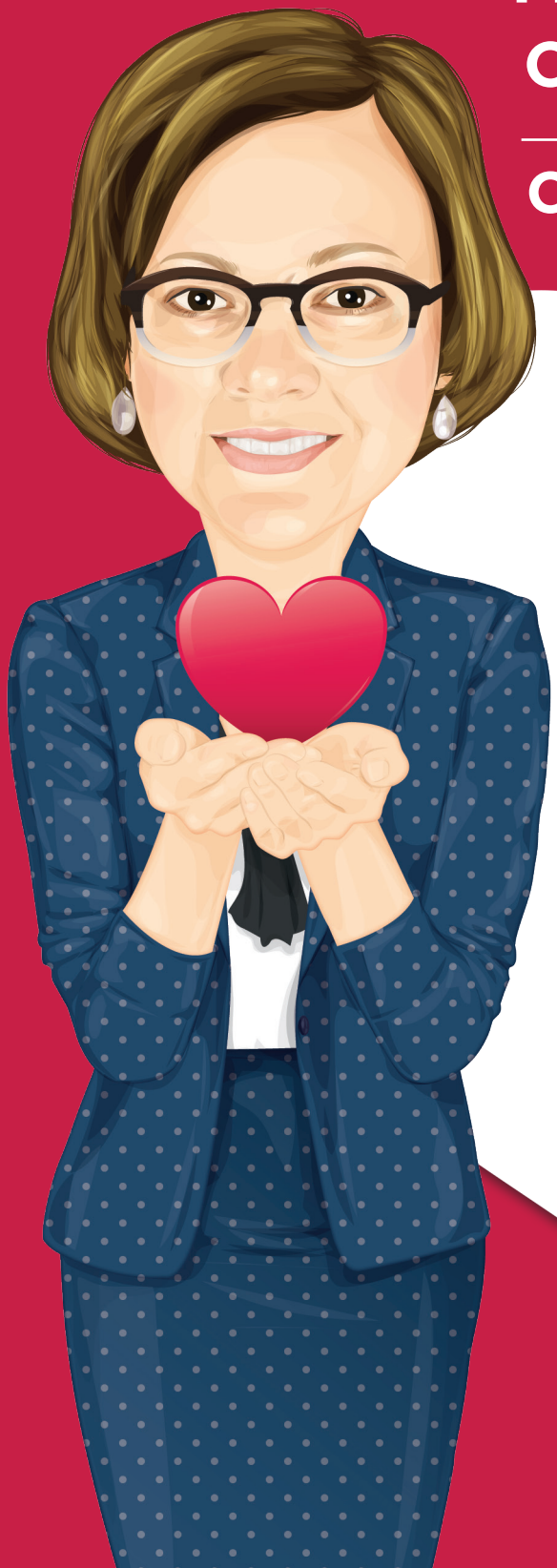
Lecture 3

HEART HEALTH=BRAIN HEALTH: How to Take Control of Your Risk Factors

COMPANION WORKBOOK 3



I CARE
FOR YOUR BRAIN
with Dr. Sullivan

Pinehurst Neuropsychology

Brain & Memory Clinic

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- **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
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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

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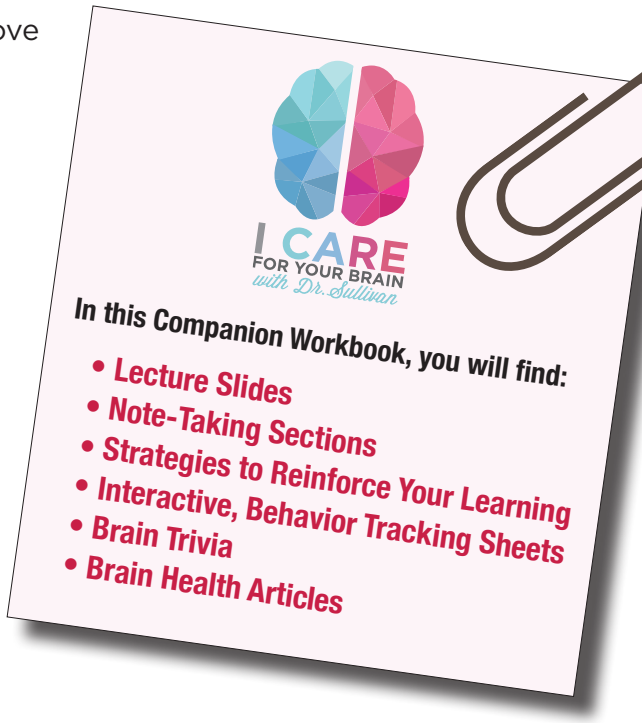
Welcome friends!

This lecture will have you making big changes to improve the health of your brain, I promise! There is now indisputable evidence that heart health and brain health are intimately connected.

Many common cardiovascular conditions that occur in older adulthood, such as high blood pressure, high cholesterol, diabetes and sleep apnea, also affect the brain. These conditions, particularly when poorly controlled, narrow and damage the rich network of vessels that supply the brain with its fuel: oxygen and nutrient-rich blood.

Over time, reduced blood flow to the brain results in both subtle and more noticeable damage, including the cognitive disorders of vascular-related cognitive impairment and vascular dementia. Recent research suggests a strong relationship between microvascular disease in the brain, the development of Alzheimer's disease and a worsening of all subtypes of dementia.



My goal in the I CARE FOR YOUR BRAIN program is to empower you with information that you then can turn into action to truly improve the health of your brain without gimmicks or too-good-to-be-true marketing ploys! In this lecture, we explore which cardiovascular risk factors most impact brain health and how to best decrease your personal risk of vascular-related cognitive decline through evidence-based recommendations. The information and interactive guides in this workbook will provide you with the tools you need to do this for yourself or a loved one.

We introduce one of the most powerful and scientifically supported concepts for brain health: cardiovascular exercise. Increased physical activity has both direct and indirect benefits on the health of our brain, including the exciting finding that it stimulates growth hormone factors that set the stage for new neuron growth in the memory centers of the brain.

Brain scientists believe that lifelong approaches aimed at improving our vascular health would drastically reduce the incidence of dementia worldwide. Vascular health is only one aspect of true brain health, which you are learning, is multidimensional and rooted in physical, social and spiritual health.

So, let's jump in and continue on this learning journey together.

Heart in hand, thank you for joining me again!

Dr. Karen D. Sullivan

Brain Matters

COMPANION WORKBOOK 3

I CARE FOR YOUR BRAIN with Dr. Sullivan

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

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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.

"Thanks so much for providing this program. Wonderful and very important information presented in easily understood style! I now know what to do to help myself, and it's all free!"

What *will you* say?

Let's get started!

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

JOIN our FREE Facebook Community Today!

5 WAYS

to Get Blood Pumping for Optimal Brain Health

As featured in OutreachNC Magazine

BY KAREN D. SULLIVAN, PHD, ABPP

If you've been diagnosed with high cholesterol, also called hyperlipidemia, it means a lab test showed that you have too much fatty plaque in your blood. When too much of this plaque builds up in the body's cardiovascular system (our blood vessels and arteries), it is called atherosclerosis. This leads to a narrowing of the space within the blood vessels and arteries, which reduces the amount of vital nutrients and oxygen carried throughout the body.

Over time, a decrease in glucose and oxygen, in particular, can damage the smallest arteries in the body most severely. These include those in the feet, eyes and brain. Within the brain, this can cause permanent damage and result in thinking and memory problems, particularly the rapid recall of known information, like quickly finding a word or recalling a friend's name on the spot.

In the worst case, a narrowing of the blood vessels and arteries can completely block blood flow to the brain and cause a stroke. This type of brain damage is more likely to occur if someone has other medical conditions that also reduce blood flow throughout the body, such as diabetes, high blood pressure or untreated sleep apnea.

Consider these five recommendations to improve your blood flow for optimal brain health:

1 Strive for at least 30 minutes of safe physical activity most days of the week. This does not have to be in the form of aerobics, lifting weights or even fast walking; just do your best to move your body more. You may choose to park farther from the store entrance, lift your legs and arms during commercial breaks while watching television or walk around the block twice a day.

2 Try to improve your diet by eating foods high in fiber, such as oatmeal, whole-grain breads, fruits and vegetables. Reduce foods high in saturated fat or cholesterol, such as meats, butter, dairy products, and foods with palm oil. Drink more water (aim for 6-8 glasses a day) and less soda, fruit juice and other drinks that are high in sugar.

3 **A number of studies have found that a mild to moderate intake of alcohol (one or two small glasses a day) has a protective effect on blood vessels.** Drinking alcohol in these amounts may also help to raise your good cholesterol levels. Although red wine is most often touted for its beneficial properties, any kind of alcoholic beverage appears to have a similar benefit. If you have liver disease, you should not drink at all. It is important to consult with your doctor to make sure that none of your medications prohibit you from drinking.

KNOW YOUR NUMBERS:

For cholesterol, everyone's goal numbers are different for LDL, HDL, Triglycerides and C-Reactive Protein, so talk with your medical provider about what's best for you.

4 **If you smoke, try everything you can to quit.** Cigarette smoking lowers the good cholesterol in your body (called "HDL"). Once a person quits smoking, these good cholesterol levels slowly change to levels that are equal to people who do not smoke. If you are not a smoker, but live with someone who is, ask him or her to consider quitting or at least smoke away from you.

5 **Take your medications exactly as prescribed by your doctor.** Developing a routine to remind you when to take your medications will make it easier to remember. For example, taking your medications with breakfast is a good cue for remembering. Using a pillbox along with notes and reminders may also help you remember to take your medications. If you still have trouble remembering to take every single dose, ask a family member or friend to call and remind you, or set up a reminder system, such as an alarm on your cell phone.

HIGH Blood Sugar = LOW Brain Power

BY KAREN D. SULLIVAN, PHD, ABPP

As featured in OutreachNC Magazine

Blood sugar abnormalities are common in older adults, with research estimating that about 30 percent meet criteria for some version of glucose disorder, ranging from pre-diabetes to Type 2 diabetes. Over time, excessive blood sugar damages the blood vessels throughout the body via a process of inflammation. Although all organs are at risk for injury, the small blood vessels in the brain are particularly vulnerable. When blood vessels in the brain are damaged, the fuel it needs to survive, glucose and oxygen, cannot get through and cells die. Brain cells have a very high need for glucose to function properly, using 65 percent of our body's supply.

High and low spikes in blood sugar, defined by the American Diabetes Association as outside the range of 80-120 mg/dL, are particularly harmful to brain cells and associated with cognitive impairment including dementia. Both Alzheimer's disease and vascular dementia have been associated with poorly controlled blood sugar levels.

Even in the absence of dementia, blood sugar irregularities can negatively affect cognition. Attention, memory and mental processing speed are particularly susceptible to damage. A 2015 study published in the journal Neurology reported that among older adults with diabetes, scores on thinking and memory tests decreased by an average of 12 percent while test scores of those without diabetes stayed the same.

Consider these five tips for decreasing your risk:

- **Close monitoring of blood sugar levels is essential for preventing or reducing brain complications from diabetes.** Check your blood glucose levels in the morning and evening at a minimum, and write down the results in a notebook, so you can see trends over time. Take all medications exactly as prescribed; don't miss even one day.

- **Eating a whole foods diet, minimizing processed foods and increasing your physical activity can really make a difference in keeping your blood glucose levels stable, especially as we age.** Strive to break a sweat for about 30 minutes at least 3 times per week. Cardiovascular exercise strengthens blood vessels and helps them to withstand the damage caused by high blood sugar.

- **Keeping your blood pressure under good control, as high blood pressure can worsen the effects of diabetes.** The goal for older adults is typically below 130/80.

- **Living with diabetes is hard; there's a lot to do every day. People with diabetes often have to balance food choices, medications and exercise.** Try your best to put a positive spin on negative thoughts. If you only focus on the foods you shouldn't eat, you'll feel deprived. If you focus instead on all the good things that you are able to eat, such as fresh greens and seasonal fruits, you'll make better choices over time. Ask for support. It's normal to want to talk about what you are going through with someone who can really understand. Find out how others with diabetes cope, and you will likely feel less alone and more motivated to make the necessary changes to keep your blood sugar levels steady.

- **Baseline testing is the best tool we have for detecting changes affecting the brain with thinking and memory.** Working with a neuropsychologist can provide you with personalized recommendations to reduce your risk of cognitive impairment.

KNOW YOUR NUMBERS

If diabetic, check your blood glucose level in the morning and evening at a minimum. The American Diabetes Association suggests an A1C of 7 percent, but glycemic goals may vary for each individual.

FEED YOUR BRAIN
with an Anti-Inflammatory Diet

BY KAREN D. SULLIVAN, PHD, ABPP

The connection between poor diet and reduced physical health has been scientifically established since the 1980s. Conditions such as heart disease, diabetes, rheumatoid arthritis, most cancers and stroke have been strongly linked to lifestyle factors, particularly a diet high in saturated animal fats and simple carbohydrates. Vegetables, fruits, nuts and fish are commonly associated with a healthy diet, whereas high sugar, fried foods and fatty red meat are notorious no-nos.

What has been less well recognized until recently is that the same nutritionally poor diet has implications for brain health by increasing the risk of cognitive decline, such as vascular dementia and Alzheimer's disease.

Data from the May 2015 Neurology Journal showed that older adults with the healthiest diets (defined as those containing a high amount of fruits and vegetables, nuts, fish, moderate alcohol use and minimal red meat) were 24 percent less likely to experience cognitive decline when compared to those with the least healthy diets.

Neuroscientists are now focused on understanding the underlying mechanisms of how diet affects brain functioning. Researchers hypothesize that poor nutrition is likely to reduce the brain's ability to grow healthy new brain cells, lessen brain cells' ability to recover from oxidative stress, including free radicals and, perhaps most importantly, increase inflammation.

While some amount of inflammation is required to support normal immune function and to assist in the body's repair processes after injury, chronic low-grade inflammation is thought to interfere with a healthy cerebrovascular system, which is essential for optimal brain functioning. Inflammation in the small vessels of the brain is thought to reduce blood flow via poor oxygenation and lower glucose delivery. In turn, brain cells cannot work properly and succumb to disease and dysfunction.

Previous trends of taking supplements for brain health have been replaced by the recommendation for consistent cardiovascular exercise, stress management and eating a whole-foods diet rich in macronutrients with the goal of reducing systemic inflammation.

Significantly reducing the foods you eat that are made with processed seed and vegetable oils (corn, safflower, sunflower, soybean and cottonseed oils) found in highly processed foods, such as baked goods, crackers and cereals, is one of the most effective ways to achieve this goal. Also, consider adding the following foods into your diet for a proactive, and tasty, way to promote brain health:

- **Oily fish (salmon, mackerel, anchovies and sardines)**
- **Berries/deep colored fruits (blueberries, tart cherries)**
- **Leafy greens (kale, spinach, collard greens and Swiss chard)**
- **Cruciferous (cabbage-family) vegetables**
- **Chocolate with at least a 70 percent cacao content**

WHAT HAPPENS IF I DO NOT TREAT My High Blood Pressure?

BY KAREN D. SULLIVAN, PHD, ABPP

High blood pressure or hypertension dramatically adds to the workload of your heart, arteries and veins. Your heart must pump harder, and the arteries and veins that carry and return the blood to the heart are functioning under greater strain. If high blood pressure continues for a long time, your cardiovascular system, including the blood flow to the brain, may not work optimally.

The damage is done is phases starting with microtears in the lining of the walls of our blood vessels. Over time, fatty tissue deposits (typically cholesterol plaques) fill in these spaces and turn into calcium deposits, which cause the arteries to lose their plasticity, to harden and thicken, and ultimately, narrow.

Your heart and brain can handle mildly decreased blood and oxygen due to high blood pressure for a long time, which is why you might live with high blood pressure for years without any symptoms or noticeable effects. However, that doesn't mean it isn't hurting you. High blood pressure increases the risk of heart attack, kidney disease, peripheral artery disease, chronic ischemic small vessel disease, transient ischemic attacks (TIA), ministrokes and stroke. All of these conditions significantly increase your risk of vascular dementia.

What can I do better?

(2017 American Heart Association recommendation: 130/80 Systolic/Diastolic)

MAINTAIN A HEALTHY WEIGHT

- Check with your healthcare provider to see if you need to lose weight.
- If you do, lose weight slowly, using a healthy eating plan and engaging in physical activity.
- Even losing 10 pounds can go a long way in improving your cardiovascular health!

BE MORE PHYSICALLY ACTIVE

- Almost everyone can be more physical even if it means doing arm and legs lifts in a chair or on the couch.
- Try to engage in moderate physical activity for a total of 30 minutes on most days of the week.
- Combine everyday household chores with stretching and walking, as your physical condition allows. Be sure to check with your doctor to learn which activities are best for you.

DRINK ALCOHOL IN MODERATION

- In addition to raising blood pressure, too much alcohol can add unnecessary calories to your diet.
- If you drink alcoholic beverages, drink in moderation—one drink a day for women, two drinks a day for men.
- Make sure to check with your doctor regarding whether alcohol is inappropriate medically or if it will interact with your medications.

TAKE PRESCRIBED MEDICATIONS EXACTLY AS DIRECTED BY YOUR DOCTOR

- If you need drugs to help lower your blood pressure, you still should follow the lifestyle changes above.
- Use a pillbox along with notes and other reminders to help you remember to take your medications every single day. Even missing your medications for two days can significantly raise your risk of stroke. Ask a loved one to help you with reminder phone calls and messages, if needed.
- If you experience side effects from your medications, please do not stop taking them. Talk to your doctor so that a more tolerable medication can be prescribed.

Lecture 3

HEART HEALTH=BRAIN HEALTH: How To Take Control of Your Risk Factors

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

Slide Presentation Begins

LEARNING TOPICS

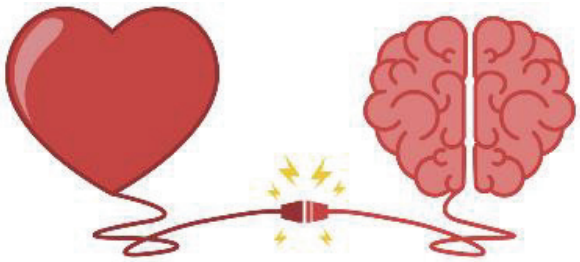
- Heart-Brain Connection
- Top Three Vascular Risk Factors
  - Hypertension
  - High Cholesterol
  - Type 2 Diabetes
- How Vascular Disease Affects the Brain
- I CARE FOR YOUR BRAIN Recommendations

WHY IS THIS TOPIC IMPORTANT

- **Vascular disease disproportionately affects older adults**
- **Genes + Lifestyle = Risk of dementia and cognitive impairment in most older adults**
- **A healthy brain is a part of aging well**
- **We can do something about it!**

NOTES

HEART-BRAIN CONNECTION



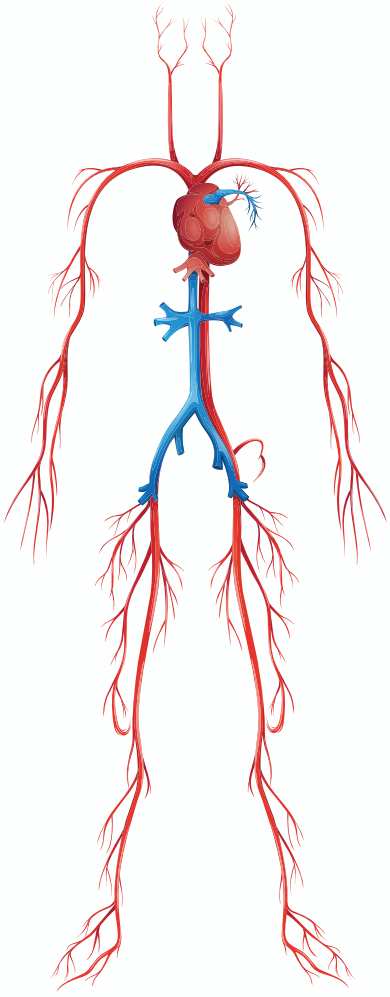
There is a growing appreciation for the profound connection between the brain and heart

First international conference
on the Heart & Brain in Paris, 2012

"The significant association between cardiovascular diseases and an increased risk of dementia offers the possibility to markedly reduce dementia by early identification and appropriate medical management of these risk factors…could be a monumental step forward in reducing the worldwide prevalence of dementia"

Jack de La Torre, 2012

NOTES



CARDIOVASCULAR SYSTEM

Body's network of blood vessels includes arteries, veins and capillaries that carry blood to and from the heart

Circulates and transports nutrients, oxygen, carbon dioxide, hormones, glucose

Provides nourishment, fights disease, stabilizes temperature, maintains homeostasis, carries off waste

Critical for brain health

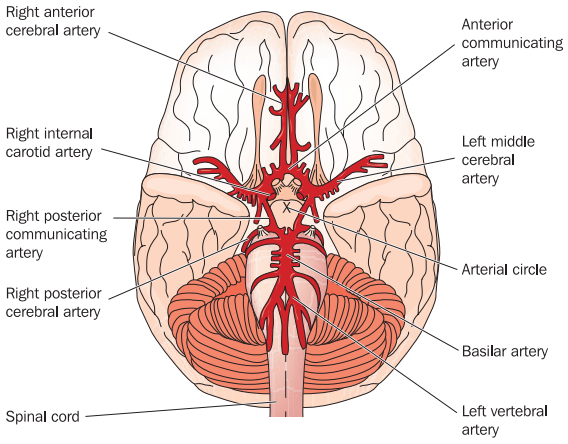
NOTES

CEREBROVASCULAR SYSTEM

Two blood vessel systems supply the brain

The internal carotid arteries supply the front of the brain and the vertebral arteries supply the back of the brain and brainstem

The circulation from the front and the back join together in the Circle of Willis



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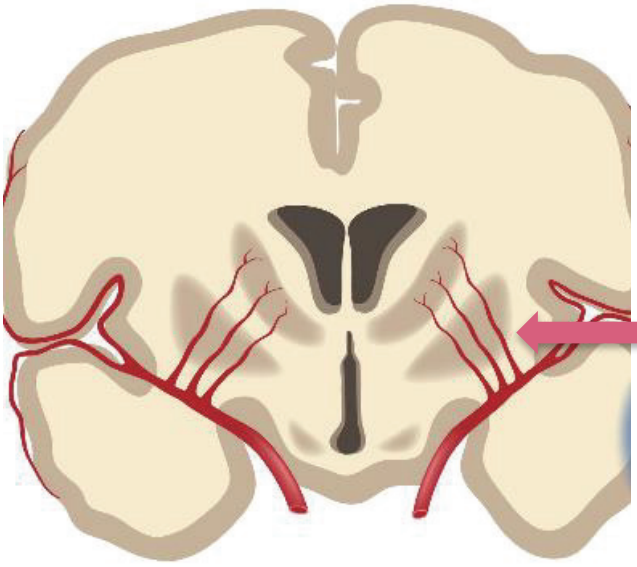
SMALL BLOOD VESSELS OF THE BRAIN



Key concept

NOTES

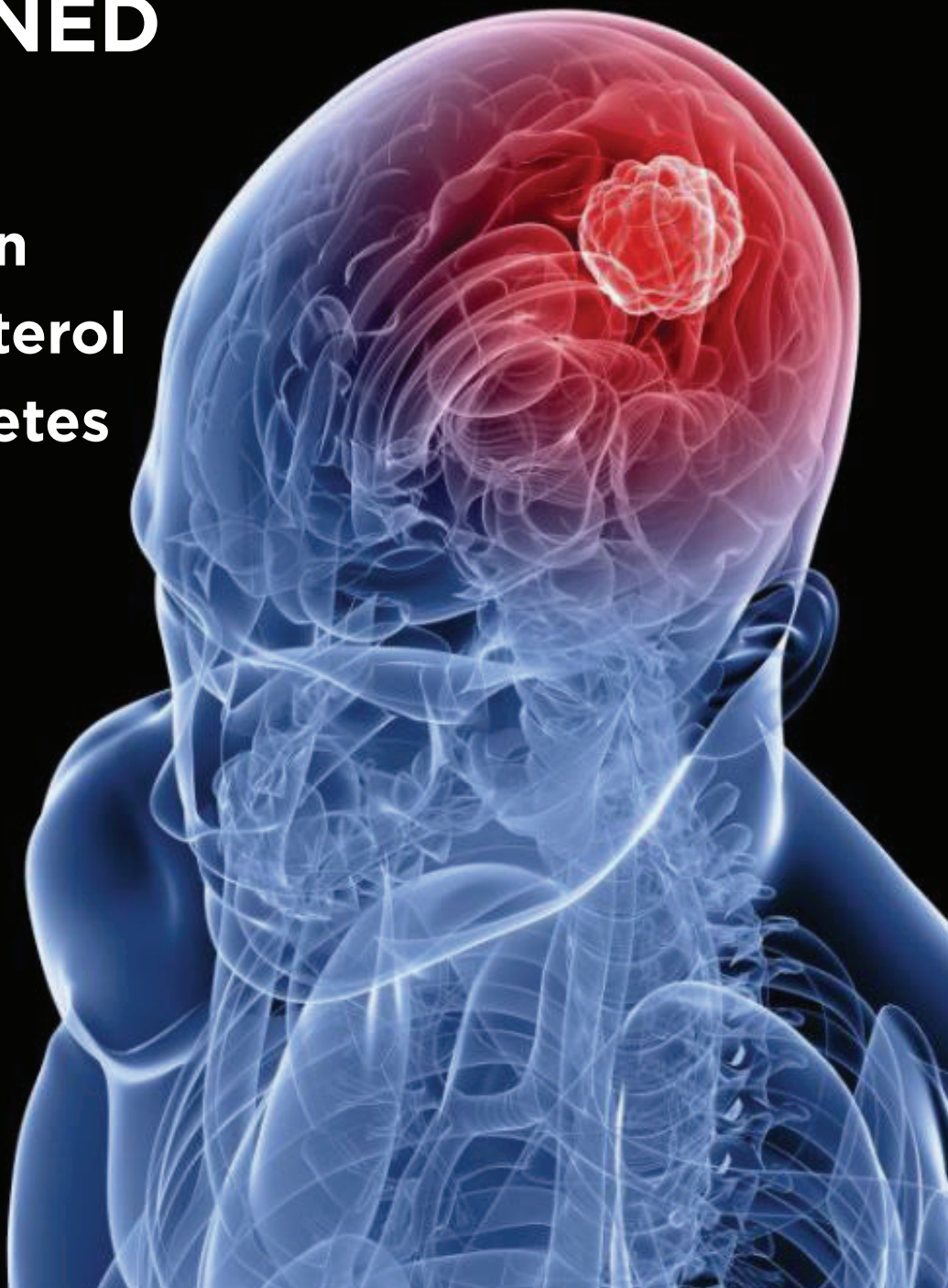
WHAT ARE CEREBROVASCULAR RISK FACTORS?

- Age (over 50 years old)
- Hypertension
- High cholesterol
- Type 2 diabetes
- Sedentary lifestyle
- Obstructive sleep apnea (untreated)
- Excessive alcohol consumption
- Atrial fibrillation
- Smoking
- Poor diet
- Overweight
- Stress

NOTES

MOST COMMON VASCULAR RISK FACTORS EXPLAINED

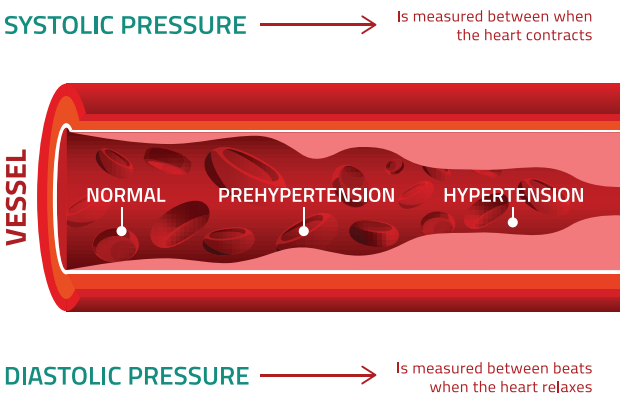
- Hypertension
- High Cholesterol
- Type 2 Diabetes



HYPERTENSION

Blood pressure is the force of blood against the walls of arteries, the blood vessels that carry blood away from the heart

In as many as 95% of cases, the underlying cause cannot be determined



High blood pressure = above 130/80

Over age 60, the upper number causes more concern because it means the arteries close to the heart have stiffened, making them less responsive to blood flow

NOTES

Over time what happens?

Too much pressure on the lining of the artery walls causes small tears, leaving space for fatty tissue to develop in those spaces

This fatty tissue causes the formation of calcium deposits, which cause the arteries to lose their plasticity, harden, and thicken.

This decreases how well blood can travel throughout the body. As a result, the optimal level of oxygen and nutrients are not provided.

Over time, injury and death of cells, tissues and organs including the brain

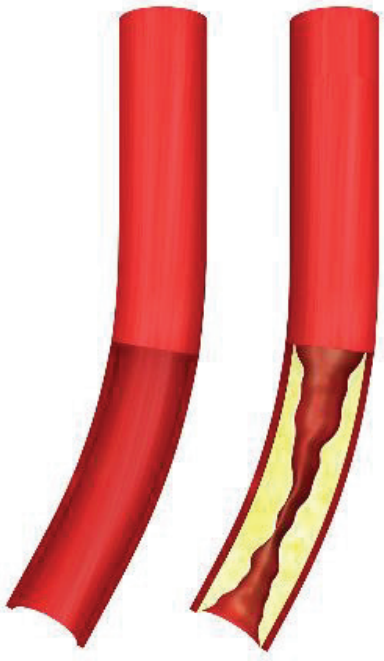
NOTES

HIGH CHOLESTEROL

A waxy substance found in the fats (lipids) in our blood

While we need cholesterol to continue building healthy cells, too many fatty deposits in our blood = atherosclerosis; decreased blood flow

Genes + Lifestyle



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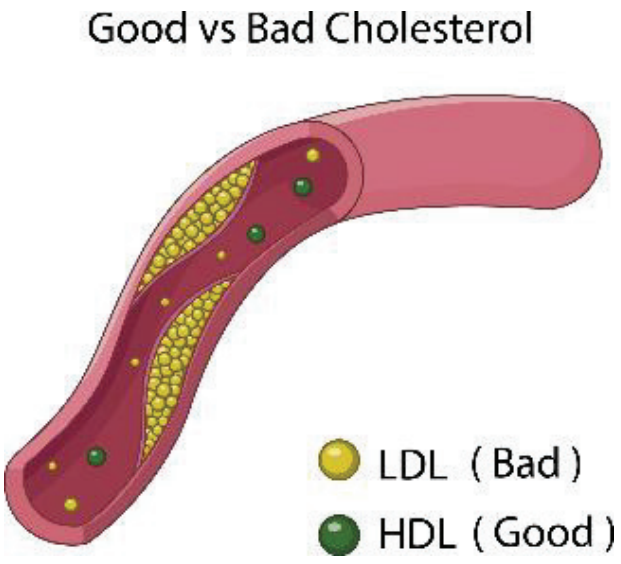
Cholesterol moves in the blood plasma in protein particles called lipoproteins

Low-density lipoprotein (LDL), "bad" cholesterol, transports cholesterol throughout our body, builds up in the walls of our arteries, narrowing them.

High-density lipoprotein (HDL), "good" cholesterol, picks up excess cholesterol and takes it back to the liver.



NOTES

There is no absolute cutoff between normal and abnormal cholesterol levels, recommendations are made in relation to other health conditions and risk factors

Statins are controversial; 2012 FDA warning about cognitive side effects, no clear evidence either way as of 2017. Overall, positive effects are thought to far outweigh the negative.

Risks/benefits for each person should be decided with PCP. Don't stop taking these medications.

NOTES

TYPE 2 DIABETES

When our body's blood glucose levels rise higher than normal and we cannot use insulin properly, it is called insulin resistance.

Initially, our pancreas makes extra insulin to compensate, but, over time, it isn't able to keep up and can't make enough insulin to keep our blood glucose at normal levels.

NOTES

DIABETES HURTS THE BRAIN THREE WAYS

Inflammation

When blood sugars are poorly controlled, insulin levels are imbalanced and inflammation occurs, narrowing the arteries.

Less fuel

Because our brain cells cannot store glucose, they depend on the bloodstream to deliver a constant supply.

Damage to memory cells

The part of the brain where we make memories, the hippocampus, is susceptible to damage as a result of quick blood sugar changes. High and low spikes in blood sugar levels are particularly harmful (below 80 or above 200)

NOTES

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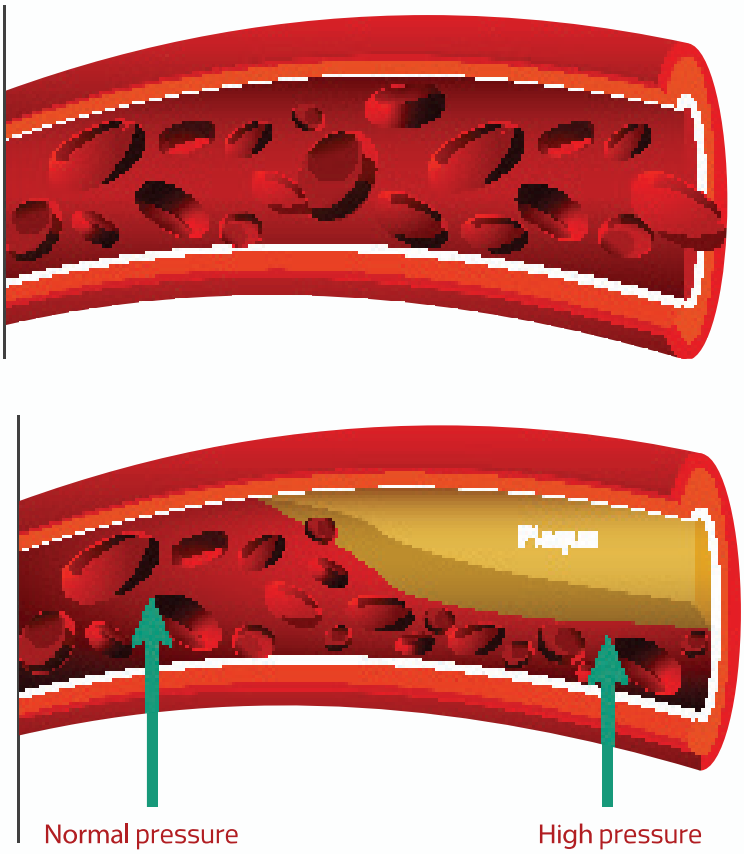
HOW DO THESE THREE RISK FACTORS

- Hypertension
- High Cholesterol
- Type 2 Diabetes

COME TOGETHER?



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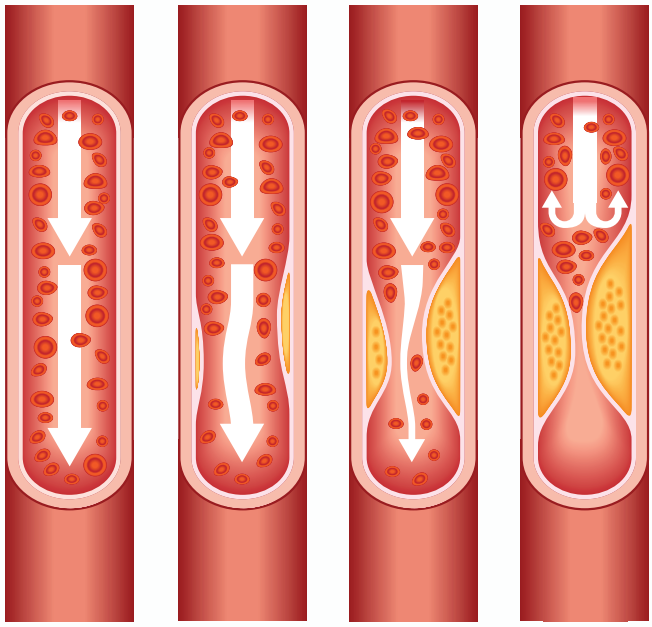
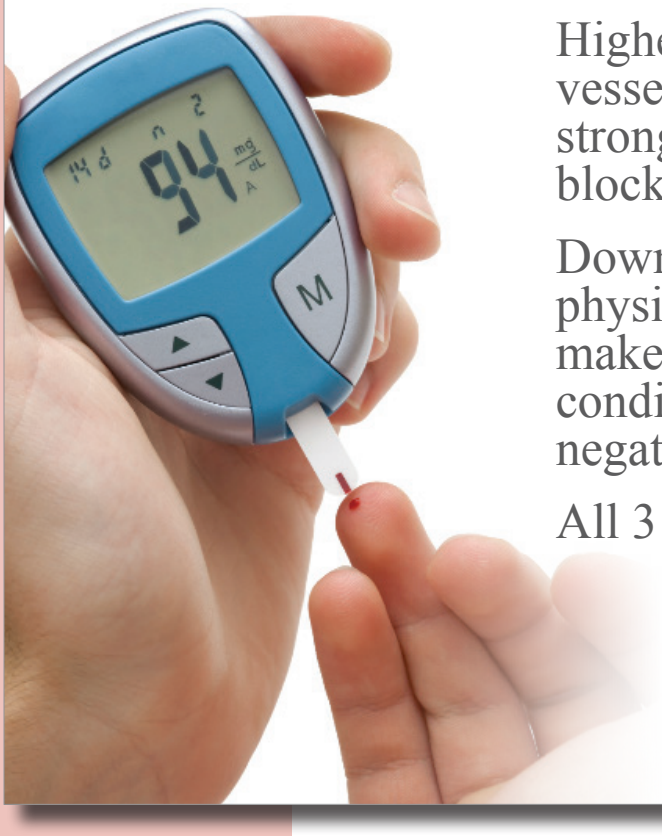


Stops blood flow completely

NOTES



Older adults rarely have one risk factor, usually many. Having one sets you up for others. When you have more than two, it is harder to control each one.

Higher glucose levels affect how blood vessels contract, making for stronger contraction, increasing risk of blockage and stroke.

Downward spiral of more and more physical and cognitive impairment makes it harder to manage the conditions, which increases their negative effects.

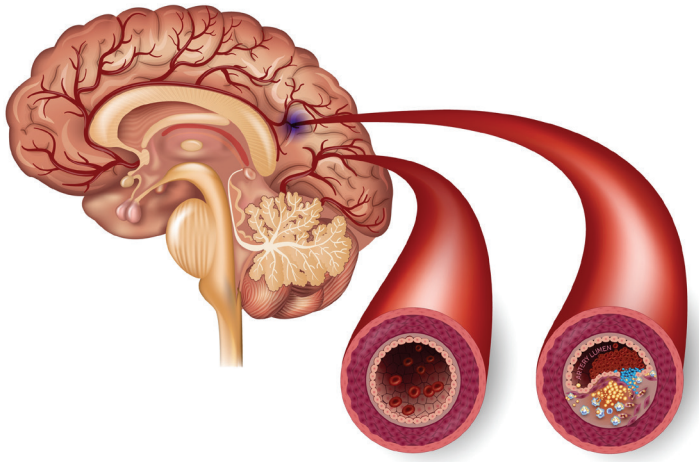
All 3 reduces lifespan by about 19 years.

NOTES

EFFECT OF THESE RISK FACTORS ON VASCULAR SYSTEM

Depending on where it happens = different symptoms and disease including death

Results in peripheral (arms and legs) and central vascular disease (trunk and brain)



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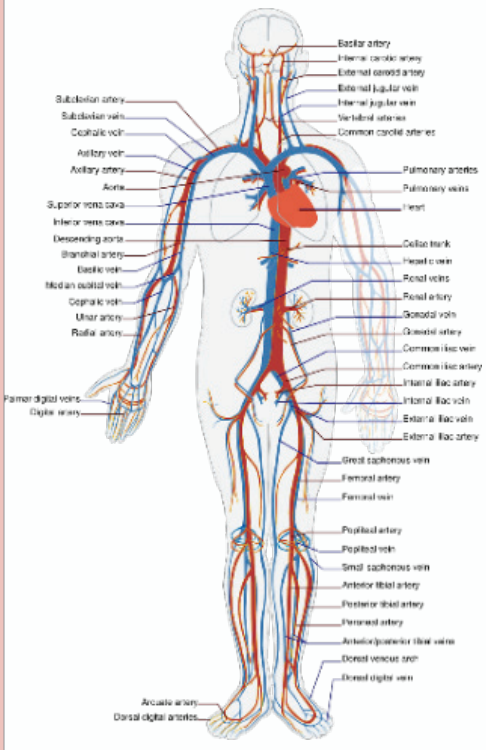


SMALLEST BLOOD VESSELS ARE AT GREATEST RISK OF DAMAGE.

WHY?

Smaller diameter

Less elastic

End of the road, less chance for compensation from nearby blood flow

Found in heart, eyes, kidneys, feet, and brain

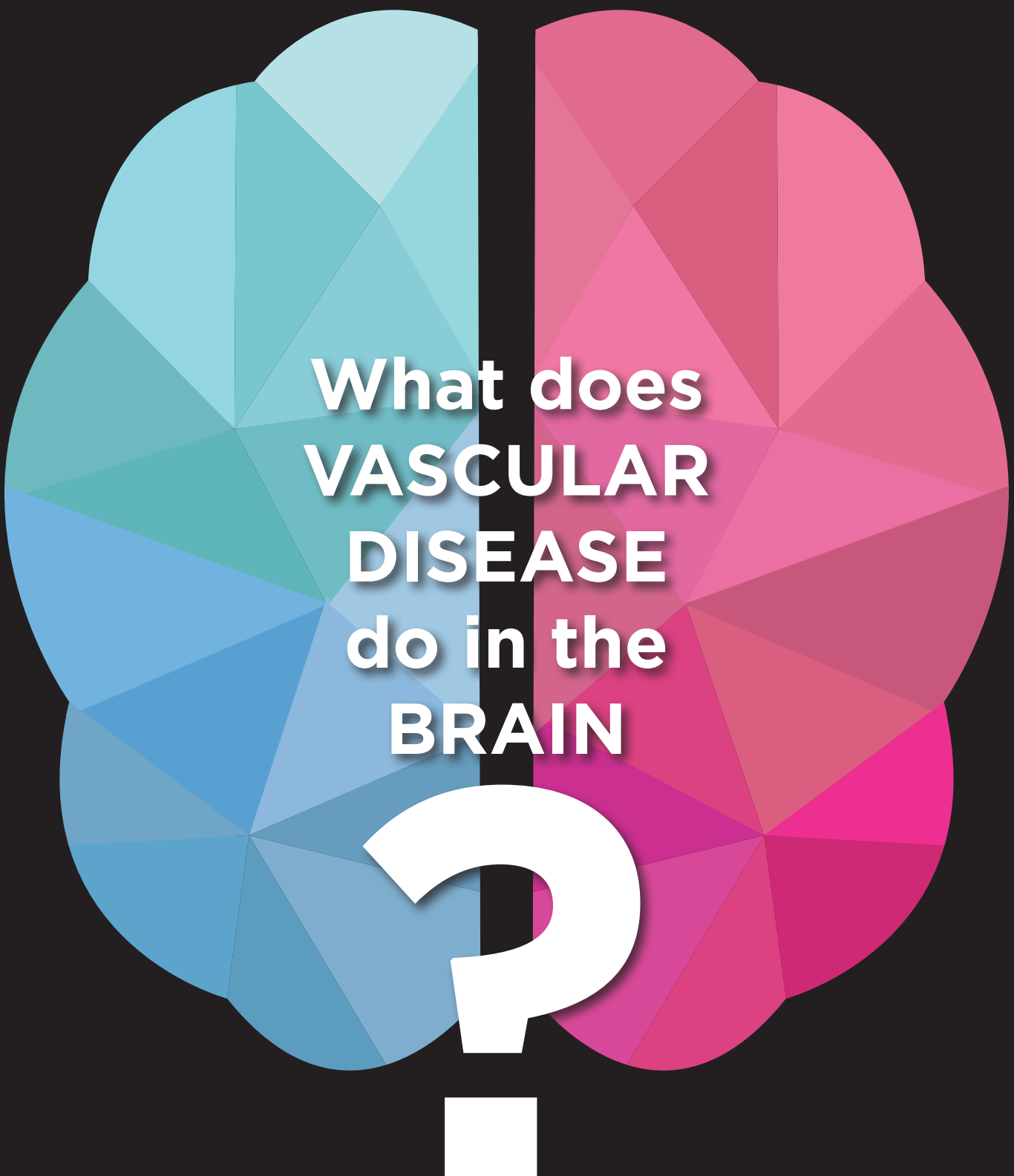
NOTES

RULES OF THUMB

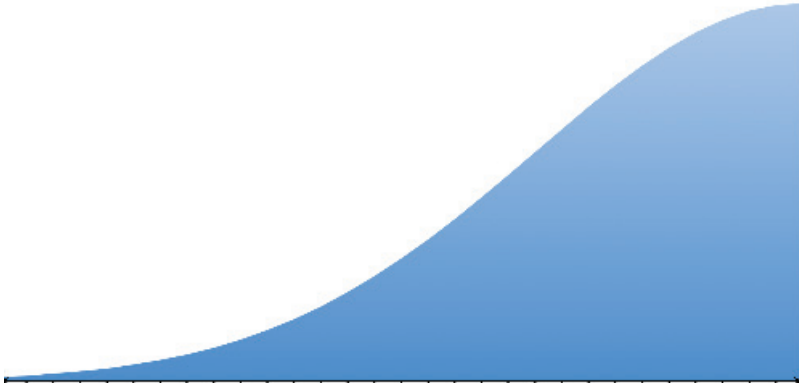
What happens in the feet, eyes, and kidneys happens in the brain

Early diagnosis and treatment are critical

NOTES


What does
VASCULAR
DISEASE
do in the
BRAIN
?

SPECTRUM OF CEREBROVASCULAR DISEASE



Chronic ischemic white matter disease

Vascular cognitive impairment

Transient Ischemic Attack (TIA or “ministroke”)

Stroke

Vascular dementia

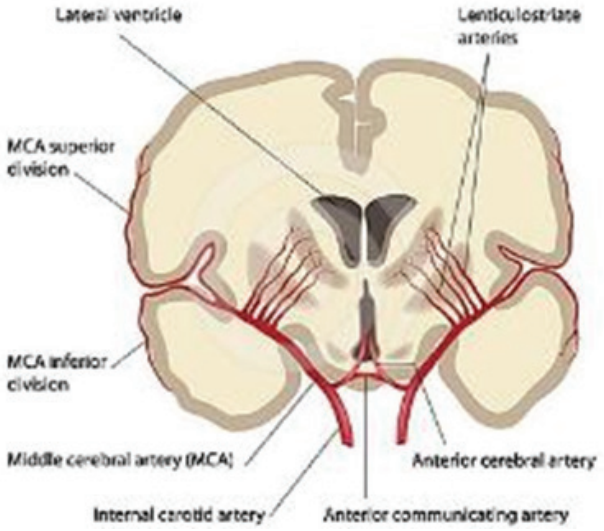
NOTES

CHRONIC ISCHEMIC WHITE MATTER DISEASE

AKA small vessel disease, white matter disease, lacunar infarction, leukoaraiosis, perivascular white matter disease of aging

Irreversible injury to brain cells due to reduced blood flow to the brain, include lacunes (small "lakes" of fluid) and white matter lesions (small areas of damage to the brain's nerve fibers),

Happens in the smallest blood vessels deep within the brain



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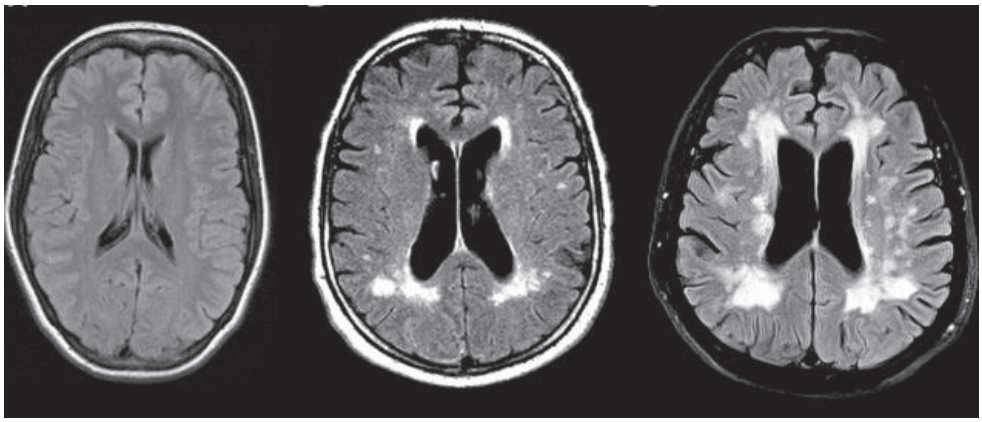


A COMMON FINDING IN BRAIN SCANS

Not serious if mild; moderate or severe degree = symptoms

Severe degree is related to stroke risk and cognitive symptoms

Our heart and brain can handle decreasing blood flow for a long time without outward symptoms

NOTES

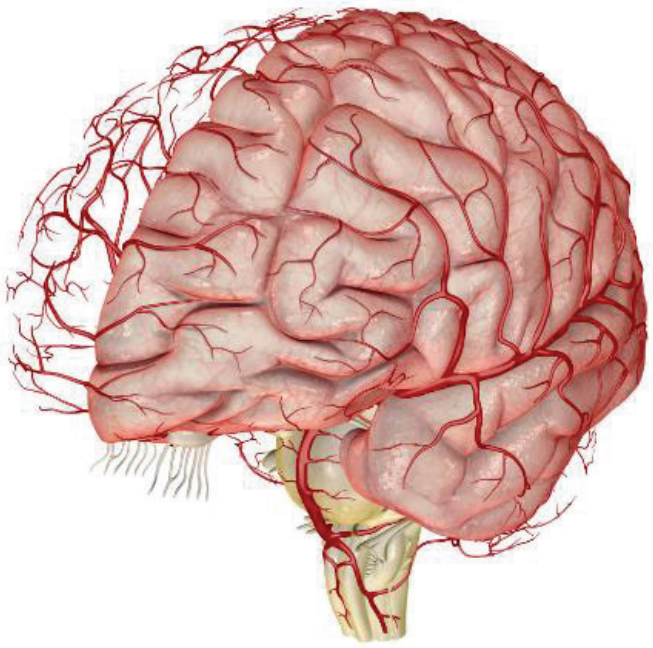
VASCULAR COGNITIVE IMPAIRMENT

- More impairment than expected with age but not dementia
- Difficulty with planning/organization, mild retrieval problems, walking and movement problems, lack of interest/motivation (can look like depression), poor bladder control
- Still independent (driving, meds, money)
- Some consider this “normal aging” in Western societies
- Cognitive reserve concept

NOTES

TRANSIENT ISCHEMIC ATTACK (TIA)

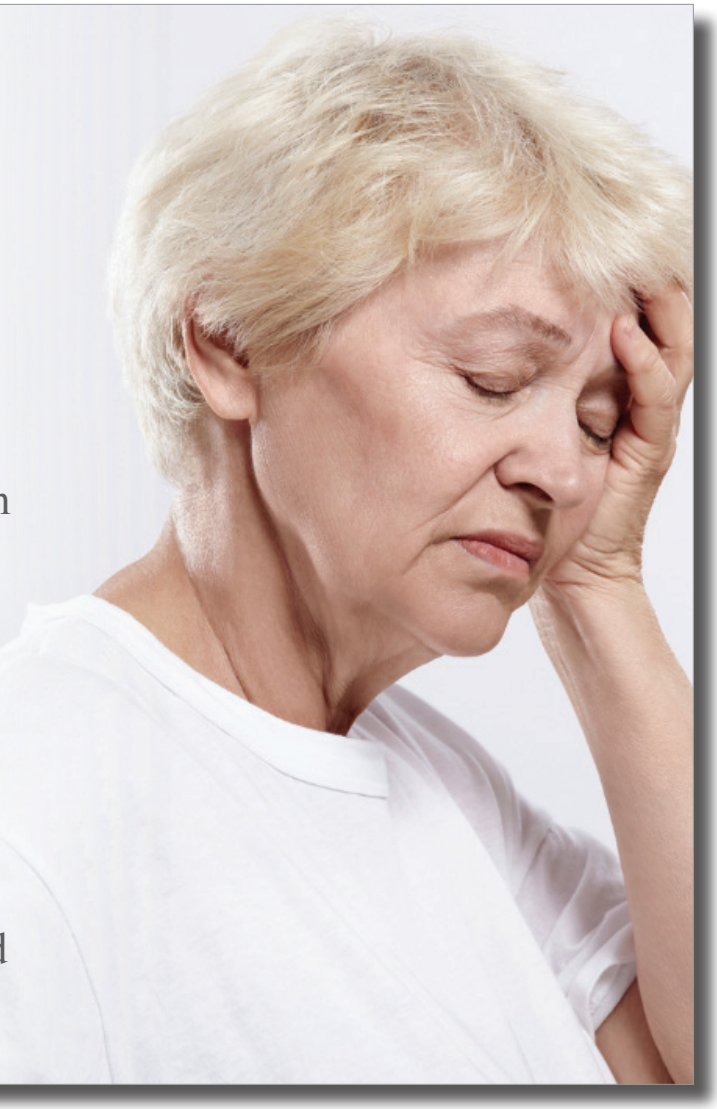
- Temporary blockage of a blood vessel
- Most last less than five minutes and not more than an hour
- Occurs when a clot or debris blocks blood flow to part of the brain
- Does not typically show any evidence of brain injury and no ongoing symptoms beyond 24 hours



NOTES

"MINISTROKE"

- No recognizable symptoms or you don't remember symptoms
- Can cause permanent damage although you may not know it
- Usually found on an incidental brain scan
- 10-20 times more prevalent than overt strokes ***(Longstreth, 1998***)
- 31% of people over 65 and 30-40% over 70 have ministrokes ***(Fried, 1991; Lim, 2010)***
- Raises risk for both another TIA and major stroke ***(Miwa, 2010)***



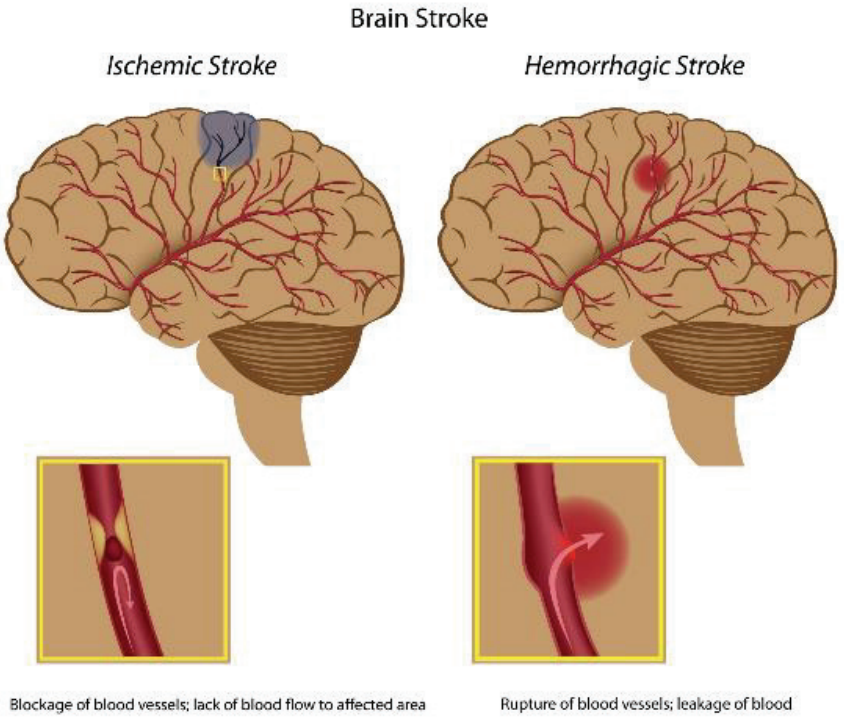
NOTES

STROKE

- The chance of having a stroke approximately doubles for each decade of life after age 55 (American Stroke Assoc.)
- Most common brain disorder in the US with approximately 795,000 strokes/ yr and approximately 15 million annually worldwide
- Leading cause of serious, long-term disability in US
- Occurs when blood flow to a part of the brain is disrupted

NOTES

TWO TYPES OF STROKE

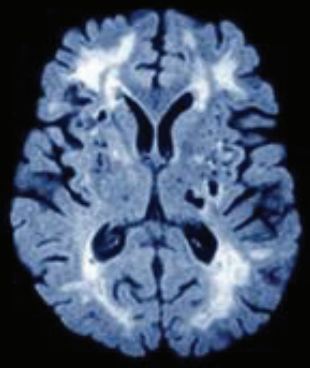


80%

20%

NOTES

VASCULAR DEMENTIA



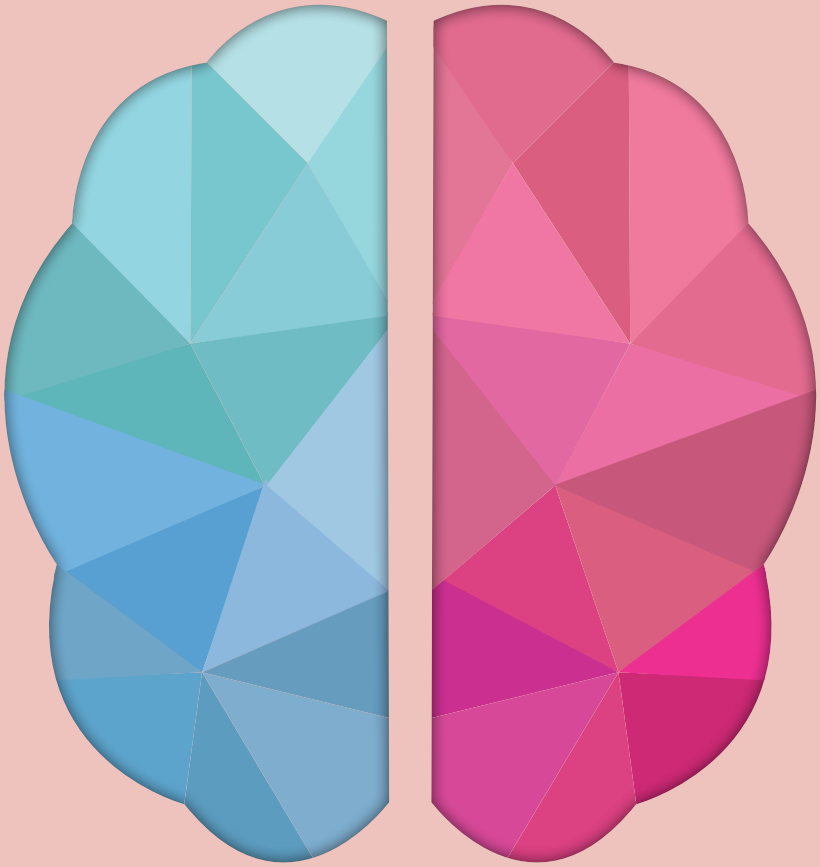
After a stroke, about one third of people develop vascular dementia, second most common cause of dementia

More sudden in onset than other types of dementia

Depends on what part of the brain is affected and to what extent

Symptoms and treatment

NOTES



I CARE
FOR YOUR BRAIN
with Dr. Sullivan

Recommendations

- Know your numbers and advocate for yourself
- Medication adherence
- The power of exercise
- Diet
- Put it into action!

KNOW YOUR NUMBERS

HYPERTENSION	HIGH CHOLESTEROL	DIABETES
Systolic: Amount of pressure in your arteries during contraction of your heart muscle. Diastolic: Amount of pressure when your heart muscle is between beats.	LDL ("bad" kind) HDL ("good" kind) Triglyceride levels (a type of fat in our blood)	Blood glucose levels A1C (average level of blood sugar over the prior three months)
The "white coat effect"	C-Reactive Protein (measure of inflammation)	Microalbumin levels (kidney function)

Three simple tests that can detect vascular disease and can save you life and prevent stroke

Abdominal Aortic Aneurysm (ultrasound)

Carotid Artery Disease (ultrasound)

Peripheral disease (ultrasound)

All serious and life-threatening, often occurring silently without any symptoms

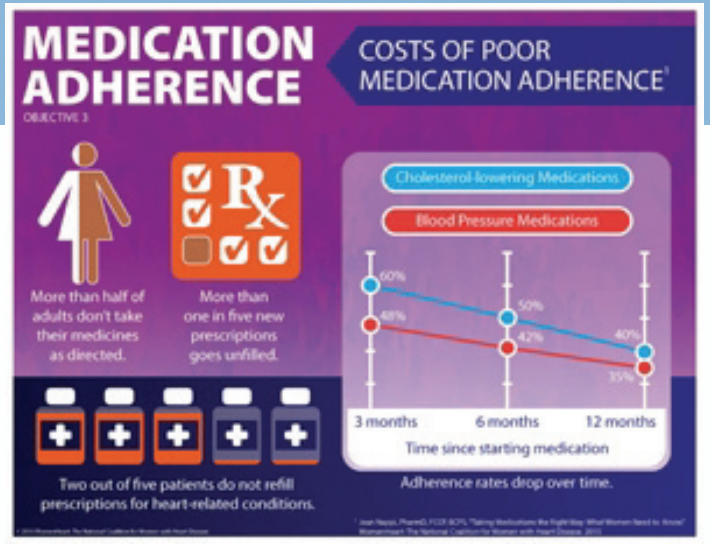
Early detection and treatment are crucial

NOTES

TAKE YOUR MEDICINE EXACTLY AS PRESCRIBED

- Develop a routine, use a pillbox
- If you still have trouble remembering to take every single dose, ask a family member or friend to call and remind you or set up an alarm reminder system
- Undertaking/overtaking meds are both risky especially in older adults
- Always use the same pharmacy. One-on-one counseling by a pharmacist is 2-3 times more effective at improving adherence than other interventions ***(New England Healthcare Institute, 2010)***

MEDICATION ADHERENCE IS LOWEST AMONG THOSE WITH CHRONIC DISEASES



Only about half (54%) of people with high blood pressure have their condition under control (Merai, 2016)

ALL HAIL THE MIGHTY EXERCISE!

Strong scientific evidence linking regular physical activity to various measures of cardiovascular health

Strive for at least 30 minutes of safe aerobic activity most days of the week (can be over time). Anything will do, just move more. Choose something you like!

If most Americans were to meet this recommendation, there would be a 30%-40% reduction in cardiovascular events (Meyers, 2003)

NOTES

EXERCISE HELPS THE BRAIN IN TWO WAYS

Directly

- Reduction in blood pressure
- Reduction in bad (LDL and total) cholesterol
- Increase in good (HDL) cholesterol
- Increase in insulin sensitivity
- Reduces insulin resistance
- Reduces inflammation
- Reduction in body weight
- Improves the body's ability to take in and use oxygen
- Helps to improve health of existing brain cells
- Helps to grow new brain cells in the brain

Indirectly

- Improves mood
- Improves sleep
- Increases coping
- Reduces anxiety
- Increases our pain tolerance
- Improves self esteem
- Reduces fatigue

WE ARE WHAT WE EAT

- Strive for an anti-inflammatory diet
- Eat more whole foods, fewer food from boxes
- More high fiber foods; less foods high in animal fats (meats, butter, dairy products) and transfats/palm oil; more polyunsaturated fats (fish oil)
- More water and less soda, fruit juice, and other high sugar drinks
- Get your vitamins from foods

FOODS TO FIGHT HYPERTENSION

Flax seeds: In a series of studies called ***FLAXPAD (Caligiuri et al, 2016)***, dietary flaxseed resulted in a powerful reduction in brachial systolic and diastolic blood pressure in patients with peripheral artery disease. "One of the most potent blood anti-hypertensive effects ever achieved by diet."

Blueberries: In a 2015 study of women ages 45-65 with high blood pressure, half ate the equivalent of a cup of blueberries every day for eight weeks. Blueberry group's systolic blood pressure dropped five mmHg, placebo group did not change ***(Johnson et al, 2015)***

Whole-grain and high-fiber breakfast cereal, can reduce your chance of developing high blood pressure or reduce it in the mild and moderate stages by 20%.

NOTES

GOOD MORNING!

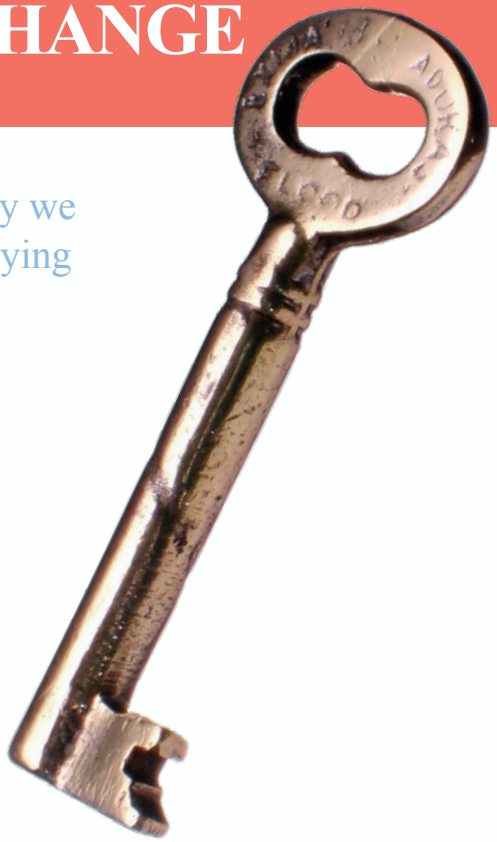
Studies used about three heaping tablespoons of ground flaxseeds daily for six months to get results (in muffins, sprinkled on cereal or added to sauces).

KEY TO BEHAVIOR CHANGE

Psychologists know that the meaning of why we do things is the key factor to getting and staying motivated!

Define your WHY

- Remind yourself of your why everyday
- Believe you can do it
- Set positive goals (instead of saying you won't do something, say what you will do)
- Make it fun
- Use a buddy system



KEEP TRACK

of your behavior,

START SMALL!

NOTES

Define Your Why for **SUCCESSFUL** BEHAVIOR CHANGE & Better Brain Health

Behavior change is at the heart of the I CARE FOR YOUR BRAIN program. The purpose of our time together is to help you turn learning into action with brain health recommendations that will get you a genuine return on your investment. Many of us have at least a waxing and waning interest in being our best selves, being healthier, being "better" but the problem is that we don't sustain this interest over time. One of the reasons when it comes to behavior changes that benefit the brain, in my opinion, is a lack of knowledge about why a specific recommendation is being made. The next step is up to you to turn this new learning you have from the lecture into action!

A common mistake a lot of us make is to be solely motivated to make changes in our behavior by negative reinforcements like guilt, fear or shame. Psychologists know that meaningful, sustainable change is much more likely to happen when we use positive self-talk and remind ourselves that not doing a certain behavior is keeping us from living a life consistent with our personal values and goals. One of the most proven ways to increase your follow-through is to get very clear on your WHY! Why do you want to make a change? What specifically is your reason? What value would you be living better if you could make a change?

Write In Your WHY For Better Brain Health

BRAIN	PHYSICAL	MENTAL	SOCIAL	SPIRITUAL
To reduce my chances of dementia as much as I can	To get all the brain benefits of exercise and help me sleep better	To continue enjoying reading the Sunday New York Times	For mental stimulation that comes from good conversations	To feel a strong connection with my purpose

Remind Yourself **of Your WHY Every Day!**

- ✓ Set small, attainable, positive goals (instead of saying you won't do something, say what you will do).
- ✓ Make it fun and reward yourself when you follow through.
- ✓ Use a buddy system by asking a friend to keep you on track with encouragement and support.

The Benefits of EXERCISE

Seven-Day Behavior Tracking

The World Health Organization (WHO) recommends that adults aged 65 and above engage in physical activities that includes leisure time physical activity (walking, dancing, gardening, swimming), transportation (walking), household chores, play, games, sports or planned exercise. The official guidelines suggest at least 150 minutes of moderate-intensity aerobic physical activity or at least 75 minutes of vigorous-intensity aerobic physical activity weekly alongside muscle-strengthening activities on 2 or more days a week.

TRACK YOUR ACTIVITY AND PROGRESS OVER THE NEXT SEVEN DAYS.

	ACTIVITY	MINUTES SPENT	HOW DID YOU FEEL AFTER?	DID THIS EXERCISE IMPROVE THE QUALITY OF YOUR BRAIN HEALTH?
DAY 1				
DAY 2				
DAY 3				
DAY 4				
DAY 5				
DAY 6				
DAY 7				

FOR THOSE WITH PHYSICAL LIMITATIONS:
The frequency and intensity of physical activity MUST be matched to a person's ability level. If the WHO recommendations are not possible for you or a loved one due to health conditions or mobility issues, there are still MANY BENEFITS of increasing physical activity as abilities allow. Remember, start low and go slow! The goal is to move more today than you did yesterday! Every little bit counts!

CONSIDER THESE LOW-IMPACT EXERCISES:

- Marching while seated
- Lifting arms up overhead while watching TV
- Moving seats to eat meals or having conversations
- Lifting legs in bed
- Shoulder circles before every meal
- Moving the hands from the knees to lower legs
- Deep breathing exercises

SMALL GROUP DISCUSSION TOPICS

1. Discuss the differences between the cardiovascular and cerebrovascular systems.

2. Of all the cerebrovascular risk factors, which ones concern you the most?

3. Do you think mild cognitive impairment has kept anyone you've known from optimally managing diabetes?

4. With so much evidence about the direct and indirect benefits of exercise, why do you think it is so difficult for some of us to consistently do it?

5. What do you currently eat for breakfast? Can you make improvements based on this lecture?

Brain Trivia

COMPANION WORKBOOK 3

1. Name the top three vascular risk factors

_____ _____ _____

2. FILL IN THE BLANK:

Genes + _____ = risk of dementia and cognitive impairment in most older adults.

3. TRUE OR FALSE:

_____ There is a profound connection between brain health and heart health

4. FILL IN THE BLANKS USING THE WORDS BELOW:

cardiovascular system	**hormones**	**oxygen**
disease	**arteries**	**nourishment**
cerebrovascular system	**heart**	**brain**

The _____ _____ is the network of blood vessels that includes _____, veins and capillaries. These blood vessels carry blood to and from the _____.

The cardiovascular system circulates and transports nutrients, _____, carbon dioxide, _____ and glucose throughout the body.

The cardiovascular system provides _____, fights _____, stabilizes temperature, maintains homeostasis, and carries away waste.

The _____ _____ is the name for the two blood vessel systems that carry blood to the _____.

5. List 4 cerebrovascular risk factors below:

_____ _____

_____ _____

Which cerebrovascular risk factors might apply to you?

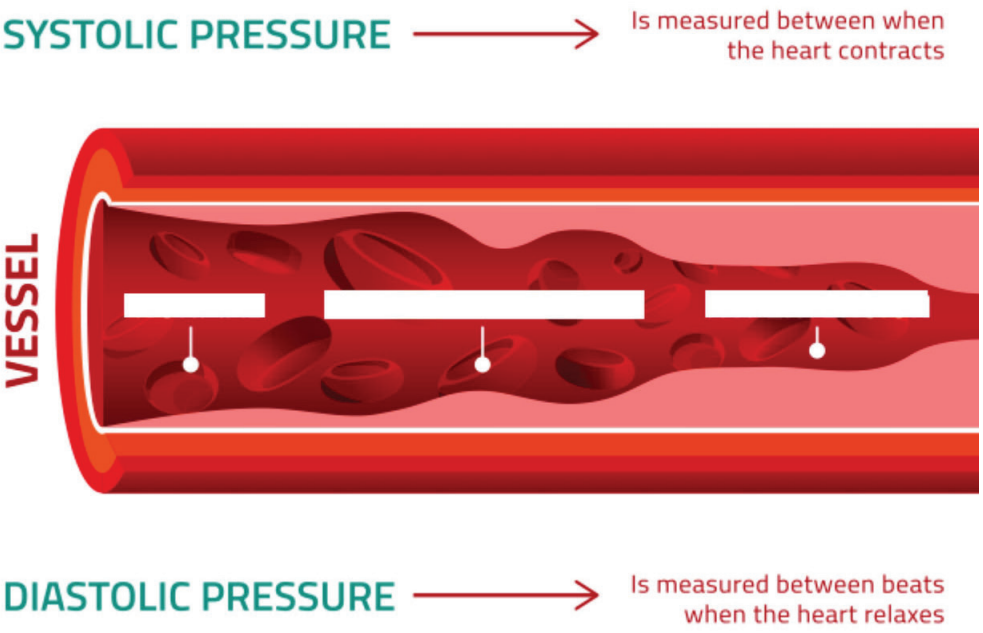
_____

_____

_____

_____

6. Label the types of blood pressure on the vein below:



7. TRUE OR FALSE:

_____ Cholesterol is a waxy substance found in the fats (lipids) of our blood.

_____ Some cholesterol is needed to continue building healthy cells.

_____ Atherosclerosis is the term used when there are not enough fatty deposits in our blood.

_____ "Bad" cholesterol builds up in the walls of our arteries, which causes them to narrow.

_____ "Good" cholesterol does not bring excess cholesterol to the liver.

8. FILL IN THE BLANK:

Type II diabetes occurs when a person's _____ cannot keep up and cannot make enough insulin to keep blood glucose at normal levels.

9. Label the descriptions of the three ways that diabetes negatively affects the brain.

_____: The hippocampus (part of the brain where we make memories) is susceptible to damage as a result of quick blood sugar changes.

_____: When blood sugars are poorly controlled, insulin levels are imbalanced and inflammation occurs, narrowing the arteries.

_____: Our brain cells cannot store glucose, so they depend on the bloodstream to deliver a constant supply.

10. FILL IN THE BLANK:

High glucose levels affect how blood vessels contract, making for stronger contraction, increasing the risk of blockage and _____.

Brain Trivia

11. Circle all the correct reasons why the smallest blood vessels are at the greatest risk of damage:

They have a smaller diameter.
They are less elastic than large vessels.
Smaller vessels have a wide diameter.
Less chance for compensation from nearby blood flow.

12. Where are the smallest blood vessels in our body located? _____

13. Connect the name of the cerebrovascular disease to the definition with a line:

Chronic ischemic white matter disease (aka small vessel disease)	Dementia caused by reduced blood flow to the brain
Vascular cognitive impairment	Injury to brain cells due to reduced blood flow to the brain and white matter lesions
Transient ischemic attack (aka mini stroke)	Blood flow to a part of the brain is disrupted; most common brain disorder in US
Stroke	Temporary blockage of a blood vessel due to a clot or debris; typically lasts less than 5 minutes
Vascular dementia	More impairment than expected with normal ageing; not a type of dementia

14. TRUE OR FALSE:

_____A mild degree of small vessel disease is associated with stroke risk and cognitive symptoms.

_____Vascular cognitive impairment can cause difficulties with motivation, poor bladder control, mild retrieval problems and difficulties with planning/organization.

_____Transient ischemic attacks (TIA) typically do not have ongoing symptoms beyond 24 hours.

_____TIA does not raise risk for major strokes.

15. Name the two types of major stroke:

_____ _____

16. After a stroke, how many people develop vascular dementia? (Circle the correct answer.)

one quarter of people
half of people
one third of people
all people

17. Dr. Sullivan believes it is very important for you to know your blood pressure, cholesterol levels and blood glucose levels. When is the last time you had your levels checked?

_____

18. List some ways that you can be sure you take your medication exactly as prescribed:

_____

_____

_____

19. How much exercise should you strive for most days of the week? What types of exercise do you enjoy?

_____

_____

_____

_____

20. List some ways that exercise helps the brain (both directly and indirectly).

_____

_____

_____

21. What type of diet guidelines are helpful in improving cardiovascular health and brain health?

_____

_____

_____

_____

22. Dr. Sullivan says that the key to behavior change is knowing the meaning of WHY you are making changes. What is your WHY?

_____

_____

_____

_____

_____

_____

_____

Brain Trivia Answers

1. Hypertension, high cholesterol and type II diabetes

2. Lifestyle

3. True

4. The **cardiovascular system** is the network of blood vessels that includes **arteries**, veins and capillaries. These blood vessels carry blood to and from the **heart**.

The cardiovascular system circulates and transports nutrients, **oxygen**, carbon dioxide, **hormones** and glucose throughout the body.

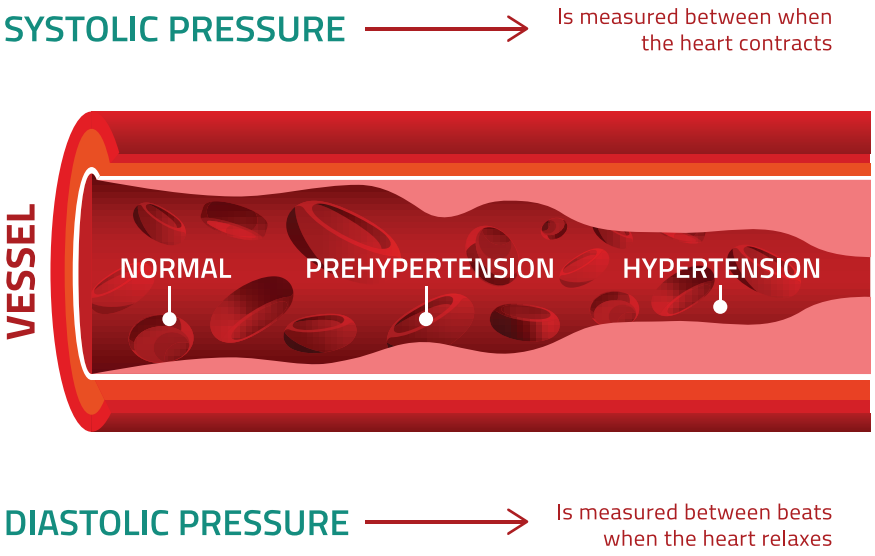
The cardiovascular system provides **nourishment**, fights **disease**, stabilizes temperature, maintains homeostasis, and carries away waste.

The **cerebrovascular system** is the name for the two blood vessel systems that carry blood to the **brain**.

5. Any of the following answers are correct:

- age (older than 50 years old)
- hypertension
- high cholesterol
- type II diabetes
- sedentary lifestyle
- untreated obstructive sleep apnea
- excessive alcohol consumption
- atrial fibrillation
- smoking, poor diet
- being overweight
- increased stress

6.



7. TRUE: Cholesterol is a waxy substance found in the fats (lipids) of our blood.

TRUE: Some cholesterol is needed to continue building healthy cells.

FALSE: Atherosclerosis is the term used when there are not enough fatty deposits in our blood.

TRUE: "Bad" cholesterol builds up in the walls of our arteries, which causes them to narrow

FALSE: "Good" cholesterol does not bring excess cholesterol to the liver

8. Glucose

9. Damage to memory cells
Inflammation
Less fuel

10. Stroke

11. They have a smaller diameter.
They are less elastic than large vessels.
Less chance for compensation from nearby blood flow.

12. Heart, eyes, kidneys, feet and brain

13. Chronic ischemic white matter disease (aka small vessel disease) = Injury to brain cells due to reduced blood flow to the brain and white matter lesions

Vascular cognitive impairment = More impairment than expected with normal ageing; not a type of dementia

Transient ischemic attack (aka mini stroke) = Injury to brain cells due to reduced blood flow to the brain and white matter lesions

Stroke = Blood flow to a part of the brain is disrupted; most common brain disorder in US

Vascular Dementia = Dementia caused by reduced blood flow to the brain

14. FALSE: A mild degree of small vessel disease is associated with stroke risk and cognitive symptoms

TRUE: Vascular cognitive impairment can cause difficulties with motivation, poor bladder control, mild retrieval problems, and difficulties with planning/organization.

TRUE: Transient ischemic attacks typically do not have ongoing symptoms beyond 24 hours.

FALSE: TIA does not raise risk for major strokes.

15. Ischemic stroke and Hemorrhagic stroke

16. About one third of people develop vascular dementia after a stroke.

18. use a pillbox, develop a routine, ask a family member or friend to remind you, and/or set up an alarm reminder

19. 30 minutes per day

20.
DIRECTLY
- Reduction in blood pressure
- Reduction in bad (LDL and total) cholesterol
- Increase in good (HDL) cholesterol
- Increase in insulin sensitivity
- Reduces insulin resistance
- Reduces inflammation
- Reduction in body weight
- Improves the body's ability to take in and use oxygen
- Helps to improve health of existing brain cells
- Helps to grow new brain cells in the brain

INDIRECTLY
- Improves mood
- Improves sleep
- Increases coping
- Reduces anxiety
- Increases our pain tolerance
- Improves self esteem
- Reduces fatigue

21. anti-inflammatory diets, more whole foods, high fiber foods, less food high in animal fat, less transfats/palm oil, more polyunsaturated fats, more water, less soda and fruit juice

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The human brain has 100 billion neurons,
each neuron connected to 10 thousand other neurons. Sitting on your shoulders is the most complicated object in the known universe.

—Michio Kaku

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Exactly as Prescribed

WHAT'S YOUR WHY?

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for better brain health

START EACH DAY *with a...*

Brain-Powered Breakfast

I CARE FOR YOUR BRAIN *with Dr. Sullivan*

MOVE *your body* MORE

for brain health

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FLIP the SWITCH

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   HOW TO TAKE CONTROL OF YOUR BLOOD FLOW
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