NYU Langone Health

Fall 2019

Mind Matters

Alzheimer's Disease Center
Center for Cognitive Neurology

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Section 1:
Oral Health and Dementia

By Bei Wu, PhD and Shahrzad Siamdoust

Our aging population is growing. According to the U.S. Census Bureau, currently 15.2 % of our population are older adults age 65 or above. This percentage is anticipated to jump almost 10% within the next decade. With this in mind, healthcare professionals are paying more attention to the management of chronic diseases such as cardiovascular disease, cancers, neurological conditions and more, to ensure healthier aging and better quality of life. However, oral health, a significant aspect of healthy aging is often overlooked. An unhealthy mouth has been linked to diabetes, respiratory conditions, and even osteoporosis. Poor oral health is especially prominent among individuals with dementia, who are more likely to experience advanced gum disease (periodontitis) and tooth loss than individuals without dementia. Evidence has shown that gum disease may contribute to the development of Alzheimer's disease, due to an involved bacteria that contributes to the accumulation of toxic proteins in the brain.

One of the major reasons for deterioration of oral health is poor oral hygiene practice in this population therefore, improvement of oral hygiene is particularly important. More research is being conducted to improve oral health among older populations. In 2017, the Gerontological Society of America launched an oral health initiative with the goals of "enabling older adults to maintain their oral health as part of a healthy aging process and to assist researchers, educators, practitioners, and policymakers to identify areas of needed activity and research on the topic of oral health in older adults." One of the GSA's fellows is Dr. Bei Wu, professor at the NYU Rory Meyers College of Nursing and Director of Global Health and Aging Research. Dr. Wu is currently working on a new study looking to improve oral health among community-residing individuals with mild dementia. This study utilizes an innovative intervention approach that incorporates the assistance of care partners (typically spouses) in the improvement of oral hygiene practices for people with dementia. Through this, NYU will be a part of the paradigm shift towards prevention, which will ultimately lead to not only a healthier mouth, but a healthier and longer life.

Section 2:
Food for Thought: How Diet Relates to Memory

By Jeannette M Beasley, PhD, MPH, RDN and Muhammad El Shatanofy, BS

A healthy diet equals a healthy mind! Eating a nutrient-rich diet can affect your ability to remember, think clearly, control emotions, and make decisions. Several studies have shown that nutrients such as omega-3 polyunsaturated fatty acids, carotenoids, vitamin E, and vitamin D lower the risk of dementia and protect brain health. A dietary pattern that encourages the consumption of these nutrients is the MIND (MedIterraNean-DASH diet) which places a particular emphasis on eating neuroprotective foods. General recommendations include consuming healthy fats such as olive oil, plant foods, and seafood, while limiting the intake of saturated fats, dairy products, and meat. Interestingly, these recommendations, which are linked to improved brain function, are also associated with improved heart health. For a healthy mind and a healthy heart, here are some foods that you can add to your diet:

- **Berries.** Berries contain important antioxidants, which protect against neuroinflammation related to Alzheimer's disease.
- **Beans.** Beans, such as black beans, contain a high amount of magnesium and folate, both of which are linked to improved cognitive function and memory. Try to eat three servings of beans per week.
- **Fish.** Fish such as salmon contain high levels of omega-3 fatty acids, which have been shown to lower blood levels of an Alzheimer's disease biomarker. Try to consume 2 servings of fish per week. Other sources of omega-3 fatty acids include flaxseed and avocados.
- **Vegetables, particularly green, leafy vegetables.** Green vegetables such as kale, spinach, and broccoli are rich in vitamins A and C. Research recommends six or more servings per week, but even two servings per week helps!
- **Nuts.** Nuts like walnuts contain healthy fats, fiber, and antioxidants like vitamin E. Try to consume five servings of nuts per week.
- **Olive oil.** Research suggests that replacing saturated fats with olive oil can improve cognitive performance on fluency and memory tasks.
- **Whole grains.** Aim to consume at least three servings of whole grains a day. Whole grains such as brown rice, quinoa, and 100% whole wheat bread are good sources of the B vitamins. Research suggests that vitamins B6/B9/B12, in particular, are linked to enhanced cognitive function and memory.

Foods the MIND diet suggests limiting include red meats, butter/stick margarine, cheese, pastries and sweets, and fried or fast food. Want to know how well your diet compares to MIND? Give yourself a point for each item in Table 1 where your diet falls within the recommended amount for a maximum score of 15. In a study of ~1000 people, those with the highest MIND scores had slower cognitive decline, equivalent to being 7.5 years younger in age, compared to those with the lowest MIND scores.

Table 1. How "MIND"ful is your diet?

MIND diet component servings and scoring

Diet component	0	0.5	1
Green leafy [1] vegetables	≤2 servings/wk	>2 to <6/wk	≥6 servings/wk
Other vegetables [2]	<5 serving/wk	5 to <7 wk	≥1 serving/d
Berries [3]	<1 serving/wk	1/wk	≥2 servings/wk
Nuts	<1/mo	1/mo to <5/wk	≥5 servings/wk
Olive oil	Not primary oil		Primary oil used
Butter, margarine	>2 T/d	1–2/d	<1 T/d
Cheese	7 + servings/wk	1–6/wk	<1 serving/wk
Whole grains	<1 serving/d	1–2/d	≥3 servings/d
Beans [4]	<1 meal/wk	1–3/wk	>3 meals/wk
Fish (not fried) [5]	Rarely	1–3/mo	≥1 meals/wk
Poultry (not fried) [6]	<1 meal/wk	1/wk	≥2 meals/wk
Red meat and products [7]	7 + meals/wk	4–6/wk	<4 meals/wk
Fast fried foods [8]	4 + times/wk	1–3/wk	<1 time/wk
Pastries and sweets [9]	7 + servings/wk	5–6/wk	<5 servings/wk
Wine	>1 glass/d or never	1/mo–6/wk	1 glass/d
Total score			**15**

Abbreviations: MIND - Mediterranean; DASH - diet intervention for neurodegenerative delay; wk - week; d - day; mo - month

[1] Kale, collards, greens; spinach; lettuce/tossed salad.
[2] Green/red peppers, squash, cooked carrots, raw carrots, broccoli, celery, potatoes, peas or lima beans, tomatoes, tomato sauce, string beans, beets, corn, zucchini/summer squash/eggplant, coleslaw, potato salad.
[3] Strawberries.
[4] Beans, lentils, soybeans.
[5] Tuna sandwich, fresh fish as main dish; not fried fish cakes, sticks, or sandwiches.
[6] Chicken or turkey sandwich, chicken or turkey as main dish, and never eat fried at home or away from home.
[7] Cheeseburger, hamburger, beef tacos/burritos, hot dogs/sausages, roast beef or ham sandwich, salami, bologna, or other deli meat sandwich, beef (steak, roast) or lamb as main dish, pork or ham as main dish, meatballs or meatloaf.
[8] How often do you eat fried food away from home (like French fries, chicken nuggets)?
[9] Biscuit/roll, pop tarts, cake, snack cakes/twinkies, Danish/sweet rolls/pastry, donuts, cookies, brownies, pie, candy bars, other candy, ice cream, pudding, and milkshakes/frappes.

Source: M.C. Morris, et al. Alzheimers Dement. 2015 Sep; 11(9): 1015–1022.

Section 3:
The Muscle-Memory Connection

According to research studies, the benefits of exercise include increased vitality, reduced stress, weight management, enhanced mobility, and notably, memory preservation. The science backs up what physical education teachers have been trying to get us to do since grade school—break a sweat. In a clinical trial offered here at NYU Langone, the National Institute on Aging's EXERT study, researchers are exploring whether there is a direct correlation between exercise and memory loss.

To exert oneself means to make an effort: whether it is physical or mental, an action is being done which could have a lasting impact. In this case, the exertion is exercise and the possible positive side effects could be a reversion of cognitive loss, impacting the prognosis of a potential dementia or Alzheimer's diagnosis. What if you could join a multi-site clinical study to prove that your daily walks around the park or your aerobics sessions really do improve your cognition?

Over 18 months, the EXERT clinical trial will determine whether physical exercise affects the memory of older adults, and reveal whether therapeutic effects of exercise in older adults might impact the progression or memory related to the onset of early Alzheimer's disease. Participation in this clinical trial might also uncover how older adults with amnestic Mild Cognitive Impairment (MCI) respond to exercise.

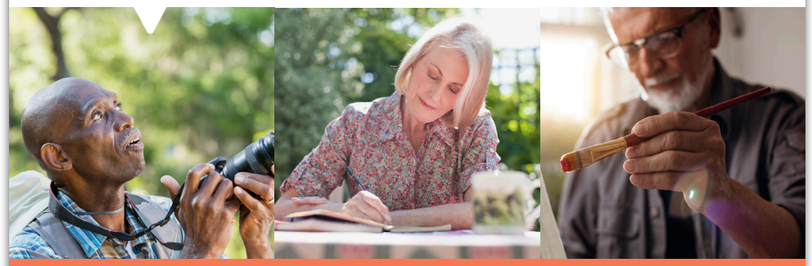
The study parameters include:

- Exercise at least four times per week at the YMCA, with a gym membership and workouts with a personal trainer at no additional cost to you!
- Willingness to participate in one of the two exercise treatment assignment groups.
- Compliance to complete noninvasive physical examinations and blood collection, cognitive testing, and brain imaging here at the clinic.
- Must be between the ages of 65 and 89, and experiencing mild memory loss, and/or a diagnosis of MCI.
- You do not already need to be exercising regularly, but must be in good health according to your primary care physician.

As more scientific research emerges about how to reduce the risks of dementia and Alzheimer's disease, it seems as though news about the next miracle pill and superfood also appears. We have seen the studies about the benefits of diet, music, and meditation on brain health. Have you ever wondered whether any of those studies pushing you to exercise would have any impact on your mind and not just your muscle? It is never too late to start exercising, but it is important to consult with your primary care physician. And remember, exercise could be swaying to your favorite tunes, stretching, or even taking the stairs. If you are ready to take the challenge and EXERT yourself, the benefits could help you beat some of the risks associated with memory loss.

Section 4:
Calling All Artists

CALLING ARTISTS OF ALL ABILITIES!
LET THE ADC SHOWCASE YOUR WORK!



Dear ADC Participants,

Our Center is fortunate to have a diverse group of participants with unique and interesting abilities in the visual arts and written word.

To share these talents with the entire ADC community, we will select one special masterpiece to publish in our quarterly newsletter.

To submit your work, please email **info.aging@nyulangone.org.**

Thank you!

Section 5:
Lunch & Learn Series

Our first of the Lunch and Learn series with Dr. Arjun Masurkar on the "Science & Medicine of Memory"

Upcoming Lunch and Learn Schedule
Location: 145 East 32nd Street, 5th Floor Conference Room, New York, NY 10016

- **Healthy Brain, Healthy You: Tips to Staying Cognitively Healthy**
  Ariel J. Warren, MSN, BSN • Friday November 22, 2019 • 12-1pm
- **What We Learn from Examining the Brain**
  Arline Faustin, MD • Friday January 31, 2020 • 12-1pm
- **Hearing Loss: What Does This Have to do with Dementia?**
  Joshua Chodosh, MD • Friday April 3, 2020 • 12-1pm
- **Sleep and Brain Health**
  Ricardo Osorio, MD • Friday May 29, 2020 • 12-1pm
- **Will There Be a Vaccine for Alzheimer's Disease?**
  Thomas Wisniewski, MD • Friday July 31, 2020 • 12-1pm

You can RSVP here: https://is.gd/CCN_EVENTS_RSVP . You can also RSVP by contacting Ashley Clayton, MA at ashley.clayton@nyulangone.org or by calling 212-263-3257. Spots are limited and will be filled on a first come, first served basis!

Section 6:
Welcoming Our New Staff

Ashley Clayton, MA
Program Manager

Gabriella Tedesco
Community Health Rep

Karen Castro
Research Data Associate

Christina Madera
Community Health Rep

Section 7:
Other Events

Upcoming Events
We are excited to announce our ADC Fall Seminar is coming up in only a few short weeks! Please join us for our annual community event, presented by the NYU's Center for Cognitive Neurology and the Alzheimer's Disease Center, where some of our clinicians will discuss insights gathered from their latest research. This year's seminar will focus primarily on what we have learned from Epidemiological studies, healthy living and cognition, and the direction for developing preventative measures and treatments for Alzheimer's disease and dementia. We look forward to seeing you there!

ADC Fall Seminar- 10/30/2019, 3-5pm
550 First Avenue, New York, NY 10016

You can RSVP here: https://openredcap.nyumc.org/apps/redcap/surveys/index.php?s=CNDMN3YRM4 or by emailing Marlena Gordon, marlena.gordon@nyulangone.org.

Past Events
On July 25, 2019, some ADC participants and study staff had the chance to explore The Intrepid Sea, Air, & Space Museum on their own, privately guided tour. Everyone seemed to enjoy themselves and the weather was great! Stay tuned for more events coming this Fall!

Section 8:
Research Opportunities

Clinical studies and trials are the force behind the treatment, cure, and prevention of any disease. Through the volunteerism of patients and others affected by an illness, knowledge is advanced.

Memory Screening and Longitudinal Studies of Aging

Longitudinal Study of Normal Aging, Mild Cognitive Impairment (MCI), and Alzheimer's Disease
PI: Thomas Wisniewski, MD
Participants receive a comprehensive diagnostic evaluation and are reevaluated every year. The goal is to improve early diagnosis and better understand the clinical course and causes of age-related cognitive decline and AD.

For information, contact Ashley Clayton, 212-263-3257; ashley.clayton@nyulangone.org

Studies for Those with Mild Cognitive Impairment and/or Alzheimer's Disease

Therapeutic Effects of Exercise in Adults with Amnestic Mild Cognitive Impairment (EXERT Study)
PI: Martin Sadowski, MD, PhD
EXERT is a national, 18-month-long clinical trial to test whether physical exercise can slow the progression of early Alzheimer's disease–related memory problems or mild cognitive impairment in older adults. Participants must be able to exercise at a participating local YMCA four times per week for 18 months (duration of the study). Participants must also be able to come to the clinic for physical exams, blood collection, cognitive testing, and brain imaging. Eligible adults must be willing to participate in either of the two exercise treatment assignment groups. We are currently enrolling adults between the ages of 65 and 89 who are experiencing mild memory loss or lapses and/or are diagnosed with mild cognitive impairment, have not been regularly exercising, and are in good health otherwise. For information, contact Anaztasia Ulysse 212-263-0771; ADClinicaltrials@nyumc.org

Anti-viral therapy in Alzheimer's disease
PI: Thomas Wisniewski, MD
Anti-viral therapy in Alzheimer's disease is investigating the efficacy of treating patients with mild Alzheimer's disease (AD) with the U.S.A marketed generic antiviral drug valacyclovir. Valacyclovir at 2g to 4g daily, repurposed as an anti-AD drug, is being compared to matching placebo in the treatment of 130 mild AD patients (65 valacyclovir, 65 placebo) who test positive for herpes simplex virus-1 (HSV1) or herpes simplex virus-2 (HSV2). The study is a randomized, double-blind, 18-month Phase II proof of concept trial. This study is funded by the NIH. For information, contact ADClinicaltrials@nyulangone.org

Long-Term Nicotine Treatment of Mild Cognitive Impairment (MIND)
PI: Arjun Masurkar, MD
The Memory Improvement through Nicotine Dosing (MIND) study will determine whether daily transdermal nicotine will have a positive effect on early memory loss in people diagnosed with MCI. Please contact us if you are a healthy, nonsmoking adult age 55+ and are interested in learning more about this study. There is no cost to participate. For information, contact Anaztasia Ulysse 212-263-0771; ADClinicaltrials@nyumc.org

Alzheimer's Disease Neuroimaging Initiative 3 (ADNI3) Protocol
PI: Martin Sadowski, MD, PhD
The Alzheimer's Disease Neuroimaging Initiative, also known as ADNI, is a historic study of brain aging looking to help change the future. ADNI's unprecedented approach to research is intended to encourage new investigation and to increase the pace of discovery in the race to prevent, treat, and one day cure Alzheimer's disease.

ADNI is seeking people over age 55 who are healthy, as well as those with mild memory problems and those who have been diagnosed with mild dementia due to Alzheimer's. There is no experimental medication involved. For information, contact Anaztasia Ulysse 212-263-0771; ADClinicaltrials@nyumc.org

TauRx: A Safety and Efficacy Study of TRx0237 in Subjects With Early Alzheimer's Disease
(Enrollment to begin in early 2020!)

Eisai: An 18-Month Study With an Open-Label Extension Phase to Confirm Safety and Efficacy of BAN2401 in Subjects With Early Alzheimer's Disease
(Enrollment to begin in early 2020!)

Studies for the Prevention of Cognitive Impairment

Sleep, Aging, and Risk for Alzheimer's Disease (SARA 2.0 Study)
PI: Ricardo Osorio, MD
We are currently undertaking a 24- to 30-month longitudinal study of 124 subjects in order to analyze the relationship between two common sleep disorders and AD risk. Age-related sleep changes and common sleep disorders like obstructive sleep apnea (OSA) may increase amyloid burden and represent risk factors for cognitive decline in the elderly. Participants must be able to come to the first visit, which will include a physical exam, cognitive testing, sleep interview, EKG, clinical labs, and blood sample. We will directly interrogate the brain using a two-night nocturnal polysomnography and amyloid deposition using C-PiB PET/MR both at baseline and at a 24-month follow-up. We are currently enrolling men and women living in the New York City area between the ages of 60 and 75 with normal cognition and in good general health, with approximately 50% having mild to moderate OSA. Participants receive results and are compensated for their time. For information, contact Eirene Oji at 212-263-7563; Eirene.Oji@nyulangone.org

Sleep AWARE
PI: Ricardo Osorio, MD
Sleep AWARE is a research study funded by the National Institutes of Health and the National Institutes for Aging. We will examine how race, genes, and other factors impact an individual's risk for developing Alzheimer's disease (AD). Poor sleep is thought to contribute to increased risk for developing AD. African Americans in particular have lower quality sleep and less sleep duration and thus may be at greater risk for AD. Researchers hope to compare sleep characteristics and their effects on Alzheimer's disease risk among African Americans and non-Hispanic Whites. For information, contact: Eirene Oji 212-263-7795 • eirene.oji@nyulangone.org

Imaging Studies

Resolving Fine Architectures of Human Gray Matter with Ultra-High-Resolution Diffusion MRI
PI: Yulin Ge, MD
Diffusion MRI (dMRI) is a powerful tool to map the brain's structural organization and connectivity non-invasively. This is used successfully for white matter imaging but has not been widely applied in use for gray matter imaging. This study is working to develop an ultra-high-resolution diffusion MRI (UHR-dMRI) technique on a clinical MRI scanner (i.e., 3T) for improved human gray matter (i.e., hippocampus) microarchitecture characterization. This project will test several novel concepts in 80 subjects to achieve UHR-dMRI on a 3T clinical MRI scanner. You may join this study for volunteering a MRI scan without administration of contrast injection if you are 60 to 85 and are in general good health, have early Alzheimer's Disease or amnestic mild cognitive impairment, or you are a healthy volunteer between 20 and 40 years old. For information, contact: Charlie Morton 212-263-3335 • Charles.Morton@nyulangone.org

Developing Advanced Blood-Brain Barrier Permeability Imaging for Early Alzheimer's Disease
PI: Yulin Ge, MD
An important initiating factor for the development and progression of cognitive impairment is disruption of the blood-brain barrier (BBB), which is important for maintaining normal brain homeostasis and protecting neural tissues from toxins. It is hypothesized that changes to the BBB are known to be common in aging and can be an early process that precedes AD. The purpose of this study is to develop and optimize a new imaging technique called GRASP MRI for people with Alzheimer's disease (AD) to be able to collect more useful imaging data in less time than necessary by current brain MRI methods. This project will test these techniques in 45 subjects with a 3T Gadolinium contrast-enhanced MRI. You may join this study if you are cognitively normal and fall within the range of 20-40 years old or 65-85 years old, or if you have amnestic mild cognitive impairment and are over 65 years old. For information, contact: Charlie Morton 212-263-3335 • Charles.Morton@nyulangone.org

In Vivo Insights of Small Vessel Changes with Age Using Ultra-Small-Superparamagnetic-Iron-Oxide (USPIO)-Enhanced MRI
PI: Yulin Ge, MD
This proposal seeks to perform an observational study for developing a new imaging tool using an ultra-small-superparamagnetic-iron-oxide (USPIO) contrast agent. The objective is to characterize age-related microvascular changes on both 3T and 7T MRI and better understand the source and basis of brain aging. This study will include 130 total healthy volunteers asked to undergo a single 7T contrast-enhanced MRI. You may join this study if you are healthy and aged 18-85. For information, contact: Charlie Morton 212-263-3335 • Charles.Morton@nyulangone.org

Mechanisms of Age-Related White Matter Hyperintensities: Insights from Advanced MRI
PI: Yulin Ge, MD
Small vessel disease (SVD) is an age-related diffuse white matter disease associated with white matter hyperintensities (WMHs) seen on brain MRI scans. SVD is a common cause of vascular cognitive impairment in the elderly. In this study, we will characterize the underlying vascular pathophysiological changes of WMHs using non-invasive and multimodal MRI measures and follow them over a period of 2.5 years in an elderly population with diverse WMH burdens. This study will include 160 participants for two visits consisting of a single 1-hour 3T MRI at each visit without administration of contrast agent. You may participate in this study if you are 65-85 years old and have a recent clinical MRI indicating you have white matter lesions present in your brain on the previous MRI. For information, contact: Charlie Morton
212-263-3335 • Charles.Morton@nyulangone.org

The Next Generation of Vascular Imaging Using Contrast-Enhanced MICRO MRI
PI: Yulin Ge, MD
The purpose of this research study is to assess new magnetic resonance imaging (MRI) methods and a new contrast agent for the evaluation of cerebrovascular diseases (diseases that affect the small blood vessels in the brain). It is hoped that these techniques will enable researchers and clinicians to better detect cerebrovascular diseases. The images collected of the brains of patients with cerebrovascular diseases will be compared to the images from healthy volunteers to see how well the technique and contrast work in detecting cerebrovascular diseases. This study will include 20 subjects willing to complete two 1-hour 3T and 7T MRIs after administration of Ferumoxytol contrast agent. You may participate as a 65-85 year old healthy participant, patient with chronic hypertension, or patient with cerebral amyloid angiopathy. For information, contact: Charlie Morton 212-263-3335 • Charles.Morton@nyulangone.org

Section 9:
Contact Info

Alzheimer's Disease Center
145 East 32nd Street, 2nd Floor
New York, NY 10016

If you would like to make a financial contribution, either as a gift or as a tribute to a loved one with a cognitive disorder, you may directly send us your donation. Please make your check payable to "NYU Alzheimer's Disease Center" and mail it to:
Alzheimer's Disease Center
c/o Marlena Gordon
NYU Langone Health
145 East 32nd Street, 5th Floor
New York, NY 10016

NYU Langone Health

The Center for Cognitive Neurology and Alzheimer's Disease Center Team