

Lifestyles for a Healthy Brain: Can We Avoid Dementia?

Summary of January VAN Forum

Tuesday, January 11, 2005: 10 to noon, Fridley Community Center

Presenters:

Catherine Johnson, director, Dementia Project, Metropolitan Area Agency on Aging, provided an overview of brain research and its implications for vital aging. **Mary Ann Schoenberger**, director of the Southwest Minneapolis Senior Center, described her center's comprehensive mental health program, and involved the forum participants in some Mind Alert exercises.

Introductions:

Jan Hively, the VAN Coordinator, asked the participants to introduce themselves and respond to the question:

“What activity have you recently participated in that stimulated your brain?”

Here are some responses:

- Language learning
- Crossword puzzles
- Exercise
- Classes
- Conversation
- Public transit
- Walking
- Traveling
- Cryptographs
- Scrabble
- Good nutrition
- Water aerobics
- Laughter
- Talking on the telephone
- Silence – meditation
- Knitting
- Dancing

How do our brains age?

Catherine Johnson reported the good news presented by recent brain research. Brain cells are different from the rest of the body's cells. Our brains continue to develop, lifelong. The loss of brain (neuron) cells across the life span is minimal in healthy individuals, and the cells that are lost are of little consequence.

Thanks to new research from people such as Dr. Paul Nussbaum, we have new understanding about cognitive capacity. The brain is an information processor that is not fixed but continues to develop. Neurogenesis is the name for the process for generating new cells (neurons) and new neuron patterns, within a nervous system that is malleable and constantly reorganizing.

We can create the intellectual reserve to sustain a healthy memory. Our environment appears to be critical to the process of developing and maintaining our

brain. A vital life style that includes new and complex learning opportunities, socialization, touch, and physical exercise may be critical. There is a great deal of variation among adults.

Our brains do age and change, however.

- Starting at age 50, for example, our brains shrink in volume. Shrinking of the frontal lobe may affect social judgment and emotional responsiveness, lessen attention, reduce control over impulses, and reduce capacity to focus on several things at a time. This physical change may be responsible for the fact that older adults tend to be more open in saying what is on their minds, and more impatient with social niceties.
- In normal aging, the level of the neurotransmitter, acetylcholine, falls. This change (affecting the hippocampus) is thought to explain normal memory loss in healthy older adults. There is a loss in **explicit** memory, which includes: a) the intention to remember (e.g., I intended to shop at the drugstore when I did my errands but when I got home I realized that I'd forgotten about that stop); and b) the ability to recall a specific name, number, or location on demand. We don't tend to lose **implicit** memory, however, which involves activities such riding a bike or driving a car.
- The more dense the neurons, and the more numerous the dendrites connecting to dendrites, the more complex and rich are the thoughts, feelings, memories and dreams of the individual. Thinning of the dendrites makes it difficult to follow complex language and logic.
- It is the case that age causes the neuron process signals to slow down in the information processing unit that is the brain. The neuron zip drive is less efficient, so the ability to learn new information and retrieve old information slows down, as does reaction time. Multitasking becomes more challenging and our brain is less tolerant of distraction.

After age 54, these factors show up in a slower rate of increase in overall IQ. The loss of speed that comes with aging results in IQ performance at age 85 that is similar to IQ at age 20 (IQ peaks at age 40). Fluid intelligence – top level speed of the neuron zip drive -- peaks in late adolescence (that's why they're so good at multi-tasking).

Why do we get Alzheimer's Disease and other Dementia?

Catherine Johnson commented that everyone wants to know: "Am I going to get it?" "How do I avoid it?" Here are some answers.

What is Dementia? Dementia is a disease of the brain which causes a decline in memory and intellectual functioning that is severe enough to interfere with everyday life. Dementia is a syndrome -- a collection of signs and symptoms occurring together -- not the name for a single disorder. Rather than regenerate, the neuron cells deteriorate.

Deficits are generally apparent in more than one cognitive domain, including the:

- Ability to learn, retain, and retrieve newly acquired information (recent memory)
- Ability to comprehend and express verbal information (language)
- Ability to manipulate and synthesize nonverbal, geographic, or graphic information (visual-spatial function)

- Ability to perform abstract reasoning, solve problems, plan for future events, mentally manipulate more than one idea at a time, maintain mental focus in the face of distraction, or shift mental efforts easily (the executive function).

Approximately four million people in the United States have dementia. This number is projected to increase to nine million by the year 2030 (based on a growing population of older adults stemming from added longevity and the aging of the baby boom generation). There are an estimated 100,000 people with dementia in Minnesota.

- 10 percent of Americans age 65 or older have Alzheimer's
- 50 percent of Americans age 85 or older have Alzheimer's

There are several types of dementia:

- Alzheimer's Disease is the most common kind of dementia, accounting for 50-70% of the total. Connected with genetics, Early Onset Alzheimer's is relatively rare and affects people younger than 65, Late Onset Alzheimer's is the most common dementia.
- Dementia due to Cerebrovascular Disease (Vascular Dementia, Multi-Infarct Dementia) accounts for 15-20%. This usually involves strokes.
- Dementia with Lewy Bodies (malformation) – Parkinsonism – may generate hallucinations.
- Frontotemporal dementia – results in socially inappropriate behavior – no control over impulses leading to sometimes shocking, emotional responses – suspicion
- Mild Cognitive Impairment (MCI) – not a dementia, but usually converts into dementia over time

What Causes Dementia? Dementia is NOT a normal part of the aging process. Researchers believe dementia may be caused by a variety of influences. Evidence supports a combination of genetic and environmental factors.

Genetic and other Factors Affecting AD and other Dementia

- Genetic – Produces Beta-amyloid plaques, Tau & Neurofibrillary tangles
- Biological changes such as oxidative stress, calcium levels, inflammation – but may have the biological signs and not exhibit any symptoms of dementia
- Aging
- Gender – females affected more than males
- Down Syndrome (chromosome 21)
- History of Head Injury – demonstrating value of seat belts, helmets, etc.
- Vascular Risk Factors – demonstrating the importance of a healthy heart to a healthy brain – cholesterol, blood pressure, etc.
- Depression – lifelong depression sets you up for dementia
- Education – protective factor!

As shown in the nuns' study by David Snowdon, learning and a healthy life style protect older adults from dementia.

Why is early dementia identification important? There are other, potentially reversible illnesses that result in symptoms that look like dementia – such as Vitamin B deficiency, dehydration from bladder infections, etc. It's important to see the primary care physician and ask for tests to assure proper diagnosis and treatment plans. Education of people with dementia and their care partners (caregivers) allows them to plan for future care that will improve quality of life along the continuum.

92% of people said they would want to know. Would you?

There are helpful tools for Early Dementia detection, including asking older adults about any concerns they might have about memory loss, and requesting collateral information from care partners. Ask others who know you. “Are you noticing that.....??”

Ten Warning Signs:

- Memory Loss that affects job skills – Forgetting recently learned information
- Difficulty Performing Familiar Tasks (reading a recipe, finding your way in a familiar grocery store, doing your craft work)
- Problems with Language – word finding
- Disorientation to Time and Place
- Poor or Decreased Judgment
- Problems with Abstract Thinking
- Tendency to Misplace Things
- Changes in Mood or Behavior – rapid mood swings for no apparent reason – loss of patience, irritability
- Changes in Personality – suspicious, fearful
- Loss of Initiative – passive

There are a lot of resources for early dementia identification, follow-up, and referral:

- Suggest that the person who has perceived a warning sign contact the Alzheimer’s Association or some other community-based resources (such as the Senior Linkage Line) for education and support related to the issues at hand.
- Suggest a visit to the Primary Care Physician for additional screening and diagnosis and, if appropriate, to begin establishing a treatment plan. The primary physician can rule out other possible causes, e.g. by using a brain scan to see if there has been a stroke, tumor, etc. The state has a minimally intrusive mental exam that simply calls on people to name as many animals as they can.

YOU can make changes to improve the health of your brain and avoid dementia!!

You can read more about these changes in: Nussbaum, P. (2003). *Brain health and wellness*. Tarentum, Pennsylvania: Word Association Press

Vital Life Style Behavior

- Do not smoke (any thing)
- Maintain regular physical examinations and follow your physician’s advice
 - You are in charge of the management of your own body
 - Develop a close and trusting relationship with your physician
 - Ask your doctor about treatments you would like to try, e.g. 800 milligrams of Vitamin E a day
- Learn new information that is complex and novel – Lifelong Learning!
 - Dance and music
 - Reading and writing
 - Art
 - Travel
 - Anything that challenges you and stimulates learning.

- Do new things –do the opposite of what you do now -- write left-handed, vary your diet, accept challenges that create a little anxiety
- Engage in regular exercise -- may reduce the risk of neurodegenerative disease – increases synaptic density and intellectual reserve
 - Exercise may slow the course of dementia -- Increases energy, sense of well-being, improves sleep – lifts your mood and enhances thinking
 - Just walk around the block 3 x a week.
- Slow down and relax periodically- the brain needs to process information.
 - Take time to be alone and think
 - Sleep more – take naps
 - Engage in an activity you enjoy
 - Identify three to five things that are most stressful to you and strive to minimize them
- Identify what makes life fun for you and do it
 - Socialize
 - List three to five things or people that are most important to you – where you would like to spend your time.
 - Focus on the things that matter to you.
 - List the things that you want to do, and that you have to do – and move from one to the other, to change life patterns
- Having some money in late life is associated with health.
 - Be financially stable and hire a financial planner
- Be spiritual. There is a relationship between prayer and the immune system. Neurotheology
 - Engage in daily prayer or meditation.
 - Mindful breathing
 - Meditation – prayer – yoga 15/20 minutes three times a day.
- Eat less and include antioxidants. What we eat affects our health, behavior and mood.
 - Generalized caloric reduction under the supervision of your physician – good idea
 - Omega-3 (salmon, almonds) Vitamin E and C (broccoli romaine lettuce), Folic acid, (blueberries or oranges), red wine
 - Being a little hungry is healthy
- Maintain strong family and friendship networks
 - Humans require love and need to express love
 - A network of friends is part of maintaining a complex and novel environment
 - We are not meant to be alone and a lot of isolation is bad for our health.
 - We are human animals – we like to touch and be touched
- Always have an occupation (paid or unpaid) and maintain a role and purpose. Do not retire from life.
 - Maintain involvement in society – hobbies, talents, work, follow your passion
 - Have a reason to get up each day
 - Create a role for yourself

Brain health is a lifelong process

START NOW!

Participant question: Should you try to influence Alzheimer patients to do these things that are listed above?

The answer is NO! Once the disease has taken hold, all complex and novel activities should be avoided. Stay in the zone of comfort, which gets smaller and smaller. Reduce stimulation to avoid stress.

Keeping Your Brain Active: Empirical Evidence

Mary Ann Schoenberger led the participants in some exercises, opening up the body through mindful breathing. Then she described research studies showing that keeping your brain active can reduce the risk of Alzheimer's and other forms of dementia.

The Bronx Aging Study. Results showed that reading, playing board games, playing musical instruments, and dancing had the most impact in creating a healthy brain. Increased participation in cognitive activities is associated with slower rates of cognitive decline, especially in memory. People doing crossword puzzles four times a week showed 47% lower risk of dementia than subjects who did puzzles one time a week. In June 2003, from the Bronx Aging Study results, Dr. J. Coyle concluded that there needs to be more research about the impact of brain exercise on dementias, "In the meantime, seniors should be encouraged to read, play board games, and go ballroom dancing, because these activities, at the very least, enhance their quality of life, and they just might do more than that."

Learning Vaccine

Here's a quote from the previously cited author of "Brain Alert," Dr. Nussbaum: "One of the behaviors shown to contribute positively to brain health is learning, and a growing body of evidence suggests that learning is a health-promoting behavior that might limit development of neurodegenerative diseases late in life. The physiological and psychological aspects of learning actually represent a potential vaccination against late-life neurodegenerative diseases of the brain."

Mary Ann has developed a varied program of mental and physical exercises for the adult day care participants and others who drop in each day at the Southwest Senior Center. She invites people in to give lectures and classes – maybe on something like learning Spanish or learning new software for the computer. She organizes group brain games once a week. A Brain Fitness Box is located in the center's library with a lot of brain teasers that participants can take home to complete. And the center's users can earn points to trade in for rewards for solving a puzzle, etc. as a Brain Challenge.

Some brain exercises:

- **Words that Go Together.** Work as a group to come up with as many work "partners" as you can. (examples: hide and seek, salt and pepper, young and old, love and hate, etc.)
- **Scattergories.** Create and fill in a chart like this:

	W	O	R	L	D
Birds					
Animals					
Flowers					

- **Finding Words.** As a group, make up as many words as you can using the letters in the words “Elderhostel”
- **Magic Squares.** Using the numbers between 1 and 9 only once, put a number in each box (a tic-tac-toe box) so that when each set of numbers is added vertically, horizontally or diagonally, they equal 15.
- **Months.** List the months in alphabetical order, without writing down a list first.
- **Measuring.** Draw various items without measuring them. Check later to see how close you came (e.g., a line two inches long.)

Mary Ann commented that Math is good exercise! It gets a different part of the brain going. Mary Ann’s Southwest Center is where Kairos Intergenerational Dance Theater comes each week to work with the older adults, often involving children and other community residents in “Dances of the Heart” and other wonderful dances.

Two useful references:

Marge Engelman. *Aerobics of the Mind Cards: 100 Exercises for a Healthy Brain.*

Douglas Mason. *The Memory Book, Breakthrough Techniques to Exercise Your Brain and Improve your Memory.*