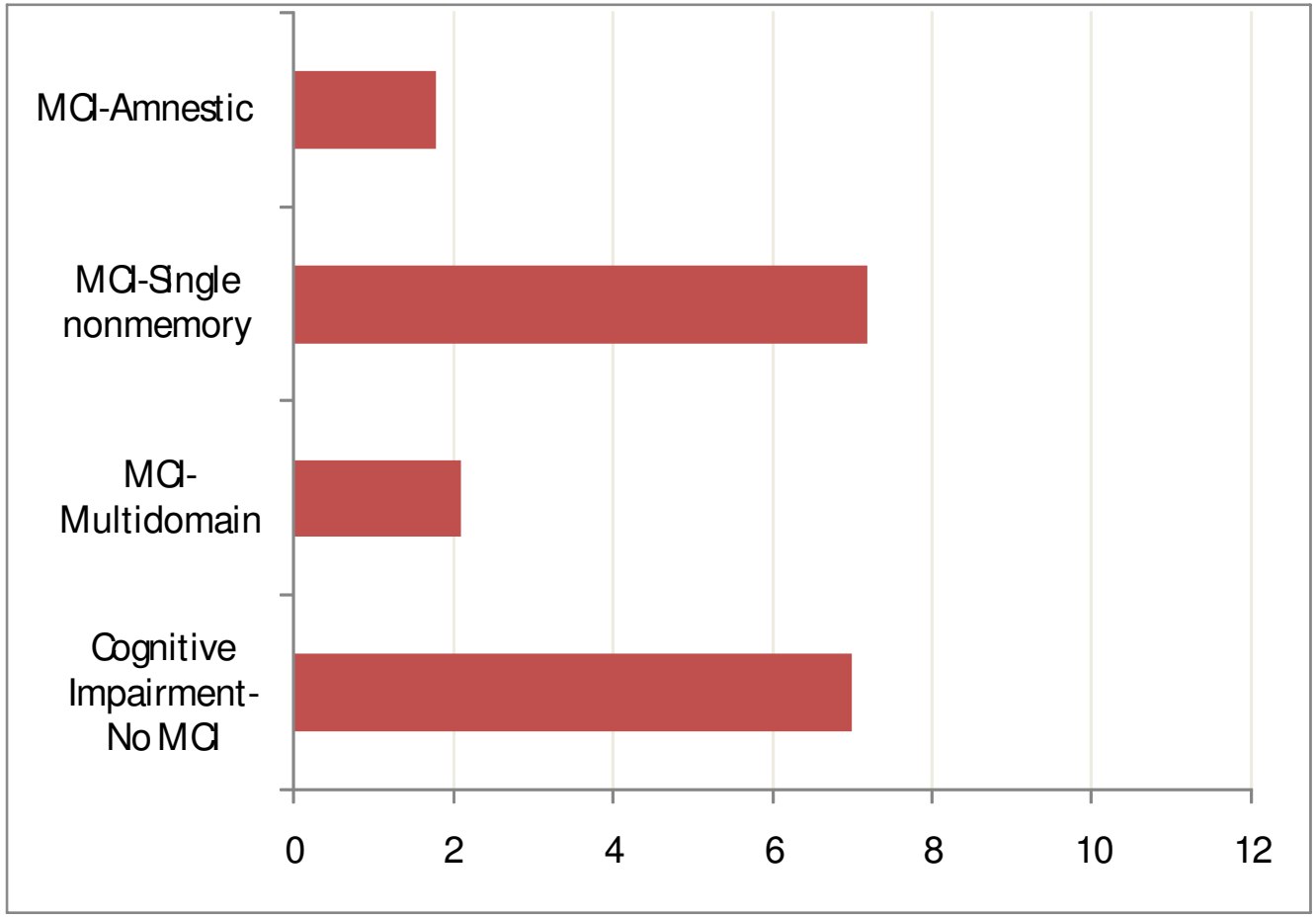
- Normal episodic memory, visuospatial functioning &verbal fluency
- Impairment only evident in general cognitive functioning (MMSE)

Occurrence of MCI subtypes
Prevalence per 100 non-demented persons



Palmer et al, Am J Geri Psychiatr 2008

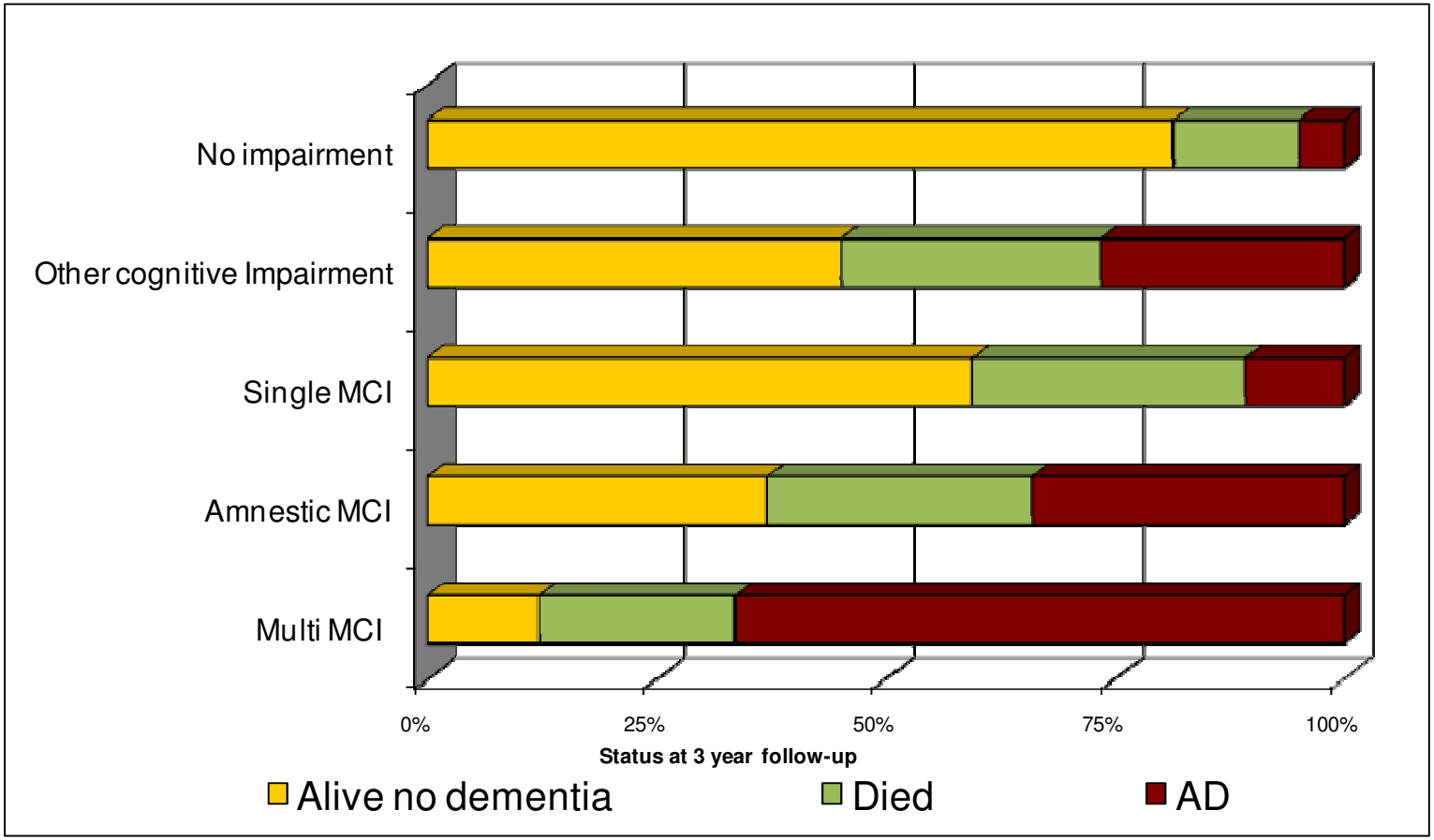
Occurrence of other cognitive impairment



7% of the population had impairment on the global cognitive task (MMSE) but performed at normal levels on all other domain-specific tasks.

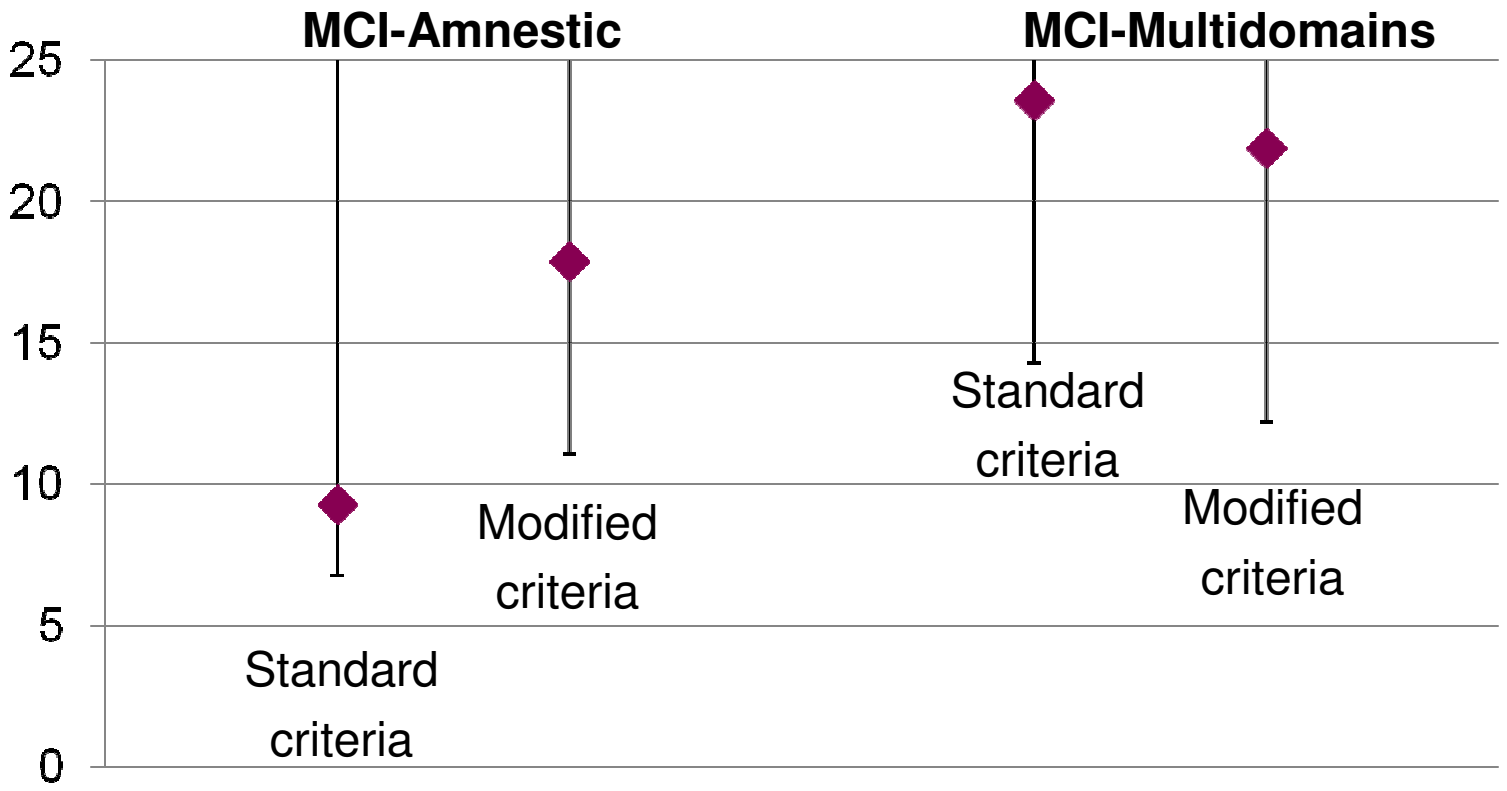
Palmer et al, Am J Geri Psychiatr 2008

Three year progression from MCI to AD



Palmer et al, Am J Geri Psychiatr 2008

Three year progression from MCI to AD
Modified vs standard MCI criteria



Hazard Ratios for progression from MCI to AD, adjusted for age, sex, education

Conclusions

- MCI-single non-memory domain impaired is the most common MCI subtype but is not associated with impending AD
- Occurrence of MCI subtypes increases when modified criteria are applied
- Positive predictive values for AD increase when modified criteria are used for MCI-amnestic
- Two-thirds of MCI-multidomains, but only one third to one half of MCI-amnestic progress to AD
- The standard MCI criteria fail to detect those people with global cognitive deficits who have a high risk of progressing to AD

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