Alzheimer’s Disease and Related Dementias: What do I need to know?

AIRS Conference

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Beth Kallmyer, MSW
Vice President, Constituent Services
Should I be worried?

• “I am always losing my keys.”
• “I seems like I walked in here for something…”
• “It’s on the tip of my tongue.”
What is Normal Aging?

As we age, all parts of our bodies change, including our brains

Examples of age related changes in the brain:

– Shrinkage of specific parts of brain
– Changes in how brain cells communicate.
– Changes in the brain’s blood vessels/blood flow.
– Increase in inflammation.

Adapted from NIA/NIH’s Alzheimer’s Disease: Unravelling the Mysteries
10 Warning Signs

1. Memory loss that disrupts daily life
2. Challenges in planning or problem solving
3. Difficulty completing familiar tasks
4. Confusion with time or place
5. Trouble understanding visual images or spatial relationships
10 Warning Signs

6. New Problems with words in speaking or writing
7. Misplacing things and losing the ability to retrace steps
8. Decreased or poor judgment
9. Withdrawal from social activities
10. Changes in mood or personality
Dementia is NOT Normal Aging

AD brain = smaller overall

ventricles enlarge
cortex shrivels, especially near hippocampus
Alzheimer’s & Related Dementias

An “umbrella” term used to describe a range of symptoms associated with cognitive impairment.

- Alzheimer’s: 50%-75%
- Vascular: 20%-30%
- Lewy Bodies: 10%-25%
- Frontotemporal: 10%-15%

Mixed Dementia = >1 neuropathology - prevalence unknown
Alzheimer’s – Plaques & Tangles

tangles

plaques
Risk Related to Cognitive Decline & Alzheimer’s

- Age: The greatest known risk factor
- Genetics
- Heart-head connection
- Head injury
- Others:
  - Biological Sex
  - Ethnicity
Understanding Genetics & Alzheimer’s

Deterministic Risk

Relatively rare: 1-3% of all cases of Alzheimer’s

Risk

Meta-analysis of 74,046 individuals identifies 11 new susceptibility loci for Alzheimer’s disease

APOE
The Alzheimer’s Epidemic Continues to Grow...

5.4 million Americans of ALL Ages will have Alzheimer’s in 2016
The Numbers Continue to Rise…

By 2050, the number of people age 65 and older with Alzheimer's disease may nearly triple, from 5.2 million to a projected 13.8 million.
African-Americans are about twice as likely as whites to have Alzheimer’s or another dementia, and Hispanics are one and a half times as likely.

*The Hispanic group for this study was primarily Caribbean-American. Created from data from Gurland et al.*

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**The Facts: Alzheimer’s is an Epidemic in America.**
More Women Than Men Have Alzheimer’s and Other Dementias

Among the 5.2 million Americans age 65 and older with Alzheimer's disease, nearly two-thirds (3.3 million) are women.
THE FACTS: ALZHEIMER’S IS AN EPIDEMIC IN AMERICA.

Women are at the epicenter of the Alzheimer’s epidemic.

In her 60s, a woman’s estimated lifetime risk for developing Alzheimer’s disease is 1 in 6. For breast cancer it is 1 in 11.

Almost two-thirds of Americans with Alzheimer’s disease are women.

Remaining Lifetime Risk of Women Developing Alzheimer’s Disease and Breast Cancer

17.2%

9.3%

Alzheimer’s Disease (Age 65)
Breast Cancer (Age 60)

There are 2.5 times more women than men providing intensive “on-duty” care 24 hours a day for someone with Alzheimer’s.

More than 60 percent of Alzheimer’s and dementia caregivers are women.
In 2016, an estimated 700,000 people in the U.S. age 65 and older will die with Alzheimer’s

6th leading cause of death in the U.S.

Of the top 10 killers, Alzheimer’s is the only one that cannot be prevented, cured or even slowed.

Source: Centers for Disease Control and Prevention (cdc.gov/nchs/fastats/leading-causes-of-death.html)
Alzheimer’s is One of the Most Costly Diseases to Our Society and the American Economy

Aggregate Cost of Care by Payment Source for Americans Age 65 and Older with Alzheimer’s Disease and Other Dementias, 2016*

- Medicare: $117 B, 50%
- Medicaid: $43 B, 18%
- Out of pocket: $46 B, 19%
- Other: $30 B, 13%

Total cost: $236 Billion (B)

*Data are in 2016 dollars.

Created from the Lewin Model.*1 “Other” payment sources include private insurance, health maintenance organizations, other managed care organizations and uncompensated care. Totals for payment sources may not add to total cost due to rounding.

Source: Alzheimer’s Association 2016 Alzheimer’s Disease Facts and Figures
Alzheimer’s Affects the Workplace

75% of caregivers reported being employed at any time since assuming care responsibilities.

54% of employed caregivers reported having to go in late, leave early or take time off due to caregiver demands.
Alzheimer’s Affects the Workplace

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Had to go from working full-time to part-time</td>
<td>20%</td>
<td>3%</td>
</tr>
<tr>
<td>Had to take a leave of absence</td>
<td>18%</td>
<td>11%</td>
</tr>
<tr>
<td>Had to give up working entirely</td>
<td>11%</td>
<td>5%</td>
</tr>
<tr>
<td>Lost any job benefits</td>
<td>10%</td>
<td>5%</td>
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Created from data from the 2014 Alzheimer’s Association Women and Alzheimer’s Poll. [17]
FINGER Study: Receipe of Lifestyle Interventions for Cognition

- Gold standard of testing any type of therapy/intervention – Randomized Control Trial (RCT)
- Large, rigorous study of 1,200 individuals
  - Half received intervention and half received standard of care
- First solid evidence that recipe of lifestyle interventions reduces cognitive decline
- Needs to be replicated in more diverse populations
- Results first presented at AAIC 2014
Statement of Evidence: Modifiable Risk Factors for Cognitive Decline & Dementia

(1) Regular physical activity and management of cardiovascular risk factors (diabetes, obesity, smoking, and hypertension) have been shown to reduce the risk of cognitive decline and may reduce the risk of dementia;

(2) Healthy diet and lifelong learning/cognitive training may also reduce the risk of cognitive decline;

(3) There are still many unanswered questions and significant uncertainty with respect to the relationship between individual risk factors and dementia.
10 Ways to LOVE Your Brain
Continuum of Alzheimer’s Disease

Adapted from Sperling et al. 2011
Pathway to Your Medicine Cabinet

Drug Discovery and Development: A LONG, RISKY ROAD

Pre-Discovery

Drug Discovery

5,000 - 10,000 Compounds

3 - 6 Years

Pre-Clinical

250

Clinical Trials

Number of Volunteers

Phase 1

20 - 100

Phase 2

100 - 500

Phase 3

1,000 - 5,000

0.5 - 2 Years

FDA Review

LG-Scale MFG

Phase 4: Post-Market Surveillance

One FDA-Approved Drug
Experimental Drug Trial Results: Potential Disease Modifying Treatments

**Solanezumab (Lilly)**
- New analysis of results from two prior phase 3 studies suggests it may slow cognitive decline
- On-going Phase 3 used Amyloid PET to enroll participants

**Aducanumab (Biogen)**
- Small Phase 1b suggests may slow cognitive decline in people w/ mild Alzheimer’s
- Launched two Phase 3 clinical trials using Amyloid PET to enroll participants
Exercise as Treatment: Living Better with Dementia

- In mild Alzheimer’s, aerobic exercise improved neuropsychiatric symptoms, such as agitation
- In MCI due to vascular disease, aerobic exercise improved memory/cognition
- In MCI, aerobic exercise reduced levels of tau, which makes up tangles
The Future
NEXT EXIT
Possible Prevention of Alzheimer’s?

Primary Prevention
- Delay onset of AD pathology
- Decrease Aβ₄₂ production
- Prevent tangle formation

Secondary prevention
- Delay onset of cognitive impairment in individuals with evidence of pathology
- Decrease accumulated Aβ burden
- Decrease neurodegeneration with anti-tau or neuroprotective agents

Tertiary prevention and treatment
- Delay onset or progression of dementia
- Neuroprotection-prevent neuronal loss
- Enhance function of remaining neurons
- Neurotransmitter repletion

Clinical disease stage:
- No pathology
- Preclinical
- MCI
- Dementia
Alzheimer’s Association: Who We Are

OUR VISION:
A world without Alzheimer’s disease®.

OUR MISSION: To eliminate Alzheimer's disease through the advancement of research; to provide and enhance care and support for all affected; and to reduce the risk of dementia through the promotion of brain health.
The Alzheimer’s Association is here for you

24/7 Hour Helpline

24/7 helpline
800.272.3900 | alz.org
Services and support for you and your family

early detection matters

resources and support for caregivers

Trusted resource for public education

Award-Winning website: alz.org

Connect with us in your community

alzheimer’s association

know the 10 signs

alzheimer’s association

alzheimer’s association

alzheimer’s association

alzheimer’s association

THE BRAINS BEHIND SAVING YOURS:
THE END OF ALZHEIMER’S STARTS WITH YOU

alzheimer's association

alz.org