Alzheimer’s Disease

Alzheimer’s Association
Montana Chapter

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Executive Director
Outline

• Basics of Alzheimer’s
• Statistics & Facts
• The Brain
• The Brain & Alzheimer’s
• Stages & Symptoms
• Warning Signs
• Treatment
• Caregiving
• Risk Factors
• Risk Reduction
• Alzheimer’s Association - Montana Chapter
What is Dementia?

Loss of memory and other intellectual abilities serious enough to interfere with daily life.

Alzheimer’s is the most common form of dementia and accounts for 70% of all cases.
History of Alzheimer’s Disease

Discovered: by Dr. Alois Alzheimer in 1906

Cause: Unknown

Cure: None
What is Alzheimer’s Disease?

Alzheimer’s (AHLZ-high-merz) disease is an irreversible, progressive brain disease that slowly destroys memory and thinking skills.

Alzheimer’s is NOT normal aging. It is a progressive, fatal disease and has no cure.
What does Alzheimer’s Do?

Destroys:

- ability to remember
- ability to reason
- ability to learn
- ability to communicate
- ability to carry out daily activities
- ability to live
Facts about Alzheimer’s Disease

- Today 5 million Americans suffer from AD, 500,000 under age 65.
- It is 6th leading cause of death in the US.
- 7.7 million will have AD by 2030
- One in eight individuals 65 or older have AD
- Nearly one in two individuals over 85 have AD
- Someone develops AD every 70 seconds
Facts about Montana

- There are 17,000 Montanans living with Alzheimer’s disease.
- By 2010, without a cure or better treatments, that number will jump to 21,000.
- By 2025 the number will jump to 29,000.
- By 2025, Montana is projected to have the third highest proportion of elders in the nation; 24.5% of its total population.
- At that time 44 out of 56 counties will have at least 20% of their population over 65 years of age.
The Cost of Alzheimer’s Disease

- Ranked #1 as causing the greatest cost to society
- Cost of caring for people with AD = $148 billion/Yr
- 2007 cost to business = $61 Billion
- By 2010 Medicaid cost = $33 Billion/Yr
- By 2015 Medicare cost = $189 Billion/Yr
The Brain

- Interprets sensations from your body, and sights, sounds and smells from the outside world.
- Generates thoughts, solves problems and makes plans.
- Forms and stores memories.
- Controls voluntary movement.
The Brain’s Vital Statistics

- Adult weight: about 3 pounds
- Adult size: a medium cauliflower
- Number of neurons: 100 billion
- Number of synapses (the gap between neurons): 100 trillion
The Main Players

Cerebrum
processes sensory information received from the outside world; controls voluntary movement and regulates conscious thought and mental activity

- accounts for 85% of brain’s weight
- consists of two hemispheres connected by the corpus callosum
- covered by an outer layer called the cerebral cortex
The Main Players

Cerebellum

- in charge of balance and coordination: receives information from eyes, ears, and muscles and joints about body’s movements and position

- takes up about 10% of brain
- consists of two hemispheres
**Brain Stem**

connects the spinal cord with the brain

- relays and receives messages to and from muscles, skin, and other organs
- controls automatic functions such as heart rate, blood pressure, and breathing
Inside the Human Brain

The Brain in Action

Positron emission tomography (PET) scans can measure brain activity. Chemicals tagged with a tracer “light up” activated regions.

Hearing Words  Speaking Words  Seeing Words  Thinking about Words
Alzheimer’s Disease and the Brain

Alzheimer’s disease leads to nerve cell death and tissue loss throughout the brain. Over time, the brain shrinks dramatically, affecting nearly all its functions.
Alzheimer’s Disease and the Brain
Alzheimer’s Disease and the Brain
Alzheimer’s and the Brain

Plaques and Tangles: The Hallmarks of AD

- **beta-amyloid plaques** - dense deposits of protein and cellular material that accumulate outside and around nerve cells

- **neurofibrillary tangles** - twisted protein fibers that build up inside the nerve cell

![An actual AD plaque](image1)

![An actual AD tangle](image2)
Neurons

There are 100 billion nerve cells, or neurons, creating a branching network.

Signals traveling through the neuron forest form memories, thoughts and feelings.

Alzheimer’s destroys neurons.
Neurons

- To stay healthy, neurons must:
  1. communicate with each other
  2. carry out metabolism and
  3. repair themselves.
- Alzheimer’s disrupts all three of these essential jobs.
Alzheimer’s and the Brain

Beta-amyloid Plaques

1. Amyloid precursor protein (APP) is the precursor to amyloid plaque. APP sticks through the neuron membrane.
2. Enzymes cut the APP into fragments of protein, including beta-amyloid.
3. Beta-amyloid fragments come together in clumps to form plaques.

In AD, many of these clumps form, disrupting the work of neurons. This affects the hippocampus and other areas of the cerebral cortex.
Neurons have an internal support structure partly made up of microtubules. A protein called *tau* helps stabilize microtubules. In AD, *tau* changes, causing microtubules to collapse, and *tau* proteins clump together to form neurofibrillary tangles.
Alzheimer’s and the Brain

Mental Activity

Pet Scan of Normal Brain

Pet Scan of Alzheimer’s Brain
Alzheimer’s Symptoms

Early Stage – changes may begin 20 years or more before diagnosis.

- Signs of AD are first noticed in the entorhinal cortex, then proceed to the hippocampus.
- Affected regions begin to shrink as nerve cells die.
- Early AD signs can include memory loss, confusion, trouble handling money, poor judgment, mood changes, and increased anxiety.
Alzheimer’s Symptoms

Middle Stage – generally last from 2 - 10 years.

- AD spreads through the brain. The cerebral cortex begins to shrink as more and more neurons stop working and die.
- Middle stage AD signs can include increased memory loss and confusion, problems recognizing people, difficulty with language and thoughts, restlessness, agitation, wandering, and repetitive statements.
Late Stage – may last from 1 - 5 years.

- In late stage AD, extreme shrinkage occurs in the brain. Patients are completely dependent on others for care.
- Symptoms can include weight loss, seizures, skin infections, groaning, moaning, or grunting, increased sleeping, loss of bladder and bowel control.
- Death usually occurs from aspiration, pneumonia or other infections.
Warning Signs of Alzheimer's

- Memory loss
- Difficulty performing familiar tasks
- Problems with language
Warning Signs of Alzheimer's

- Disorientation to time and place
- Poor or decreased judgment
- Problems with abstract thinking
Warning Signs of Alzheimer's

- Misplacing things
- Changes in mood or behavior
- Changes in personality
- Loss of initiative
### Warning Signs of Alzheimer's

**What’s the difference?**

<table>
<thead>
<tr>
<th>Someone with Alzheimer’s</th>
<th>Someone with normal age-related changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forgets whole experiences</td>
<td>Forgets part of an experience</td>
</tr>
<tr>
<td>Rarely remembers later</td>
<td>Often remembers later</td>
</tr>
<tr>
<td>Is gradually unable to follow written/spoken directions</td>
<td>Is usually able to follow written/spoken directions</td>
</tr>
<tr>
<td>Is gradually unable to use notes</td>
<td>Is usually able to use notes</td>
</tr>
<tr>
<td>Is gradually unable to care for self</td>
<td>Can usually care for self</td>
</tr>
</tbody>
</table>
Memory problems that aren't part of normal aging

- Forgetting things much more often than you used to
- Forgetting how to do things you've done many times before
- Trouble learning new things
- Repeating phrases or stories in the same conversation
- Trouble making choices or handling money
- Not being able to keep track of what happens each day
Getting a Diagnosis

- Medical and social history
- Mental status evaluation
- Physical exam
- Neurological exam
Alzheimer’s Disease Treatments

No known treatment can stop AD

Drugs used to treat mild to moderate AD symptoms include:

- Aricept
- Exelon
- Reminyl
- Namenda

These drugs can help improve some patients’ abilities to carry out activities up to a year or so. They do not slow the progression of the disease.
The Search for New Treatments

Researchers also are looking at other treatments including:

- cholesterol-lowering drugs called statins
- anti-oxidants (vitamins) and folic acid
- anti-inflammatory drugs
- substances that prevent formation of beta-amyloid plaques
- nerve growth factor to keep neurons healthy
Alzheimer’s Research Grants

• Alzheimer’s Association awarded 131 grants to researchers in 2008
• Largest private non-profit funder of Alzheimer’s research
• Since 1982, the Association has committed over $250 million to more than 1,700 best of field grant proposals
“There are only four kinds of people in the world - those who have been caregivers, those who currently are caregivers, those who will be caregivers, and those who will need caregivers”…

Rosalynn Carter
The Demands of Care Giving

- 10 million caregivers and a third are 60 or older
- Family caregivers provide an estimated $257 billion annually in services
- Total un-reimbursed monthly expenses for family caregivers is $1.5 billion.
- 70% of AD sufferers live at home
The Demands of Care Giving

- A significant percentage of family caregivers report physical or mental health problems due to care giving.
- Caregivers report chronic conditions at nearly twice the rate of non-caregivers.
- Caregivers have a 63% chance of dying earlier than non-caregivers.
Communicating with the Memory-impaired person

- Have realistic expectations
- Don’t rush the person
- Keep it short and simple
- Use multi-sensory cues
- Do not argue or correct
- Limit choices
- Be aware of body language (yours and theirs)

Keys to opening the door . . .
Alzheimer’s Disease Risk Factors

AGE
Alzheimer’s Disease Risk Factors

GENETICS
Alzheimer’s Disease Risk Factors

CARDIOVASCULAR HEALTH
Alzheimer’s Disease Risk Factors

LIFESTYLE HABITS

Diet

Smoking

Alcohol

Lack of exercise

Stress

Loneliness
Alzheimer’s Disease Risk Factors

SOCIAL & INTELLECTUAL ENGAGEMENT
Alzheimer’s Disease Risk Factors

HEAD INJURY
Reducing Your Risks
three primary areas

brain

body

person
staying sharp
activity: test your brain

RED  ORANGE
BLUE  YELLOW
GREEN  BLUE
YELLOW  BLACK
part 2: the body
heart-brain connection
monitor your numbers

... Blood pressure

...... Blood sugar

... Cholesterol

........ Weight
a healthy lifestyle
healthy food
folic acid and other b vitamins
limit consumption of . . .
physical activity is great for both
exercise ideas
more healthy habits
part 3: the person
social outlets
social interaction
how do you relieve stress?
seek help for depression
keep a purpose in life
The mission of the Alzheimer's Association Montana Chapter is to enhance the care and support for individuals, their families, and caregivers and to eliminate Alzheimer's disease through the advancement of research.
Programs and Services Offered by the Alzheimer’s Association Montana Chapter

Information and Referral

Resource Library

Community Education

Care Consultation

Support Groups

MedicAlert/Safe Return™

HELP-LINE
24/7 toll free (1-800-272-3900)
Yes You Can Help
License Plate Program

Is one way to raise awareness as well as funds, which will be used to provide needed services statewide. If you would like to purchase a plate, please call the office at 406-252-3053 or purchase one at your county treasurer’s office.
Learn how you can join or organize a walk in your area
check our web site at
www.alz.org/montana
Angels for Alzheimer’s

We invite you, your family, your service organization, and your community to participate by donating HANDMADE angels to the “Angels for Alzheimer’s” program.

For more information, call 406-252-3053
Sustaining Partners

- Platinum ($1000 per year and up)
- Gold ($750-$999 per year)
- Big Sky ($500-$749 per year)
- Meadowlark ($250-$499 per year)
Thank You

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