

Staying Sharp: Tallahassee

May 2014

THE DANA ALLIANCE FOR BRAIN INITIATIVES

(Background Conversation)

LR: Good morning everyone. Welcome to Staying Sharp. Just to get our morning rolling, we're going to start with a brain warm up. And our friend Patty, has come to get us moving for a few minutes before we sit down and listen to this wonderful conversation. So participate if you'd like. I'm going to participate from the back. Thank you.

LR: All right, now that we have everyone's attention ... (Laughter) Good morning, my name is Laura Reynolds, and I'm the Director of the Cognitive Fitness Initiative at the Dana Alliance for Brain Initiatives, and together with our partners this morning, AARP and the Osher Institute for Lifelong Learning, we are presenting this Staying Sharp program. We're going to get started in just a minute. I just wanted to give an opportunity to our partners to say good morning to you also, so I'm going to hand the mike over to Leslie Spencer from AARP. Good morning, Leslie. (Applause)

LS: Good morning, everyone! How's everybody feeling this morning? (Overlapping Voices) Wasn't Patty wonderful? You're energized and ready to go. I'm really excited about having the Dana Health Alliance here this morning and partnering with Osher Lifelong Learning. We have a wonderful panel of experts. I really want to say thank you to all the wonderful vendors we had out here with us this morning, Premiere Fitness, the Memory Disorder Clinic, the Tallahassee Senior Center, Alzheimer's Project, Osher Lifelong Learning and Ability First. So I hope you took advantage of some of the great information that they brought with them today and I know you're really going to enjoy our speakers. So have a wonderful time. I'm going to turn it over to my friend and colleague Debra Herman from FSU Osher. Thank you all. (Applause)

DH: Good morning, everyone! (Overlapping Voices) Thank you, Leslie. I almost didn't hear my introduction so I had to run up here. I see a lot of familiar faces in the audience. Good to see you. On behalf of the Osher Lifelong Learning Institute at FSU, we want to welcome you here again today, and without further ado, let me introduce Tom Flanigan from WFSU

who is going to be the moderator for this morning. I'm so glad you're here. And Tom?

TF: Well, you'd think by now I'd know how to use a microphone, huh? (Laughs) And folks, thank you all for coming out. Saturday morning can sometimes be kind of a hard sell here in Tallahassee with so many things going on. You've got the downtown market, you have a number of interesting fundraisers for all kinds of worthy causes going on around the community. But we wanted to bring on our panelists. We have a really high powered situation here for you today to talk about not only what is going on in terms of our regular brain functions when it comes to cognition and health and all of that, but also how these situations can over a period of time kind of get out of control, can kind of spin off the rails, as it were, and what if anything we can do as far as being proactively involved about preventing that kind of deterioration and also what's going on as far as modern medical science and nutrition and exercise, like Patty just put us through, can help to influence us in a really positive way. So, folks, if we could please welcome our panel of distinguished experts here this morning! (Applause) And what I'll ask everyone to do is to give a

brief introduction for just a few moments on who they are, what they do and what they bring to the party here this morning.

Katherin, let me start with you.

KS: Hi, my name is Katherin Snyder. I'm a registered dietitian at TMH Bariatric Center, and I work with patients who are overweight and obese, hopefully improve their health and medical problems through healthy eating and recommendations for physical activity.

TF: Okay, Dr. Patrick?

PAG: Good morning. I'm Patrick Griffith. I'm an adjunct professor of medicine at Morehouse School of Medicine in Atlanta. I have to teach medical students, psychiatry residents and internal medicine residents about neurology and how the brain works. My research interest is why certain forms of dementia affect different groups nationally and internationally more than others.

TF: Okay, and Dr. Ken?

KH: Hi, my name is Ken Heilman. As you can tell from the colors of my bowtie, I'm from the University of Florida, home of the Gators. (Laughter)

TF: Okay ... (Laughs)

KH: There we go. Okay. And I'm a distinguished professor of neurology. I'm also the director of our Cognitive and Memory Disorders Clinic. I train a huge amount of neurologists, medical students and do a lot of research into cognitive disabilities in dementia. So thank everybody for coming. Go Gators.

(Laughter) (Overlapping Voices)

TF: Well, I thought what we'd do is keep it a very conversational situation. We've divided the program into three fundamental parts, and as we mentioned at the outset, the first thing we're going to do is to kind of take a look at what is the normal function and evolution of the brain, if you will, just given a healthy individual with a good positive lifestyle and all of that. We'll spend about half an hour on that. We'll then get into what can cause some problems with the aforementioned brains as we age when you have other factors that are put in, be it diabetes or any kind of a cognitive malfunction that takes place. And then we're going to get into kind of a synthesis of all that, ending with your questions. So if you can throughout the presentations here this morning and the discussion be thinking of, "Oh, gosh, wow, that's

really interesting. I wonder if there's some more that these folks could say about that?" Keep that in mind and we'll have plenty of opportunities for that early on.

Folks, if we could talk about just the normal function of the human brain, and it really amazes me that this little device right here has more capacity for processing information and data storage and retrieval than the entire NASA computer system that put people on the moon back in late 1960s and early 1970s. In fact, our cars now have more computing power than did the NASA computers back then. But these all are just a pale compared to what we have between our ears, so who wants to lead off the discussion of the normal brain and sort of how it functions and does these amazing things. Dr. Ken?

KH: Well, this physician here said, "Get up in a minute and tell them how the brain works." Yes, sure, one minute to tell how the brain works. (Laughter) A good friend of mine, Bob Watson, once said that when Ken Heilman dies if God forgives him, maybe he'll let him go to heaven. And when St. Peter says, "Well, Ken, do you have any questions?" he said, "Ken's gonna ask him how does the brain work?" (Laughter) So I've been trying

to understand that only now for oh, about 40 plus years, okay?

And I've written some books about it, but all we know about the brain is still miniscule. But let me just very briefly give you some fundamental concepts. The major part of the brain is something called nerve cells or neurons, and let me give you an idea about the structure of the neurons. Think of it almost as a pine tree, so the cell's body would be the trunk, and that's where the major energy and the hereditary things are all in the trunk. And then the branches that go out, those are called dendrites. Those are called dendrites. Just like the branches of the tree. And then there's a big major branch like a big root that comes out and that's called an axon. Now what a neuron does is like trees in a forest that are very close together. So they get very close together, and these branches communicate with each other by giving off chemicals. Now sometimes they communicate with the dendrites with the neurons that are close by, and they communicate with the neurons that are far away by these long things called axons.

Now the way we learn, things that we learn throughout life and store in our memory is all done by changes in the connectivity between these neurons. So in some sense what

happens is if you have two trees, some of the branches will be able to communicate very well, very highly. Other branches will not communicate and even other branches will be the opposite. They'll inhibit. They'll close down the communications system. And basically almost every disease that we know about the brain, what it does is change the ability of these neurons to communicate, and the reason why it does this is because the nerve cells get sick. So for example, when you talk about diseases like Alzheimer's disease, Bob Terry showed years ago that it was like a dying tree. So the trees normally were like this, and these neurons as they got sick, just like a tree, the branches started collapsing so that they were not meeting.

There's other diseases that interfere with the chemicals that allow them to communicate, and even other diseases that interfere with this long thing we call the axon. So for example, that axon like an electrical wire has insulation, and there are diseases like multiple sclerosis where the insulation disappears and so the messages can't come down. So all our brains are made out of billions and billions and billions of connections between these neurons, and all the things that we can do with our

brains are all dependent on activities and communication between the neurons.

Now different parts of the brain have different functions, so you already heard, for example, the left brain is verbal, the right brain is more visual, spatial. Back parts of the brain are for coordination. Parts of the brain stem control our respirations. So within the system, there is specialization. We use a big word, modularity, and these are neurons gathered together that have a special function, and when those get damaged you can lose special functions, and we may be able to talk to that a little bit later on. But remember, the key thing is communication between these cells, connectivity and communication. I hope that gives you a big overview in a couple of minutes. Thanks. (Applause)

PAG: I was going to add that if you take Dr. Heilman's example, you've got to remember a couple of things. Most of the concerns of seniors and the doctors who take care of seniors is those four lobes in the upper part of the brain that are called hemispheres. So there are two halves to the brain. The four lobes are frontal, temporal, occipital, and parietal, and they

have different jobs. Dr. Heilman is trying to help you visualize it, and what we did in the last Staying Sharp session was Mo(?) showed us if you think of your hands and the thumbs, the thumbs are the frontal lobe and they're probably connected primarily to the brain through the olfactory nerves that come from the nose. That's going to be important later on when we speculate as to what starts Alzheimer's as one of the conditions. So then on the side where your knuckles are is where the temple lobes are. That's where it hurts when you have a bad headache, right? Okay, and then closest to me would be occipital lobe which has to do with visual images. Most of the activity is occurring in those areas.

Now the brain stem is like the tree trunk. You remember his example about the tree. And that does a lot of the older functions of the brain, breathing, heart rate, eye movement, et cetera. And then the last part that we don't talk a lot about in people having cognitive problems is the cerebellum which is back here and that's what does the coordination. So that when the young lady was dancing and doing the exercises, that's what helps to determine the sequence of the movements, et cetera. So that's one of the takeaways.

The other takeaway ... you remember I talked about national/international? As best we can tell, the brain in every part of the world works the same way. The difference is language, and there are certain parts of the brain that are specialized for words, for memory of words, what they mean and language, so that you know I'm speaking English as different from Spanish or French, which I know a little bit. So that's the other universality that when we were created, all of the brains are equal in terms of what they do. So I will leave you with a teaser. What's different between the brain of a man and a brain of a woman? (Laughter) Nobody knows. The problem is that probably the hormones, which are something that we haven't yet talked about, may affect the brain differently, and we think that the female hormone estrogen stimulates brain growth, stimulates neuron growth and the particular factors in the middle. And if you remember, one of the big concerns several years ago was whether or not women were at a higher risk of developing problems with cognition, and specifically why are women more likely to have Alzheimer's disease when they get older? We are not sure, but that's the third takeaway. So one is when we talked about the

wiring of the brain, then the next level is the different parts of the hemisphere, and then the third level is whether or not there's gender differences and what that may tell us about what to expect when things go wrong.

TF: Okay, so there's no veracity to the statement then that women are from Venus and men are from the 14th moon of Jupiter. (Laughter)

KH: I've got to tell you a story about this ...

PAG: You've been married than I am so I'm not going to say very much. (Laughter)

KH: One of my mentors, Norm Geshwin(?), said, "You know, you're a Caucasian male. There's two things you're never to talk about. Sex differences in the brain and race differences. And then what happened was I heard a story about this person who had these terrible headaches, and I'm a neurologist and I take care of everything. They couldn't cure the headaches at all. So the person finally said to this patient, "You need a brain transplant, but of course your insurance won't take care of it." And the person said, "How much does it cost?" "Well, it depends if you get a male brain (Laughter) or a female brain." Just

hold on. (Laughter) The patient says, "Well, what's the difference?" He says, "Well, if you get a male brain, it'll cost you a million dollars, but a female brain you probably can get for about \$25,000." So usually when I tell this story the women are ready to get up and attack me. So the patient says, "Why the big difference?" And the doctor says, "Well, female brains are used." (Laughter/Applause)

PAG: It's never easy to follow that kind of line, (Laughter) except that I will tell you what my church members say. I'm Episcopalian, and so I was doing this kind of program in a particular church in Atlanta. And one of the church mothers got up and says, "I know exactly why women have more problems with Alzheimer's disease." She's looking at me and she says, "It's because I have to live with ..." (Laughter)

TF: Why don't we get another viewpoint in here? (Laughter) Katherin Snyder, from a bariatric and diabetic viewpoint here without getting into those pathologies ... What can you add to the discussion here as far as what they were talking about, the mechanics and the functionality again of the normal brain or the normally aging brain as you see it?

KS: Well, that's not necessarily my specialty, but you know, there are diet things that I'll talk about later in the program that might be helpful in terms of aging. So I mean, there's nothing that I feel like ...

PAG: But you could tell them about which parts of the brain are vulnerable to certain dietary indiscretions. For instance, if there's not enough thiamin, you're likely to get damage in the mammillary bodies and in the parts of the brain stem that are connected with how memory works, and you may get a particular deficiency state with not enough thiamin.

TF: Let's carry that one step further though. If we do have a medically accepted well balanced diet, all the food groups represented in proper amounts and good vitamin intake and all of that sort of thing, and we do what Patty said as far as keeping active and all. Well, then is there a higher likelihood that our brains are going to stay healthier longer and age better?

KS: I would imagine so, but I can defer to the doctors for that one. (Laughs)

PAG: Absolutely. So what Dr. Heilman introduced is the concept of what will make the brain stay sharp, and there are

basically four things to think about. If you increase your physical activity, and you heard the exercise person talk about it, and there are clear anatomical and radiological studies that show that certain parts of the brain are bigger and better functioning if you exercise on a regular basis. And specifically exercise such that your heart rate increases. It's called aerobic exercise. So it's a good thing to get into the exercise habit. The other is that if you exercise your mind, and again we're using exercise liberally, but certainly staying socially engaged, continuing to go to your bridge club, continuing to go to the senior center, continuing to have social interaction with your faith community members ... all of that is good for the brain. And the third would be eating properly, and we'll defer to our dietitian about that, but if you're going to develop a brain healthy lifestyle, the easy way to remember it is what's good for the heart is good for the brain.

KH: Let me add a couple of things to what they were talking about. There's a wonderful paper published about two or three years ago by Erlich(?), a neuroscientist up in Pittsburgh, and he took two groups of older people. One he had them do stretching exercises, the other ones he had them walk. I think it

was only three times a week for about 30, 40 minutes, but everybody says it should be more frequent than that. And he did two things. He measured their episodic memory, that's the memory of remembering what you had for dinner last night, who you met, so-called episodes, and he also measured the part of the brain that is critical for storing memories. Remember I had mentioned to you that memories and knowledge is formed by connectivity, and the part of the brain that allows or instructs things to connect is called the hippocampus, and it's right here in the bottom of the temporal lobes. So after one year he broke up the two groups, the group that was stretching and a group that were walking. One year later he tested their memory. The people who were stretching, their memories slowly diminished, as it does with aging. The group who did the walking, their memory improved. But here is the most dramatic thing. He did MRIs of their brains and he looked at this hippocampus, this critical area of the memory, and the people who walked, it actually grew. It grew. And now we know there's something called brain-derived neurotrophic factor. It's fertilizer. And the exercise gets that neurotrophic factor, that fertilizer to the brain, and actually helps

the neurons maintain themselves and maybe even allows the branches of the trees again to grow and flourish. So exercise is really, really important. Let me say something else about diet. If I could. Please correct me if I'm ...

PAG: If you can finish ... we're allowed to do this ... (Laughter) If you finish your story about the different kinds of memory, and you mentioned episodic memory ... no, no, this is something we'll do together. Can you relate that to what most non-neurologists know about memory, and that is recent and remote? So remote is who was your first spouse? (Laughter) Who was your first date? That's remote. And then recent is what did you have for snacks in the reception area? Certain diseases seem to affect recent memory more than anything else, and the driver for recent memory is called working memory. So it's the thing that's not programmed to last for a long time. It's just a few seconds, maybe even a few minutes. And some people think that working memory has two functioning parts.

The frontal lobes and the medial temporal lobes. So on on the middle of the brain, deep where the hippocampus is, there's a right and a left medial temporal lobe

that's going to help. So think of the frontal lobe as acting like a file clerk, and it's going to take those memories and put them into one or two places, so it's like putting it into a cabinet. So it's going to put it into the cabinet for recent memory, or it's going to put it in the cabinet for remote memory. And there are certain diseases that affect those cabinets or affect the work of the file clerk. (Laughter)
(Overlapping Voices)

KH: Okay, well, anyway ... (Laughter) Getting back to food groups and memory. See? I remembered.
(Laughter) There are some things about food. Now one of the things that was mentioned, which was really important, what's good for the heart is good for the brain, because a major, major factor in cognitive decline with aging turns out to be insufficient blood going into the brain and is as I said, is a major thing. So what's good for the heart is good for the brain dietary and even medication, and maybe we'll talk about the treatment of this and some ways the prevention a little bit later.

But there's one or two things that I did want to mention besides the heart and brain, just talking at the brain by itself. There hasn't been a huge amount of studies about this, but

they know that certain foods contain antioxidants. So just like iron rusts, it turns out that our brain oxidizes and this actually destroys some of those trees and makes them sick as we talked about, and there are certain foods called antioxidants. And it turns out, for example, that the berries have chemicals in them that are very strong antioxidants. So strawberries are a prime example of that, grapes ... I don't know if it's the white ones or green ones that are better ...

KS: Well, they typically say that red grapes ... blueberries, blackberries ...

KH: Red grapes, blueberries, blackberries. And what I found out being an onion eater, guess what? Onions have a lot of antioxidants. So the only problem is it also gives me a lot of heartburn, but anyway ... (Laughter) So those things are very, very important. And I want to bring up something else that's very, very important, and it's not food, but it's something that people almost use like a food. About five, six years ago we saw a woman in the clinic who swore she had Alzheimer's disease because she had a problem with this episodic memory. And it turns out that she was having trouble controlling her urine, and her doctor gave her a

medicine that would help her control her urine. It was called Detrol. Now what Detrol does is Detrol reduces a chemical called acetylcholine, and the reason it works is because acetylcholine is the neurochemical that makes the bladder do this. But there's only one problem. Detrol also goes up to the brain and also inhibits the acetylcholine in the brain. Remember I told you about making connections? One important chemical that makes those connections is acetylcholine. So we wrote this up in the New England Journal of Medicine. There's still no warnings on these medications, by the way, and lots of people use them. Some of them go to the brain more than others and I don't want to go into that right now. But we said, "Okay, if I can just do this for a while, can something greater be going on about this?"

Now I remember when I was in high school I had learned that the Roman Empire collapsed because of the barbarians. How many people had learned that? Okay. (Laughter) When I got to medical school I learned something else. It really collapsed ... you got it ... because their pewter was loaded with lead. Turns out many of my patients when they can't go to sleep, they go to the drug store and they get almost like a food,

things like Benadryl and all these other sleeping aids, right? Helps you fall asleep, correct? Guess what? They're anticholinergics. And we just completed a study with one of my former fellows Jack Sow(?) that showed with the numbers in pre-studies that the people who use a lot of these anticholinergic medications over time, people don't are like this, the ones who use them go down. Be careful about the sleep foods like medications and other things that you use. Make sure about anticholinergics.

PAG: A way to amplify that to keep the audience from going to sleep ... (Laughter) is to think of ...

KH: Are you making a comment about my talking? (Laughter)

PAG: No, no. (Laughs) We use the example of the medications as a contributor to cognitive problems in seniors, and we teach our students and residents that if you think of a senior coming to your office with problems, think of four Ds. Four Ds. The first D is drugs, and the problem is that most people think if it's something they get from the health food store that does not require a prescription then it's not a drug. So we teach our students to ask the family to bring in every single thing out of the medicine cabinet,

and what we're looking for are those medications that have anticholinergic side effects, because they're likely contributing to the senior having problems with their memory function and other function, and simply if you were to remove the offending drug, they may get better. They may get better. The second D is delirium, and that is where there is an acute change and a lot of our seniors come in and the family says, "You know, they were fine for Mother's Day, but all of a sudden the Monday after they were running a fever and they were just confused and 'talking out of their head.'" So delirium is an acute change and it's one of the Ds, and most delirium is usually due to a fever somewhere in the body or a medication problem.

The third D is depression. Depression. A very difficult situation sometimes to sort out, but some seniors when you test them on some of the items will say, "I don't know." And so our fellows and residents have to score them a zero. The really demented patient will give an answer because they will guess, and it's wrong, and so then you score them a zero. So Dr. Wells from Vanderbilt came up with a term called pseudo dementia where the person acts like they're demented or tests like they're

demented, but they're really depressed. And we'll come back to depression in a second. And the last is dementia. So if you go through those four Ds when you go to the doctor's office before he or she gives you a large bill, say, "Which one of those four Ds are you putting my mother or father or grandparent into?" and it'll force the doctor to have a conversation with you about what's going on, and you will also know whether or not that physician has done their homework in checking all the possibilities. So be more of an advocate for your relatives.

TF: Okay, Katherin, did you want to jump in there on anything?

KS: Well, I think that related to depression, I mean, we see in our clinic a lot of patients who are overweight and obese and they don't sleep well and they don't eat well, and all of these things tend to contribute to depression. So if we can get people to get out and do small bouts of exercise ... Maybe you don't feel like you can go for 30 minutes. Maybe that seems too overwhelming. You know, ten minute bouts is better than nothing at all. And making sure you get your sleep. There are a lot of people maybe in the audience here retired, and when you went to

work you had a schedule, and a lot of people I meet with go to bed at three in the morning and they sleep till noon and they don't have a schedule, and so trying to get people back into a routine with eating and physical activity and sleep really tends to help them be more successful in managing their weight and their health. So sometimes it's just a planning and scheduling thing that we have to help with, not necessarily something extremely complicated.

TF: That's a real nice transition then to get us into maybe some of the more profound kinds of maladies and afflictions that can affect cognition and reasoning and all that. But before we do that, quick housekeeping thing. There are goodie bags that are out front. If you have not picked up one, please avail yourself of that on the way out. It's got all kinds of great material in it and useful and helpful stuff that you can use in your own real life. To make that transition here into the not so normal aging of the brain, how much should we be concerned about the episodic memory lapses, the so-called "senior moments" that we all talk about? Is that a precursor? Is that a danger sign? Or is that just ... it happens?

PAG: If I can get your permission to pick up on

depression ...

TF: Sure.

PAG: ... and then pass it on over. There's some exciting research that's going on. Some of it's observational, some of it's retrospective, but back to George Grossberg who's a geriatric psychologist that's got an international reputation out of St. Louis University in St. Louis at the medical school, talks about looking retrospectively, looking backwards at his patients who he then diagnosed as having Alzheimer's disease. And a higher proportion than normal would have had a history of depression in their past. Our work at Morehouse where we are part of a database that's at Boston University looked at whether or not depression seemed to be the kind of precursor that Dr. Grossberg talked about, and we found that in our patients that several of them had depression as a prelude to later on getting into things like Alzheimer's. What's important is that there's now new evidence that some depression is mediated by certain chemicals, and the hottest thing as of last week is that there is some bench research suggesting that one of the antidepressants, at least in non-humans, seems to delay the problems of cognitive difficulties. It's

called Citalopram. And so we're all watching to see whether or not this link to depression is more than just a statistical anomaly.

TF: Dr. Heilman, to follow up on that, again precursors here. Depression being a precursor, episodic memory loss which you said can be mitigated by more vigorous kinds of exercise and all that. But do we need to worry about it? You know, I can't remember from one moment to the next what's going on, so should I be concerned?

KH: Could you repeat that question again?
(Laughter) It turns out that Ron Petersen up in Mayo Clinic developed a term called mild cognitive impairment. I'm not crazy about the term and I won't tell you why. We used to call it amnesic disorder. And Dr. Griffith mentioned this thing about episodic memory. So for example, if I said to you remember these three things: a daisy, a lamp and mirror, and then had you repeat it, and then we would talk for a long time, another 20 minutes or ten minutes, and I say, "What were those three words?" and you could not remember them, that's the kind of test we use for episodic memory. Now if that's the only problem that you have and the rest of your thinking is okay, they call it mild cognitive impairment,

amnesic subtype. And it turns out that about ten to 12 percent of people who have that each year will go on to develop Alzheimer's disease. Now the first thing from a physician point of view is when we see people with mild cognitive impairment, any type, is to make certain that we can rule out any kind of structural disease or metabolic disease or other diseases that can do that. So it's imperative if anybody has that to get brain imaging. Brain imaging will help rule out structural disease. It's imperative also to make sure that there's no vitamin deficiency, that your B12 is okay, that your thiamin's okay, that your folic acid is okay, your Vitamin D is okay. Those can be done by blood tests. It's very important to make sure that your thyroid is okay. That can also be another cause. It's also important to make sure that there's no general medical thing. Heart failure, kidney failure, any other kind of vital organ failure that does it. And then finally if you have some risk for communicative disease, either syphilis or AIDS, HIV, they have to be tested because they also cause those problems and they're very, very, very treatable.

Now if based on that they do not find anything, then as I said, anything they can treat, and not

depression ... not a whole bunch of other things ... then there is a risk for you to go on to develop Alzheimer's disease. But there are things that we talked about and we're going to talk about in the future that may lower the probability of you getting it. Now it doesn't mean you're going to get it. Many patients don't develop it, but some do. So that's one of the things. But I wanted to mention that there's only one type of cognitive disorder that you can see, one type of memory disorder that you can see. There are other types of cognitive disorders that you can see that perhaps later on we'll talk about a little bit more. (Overlapping Voices)

TF: I thought so, Dr. Griffith.

PAG: Again, we always want to make sure you have take home things and you can make notes to yourself. So if you write the word "dementia" vertically, and I'll go slow enough that you can make notes to yourself, the D is "drugs," the E is "emotional," and you can put next to it "depression," the M is "metabolic," and you heard him mention about the thyroid ...

W: (Inaudible)

PAG: Too fast?

W: Yes! (Laughter)

PAG: Oh, I'm sorry. I'm accustomed to my medical students who are fast typers. D is "drugs", E is "emotional (depression)," M is "metabolic." The example that Dr. Heilman gave was thyroid deficiency. The second E is "eyes and ears." Think about how many people who don't hear the questions that you're testing them on or can't read the information and they give you wrong answers. So that's the second E. Then the N is "nutritional," which is why we're blessed to have a food expert and dietary expert, because it could be not enough of those essential things that the body needs, specifically vitamins, and we gave you those examples. So we're up to T. The T could be a "tumor" or it could be "trauma." Tumor like cancer or trauma would be like a hit to the head, and we're very concerned about ... Which group of people we worry about head trauma?

KS: Football players. (Overlapping Voices)

PAG: Athletes, specifically football players, and there have been lots of reports in the newspaper, boxers, okay? And the research that's going on now at Boston University and the VA is an entity called CTE, Chronic Traumatic Encephalopathy. And the lead pathologist is a lady, she's a Packers fan so you can

understand she loves football. Her name is Ann McKee. And she has a group where people are making arrangements to have their brain sent to her lab when they don't need it anymore. Well, they're football players who are trying to get this resolved, you know, so they're brave enough to make that part of their world, and I think that's a good thing. The I is "infections," and Dr. Heilman mentioned several of them. The other thing to add to the I is something called "intoxication." If you have too much of certain things it can be harmful to how the brain works. The A can be either "atherosclerosis," which is hardening of the arteries, et cetera, or it could be problems with how the body fights itself. It's called "autoimmune." Or it could be Alzheimer's.

W: (Inaudible)

PAG: Oh, sure. So atherosclerosis, then autoimmune, and then Alzheimer's. And so the key is if you're an advocate for a senior, you not only want to know does your family member fit into one of those four buckets, but if the doctor says, "I think your family member has a dementia," then that person has to give you a better, more detailed explanation as to what kind of dementia, because there are different kinds. Alzheimer's is only

one of those dementias. Stroke related dementia is only one of those under atherosclerosis or arteriosclerosis, which is the new hot research area now. And so we want you to be armed with this kind of information so that when you're with the doctor, you're trying to push him on how are they sub-setting your family member. The other thing in lots of things that you read is they talk about treatable or untreatable. They talk about reversible or irreversible causes of dementia. If you go back to your list, star the first two. Star drugs and star emotional/depression. Those are the only two that if identified will reverse. You stop the drug and/or treat the depression. The rest of things you may be able to arrest, you may be able to stop the progression. Under the N, some of my students put in an entity called "normal pressure hydrocephalus" where there's too much water on the brain, and that can be fixed in some people with a shunt. But the point is do not let your physician tell you, "Oh, it's dementia and it must be Alzheimer's." Please do not accept that. They must tell you what tests they did to exclude all the other things that Dr. Heilman mentioned. They must do imaging, they must do a certain number of blood tests, they must get a dietary history as to what's going on. Absolutely.

TF: And if the doctor says also, "Well, they're just getting older and these things happen," you should run, not walk to the nearest second opinion.

PAG: No, you tell the doctor that they heard in a Staying Sharp session that memory loss is never normal. I repeat that. Memory loss is never normal. We do not accept seniors with memory loss as "normal aging." That is just not true. And I think in the Staying Sharp book this is called a myth. It's like men being stronger than women. That's a myth. Nobody picked up on that, okay. (Laughter) I'm very, very serious about that. It is never normal. There are intact 100 year old people and they're okay.

The research question is why? How come some people are having difficulty with their cognitive abilities in their 30s, which is the youngest reported cases of Alzheimer's disease, the presenilin variants, the early onset ones, in their late '30s. Okay, how come that happens and how come some people in their 90s and 100s are perfectly okay? What is special about them? And the research that's just as exciting as the one that I mentioned about depression is that there's a group now called the Dominantly Inherited Alzheimer Network, the DIAN Network, and

they're looking at something called biomarkers. Primarily they're looking at biomarkers in spinal fluid, which is a whole other problem. I keep hoping that they're going to find markers in the blood, and that's a research right turn that we may not be able to get into today. But the point is with biomarkers, some of the researchers are finding that they can predict 25 to 30 years before the person had Alzheimer's disease. 25 to 30 years before. Think about that. They can see these biomarkers and they can watch the trajectory over time. So we're getting better at understanding what the precursors are for Alzheimer's, and Alzheimer's is the most common and that's why it gets everybody's attention. Unfortunately, it affected one of our former presidents. But the point is that it's sort of the thing that's upper most in everybody's mind. And hopefully we're going to get into the second concern about a lot of people, because I'm from Georgia and we're in a part of the country that's called a stroke belt, and we worry about people who have more than one stroke and sometimes they can have a stroke in special areas, only one, and still they have problems. So people are worried about Alzheimer's, people are worried about stroke related dementia.

TF: Also a great handoff, Katherin, to you, because everyone's looking for the magic bullet.

PAG: Absolutely.

TF: And there's a multi-billion dollar industry out there of all kinds of pills and potions and everything else saying, "This will keep your brain sharp and functioning and your acuity up there and prevent dementia and Alzheimer's if you take this magic little pill ..."

KS: Yeah. Everyone seems to want the quick fix without doing any of the work to get healthy. So what I try to help people with is when you're trying to make changes, pick something that you're actually willing to work on. If you're not ready to give up sugar sweetened beverages, you know, maybe decrease how many per day you're actually drinking. If you're not doing any exercise, could you do ten minutes? You know, kind of meet people where they're at. But unfortunately, you do have to make a lot of changes. More whole grains versus whole wheat, or whole grain, whole oat, more fresh fruits and vegetables, less salt, less saturated fats from meats like ribs and polish sausage and bratwurst, a lot of the foods that people really enjoy. Doesn't mean

that you can never have them, but it's hard to stay healthy if you're eating those foods consistently through the diet. So healthier fats, olive, canola, peanut oil, nuts, olives, avocado ... those are really healthy. In your packets today there should be a Mediterranean diet shopping list just to give you some ideas, as well as ways to decrease salt in your diet. And part of what we were talking about was, you know, if it's healthy for your heart it can be healthy for your brain, so a heart healthy diet. Whether it's the dash ... I don't know if anyone's heard of dietary approaches to stopping hypertension? Very high focused on fresh fruits and vegetables.

And you may even just say, "Okay, I'm willing to write down what I'm eating for three days. What am I actually eating? Do I actually eat fruits and vegetables?" You may think you do, but then when you write it down you're like, "Oh, I didn't have any fruit today." You know, and really kind of see what am I actually eating? And trying to eat more whole foods versus a lot of the packaged foods. And a good tip is if you shop around the outside of the grocery store, you know, you're going to get your fresh fruits and vegetables, your meat, your eggs, your cheese, you know, your dairy products, and you'll hopefully stay out of a lot

of the crackers, cookies, you know, all those things, sweets, that you're really trying to avoid. So I think you just have to be realistic, and hopefully those little handouts that I gave in the packets will help. You know, learning to do more spices, herbs, you know, garlic, onion, basil, oregano. You may not have a big back yard where you can plant fruits and vegetables, but maybe you'll say, "I can put in a tomato plant," or "I can grow some basil." And try new things and experiment, have fun. I mean, I don't know if a lot of people enjoy cooking. If you're not someone who enjoys cooking, you may have to kind of teach yourself or learn more about it, and there are a lot of outlets in the community that can help with that if you're interested in learning how to cook if you don't know how.

TF: I think it's also why God invented the Food Network. (Laughter)

PAG: I'm from Georgia and so the big food item on Fridays is catfish. Can you tell us something about fried catfish? You have to have it with hot pepper, by the way. (Laughter)

KS: Most people want hushpuppies and mac and cheese and collared greens, and not that you can't eat that, but you may have to find alternative ways. Maybe baking, roasting,

grilling, broiling, you know, searing with heart healthy fats versus deep fat frying.

PAG: The other thing about the Mediterranean diet is that it pumps up red wine.

KS: Yes, just because you get permission to drink one glass doesn't mean you can have the whole bottle.

PAG: In the south we're into scotch and bourbon and what else do we have, guys? (Overlapping Voices) Moonshine?

KS: So in terms of alcohol, I mean, I think throughout diet and alcohol, and when I say diet I mean your eating pattern, not necessarily you're on a special diet, but a recommended drink is an ounce of hard alcohol, four to five ounces of wine or a 12 ounce beer. That's considered a drink. And so for women one a day is healthy, men up to two. If you're trying to lose weight, though, you know, people will tell me all the time, "Can I save up all those drinks and have it in one day over the weekend?" (Laughter) No, you can't do that. So I think moderation is important, and you may find, "I'm not willing to give up those calories. That's 150 calories that it took me 25 minutes to

walk that. I'm not willing to drink that."

PAG: But there are people who claim that the French paradox is that red wine contains resveratrol and it's supposed to be good for you. It's supposed to be better than white wine.

KS: Sure, and I think there are components in the grapes, but I think at the same time we have to look at the French lifestyle. A lot different than ours. You know, they're a lot less stressed.

PAG: You mean French fries?

KS: No! (Laughter)

TF: Well, folks, we've been focusing really on kind of one aspect of mental impairment which is loss of memory. That is a wonderful thing to keep in mind constantly that it is not normal. This is not a ...

PAG: Absolutely not.

TF: ... just an acceptable part of aging or anything else.

PAG: That's right.

TF: But what other things should we be

concerned about as far as symptoms are concerned ... that this may not be within the realm? Dr. Heilman?

KH: We spoke earlier about the four lobes of the brain, and most of the stuff we were talking about, this episodic memory problem is really a problem of the medial temporal lobe as we said, the hippocampus. But more and more we're seeing people with what we call frontal executive dysfunction, and this is getting very, very common. The most common cause probably turns out to be what we call small vessel disease. As you know, the vessels started off very, very big, like the aorta, and then they get into the carotid, and eventually they come into these really teeny tiny little vessels arterials. And what happens is that with certain diseases, like hypertension especially, those vessels become thickened and so blood can't get into them. And so what happens is because blood can't get in, and this is the deepest part of the brain, those axons, those big cables that I told you about, like the roots, they can no longer work correctly. And the frontal lobes, unlike other parts of the brain, are very heavily dependent on these major axons, these major tables.

Now the big problem is when you talk about,

well, what kind of problems people have who have frontal lobe functions. And the reason we call these clinics memory clinics is because almost everybody knows what a memory disorder is. But what's frontal executive dysfunction? It's very, very hard to describe. So in general we think about four major problems associated with it, and the biggest one is initiation. Initiation. What do I mean by that? Well, it turns out with aging a lot of people think it's normal to be abulic, to be couch potatoes, to sit around and not initiate activities, to not only plan but to do it. And this goes all the way from very severe, so people virtually don't even shower or do their hygiene, to very mild where the executive is not so much of an executive. They're not getting out there and doing things. A second symptom that's associated with this is something called impersistence. So sometimes they'll initiate an activity but they won't complete it. They don't have that drive. If you asked me, for example, "What's the most important characteristic of somebody successful in medicine?" Guess what?

PAG: Persistence.

KH: Persistence. Now it varies from individual to individual, but a lot of people have this decrease of persistence,

which is also abnormal. A third thing we talk about is defective response inhibition, and that means that they're very stimulus driven. In other words, they do not initiate what they want to do. They're dependent upon what other people do for them. Now again is there a simple test for that? We have some tests. Neuropsychologists and behavior neurologists have some tests for that, but that's very, very hard to diagnose. Many people think that's normal aging. It is not normal aging. That is almost always caused by diseases, the major one being as we talked about vascular disease. But there are many other things that can do it. Tumors can do it, chronic infections can do it, as we talked about, vitamin deficiencies can do it, head trauma. Repeated head trauma can do it. So there's a whole bunch ...

(Background Conversation)

KH: There's a huge amount of diseases that can do that, and it turns out that many of these are treatable disorders. Many of them are treatable disorders. So again, people have to be aware of it. The physician has to evaluate it, and the people who do therapy have to know about those things, because like anything else you can practice them. You can practice them. So these are

called frontal executive disorders. Now there are also degenerative diseases that we're finding that cause frontal executive disorders, and several of them have to do with language. But one of them is called behavioral variant, and these are people who as they're getting older, sometimes it starts in their fifties, just start doing really strange things, anything from sexual to financial. They start investing in crazy things. They gamble when they didn't gamble. They start touching men or women as they shouldn't be touching them, saying comments where they shouldn't be doing it. And again, this doesn't have a cure, but it can be managed, but people have to be aware of all these disorders.

The most common cause of this is as I said a small vessel disease, and these small vessel diseases are preventative. The major means of prevention is treating hypertension. It's not just getting your pulse and your blood pressure down, it's actually getting or reducing the pulse pressure, the difference between the systolic and diastolic. And there are certain medications that seem to work better than other medicines. This hasn't been highly approved, but it turns out that the ACE inhibitors and ARBs seem to work better than other medications.

Not entirely. Sometimes people need other medications, but that's very, very important. Again all the things that can cause atherosclerosis have to be a concern. Back in the old days we said, "Oh, only if you had a heart attack or stroke do we reduce your lipids." We're showing more and more now guess what? If your lipids and cholesterol is high, it's really important to get it down. And when I say get it down, I mean get it down. Your LVOs if you're having these risk factors should be below 70. Below 70. Another thing you have to check always with your physicians are anti-thrombotic agents, like an aspirin, maybe one milligram. But of course if you have other disease, like if you have a fluttering heart like atrial fibrillation, you may need to prevent strokes to be on an anticoagulant. Speak to the doctor. One of the things that's missed most commonly is people who have intermittent atrial fibrillation. So yes, they'll take their pulse and it's regular, but every once in a while they tell you, "Oh! I feel some fluttering!" But it goes away. Watch out. That fluttering means that part of your heart, the atrium, is doing this way. When it does that it forms clots and when it starts beating again, bingo, you know where they go? Up to the brain. So all those things, please be very, very careful

and please be safe about them. Very critical.

PAG: Dr. Heilman, you introduced the term of frontal temporal dementia and the particular variant, behavioral. There's a primary progressive aphasia and some others. But what that introduces is that some people think that the underlying pathology is mediated by a protein called tau, whereas Alzheimer's is thought to be more than one so it is thought to be tau and amyloid not working properly. And because we had a discussion before we came in, Dr. Heilman is going to tell you what he thinks is the main abnormal protein in Alzheimer's. And the reason for my pushing him on this in front of you is that back to Ann McKee and the Chronic Traumatic Encephalopathy, they think most of that brain problem is related to tau. So there's this connection between head injury, abnormal proteins and the kind of problems that people have in staying sharp, because if they're not attentive to these things they're going to get either Alzheimer's or they're going to get frontal temporal, which may be the second most common cause after stroke. So it's Alzheimer's, most common, then frontal temporal, which has several genetic and other variants, then stroke.

KH: Well, okay, so let me tell you a little story about what's going on in Alzheimer's disease first. For a long time we've known that there's an abnormal ... it's not really a protein, it's a breakdown of a protein product called amyloid. And when we look at patients who have severe disease, their brain is loaded with amyloid. And now they have even ways of imaging amyloid, so you can go in to the radiologist, get an injection, and they can tell you how much amyloid is there. So many people said, "Oh, you know, it's the accumulation of this protein breakdown, this amyloid, that's causing Alzheimer's disease." Now there were people like me who actually said, "Wait a minute. This can't be the case, because if you look where the amyloid is distributed, it's different places than happens with Alzheimer's disease." A second thing is the first place that normally Alzheimer's starts is actually part of the smell brain. I don't know if any of you have seen the paper that I did with Jennifer Stamps where we looked at smell and asymmetries of smell showing that this is a predictor of Alzheimer's disease.

TF(?): There are some doctors that offer smell tests.

KH: Yes, we did that. If anything I'll be famous

one day after I'm gone is for the peanut butter test. Anyway ... (Laughter) got a lot of press. I think even Dr. Oz talked about us, which is the highlight of my life, right? (Laughter) Anyway, what happened based on this amyloid hypothesis, they thought, okay, we'll get rid of the amyloid. So several major drug firms together with National Institutes of Health made these things called monoclonal antibodies. These are things that your body makes, antibodies, chemicals that usually destroy viruses and bacteria, but they trained it to go after the amyloid. And they did three huge studies, the most recent one by Rachel Didi(?) was published in the New England Journal of Medicine. And they gave this to people who had early Alzheimer's disease and guess what? It was a total failure. It did not prevent any of the progression.

PAG: Except that the vaccine seemed to help clear amyloid in some people.

KH: Well, it cleared the amyloid. It cleared the amyloid, but didn't help them. It did clear the amyloid. It worked. It got rid of the amyloid, but they continued to progress in a downhill fashion without any change.

PAG: But it didn't kill them, because the study had

to be stopped. The vaccine study had to be stopped.

KH: Well, it turns out what they're thinking now, and I hope they're right but I'm very pessimistic, is "Well, maybe we started it too late." So now what they're doing is they're imaging people before they have Alzheimer's to see if they have amyloid, and then they're going to give them this medication ...

PAG: To see if it helps.

KH: ... and see if it prevents Alzheimer's disease, whether it helps. But most people, as he was eluding to, think that there's something else going on. If you look at the neurons ... remember I told you about the idea that the neurons are like a tree, like a trunk? And there's branches going out there and the root picks up the nutrients and the water and brings it up, the leaves make the chlorophyll and sends it down, and if any of you remember any botany ... there's xylem and phloem, those little tubes? Well, neurons have tubes also, and those tubes actually send stuff all the way down these big axons and these dendrites as we talked about.

And what happens is there's a protein in this tube called tau that actually helps to make the tube, and for some

reason in Alzheimer's disease it gets misshapen. It gets misshapen. And when you actually look at the brains of people who had Alzheimer's, you can see these tubes are malformed. They're called neurofibrillary tangles. So what happened is that information can't get out there anymore. The nutrients can't get out there. And just like if you block the xylem and phloem of a tree, it starts dying, and that is what happens with neurons. So now people are starting to look at tau and what we can do to prevent this with medicines. There's nothing available and there's no way of even imaging the tau, but they're working on this. So all we know about are certain things like prevention. Prevention, prevention, prevention.

One of the things that was mentioned about prevention was preventing superimposings like vascular disease. But there are some primary preventions, so for you here who have kids or grandkids, let me just tell you about one primary prevention. There was a study done in Portugal. They were having large families, ten kids, 12 kids, so the first girl that was born never was sent to school because her job was to help the mother take care of the young kids. Later on when they looked at who got Alzheimer's

disease, guess what? That first daughter was devastated. Devastated. And if you look at Alzheimer's disease, it occurs least often in the people who are most educated. That's been shown over and over and over again. Even looking at nuns. They opened up their diaries, and they could judge who was going to come down with Alzheimer's later on based on their writing in their diaries. So education. Now do I mean just education of use? Yes, that's what I was talking about. But it should never stop. People say, "Hey, Ken, you're in your mid-seventies. Why do you keep on working?" I say, "Why should I stop?" They say, "Oh, then you could do all the things you wanted to do." I say, "What the hell do you think I'm doing now?" (Laughter) What the hell are you doing now? So it turns out that they found that the longer you work, because you have to use your brain and you have to keep on learning, you have less of a chance of getting Alzheimer's disease. So not only physical exercise, but keep working. Keep that brain learning. Because those are primarily preventions.

PAG: We want to make sure that you take home what started off as maybe a little bit humorous. Women are more likely to get Alzheimer's disease. I want you to remember that. I

want you to think about what that means. The 2014 facts and figures from the Alzheimer's Association has a special section just on women, so for the first time researchers are trying to address the gender issue, and it is very important. So a takeaway statistic. A woman over age 60 has a one in six chance of getting Alzheimer's. How much do you think it is for men? Same age. One in 11. One in 11. So there's something that the creator is trying to tell us or that women are doing differently. There's all kinds of speculation. But it's not something to be ignored and blown off. Women get more Alzheimer's disease.

TF: I'm sure that we've got from this incredible range of ideas and concepts and information that we've learned here so far this morning a host of questions that we'd like to pose to perhaps some of the best minds in the business when it comes to this. And folks, if you could please avail yourself of the microphone, because we are recording this and we want to keep this for posterity. We have about 20 minutes, and please, folks, just keep your questions as brief as you can. Thank you.

(Overlapping Voices)

W: For positive factors, how much do we know

about stress? How much is stress contributing?

PAG: Stress is something that's very hard to measure, but that was the implication in the church mother that was waving her finger. She says that being married to men is very stressful. (Laughter)

KH: No, I think that's a very important question. It turns out that we know when you're stressed you increase the amount of cortisol, a hormone in the brain, and it's been shown in animals over and over again high levels of cortisol injure the hippocampal cells. So yes, stress can be a cause of memory decline.

W: I thank you so much. I've learned so much. I'm in the trenches. I work for the University of Ithas(?) working in the area of nutrition. One of the things that I'm finding is that we've over supplemented our entire population, especially A, D, E and K, the fat soluble vitamins. I am thrilled that now in the general media that's being revealed and our requirements for supplements is being reduced. I see community members that are taking supplements with 400 percent of what's needed in some of these and they're stored in the body. Can you please give some insight

on your feelings about whether you agree or disagree?

KS: Well, in terms of supplements, I never advise anyone to take any supplement without advising their physician, because there are a lot of different interactions that can happen with supplements and prescription drugs and maybe they shouldn't be on a general multivitamin for whatever health condition they're on. I mean, I have had multiple patients, we'll ask them to write all their medicines and supplements, and people say, "Oh, you need to know? I'm on chromium and zinc and iodine and selenium and this and that," and they don't really understand. So I think that if someone is deficient there is a place for vitamins, but you need blood work, you need testing before you just start taking all these vitamins and minerals without really knowing why. Because you can waste a lot of money. I'd rather you spend some extra money on your groceries and actually get the nutrition from the food.

KH: Can I just say something real quick about that? There are hypervitaminosis states. A can do it okay, and B6 can do it. B12 you don't have to worry about, B1 you don't have to worry about. The question about E has been very debated. Some people thought that it was helpful in preventing dementia, then it

went the other way. Now they're saying, "Well, maybe it helps in some people."

PAG: It may be dose dependent.

KH: It may be dose dependent. But be careful about B6 and also A which can be very, very dangerous.

PAG: I want to add to the business about food while you're getting to the next person. There are certain populations in the world who eat more vegetables, and I endorse what the dietitian is saying. And in some of those populations where they're primarily vegetarians, the prevalence of Alzheimer's is less. Now it may be that they are living a different lifestyle, because a lot of these places in the world are called "developing countries," so they don't have cars, they walk wherever they go, the food that they eat is what they've grown in their yard so it's never been refrigerated, there's no pesticides on it, there's no coloring to it.

And there clearly are these parts of the world where Alzheimer's is not as frequent, and I think it's an opportunity for us to learn from those people the same way that I think that the gender question is an opportunity to learn better about Alzheimer's disease. There are some researchers who now think that

Alzheimer's disease is a syndrome and that there are different kinds, and at least one of the mentors that I have, a fellow named Goreli(?), thinks that there may be a vascular variant of Alzheimer's disease where it's being driven by these vascular risk factors that we're hoping the dietitians are going to help us with. Hypertension, cholesterol, diabetes. In some of those countries where they're primarily vegetarian, there's also less hypertension and less cholesterol problems. They've even tried to look at a particular risk promoter gene that's called ApoE4, and if you have two E4s, that's not so good. Well, E4 may be related to cholesterol. We don't know. And specifically the bad cholesterol, the LDL. So all of these things have to continue to work, we have to continue to talk even if we're in a medical school that's competitive in terms of football. Right? (Laughter) I'm from Georgia. I'm sorry.

(Laughter)

W: I started in my early fifties having a problem with words. I used to consider myself fairly intelligent, but it has gotten progressively worse to where all of my friends have to give me words. This morning I couldn't think of the word "t-h-i-n-k." Is that one of the memory problems that you were talking about, and

is there anybody specifically I would be able to go to help me figure this out?

KH: You should see a neurologist and make an appointment in the memory clinic. With aging almost everybody says that they have problems with proper names, so for example, who is the actor who played in "Giant?" But regular words ... is it abnormal if you're having trouble ... a decrease in words? And there is, as we talked about, several forms of what they call primary progressive aphasia where people have word finding difficulties. So please, young lady, go see somebody.

PAG: And please don't make diagnoses on your own or based on just what you heard from us. Please see your physician. See a competently trained person in the memory clinic and get a proper consultation.

KH: You know, physicians who treat themselves have fools for doctors. (Laughter) And that's also true for laypeople.

W: So for those of us who are on a plant based diet, could you debunk the myth of the incomplete protein? Because we get a lot of pressure from our friends that you have to

eat meat because of the intrinsic factor. That would be one, and the second one before I give up the mike is could you also talk a little bit more about the Celexa study? Could you talk more about the Celexa study? The Citalopram? Just a little bit? Yes, thank you.

KS: Okay, in terms of complete and incomplete proteins, animal proteins our body can use and it's the most available to our bodies. But in a lot of parts of the world maybe you can't afford meat or you don't eat meat by choice. An example is rice and beans. So when you eat rice and beans, we used to think you had to eat it at the same meal to be effective. Now we know if you are able to consume ... maybe you eat beans for breakfast and rice of the evening meal, if you consume that food within 24 hours your body can still use the components of those proteins. So you don't have to eat animal products to get the protein that you need. It's just you tend to be able to increase your protein, and you may actually consider like a protein shake or something if you're not able to get enough protein. Because protein helps us maintain an immune system, healthy muscles, it helps with hunger. So it may be that you have to eat more volume,

like tofu. You might have to eat a lot more tofu to get the same quantity of protein as in a three ounce piece of grilled chicken. But yes, you can still be vegetarian and be healthy.

PAG: So the answer about Citalopram or Celexa is that it's a preliminary study. That's number one. Number two, right now it's a bench phenomenon, meaning that these were not humans. And then the third is going to be if you were to go into the kind of sequence that the FDA does, which is phase one, phase two, et cetera, you're going to have to decide if in phase one, is it dose dependent or is it where you're having normal people not being affected by the different doses? And you've got to use an acceptable test, meaning that other researchers can test their patients and see whether or not this holds up. Because what you're aiming for is that it's going to delay the onset of Alzheimer's. So you're going to be testing people who are normal, you're going to be testing people who have been labeled MCI, and you're going to be testing people who on imaging have all these signs of amyloid, their position, until they figure out a biomarker for tau that we can see how that changes. So it's premature, but it sells newspapers and TV time, and I'm just asking for you to be patient

until we get a definite answer, because I would not want physicians to say, "Okay, you're elderly and we heard that there was dementia in your family. Here's Citalopram." That's not the best way to proceed. What would you do in the memory clinic if somebody came in and said ...

KH: Well, you know, first of all, Citalopram increases the amount of serotonin in the brain.

PAG: It's an SSRI.

KH: That's right. And it turns out that actually, although we talk about how important Citicoline is for memory, turns out that serotonin also has an influence on those systems. And just like you talked about with pseudo dementia with depression, you give them SSRIs and they improve. So the big question that I don't know about is whether or not you are actually in some sense enhancing people's memory or whatever else, but you're upregulating the serotonin, or is upregulating it in some way going to be preventive for a detriment in that system? So I think there's a lot to go with that before you do it.

PAG: The other thing related to what Dr. Heilman and I have seem to be having a side conversation about is that

serotonin is related to sleep, and they're finding now that sleep disorders may be part of people who have cognitive trouble. So a lot of these leads are interconnected, and you have to get the well informed scientist to be able to connect all of these leads and not make premature recommendations. Premature recommendations.

TF: Yes, it almost sounds like a detective novel where you're piecing together ...

PAG: That's the beauty of neurology. We all wish we were like Monk. Does anybody watch Monk? (Overlapping Voices) Yeah, he's a great guy. Or the previous generation would think of Sherlock Holmes, right? It's the same kind of thing.

KH: Sherlock Holmes was actually a neuro-ophthalmologist.

PAG: I rest my case.

KH: I mean, Holmes wasn't.

PAG: I know, I know. (Laughs)

TF: Elementary, my dear Heilman! Folks, we can get in one more question. Time draws short, so sir, if you would please.

M: I think we need to look at our problems,

Alzheimer's, brain problems, physical problems, not just as individuals as we are, or we perceive ourselves to be individuals, but we are members of a much more expansive and subtle web of life. And so when you hear things about BP's oil spills, the toxic air that we breathe, all of that has an effect on our mental health, our physical health, and that's a darn hard nut to crack, I'm sure. But would you care to comment on that?

PAG: You said this was recorded? (Laughter) No, I think that's that same trend that I was giving you, that there is at least one neuro-epidemiologist, and his name is Colaria(?), he's right now at the University of Oxford in England, and he says that there's a difference in the prevalence which is all of the cases between those countries that are developing and those countries that are developed. And I think that there's something to it, because I think in the developed countries such as US, Canada, England, certain parts of Europe, that's where you're having a higher prevalence of Alzheimer's disease, whereas in the one study that I'm familiar with is one between Indianapolis in the US and Ibadan in Nigeria. And they've done the testing over now 20 years I guess, the Indianapolis/Ibadan project, that is consistently

less in the native Yoruba people in Ibadan. So there is something to this difference that has to do with exposure or with diet or with lifestyle, but I think all of the answers are not yet in. But, you know, we've got Heilman who's going to find out from the big person ...

(Laughs) What's the deal?

KH: That's if I go up that way.

PAG: We're betting on that! (Laughs)

KH: You're asking a very, very important question.

You know, when I went to medical school or even earlier, the biggest change in medicine is that Pasteur discovered that there was infectious agents, and Max Erlicht(?) said, "Hey, we can develop chemicals that might find them." And I was born in the antibiotic era where we had what we called agents. So if you had meningococcal meningitis we could give you penicillin. The big problem with degenerative diseases is that we can't fully account for them by genetics. Yes, some people do have it, but we can't fully account for genetics. We have some idea about agency. We talked about that already. But we really don't know with all these degenerative diseases what is the agent? What is the causation of these disorders? It's not purely age, because as we talked about

30 year olds can come down with Alzheimer's disease, and there's other diseases. So for example, they thought that Parkinson's disease was caused by a virus. People who got that old flu in the late teens, 1917, '18, many of them became Parkinson's. One of the famous neurologists said, "I think all these cases are from that virus." All those cases are from that virus. And I'll bet anybody a case of scotch that they can't produce ... this was at the AA meeting ... anybody below the age of 30 who has Parkinson's disease. They knew he was giving the lecture outside ... in came this person. We don't know the agents. The agents still could be viruses. We don't know. Could be toxins. People are talking about Parkinson's disease ... that people who drink well water have a high rate because it may be the pesticides or the herbicides that are down there. So we don't know if we're poisoning ourselves, whether we get a virus, but I think most of these things would be multi-factorial in the sense that yes, you have a genetic thing. Doesn't give you the disease. It makes you more susceptible, and then there are other agents and things you can do that adds on to that. But what all those factors are, we don't know now, but we have to study them.

TF: And Katherin Snyder, let me give you an opportunity to get in a last word on this one, too.

KS: Well, I think just kind of to wrap things up, if you're looking for something ... general health ... you know, there are dietitians in the community if you want more information. But you need to start somewhere. You need to pick something that you're willing to change and work on it and maybe through some of the reading today ... in your bag you might say, "Oh, I can do this." So you've just got to start somewhere. I know there was a study a few years back that said if you sit all day, you are decreasing your life span. So get up, move, be active, you know, be social, be less stressed, get your sleep. You know, all of these things can really help, and hopefully it'll help a variety of medical conditions, not just the brain and aging. So start somewhere, decide what you want to do and get moving.

TF: And it also helps if you remain inquisitive and engaged, and folks, our three panelists will be remaining behind, so if you want to come up and pose a query individually after we conclude, that would be absolutely outstanding. Go ahead, Dr. Griffith.

PAG: A final word. There's a gentleman named Prusiner who got a Nobel Prize because he was convinced that there was a particular infective agent called a prion. And so there are studies being done at UCSF where his collaborators are, and they collect unusually fast moving forms of dementia that are referred to his unit at UCSF. And Geshwin's nephew I guess ... (Overlapping Voices) and Bruce Miller are the neurologists that are working on this, so that there is a lot of brain power going towards looking at all of these leads. And what I would encourage you to do is to continue to be inquisitive, to continue to read, that when you see things on USA Today or on CNN News, ask who's the person reporting the study, where is it coming from, how many people, has anybody else done it before you start making changes, whereas you can start making the changes that our dietitian is telling you right now. You must look at those four factors for staying sharp. You've got to have a brain healthy lifestyle and you've got to fix vascular risk factors. You just got to do it.

TF: Dr. Patrick Griffith, Professor of Clinical Medicine, Chief of Neurology, Morehouse School of Medicine in Atlanta, Katherin Snyder, Tallahassee Memorial Hospital Bariatric

and Diabetes Center, and Dr. Ken Heilman, the James E. Rooks, Jr. Distinguished Professor of Neurology at the University of Florida College of Medicine. Folks, a fantastic panel. Thank you! (Applause) And thanks also to the Dana Alliance for Brain Initiatives and the Osher Lifelong Institute for Learning, and thank you all for coming out today. We've all learned a lot, and please have a wonderful weekend and a safe trip home.

(Background Conversation)

(END)