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**THE DANA ALLIANCE FOR BRAIN INITIATIVES**

LR:           And we are so grateful to partner with AARP and to have a generous grant from the MetLife Foundation to present this program, and we thank you all for coming on this kind of rainy fall morning. We're so pleased with this turnout. This is just wonderful, and I think you're going to be glad you came. I think we have a wonderful program planned. I think everyone got a program and a survey. This survey is something new for us, so it is an online survey. It only takes a few minutes to fill out. If you would prefer to have a survey mailed to you, you're welcome to call this number on the back of the card, and we'll get one mailed to you if going online isn't your thing. We're going to start our morning with a little brain warm-up. We have JoAnn Insel(?) who is a certified personal trainer and senior exercise specialist with AARP Fitness and Wellness program. She's going to get us warmed up and get our blood pumping and our hearts pumping, ready to listen to the panel. So again, thank you for coming, and welcome, JoAnn.

(Applause)

Jl: (Warm Up Exercise – Not Transcribed)

WA: Good morning. I don't know if I can top that, but I'd like to (Laughter) ... all right. There you go. (Laughter) My name's Bill Armbruster. I'm the Associate State Director for AARP. I happen to live in this community, and I'm very excited that AARP chose the Rochester area as a pilot community to do new, unique and different things, and bringing this national program to Rochester is one of those opportunities. So thank you for attending today. I think this is a great opportunity to have a wonderful discussion about the brain, the aging brain, and we have a panel of experts here who are going to talk to you about normal brain function, a little bit about disease in the brain and dementia and Alzheimer's and then successful aging. Then at the end we're going to actually spend some time with Q&A, and we'll have a couple people with microphones, so all you have to do is raise your hand, and they will come to you, and you'll be able to ask your questions of the audience also. So to get us started, I'm going to have each of our panelists just take a moment to introduce themselves and tell you a little bit about what they do to sort of set

the tone. Dr. Podgorski?

CP:           Okay, hi. I'm Carol Podgorski. It's a pleasure to be here this morning. It's a beautiful facility, and it's a nice opportunity for me to get to have this discussion with friends and colleagues, so it's a nice way to spend a Saturday. So I'm an Associate Professor in Psychiatry at the University of Rochester Medical Center, and my doctoral degree is in sociology where I studied the sociology of medicine, and then my interest turned to geriatrics and gerontology, and mid career I decided that I wanted to understand more about family relationships, so I got a degree in family therapy, so I spend most of my time doing family therapy in the University of Rochester Memory Care Program, and my particular scholarly interest is in the relationship between older adults and their adult children. And one of the other things I've done along the way is Dr. Hall and I directed the Center for Lifetime Wellness at Monroe Community Hospital, so when we were asked to do this, and we saw the part on successful aging, it gives us a nice opportunity to work together again.

WA:           Dr. Hall.

WH:           Good morning. My name is Bill Hall. I'm a

geriatrician, a physician geriatrician, and I'm a member of the faculty at the U or R, Professor of Medicine and Gerontology, and I guess my main qualification for being able to come and talk to you is that I've had a Medicare card for more years than I (Laughter) necessarily want to share with you. So I'm living this. I'm living, as you are, the whole issue of aging and coping at some times and also looking at what are some of the opportunities that we have as we get older. My professional interest in geriatrics, in addition to my clinical work and teaching of young physicians, has been to try and understand really what is normal aging, and what can we do to even improve on normal aging. So as Carol mentioned, we've been very active in the community in a variety of ways trying to promote various activities, and we'll talk about some of those as we go along. But also just trying to really understand for individuals how we can continue to reach our potential as we get older, and I'm very excited about that topic, so I'm very happy to be here, and I want to thank Laura Reynolds and the Dana Foundation for making this tremendous event possible.

WA:           And I just want to add in one more thing about Dr. Hall. He just recently went off as a member of AARP's

National Board of Directors, so I feel that we're very lucky to have not only a physician of his stature but upstate representation on the voice of AARP and his guidance in these directions, so again, thank you to Dr. Hall. And last but not least, Dr. Boyle.

LB: Hi, my name is Lisa Boyle, and I'm a geriatrics psychiatrist, and I trained in geriatrics here at the University of Rochester. I'm currently an Assistant Professor of Psychiatry, and I'm very happy to be here today. Most of my time is spent taking care of patients with Alzheimer's disease and other types of dementias either through my work at Strong Memorial Hospital as well as through the Memory Care program, and my interest is in looking at how we can improve how we deliver care to individuals who have memory disorders and also how we collaborate among other disciplines in the healthcare system. I also do a lot of teaching of trainees, so residents as well as I'm the Director of the Geriatrics Psychiatry Fellowship program, and thank you all for coming today. This is a really important topic, and I'm glad to see so many people here.

WA: I think as we get started, I think we want to go and start with basics. We want to really start talking about basic

brain function before we get into the advances in successful aging and disease states. So Dr. Hall, can you kick us off and just sort of go and give us a Brain 101? (Laughter)

WH:           A Brain 101. Okay, let's see. So I'm an educator, and I always think it's useful to understand where my audience is coming from. So would you mind if I give you all a quiz? (Laughter) And you're going to answer this quiz by raising your hand. So let's start out easy. How many of you have never forgotten anything? (Laughter) Good. You'd be surprised how there's always a few people that raise their hands. (Laughter) So I want to know how many liars there are in the crowd. (Laughter) How many of you have ever had trouble remembering the name of somebody, a classmate, somebody you hadn't seen in a period? You meet them at Wegman's(?) or you meet them at a social event? (Laughter) We got troubles here. (Laughter) All right, how many of you have ever misplaced your keys, house keys, car keys? My goodness. Okay, how many have ever put your car keys in the freezer? (Laughter) So a couple of you have done that, why don't you see me afterwards?

So the whole point is that when we say

memory, it's one of the things that I think is foremost in our minds. I used to think it was physical activity and the ability to do one thing or another, but really I think fundamentally, as we get older, most of us worry about losing our brains and losing our mental function, and it's harder to talk about that than it is to talk about, you know, I'm having trouble running a marathon. I can't do that anymore. People are quite willing to admit that, but the whole idea is that, you know, sometimes I meet people, and I don't necessarily remember their names, and am I developing Alzheimer's disease? So this is the modern plague, so we all worry about these things.

So why don't we then start with this organ that we call the brain which is, in case you forgot your anatomy, is up here somewhere. It's three pounds of what's largely fat, and because in a very literal way, it creates all that we are, all we are as people and all we are as personalities. It's encased in a skull. While it's well-protected as we'll talk about today, it isn't completely protected either from the outside world or the inside world.

It weighs about three pounds. It's not much of a structure, and so when people used to ... in our generation you'd call somebody a fathead which wasn't a particularly nice thing to

say, but in point of fact it's quite a compliment now that we know more about the brain. (Laughter) So it makes me feel better about all the people that called me a fathead. But what I'd like, though, to leave you with is the concept that this brain is not just this mass of fat tissue, but it's actually a factory that is constantly renewing itself.

It's one of the most amazing biological structures that's there, and all the way up through the whole different species of life, we as humans, one of the things that differentiates us the most from every other creature around is how sophisticated our brains are. You probably hear that, when they talk about genetics, that we're only a couple little molecules different than we are from apes and from ants and all the rest, and while that's true, those few molecules have made a huge difference in our development and allows us to write enormous operas, to build large buildings, to be responsible parents and all the rest.

So the way to think about modern-day thinking about the brain is that it's this enormous factory. It's made up of very specialized cells in the body, cells that are very different



than any other cell, because once you're endowed with these cells, by and large you're going to keep them the rest of your life, and these cells are special in that it's more like if you go down to your basement and dig around for an extension cord. I'm sure some of you have done that, and you finally find the box where you put the extension cords, and all you see is this mass of wires all tangled together.

That's what the brain really looks like, because it's these extensions of the brain, little wires if you will, that are constantly talking to other little wires and then creating electrical impulses which, in turn, end up being wonderful thoughts. In some cases depending on where it is in the brain, it makes you feel love for another human being. Other places it makes you excited about learning new things, et cetera.

And when I was in medical school, I was taught that you have all the brain cells you're ever going to have when you're born, and it's all down hill from that point on.

(Laughter) I used to take great comfort in that in medical school when I had to memorize anatomy or something, that you should have gotten me when I was two years old. I could have really done

this a lot better. (Laughter) But now we recognize that that isn't really true. While there's much more, if you will, new brain activity when we're younger, it persists at all points throughout our lives. So right now, the fact that you're here and that you're actively trying to learn, you're actually promoting real brain cells, and if there was some way we could actually measure that with some huge scanner here, we would see tremendous amounts of activities except in a few people where we wouldn't see very much at all, but that's okay.

So the whole idea here is that the brain is an organ that is constantly changing. It has the potential for change. Unfortunately, that potential can go down, or it can go up, and one of the major messages we're going to leave you with is it's how you take care of that brain that makes the whole difference in how you age. So there are a couple of terms that we'll probably be using that I think are important for you to keep in mind. We talk about memory, and we all kind of know about what memory is. You meet somebody. You get their name, and you'd like to be able to store that, but there are many memories that you don't really want to keep around very long.

Maybe you had trouble getting here this morning because you've never been out here in this part of Chili, and so you might have memorized a map, and you don't necessarily have to keep that in your memory five years from now. It's not really important. I've had people come up to me after talks and say, "Well, you know, this is all fine that I should learn and expand my brain and all, but you know, doesn't it get kind of filled up?" (Laughter) "I mean, what do you do with all that?" Well, the brain takes care of that in that, because it's a very, if you will, dynamic process, there are these little circuits that are actually our memory. They keep changing, and so they can go away. They can be recalled, so you don't have to worry about that. You can never learn too much is the point that I want to make with you.

But that's not all about the brain that I think is important. There's a word we use about cognition, and cognition is all the mental skills that we have. The best way I can describe this to you is just think of all you had to do to get here this morning. First of all, you had to be motivated to actually come here. As I understand, a lot of you had to control your emotions when you found out that the paper said we actually started at nine, instead it

was ten. (Laughter) So you didn't go off in a rage somewhere, and you actually ... we thank you for waiting. You had to make a lot of decisions. You had the wherewithal to get out of bed, to the toilet, to dress yourselves, perhaps eat if that's what you wanted to do, and then you sort of set goals for yourself. I'm going to get in the car. I'm going to get here at a certain hour. You know, this type of human activity is really absolutely remarkable. I mean, it's phenomenal and, in a sense, you didn't even have to "think about it" because the brain had processed this and its own kind of computer software was allowing you to do all these things.

And when we talk about brain disease, to be sure we're going to talk about memory, but we're also going to talk about the unfortunate loss of some of these other functions including the one that I think is the most important and that is the personality, who I am, and one of the things we all worry about is losing that sense of person, who we are, and again, we have some very good news for you in that respect. So Bill, I think that probably covers the 101 part of this.

WA: All right. Now I have a question. This is an ongoing thing with my wife and I. I will go up, and she'll be talking

to someone, and I'll say, "Who's that person?" and she goes, "Well, they only coached your kid for three years." I have a terrible time with names. Can someone help me? Dr. Podgorski, can you help me? Is there a different between men and women and aging brains ,or ... ?

CP:           Okay, there probably are ways to help you learn (Laughs) how to associate somebody's memory. It has to do with paying attention to them and associating them (Laughter) with something else. So you might take the first letter of their name and associate with Alice was eating an apple or whatever it is, but anyway, there are skills and books to help you with that, but now, to go back to your other question.

                  There's some information about the difference between how the brain ages between men and women, but my colleagues remember it wasn't very long ago that only men were studied in medical science. Right? (Laugh) Because they thought that because (Laughter) women had estrogen and menopause and all that other stuff, it was too messy, so women weren't studied for a very long time, so it wasn't until the last probably 20 years that the National Institutes of Aging said, "You

have to study people other than white men," so we're just catching up on that.

But anyway, I think that what Dr. Hall said is really important. We think about the brain, but we have to think about the brain as being kind of like tofu. I don't know if you know about tofu, but it absorbs all the flavors in everything, of things that are around it, so the brain is like that, too. So it absorbs all of our family experiences, all of our knowledge and our education, all of our habits and all of those kinds of things, so a lot of the differences in the aging brain are because of those kinds of things. So how the brain ages is determined by what kind of education we have, what kind of medical care we have. We know there's a big difference between men and women and getting medical care which sometimes influences their health outcomes later in life. Women are much more likely to go to the doctor, for example. We know there are differences in who participates in physical activity. All of that contributes to how the brain ages.

WA:           So if we took aging now, and we're starting to talk about memory and learning. Dr. Boyle, can you sort of take us, you know, talk to us a little bit about memory and learning?

LB: Yeah, so one of the things I think, Dr. Hall, you had mentioned is that there's different kinds of memories, and that some things in terms of learning, you just want to hold onto for a short period of time, and then other things you really want to build into your repertoire and know it a lot more better. When I explain memory function to a lot of my patients and colleagues, it's really, if you think about it, you have to be able to attend to what you want to learn.

So basically, for instance, if I'm running around and I'm late one morning, and I'm not really focused on what's going on in front of me, I'm probably not going to hold onto that information as well as is I'm really trying to focus and really attending to this stimuli or the information that's coming in. So I always think about it as first of all you need to have to a focused attention on what you're trying to remember. Then your brain will then be able to try to store that information, and that's kind of the process of learning, so you basically hold on to that information. The brain holds onto it so that later when you need it, you can pull it back out again.

And so one of the things that when we look at

different types of memory functioning, we want to kind of get a sense of, of those three processes, that paying attention part, the actual being able to store or encode the memory by the brain or being able to pull it out later again, where is it going wrong? And so I think we'll talk a little bit more about that when we go into a little bit about some types of brain diseases like Alzheimer's disease, but basically when you're trying to learn something, it's really important to have the attention and then to be able to kind of have an idea of how you want to use it, and context is really important, too.

In terms of other types of issues, I think that the other thing I really wanted to emphasize, and I think that you guys had already mentioned that, was that we're learning all through life. So one of the big myths that we often run into as clinicians, we get asked, "Well, is it even worth doing something new, learning something new? Because do we learn as we get older?" and of course we do. So the important thing is that we're always learning. We're always taking in, even if you're not trying, but in terms of how much you're going to be able to hold onto that information, it really does depend on the circumstances and what



you're focusing on.

WA:           And that brings me to the next piece on this. I've heard that my brain is a box of extension cords. I'm marinating it in tofu. (Laughter) And now I hear there's really great news, because my brain is plastic. Could one of you explain why my memory is plastic, and why this is good news?

WH:           Well, George ... oh, no, that's not your first name, is it? (Laughter) So scientific terms get thrown in, and we sometimes confuse people and confuse ourselves, so let's talk about plastic. You ordinarily think of plastic as something that maybe has water in it like this bottle or something, but the way plasticity is being used is it means that it's changeable, that it's moldable. Plastics, that's really, if you go back to the derivation, something that you can mold, and so the brain is plastic in the sense that it's ... Al Gore used the term when he was running for President, that we're going to put Social Security in a lockbox. Remember? (Laughter) Memory is not a lockbox, but it's a function of the brain and, to a certain extent, it tends to be localized, one part of the brain or another, but if you happen to have something wrong with that part of the brain, other parts of the

brain can actually take over those functions. So it's a tremendously adaptive organ.

So maybe just a few other things about that which I think are important that come up with terms. One that's used a lot is called neurogenesis, and all this means is birth of neurons, neurons being the name for the basic cell that's in the brain. As I mentioned, the great bulk of these neurons are present when we're born, and then there's another surge of growth when we're adolescents, probably mostly related to hormones I would guess, and then beyond that it used to be said there was no more growth or no more new development or neurogenesis, and that's really not true. It's very well studied now, not only in humans but in other experimental animals.

So basically you can't blame nature on the fact that if you find that there are what we call normative changes of aging, that it's all just related to age. It might be related to what you're doing to yourself or, more importantly, what you're not doing to yourself as we grow older. So we're going to be able to explain to you and persuade you that a lot of the skills that you would like to learn, a lot of the dreams, whatever happens to be in your

bucket list, a common phrase that's used, you can actually reach many of those goals, and you can't use biology as an excuse for not doing it. It's a conscious decision. It's a mental choice.

WA: Dr. Podgorski, did you have something to add? I think I cut you off a moment ago.

CP: Oh, it's okay. I think it can fit right into the next session, so we're good.

WA: So I start out. I'm young. I get a surge of memory. I'm not forgetting my kid's coaches. What's normal with memory and aging? What can I expect, and then I think that will lead us really into the next part. At what point should I start to look at seeking some questions or some help of things like that? So, Dr. Boyle, can you tell us a little bit about that?

LB: Yeah, so in order to answer this question, people have looked at groups of people as they get older. So there's two different ways that you can assess what happens to our memory when we get older, just as part of normal aging process. So one way of doing that is to take a group of people in different age groups and do a bunch of memory testing and see, how does a 20-year-old compare with someone who's in their 80s or 90s?

Another way of doing that is to actually go through and follow people over the long term as they get older, so following one group of people over the course of several decades. That last part of it is much more challenging to do, but we actually do have studies that have looked at both longitudinal performance memory tests, as people get older, as well as the cross-sectional where you take a section of a population based on age. And I think the good news is that there are some benign, very mild changes that happen to our cognition as we get older, but it's not all dire, you know, gloom and doom.

So basically what we know is that as people get older, there can be some very mild, very benign symptoms. So as Dr. Hall started the session, you know, all of us have had memory slips here and there. That's something that people can have more frequently as they get older. There can be also certain things that you just have to be aware of when we're thinking about going about our day to day.

So we know that as we get older, it can take longer to process information. So one of the things I really advise a lot of people is, you know, don't try to rush. Don't try to pack

everything in in a short period of time. Really be able to allow yourself to take time, to process what you need to do and to not rush yourself, because your memory and your brain function is going to perform better. I think the other thing is that memory cues are really important.

So as we get older, a lot of us rely more on writing things down, and those kind of memory prompts are really important, because a lot of times it's just what happens is that, you know, when I talked about the attending and then the storing of the information and being able to pull it out later, sometimes we just need a little bit more help on pulling it out later, and writing cues to yourself, notes to yourself, keeping a calendar. Those things can be really helpful.

I think there are also other things that can happen as we get older that can affect memory, so thinking about stress and thinking about tension and other kinds of things that can kind of compete with your ability to concentrate and think. So really stress is really important to kind of be aware of. So if you're feeling really high stress, most of us are not going to be able to necessarily focus and attend quite as well as if you are feeling

really relaxed and comfortable.

I think that also one of the other things is I usually tell a lot of my patients that I see that it's really okay not to multitask. So as we get older, it's often more challenging to be able to juggle 10 things at once. So again, it goes to that tenet that, you know, information processing slows a little bit as we get older, so take things slower, try not to do a lot of multitasking. Really one step at a time is really important, and I think those are some really helpful tips.

CP: I'd like to add something. The sociologist in me is always about the environment and the social context, and when I was listening to Lisa talking, I was thinking about, do you remember years ago when you could watch a TV show, and you could focus on one thing on the screen? What does CNN's screen look like now? Right? (Laughter) There's somebody talking. There's something scrolling down the bottom. There's something scrolling down the side. Is it a wonder that we say, "I don't really know what I was listening to or what I heard, or what I walked away with"? I think sometimes we're so aware of what we don't remember, because the amount of information that we have to filter

in our society is so great. So I think that increases the amount of concern that we all have because we forget so many more things, because there's so many more things to process. So I think Lisa's right. We hear a lot about mindfulness and paying attention to things and not multitasking, but it's a harder job to do, because so much stimulation is thrown at us all the time.

Last week, I was on vacation with my husband, and we were on our way to this concert, and he says, "Oh, we have to hurry up and print out our boarding passes," and so I was under stress, and I was at a computer in a business center. I could not remember my password. (Laughter) It was a password I use 100 times a day, and here I was under these conditions of a different situation and stress, and it was terrible. Then I tried so many times it locked me out, and then I was just frustrated. (Laughs)

WH: You know, I recently was at a conference where one of the speakers talked about the thinking processes of what they call the millennial generation. These are people born from about 1980 on, so these are young people who their entire life have lived in a world of Internet and computers, and what some

people are actually worried about is that their brain development and this neuroplasticity is actually very, very different than previous generations, and one of the manifestations of this is that they're very good at multiprocessing little bits of information, but they're very poor at what we would call narrative, to be able to actually tell a story, a cogent story of something.

Rather than watch an episode of a TV show every week, they'll just wait until it comes all together, and they'll watch it all in one night, and so the notion of time falls out. I've noticed this, in fact, with some medical students recently who are just sort of the upper edge of that generation. But a couple of sort of common little hints that I think are very useful. One is that if it's important for you to remember something more than just for the moment, remind yourself that it's important. For example, if you meet somebody and this is a name I want to remember. Remind yourself that you want to remember.

The other thing is that if you misplace things periodically, most of us do in a pattern fashion. So when I'm hurrying around ... in fact, that happened this morning, and I couldn't find my keys. I knew they were in the house somewhere,



and so as usual I asked my wife. I said, "Where the hell did I leave my keys?" (Laughter) She doesn't get upset at me at all. She didn't even look at me. She just said, "Look high," because she knows that I leave things high, so sure enough, on top of the refrigerator, (Laughter) right by the door were my keys ready to roll. So that's been very helpful for me.

And also we've each mentioned this in a different way, and we'll come back to this some more. Get into the pattern of visualizing. Visual cues on memory are just extremely, extremely useful, and when we get into the successful aging part of this, I'll have a little more to say about the people who have won what's called the memory championships. Every year there's a contest on this, and if I forget that, Peter, or whatever your name is, (Laughter) would you please remind me, and we'll come back to that.

WA:           So yeah, I know I was so excited when I got my car a couple years ago. It came with the little lock thing, but when you lock it, it beeps. So my wife's like, "Do you know where the car is?" I said, "I don't need to know where the car is. I just have to follow the horn, and it'll eventually lead me there."

(Laughter) So I think there is times where you're like, "Oh, wow, one less thing I do have to remember," and if you saw my keys today, they're on a three-foot lanyard. (Laughter) So I do have that visual back, but we're talking about memory. We're talking about tips. I do want to get a little bit more serious here now and start to really alleviate some of the things on people's mind. What is or when should we be concerned? What do we need to know, Alzheimer's, memory, dementia? What are the differences?

I had the great privilege last week to meet a woman named Sylvia Mackey. Her husband was an NFL Hall of Fame football player who recently passed away from frontal lobe dementia and got to go through her whole story, and I think at the beginning of this, she was the one who lived with her husband and noticed the differences and saying, "I don't think this is normal," and he was going into the doctors, and the doctors treating her like she's crazy, and the doctor said, "He has no problems. I asked him what he had for breakfast this morning. He told me two eggs, toast, juice and coffee," and she said, "He didn't have breakfast this morning because we were coming for blood tests." So where and how? How do we have these conversations? If you can explain a

little bit to us, that would be great.

LB: Sure, so maybe to start with is defining what dementia is, because I think that that's a clinical term that you hear a lot about, especially more and more in the news and, in particular, a type of dementia called Alzheimer's disease. So dementia is defined by a clinical syndrome, so it means a set of symptoms or signs that people can measure that affects one's day-to-day functioning. So in particular in dementia, we're talking about changes in cognition, so the mental skills, and there can be a variety of different patterns to it. So most of the time we hear about memory, but there can be other types of disorders that affect other types of mental skills other than memory.

So for instance, when we talk about dementia, we're talking about changes in one's intellectual abilities, mental functioning such that it impairs one's ability to do the things that they normally did for themselves in the past. So it's a set of symptoms that affect cognition, memory, language, executive function which is a fancy term that describes the kind of memory that's necessary for planning and organization and executing a series of tasks and skills. But it also then affects that person's day-

to-day routines and their day-to-day life in terms of their social functioning, in terms of occupational functioning and also can affect physical functioning as well.

So it's a really generic term, so when people are worried about dementia, often times the next step is, do we have a dementia? Is this what this person is experiencing? Or is it something else where it could be, for instance, you know, some other type of process going on. So for instance, it could be related to a number of different things that can impact memory but not necessarily be a dementia. So some examples might be medication side effects, or it could be that someone is so sleep disturbed that they just haven't been able to get enough rest, and so they're actually showing changes in how their memory is functioning at the time.

I think that the issue is that dementia is more of an umbrella term, and really you want to delve in a little bit deeper to figure out what's causing it, because again, there can be a lot of different causes. The most common cause and the one I think all of us are most concerned about is Alzheimer's disease, and the reason that we're most concerned about it is that about

two thirds of all dementias are caused by Alzheimer's disease, and Alzheimer's disease is a condition that actually attacks the brain cells or the neurons that make up the brain, and they kill the neurons, and we're trying to understand more and more what the underlying mechanism is, and so some of the hypotheses are related to abnormal protein buildup in the brain, and more and more what's I think interesting is that people are looking this as a process of middle age as well as aging, so that some of these changes in the brain are occurring much earlier than we ever thought in the past. So some of the things that we're hearing about is that actually people are trying to determine how early does it start, and it seems like it's actually a process that can start much earlier, so in your 30s, 40s, 50s but doesn't really manifest as a problem until usually past your 60s, 70s and 80s.

The other thing about Alzheimer's disease is that it's something that really you can only diagnose 100 percent by looking at the brain in autopsy. So it's a clinical diagnosis, so typically someone who comes in for an evaluation is going to ask, the doctor is going to ask them a bunch of questions to kind of get a sense of the level of their symptoms and their level of their

functioning, but then they're also going to do a very thorough physical exam, because they're looking for potentially other causes that could mimic Alzheimer's disease. So they're trying to rule out and exclude other types of medical or neurological conditions that can look like Alzheimer's disease.

The other thing is that often times people will be asked to do blood work or do other types of things such as taking a picture of the brain just to complete the workup, because it really is something that you're trying to exclude other potential causes for the memory changes. So the classical symptoms of Alzheimer's disease is really memory loss, and it's not benign memory loss. It's more along the lines of memory loss such as pretty profound forgetting.

So having a conversation with someone and maybe 10 minutes later, 30 minutes later, having no recollection of that event. So having problems often times with repeating oneself repeatedly and other people start noticing. Having problems with not remembering where you are, who people are, things like that. There can be also other types of difficulties in terms of remembering how to do things that before used to come very

easily to you. So for instance, someone who's always been an accountant now not being able to understand how to use a checkbook and what checks are and how to kind of keep track of their bills and stuff like that.

So really it's a much more severe type of memory loss. In addition, besides memory, it can affect other types of mental functioning, so language often can be affected as well. So people sometimes will forget how to use words or how to express themselves in the way that they used to be able to do. Sometimes it also then can affect other types of mental functioning, so people might not remember, as the disease progresses, how to do simple things such as putting on their clothes for the morning, how to do buttons, how to do zippers. So those kinds of things that normally we wouldn't really have to think about, those become much more challenging. People often times will notice a change in personality and change in judgment.

So for instance, sometimes people will become much more withdrawn, whereas before they could have been very extroverted, very outgoing and now, because of this disease, they're much quieter, or the opposite can happen. So

there's a lot of different changes in multiple aspects of cognition that are affected by Alzheimer's disease, and there can be other types of changes as the disease progresses that affect physical health as well in terms of someone's balance and walking and coordination as well as mental health. So one of the things with this condition is that it can really affect people's mood and emotions and change that.

CP: Lisa, I have a question. I have a couple points, but I have a question for Lisa first of all. We know that dementia isn't reversible, but we know that memory loss sometimes is reversible, so sometimes people might have an onset of memory loss, and you might wonder what's going on, and we hear sometimes that it isn't Alzheimer's. What other kinds of things could it be?

LB: Yeah, so I think that's a good question. So Alzheimer's disease is a chronic and persistent illness. It's going to continue to progress, and it isn't reversible. We sometimes use the term reversible dementia, and basically there are certain things that potentially can improve if you identify what the cause is. So for instance, depression. With severe depression, people can have



significant changes in their memory functioning as well as cognitive functioning, and when you treat the depression in a lot of the cases, those cognitive changes, those memory symptoms improve as well with the underlying treatment. So that's an example. There's also examples, again, of other types of conditions, sometimes medical conditions. So Dr. Hall, I think you could probably speak to this as well, so like things like having a low thyroid level, so people have imbalance in some of their hormones sometimes you'll notice improvement if you treat the underlying metabolic or medical condition that's causing your brain to not function well. So I think those are some of the things, and then other things can impact memory and not necessarily get to the point of dementia, so medications. We know that there's a lot of medications that can have cognitive memory side effects, and when you stop those medications, people can experience improvement in their functioning.

WH: Lisa, it's not exactly on our agenda here this morning, but I'm sure many people in the audience have had experiences with a loved one in the hospital for some problem, minor problem or maybe not so minor problem, and their loved one

becomes very confused in the hospital, and they hear this term "delirium". Is that the same thing as depression?

LB: It's not the same thing. So delirium is a condition that affects our ability to attend and have sustained concentration. It can affect people in a variety of ways, so people who have delirium can present with very severe confusion, all sorts of different types of psychiatric symptoms, so it could be apathy. It could be being really depressed, or it could be very hyperactive agitation. Sometimes people with delirium can hallucinate, meaning that they hear things that no one else can hear or they're seeing visions that no one else can appreciate.

So it can distort their perception of reality, but it's different from depression in that delirium is caused by underlying medical disturbance. So often times like coming into the hospital when people are very ill, or they've just had surgery, or they're given some new medicines, it can disrupt the way that our brain processes those signals and cause a condition called delirium which is usually a sudden change. It doesn't always have to be quite so sudden, but it usually is represented by fluctuating symptoms over the course of the delirium. And the basic bottom

line for delirium is that we really have to treat the underlying offenders or the underlying condition in order to get that person to improve.

CP:           So part of my question about the reversible thing was somewhat loaded, because I think sometimes when we notice changes in a loved one's memory, whether it's from depression or a urinary tract infection or whatever it might be, we get really scared, and I wanted to just talk a little bit about there was a piece in "The New York Times" a few years ago saying that Alzheimer's disease was the number one dread fear among older adults, and that one third of well-educated people in the United States live with a very, very strong fear, and I wanted to mention that, because not all memory loss, or as we've all been saying today, some of the things about forgetfulness or memory don't necessarily mean that there's something terrible or that there's an underlying disease.

                  But I think it's important to remember that over 60, about 10 percent of people have dementia. It does increase with age, but over 60 one in ten people have dementia, but the fear is disproportionate, and some people live as though

their chance of getting Alzheimer's was closer to 90 percent, and what happens is that sometimes living with fear really interrupts people's chances for successful aging or enjoyment later on, because sometimes people save for retirement, and then when they live with this fear, they say, "I'm not going to spend money going on a trip, because what if I need to go into a nursing home because I'm going to get Alzheimer's disease." Or they start thinking that if they start forgetting things, that it means something greater, so they start to isolate themselves.

So this fear of Alzheimer's disease is really very powerful. So I asked Lisa about that question about reversible memory loss or reversible dementia because I think it's important not to live with this fear because there are things you can do to improve your memory. Chances are there are a lot of medical conditions that can cause those symptoms, but we live in such a fear of it that we don't want to bring it to our doctor's attention. I think it's really important to do that.

Lisa did a great job explaining what some of the warning signs are, but I also wanted to say if you didn't get a chance to capture them, that the Alzheimer's Association has 10

warning signs on the website, and they have a great deal of information. I know they have a table here today. So if people feel that fear or they know somebody who lives in that fear, please encourage them to look further and not make decisions about how they want to spend their retirement years and put that fear in its place.

WH: I'd like to add also another kind of local flavor to all this. I'm involved in a research study that's been going on for about five years at the U of R at Monroe Community Hospital where we're following a group of Rochesterians living in the community over age 75 for changes in mental function. It's called the Rochester study. Any participants here today? Yeah, we have a few. Right, of course, yeah. So we're into the fifth year of this study, and the idea was to initially collect some blood on all these people and process in a way that once we understand the progression of changes in cognition, we can then ask our basic scientists to say, is there anything about the structure of cells and particularly of the DNA that might predict who's going to get disease and who isn't? And we haven't reached the point now of doing all of the biochemical studies, but the clinical studies have

been done, and one of the most remarkable factors about that ... it's a group of people about the size of this group, about 500 people or so. It's been remarkable how very few people have actually progressed into what we would call even the early stages of dementia. So Carol's quite right about the one out of every ten, but when you select out a population of people, people like yourselves who on a Saturday morning can get up and come to a conference like this, in all probability you're in a much lower risk group than what might be called the overall population of people with a number of underlying disease entities.

WA:            Now, we can text. We can do everything. Can I get a shot or a pill for this? Where are we? Can't I just go get a ... I went by Walgreen's, shingles shot, flu shot, pneumonia shot, (Laughter) and I didn't see an Alzheimer's shot. (Laughter) Where are we on that?

LB:            I mean, I think a lot of people, a lot of really smart people are working on trying to find a cure or a prevention. You know, better yet prevention if you could stop this process altogether. There are FDA-approved treatments to try to target some of the symptoms of Alzheimer's disease, and unfortunately

the treatments don't necessarily stop the progression or the underlying pathophysiology of what happens, but I think the bottom line is that it's really important if you do have Alzheimer's disease that you are connected with treatment, because there are a lot of things in addition to medicines that can make a difference in terms of your quality of life and the quality of life for your family, and so really thinking about linking yourself with supports in a community, and Dr. Podgorski had mentioned the Alzheimer's Association is really an important resource support for not only the person who's living with the memory loss but also the people surrounding that person who care about them. So that's really, really essential.

There's other things that you're going to want to do when you have the disease in terms of really close follow-up with your medical providers, because there can be other medical problems that can come up that can actually accelerate the symptoms of the disease that could be preventable, so really taking good care of your physical health as well as your emotional health is really essential in terms of living with this condition, and then supports and staying active is really important as well. So we really would advocate that you really embrace the resources that

this community has for people living with Alzheimer's disease and other types of dementias.

WA: So when we talk about other types of dementia, I've heard that there could be dementia associated with having a stroke. Can you tell us a little bit about that?

WH: So stroke is one of those old medical terms. It's 100 years old, probably 200 years old. It's in the same class of things like dropsy which used to be a term used for fluid accumulation in the body.

CP: Hardening of the arteries.

WH: Hardening of the arteries, yeah, a lot of old terms, but some of these terms are very important, because they really do describe the disease. So stroke, you all know what a stroke is. It's something that comes out of the blue and hits you, sometimes for the better and sometimes for the worse, but the whole idea of stroke is a sudden unexpected global change in how your brain functions. So stroke is a really good word, but cerebral vascular accident is another, cerebral emboli. A lot of different terms are used, but I think stroke is the term that really describes, I think, in terms that most of us can understand. So what a stroke



is, it's a vascular disease where out of the blue suddenly a portion of the brain, sometimes only a small portion or tiny portions of the brain or maybe a major portion of the brain is suddenly deprived of blood supply, and when that happens, of course, the brain cells, which are the most avid users of oxygen of all the cells in the body, can become damaged very, very quickly.

So first of all, in terms of what causes strokes, and we probably will come back to this periodically in the course of our conversation today, is kind of the classic serious chronic diseases that unfortunately are at least more common in people as they get older, so diabetes would be at the top of the list. High blood pressure that isn't under control, certain irregularities of heart rhythm but particularly the one that's called atrial fibrillation which is almost epidemic now among people over age 60. These are kind of the precursors, the diseases that can then lead to this horrible condition of stroke, where what happens is that either there's a sudden clot somewhere in the whole vascular system from the heart up to the brain, and that clot just sits there and deprives the brain of blood, or just small clots that break off in other parts of the system and throw themselves like sand into the eye

and cause a different kind but also the same serious kind of damage. Or sometimes it can be not even necessarily definable by a distinct anatomical area, but suddenly there's a drop in blood flow to a portion of the brain, so all of these put together is what we call stroke.

I think the important thing to keep in mind is that a lot of these conditions are preventable with good medical care. We know that among people over age 70, that only about half of us who have blood pressure are actually adequately controlled. People are still walking around with this arrhythmia, atrial fibrillation, and are not taking advantage of medical therapy that reduces the likelihood of clot forming in the heart that is beating in an irregular fashion. There's so much we know about preventing particularly so-called type II diabetes, the kind that develops in people as we get older. I mean, there's just such an abundant amount.

Lisa made the point that we think we're perhaps nearing a threshold of finding some effective drugs for Alzheimer's disease. We're by no means there, but the future probably is optimistic in that regard. We already have these

therapies to prevent what generally leads to stroke, so if you're not in a good relationship with a primary care doctor, for goodness sakes, if there's anything you take away from this morning's talk, is do that. It is so, so terribly important to prevent these things.

We're very blessed in this community among our three major health systems that we have some real experts in the treatment of stroke. In fact, most of our hospitals are what are called designated stroke centers which means there's an entire team so that when you or your loved one present to the hospital with symptoms that would suggest a stroke, this could be a sudden loss of movement in an extremity, inability to articulate, to come out with the right kinds of words, some change of consciousness, a team gets on that right away, and a variety of things can be done in terms of testing and then also actually even reducing the amount of clot in the blood system using these clot buster drugs that have come along.

So you don't have to go to the Mayo Clinic or to Cleveland or something to get this therapy. It's all right here in the community, but the most important thing is that all of these therapies only work in the very early stages of stroke. Two hours

out, and you're kind of out of luck. So don't ignore these symptoms. Don't apologize if you go to the emergency room, and they say, "Well, there's nothing wrong with you. You just must have fallen asleep in your arm." Don't apologize for having come to the emergency room about that, because you never know. It could be something else, and if you haven't gone over some of these preventive measures, for goodness sakes, do it, because it's really important.

Now, one of the long-term sequelae of having a stroke, in addition to inability to use parts of your body and, in many cases, difficulty thinking even to the point of dementia, is that many patients with stroke end up with fairly serious depression, and there's a very close relationship, and I think that's one of the things we're going to be talking about next.

WA: Which leads us right into the next discussion. You know, most people think they're at least 10 years younger than they are, you know, and I'm invincible until I'm told otherwise, and yet I'm still invincible until I'm told otherwise. I'm experienced some memory loss. I'm a little concerned or I've had a stroke. My gut reaction, me personally, is to close in and sort of isolate. I may

be a different person than I was before. What do you look for in terms of signs and symptoms in terms of depression? You know, how do we have that conversation? What are the resources? What do we do to treat the person and the mind, not just the anatomy of the brain?

CP: Lisa, do you want to take the signs and symptoms, and then I can talk about contextual things?

LB: Sure. So depression, I mean, when we talk about depression, we can all have those bad days. Right? Days that don't go very well. We might feel a little bit more down, but depression is actually a different level, a different threshold, so when we talk about clinical depression, we mean persistently that someone is feeling very low, depressed, sad, down, pretty much most of the day for nearly every day for at least a two-week period. That's the definition of what we consider major depression or clinical depression.

The other symptoms besides low mood or depressed mood is that people often with depression just don't have the same interests in doing the things that they normally enjoy and look forward to. When they do do things, they often will

describe that they just don't feel the same way about it. They aren't able to enjoy it the way that they normally did. A lot of times people will describe that they have to kind of just push themselves through the day, that everything's an effort.

Besides these types of symptoms, depression can be really extremely distressing to that person, because it can affect other aspects of their thinking. So a lot of times when people have a clinical depression, they'll know that their concentration is very poor, that they just seem very distractible. I can't really hold onto things. I can't remember things the way that I normally do. They'll often have these very distressing thoughts that they're really hard on themselves, so people will feel like a very bad person or feel very horrible about themselves. T

hey often times will describe feeling a sense of guilt or, in certain populations, feeling like a burden on their family, and it's really excessive. It's really not what kind of the typical person would describe. So for instance, a lot of times we'll hear from families or from the patient's themselves that, you know, they may have never gone through something like this before, or they've gone through it in the past, but it's a clear distinct change in

the way that they think about themselves as well as the world in a very pessimistic, very hopeless kind of way.

Other types of features of depression can affect day-to-day physical functioning as well. So in addition to affecting your cognition and the way that you perceive things, it can affect sleep. So a lot of times people will have a horrible time trying to sleep, either trying to go to sleep or trying to stay asleep. Opposite sometimes people will have a different kind of depression where they actually sleep too much. Like they just have no energy. They just sleep several hours more than they normally would because they just can't get out of bed. It can affect appetite, so a lot of times people will lose appetite or interest in food, and they may lose significant amounts of weight, or alternatively sometimes people cope with depression by over eating and gaining weight. It can also affect people in terms of thoughts about life not being worth living, so suicidal thoughts are really a serious symptom of depression where people start entertaining the thought that I'm better off dead, and then sometimes it goes beyond that to actually thinking about, I'm going to actually end my life, so that's how desperate and how painful depression can be.

CP:            So I just wanted to share that about 13 percent of adults over the age of 65 suffer from depression. That's a pretty high number, and we also know that depression affects a lot of other things. So depression is related to increased functional decline, your ability to carry on your normal activities of daily living. Depression's also been related to poorer outcomes in medical illness, and that includes poorer ... so people with diabetes who are depressed do worse than people who are not depressed. The same for people with cardiovascular disease, the same for people with lupus, the same for people with Alzheimer's disease.

                 Outcomes are much worse when you add that layer of depression onto them. In older adults, depression increases the likelihood of going into a nursing home. It also increases the likelihood of hospitalization. It increases service utilization costs, because it complicates disease so much more, and it also contributes to mortality. So being depressed will increase your likelihood of death, and it also increases the likelihood of suicide.

                 I share that because it's really .. we're socialized to think it's just a bad day or, you know, pull yourself up



by your boot straps. It's a serious medical illness. I also wanted to say that it's also under diagnosed, and it's under treated, and a lot of times older adults won't go in saying to their doctor's office saying, "I'm depressed," but they might go in, as Lisa said, saying, "I'm having trouble sleeping. I'm having a back ache. I'm having a headache." Those are the kinds of things that usually should trigger a question about the signs and symptoms of depression, but it doesn't always, so I think it's important if you're experiencing that or someone you know and love is experiencing that, to delve further into whether or not it could be depression.

LB:           And I think I want to just add, I mean, the bottom line is that depression is never a normal part of getting older, so when we're talking about depression, it's an illness, and it is something that has really effective treatments for ...

CP:           And that's an interest- ....

LB:           ... and so people shouldn't have to suffer or say, "This is what I should expect because I'm getting older."

CP:           I wanted to ask Lisa about something, because the medication treatments are quite effective in depression most of the time, but a lot of people say, "I don't want to

take medication," but I wanted to ask Lisa to explain some of the work that she's doing with Elder Source, because there's a program where it's an alternative to medication where though improving behavioral activation or problem solving, so there are other treatments other than medication. I wonder, Lisa, if you could say a little about that.

LB:            Yeah, so I'm a part of a collaborative team through Elder Source, and we're called the Pearls Team, and it's a program to encourage active and rewarding lives for seniors. So we know that people can be at increased for depression as they get older because of a number of different things such as life stressors, certain losses, bereavement, you know, problems with one's physical health that affect day-to-day functioning, and so what this program offers is an approach, teaching seniors an approach to managing problems that can contribute to depression but also can be caused by depression, and the standardized approach is a treatment called problem solving therapy.

So it's really a systematic approach, and it's a skills building approach that seniors learn how to go about systemically thinking about problems that cause stress in their life

that cause them to feel more down and a systematic way of addressing those problems. So instead of everything seeming catastrophic and too big to tackle, the Pearls coaches teach their clients how to break down the problems to manageable pieces so that you gradually build and build and become much more confident in one's ability to tackle these problems on one's own. And the other aspect of the treatment is, besides learning problem solving therapy, is what we call behavioral activation. So behavioral ... can you guys still hear me? I think the mic went out.

(Background Conversation)

LB: So behavioral activation, so teaching people that it's really important to have routine frequent activities that involve pleasurable activities on a regular basis, physical activities, socially engaging activities, because we know that the more that people engage in those kinds of activities, the better you feel, the better your spirits can be, and we've actually had really, really good success with people responding, really liking the therapy and finding that it helps.

CP: We think that this is a great idea, because a lot of older adults aren't likely to go to psychotherapy or to go to

clinics for that, so this is kind of more of a home-based or a skills-based treatment, so instead of the idea of lying on the couch and all of that kind of psycho babble stuff, it's actually concrete skills, and we think that it'll be more palatable to older adults and, in particular, to older men.

WH: I might just say a word ... you talk about older men. (Laughter) In defense of older men, you know, many of us come from a generation where a mental illness was taboo to talk about, and we still remember that institutions were called insane asylums, that if you had an uncle who was a little bit odd, nobody would ever want to talk about Uncle Al, and maybe you'd bring him out at Christmas or something, and particularly among men this is a problem, and you know, growing old is not for sissies. We all know that. There are a lot of stressors as we get older, a lot of factors that could potentially lead to depression, but to deny that you might be depressed because it's not macho is really a huge mistake, because as it's already been mentioned, there are a number of pharmacologic and non pharmacologic treatments that can make just a world of difference, so don't sit on that. Get some help.

WA: We're going to move on as we continue on, and I've heard head injuries can impact our cognitive function, too, and we've been hearing a lot lately about football helmets with kids and the cheerleaders with the amount of falls, and I think this fall it was about girls' lacrosse. They've never had to wear helmets and things like that. Now, I can't envision 500 people wearing helmets here today, but what is it that we could do or can you tell us a little bit about head injuries and falls?

WH: Well, some of you remember that Lyndon Johnson used to say about Jerry Ford is that he played football at Michigan without a helmet. (Laughter) In those days, that was a joke. Now we recognize that it's not such a joke. We see a whole group of professional athletes, whether it's professional football or high school football or now, as you mentioned, cheerleaders.

CP: Boxing.

WH: Boxing is a good one, yeah, where head injury is a very serious precursor to very serious problems with mentation, a great association with depression but also, frankly, with dementia. So protect your head. It's the only one you've got. You know, usually you have double organs, but there are a couple

of exceptions to that, of course, but one of the important ones is the brain, and remember that as we get old, there is a propensity to have falls. I'll tell you. The only people over age 80 who deny they've ever had a fall, fall into that group of liars who people who have forgotten. (Laughter) It happens to all of us, and basically remember that this is a potential ... it's not just breaking the bone, but you could actually influence your brain function. Wear your seatbelts. That's still a very important aspect of this, and if you have a propensity to fall for lots of reasons, get some help, because not only may you break a hip, but you may end up being demented as well.

CP:           So I want to add also that Elder Source has a great service where they can do safety assessments, you know, check for things like the loose scatter rugs and other kinds of things, but I also think it's important in Rochester because we live in an icy, somewhat icy environment, to look at those aids that are available to put those things in the bottom of your boots to prevent yourselves from falling. There's a lot of resources we have here to help with safety.

WA:           Let me just add onto that. We've talked about

Elder Source several times. For those who aren't aware of what Elder Source is, Elder Source is your one-stop guide to anything in the realm of aging in this region. If you have a question about housing, about transportation, about sleep, about health care, about yourself, about care-giving, about whatever benefits, anything you can think of, there's a place in town called Elder Source, and they are the place that can tell you everything from not for profit free services to pay yourself programs as you go through, and it's really difficult, because we do talk about a long-term care system, but everybody in here is different, so your questions are different.

This is a one stop that could be a great information referral source for folks. It is in the phonebook. It's very accessible and the name is Elder Source. To continue on, I do want to talk about sleeping. I've noticed, you know, I no longer sleep like a baby. I was one of those people who could go, when I was a kid, and you'd see me sleeping behind a chair just because it was time for bed. What's normal with aging and sleep? What should I be aware of? What would be good for me, you know?

WH: Well, this is a really common question that

comes up, because everyone has some problems with sleep as we get older, and it opens up a whole can of worms, so to speak, in terms of what we might want to do about this, but let's put it in context. There are some important differences in how we sleep when we get older.

One is we tend not to ... some of us have a tendency to not fall asleep very quickly, so there's a longer period of time between putting your head on that pillow and falling asleep. That's number one. And then in the course of sleep itself, we tend not to go into the deeper phases of sleep which some people feel are the restful and restorative phases of sleep. It's called rapid eye movement or REM sleep, and so this is a problem that many of us have, and so we need to get different patterns of sleep to get around that.

Number one is, are you not sleeping because there's something that's really keeping you awake? Specifically, do you have a lot of pain that you notice much more at night when you don't have so much stimulus coming in, arthritic pain that's keeping you from sleeping? Is it possible that part of your problem with sleep is that you have a problem of what's called sleep



apnea? There are different forms of that. That's less common, but it's present. Or are you really disturbed, even depressed about something that's keeping you from sleeping? So don't ignore the fact that there could be a legitimate medical problem that needs to be solved in order for you to get to sleep.

But after that is the question of, well, I'm a person, I just don't need sleep, a lot of sleep. I'm sorry, that doesn't work. Over time, it just isn't true. We all still need about eight hours of sleep to function properly. It's the restorative part of sleep that in many ways, if you will, washes away some of the problems of the previous day. It allows us to awake much more alert and able to take on the problems of the day. So some people say, "Well, I only sleep about five hours a night." Then you say, "Well, do you take a nap?" "Yeah, I take a good nap in the afternoon." Well, five plus three equals eight.

You probably are getting eight hours of sleep, but I will tell you that that type of sleep pattern is not the most healthy that you have, because you are almost guaranteeing you're not going to have any of these deeper layers of sleep. So sometimes it's just a question of not taking that nap and forcing

yourself to stay up.

Now, there's been a lot of talk about what's called sleep hygiene which is a funny kind of name. You know, do you have to be clean about your sleep, but what does this really mean? (Laughter) But experts who have studied this from a behavioral standpoint have really pointed out ... and I think basically it's this. You know, don't make your bedroom your living room. Get the television set out of there. Don't even tempt yourself with ... particularly don't tempt yourself with a lot of gadgets. So if you have a Kindle, an iPad, and iPhone and iWhatever, get rid of it. Take it somewhere else, because you're going to be tempted, if you're not sleeping, to check your e-mail or to look something up that you think you desperately need to know about. I guarantee you will not remember anything about that the next morning. It's just a totally useless waste of your time.

So what people say is, look, identify your bed with sleeping. If you can't sleep, you're not falling asleep, get up and go somewhere else and do whatever it is that you're going to do. If you wake up at night and you know you're not going to go back to sleep, don't just lie there and think about it. Get up, and

sometimes people find that something that allows them to kind of relax and be more centered is useful.

This can be something as simple as having a glass of warm milk, but changing your environment when you do that or picking up something that means a lot to you in terms of reading, not a good time to read the newspaper actually, something else, some poetry, something that ... that old story that sometimes ... anything that relaxes you and gets you a little bit more centered, and be very careful about sleep aids.

I think this is really important, particularly the kind that you buy at the drugstore over-the-counter, and you can buy them associated with cold medicines, and generally these have some form of an antihistamine medicine in it, because one of the side effects of antihistamines, which were actually a drug designed to reduce inflammation due to allergies, one of the common side effects of antihistamines is that it interferes with your mental functioning. You get confused with these medications, and it may help you get to sleep, but I will tell you. You wake up, and you're not going to be rested. It just doesn't work that way, and these drugs last almost forever once you start taking them, so it's

best to concentrate more on the kind of sleep hygiene part of this, but pay attention. It's another one of the things that in a positive way you can do for yourself.

WA:           Okay, I want to shift now onto successful aging. How do we do that? I've seen that there's studies from all over the world looking at individuals from mid to old age, and they're coming up with four factors that predict maintenance of cognitive function. Increased mental activity, increased physical activity, increased levels of social engagement and control of vascular risk. So let's start out with mental activity. What kind, how much? Should we all be sitting here doing our Sudokus today or our crosswords? You know, let's talk a little bit about mental activity. Dr. Hall, you want to start us off?

WH:           Would you like me to do that? Well, this is the neat part of our morning, because now we're going to tell you a lot of good stuff that you can do for yourself. I mentioned at the beginning about the brain and the plastic part of the brain. The brain isn't going to continue to develop on its own. You might want to think of it as a muscle. If you don't exercise a muscle, it atrophies. It gets weak. It isn't the same thing. The brain is the

same way. If you aren't constantly stimulating your brain, making those neurons develop all these new connections that we talked about, you're going to have a problem in many aspects of life, and particularly with cognition.

So one can actually do this even in an animal model. Usually they use rats or something. What they find out is that putting rats ... and we'll get into this .. in a social environment, having more mental activity, making it enriched has enormous impact on memory, ability to keep things in memory, able to keep things prioritized in all aspects of cognition. So the real challenge is, how do you actually increase your mental activity? We'll talk about that.

LB:           And I like to tell people you use it or you lose it, so kind of like exercising the muscle. You're exercising your brain, and I think the other important point is, so when we talk about increasing mental activity, I don't think any of us are really talking about that you have to do crossword puzzles 10 hours a day every day and just keep at it. It's really looking at diverse activities, so really variety of things that cause you to think and stimulate your thinking and your mind. So taking these kinds of

classes or reading the paper, joining friends out to a lecture series or going to see something that you can talk about later and really process what happened. I think those are really important. Some people have like other types of hobbies that they really like, but I think that the important thing is trying for diversity so you're not doing exactly the same one mental activity all the time, and frequency so it becomes a part of your regular routine is really important.

CP:           There was a 10-year longitudinal study done in Sweden. I guess it was probably into the '90s, and they found that when people had multiple leisure activities as Lisa said, they had a 38 percent reduced risk of dementia, and for each additional activity that they added, the risk went down eight percent. So I think there's really something about that, and then I was thinking back when Dr. Hall and I were part of the Center for Lifetime Wellness. We were following Jack LaLanne and how awesome he was at the time, and he stayed awesome, right, until the time he died, but one of the things he said was one of the secrets to his success was changing up his routine every two weeks and doing something different, and he said even if it was driving to church a

different way or brushing your teeth with your left hand if you were right-handed, anything that mixed things up a little bit, he said was helpful, and I always thought that that was like the simplest but probably really pretty good advice.

LB: Because you're using different parts of your brain.

CP: Exactly, and we were also talking before about dancing, that dancing is a great activity because it stimulates every region of your brain, and if it's the kind of dance that you do with someone else, it also contributes to socialization, and you get the benefits of that.

WA: Which takes us further on use it or lose it. How important is exercise, physical activity, and do we have to be out there aerobic activity five days a week for five hours or ... ? Can we talk a little about that? Especially with reference to the Center for Lifetime Wellness and the work that's been done in this community.

WH: Well, just to summarize all of this. If we could put exercise in a bottle, Jim Croce's song, put exercise in a bottle and sell it like people sell snake oil or something, we'd be so

wealthy, we'd be in Hawaii in a condo somewhere. We wouldn't be here, because it is that good. If it were a pill, everybody would be taking it. One of the great advances in gerontology I think over the last 20 years has been to really focus on how important exercise is as we get old. And for the current generation of people in their 70s, that is a bit of a foreign concept. Any of you ladies in the crowd, if you ever played an athletic event in high school or basketball, does anybody remember the rules of basketball for women? What couldn't you do?

W: Cross the center line.

WH: You couldn't cross the center line. You can only dribble the ball three times. Right? Why were we telling you that? Something would fall out, or you would ... ? (Laughter) It was completely 100 percent wrong, but when you have been told that at the most impressionable stage of the development of your personality when you're about 15, 16 years old, you're not going to easily adapt to exercise when you get older, and that's one of the things we learned at our Wellness Center, but the impact of exercise not only on physical fitness but on mental function are just unbelievable. Most of us are very good at starting out exercise



programs, and we're not very good at continuing them. Now, Mark Twain used to say about stopping smoking, he said, "It's the easiest thing in the world. I've done it thousands of times," (Laughter) and that's the way it is with exercise,

One of the things that Carol and I found out was that men and women have different motivations for exercise, and for women I think Carol would agree that one of the major ones is that it was a form of social engagement, and so if we had just the woman who would come by herself and didn't start to engage and develop a buddy system, they wouldn't come back anymore. It was really important. What about men? Men love to compete. We never lose the urge to want to beat the guy next to us. So I learned this because working with Carol we used to, every summer, have a triathlon training program for older people, and it was an incredibly successful program thanks to AARP who sponsored this program for us, and I was a participant in each of the years, and one year we had a little written survey of our members, and it said, "What is your goal for being in the training for the triathlon?" Some people would say, "I want to get fit so I can travel somewhere," or "I want to be able to paint my house," or

something like that, and I remember one I was saying to Carol. It says, "I want to beat the hell out of Bill Hall." (Laughter) I took him out by three seconds. (Laughter)

WA:           So now going on beyond the physical activity, and I think you alluded to this, too, the social component of not only exercise but life. I mean, I probably think at least three or four people here may be retired, maybe five. You know, you're at work every day. I'm out. I'm connecting with people. You know, I go through life changes or I may now be a caregiver, or I may experience some physical changes. How important is social engagement?

CP:           The study of social connections has become one of the most important and trendy things in geriatric research these days. There are people who are studying the neural biological psychology of social connections and the body of evidence is really astounding, and I get to share some of that with you today. What we've learned is that social connections are a powerful determinant of emotional health, physical health had suicidal behavior.

For example, regarding emotional health, we

know that social connections are related to more social connections decreases depression, decreases a sense of hopelessness which is really important and a predictor of suicide. It increases your sense of your subjective wellbeing, how you feel about how you're doing. It increases your memory, the capacity of your memory to perform, and it decreases your risk of dementia. And I think that what we're learning is that how this is done, the mechanism, is stress buffering. And what does that mean? It means that we have life events. Everybody experiences life events, and there are some that we experience that we consider to be stressful. Right?

We don't all consider the same things to be stressful, but we all have life events that we consider to be stressful, and how we respond to that is based on whether or not we think we have what it takes to cope with that stressor. Sometimes we have really good coping mechanisms. Sometimes we need the help of other people to help us. Right? It could be professionals, friends, family members, and so it's the connection with other people that helps us to buffer that stress and maybe solve the problem. If you need help with housing, you can call

Elder Source. If you need help raking your leaves, you can call somebody else.

There are things you can do to mediate these things. Sometimes just talking to somebody helps you change how you think about your problem. That's called appraisal of stress. So that's one of the biggest benefits. You might not be able to change that you lost your job, but you might be able to change how you think about it which then helps you cope with it in a different way. So that's probably the biggest most powerful thing in terms of how social connections affect emotional health, but it also affects physical health. There have been studies that have shown that the more friends you have reduces your resistance to the common cold. The number of friends you have reduces the chance that a woman who survived breast cancer will have a recurrence. So they found that people that had seven or more close friends had less of a likelihood of recurrence after five years. These were all in very reputable journals.

WA: Now, do Facebook friends count? (Laughter)

CP: I think Facebook friends do count, because when we look at social support, we're looking at a sense of giving

something or getting something from someone, so I think that all those kinds of connections matter. So I think it also affects outcomes from heart disease and whether or not HIV will turn into AIDS. So these are really, really important things. Let's see if there's anything. Oh, I think one of the most important things also is that there was a meta analysis. That's a fancy word for a study of lots of studies. Okay? So people have looked at studies and studied the studies, and what they found was that when it came to looking at risk factors for mortality, that having a good social support network was more important. It actually had an equal ... the magnitude of effect was equal to quitting smoking, and sorry about this, Dr. Hall, but it even had more power than physical activity. So just having social connections are that powerful, and again that same Sweden study that I talked about also found that a rich social network cut the odds ratio for getting dementia by half and avoiding social connection at all costs doubled your risk of Alzheimer's disease. So it's really powerful, and now we have such a body of science to support it. It's really important.

WA:            So I need to exercise my mind. I need to exercise my body. I need to exercise some social ... socialize with

my friends. And I heard you mention something earlier, what's good for the heart is good for the head. Can we talk a little bit about cardiovascular? Or what do I need to do? Eat my veggies? You know, strive for five? What other factors can help increase my successful aging?

WH: Well, see, now we have a number of things in Rochester that are better and different than many other communities, and one is I think an awareness in nutrition, whether this is due to the large marketing firms like Wegmans or not, I'm not sure, but so strive for five is something that everyone has heard in this room. There are many places I'll go, and if I were to day strive for five, they would say, "Five what?" (Laughter)

CP: Or 5210. You know? Right? We all know 5210.

WH: Yeah, right, right, 5210. So nutrition is one of the basic building blocks at any given age, but what I would just like to concentrate on is that the biggest nutritional problem that people in a community like Rochester have is actually in a sense over nutrition or malnutrition in a different direction. So being overweigh and being obese is one of the ... it's not epidemic the

way it is in teenagers, but it's very much a part of our lives right now. So I think if you find that when you go to your doctor, and usually they way this will come out is they'll weigh you, and they'll measure your height, and they'll say your body mass index. Their BMI is either high or low, and the idea here is that if you're out of the norm, that is, you have too much body mass relative to the amount of height you have, that's fat, and that fat isn't just a cosmetic problem. That fat is a very active metabolic organ that produces a tremendous amount of inflammation in the body, and it's inflammation that starts to attack blood vessels in the brain and elsewhere.

So one of the most basic things you can do ... and I don't think you have to become a dietary nut about this, but you have to understand some of the basics of nutrition, that everything you pick off the shelf isn't necessarily good for you, and it's possible to reduce salt, reduce fat in your diet very easy in a community like Rochester. You could also get some professional help on that, and to do something about it, particularly this area. The belly fat is the part that we worry about the most. I think that's just common sense, but as you know common sense is not all that

common.

The other thing is, what about nutritional additives that you can take, various forms of vitamins beyond the multivite each day or a lot of products that are sold? And Lord knows if you're on the Internet, they're everywhere. Be very, very careful about this, because there is no magic pill that corrects all metabolic problems in the body. If you get the wrong stuff, it can actually turn out to be very dangerous. Know what your body weight is. Know how it stacks up against your height and your age particularly. Try to become informed about this. Seek medical attention if you need it, but it's one of those things you just shouldn't ignore like high blood pressure.

WA:           Okay, I have one more question for the panel, and then we're going to go to question and answer, and you can actually just stay in your seat, and we'll come around with a microphone for that. I want to go for some parting thoughts, either on ... you know, we heard Dr. Hall talk about some of the research that's going on, some of the work that's going on through Elder Source. What else is out here? And then again, being an educated consumer, and I do have to go back to when in doubt in



this community, call Elder Source first. They're the only folks who aren't going to be selling you anything in terms of your concerns. They're going to be that place of guiding information. The Alzheimer's Association is here, great source of resource. We want to go to that, but we're also a community rich in clinical studies, and we also heard a little bit about the hospitals all having stroke units here and having that. So I just want to go across the panel here and have you end with either a community resource, some parting thoughts, and then we're going to go to Q&A.

LB:           So one of the things I wanted to point out is so when we're talking about Alzheimer's disease as being like the next epidemic and that, there's a lot of concern about what we do for people who have Alzheimer's disease. We have a really very good resource in the community that is relatively unusual. It's the Alzheimer's Disease Care, Research and Education program at Monroe Community Hospital, and they've been around for many, many years now, and they participate in some of the clinical trials that have led to some of the FDA-approved treatments for Alzheimer's disease in the past, and they're always looking at cutting edge, what other trials or research studies can we get our

community involved in, and I just wanted to let you know that there are some brochures that we brought just so that if you are interested in learning more about AD care at Monroe Community Hospital, there's ways that you could participate. They're looking at different types of studies, so some of the studies are just trying to better understand the process and what happens as people get older with Alzheimer's disease. Some of the studies are looking at different ways of detecting the disease using different things like tools, and then more now what we're seeing is some of the recent studies are looking at that abnormal protein buildup that I had mentioned, and how do you actually try to block that, or how do you actually interfere with that process to try to decrease the chances that you're going to see the clinical pathology and the impact on people's functioning. So it's a really exciting time, and it's something that if you're interested in trying to advance clinical knowledge about how do we care better for these patients, I think it's a really good group to look into.

WA: Great. Thank you. Dr. Hall?

WH: Along the same lines, we're a community that's very rich in resources to help us age. Our university networks

are certainly a prime example of that. The one I'm most familiar with, of course, would be the University of Rochester, and we have a community website that lists the various clinical trials that are available. These are all extremely ethical trials. They've all been vetted by the federal government. For those of you who might be interested in that world, it's very easy to get information about these kinds of things, and almost every aspect of aging is under investigation right now. These often are not drug trials. These are trials that are much more fundamental than that, and they can be ... most people who enroll in these really find them very interesting. As far as community resources, when Carol and I first got involved in exercise 10 or 12 years ago ... or is it longer than that now?

CP: Probably (Overlap/Inaudible).

WH: Longer than that. Time flies when you're having fun, you know, but there were very few facilities where someone over age 65 could go for physical exercise training. Now, every single one around, the major community resources like the Jewish Community Center, the Y system throughout the community. They have very sophisticated programs of exercise for older adults, and the prices are very, very reasonable, so no

excuses in terms of being able to find things. We have an enormous number of social opportunities in this community for older people, often centered around the churches, but also various interest groups, things that you may not have thought about. For example, Writers and Books, an organization on University Avenue, has an enormous number of programs specifically for seniors about writing your memoirs, a very interesting kind of concept, being involved. Every one of the book stores has interest groups, and they're mostly populated by people over age 65. So again, no excuses. You can find these things everywhere you want in our community.

WA: Thank you. Dr. Podgorski?

CP: I have just a couple brief things to say. One is in our community we're lucky that there are very few older adults who don't have a primary care physician, but I think that developing that relationship and learning how to get the most out of that relationship is very important, and Dr. Hall happens to be an expert in that area and has done a considerable amount of teaching and writing about that, but I think that's an important thing, is how to get the most out of that visit. And the other thing I

wanted to just talk about is the volunteers. Volunteer Connection through United Way or the RSVP program through Lifespan, I think that those are important ways to get involved in the community and, again, the social engagement and the idea of giving something back is a powerful predictor of successful aging, so I just wanted to throw those into the mix.

WA: And you can always volunteer with AARP.

CP: There we go.

WA: We have two folks that are coming around with microphones, and if you do have a question, I ask you to raise your hand, and we'll go to those, the questions. We did a drawing also today for those who entered, and we'll be doing that after the program and sending those folks who won books out to them. So who's got a question? You can raise your hand. Go ahead.

M: Hi. My father died a few years ago after 10 years with Alzheimer's, and I haven't heard anybody say anything yet about whether or not it's genetically predetermined, or if it's an environmental thing. I try to eat right. I try to take care of myself, but if this is a genetic thing, is it a death sentence?

WA: So the question, is there a genetic

component to Alzheimer's that we need to look at?

LB: So when we talk about Alzheimer's disease, typically there's a couple of different ways that you can classify it, so there's early onset Alzheimer's disease and late onset Alzheimer's disease, and typically we know that there's a very strong genetic component to early onset Alzheimer's disease, meaning that families with early onset Alzheimer's disease tend to be struck by the disease much earlier, so we're talking in their 30s, 40s, 50s, and there's a genetic link that if one parent has the disease and they pass along that gene to their child, that that child is pretty much going to develop the disease. There's not as strong a genetic link in terms of late onset Alzheimer's disease, so the typical Alzheimer's disease in about 90 percent of patients with Alzheimer's disease happens after the age of 60, and in that situation, we don't understand the genetics quite as well, that someone can have a family member who has late onset Alzheimer's disease that they developed in their late 80s. That doesn't necessarily mean that their offspring are going to have the disease as well. There's other types of environmental factors, and I think some of the things that we had talked about in terms of your

diet and your lifestyle and your cognitive activities, all of those things can come into play.

WA: Great. We've got a question up back.

W: Yes, I'm just looking for a third opinion. I have two doctors who disagree on the value and even the safety of taking a multivitamin, a daily multivitamin and wondered if I could get a third opinion. (Laughter)

WH: Sure. So the question is, two doctors giving you different points of view on the use of vitamins. Why am I not surprised? Vitamins are essential nutrients. They're generally easily obtainable in common food sources, particularly green leafy vegetables. They are essential to the body. A multivite a day, there's relatively little argument about that. Where it comes into is when you start to supplement in a much more aggressive fashion, typically vitamin D, vitamin A, vitamin E, and here in some sense the jury is out except to say that common sense should prevail here and that super therapeutic levels of vitamins, I think the general consensus is to be very, very careful with that, because we might be unleashing something that we don't really know. But there is going to be controversy, and I really can't reduce the

controversy, but if it's about whether you should take mega doses, I would opt with the doctor who said don't bother.

CP: But regular multivitamins?

WH: Regular multivites is fine.

WA: Got a question in the front.

M: Yeah, I have a question about (Inaudible)

study or the regions of the United States about aging study. You have any study that compare the different region of a country or different country in the world?

WA: So this is looking at different aging studies and whether there would be regions of this country comparing how people age in different cultures or even within the geographic-ness of our country.

WH: Well, there's a book out, a very popular book called "The Blue Zones" and it's a book about special areas of the world where people seem to have exceptional longevity. One is in Okinawa off the southern coast of Japan. Another is in Greece, particularly in the mountainous regions of Greece. There are a few other scattered ones around, Costa Rica. The common denominator there is that despite the fact that they don't seem to



have a common genetic inheritance in those regions, a lot of things are prevalent in those. One is physical exercise usually because they live in a more agrarian environment. The other is that the diet tends to be much more plant-based than it is meat and processed foods, and the other is that the concept of family hasn't died out there, so there's very rich social communities and those three things are the ones that seem to stand out, but all of those can be replicated right here in Rochester, New York.

CP: That is a great book.

WA: Diane, we've got a question up there.

W: I wondered why you didn't talk about sleep apnea. A lot of people have it, and a lot of people don't know why they have it.

LB: Sleep apnea.

W: I have it.

WH: Talk about sleep apnea. So yes it's true that it is fairly common. It's a clinical topic that we just briefly mentioned if you're having a problem with sleep. There are very, very effective therapies for sleep apnea, so this is something you should discuss with your physician, and they'll probably have you evaluated in

what's called a sleep laboratory. How common is it? It all depends a little bit on the subset of the population that you look at, but it does exist out there.

LB:           And it really can have a pretty significant impact on cognitive functioning, pretty much causing all sorts of different types of difficulties with cognitive processing, so it is something that not only affects your brain but then also, in terms of your overall general health and can increase your mortality if you don't address it.

WA:           We've got a question over here.

M:            Yes, as a person who never liked puzzles and things like this, how important is it for me to incorporate in my weekly routine some of these little mind games and things that tend to frustrate the living daylights out of me? (Laughter)

LB:            I mean, I always think it's a balance. You have to do things that are pleasurable, too. So it's always a balance in terms of managing your stress, so if you're just forcing yourself to do something that you really hate doing, I think there's probably other ways that you can get that stimulation and find it much more pleasurable. You're more likely to be able to do it and

add it into your regular routine if it's something you enjoy.

WH:            Yeah, there's nothing harmful about those, but I think it's probably better to find something you like, and Carol mentioned this idea of ballroom dancing. I guess most of the people in the audience know what ballroom dancing is, and if I were to take it one step further, people have told us the best possible anti-aging program would be to become expert in the tango. (Laughter) In order to do the tango, you have to learn a different kind of music. You have to concentrate on rhythm, on balance. You have to remember the complex strokes. You get to hold and embrace another human being in a way that's pretty sensuous, and it's fun. So I know everyone isn't going to get on the plane to Buenos Aires tomorrow, but if we could I think we should.

W:            I have been having some memory issues for about the last five years after experiencing some depression. I was sent by my medical doctor to the Memory Clinic, and they deemed that I did not have a memory problem, so when I have brought this up with my physician, he has either ridiculed me or said there's nothing wrong, but my family all notices this, and I notice it very much. How should I continue pursuing this problem? I have

changed doctors but still have not made any progress.

WH:           So your concern is that there is something there, and it just hasn't been discovered yet. Lisa may want to comment on this, but Rochester is also very rich in resources in what's called psychometric testing. This is a much more sophisticated form of testing than generally is applied in the doctor's office when they give you a relatively short memory test, and I would actually go probably suggest that. I don't know. Lisa, what do you think about that?

LB:           Yeah, I mean, I think that there can be a lot of different levels to memory symptoms, and so we kind of focused on dementia which is the most severe, but there's also things like mild cognitive impairment which doesn't quite meet criteria for dementia, but it is something that the person themselves recognize or other people can recognize as changes, and sometimes you can go a little bit further with the testing, just like Dr. Hall said, with actually meeting a neuropsychologist and going through a series of different types of exams, and that also can give you more ideas about different ways of coping with the specific findings of the test. So the neuropsychologist often doesn't just say, "Okay, you have

problems with these aspects of memory,” but then they can give suggestions of how do you adapt and cope so that you can continue your day-to-day routines and functioning, and I think the important thing is that monitoring is going to be really important, so it’s obviously a concern that you have. Then continue to persist in talking to professionals to get what you need.

CP: I think it might also be helpful to keep a diary of what could you do before? What are you noticing? To try to describe it and also to see if it happens in certain places and times, or is it always there? So help the doctors by giving them concrete information and have your family members add to that log with what they’re observing, because that might be helpful in diagnosing.

WA: We’ve got a question over here.

LB: And can I just add one more thing for that? So one of the challenges is we know that mood syndromes like depression can affect memory, so a lot of times it’s hard to make as clear a diagnosis if both of those things are going on, and so it’s really getting the help that you need for yourself to treat your depression and then kind of seeing what else is left over that

needs to be addressed after that, and so that's something I think that's important to know.

W: I have just become friends with a sixth-year pharmaceutical student. We were talking about the brain. He said the brain is 80 to 90 percent cholesterol, and so I'm wondering, what does Lipitor and other statins, how do they affect all this cholesterol in the brain? Because we're trying to reduce it. Does that have anything to do with it?

LB: I think it's a really complicated question, because as Dr. Hall had mentioned, it's important to manage vascular risk factors to lower your risk for cardiac disease and stroke. There have actually been some case reports of certain medicines like the statins affecting memory, so causing some memory dysfunction, although I think in kind of the general practice, you know, it's hard to weigh how much you take that information, because I don't think that there's been really robust studies that would say that they have detrimental effects on your memory and cognition, and depending on the person's situation, they may need those medicines to help maintain their stroke risk factors.

WA: Got a question back here.

M: Referring to Dr. Hall's comment about dancing, if I'd have been tested for Alzheimer's in my 20s, I couldn't dance. (Laughter) My question is, I'm looking for a variety of brain games on the computer websites, and I haven't been able to find one that would give us a variety. On some of them that I've looked at, give you a rating that you can test yourselves in trying to improve. So do you have any recommendations for a website that you don't have to pay any large amount for that?

WH: Well, there are a number of computer programs. Many of them are commercial and not free that purport to give you a variety of different activities that are useful for brain function. I don't really ... I can't really recommend one over the other. I think all of this is still a work in progress. I would say more recently I've become a little less enamored with games on the computer for older people. It sounds very modern and the right thing to do, but particularly if you're doing these in leisure hours, particularly before you go to bed, I think it's a real impediment to sleep. It has a lot to do with the light intensity. It really does interfere with a lot of basic brain functions. So I'm much more a ...

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