Every year, each of you come in for extensive memory testing. These tests have helped us to track memory and thinking changes that occur as part of the normal aging process, and more importantly have helped us learn about the earliest signs and symptoms of developing disorders like Alzheimer's disease (AD). We can identify early memory loss as a sign of mild cognitive impairment (MCI), on average 4 years prior to the development of dementia. Further work has helped us explore increased rates of decline, while a person is still scoring in the normal range, changes in test scores can identify decline another 4 years prior to even a diagnosis of MCI. These tools are extremely important for identifying those among us that are at risk for AD.

Different patterns of strengths and weaknesses on this testing can also help identify different causes for decline. While AD typically shows us a pattern of short term memory loss, other diseases like dementia with Lewy bodies may demonstrate early problems with attention and spatial functioning, with no changes in memory. Still, other disorders like frontotemporal dementia, vascular dementia, primary progressive aphasia,...etc show other unique patterns of deficits.

For many of us, the yearly testing can stir up feelings of anxiety. Much of the testing is (continued on pg 4)

Coconut oil for Alzheimer’s disease…
What’s up with that?

Many of you may be aware of the recent craze about coconut oil for the treatment of Alzheimer's disease (AD). Sound crazy? Well, this potential treatment could prove beneficial for some, and is firmly based in scientific research in the field, although no human clinical trials have yet been performed.

Much research has suggested that the very earliest brain changes leading to AD, involve changes in brain metabolism, with reduced ability to use glucose (sugar) as an energy source in regions that will eventually develop the characteristic plaques and tangles that define the disease. Such early changes can be detected through the use of PET (positron emission tomography) testing. PET involves the injection of radioactive sugar into the vein, and is routinely used to screen for cancers. It is also approved to look at brain changes that differ between AD and frontotemporal dementia. In this test, areas of the body that use a lot of sugar (healthy brain tissue or metabolically active cancers) will “light up” with radioactivity. Other tissue that is not active will only pick up small amounts of radioactivity or none at all, leading to a dark spot on imaging. Brain PET patterns are strikingly different between normal healthy and (continued on pg 4)
Our biomarker initiative is well underway, but we need more interested participants willing to help!

Efforts to better understand brain aging and diseases like Alzheimer’s require more than just memory tests and autopsy study. New technologies have been developed that allow us to study biological changes in the brain using specialized brain imaging and spinal fluid markers. Techniques like diffusion tensor imaging (DTI) can visualize the “wires” connecting different brain areas, functional MRI (fMRI) can show us which areas of the brain are talking with one another while someone takes a memory test, inside the scanner!, fluid attenuation inversion recovery (FLAIR) can show us signs of silent vascular disease or strokes. Spinal fluid studies allow us to measure protein changes that reflect healthy vs. Alzheimer changes, assess inflammation and oxidative stress, and develop novel tests for AD. These techniques are being pioneered here at UK, as part of our biomarker initiative, designed to keep the UK Alzheimer’s Disease Center and the Sanders-Brown Center on Aging in its leading position as an International center of excellence as we move closer to more accurate diagnosis and our search for a cure. We are specifically looking for folks with normal memory and thinking to participate. All this takes is a single visit for a short MRI, and spinal fluid donation. Our staff are happy to discuss the details of participation with anyone who would like to help in this important project. Contact us at (859) 323-5550 for more info.

Brain teasers for brain health: Test your skills

**Double-speak Proverbs**

Try to identify the common proverb underlying these verbose passages:

1) If a large solid-hoofed mammal becomes available to you without compensation, refrain from casting your faculty for seeing into the oral cavity of such a creature.

2) He who locks himself into the arms of Morpheus promptly at eventide, and starts the day before it is officially announced by the rising sun, excels in physical fitness, increases his economic assets and celebrates with remarkable efficiency.

3) Superfluous chronological dispatch institutesridance of valued effects.

**FIND THESE WORDS**

- brain
- health
- memory
- coconut oil
- exercise
- plaque
- tangle
- alzheimer
- imaging
- spinal fluid
- flair
- diffusion
- amyloid
- diet
- socialization
- games
- sboac
- triglyceride
- neuropsychological
- caprylic acid
- positron
- biomarker
Why is the US government spending millions of dollars to try and cure Alzheimer’s disease in Columbia, South America?

The Health and Human Services’ (HHS) National Alzheimer’s Project Act (NAPA) is aimed at developing effective treatments and cures for Alzheimer’s disease (AD) and related dementias by 2025. A proposed 2013 budget would call for a $100 million increase in funding to fight AD.

One of the centerpieces of the plan is a clinical trial of the drug Crenezumab, designed to test whether the therapy could prevent Alzheimer’s in those with a genetic type of Alzheimer’s disease that is rare, but inescapable, for those inheriting the gene. Most AD is not like this, and while it may run in families due to genetic risks, there is no guarantee that any one family member will develop AD. This uncertainty makes it difficult to find and treat those that are not yet suffering from, but are destined to develop AD. Taking advantage of this rare form of genetic AD, we can tell who is going to develop the disease with absolute 100% certainty. Furthermore, the age of onset for such genetic forms of AD is highly predictable, helping us to know precisely when treatments targeting the disease may be most likely to stop it.

Finding enough family members with this type of rare genetic mutation is not easy, but there are large families in the world that make this easier. The world’s largest family affected by genetic AD includes 5,000 people from Medellín, Colombia and its surrounding areas. Family members with the genetic mutation begin to show cognitive impairment at around age 45, and advanced stage dementia at around 51. One half of this family carries the genetic mutation that increases the rate and development of amyloid plaques that may cause AD. Several agents have been shown to prevent the buildup of such plaques in the laboratory and in animal models of AD. Crenezumab is one of these agents and has been selected as the drug of choice for targeting AD prevention in this large Columbian family.

At a cost of 10’s of millions of dollars to the US, one might ask “What’s in it for us?”. The answer is simple, if the trial is a success, we will be poised to move such treatments forward in the US population, and hopefully prevent the National healthcare catastrophe the AD epidemic is forcing upon us. This study could advance discovery in AD therapeutics, years ahead of efforts using traditional clinical trial approaches!

Amyvid™ imaging of Alzheimer plaques approved by the Food & Drug Administration (FDA)

Amyvid™ Positron Emission Tomography (PET) imaging of the brain can actually see amyloid plaques in living persons being evaluated for Alzheimer’s Disease (AD) and other causes of cognitive decline. A negative Amyvid scan reduces the likelihood that a patient’s cognitive impairment is due to AD. A positive Amyvid scan is seen in AD, but may also be seen in other types of neurologic conditions as well as older people with normal cognition. “Many Americans undergo evaluations to try to determine the cause for a decline in cognitive functioning,” says Janet Woodcock, M.D., director of FDA’s Center for Drug Evaluation and Research. “Until now, the brain content of β-amyloid neuritic plaques could only be determined with a brain biopsy or examination of the brain at autopsy. This imaging agent is one tool to help physicians in the assessment of their patients by serving as an adjunct to other diagnostic evaluations.” One day, in addition to routine colonoscopy and mammography, your primary care doctor may be sending you for a routine screening Amyvid scan!
Coconut oil? (continued from pg. 1)

AD brain scans. The inability of the brain to use glucose, may lead to cell death and eventually AD. We also know that the brain is unique in its ability to use fats as an alternative energy source if glucose is not available, or can not be used properly. Medium chain triglycerides (MTG) are ideal for this purpose, and are enriched in many vegetable sources, especially coconuts. The data is so compelling that one company developed a nutritional drink using caprylic acid (the main MTG in coconuts) specifically for AD. This supplement is called Axona® and is available in the US. A prescription is required for safety, as diabetics and others may be at risk for health problems from MTG supplements.

In contrast, natural coconut oil has little risk and can be part of anyone’s healthy diet. When intra-venous (IV) solution was in short supply, doctors during World War II and Vietnam used coconut water in substitution of IV solutions! Who knows, a piña colada, a slice of coconut cream pie, a macaroon, may be one of your best bets for brain health!

Explore memory testing at our next Townhall meeting (cont. from pg. 1)

designed to be impossible to score perfectly on. This allows us to track intelligence and early decline in even the smartest and most able of our participants. This can sometimes lead to frustration as we all want to get an A+ on the testing. That is how we have lived our lives, and so it is only natural. Other parts of the testing are so easy, that almost everyone can do well, allowing us to track decline well into the latest stages of AD. Dr. Allison Caban-Holt will be our guest speaker for this event, hosted by Dr. Jicha and the team from Sanders-Brown.

Upcoming changes in the testing are going to allow us to do an even better job of tracking change over time. Understanding these neuropsychological tests and why they are important is the topic of our next Townhall meeting. We will also discuss upcoming changes in the testing and the use of computerized tools to measure unique brain skills.

Please join us as we explore memory testing as a tool that is unlocking the secrets to healthy brain aging together at our next Townhall meeting, August 6th from 1-3pm at the Fayette County Extension Office, 1140 Red Mile Place in Lexington, KY. Call the Center at (859) 323-5550 for more information, although no reservations or fees are required to attend.