Aging & Alzheimer’s Disease: Evidence-based approaches to treatment and care.

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Presented at Council of State Governments Health Policy Academy  Bellevue, WA October 19, 2011
Number of Persons 65+, 1900 - 2030 (numbers in millions)

Note: Increments in years are uneven. Based on data from the U.S. Bureau of the Census.
Living to 100: Historical Trends

- Sweden:
  - 1860s - 3 persons celebrated their 100th birthday per year (almost all women)
  - 2007 - 750 persons celebrated their 100th birthday
  - Of persons born in 2007, 50-60,000 people are likely to become centenarians.

- If current trends continue, half the babies born in developed countries in the new millennium will live to enter the 22nd century.
Cognitive Changes with Advancing Age

Dementia

- Age is the most significant risk factor of Alzheimer’s disease (AD):
  - 5% prevalence over the age of 65,
  - 20-50% prevalence over the age of 80.

- In older adults, Alzheimer’s disease (AD) is the most common form of dementia, effecting over 7 million adults.
**Age and Incidence of Alzheimer’s Disease**

*Figure 3. Age and the incidence of Alzheimer disease in 6 studies compared with the Adult Changes in Thought (ACT) cohort study. EURODEM indicates European Studies of Dementia*¹⁸; MoVIES CDR >0.5, MoVIES Clinical Dementia Rating 0-5 or greater, Monongahela Valley Study*¹⁰; Rochester, Rochester, Minn, study²; Framingham, Framingham, Mass, study³; East Boston, East Boston, Mass, study⁴; and Baltimore Longitudinal Aging Study, the Baltimore Longitudinal Study of Aging,⁵ Baltimore, Md.

**Walter A Kukull; Dementia and Alzheimer Disease Incidence; Arch Neurol 2002;59, 1737-46;**
Prevalence of Alzheimer’s Disease
Alzheimer’s Disease

- Progressive, degenerative brain disease characterized by increasing loss of memory, language & other cognitive functions.
- Significant (albeit insidious) changes in behavior, personality, judgment, and activities of daily living.
- Known risk factors are advancing age, family history (including Down’s disease).
- Diagnosis remains one of exclusion (no physical evidence to rule other factors) and clinical history.
- Histopathological confirmation at autopsy reveals significant plaques, tangles, and brain atrophy.
- No known cure BUT TREATMENT & CARE CAN HELP.
Alzheimer’s and the Brain

- Signals that form memories and thoughts move through an individual nerve cell as a tiny electrical charge.
- Nerve cells connect to one another at synapses. When a charge reaches a synapse, it may trigger release of tiny bursts of chemicals called neurotransmitters. The neurotransmitters travel across the synapse, carrying signals to other cells. Scientists have identified dozens of neurotransmitters.
- Alzheimer’s disease disrupts both the way electrical charges travel within cells and the activity of neurotransmitters.

Image credit: Alzheimer’s Disease Education and Referral Center, a service of the National Institute on Aging. 2006 Alzheimer’s Association. All rights reserved. www.alz.org/brain
Alzheimer’s tissue has many fewer nerve cells and synapses than a healthy brain.

Plaques, abnormal clusters of protein fragments, build up between nerve cells.

Dead and dying nerve cells contain tangles, which are made up of twisted strands of another protein.

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Alzheimer’s Disease

- Other Medical Problems
- Behavioral Problems
- Social Interaction Problems
- Functional Problems
Courageous families tell their stories

ALZHEIMER’S

Mike Myers
• Dad was ‘terrified’

Jay Rockefeller
• A mother’s agony

Shelley Fabares
• Her mom ‘vanished’

Keith Hernandez
• Family tensions

Ronald Reagan
• ‘Fading slowly’
Historically: What did we think about providing treatment and care to individuals with dementia?

- Nothing can be done - they are just going to suffer and get worse.

- Of course caregivers are depressed. There is nothing they can do.
Now: What do we **know** about providing treatment and care to individuals with dementia?

- Family caregivers represent the majority of care providers for persons with dementia.
  - Family Caregiver Alliance, 2005

- Emotional and physical health of caregivers are associated to the problems experienced by the person with dementia and level of care required.
  - Pearson, Teri et al, 1993; Etters & Harrison, 2008

- Effective interventions now exist to help both caregivers and their care-recipients reduce problems of dementia and caregiving.
  - Coons & Evans, 2009
Living Arrangements of the Elderly

(Newhouse News Service)
OVER 70% OF THOSE WHO PROVIDE UNPAID CARE FOR FRAIL OLD PEOPLE ARE WOMEN, MANY OF WHOM ARE THEMSELVES ELDERLY.

**SONS**
- 8.5%
- Average Age: 48.6

**Husbands**
- 12.8%
- Average Age: 73.3

**Other Men**
- 7.2%
- (Related and Not)
- Average Age: 45

**Wives**
- 22.7%
- Average Age: 69

**Other Women**
- 28.9%
- (Related and Not)
- Average Age: 52.4

Source: Older Women’s League; data from Exploding the Myths: Caregiving in America, the Subcommittee on Human Services, Select Committee on Aging, U.S. House of Representatives
Caregivers Health Compared to Non-caregivers

- Caregivers
  - Have 46% more physician visits
  - Take over 70% more prescribed medications
  - Are more likely to be hospitalized
  - Have higher depression rates
  - 34% of caregivers are clinically depressed
  - 10% report significant anxiety
CIRCUMSTANCES BEYOND YOUR CONTROL
NEXT 2650 MILES
Historically: What did we think about behavioral problems in persons with dementia?

- Behavioral problems are an epiphenomena.
Now: What do we know about behavioral problems in persons with dementia?

- For person with dementia, problems are:
  - Common, frequent, yet variable
  - Significantly related to long term care placement

- For the caregiver, such problems:
  - Complicate and hinder care
  - Relate to their own emotional and physical health

- For both, such problems:
  - Adversely impact care, quality of life, and decisions about long term care
Historically: What clinical evidence led to caregiver training to enhance care in persons with dementia?

- Published reports of successful interventions for caregivers of older adults with dementia
  - Case studies
  - Caregiver education programs
    - Zarit et al., 1985
  - Caregiver self-help books
    - Mace & Robins, 1981; Powell & Courtice, 1983
When a Parent Needs Care

This mother and daughter found a good nursing home. Our undercover investigation shows they were lucky. We rate 43 nursing-home chains.

Gloria Silverman and her mother, Mary Lehrer, at the Jewish Home and Hospital for Aged in New York City.
Now: Current evidence-based caregiver training programs

- Seattle Protocols - Teri et al. 1990-present
  - STAR
  - STAR-C
  - RDAD

- NYU Caregiver Program - Mittleman et al., 1993-present

- REACH/REACH II - Belle et al., 2002; 2006

- Savvy Caregiver - Hepburn et al., 2007

- ACT - Gitlin et al., 2010
Now: What is the evidence for caregiver training?

- For family caregivers:
  - Burden and depression can be reduced.

- For staff caregivers (in ALRs):
  - Skill, reactivity, and job satisfaction can be improved.

- For those with dementia:
  - Depression, anxiety, and general behavioral problems can be reduced.
  - Physical activity can be increased and disability decreased.
  - Institutionalization can be delayed.
Northwest Research Group on Aging - Seattle Protocols

From Practice to Research to Translation: Promoting Health and Independence for High-Risk Elders

- **RDAD/STAR-C**
  - Persons with Dementia
  - Individual
  - Caregiver Directed

- **STAR**
  - Residents with Dementia
  - Group
  - On-site Staff Training

- **MCI/RALLI**
  - Persons with MCI
  - Group
  - Self Directed with Assistance
Seattle Protocols: Background and Key Elements

- Theoretically grounded

- Clinically developed and applied
  - Over two decades of clinical expertise
  - Standardized and individualized
  - Focus on skill development - communication, pleasant events, ABCs

- Empirically evaluated
  - Randomized controlled clinical trials
Behavioral Treatment of Depression in Dementia

Subjects in Behavioral Therapy
Treatment Gains
Maintained at 6-Month Follow-up

Changes in Person Depression Measures from Pre- to Posttreatment ($P<.0001$)

- BT-PE (N=23)
- BT-PS (N=19)
- TCC (N=10)
- WLC (N=20)

HDRS

Changes in Caregiver Depression Measures from Pre- to Posttreatment

- BT-PE (N=23)
- BT-PS (N=19)
- TCC (N=10)
- WLC (N=20)

* $P<.01$

BDI=Beck Depression Inventory

**RDAD: Reducing Disabilities in AD**

- **Active treatment:**
  - Home-based exercise - strength, balance, endurance
  - Behavior therapy - communication, problem-solving

- **Control:**
  - Routine Medical Care

- **Therapists:** Master’s level home health providers (SW & PT)

- **9-week treatment duration**

- **MMSE 0-29; Mean = 17**

- **Assessments at baseline, 3, 6, 12, and 24 months**

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Teri L, Gibbons LE, McCurry SM, Logsdon RG, Buchner D, Barlow W, Kukull W, LaCroix A, McCormick W, Larson E.


Funded in part by the National Institute on Aging (AG10845 and AG14777)
Why Combine Exercise with Behavioral Treatment?

Persons with AD, compared with age-matched controls:

- Are more undernourished
- Exhibit ambulation and mobility deterioration over 1 year
- Have 3 times higher risk for falls and fractures
- Are significantly less likely to recover from falls and fractures

Benefits of physical activity for Individuals with Dementia

Improves Strength and Mobility
Lazowski, et al. 1999
Arkin, et al. 2003
Hageman, et al. 2002
Rolland, et al. 2000

Reduces Depression
Teri, et al. 2004

Decreases Behavioral Disturbances
Rolland, et al. 2000
Teri, et al. 2004

Mitigates Cognitive Decline
Rolland, et al. 2000
Recent Evidence Strongly Supports a Body-Mind Connection: Exercise and Risk of Dementia and AD

### RDAD Results

**RDAD: Change in Percent of Subjects Exercising at Least 60 Minutes a Week**

![Bar chart showing the change in percent of subjects exercising at least 60 minutes a week.]

- **3 Months:** RDAD -6, RMC +3
- **12 Months:** RDAD +8, RMC +3
- **24 Months:** RDAD +26, RMC +5

ITT: Pre-post <.01; longitudinal P=.13.

**RDAD: Reasons for Institutionalization**

![Bar chart showing reasons for institutionalization.]

- **Patient Behavioral Problems***: RDAD 19, RMC 50
- **Patient Impairment or Illness**: RDAD 19, RMC 18
- **Patient Increased ADL Impairment**: RDAD 24, RMC 27

*P<.08.

**Change in Hamilton Depression Rating Scale**

(Pts >6 on Cornell at baseline)

![Graph showing change in Hamilton Depression Rating Scale.]

- **3-Month (p<.05)**: RDAD -1.6
- **24-Month (p<.05)**: RDAD -1.2


Funded by NIA.
STAR:
A Dementia-specific Training Program for Staff in Assisted Living Residences

L. Teri, P. Huda, L.A. Gibbons, H. Young, & J. van Leynseele

University of Washington

Funded by a Pioneer grant from the Alzheimer’s Association and NIMH Grant # 5 R21 MH069651, L. Teri, Principle Investigator

Why dementia-specific training in Assisted-living Residences?

- Fastest growing residential option in Long Term Care.
- Over 50% of residents are demented.
- Numbers are thought to double in the next ten years.
- No published reports of training programs.
Training Community Consultants to Help Family Members Improve Dementia Care: A Randomized Controlled Clinical Trial

L. Teri, S. McCurry, R. Logsdon, & L. Gibbons

Funded in part by Alzheimer’s Association Pioneer Award

Teri, et al., Gerontologist, 2005, 45 (6), 802-811.
**STAR-Caregivers**

**Change in Target Behaviors During Treatment**

- Frequency: Session 1 > Session 8
- Severity: Session 1 > Session 8
- Reaction: Session 1 > Session 8

All change scores significant at p<.0001

**Caregiver Depression: CESD**

- Pre-Post: p<.05
- Longitudinal: p<.02

**Care Recipient Quality of Life (QOL-AD)**

- Pre-Post: p<.05
- Longitudinal: p<.03

**Caregiver Burden: SCB**

- Pre-Post: p<.01
- Longitudinal: p<.03

All change scores significant at p<.0001
Seattle Protocol Translation Sites

- **STAR-C-New Mexico**
  - E. Costilla
  - State of NM - DSHS workers
  - Funding: AoA
  - Start date: 2008

- **STAR-C-Oregon**
  - J. Mead
  - State of Oregon - Case managers
  - Funding: AoA
  - Start date: 2010

- **RDAD-Ohio**
  - S. Bollin
  - Alz Assn counselors
  - Funding: AoA
  - Start Date: 2008

- **STAR-VA**
  - B. Karlin
  - VA-CLC Mental Health Providers
  - Funding: VA
  - Start date: 2010
What can we accomplish next?

- Increased understanding and strategies for helping caregivers and care-recipients.
- Dissemination of evidence-based programs for caregivers of persons with dementia.
  - Effective strategies for dementia care easily accessible for families and health care workers.
  - Understanding heterogeneity of both caregiver and care recipient to improve outcomes on effectiveness.
- Improved care of persons with dementia, across the continuum of disease.
- Decreased caregiver burden, depression, and health problems.
Thank You...

Research Funding

National Institute on Health ARRA P30AG034592
National Institute of Mental Health R21 MH069651
National Institute on Aging AG10845 and AG14777
Alzheimer’s Association IIRG-0306319

Northwest Research Group on Aging

Rebecca Logsdon, Ph.D., Sue McCurry, Ph.D.,
Amy Moore, June van Leynseele, Cathy Blackburn, Cat Olcott,
interviewers, interventionists, and staff

Colleagues

Eric Larson, M.D., MPH., Glenise McKenzie, RN, Ph.D., and
those at our partner sites in Seattle and beyond

Those with dementia and their loved ones.