



the Center Report

Faculty Present Research at Geriatric Society Meetings

Over thirty Center faculty and fellows presented their research at the annual meetings of the American Geriatrics Society in Seattle, WA, May 3-5, 2012.

C. Colon-Emeric, S. Pinheiro, K. Simpson, K. Porter, K. Corazzini, and R. Anderson presented a poster on “Improving Uptake of a Falls Educational Program by Focusing on Staff Interactions.” They concluded that focusing on improving interactions among nursing home staff was highly acceptable, and was reported to enhance the uptake of a traditional falls education program.

M. D’Souza, M. Yanamadala, J. Twersky, & B. Kamholz presented a poster on “Evaluation of the Outcomes of COACH: A collaborative care model for patients with dementia.” They concluded that the COACH program reduced nursing home placement in the first year while improving dementia care delivery, reducing caregiver burden, and improving quality of life.

L. Genao, H. Whitson, D Zaas, L. Saunders, & K. Schmader presented an encore poster on “Functional Status



after Lung Transplantation on Older Adults in the Allocation Score Era.” They concluded that good functional status at the time of transplant predicts a slower decline over time; older adults decline faster than young adults; and those with very poor baseline functional status typically exhibit disability within four years of transplant.

S. Hastings, K. Johnson, R. Sloane, L. Landerman, C. Horney, and H. Whitson presented a poster on “From the Welllderly to the Sickest Elderly: Classifying Older ED Patients According to Patterns of Health Service Use. They identified 5 groups of Emergency Department patients based on previous health service use.

I. Iwata, L. Martinez, & S. Pinheiro presented a poster on “Assessing Interns’ Learning about Geriatrics

through Critical Incident Reports.” They concluded that the Critical Incident Reports (CIR) showed that the geriatric rotation increased their confidence in identifying and treating delirium, recognizing the importance of functional assessment and “knowing the baseline.”

K. Johnson, M. Kuchibhatla, & J. Tulsy made an “encore presentation” of a poster on “What are Hospice Providers Doing to Reach African Americans, and what works?” They concluded that more aggressive treatment preferences and accommodation of nontraditional care models may be more successful than community outreach at increasing services to African Americans.

V. Kraus was a coauthor of a poster on “Biomarkers of Joint Metabolism



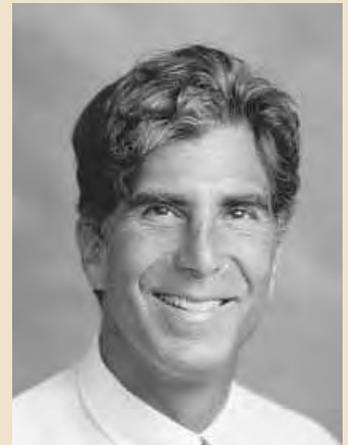
Exercise and Nutritional Interventions to Prevent Dementia

Patrick J. Smith, PhD; James A. Blumenthal, PhD

You have no doubt heard that diet and exercise are important for heart health. Diets with higher intake of vegetables, whole grains, and fruits are known to lower blood pressure and reduce risk for other chronic diseases including cancer and diabetes. Exercise also has been shown to be beneficial for patients recovering from heart disease and may reduce the risk for such conditions as osteoarthritis. However, you may be surprised to learn that a growing body of evidence suggests that diet and exercise are also important for the health of your brain.



Patrick J. Smith, PhD



James A. Blumenthal, PhD

The Health Benefits of Diet and Exercise. Prospective studies have found that adults who exercise regularly during middle-age are more than 35% less likely to experience cognitive decline later in life and 45% less likely to develop Alzheimer's disease when compared with their sedentary counterparts. We recently conducted a meta-analysis of randomized controlled trials examining the effects of aerobic exercise on cogni-

tive function and found that aerobic training improved cognitive functions, such as memory and attention, and these improvements tended to be larger among adults with mild cognitive impairment. Recent studies have also shown that regular exercise increases hippocampal volume, the brain region most important for memory function.

In addition to the benefits of exercise, the importance of dietary habits has received growing attention, with reports of cognitive improvements associated with various dietary supplements, although randomized trials of individual dietary components, such as fish oil, vitamins B6, B12, and folate have shown little benefit on cognitive function, suggesting that individual supplements do not improve cognitive performance. On the other hand, studies of 'whole' dietary approaches, including caloric restriction, the Mediterranean diet (MeDi), and the Dietary

Approaches to Stop Hypertension (DASH) diet, have reported promising results. For example, large-scale epidemiological studies have examined the effects of both the MeDi and DASH diets, both of which emphasize high intake of vegetables, legumes, fruits, cereals, unsaturated fatty acids, and fish. A recent study from Duke also showed that the DASH diet by itself and when combined with exercise and a weight reduction program improved cognitive abilities among overweight adults with high blood pressure.

A New Duke Study: ENLIGHTEN. Although these findings suggest that lifestyle may improve cognitive abilities in healthy older adults, the separate and combined effects of dietary modification and aerobic exercise have never been examined in patients at risk for developing dementia or other cognitive impairments later in life. ENLIGHTEN is a randomized clinical trial of exercise

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What on Earth Should I Be Eating?

By Martha Payne, PhD

As a dietitian and nutrition researcher, I often hear people complain that nutritionists “keep changing their minds about what people should be eating.” In many ways, the nutrition recommendations have changed. As we accumulate more evidence about the function of nutrients, changing needs across the lifespan, and mechanisms for disease, it is logical that our recommendations for the public would change. However, many recommendations have remained not only relatively constant but very much a matter of common sense — eat a good variety of fruits, vegetables, whole grains and lean protein, while limiting ‘junk foods’ or foods containing excess sugar, salt and solid fats. It seems that some people may use the changing nature of dietary guidelines as an excuse to not make any changes to their diets.

The issue of what one should be eating is especially important for older adults. As people age they require fewer calories but similar amounts of micronutrients (vitamins and minerals), in comparison to younger adults. This means that elders need to consume more *nutrient-dense foods* (e.g., fruits, vegetables, nuts and lean protein) and fewer discretionary (‘junk food’) calories in order to meet their nutrient needs but without gaining weight. Older adulthood is also a time when many

people experience chronic diseases such as heart disease, hypertension, and stroke, conditions which are caused in large part by sub-optimal diets. One nutritional strategy used by many older adults is the consumption of dietary supplements.

Dietary supplements contain single or multiple ingredients, and may include varying amounts of vitamins, minerals, oils, amino acids, and herbal substances. Commonly-used supplements include multivitamins, calcium supplements, and omega-3 fatty acids. Recommendations on dietary supplements have changed significantly over the past two decades.

At one time multivitamin supplements were simply

viewed as an insurance policy against occasional lapses in one’s diet, as a way to ensure that adequate amounts of nutrients were consumed. As time went on, supplements became viewed as proactive agents to both prevent disease and promote health. Often consumers were told that they could not achieve adequate nutrient intakes from food alone, and that they must get these nutrients from dietary sup-

plements. The pendulum has now swung away from this advice, after a number of studies have either failed to show benefit or have shown potential for harm from using dietary supplements. Most recently the U.S. Preventive Services Task Force recommended against the use of calcium and vitamin D supplements for the prevention of bone fractures.

One important factor to consider about nutrition recommendations is that they are made *for the public*, rather than individuals. While specific foods, nutrients, or dietary supplements have been shown to prevent or promote certain diseases in large study populations, individuals may have somewhat different requirements based upon their genes, health status, and medical conditions. It is best to talk with a health care provider about any specific situations and needs.

So, where does this leave us? Should we continue to load up on potato chips, candy, soft drinks, white bread and cookies while we wait for the nutritionists to ‘make up their minds’ about nutrition recommendations? Perhaps we could simply follow some common-sense advice while we stay-tuned for more details — 1) Get your nutrients from foods (if possible), 2) Eat lots of fruits and vegetables (aim for a variety of colors), 3) Consume protein foods that are low in saturated fat (including beans, lean meats, seafood, eggs, nuts and low-fat dairy products), 4) Eat whole grains and other high-fiber foods, 5) Limit your intake of sugary beverages, desserts, salt and solid fats (saturated and trans fats), and 6) Get moving (physical activity is an important partner to nutrition). See **Choose-MyPlate.gov** for more details.



Martha Payne, PhD



FIT for LIFE Trial

By Jason Allen, PhD

The number of individuals over the age of 65 years is expected to increase from approximately 35 million in 2000 to an estimated 71 million in 2030. If this population can maintain functional independence it allows for an increased life expectancy without a corresponding increase in health care costs. However, there is clear evidence of an accelerated decline in physical fitness and function after age 65 yrs. and it appears to be predominantly via peripheral (vascular and muscle) rather than central (heart & lungs) mechanisms.

Current exercise guidelines recommend a well-rounded, whole-body training program, and typically in practice, start with low-to moderate intensity aerobic exercise with resistance exercises added later in the program. Although this approach yields favorable results, improvements in functional capacity, are limited, suggesting the need to examine more innovative exercise progression models.

The Fit for Life Trial is a novel peripheral tissue based training regimen used to increase gains in functional capacity in elderly subjects at risk for losing independence. It is a randomized controlled trial, conducted at Duke and Pennington Biomedical Research Center.

One hundred and eight subjects were randomized to one of two training groups; 1) four weeks of aerobic training (60min of walking/biking at 40-60% of max, 3 times a week) followed by eight weeks of a well-rounded program consisting of both aerobic and resistance training or 2) four weeks of Regionally Specific Training Stimulus (RSTS = specific muscle group exercises focused on the calf,



Jason Allen, PhD

thigh, buttocks, arms, shoulders, and torso, performed for 3 to 5 min, at ~40-70% of the MVC, 60 min total, 3 times a week; followed by eight weeks of a well-rounded training program consisting of both aerobic and resistance training.

At the end of 12 weeks there was a significant benefit in aerobic capacity and strength for those who started with RSTS training above and beyond the increases shown in those who started with aerobic training. Analyses of the physiologic mechanisms for this benefit are currently ongoing.

These results suggest initial RSTS may serve as an effective modality for enhancing strength and aerobic fitness, in the elderly.



Inpatient Medication Related to Readmission Rates

Reducing readmission rates is imperative, and an important piece of this effort is to identify patients at highest risk of readmission so programs and resources can be targeted to those most likely to benefit.

Risk of rehospitalization models exist, but they are imperfect. They often rely on baseline characteristics of patients (such as co-morbidities and prior health care utilization) and do not incorporate real-time clinical data that may reflect increased or decreased risk.

The association between inpatient medication prescribing and risk of readmission has been largely unexamined. Inpatient medication prescribing is one element of real-time inpatient clinical data that can be captured using health system data portals. If an association between certain medication classes and risk of readmission is observed, this information could be added to real-time risk models to enhance identification of older adults at risk for hospital readmission, and leverage the use of current electronic health system data.

Juliessa Pavon, MD, and her mentor Susan Hastings, MD, MHS, examined the associations between inpatient medication exposure and risk of hospital readmission. An analytical dataset constructed by Eleanor S. McConnell, PhD, RN, GCNS-BC, and Yanfang Zhau, PhD, was used for this study, and the original data came from the Duke Enterprise for Data Unified Content



Juliessa Pavon, MD

Explorer (DEDUCE) data portal. A total of 4,627 residents of Durham County aged 60 and older, and discharged alive, who were hospitalized at Duke Hospital between 2007 and 2009 were identified for this study. Of this sample, 955 patients (21%) were readmitted within 30 days. Exposure to anticonvulsants, benzodiazepines, corticosteroids, and opiates were significantly associated with increased risk of readmission in adjusted models that controlled for age, gender, race, and length of stay, and this association with medication class and readmission may be different according to service type (Medicine, Cardiology and Surgery). Future studies are encouraged to utilize and explore existing data with emphasis on how we can use our electronic health data to make predictions.



Is the Idle Mind a Devil's Workshop?*

By P. Murali Doraiswamy, MD

The use-it-or-lose-it theory posits that the brain can be influenced by how we use it, much like a muscle, and that an enriched environment along with a cognitively active life style can prevent or postpone dementia. The popularity of this theory has been fueled by the rapid growth of aging baby boomers, the lack of pharmacologic therapies for preventing dementia, and companies seeking to cater to this need. Approximately 80% of the 38,000 adults older than 50 years surveyed in the 2010 American Association of Retired Persons Member Opinion Survey indicated staying mentally sharp as their top-ranked interest and concern, above other important concerns such as social security and Medicare. This has spawned a brain fitness training industry that is on the verge of becoming mainstream, much like jogging did some decades ago. But are these claims true? And if so, what are the underlying mechanisms?

The primary evidence supporting a link between a cognitively active life style and dementia comes from four types of studies: pathologic, epidemiologic, pre-clinical, and imaging. Pathologic and perfusion imaging studies showing that some highly educated individuals who show neuropathologic features of Alzheimer's remain cognitively spared in life raised the possibility of a cognitive reserve. Many, but not all, epidemiologic studies have associated higher IQ, higher education, larger head size, higher occupational attainment, or higher levels of mental and social activity with lower rates of prevalent dementia. One review of 22 studies found an overall 46% decrease in incident dementia risk. This suggests, but does not prove, that the concept of cognitive reserve is not entirely an epiphenomenon due to a detection bias. Preliminary imag-

ing studies have demonstrated a capacity for neuroplasticity in older adults following memory training or brain injury.

Such studies have given rise to a life-course model of cognitive reserve in which premorbid cognitive ability is a central determinant of the clinical expression of disease following brain lesions or damage. Premorbid cognitive ability in turn is influenced by brain size and network efficiency, which in turn are influenced by genes, environment, health, and behavior.

The model can work in a positive or negative feedback loop. Thus, higher education enhances brain size or cognitive reserve, which reduces expression of disease. Likewise, lower education enhances unhealthy behaviors which may lead to more brain lesions, which in turn reduces cognitive reserve and leads to greater expression of disease. In such a model, there

are several potential mechanisms by which a cognitively active lifestyle might protect against dementia: effects on beta-amyloid or tau, effects on cerebrovascular disease, effects on neurogenesis and brain volume, and compensatory effects (cognitive efficiency and alternate pathways).

A recently published study of over 13,000 subjects found somewhat conflicting results. As expected, higher cognitive life style scores were associated with a lower risk for dementia and a slower trajectory of cognitive decline. However, the neuropathologic findings were conflicting and apparently gender specific.

So what are we to make of these results? The study suggests that a cognitively active lifestyle may indeed reduce clinical dementia, possibly through effects on silent cerebrovascular disease or compensatory prefrontal mechanisms. What still remains unclear is whether the observed effects are due to inherited biological disposition and early childhood influences, confounding effects of factors not measured or whether behavioral changes can indeed have an impact.

The concept of cognitive reserve is difficult to test at the cellular level in living humans and remains somewhat of a black box. Indeed, there may be multiple types of neural reserves that vary by a person's genes and environmental exposure. Likewise, our understanding of what constitutes a cognitively active brain may also be simplistic. Indeed, there may be no such thing as an idle mind. Imaging studies suggest the resting brain uses several times more energy than when the brain is directed at specific cognitive tasks. Imaging tools could potentially be used as a biomarker to select the best brain training interventions for further study.

*Adapted from *Is the Idle Mind a Devil's Workshop?* Biol. Psychiatry 2012;71:765-766.



FD~AGE Consortium Completes Long-Term Care Mini-Fellowship

The Donald W. Reynolds Consortium for Faculty Development

to Advance Geriatric Education (FD~AGE) at Duke completed a Long Term Care mini-fellowship this past March 26 – 30, 2012.

We had eight scholars in the week long program coming from various medical facilities around the country including Kaiser Permanente, Riverside, California, SUNY Downstate, Brooklyn, NY, and Indiana School of Medicine, Indianapolis, Indiana. We also hosted a Nursing scholar and visiting Faculty member from North Carolina Central University in this session. Our next mini-fellowships will be Palliative Care in June 2012 and Graduate Medical Education in October 2012. Please visit our website for further details: <http://careinaging.duke.edu>.

As part of a Duke Geriatric Education Center HRSA funded grant, we have conducted our first monthly teaching series called Delirium Teaching Rounds, dedicated to educating learners from a variety of health professions on the recognition of delirium to improve patient safety and delivery of patient services. We have had over eight sessions and topics have included Delirium: Can you recognize it?, Delirium in the Long Term setting, and Pain Management in the delirious patient. Our one hour sessions are usually held the second Friday of the month, from 12 noon – 1 pm. If you are interested in attending the next session, please contact Michele Burgess either via email – Michele.burgess@duke.edu or 919.660.7577. In May, the Health and Human Services released an ambitious national plan to fight Alzheimer's disease. The plan was called for in the National Alzheimer's Project Act (NAPA), which President Obama signed into law in January 2011. As part of this plan, the Duke Geriatric Education Center received supplemental funding in May 2012 as part of the HRSA plan to improve the care of patients with Alzheimer's Disease through improved recognition and management. The plan is to leverage existing GEC expertise and resources for delirium education and apply them to community providers caring for those with Alzheimer's. For further information, please contact Dr. Mitch Heflin via email—Mitchell.heflin@dm.duke.edu.

Leadership in an Aging Society Program (LASP) Announces Interns

The Duke Leadership in an Aging Society Program (LASP) is pleased to announce that three Duke students have been selected to be interns for 2012. The program, directed by Dr. Deborah T. Gold, funds summer learning experiences related to leadership in aging for Duke undergraduate and graduate students. Interns will work closely with a faculty mentor, complete internships or research projects, and develop networks with peers and leaders in the Center for the Study of Aging and Human Development.

Natalie Miller is an undergraduate student pursuing a BA in Biology. Under the guidance of her mentor, Ornit Chiba-Falek, Natalie will conduct lab research on the genomics of Alzheimer's and Parkinson's diseases.

Collin Mueller is a graduate student pursuing a PhD in Sociology and a Master of Divinity. Under the guidance of his mentor, Linda George, Collin will survey and interview staff at a faith-led medical ministry to examine the social organization of retired physicians and underserved patient populations.

Yuqing Hu is a graduate student pursuing a MA in Economics. Under the guidance of her mentor, Joseph Hotz, Yuqing will analyze nationally representative survey data from the US and China to compare patterns of intergenerational family economic transfers.

Congratulations to the 2012 Leadership in an Aging Society Interns!



■ CONTINUED FROM PAGE 1

Faculty Present Research at Geriatric Society Meetings

and the Severity of Radiographic Hand Osteoarthritis.” Conclusion: small joints with osteoarthritis can make disproportionately large contributions toward systemic biomarker levels.

V. Kraus was also a coauthor of a poster on “The Association between Australian/Canadian Hand Osteoarthritis index (AUSCAN) and Biomarkers of Joint Metabolisms. They concluded that biological processes related to these biomarkers are important in hand osteoarthritis and its symptomatic consequences.

R. Lee, T. Weber, & C. Colon-Emeric presented a paper on “Cost-effectiveness analysis of screening for Vitamin D insufficiency to prevent falls and fractures among community-dwelling older adults.” They concluded that universal vitamin D supplementation without screening is the most cost-effective strategy for community-dwelling white women age 65 and 85 years. However, annual screening and targeted supplementation is more cost-effective than no screening or supplementation.

L. Martinez & M. Heflin presented a poster on “Hazards of Hospitalization: A Novel Geriatrics Curriculum for Internal Medicine Interns.” They concluded that implementation of this curriculum demonstrated improvement in intern knowledge and self-efficacy regarding hazards of hospitalization.

L. Ragsdale, C. Horney, K. Schmader & S. Hastings presented a poster on “Emergency Department Prescribing and Continuity.” They concluded that Emergency Department providers frequently prescribe new central nervous system and antimicrobial medications for older patients treated and released from the ED. Lack of communication between providers in the care for this patient population was common.

L. Ragsdale & C. Colon-Emeric presented a poster on “Older Adult Fallers in the Emergency Department.” They concluded that over 50% of fallers will return to the emergency department after an index fall, with a large proportion of the visits related to a fall. A large number of these fallers are discharged to home with less than half having recommended follow up. ■

■ CONTINUED FROM PAGE 2

Exercise and Nutritional Interventions to Prevent Dementia

and the DASH diet for heart and brain health at Duke University Medical Center. The study also will be conducted at Meadowmont Wellness Center as part of the UNC health system and at Duke Raleigh. To our knowledge, ENLIGHTEN is the first randomized controlled trial to examine the effects of both aerobic exercise and the DASH diet on changes in cognitive function among older adults at risk for cognitive problems. The study is currently recruiting sedentary adults aged 55 and older with either risk factors for heart disease or a history of heart disease to participate. ENLIGHTEN is a 6-month trial in which participants will be randomly assigned to one of four groups: aerobic exercise, the DASH diet, combined exercise and DASH diet, or a health education control group. Participants will complete measures of cognitive function both before and following completion of the trial, as well as measures of heart health and fitness. All assessments and interventions are provided at no cost to participants.

For more information about participating in ENLIGHTEN please call 919-681-4747. ■

Why Does Hair Turn Grey?

“I’ve reached the metallic age: I’ve got silver in my hair, gold in my teeth, and lead in my rear”

(ANONYMOUS)

Actually, there is no such thing as a “grey hair.” Hairs are either a color (such as black, brown, red, or yellow) or they are white. The illusion of grey hair is produced by the mixture of white and dark hairs in which the white hairs predominate. The increase of white hairs is caused by a reduction in melanin produced by the melanocytes in the hair bulb. This is an irreversible process, so unless we want to deny our age, we might as well develop the attitude that “grey is beautiful.”

*Adapted from Palmore, *Older Can Be Bolder* (Amazon, 2012)



Photo courtesy of Anita Aiken

Coming Events

July 14–19

Alzheimer's Association International Conference 2012, Vancouver, BC, Canada. Visit Alz.org/AAIC.

September 5–7

International Conference on "Ageing: Moving Beyond Boundaries." Lancaster University Centre for Ageing Research. Contact: Sue Broughton s.j.@lancaster.ac.uk

October 9–12

19th International Congress on Palliative Care, at the Palais des Congrès in Montréal, Canada. Presented by Palliative Care McGill, McGill University. For information visit www.pal2012.com.

November 14–18

GSA 65th Annual Scientific Meeting. San Diego, CA. "Charting New Frontiers in Aging". Contact Geron.org.

February 28–March 3, 2013

39th AGHE Annual Meeting. "Waves of Change: Charting the Course for Gerontological Education. Hilton Bayfront at St. Petersburg. Contact: aghe.org/am.

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