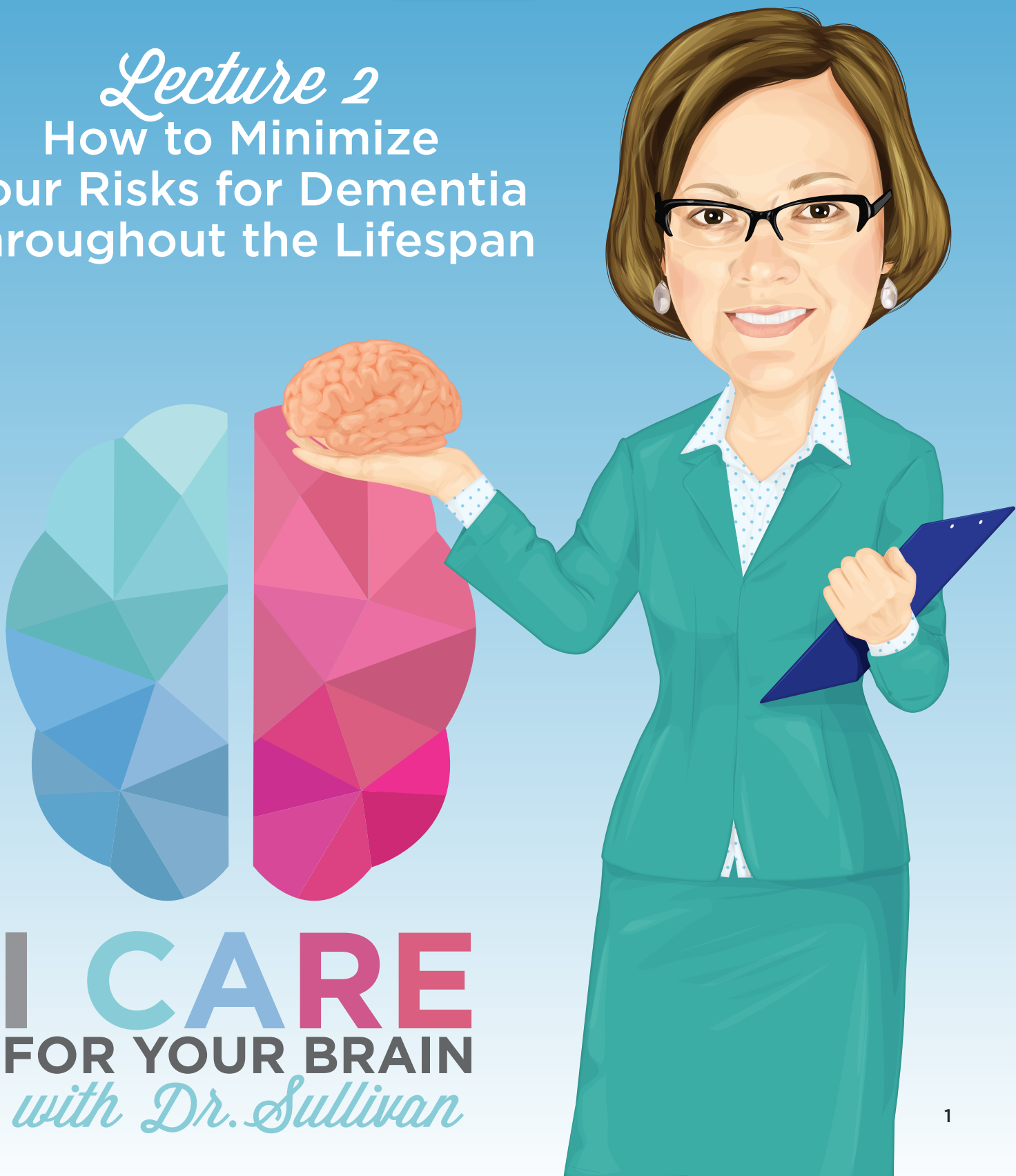
COMPANION WORKBOOK 2

Lecture 2
How to Minimize Your Risks for Dementia Throughout the Lifespan



I CARE FOR YOUR BRAIN
with Dr. Sullivan

Pinehurst Neuropsychology

Brain & Memory Clinic

- EXPERT clinicians with first-rate diagnostic skills and outstanding bedside manner
- COMPREHENSIVE testing and review of medical records
- PERSONALIZED recommendations that emphasize brain health, quality of life and independence
- COMMUNITY resources
- THERAPY services for both the patient and caregiver
- HELPFUL, friendly staff and inviting office

What our patients say...

Pinehurst Neuropsychology is a patient-centered practice, and the providers' expertise, compassion and passion for their field provide patients with a detailed plan of care and resources to ensure the best quality of life.

Karen D. Sullivan, PhD, ABPP
Board-Certified Clinical Neuropsychologist

Taeh A. Ward, PhD
Clinical Neuropsychologist

Maryanne Edmundson, PhD
Clinical Neuropsychologist

Heather Tippens, LPC
Licensed Professional Counselor

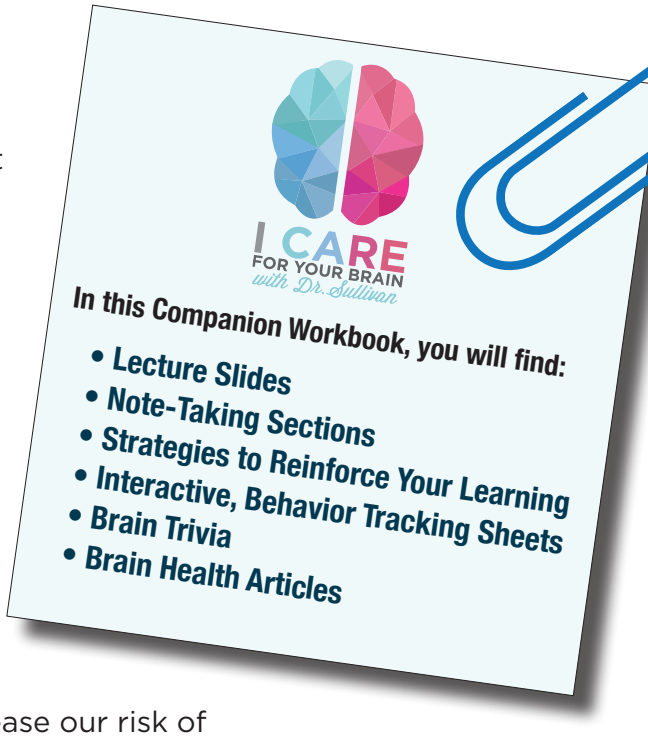
Schedule an appointment today

45 Aviemore Drive | Pinehurst | 910.420.8041

www.PinehurstNeuropsychology.com

Hello friends!

Lecture 2 is near and dear to my heart. As you may know, I was initially inspired to pursue a career in neuropsychology based on my grandmother's experience with Alzheimer's disease. Since then, so many people with all types of dementia have profoundly affected me, and I carry them in my heart every day. Their humanity, their courage and their attempts to hold onto their personhood in a society that all too often excludes them and their caregivers continue to inspire me.



With dementia, we indeed have a public health and humanitarian crisis on our hands as we face the next decade and so-called "silver tsunami." We must find ways to prevent dementia, absolutely. But, until that glorious day comes, we must find ways to be more inclusive of people living with these diseases and reduce modifiable risk factors that contribute to its development.

In this lecture, we are going to learn how our genes and environment come together to increase or decrease our risk of dementia. Interestingly, this is not a topic we should only care about once we cross the threshold of 65. We must know the specific risk factors for dementia that are present throughout childhood, adulthood and older adulthood.

Most dementias are the result of disease processes that occur over long periods of time. We must know the protective factors that reduce the likelihood that those of us with a family history of dementia may develop it and the earlier, the better (although it's never too late!). This lecture should answer the question: What should we be doing and not doing today to help keep our brains healthy?

As always, we will start off with an up-to-date scientific background on our topic and then move into the evidence-based recommendations that you can start using today to truly improve the quality of your brain—without hype or any exaggerated claims!

Thank you for joining me again,

Dr. Karen D. Sullivan

BRAIN MATTERS

COMPANION WORKBOOK 2

I CARE FOR YOUR BRAIN with Dr. Sullivan

CREATED BY
Karen D. Sullivan PhD, ABPP

GRAPHIC DESIGN
Carrie Frye

45 Aviemore Drive
Pinehurst, NC 28374
910-420-8041
DrSullivan@ICFYB.com
www.ICFYB.com

I CARE FOR YOUR BRAIN with Dr. Sullivan Companion Workbook is a publication of KDS Productions.

in partnership with

PENICK VILLAGE

500 E Rhode Island Ave
Southern Pines, NC 28387
910-692-0300
www.PenickVillage.org

I CARE FOR YOUR BRAIN

was founded on the belief that successful cognitive aging is more than just brain health. It is a multi-dimensional concept that in addition to being brain-based is also rooted in physical health, social and spiritual connectedness, and vital engagement in life.

It is a state-of-the-art brain-centric education program for the 50+ crowd delivered in an engaging, easy-to-understand style that is motivating for action!

Through two interactive communities (in-person and online), Neuropsychologist Karen D. Sullivan, PhD, ABPP, provides scientifically-based information on what brain scientists know are the pillars of brain health and evidence-based recommendations in a series of nine lectures. Dr. Sullivan provides you with clear, proven action steps you can take to immediately start to truly care for your brain.

Sign up online today at www.ICFYB.com.

"I feel empowered! Thank you for honest, straight-forward information."

What *will you* say?

Let's get started!

Watch Dr. Sullivan's Facebook LIVE Mini Brain Health Lectures

JOIN our FREE Facebook Community Today!

A Closer Look at Latest Alzheimer's Research Findings

BY KAREN D. SULLIVAN, PHD, ABPP

As featured in OutreachNC Magazine

Findings are reported nearly every day in scientific journals and the media on Alzheimer's disease, the most common type of dementia.

One of my favorite resources for evidence-based information is the Alzheimer's Association International Conference. Each year, the conference provides an overview of the year's best research from world-leading experts with more than 2,000 presentations on the study and treatment of Alzheimer's disease. This is some of the latest data highlighted from the 2016 conference:

Gene and Environment Interaction

Among people diagnosed with mild to moderate late-life Alzheimer's (onset after age 65), about 60-70 percent test positive for a genetic variant called ApoE4. This means that there are both genetic and environmental reasons people develop Alzheimer's. However, having one or more of the genetic variants does not mean someone will definitely get the condition. It means that if someone is exposed to certain risk factors in the environment, the gene can "turn on" and cause the disease processes of Alzheimer's to begin.

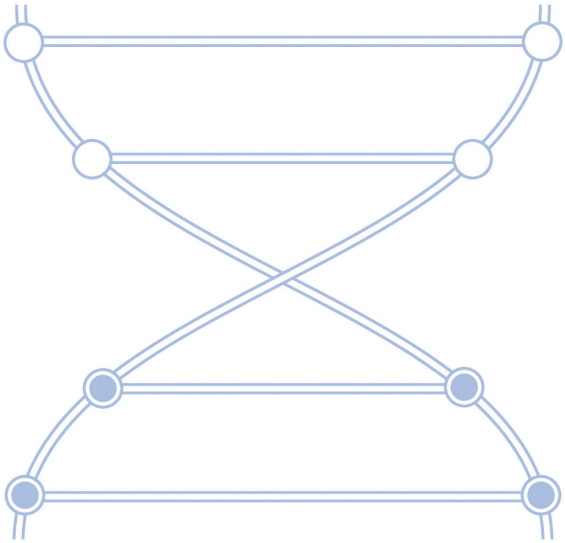
Identifying environmental risk factors for Alzheimer's has been the focus of much research in the past 10-20 years. Health conditions that affect the cardiovascular system seem to have the most influence to "turn on" Alzheimer's genes (most notably type 2 diabetes, high cholesterol and hypertension).

Researchers are now studying "protective factors" that may buffer these effects. Data presented at the 2016 conference suggested that people whose occupation in mid-life required complex thinking and activity had a greater ability to fight the effects of Alzheimer's and that working with people, rather than data, provided the greatest defense.

Redefining Early Treatments

Despite many promising starts, translating laboratory findings into patient treatments is painstakingly slow. Unfortunately, the 2016 meeting brought news of another failed late-phase clinical trial for a medication called "LMTM" (TauRx Therapeutics). Many researchers said that the lack of a cure or highly effective medication to date is because treatments begin too late. The disease processes that cause Alzheimer's start many decades before any of the learning, memory, word-finding and personality changes that characterize Alzheimer's begin.

A theme at the 2016 meeting was the importance of detecting the earliest brain changes—even in young and middle age. It was discussed that future treatments will need to be started many years before someone starts showing the symptoms. This will involve identifying people at genetic risk for Alzheimer's in early and mid-life with DNA testing and proactively treating them before any observable symptoms.



"De-prescribing" to Treat Behavioral Symptoms

So-called "behavioral disturbance" in Alzheimer's disease is fairly common, with estimates of about 40-45 percent of people exhibiting agitation and issues, such as paranoia and wandering.

Many of us who have cared for people with Alzheimer's know these symptoms are often more difficult to manage than problems with memory. While there are likely biological reasons for these symptoms, they are also certainly related to social, and therefore treatable, factors including a lack of stimulation, social isolation and difficulty with communication.

Unfortunately, many healthcare workers are not properly trained to know how to deal with these issues, and more than 25 percent of patients in residential care facilities in the U.S. receive powerfully sedating medications as the first-line treatment.

Australian researchers presented results from a project where they dramatically reduced the use of anti-psychotic medicines in 75 percent of study participants after six months through a process of "de-prescribing." This included training staff in non-pharmacological and person-centered approaches to dementia care, including engagement in therapeutic activities and helping to reduce stress in the environment.

Adding Memory Testing to Older Adults' Health Exams

The importance of an early and accurate diagnosis in Alzheimer's continues to be emphasized. It was once believed that Alzheimer's could only be diagnosed at autopsy; we now know that this is not true. An evaluation by a neuropsychologist using comprehensive pen and paper testing to assess learning and memory and sophisticated types of brain scans usually only offered in research settings remain the best tools to diagnose all forms of dementia.

An early diagnosis allows the person to get the most benefit from the memory-enhancing medications on the market (Aricept and Namenda are the most common). One study at the 2016 meeting showed that patients treated with these medications are hospitalized less and have lower mortality rates compared to untreated patients. This is in addition to the already known benefits of slowing down the symptoms from the point when the person starts to take the medications.

Getting older adults to undergo memory testing that is both sensitive and comprehensive enough to diagnose dementia continues to be a worldwide challenge. There are not nearly enough medical providers specializing in geriatric medicine to meet the demand. Researchers made the recommendation that memory testing should be a part of all older adults' health care after the age of 65 due to the expense—financial and emotional—of undiagnosed and untreated dementia. Many people are surprised to learn that Medicare and many other insurances cover the majority, if not all, of the costs for these evaluations.

Parkinson's disease is a progressive neuropsychological disorder in which the brain does not make enough of a specific chemical, the neurotransmitter dopamine. Dopamine is released by the nerve cells in one part of the brain to communicate with nerve cells in many other parts of the brain. Commonly, Parkinson's disease is characterized only by tremor and slowness of movement; however, other symptoms, including those involved in cognition and mood, are increasingly recognized as a fundamental part of the disorder. These symptoms are important to address and treat as they can reduce quality of life and everyday functioning.

ADDRESSING ALL SYMPTOMS of Parkinson's Disease

As featured in OutreachNC Magazine

BY KAREN D. SULLIVAN, PHD, ABPP

MOTOR SYMPTOMS

People living with Parkinson's have both primary and secondary symptoms that affect movement of the body called motor symptoms.

Primary symptoms include:

- **a resting tremor, with about 70 percent experiencing a slight tremor in the hand or foot on one side of the body, usually when the muscles are relaxed;**
- **bradykinesia, a decrease of spontaneous movement causing short, shuffling steps;**
- **rigidity, stiffness and inflexibility of the limbs, neck and trunk; and**
- **postural instability, a loss of some reflexes needed for maintaining an upright posture, resulting in a tendency to fall.**

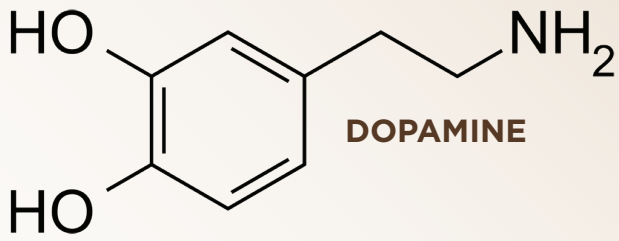
Secondary motor symptoms include:

- **freezing, feeling as if the feet are glued to the floor when starting to move;**
- **micrographia, a decrease in the size of handwriting that gets worse the more a person writes; and**
- **masked facies, a decrease in facial expressions.**

COGNITIVE SYMPTOMS

Cognitive change is common in Parkinson's disease and can range from mildly frustrating symptoms to those that interfere with remembering to take one's medications or pay the bills. These symptoms primarily occur in executive functioning (decreased initiation, multi-tasking, problem-solving, planning/organization), slowed processing and difficulty with new learning. The rapid retrieval of information, i.e, recall is especially affected in Parkinson's disease often making it aggravating to find the right word "on the spot" or participate quickly in a group discussion.

Understanding the cause of cognitive changes in Parkinson's disease is a work in progress, although the same brain changes that result in motor symptoms are likely related. Other factors are thought to be sleep disturbance and medication effect, whether for Parkinson's disease or other conditions. It is critical to address and treat any other medical conditions that may be worsening the cognitive symptoms in Parkinson's disease, such as untreated sleep apnea, diabetes and high blood pressure.



DOPAMINE

MOOD SYMPTOMS

Between 40-50 percent of people living with Parkinson's disease experience depression, anxiety or apathy. These symptoms can occur at any stage of the disease, and in many individuals, may occur before motor symptoms.

Scientists believe these symptoms are more related to changes in the brain. A focus of current research is the link between reduced dopamine in the emotional center of the brain-known as the limbic system-and another neurotransmitter, serotonin, known to be essential in maintaining a positive mood.

TREATING PARKINSON'S DISEASE

Before any treatment can be successful, an individual evaluation is needed to understand each person's unique issues. Neuropsychologists guide patients, families and other medical providers to the best treatment options and aim to reduce the severity of the symptoms and improve daily life. Recommendations include:

- **the use of increased coping strategies;**
- **memory enhancing medications**
- **skills training;**
- **improved sleep;**
- **exercise;**
- **attending a Parkinson's disease support group;**
- **supportive counseling;**
- **social interaction; and**
- **stimulating leisure activities.**

An excellent resource to find out more on this topic is www.michaeljfox.org.

LEWY BODY DEMENTIA:

The Most Misdiagnosed Type of Dementia

BY KAREN D. SULLIVAN, PHD, ABPP

As featured in OutreachNC Magazine

The news suggested that beloved actor Robin Williams had Lewy body dementia. Lewy body dementia is thought to be the most misdiagnosed type of dementia due to the lack of access to dementia experts and considerable overlap between Lewy body dementia and its two closest conditions: Alzheimer's disease and Parkinson's disease with dementia. A correct dementia diagnosis matters for many reasons, including identifying what medicines will help and, in the case of Lewy body dementia, which to avoid, and allows patients and families to connect with community resources.

Lewy body dementia is an umbrella term for two types of dementia: dementia with Lewy bodies and Parkinson's disease dementia, associated with the presence of Lewy bodies—abnormal protein deposits called alpha-synuclein—in the brain.

Dementia with Lewy bodies causes changes in a person's thinking, motor abilities and behavior that interfere with daily functioning. The main symptoms of dementia with Lewy bodies are fluctuating cognitive impairment, well-formed and recurrent visual hallucinations, and motor symptoms, like tremor and rigidity. Suggestive symptoms of dementia with Lewy bodies include repeated falls, syncope (i.e. fainting or passing out), REM sleep disorder (acting out of one's dreams, often in an aggressive manner), and trouble with the autonomic nervous system (blood pressure rising and falling unpredictably, urinary incontinence and constipation).

Diagnosing Lewy Body Dementia

Without MRI or CT scans or blood tests that can reliably diagnose dementia with Lewy bodies, neuropsychologists are increasingly called upon to provide the cognitive assessments that are often considered the most accessible gold standard tool for the diagnosis of a specific dementia and how it is progressing.

The most difficult distinction is between dementia with Lewy bodies and Parkinson's disease dementia, because the symptoms are very similar. Neuropsychologists use their skills in clinical interviewing, alongside other techniques, to separate these two diseases based on the onset, symptoms and pattern of impairments. If the onset of dementia is within one year of motor symptoms, it is more likely to be dementia with Lewy bodies.

In contrast, if the onset of the motor symptoms is more than one year earlier than the onset of dementia, Parkinson's disease dementia is more likely. All individuals with Parkinson's disease dementia have motor symptoms at the time of a dementia diagnosis, in comparison to only 25-50 percent of those with dementia with Lewy bodies when diagnosed.

Separating dementia with Lewy bodies from Alzheimer's disease is more straightforward with the right diagnostic tools (paper and pencil cognitive testing), although it can still be tricky. Short-term memory loss tends to be a more prominent symptom in early Alzheimer's disease when compared with early dementia with Lewy bodies, whereas those with dementia with Lewy bodies usually experience problems in the realm of executive functioning-planning, organization and the processing of visual information. Well-formed and recurrent visual hallucinations are much more frequent in early-stage dementia with Lewy bodies, whereas delusions (like thinking someone is stealing from them) tend to be more common in Alzheimer's disease. REM sleep disorder is also more common in early dementia with Lewy bodies.

Treating Lewy Body Dementia

Research suggests that people living with Lewy body dementia might have better responses to memory-enhancing medications (cholinesterase inhibitors, such as Aricept) than those with Alzheimer's disease.

A diagnosis of Lewy body dementia also alerts medical providers to avoid medications that can aggravate symptoms dramatically, such as traditional antipsychotics, such as haloperidol (Haldol). Approximately 60 percent of people with Lewy body dementia treated with these medications show distressing signs of sedation, decreased ability to move or a life-threatening condition called neuroleptic malignant syndrome that develops with severe muscle cramps and alterations in mental status.

Behavioral interventions can help families more effectively cope with cognitive symptoms, difficulty with eating because of tremor and fall prevention.

For more information, visit www.lbda.org.

Lecture 2

HOW TO MINIMIZE YOUR RISKS FOR DEMENTIA THROUGHOUT THE LIFESPAN

- Lecture series focused on the brain health of older adults
- Evidence-based information and recommendations
- Supported by science and unbiased clinical expertise

Slide Presentation Begins

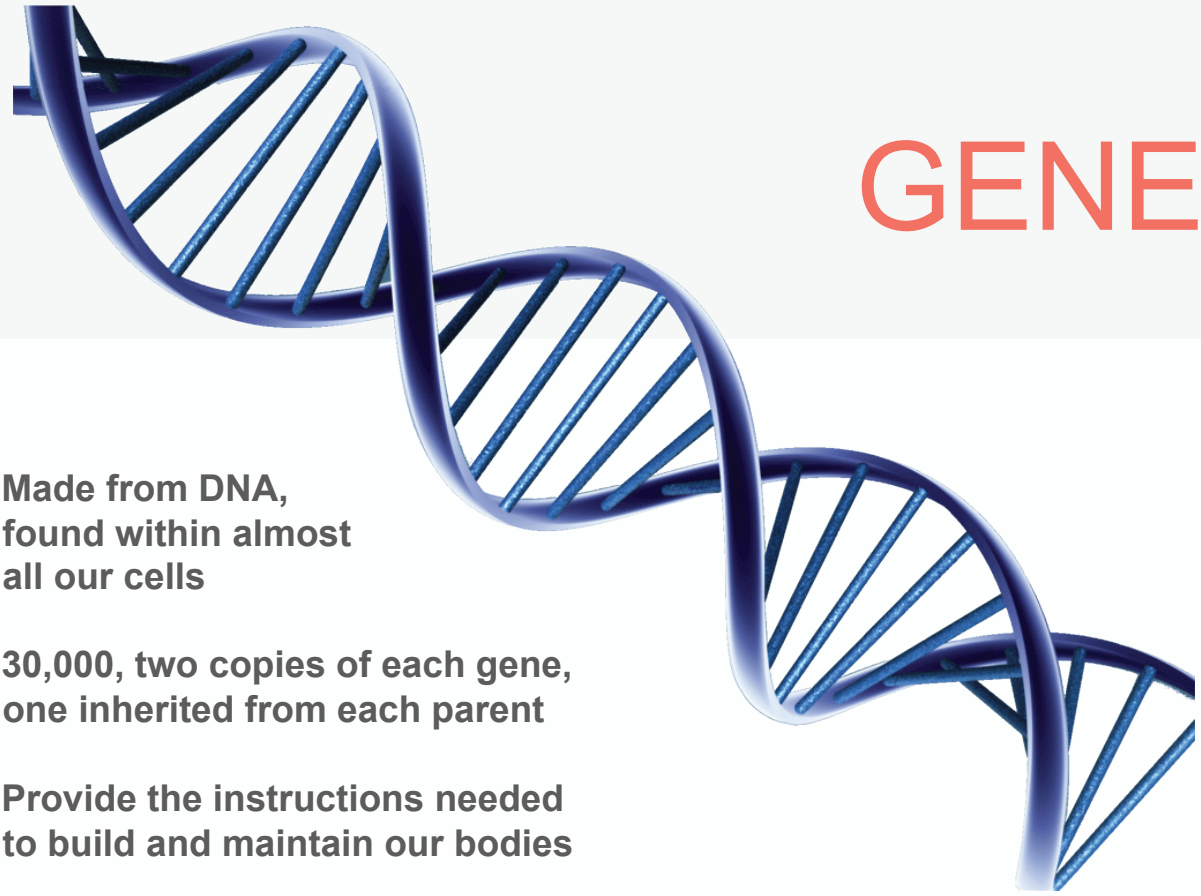
LEARNING TOPICS

- How do our genes and environment interact to increase or decrease our risk of dementia?
- Learn the specific risk factors for dementia throughout childhood, adulthood and older adulthood
- What are the protective factors that increase cognitive reserve?
- What can you do today to keep your brain healthy?

GENES AND DEMENTIA

- Genes play a role in almost all dementias
- Very few dementias are due to mutations alone
- Genetic variants play a significant role in raising or lowering our chances of developing dementia
- Alzheimer's disease example: Early vs. Late Onset

NOTES



GENES

- Made from DNA, found within almost all our cells
- 30,000, two copies of each gene, one inherited from each parent
- Provide the instructions needed to build and maintain our bodies
- Our genes and environment interact to result in our risk for many diseases as we age

NOTES

MUTATIONS	VARIANTS
Rare, faulty	Not faulty or abnormal
Effects are greater, typically harmful	Some genes have multiple different forms = individuality
We will develop a disease, no matter what	We may develop a disease if something in the environment “turns on” the gene

NOTES

WHY LOOK AT THE LIFESPAN?

Most dementias are the result of disease processes
which develop over several decades

Remember the concept of cognitive reserve

We can decrease our risk; the earlier the better
although it's never too late!

NOTES

CHILDHOOD

MATERNAL SMOKING; LOW BIRTH WEIGHT

Maternal smoking may increase later risk for dementia by influencing lifelong cardiovascular and metabolic health

(Power, 2010)

Babies weighing under 6.2 lbs are more likely to have cognitive decline in middle age

(Dawes, 2015)

Low birthweight babies are at increased risk for many physical conditions that are risk factors for dementia

(Gustafson, 2008)

NOTES

POOR SCHOOL PERFORMANCE

- Two 2015 studies suggest an association between childhood school performance at age 9-10 and late life dementia
- Dementia risk was elevated 21% in people who were in the lowest tier of childhood school grades and more than 50% in those over 75 (Dekhtyar, 2015)
- Individuals who completed secondary education had a 28% lower risk of dementia compared to individuals with only elementary education
- Some learning disabilities are associated with certain dementias
- Correlation studies are limited

NOTES

LOW PHYSICAL ACTIVITY AND HIGH TV VIEWING

Participants with low levels of physical activity and high levels of TV watching in mid-childhood were almost 2 times more likely to have poor cognitive function in mid-life, adjusting for age, race, sex, education, smoking, alcohol, BMI, and hypertension

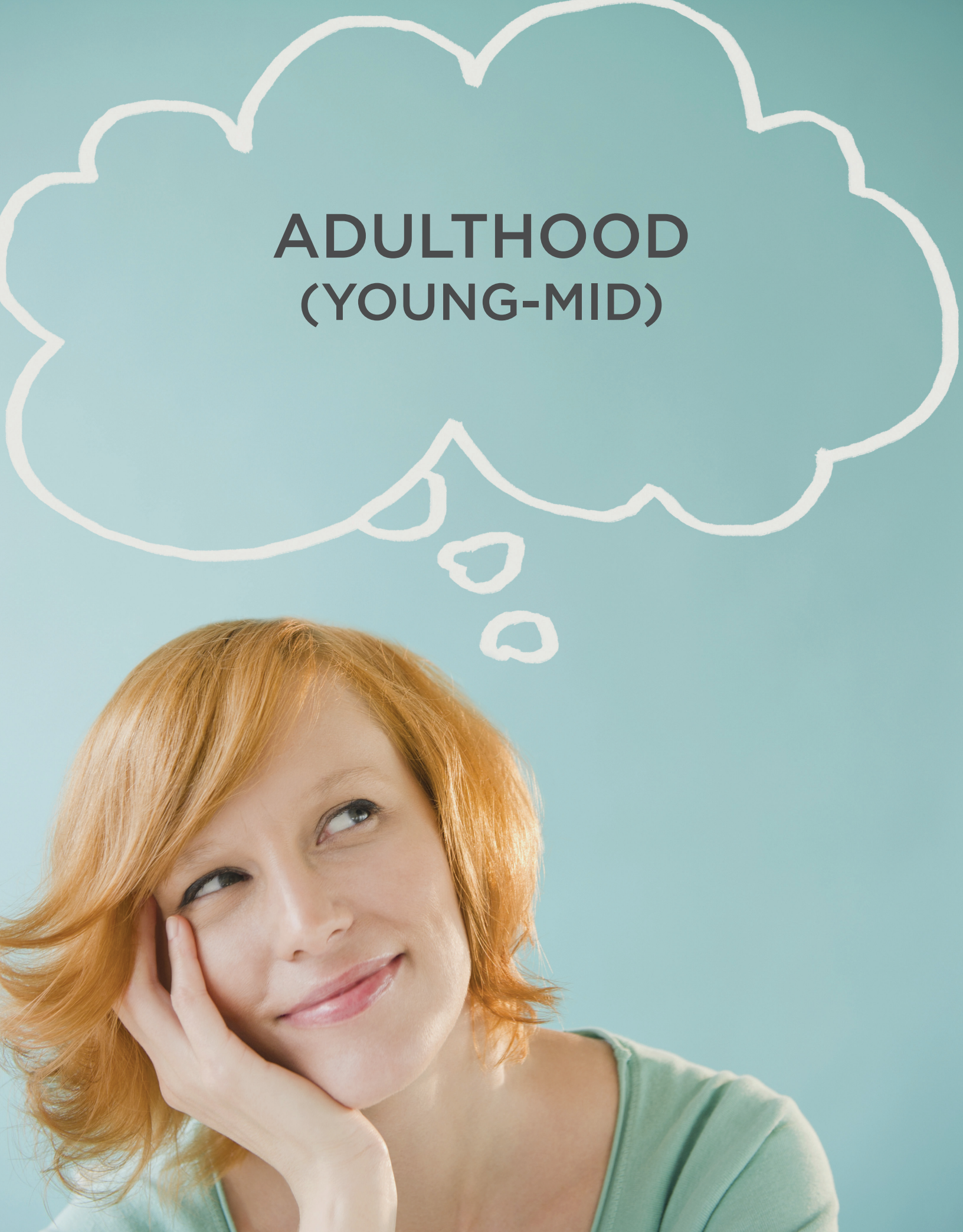
(Hoang et al, 2016)

Low physical activity = activity < 50 min session, 3 times per week

High television viewing = > 4 hours per day

NOTES

ADULTHOOD
(YOUNG-MID)



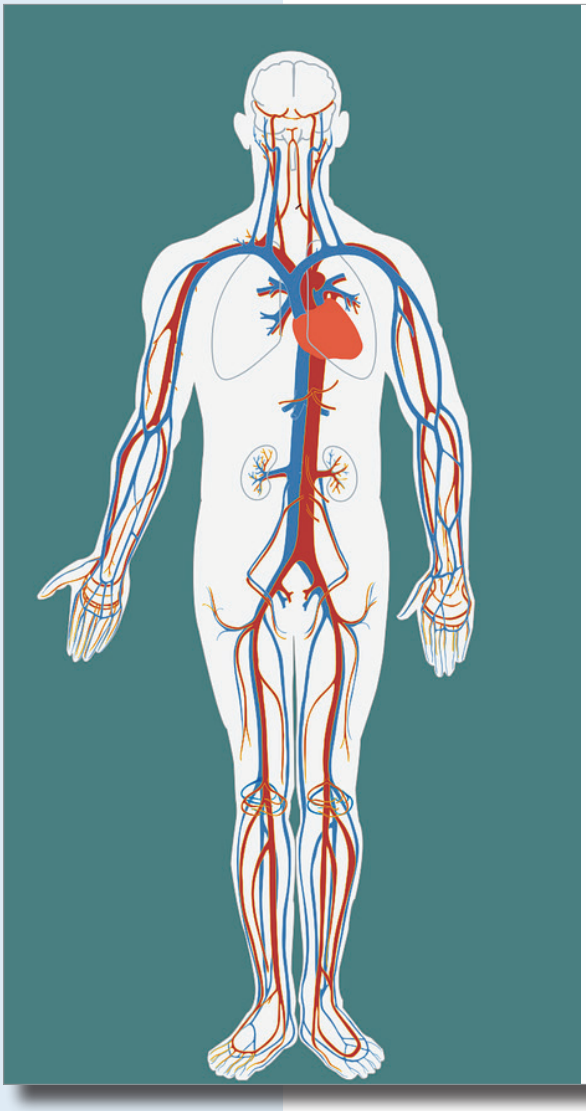
CARDIOVASCULAR DISEASE

Heart health = Brain health

Diabetes, high blood pressure and high cholesterol in mid-life are the strongest risk factors for AD and vascular dementia

All narrow blood vessels and reduce blood flow to brain

NOTES

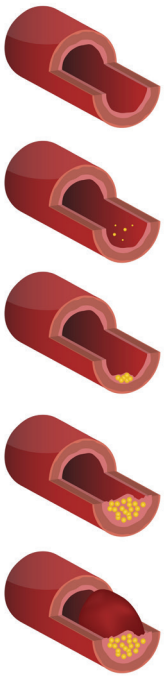


Each heartbeat pumps about 20 to 25% of our blood to the brain

Blood carries the brain's fuel: glucose and oxygen

NOTES

HOW DOES VASCULAR DISEASE AFFECT THE BRAIN



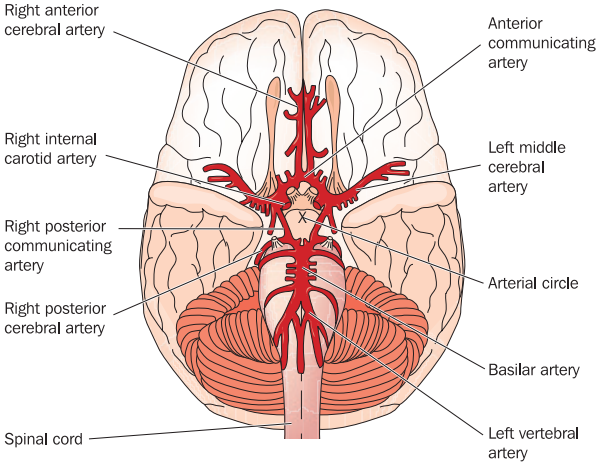
Normal cross section of artery

Cholesterol Particles

A plaque forms in the artery

Artery becomes narrowed

Narrowed artery becomes blocked by a blood clot



NOTES

PHYSICAL INACTIVITY

"How often do you participate in physical activity that lasts at least 20–30 mins and causes breathlessness and sweating?"

Individuals who did this at least twice a week have **50% lower odds of dementia** compared with sedentary persons

The association is stronger for AD;
especially among APOE4 gene carriers

Rovio, 2005

NOTES

UNHEALTHY DIET

- Too much saturated fat **(raises cholesterol)**
- Too much salt **(contributes to high blood pressure and stroke)**
- Too much sugar **(increases risk for type 2 diabetes)**

High saturated fat intake increases the rate of decline in cognitive abilities with age

(Beydoun et al., 2007; Devore et al., 2009; Eskelinen et al., 2008)

More scientifically designed intervention studies are needed

NOTES

ORAL HYGIENE

Twins who had had early periodontal disease — leading to loose or lost teeth by age 35 — had a fourfold increased risk of dementia *(Gatz, 2012)*

Gum disease =

inflammatory disease; inflammation increases the risks of numerous disorders later in life

NOTES

EDUCATION/JOB COMPLEXITY

Relationship between education and dementia is strongest and most consistent in those with no or very low education ***(Qiu et al, 2001)***

Those who reported complex jobs involving working with people had 60% lower risk of dementia; those focused on data and numbers had 23% less risk ***(Kroger, 2008)***

Why?

"Use it or lose it" hypothesis

Making decisions causes us to develop our intellectual flexibility; stronger brain networks

NOTES

MENTAL STIMULATION

Middle age intellectual stimulation protects against dementia (Wang et al, 2002); less likely to have AD ***(Landau, 2012)***

Novelty, repetition and increasing expertise

Find the sweet spot

NOTES

SHIFT/NIGHT WORK

Any shift work and night work modestly predicted elevated risk for dementia in a 2017 study.

Researchers believe night time shift work conflicts with our circadian rhythms and accelerate brain aging.

Sleep deprivation in mice increased β-amyloid in the brain, the pathological hallmark of Alzheimer's disease ***(Kang, 2009)***

NOTES

TOO MUCH ALCOHOL

- Alcohol consumption at high levels (over 3 drinks a day) over a long period of time (about 20 years) increases the risk of developing alcohol and vascular dementia
- The protective effect of mild-moderate alcohol remains controversial
- Benefits of alcohol may be related to positive effects on the cardiovascular system

NOTES

OLDER ADULTHOOD
(OVER 65)

AGE

Risk for both AD and vascular dementia doubles every 5 years over 65 (Wimo, 2010)

Why?

- **Increased risk of cardiovascular diseases**
- **Changes to DNA and cell structure**
- **Weakening of the body's immune system**
- **Loss of hormones**

NOTES

POLYPHARMACY (TOO MANY MEDICATIONS)

Older adults disproportionately use more prescription and non-prescription drugs

Considered over 4 medications in those 65 and older

All drugs tend to stay inside our body longer as we get older mainly due to kidney and liver changes, loss of muscle mass = prolong drug half-lives and increased sensitivity

Polypharmacy may increase risk of cognitive impairment

Important: Don't stop taking any medications without your doctor's agreement

NOTES

ANTI-CHOLINERGICS

Used for urinary incontinence, depression, sleep and allergies (Benadryl, Dramamine, oxybutynin, Paxil, any "PM" drug, Unisom)

HOW?

Risk for cognitive impairment was increased by 50% in adults receiving at least 3 mild ACs for more than 90 days and by 100% in those receiving 1 or more severe ACs for more than 60 days
(Cai, 2013)

After about 7 years people taking these were 4x more likely to develop dementia; had less brain matter especially in memory areas
(Risacher, 2016)

NOTES

BENZODIAZEPINES

- Used to treat anxiety and sleep (Klonopin, Valium, Xanax)
- Well established: One dose = impaired memory and attention (Tannebaum et al, 2012), increased risk of falls, car accidents
- Unclear if long-term use is associated with cognitive decline, research conflicting; evidence overall suggests an increasing risk with cumulative use
- American Geriatrics Society: Don't use benzodiazepines or other sedative-hypnotics in older adults as first choice for insomnia, agitation or delirium. Some use may be necessary.

NOTES

LONELINESS

Feeling lonely rather than being alone is associated with an increased risk of dementia in later life ***(Holwerda, 2012)***

Researchers reported that the loneliest people in one study experienced accelerated cognitive decline approximately 20% faster over 12 years than people who were not lonely ***(Donovan, 2017)***

NOTES

DELIRIUM

Acute mental change most common during a hospital stay, post-operation or with infection

Delirium increases the risk of new-onset dementia, as much as 8 times, worsens severity in those already diagnosed with dementia and increases the pace of cognitive decline ***(Davis, 2012)***

NOTES

HEARING LOSS

43% of adults over 65 have hearing loss

After six years, those with hearing loss severe enough to interfere with conversation were 24% more likely have cognitive decline (Lin, 2011)

Older adults with hearing loss have less gray matter in the part of their brain that receives and processes sounds

Why?

Not enough brain stimulation
Social isolation

NOTES

SLEEPING PATTERNS

2017 Screening Across the Lifespan Twin (SALT) study

Short and extended time in bed, under 6 hours and over 9 hours respectively, and rising after 8 a.m. among older adults predicted increased dementia incidence in the following 17 years.

Researchers concluded that this data suggests that extended time in bed and late rising represent very early features of dementia whereas under 6 hours in bed appeared to be a risk factor for dementia.

NOTES

I CARE FOR YOUR BRAIN

Recommendations

TAKE CONTROL

# of your HEALTH

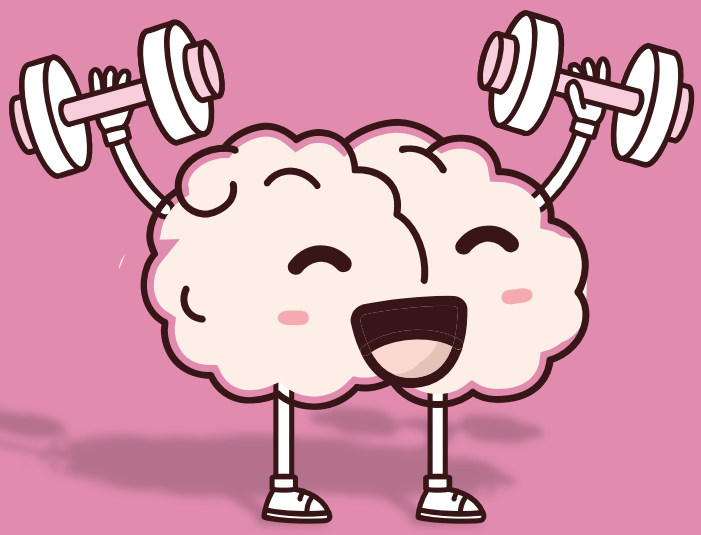
Ask for an annual medication review;
reduce anti-cholinergic meds

NOTES

CHALLENGE YOUR BRAIN

Undertaking complex mental activity later in life is associated with at lower risk of dementia, and slower cognitive decline after a diagnosis of dementia

New, repetitive, challenging (but not too much)



NOTES

MOVE YOUR BODY MORE

Any type of increased movement is good for your brain

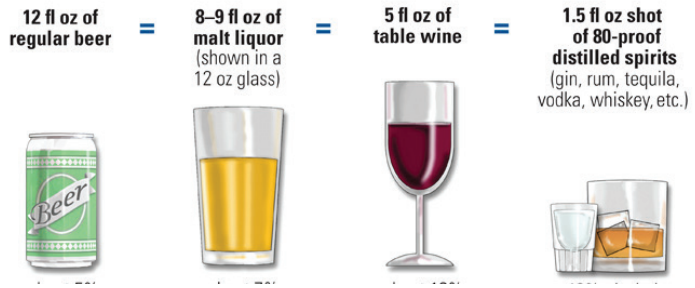
- Direct benefits: Reduces insulin resistance, reduces inflammation, stimulates the growth of new blood vessels in the brain

- Indirect benefits: Improves mood and sleep, less stress and anxiety through endorphins

Parts of the brain involved in memory (prefrontal cortex and medial temporal cortex) are bigger in people who exercise versus people who don't. Benefits can be seen after 6 months of moderate exercise.

Every little bit helps!

NOTES



KEEP IT TO 1-2 DRINKS PER DAY

1 drink per day for women and up to 2 drinks per day for men
(Dietary Guidelines for Americans, 2016)

Do a self-assessment, record your # of drinks over the week

If you can't cut down, talk to your PCP

NOTES

EAT A MEDITERRANEAN DIET

Greatest reduction in risk for diseases such as dementia
(Sofi, 2010)

Dietary Guidelines for Alzheimer's Prevention (2013) state to:

- Minimize intake of saturated fats and transfats
- Eat plant-based foods
- Get your vitamin E from foods, not supplements
- Increase intake of B12 through fortified foods and supplements
- Choose a multivitamin without iron or copper

NOTES

BE A SOCIAL BUTTERFLY, IN YOUR OWN WAY

- Emerging evidence that staying socially engaged and having a supportive social group may reduce dementia risk
- Visit family/friends, look after grandchildren, join a club, volunteer, church
- Attend interesting and informative lectures (wink, wink)

NOTES

WEAR YOUR HEARING AIDS

NOTES

STAY OUT OF HOSPITAL

Reduces your chance of getting delirium

Fall prevention

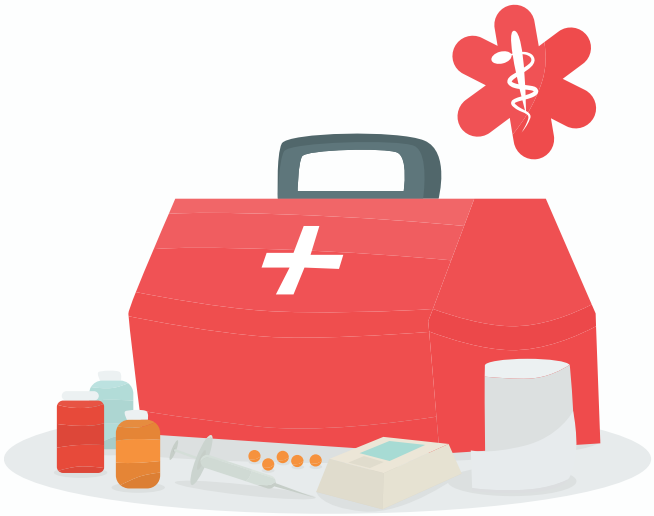
Don't over or under take your medications

Important: The hospital can also save your life so if you need to go, go!

NOTES

EARLY AND ACCURATE DIAGNOSIS OF DEMENTIA

- Many benefits including memory medications
- The earlier someone who needs them takes them, the better.
- Best chance to slow decline
- Remember, neuropsychological evaluation is the gold standard



NOTES

SMALL GROUP DISCUSSION TOPICS

1 Which risk factor for dementia most surprised you?

2 Discuss the concept of job complexity being related to more brain reserve. What jobs have done in your life that were the most challenging?

3 Was the information about anticholinergic drugs new to you? Do you have a plan to reduce your use of them with the help of your doctor?

4 Discuss the difference between being alone and feeling lonely. Do you think this is different for introverts or extroverts?

5 How comfortable do you feel in talking about brain health with your medical providers? Have you felt taken seriously if you have brought up concerns about yourself or a loved one?

NOTES

How To Minimize Your Dementia Risk By Reducing Your Use of ANTI-CHOLINERGIC MEDICATIONS

The use of anti-cholinergic medicines is common in older adults. These medicines block an important chemical called acetylcholine (essential for brain function among other things) and cause an array of side effects that often go unnoticed.

Classes of medicines known to have anticholinergic properties include those used for urinary incontinence, older antidepressants called tricyclics, antihistamines/allergy medications, inhaled steroid sprays and over-the-counter sleep medications and cold and flu remedies. Cognitively, the side effects range from sedation, troubling learning and concentrating, to poor memory and confusion. Physically, they can cause constipation, dry mouth, difficulty releasing urine, dry eyes, falls and slowed heartbeat.

Anti-cholinergic potencies vary between medications and we all differ in our ability to tolerate them. The unique concern in older adults is the cumulative effect of taking multiple medicines with these properties even one each individual medicine has a relatively low strength. Older adults, on the whole, are more sensitive to all drugs due to the physiological changes that accompany aging that make it difficult to excrete medications efficiently (this will be covered in detail in Lecture 4!) but this is particularly so with anti-cholinergic drugs.

In a random community sample of older adults, 90 percent of study participants had detectable levels of anti-cholinergic activity in their systems (Mulsant et al, 2003). This is alarming!

Side effects are often incorrectly labeled as being due to "normal aging," which leads to yet another prescription to manage that symptom which, of course, perpetuates the problem. The bottom line is that anti-cholinergic medicines should be avoided or at least minimized in older adults with the assistance of your doctor and presents us with an excellent modifiable risk factor for dementia.

It is important to calculate what scientists call your "anti-cholinergic burden" score, a measure of your overall exposure to these medications. In the most recent Anti-Cholinergic Cognitive Burden Scale published by Dr. Boustani in 2012, possible anti-cholinergic medications are listed with a score of 1 and definite anti-cholinergics include those listed with a score of 2 or 3, using the following criteria:

SCORE OF 1 : POSSIBLE EFFECTS

Evidence from in vitro data that chemical entity has antagonist activity at muscarinic receptor.

SCORE OF 2: DEFINITE EFFECTS

Evidence from literature, prescriber's information or expert opinion of clinical anti-cholinergic effect.

SCORE OF 3: DEFINITE EFFECTS

Evidence from literature, expert opinion or prescriber's information that medication may cause delirium.

The higher the score the higher the risk of cognitive side effects. Interpretation: No specific cutoff has been identified at this time.

I want you to calculate the risk level for yourself or a loved one by doing the following:

1. **Make a list of all medicines (prescription, supplements and over-the-counter)**
2. **Consult the list at the right, add up the 1, 2 and 3 scores and determine an overall "burden score."**
3. **If concerning, ask the person's medical provider if this medicine essential? If yes, ask these questions:**
   - **Is there a different treatment option?**
   - **If not, can we safely reduce the dose of the medicine?**

Drugs with ACB Score of 1

GENERIC NAME	BRAND NAME
Alimemazine	Theralen™
Alverine	Spasmonal™
Alprazolam	Xanax™
Aripiprazole	Abilify™
Asenapine	Saphris™
Atenolol	Tenormin™
Bupropion	Wellbutrin™, Zyban™
Captopril	Capoten™
Cetirizine	Zyrtec™
Chlorthalidone	Diuril™, Hygroton™
Cimetidine	Tagamet™
Clidinium	Librax™
Clorazepate	Tranxene™
Codeine	Contin™
Colchicine	Colcrys™
Desloratadine	Clarinex™
Diazepam	Valium™
Digoxin	Lanoxin™
Dipyridamole	Persantine™
Disopyramide	Norpace™
Fentanyl	Duragesic™, Actiq™
Furosemide	Lasix™
Fluvoxamine	Luvox™
Haloperidol	Haldol™
Hydralazine	Apresoline™
Hydrocortisone	Cortef™, Cortaid™
Iloperidone	Fanapt™
Isosorbide	Isordil™, Ismo™
Levocetirizine	Xyzal™
Loperamide	Immodium™, others
Loratadine	Claritin™
Metoprolol	Lopressor™, Toprol™
Morphine	MS Contin™, Avinza™
Nifedipine	Procardia™, Adalat™
Paliperidone	Invega™
Prednisone	Deltasone™, Sterapred™
Quinidine	Quinaglute™
Ranitidine	Zantac™
Risperidone	Risperdal™
Theophylline	Theodur™, Uniphyl™
Trazodone	Desyrel™
Triamterene	Dyrenium™
Venlafaxine	Effexor™
Warfarin	Coumadin™

A Special Note About Dementia:

Anti-cholinergic medicines may worsen cognitive decline and confusion associated with Alzheimer's disease. The combination of cholinesterase inhibitors, such as donepezil (Aricept), galantamine and rivastigmine (Exelon) and anti-cholinergic medications should be avoided, because they decrease the effectiveness of both medications. Brain scientists believe that those with dementia already have lower levels of acetylcholine, the chemical anti-cholinergic medications reduce.

Drugs with ACB Score of 2

GENERIC NAME	BRAND NAME
Amantadine	Symmetrel™
Belladonna	Multiple
Carbamazepine	Tegretol™
Cyclobenzaprine	Flexeril™
Cyproheptadine	Periactin™
Loxapine	Loxitane™
Meperidine	Demerol™
Methotrimeprazine	Levoprome™
Molindone	Moban™
Nefopam	Nefogesic™
Oxcarbazepine	Trileptal™
Pimozide	Orap™

Drugs with ACB Score of 3

GENERIC NAME	BRAND NAME
Amitriptyline	Elavil™
Amoxapine	Asendin™
Atropine	Sal-Tropine™
Benztropine	Cogentin™
Brompheniramine	Dimetapp™
Carbinoxamine	Histex™, Carbihist™
Chlorpheniramine	Chlor-Trimeton™
Chlorpromazine	Thorazine™
Clemastine	Tavist™
Clomipramine	Anafranil™
Clozapine	Clozaril™
Darifenacin	Enablex™
Desipramine	Norpramin™
Dicyclomine	Bentyl™
Dimenhydrinate	Dramamine™, others
Diphenhydramine	Benadryl™, others
Doxepin	Sinequan™
Doxylamine	Unisom™, others
Fesoterodine	Toviaz™
Flavoxate	Urispas™
Hydroxyzine	Atarax™, Vistaril™
Hyoscyamine	Anaspaz™, Levsin™
Imipramine	Tofranil™
Meclizine	Antivert™
Methocarbamol	Robaxin™
Nortriptyline	Pamelor™
Olanzapine	Zyprexa™
Orphenadrine	Norflex™
Oxybutynin	Ditropan™
Paroxetine	Paxil™
Perphenazine	Trilafon™
Promethazine	Phenergan™
Propantheline	Pro-Banthine™
Propiverine	Detrunorm™
Quetiapine	Seroquel™
Scopolamine	Transderm Scop™
Solifenacin	Vesicare™
Thioridazine	Mellaril™
Tolterodine	Detrol™
Trifluoperazine	Stelazine™
Trihexyphenidyl	Artane™
Trimipramine	Surmontil™
Trospium	Sanctura™

YOUR BRAIN HEALTH PROGRESS

ALCOHOL INTAKE

0-2 per day for men
0-1 per day for women

DIET

Reduce saturated fats
Eat plant-based foods

DAY	ALCOHOL INTAKE		DIET	
	WEEK 1 Normal Activity	WEEK 2 Behavior Change	WEEK 1 Normal Activity	WEEK 2 Behavior Change
1				
2				
3				
4				
5				
6				
7				

Two-Week Behavior Tracking Sheet

EXERCISE
Any type of increased movement

COGNITIVE STIMULATION
Novelty and repetition

SOCIAL INTERACTION
Be social in your own way

WEEK 1 Normal Activity	WEEK 2 Behavior Change	WEEK 1 Normal Activity	WEEK 2 Behavior Change	WEEK 1 Normal Activity	WEEK 2 Behavior Change

How Do the Risk Factors for Dementia *Relate to You*

Check off all of your known risk factors for dementia through each stage of life:

GENETIC (family history/gene mutations)

CHILDHOOD

Maternal smoking

Low birth weight

Poor school performance

Low physical activity

High television watching

YOUNG-MID ADULTHOOD

Cardiovascular disease (high blood pressure, high cholesterol, diabetes)

Low physical activity

Too much saturated fat in diet

Too much salt in diet

Too much sugar in diet

Loose or lost teeth

Gum disease

No/Low formal education

Low complexity job

Low mental stimulation

Overnight shift work

Too much alcohol

OLDER ADULTHOOD (OVER 65)

Age

More than 4 prescription medications

More than 90 days on an anticholinergic medication

Long-term use of benzodiazepine

Feeling lonely

History of hospital-based confusion aka delirium

Untreated hearing loss

BRAIN TRIVIA

SEE ANSWERS PAGE 62

1. TRUE OR FALSE: Genes play a role in almost all dementias.

2. Label the descriptions below as Gene Mutations or Gene Variants.

_____ Rare, faulty

_____ Some genes have multiple different forms = individuality

_____ Will develop a disease, no matter what

_____ Not faulty or abnormal

_____ We may develop a disease if something in the environment "turns on" the gene

_____ Effects are greater and typically harmful

3. Are most dementias a result of disease processes that develop after we turn 65 years old?

4. List two things that happen in childhood that may increase later risk for dementia

_____

_____

5. Which, if any, of the risk factors from childhood did you experience growing up?

_____

6. Fill in the blank: _____, _____, and _____ in mid-life are the strongest risk factors for AD and vascular dementia.

7. What essential fuels does the blood carry to the brain? _____

8. People who participate in physical activity for at least 20-30 minutes and causes breathlessness and sweating at least twice per week have _____ lower odds of dementia compared to sedentary persons.

9. Match the unhealthy diet factor to the increased health risk

Too much saturated fat	Contributes to high blood pressure and stroke
Too much salt	Increases risk for type 2 diabetes
Too much sugar	Raises cholesterol

10. TRUE OR FALSE: Education and job complexity do not influence dementia risk.

11. Use the words below to complete the sentences below:

Night work Dementia Alcohol consumption

Middle age intellectual stimulation protects against _____.

Shift work and _____ modestly predicted elevated risk for dementia in a 2017 study.

_____ at high levels over a long period of time increases the risk of developing alcohol dementia and vascular dementia.

12. Why does the risk of Alzheimer's disease and vascular dementia increase after the age of 65? (Circle all correct responses.)

Increased risk of cardiovascular diseases
More trouble with attention
Weakening immune system
Loss of hormones
More trouble with multitasking
Changes to DNA and cell structure

13. TRUE OR FALSE: Taking too many medications may increase the risk of cognitive impairment.

14. Fill in the blanks using the words below:

Delirium	43%	gray matter
six hours	lonely	hearing aids

Feeling _____ rather than being alone, is associated with an increased risk of dementia in later life.

_____ is an acute mental change, most common during a hospital stay, post-operation or with infection.

Older adults with hearing loss have less _____ _____ in the part of their brain that receives and processes sounds.

_____ of adults over the age of 65 have hearing loss.

Under ____ _____ in bed appears to be a risk factor for dementia.

If they are needed, it is important to always wear _____ _____ to reduce risk of social isolation and lowered brain stimulation.

16. Dr. Sullivan recommends you challenge your brain with complex mental activity to help lower your risk of dementia. What are some challenging activities for your brain that you might enjoy?

17. TRUE OR FALSE:

____ Any type of increased movement is good for your brain.

____ Exercise does not stimulate the growth of new blood vessels in the brain.

____ Parts of the brain involved in memory are larger in people who exercise.

____ Having five drinks per day on a regular basis does not affect your health.

____ Dietary guidelines for Alzheimer's Prevention recommend minimizing the intake of saturated fat and trans fat.

____ Eating plant-based foods is recommended by the Alzheimer's prevention dietary guidelines.

____ Staying socially engaged is not important for dementia risk.

____ It is important to wear your hearing aids.

18. How many alcoholic drinks per day to you usually have? Does this match with the dietary guidelines suggested by doctors?

19. What type of social activities do you enjoy, and how often do you participate in them?

20. List two reasons why early and accurate diagnosis of dementia is important.

21. What are some steps you can take that will help reduce your risk of developing dementia?

It's never too early or too late
to work toward being the healthiest you.

1. True
2. Mutation: Rare, faulty
Variant: Some genes have multiple different forms = individuality
Mutation: Will develop a disease, no matter what
Variant: Not faulty or abnormal
Variant: We may develop a disease if something in the environment "turns on" the gene.
Mutation: Effects are greater and typically harmful.
3. No, most dementias are the result of disease processes that develop of several decades.
4. Maternal smoking, low birth weight, poor school performance, and low physical activity + high TV viewing.
6. Diabetes, high blood pressure, and high cholesterol
7. Glucose and oxygen
8. 50%
9. Too much saturated fat—Raises cholesterol
Too much salt—Contributes to high blood pressure and stroke
Too much sugar— Increases risk for type 2 diabetes
10. False
11. Middle age intellectual stimulation protects against dementia.
Shift work and night work modestly predicted elevated risk for dementia in a 2017 study.
Alcohol consumption at high levels over a long period of time increases the risk of developing alcohol and vascular dementia.
12. Increased risk of cardiovascular diseases, weakening immune system, loss of hormones, and changes to DNA and cell structure
13. True
14. Lonely
15. Feeling lonely rather than being alone, is associated with an increased risk of dementia in later life.
Delirium is an acute mental change, most common during a hospital stay, post-operation or with infection.
Older adults with hearing loss have less gray matter in the part of their brain that receives and processes sounds.
43% of adults over the age of 65 have hearing loss.
Under six hours in bed appears to be a risk factor for dementia.
If they are needed, it is important to always wear hearing aids to reduce risk of social isolation and lowered brain stimulation.
17. True: Any type of increased movement is good for your brain.
False: Exercise does not stimulate the growth of new blood vessels in the brain.
True: Parts of the brain involved in memory are bigger in people who exercise
False: Having 5 drinks per day on a regular basis does not affect your health
True: Dietary guidelines for Alzheimer's Prevention recommend minimizing the intake of saturated fat and trans fat.
True: Eating plant based foods is recommended by the Alzheimer's prevention dietary guidelines.
False: Staying socially engaged is not important for dementia risk.
True: It is important to wear your hearing aids.
18. Dietary guidelines recommend one drink per day for women and up to two per day for men.
20. Being able to get prescriptions for memory medications, best change to slow decline.

REFERENCES

- Barnard, N. D., Bush, A. I., Ceccarelli, A., Cooper, J., de Jager, C. A., Erickson, K. I., Squitti, R. (2014). Dietary and lifestyle guidelines for the prevention of Alzheimer's disease. Neurobiology of Aging, 35, S74-S78.
- Beydoun, M. A., Kaufman, J. S., Satia, J. A., Rosamond, W., & Folsom, A.R. (2007). Plasma n-3 fatty acids and the risk of cognitive decline in older adults: The atherosclerosis risk in communities study. American Journal of Clinical Nutrition, 85(4), 1103-1111.
- Bokenberger, K., Ström, P., Dahl Aslan, A. K., Johansson, A. L., Gatz, M., Pedersen, N. L., & Åkerstedt, T. (2017). Association between sleep characteristics and incident dementia accounting for baseline cognitive status: A prospective population-based study. The Journals of Gerontology Series A, Biological Sciences and Medical Sciences, 72(1), 134-139.
- Bokenberger, K., Sjolander, A., Dahl Asian, A. K., Karlsson, I. K., Akerstedt, T., Pedersen, N. L. (2017). Midlife shift work and risk of incident dementia. In M Yurcheshen & J Liou (Co-Chairs), Neurological Disease and Sleep. Symposium conducted at The Joint Meeting of the American Academy of Sleep Medicine and the Sleep Research Society, Boston, MA.
- Cai, X., Campbell, N., Khan, B., Callahan, C., & Boustani, M. (2013). Long-term anticholinergic use and the aging brain. Alzheimer's & Dementia: The Journal of the Alzheimer's Association, 9(4), 377-385.
- Davis, D. H., Terrera, G. M., Keage, H., Rahkonen, T., Oinas, M., Matthews, F. E., Brayne, C. (2012). Delirium is a strong risk factor for dementia in the oldest-old: A population-based cohort study. Brain: A Journal of Neurology, 135(9), 2809-2816.
- Dawes, P., Dickenson, C., Emsley, R., Bishop, P. N., Cruickshanks, K. J., Edmondson-Jones, M., Munro, K. (2014). Vision impairment and dual sensory problems in middle age. Ophthalmic and Physiological Optics, 34(4), 479-488.
- Dekhtyar, S., Wang, H. X., Scott, K., Goodman, A., Koupil, I., & Herlitz, A. (2015). A life-course study of cognitive reserve in dementia- From childhood to old age. The American Journal of Geriatric Psychology, 23(9), 885-896.
- Devore, E. E., Stampfer, M. J., Breteler, M. M., Rosner, B., Kang, J. H., Okereke, O., & Grodstein, F. (2009). Dietary fat intake and cognitive decline in women with type 2 diabetes. Diabetes Care, 32(4), 635-640.
- Donovan, N., Wu, Q., Rentz, D. M., Sperling, R. A., Marshall, G. A., & Glymour, M. M. (2017). Loneliness, depression and cognitive function in older U.S. adults. International Journal of Geriatric Psychiatry, 32(5), 564-573.
- Eskelinen, M. H., Ngandu, T., Helkala, E. L., Tuomilehto, J., Nissinen, A., Soininen, H., & Kivipelto, M. (2008). Fat intake at midlife and cognitive impairment later in life: A population-based CAIDE Study. International Journal of Geriatric Psychiatry, 23(7), 741-747.
- Gray, S. L., Dublin, S., Yu, O., Walker, R., Anderson, M., Hubbard, R., & Larson, E. (2016). Benzodiazepine use and risk of incident dementia or cognitive decline: Prospective population based study. The BMJ, 352.
- Gustafson, D. (2008). A life course of adiposity and dementia. European Journal of Pharmacology, 585(1), 163-175.
- Hoang, T. D., Reis, J., Zhu, N., Jacobs, D. R., Launer, L. J., Whitmer, R. A., ... Yaffe, K. (2016). Effect of early adult patterns of physical activity and television viewing on midlife cognitive function. JAMA Psychiatry, 73(1), 73-79.

CONTINUED PAGE 64

REFERENCES

- Holwerda, T. J., Beekman, A. T., Deeg, D. J., Stek, M. L., van Tilburg, T. G., Visser, P. J., ... Schoevers, R. A. (2012). Increased risk of mortality associated with social isolation in older men: Only when feeling lonely? Results from the Amsterdam Study of the Elderly (AMSTEL). Psychological Medicine, 42(4), 843-853.

- Kang, J. E., Lim, M. M., Bateman, R. J., Lee, J. J., Smyth, L. P., Cirrito, J. R., & Holtzman, D. M. (2009). Amyloid-beta dynamics are regulated by orexin and the sleep-wake cycle. Science, 326(5955), 1005-1007.

- Kröger, E., Andel, R., Lindsay, J., Benounissa, Z., Verreault, R., & Laurin, D (2008). Is complexity of work associated with risk of dementia?: The Canadian Study of Health and Aging. American Journal of Epidemiology, 167(7), 820-830.

- Landau, S. M., Marks, S. M., Mormino, E. C., Rabinovici, G. D., Oh, H., O'Neil, J. P., ... Jagust, W. J. (2012). Association of lifetime cognitive engagement and low β-amyloid deposition. Archives of Neurology, 623-629.

- Lin, F. R., Metter, E. J., O'Brien, R. J., Resnick, S. M., Zonderman, A. B., & Ferrucci, L. (2011). Hearing loss and incident dementia. Archives of Neurology, 68(2), 214-220.

- Power, C., Atherton, K., & Thomas, C. (2010). Maternal smoking in pregnancy, adult adiposity and other risk factors for cardiovascular disease. Atherosclerosis, 211(2), 643-648.

- Qiu, C., Bäckman, L., Winblad, B., Agüero-Torres, H., & Fratiglioni, L. (2001). The influence of education on clinically diagnosed dementia incidence and mortality data from the Kungsholmen project. Archives of Neurology, 58(12), 2034-2039.

- Risacher, S. L., McDonald, B. C., Tallman, E. F., West, J. D., Farlow, M. R., Unverzagt, F. W., ... Savkin, A. J.; Alzheimer's Disease Neuroimaging Initiative. (2016). Association between anticholinergic medication use and cognition, brain metabolism, and brain atrophy in cognitively normal older adults. JAMA Neurology, 73(6), 721-732.

- Rovio, S., Kåreholt, I., Helkala, E. L., Viitanen, M., Winblad, B., Tuomilehto, J., ... Kivipelto, M. (2005). Leisure-time physical activity at midlife and the risk of dementia and Alzheimer's disease. Lancet, 4(11), 705-711.

- Sofi, F., Abbate, R., Gensini, G. F., & Casini, A. (2010). Accruing evidence about benefits of adherence to the Mediterranean diet on health: An updated systematic review and meta-analysis. American Journal of Clinical Nutrition, 92(5), 1189-1196.

- Tannenbaum, C., Paquette, A., Hilmer, S., Holroyd-Leduc, J., & Carnahan, R. (2012). A systematic review of amnestic and non-amnestic mild cognitive impairment induced by anticholinergic, antihistamine, GABAergic and opioid drugs. Drugs & Aging, 29(8), 639-658.

- U.S. Department of Health and Human Services and U.S. Department of Agriculture. (2016). 2015 – 2020 Dietary Guidelines for Americans. 8th Edition. Retrieved from health.gov/dietaryguidelines/2015.

- Wang, H. X., Karp, A., Winblad, B., & Fratiglioni, L. (2015). Late-life engagement in social and leisure activities is associated with a decreased risk of dementia: A longitudinal study from the Kungsholmen project. American Journal of Epidemiology, 155(12), 1081-1087.

- Wimo, A., Prince, M. (2010). World Alzheimer Report 2010: The global economic impact of dementia. London, UK: Alzheimer's Disease International.

STIMULATE YOUR BRAIN

with
NOVELTY
&
REPETITION

I CARE
FOR YOUR BRAIN
with Dr. Sullivan

Be a
Social Butterfly
in your own way

I CARE
FOR YOUR BRAIN
with Dr. Sullivan

TAKE
CONTROL
of your HEALTH

I CARE
FOR YOUR BRAIN
with Dr. Sullivan

Wear your
HEARING AIDS
EVERY DAY

I CARE
FOR YOUR BRAIN
with Dr. Sullivan

FLIP the SWITCH

I CARE FOR YOUR BRAIN
with Dr. Sullivan

JOIN Our Facebook Community Today!

Turn LEARNING into ACTION

WITH DR. SULLIVAN'S 9-PART LECTURE SERIES IN-PERSON OR ONLINE

1. UNDERSTANDING THE AGING BRAIN
   WHAT IS NORMAL AND WHEN TO WORRY
2. DEMENTIA RISK FACTORS THROUGHOUT THE LIFESPAN
   HOW TO MINIMIZE YOUR RISKS
3. HEART HEALTH = BRAIN HEALTH
   HOW TO TAKE CONTROL OF YOUR BLOOD FLOW
4. HOW DO SUBSTANCES AFFECT THE AGING BRAIN?
   WHAT TO DO ABOUT DIET, MEDICATIONS, ALCOHOL AND SUPPLEMENTS
5. THE PSYCHOLOGY OF AGING: STRATEGIES FOR BETTER COPING
6. THE IMPORTANCE OF SOCIAL CONNECTION IN OLDER ADULTHOOD
   HOW TO FIND YOUR VILLAGE
7. NORMAL MEMORY CHANGES WITH AGE
   EVIDENCE-BASED METHODS TO IMPROVE MEMORY
8. HOW SLEEP CHANGES WITH AGE: EFFECTS ON MEMORY AND MOOD
   HOW TO IMPROVE SLEEP STARTING TONIGHT
9. A REVIEW: BRAIN HEALTH AS WE AGE:
   DR. SULLIVAN'S TOP 10 RECOMMENDATIONS

www.ICFYB.com

FirstHealth
OF THE CAROLINAS

Neurosurgery Excellence

Right Brain vs Left Brain.

The right captures imaginative thinking. The left deductive logic. To be in command of neurosurgery excellence, we need both attributes. From neck pain to back pain to other more complex neurosurgical disorders, our neurosurgical team has the creativity to make a clear diagnosis and the knowledge to provide the most advanced treatment options and procedures. And most importantly, positive outcomes. Our board certified physicians have 47 years of combined experience and our service area includes not only the Sandhills region, but much of the mid-Carolinas.

The Brain is our Domain.

For more information call (855) 535-8700
or visit www.firsthealth.org/neurosurgery

Dennis M. Campbell, M.D. • Michael D. Fromke, M.D. • Cynthia Z. Africk, M.D.

874-50-17