Alzheimer’s Paradigm Shift: From Brain Disease to Brain Health

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We are all in a continuum…

From brain health to Alzheimer’s disease
Prevalence and projections

Created from data from Hebert et al.\textsuperscript{31, A12}
Why is prevalence increasing?

- “Success Aging”

![Bar chart showing percentage changes in selected causes of death between 2000 and 2013.](image)

Fig. 5. Percentage changes in selected causes of death (all ages) between 2000 and 2013. Created from data from the National Center for Health Statistics [169].
Alzheimer's Cost – in Billions

Alzheimer’s Association Facts and Figures 2009
Why is it so expensive?

- Co-morbid hospitalizations

<table>
<thead>
<tr>
<th>Condition</th>
<th>With Alzheimer’s disease and other dementias</th>
<th>Without Alzheimer’s disease and other dementias</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congestive heart failure</td>
<td>804</td>
<td>753</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>791</td>
<td>590</td>
</tr>
<tr>
<td>Chronic kidney disease</td>
<td>772</td>
<td>576</td>
</tr>
<tr>
<td>Coronary artery disease</td>
<td>727</td>
<td>475</td>
</tr>
<tr>
<td>Stroke</td>
<td>716</td>
<td>550</td>
</tr>
<tr>
<td>Diabetes</td>
<td>678</td>
<td>386</td>
</tr>
<tr>
<td>Cancer</td>
<td>682</td>
<td>392</td>
</tr>
</tbody>
</table>

Created from unpublished data from the National 5% Sample Medicare Fee-for-Service Beneficiaries for 2014.
Why is it so expensive?

- Home and long-term care costs

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**Annual Costs: Chicago Area, IL (2016)**

<table>
<thead>
<tr>
<th>Service Type</th>
<th>2016 Cost</th>
<th>5-yr Annual Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Homemaker Services</strong></td>
<td>$52,624</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Home Health Aide</strong></td>
<td>$52,624</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Adult Day Health Care</strong></td>
<td>$18,741</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Assisted Living Facility</strong></td>
<td>$52,200</td>
<td>-1%</td>
</tr>
<tr>
<td><strong>Nursing Home Care</strong></td>
<td>$82,125</td>
<td>5%</td>
</tr>
</tbody>
</table>

The costs of caregiving

The diagram illustrates the percentage of caregivers who experience high to very high stress compared to those who experience not high to somewhat high stress in various aspects of caregiving.

- Emotional stress of caregiving:
  - High to very high: 59%
  - Not high to somewhat high: 41%

- Physical stress of caregiving:
  - High to very high: 38%
  - Not high to somewhat high: 62%

Other measures include:
- Cut back on spending: 48%
- Cut back on saving: 43%
- Spent general savings: 30%
- Spent retirement savings: 20%
- Borrowed money from friend or family: 15%
- Sold assets: 13%
- Took a loan: 5%

Created from data from the Alzheimer's Association Family Impact of Alzheimer's Survey.2
Apolipoprotein E (APOE)

- **2/2**: Half as likely
  - Lifetime risk: 5-6%
- **2/3**: Half as likely
  - Lifetime risk: 20-27%
- **2/4**: 3 x more likely
  - Lifetime risk: 8-10%
- **3/3**: Average risk
  - Lifetime risk: 23-30%
- **3/4**: 3 x more likely
  - Lifetime risk: 50-60%
- **4/4**: 15 x more likely
  - Lifetime risk: 50-60%

Lifetime risk: 50-60%
Proportion of Americans 65+ living with Alzheimer’s disease

Washington Heights-Inwood Columbia Aging Project
Sufficient evidence in the medical literature in 2010

- Diabetes increases risk
- Depression increases risk
- Smoking increases risk
The creation of a World Dementia Council was one of the main commitments made at the G8 dementia summit in December 2013. The council aims to stimulate innovation, development and commercialisation of life enhancing drugs, treatments and care for people with dementia, or at risk of dementia, within a generation. It will do this by providing independent, non-governmental advocacy and global leadership. The views expressed by the council will be independent of any government and not representative of government policy.
Summary of the evidence on modifiable risk factors for cognitive decline and dementia: A population-based perspective

Matthew Baumgart\textsuperscript{a}, Heather M. Snyder\textsuperscript{b,*}, Maria C. Carrillo\textsuperscript{b}, Sam Fazio\textsuperscript{c}, Hye Kim\textsuperscript{a}, Harry Johns\textsuperscript{d}

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\textsuperscript{b}Division of Medical & Scientific Relations, Alzheimer’s Association, Chicago, IL, USA
\textsuperscript{c}Division of Constituent Relations, Alzheimer’s Association, Chicago, IL, USA
\textsuperscript{d}President & CEO, Alzheimer’s Association, Chicago, IL, USA
Fig. 1. Strength of evidence on risk factors for cognitive decline.
Exercise training increases size of hippocampus and improves memory

Kirk I. Erickson, Michelle W. Voss, Ruchika Shaurya Prakash, Chandramallika Basak, Amanda Szabo

120 Adults (mean age 67)

Aerobic exercise (brisk walk) 40 min 3 days a week 1 year

Stretching/toning (class) 40 min 3 days a week 1 year

memory tests blood draw MRI of the brain

Day 1
6-months 1-year

Day 1
6-months
1-year
Mediterranean Diet and Age-Related Cognitive Decline

A Randomized Clinical Trial

447 adults (mean age 67)

Mediterranean diet supplemented with olive oil

Mediterranean diet supplemented with mixed nuts

3 types of memory/cognitive tests

Low fat diet

Day 1
5 years

Cinta Valls-Pedret, MSc; Aleix Sala-Vila, DPharm, PhD; Mercè Serra-Mir, RD; Dolores Corella, DPharm, PhD; Rafael de la Torre, DPharm, PhD;
Thank You

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