Mild Cognitive Impairment

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Introduction: Dementia

- Slow neuronal degeneration beginning years before symptoms occur
- Early identification is important
  - Counseling patients and families
  - Differential diagnosis (tx implications)
  - Research/clinical trials

Continuous Model: Cognitive Decline in Aging
Normal Aging

- Most common cause of memory complaints in the elderly
- Selected areas of recent memory
  - Impaired retrieval
  - Retrieval Support can help

(Salthouse et al., 1996: Neuropsychology 10)

Nonmemory changes in:
- Divided attention
- Working memory
- Processing speed
- Nonverbal problem solving
- Visuospatial functions

Definition of MCI

- Cognitive impairment greater than expected for age and education without obvious etiology
- A "transitional zone" between normal cognition and Alzheimer's disease

Winblad et al., J Int Med, 2004
### Related Clinical Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Normal</th>
<th>Abnormal</th>
</tr>
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<tbody>
<tr>
<td>Senile Forgetfulness</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Age Associated Memory Impairment (AAMI)</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Age Related Cognitive Decline (DSM-IV)</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Cognitively Impaired Not Demented</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>MCI / MCI-amnestic</td>
<td>✓</td>
<td></td>
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</tbody>
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### Diagnostic Criteria

- Memory Complaint
- Normal general cognitive functioning
- Evidence of memory impairment
  - 1.5 SD below age-adjusted mean
- Not demented
- Preserved ADLs
- (Clinical Dementia Rating score of .5)

Petersen et al. (1999)

### Cognitive Profiles in Aging

![Cognitive profiles in aging graph](image)
MCI Cognitive Profile

Greenaway et al. 2006
CVLT learning rate

MCI Cognitive Profile

Greenaway et al. 2006
CVLT recall after short (SD) and long (LD) delays

3-year Conversion Rates for Dementia
Tschanz et al., 2006
Cache County data; N = 3266

<table>
<thead>
<tr>
<th>Group</th>
<th>NI</th>
<th>proAD (MCI-a)</th>
<th>CS (MCI)</th>
<th>AD</th>
<th>Other dementia</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI</td>
<td>2866</td>
<td>103 (3.3%)</td>
<td>73 (2.3)</td>
<td>65</td>
<td>39 (1.2)</td>
</tr>
<tr>
<td>proAD</td>
<td>11.8%</td>
<td>21.6%</td>
<td>11.8%</td>
<td>24</td>
<td>7.8% (47.1%)</td>
</tr>
</tbody>
</table>
Conversion Rates to Dementia

- Higher rates of conversion to dementia in MCI patients relative to controls.
- High variability in conversion rates related to sampling and definitions
- 10-15% MCI conversion per year
- ~55% MCI in 3 years
- Versus 1-3% per year in controls

Conclusions

- Functional impairment in ADLs is a critical factor in definitions
- Predictions of later dementia highest in categories that have ADL impairment criteria
- “Functional decline in MCI is the prodrome to dementia” - Storandt (2006)
Improving Detection of Early Dementia

- Use profiles
  - Too much overlap in predictive utility of single measures
- MUST rule out alternative causes
  - Psychiatric, immunological, hormonal, medication effects, etc.
- Use other sources beyond just cog. Tests
  - Imaging, neurological workup
  - Genetic risk: APOE, family history
  - Informant/patient info and insight

Importance of Early Detection

- Ultimate goal: Reverse or restore function of diseased cells/tissue
- To be effective, must target pathological cause of dementia
- AND the intervention would likely have to start early in the disease course for maximal efficacy

Current Treatment Approaches
Secondary Prevention Approaches

- Cognitive decline
- Early detection may alter course
- Dementia
- Age

Amnesiacs Anonymous