Over a third of inpatient surgical procedures in the U.S. are performed on adults over age 65, a population segment that suffers the highest rates of life-changing complications, leading to longer hospitalizations and loss of independence. A study of older adults undergoing general surgery at Duke Hospital between 2007 and 2009 revealed rates of complications similar to those nationwide. The study, led by Duke medical student Rachel-Rose Cohen, MD, and co-authored by a number of Aging Center faculty and fellows, also suggested that patients prone to complications could be identified through routine screening measures (e.g. Braden Pressure Ulcer Risk Scale), thus presenting an opportunity to prevent complications through targeted pre-operative and immediate perioperative interventions. At the time, no well-defined model for such care existed. Inspired by the vision and passion of Sandhya Lagoo-Deenadayalan, MD, PhD, a general surgeon and fellow in the Aging Center, teams from geriatrics, general surgery and anesthesia at Duke University Hospital (DUH) developed the Perioperative Optimization of Senior Health (POSH) program. Informed by traditional methods for comprehensive geriatric assessment, guidelines for pre-operative assessment of older adults, and evidence from post-operative care of hip fracture patients and the hospitalized elderly, the program’s primary aim was to optimize care and improve outcomes for high risk older adults who undergo surgery at Duke. Over the last 5 years, the program has grown into a multi-institutional, interdisciplinary, interprofessional collaboration that serves as a model for person-centered care.

The POSH program is a care-redesign initiative that utilizes the multidisciplinary expertise of geriatric, general surgery and anesthesia teams at Duke University Hospital to optimize the care

Continued on page 4
My research has been informed by my personal background and clinical observations. Growing up in a small, rural African-American community in Mississippi, I witnessed first-hand poor health outcomes among those with limited access to healthcare. As a Geriatrics fellow, I became interested in improving the care of patients near the end of life. This interest was sparked by patients like Ms. C, an African-American woman admitted to the hospital with advanced cancer. At the time of her diagnosis, Ms. C had received surgery and chemotherapy. As her cancer progressed and there were no more treatments options for the cancer, her oncologist suggested hospice. She refused stating, “That’s where they put you to die.” In the 2 months before I met her, she had been at home with significant pain, nausea, and vomiting—all symptoms that could have been addressed by hospice, allowing her to maximize the quality of her remaining life.

Ms. C is just one example of the physical, psychological, and social burden that patients and their families face at the end of life. Although hospice improves the quality of end-of-life care, African Americans are less likely than Whites to enroll in hospice. Our research examines patient factors associated with lower use of hospice among older African Americans and seeks to identify best practices among hospice providers in reaching African Americans.

In a survey of community dwelling older adults, we found that African Americans have less knowledge of hospice than Whites and are more likely to report that they have never heard of hospice. This is important because greater exposure to information about hospice is associated with a greater desire to use hospice in the future. Additionally, African Americans more commonly reported unfavorable and incorrect beliefs about hospice, such as hospice means you get no treatment or causes you to die before your time. Other factors which may explain lower rates of hospice use among African Americans included preferences for life-prolonging therapies even when prognosis is poor, spiritual beliefs about the redemptive value of suffering, and mistrust of the healthcare system.

In addition to patient factors, the practices of hospice providers may also impact hospice enrollment. That is, some hospices may be better than others at reaching African Americans. In a survey of North Carolina hospices, we found that 80% of participating hospices were concerned about the low proportion of African Americans that they served and had set goals to increase service to African Americans. Most were engaged in community education and outreach, commonly partnering with African-American churches, businesses, civic groups, social service agencies, and health care providers. Many reported attempts to hire African-American staff and train current staff to provide culturally sensitive care. These findings suggest that hospices are working to address patient-level barriers to hospice use through educational activities to dispel myths about hospice and are partnering with churches and other organizations to better understand spiritual beliefs and build trust. We recently completed a national study of hospices to identify best practices in reaching African Americans. The goal of this research is to develop interventions which ensure that all older adults have access to high quality end-of-life care.

the Center Report

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Palliative care is actually a specialized approach to easing suffering for people with serious illness. It is provided by a team of doctors, nurses, social workers, and other specialists who focus on easing pain and other symptoms, and reducing stress. Palliative care may include medications, counseling, and help to better communicate patient values, goals, and treatment preferences to health care providers. The goal is to enhance the quality of life for the person and for his or her family and caregivers. There is some evidence that palliative care may also prolong a person’s life. In addition, it may reduce wasteful spending on avoidable hospital costs and hopeless treatments.

So with all these benefits, why do some people resist palliative care? Probably because of a mistaken belief that it is only for people who are dying and that no further attempts to cure the underlying illness or prolong life will be made. In fact it is not limited to end-of-life situations. Palliative care is appropriate at any stage of illness, can be provided along with curative or life-prolonging care, and is available in inpatient and outpatient settings.

I agree with the AARP that:

- Medicare should facilitate more palliative care outside of hospice and let beneficiaries know about this option.
- All hospitals and nursing homes should offer palliative care teams.
- Palliative care should play a greater role in medical, nursing, and social work education.

For more information about palliative care, you can go to getpalliativecare.org.

*Based on “Palliative Care: A Key to Living With Dignity” by Jeannine English in AARP, The Magazine. The opinions expressed are those of the editor.

**IN THE NEWS**

**Murali Doraiswamy, MD,** was featured in an article, “Professor: Wake up to sleep’s critical role” on the front page of The Herald Sun, May 2, 2016. The article quotes Doraiswamy as saying that the public needs to wake up to the crucial role sleep plays in keeping us health. He is identified as “an internationally recognized expert in brain health with Duke Health Systems.” Doraiswamy is Head of the Division of Biological Psychiatry and a Senior Fellow at the Duke Center for the Study of Aging.

**Linda K. George, PhD,** Professor of Sociology and Associate Director of our Center on Aging, has been awarded a Distinguished Professorship. She first came to Duke as a graduate student in 1973 and received her Ph.D. in 1975. She then enrolled in postdoctoral training at the Aging Center from 1975-1977. With her training complete, she joined the faculty in the Department of Psychiatry in 1977 and later moved her primary appointment to the Department of Sociology. Congratulations!
WE ARE 6TH AND 7TH!

The US News and World Report has ranked two Aging Center related specialties as among the top ten in the nation. The School of Nursing program in Acute Care Gerontology was rated as sixth and the School of Medicine Geriatric specialty was rated as 7th.

The U.S. News rankings are based on a combination of statistical data and expert assessment surveys.

CONGRATULATIONS TO EVERYONE INVOLVED!
FREQUENTLY ASKED QUESTIONS*
Can most old people do normal activities without help?

Some of our modern grandmothers are so young and spry, they are helping Boy Scouts across the street.

More than 85% of people over 65 are able to carry out their normal activities of daily living without help, such as eating, bathing, and dressing. Ten percent need help and another five percent are in long-term care institutions such as assisted living and nursing homes.

*Adapted from Older Can Be Bolder by Erdman Palmore, Ph.D. (Create Space: Amazon, 2011)

POSH Reduces Length of Stay (continued)

The Center of Excellence nationwide from nearly 60 applications. Led by Drs. Lagoo-Deenadayalan and Heflin, and supported through the VA Department of Surgery and the Durham Geriatric Research Education and Clinical Center (GRECC), the Center of Excellence has established a replica of the Duke POSH program at the Durham VA, but with a broader mission to educate trainees across involved professions in a model based in proactive, patient-centered assessment. The program has established a framework for perioperative management that emphasizes three key principles of value-based care, including a focus on risk-stratification and prevention, communication and coordination, and quality improvement plans. The team has developed a series of web-based modules that detail the various “care points” included in the POSH intervention. The program to date has completed assessments on over 160 veterans. Nancy Loyack, DNP, the program manager, oversees center operations and its multifaceted projects.

The Duke and VA POSH programs present important innovations on several fronts. 1) Patient-Centeredness. The program engages patients and families closely in the assessment and decision making process and recruits caregivers to participate as team members. 2) Prevention. POSH has pre-operative, post-operative and post-acute components to reduce risk and prevent complications pre-emptively. 3) Shared Decision Making. POSH strives to enhance shared decision making regarding the need for surgery and other invasive procedures, and the benefits and risks, by providing detailed algorithms of care and expected outcomes. 4) POSH focuses on the care of the frail, vulnerable aging population. 5) Interprofessional. POSH aims to create a program that is fundamentally interprofessional and multidisciplinary. 6) POSH provides a model of care that combines the technical expertise in surgery with the global perspective of geriatrics.

The POSH program offers older adults at Duke and the VA undergoing elective surgery a truly innovative model of care that combines the best elements of traditional geriatric assessment with modern surgical advances to improve operative outcomes and quality of life. In the near future, we hope to expand the program to include more surgical specialties in more locations. As the program grows, however, we also remain committed to educating learners from all professions in person-centered surgical care and to gaining new understandings of risk and recovery to optimize experience and outcomes.

Reference:

The Duke Aging Center successfully competed for a 5-year renewal of the highly prestigious Claude D. Pepper Older Americans Independence Center (Duke Pepper Center). The Duke Pepper Center supports research and training that improves independence in older Americans. The Duke Pepper Center has been continuously funded since 1991 under the leadership of Dr. Harvey Cohen, and now Drs. Kenneth Schmader and Miriam Morey. For the competitive renewal the Duke Pepper Center was reorganized and restructured to introduce an evolution in research focus, building on our past theme of understanding and modifying functional decline, to a focus on understanding and optimizing reserve and resilience.

Our evolution in research focus represented the natural course of scientific discovery in our center: our studies of functional decline demonstrated that some individuals resist decline or recover well from a stressor. These observations generated new questions about the underlying mechanisms of resilience and possible interventions to optimize resilience; to prevent or reduce functional decline; and to maintain independence. In preparation for the application, Duke investigators performed a systematic review of the literature to determine current definitions and conceptualizations of resiliencies in older adults. Eighty percent of the existing literature could be categorized as psychosocial, leaving ample room for investigations focusing on physical resilience. A conceptual model was developed which describes a tightly integrated relationship between physiologic reserve and resilience influenced by psychosocial factors, genetics, life experience, and the environment (Figure 1).

In the systematic review of the scientific literature, we discovered that although there is an extensive knowledge base about psychosocial resilience and aging, there are substantial gaps in knowledge of measures, analytical strategies, mechanisms and interventions to optimize physical resilience. This review was presented at the 2015 Pepper OAIC Annual Meeting and an NIA Workshop, held in Bethesda, MD in August 2015. This background contributed to our Center's evolution grounded on the knowledge that there are substantive opportunities to advance scientific knowledge regarding the contributions of physical resilience to independence in older adults. Furthermore, Duke has an abundant pool of junior and senior researchers and programs uniquely positioned to tackle questions within our focus from multiple angles. This focus lends itself well to the Duke OAIC's considerable multidisciplinary and translational strengths and provides diverse training opportunities for early stage investigators. Moreover, physical resilience is an emerging area related to independence in older adults currently lacking in the national OAIC portfolio.

The Duke Pepper Center consists of a Leadership and Administration Core (led by Drs. Kenneth Schmader and Miriam Morey, with Dr. Harvey Cohen serving as Senior Advisor), a Research Education Component (led by Drs. Cathleen Colon-Emeric and Kimberly Johnson), a Pilot and Exploratory Studies Core (led by Drs. Heather Whitson and William Kraus), and three Resource Cores: Molecular Measures Core (led by Drs. Virginia Kraus and James Bain), Physical Measures Core (led by Drs. Miriam Morey and Katherine Hall), and Analysis Core (led by Drs. Carl Pieper and Jane Pendergast). The specific aims of the Duke Pepper Center are: (1) to better understand and optimize reserve and resilience in older adults through an integrated research program that emphasizes translational and team science; (2) to develop and evaluate new methods that advance the study of reserve and resilience focusing on new analytical strategies and measures for physical resilience and cell/tissue/organ level reserve in late life and across the life span; (3) to identify and develop the next generation of researchers who will become leaders in aging and geriatrics research related to physical resilience.

Figure 1. Duke OAIC Research Framework

Pepper Center Receives 5-year Renewal

Continued on page 7
the Duke OAIC focus; and (4) to support pilot studies that acquire information needed to select or design successful, more definitive research studies related to the Duke Pepper Center focus.

The Duke Pepper Center will initially support five early stage investigators under the Research Education Component: (1) Daniel Belsky, Ph.D., whose work focuses on “Quantification of molecular signatures of resilience in aging”; (2) Rasheeda Hall, MD., whose work focuses on “Resilience in older dialysis patients”, (3) Juliessa Pavon, MD., whose work focuses on “Mobile health technology to improve hospital ambulatory activity”, (4) Denise Wei Duan-Porter, MD, PhD, whose work focuses on “Exploring reserve and resilience in older long-term cancer survivors”, and (5) Micah McClain, MD., whose work focuses on “Genomic signatures of resilience in acute viral infections”. Four supported pilot studies include: (1) Pre-operative exercise to enhance resilience after surgery in older adults (Miles Berger, MD.), (2) Rejuvenation of aging chondrocytes to enhance reserve and prevent osteoarthritis (Amy McNulty, PhD), (3) The role of autophagy in aged satellite cells: optimizing muscle reserve (James White, Ph.D.), and (4) Geriatric assessment and biomarkers to predict resilience in multiple myeloma chemotherapy (Sascha Tuchman, MD.). Each Resource Core, in addition to supporting the work of Pepper Center investigators will advance the science of resilience by developing new methods in molecular profiling capabilities, physical measurement capabilities, and analytic modeling. The Physical Measures Core will host an annual competition “Emerging Discovery”, in conjunction with the Duke Institute for Health Innovation for development of health technologies. The first proposed Emerging Discovery project is entitled “Development of two new tools to measure muscle reserve and function using electrical impedance myography (EIM) and quantitative muscle ultrasound (QMUS)” (Lisa Hobson-Webb MD and Kevin Caves BME are co-principal investigators).

The Duke Pepper Center will also support collaborative research with investigators whose funded work is relevant to our Center theme such as collaborations with the MURDOCK team for a Physical Performance Across the Adults Lifespan study and The Dunedin Study of Aging in 1000 Healthy Young Adults, and a host of other ongoing investigations. New investigators and pilot studies will be supported in later years. Please contact us if you are interested in involvement in this exciting work.

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Forever Young

Is falling apart inevitable as we get older? Not for tiny aquatic animals called hydra, says a team led by Duke University aging researcher James Vaupel, PhD, Professor of Public Policy Sciences. Unlike us, hydra continue to survive and reproduce well into old age, the researchers found. The results are part of an eight-year study of more than 2,000 individuals at the Max Planck Institute for Demographic Research. Hydra are closely related to sea anemones and jellyfish. They manage to keep their bodies young by replacing damaged or lost body parts every few weeks, so harmful mutations have little chance to build up, the researchers say.

SLOGAN FOR THE DAY:
If aging improves quality, I’m approaching perfection.
Grand rounds provide an opportunity for reflection on one’s work. Having spent the past three decades involved in clinical programs and research surrounding physical activity and exercise for older persons, I’ve developed a few opinions on the matter. Undoubtedly, physical activity and exercise are beneficial to our health; each has a place in health maintenance. And yet to this day, I wonder what role, if any, the medical system should have in providing opportunities for exercise as health promotion for our patients who view us as their partners in health care.

Physical activity and exercise are two different concepts. Physical activity refers to any movement involving skeletal muscles that result in energy expenditure above baseline. Unfortunately about two thirds of older adults don’t “move” enough, spending far too much time being sedentary. Sitting around all day, either at the office or at home is not good for health. A recent study found that for each hour above seven spent sitting, our risk of mortality increases by about 5%. Prolonged daily sitting was linked to 3.8% of all-cause death. So, from a population health perspective, we have a lot to gain by just getting people to move more and become more physically active. Exercise, on the other hand, is a type of physical activity consisting of planned, structured, and repetitive bodily movement done to improve or maintain one or more components of physical fitness. When we exercise we are more intentional about our activity and typically are more focused on spending more time, intensity and frequency at a given exercise or set of exercises for a particular gain. In general, exercise is more robust than physical activity; and dose matters: the more physically active you are, or the more you exercise, the more benefit you will likely accrue.

A case study from my clinical work should illustrate this point. I have had the privilege of directing a clinical exercise program at the Durham VA Medical Center called Gerofit. A unique aspect of Gerofit is that it is not time limited. That is, Veterans eligible for our program can join the program and stay as long as they like. The focus on the program is not on rehabilitation or restorative care, which tend to be time-limited; but on exercise as a lifelong habit to optimize health. Some of our Veterans have been attending Gerofit regularly for over 20 years! One of our Veterans came to our program six years ago following a series of severe strokes which left him with left-sided deficits. He could barely use his arms, had difficulty walking, used a wheelchair to get around, and was a frequent faller. He went through a six-month stroke rehabilitation program followed by an additional home-based exercise program that included home health physical therapy visits. He met goals for safe mobility at home but felt that he needed more so that he was healthy and not dependent upon others to get him around. He was very lucky to have access to Gerofit where he could get an exercise program that was specifically tailored to his functional needs. When he began the program, his abilities were far below normal on each of the five measures assessed. With determination and commitment on his part to exercise regularly, it took him almost 5-6 years to get his scores to normal levels – and this gentleman had suffered from multiple strokes! He now functions almost normally in every domain measured and has happily not fallen in years. You can hear his story in this 1 minute video: https://www.youtube.com/watch?v=4go-QRKjjJls.

There are several important take-home messages from this example. First, because he started out with so many impairments in different aspects of his physical health, it took many years of consistent work on his part to achieve these gains. He could not have been told to simply go out and be more physically active – he needed a more robust and structured approach to exercise. Second, he was fortunate to have access to a program with a medical basis that was available for him – this type of program is not typically available for our patients. And finally, he had to take ownership of his health and make exercise a necessary...
New Studies Announced

The Duke Bryan Alzheimer's Disease Research Center announced that two new studies to prevent Alzheimer's Disease (AD) will be enrolling this spring and summer. The first of these is PREPARE-II. This study builds off the first PREPARE study, which was conducted at Duke four years ago and paved the way to the large study to delay the onset of AD called TOMMORROW.

The PREPARE II study will examine cognitive abilities in people who participated in PREPARE four years ago and will explore the relationship of cognitive change to common exposures in the environment, including common medications. Investigators hope to see the same high participation rates that they saw in the first study and use the information from both PREPARE I & PREPARE II to address factors that are modifiable so as to improve brain health here locally.

The second study, CONNECT, is a new brain imaging initiative that will use novel high-quality MRI techniques to advance our understanding of how the left and right brain hemispheres cooperate to compensate for injuries and maintain cognitive health in healthy aging.

This research study is directed by Dr. Simon Davis and is funded by the Department of Neurology. The ultimate goal of the study is to use the information gathered to design better and more personalized approaches for enhancing brain health.

A third study called ENLIGHTEN has been ongoing for a couple of years now and is still inviting new participants. It is a very practical clinical trial conducted by the successful team led by Dr. James Blumenthal in Behavioral Medicine. The study examines the benefits for brain health by beginning an exercise program, getting on a healthy “heart smart” diet, or by doing both, diet and exercise in people who have been relatively sedentary. The goals of the study are to develop a better understanding of the role that cardiovascular risk factors play in Alzheimer’s disease and then to use this information to design better and more personalized approaches to enhance brain health.

To get involved or find out more information on any of these studies, please contact Michelle McCart: email: michelle.mccart@duke.edu or by phone 919-668-0820.

Spotlight On Physical Activity and Exercise (continued)

priority. The benefits he reaped have been replicated by many of our program participants. We have also shown that participants in our program have a 25% lower mortality rate than dropouts over a ten year observation period.

Much of what I have learned over the years comes from our clinical and research programs which systematically measure physical activity and physical function. Many of us who study aging bemoan the fact that our medical system doesn’t routinely assess simple measures of exercise capacity and physical capabilities. Our basic battery of tests take very little time and space to administer and provide a window into future health outcomes. We have learned that all of these tests tend to show declines over time. Unfortunately, it is difficult to discern deficits in mobility, strength, and balance until performance becomes severely impaired. We are now working on a large study in which we are using this functional battery across a full adult life span among adults ages 30 and above. We are finding that people begin to demonstrate impaired function in their 40’s and 50’s for some of these measures. This begs the question as to whether we should be performing these simple tasks routinely for all of our patients. More importantly, should we expand the role of our medical systems to provide exercise opportunities for our patients to optimize late life function?  

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COMING EVENTS

Contact: www.alz.org/aaic.

October 3–5: 4th International Conference on Geriatrics & Gerontology.
Contact: geriatrics-gerontology.conferenceseries.com.

Annual Scientific Meeting of the Gerontological Society of America in New Orleans, LA.
Contact: www.geron.org/2016.

March 7–12, 2017: 43rd Annual Meeting of Association for Gerontology in Higher Education.
Miami, FL. Contact: meeting@aghe.org.

Hyatt Regency Chicago. Contact: www.americangeriatrics.org