Aging Institute • 2015 Annual Report

UPMC Senior Services & the University of Pittsburgh

SOWING SEEDS FOR MORE REWARDING LIVES

University of Pittsburgh

UPMC | SENIOR SERVICES

Recommendations of the Pennsylvania State Plan for Alzheimer's Disease and Related Disorders

In February 2014, the members of the Pennsylvania Alzheimer's Disease Planning Committee presented the following recommendations to the Office of the Governor as part of its State Plan for Alzheimer's Disease and Related Disorders in support of the growing needs of the nearly 400,000 Pennsylvanians suffering from these diseases. Among those serving on the 23-member statewide committee was the Aging Institute's Director, Charles F. Reynolds III, MD.

These recommendations have helped to inform and focus the activities of the Aging Institute in its work.

1. Improve awareness, knowledge, and **sense of urgency** about medical, social, and financial implications of Alzheimer's disease and related disorders (ADRD) across the Commonwealth.
2. Due to the magnitude of the ADRD epidemic, identify and, where possible, **expand financial resources** to implement this plan through federal, state, foundation, private, and other innovative funding mechanisms and partnerships.
3. Promote **brain health and cognitive fitness across the life cycle**, from birth onward.
4. Provide a **comprehensive continuum of ethical care and support** that responds to social and cultural diversity, with services and supports ranging from early detection and diagnosis through end-of-life care.
5. Enhance **support for family and nonprofessional caregivers** and those living with ADRD.
6. Build and retain a **competent, knowledgeable, ethical, and caring workforce**.
7. Promote and **support novel and ongoing research** to find better and effective cures, treatments, and prevention strategies for ADRD.

AGING INSTITUTE

2015 Annual Report

UPMC Senior Services & the University of Pittsburgh

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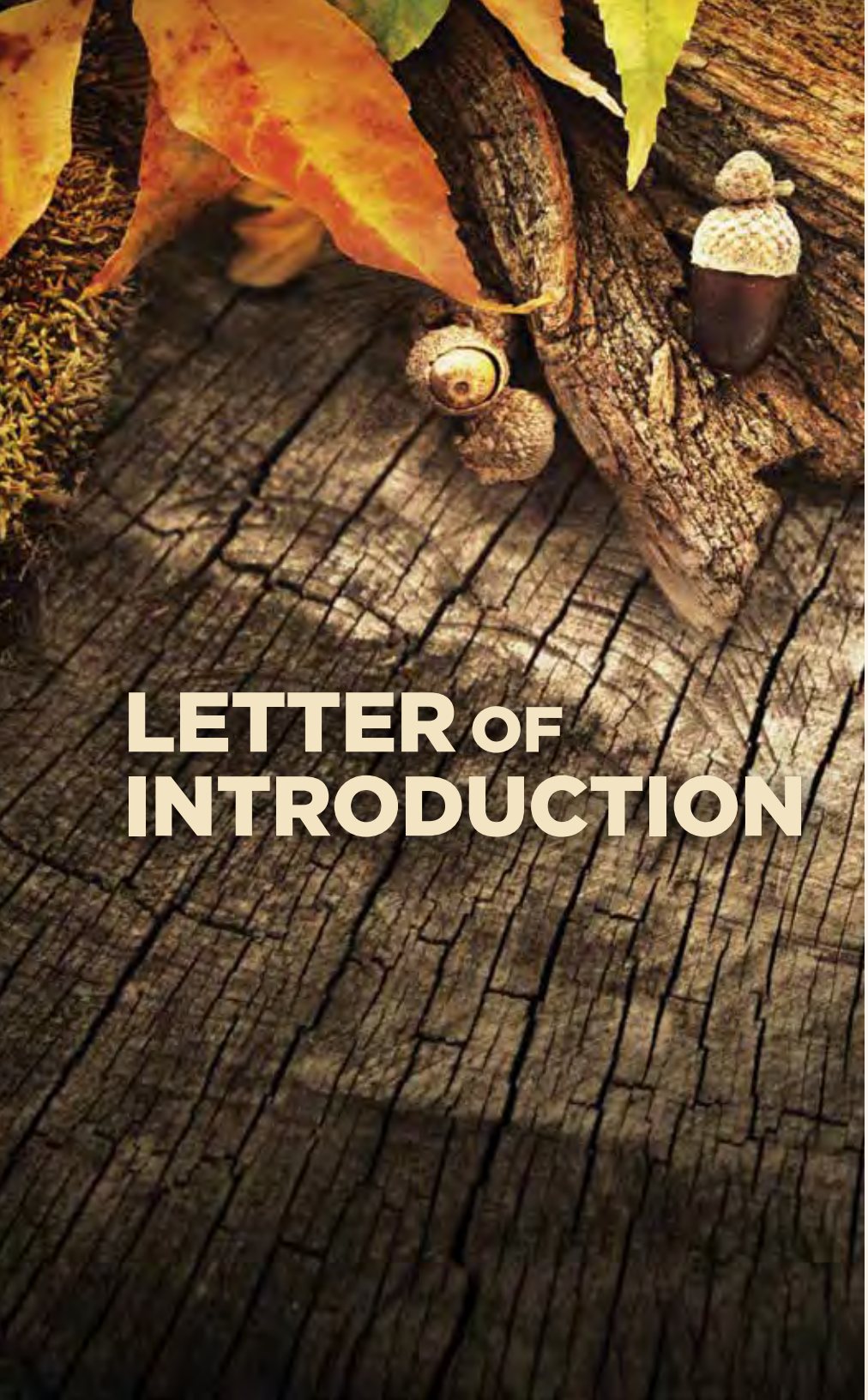
As demonstrated throughout the pages of this annual report, the Aging Institute focused its energies on the following core themes during 2015:

Achieving a better understanding of healthy brain aging;

Having a greater voice on health policymaking that impacts older adults and their caregivers — regionally, statewide, and nationally; and

Supporting the growing needs of caregivers, particularly long-term dementia caregivers.



LETTER OF INTRODUCTION

It is our honor and privilege to co-author this introduction to the 2015 Annual Report of the Aging Institute of UPMC Senior Services and the University of Pittsburgh.

In doing so, we celebrate the deserved recognition accorded to our colleague and friend, **Charles F. Reynolds III, MD**, director of the Aging Institute, as the recipient of the 2015 Grand Champion Award by UPMC Senior Services. Under his inspired leadership, the Aging Institute has evolved into a nationally recognized authority on the myriad of challenges facing us as we age and a respected resource for innovative solutions and groundbreaking interventions. Pittsburgh is recognized as a national leader in aging research, education, and innovative clinical services due, in large part, to the vision, commitment, and hard work of Dr. Reynolds.

As early advocates of aging research and geriatric care in Pittsburgh — and proud founding members of the Aging Institute — we personally salute the many accomplishments that have been realized through the tireless work of our colleagues in advancing global understanding of aging and the needs of older adults, and the quality of health care and support services administered on their behalf. How far we have come!

The late Thomas Detre, MD, whose leadership and vision transformed the trajectories of both the University of Pittsburgh and UPMC, believed that the problems of older adults were among the most interesting and challenging of all in medicine, because to effectively address them requires a multidisciplinary approach characterized by the active collaboration of physicians, nurses, therapists, psychologists, educators, researchers, and others.

Those of us who are partners in the great work of the Aging Institute wholeheartedly agree. Indeed, as you'll read in subsequent pages of this report, the need for greater investment by our country's business, government, health care, insurance, and education sectors is only accelerating.

This report is a tribute to the spirit of collaboration that is the hallmark of the Aging Institute. Working together, the University of Pittsburgh and UPMC are steadily breaking down silos by bridging the shared interests of academic disciplines and clinical specializations. Each year, the new partnerships forged —

and the knowledge shared — are having a profound practical impact in the shaping of research agendas, the forging of important public policy, and on direct patient care.

The work of the Aging Institute has long and deep roots at the University of Pittsburgh and UPMC, beginning with the formation of its predecessors: the Council on Aging in 2000 and the University of Pittsburgh Institute on Aging in 2002. Many of the early initiatives started then — including the creation of a call center to respond to community needs … the partnership with UPMC's health care system and providers to enhance care of the region's seniors … the funding of seed grants to support promising young researchers … and the convening of Research Day to showcase and demonstrate the work being done at both bench and bedside — continue to flourish today under the direction of the Aging Institute.

This report chronicles the remarkable successes of these and many other new initiatives under Dr. Reynolds's aegis — from the exciting basic and clinical research work of the Healthy Brain Aging Workgroup to the groundbreaking work of the RAVEN team in reducing unplanned hospitalizations at 19 skilled nursing facilities in western Pennsylvania. We also celebrate the successes of both our new and long-term partners, including the Basic Biology of Aging Workgroup, the Pittsburgh Claude D. Pepper Older Americans Independence Center, the Geriatric Education Center, and the Alzheimer Disease Research Center.

On Dr. Reynolds' behalf, we acknowledge with appreciation those who help make the work of the Aging Institute possible, beginning with the guidance of its general advisory and executive boards, which include representation from the UPMC health system and Health Plan, as well as numerous disciplines throughout the schools of the University of Pittsburgh. We express gratitude f or the continued participation of the Aging Institute's many supporters — Steven D. Shapiro, MD, president, and Leslie C. Davis, executive vice president, UPMC's Health Services Division; Diane Holder, president, Health Insurance Division; the leadership of the University of Pittsburgh Schools of the Health Sciences: Thomas Braun, DMD, PhD, School of Dental Medicine; Clifford Brubaker, PhD, School of Health and Rehabilitation Sciences; Donald Burke, MD, Graduate School of Public Health; Jacqueline Dunbar-Jacob, PhD, RN, FAAN, School of Nursing; Patricia Kroboth, PhD, School of Pharmacy; Arthur S. Levine, MD, School of Medicine; and Larry Davis, MA, MSW, PhD, School of Social Work; and Patricia Beeson, PhD, provost, University of Pittsburgh.

We also express our gratitude for the early support extended by Dr. Detre, Dr. Levine, and by the president and CEO of UPMC, Jeffrey A. Romoff, in funding aging initiatives, including the creation of the Aging Institute. They recognized the importance of leading while contributing to a body of work serving to enhance contemporary understanding of the promise of aging, along with its challenges and opportunities. In so doing, Pittsburgh is now a cynosure for some of the best and brightest work on the subject of aging in the world today.

Neil M. Resnick, MD

Associate Director, Aging Institute

Chief, Division of Geriatric Medicine and Gerontology

Thomas P. Detre Professor of Medicine

Director, John A. Hartford Foundation Center of Excellence in Geriatric Medicine

University of Pittsburgh School of Medicine and UPMC

Richard Schulz, PhD

Associate Director, Aging Institute

Distinguished Service Professor of Psychiatry, School of Medicine

Professor of Epidemiology, Sociology, Psychology, Community Health, Nursing, and Health and Rehabilitation Sciences

Director, University Center for Social and Urban Research

Director, Geriatric Education Center of Pennsylvania

Aging Institute Workgroups

The aging process can have a profound impact on the functioning of the human brain. Convening experts who represent diverse disciplines from the University of Pittsburgh, UPMC, and UPMC Health Plan, the Aging Institute Workgroups continued their focus on promoting healthy brain aging in 2014–15, identifying ways to combat the diseases and complications of the aging brain, and supporting the growing needs of caregivers.

The Healthy Brain Aging Workgroup

Unraveling the Mystery of Brain Aging

Just as our bodies change as we age, so too do our brains — changes that range from reduced blood flow to shrinking and inflammation. These changes increase our susceptibility to neurodegeneration and cognitive decline, as well as to the ravages of disease processes like stroke, and Parkinson's or Alzheimer's disease.

Are these changes inevitable or are there measures we can take to protect our brains from aging-related decline? In 2014–15, the members of the Aging Institute's **Healthy Brain Aging Workgroup** continued their study of the impact of physical activity on healthy brain aging.

"Our multidisciplinary Workgroup is particularly well positioned to look at developing preventative strategies, especially those linked to changes in lifestyle," says Workgroup chair **Judy Cameron, PhD**, professor of psychiatry and director of the Science Outreach Program at the University of Pittsburgh.

"We already know that our brains respond to even a little bit of activity — unlike our hearts, which require a much higher level of aerobic exercise," says Dr. Cameron. "This year, we initiated dual basic science and clinical research projects that examine the contributions of physical activity to brain health and cognition. Our goal was to get both our animal subjects and participating older adults to be more active in small doses, and then measure the impact of that activity."

The Impact of an Enriched Environment on Older Animals

For more than 40 years, **Michael J. Zigmond, PhD**, professor of neurology at the University of Pittsburgh, has studied cellular and animal models as part of his research on Parkinson's disease (PD). "We don't know what causes Parkinson's, but we know that aging is a very real factor," he says. "About one in 100 adults gets PD, starting around 60 years old and sharply rising with age."

Dr. Zigmond's current research focus is the impact of the lack of physical exercise among most adults, which he believes causes a decrease in neuroprotective factors within the brain. "Today, we follow a very different lifestyle than our hunter-gatherer ancestors. We've gone from miles of walking and running each day to virtually no activity," he says. "As we grow older, we become even less active. And because many older adults no longer drive, or can't hear or see as well, they often become socially isolated."

Dr. Zigmond was awarded a seed grant from the Aging Institute in spring 2014 to lead the Healthy Brain Aging Workgroup's basic science research project, titled *Does Environmental Enrichment and Associated Exercise Promote Healthy Aging That Can Be Detected by Peripheral Biomarkers.* In addition to observable physical activity, the project measured other signs of change, including possible biomarkers and muscle mass. Also participating in the study were **Richard J. Smeyne, PhD**, faculty member, St. Jude Children's Research Hospital; **Donna L. Korol, PhD**, associate professor of biology, Syracuse University; and **Abbe N. de Vallejo, PhD**, associate professor of pediatrics and immunology, University of Pittsburgh School of Medicine.

The group studied small groups of older rats that were placed together in an enriched social environment, complete with running wheels, climbing areas, and balls. "At the end of the four-month mark in this environment, the older adults began to move more and play

with other rats and with their toys," says Dr. Zigmond. "While their level of actual physical activity was modest, they were more socially interactive and engaged."

Dr. Zigmond is continuing to work with other researchers to explore aspects of the experiment, including cognitive function, genetics, oxidative stress, and inflammation. "Results aren't always immediately visible. If I'm a diabetic and I skip my insulin, I may not initially see its impact, but I can definitely see a rise in my blood glucose levels. While we may not yet understand the full results of what occurred in our research, we do know that good things are happening." Among the changes seen by Dr. Zigmond's group is a marked increase in a neuroprotective factor in the hippocampus, a key area for cognition.

Enhancing Brain Health Through Exercise

Can intermittent activity across the day be neuroprotective in older people? That is the question posed by the Healthy Brain Aging Workgroup's seed grant clinical research study, *Examining the Contribution of Physical Activity to Brain Health and Cognition in Older Adults*, led by **John M. Jakicic, PhD**, chair of the Department of Health and Physical Activity at the University of Pittsburgh.

"A physical exercise regimen typically involves 30 to 60 minutes of continuous activity. In this project, however, our goal is to engage participants in three brief periods of exercise that they can do at home every day, plus one weekly group session initially with our staff," says Dr. Jakicic. In addition to observing participants as they exercise, the group session provides valuable social interactions and the opportunity to discuss other behavioral factors that may be important to maintain engagement in physical activity.

Participants gradually transition from one to three 10-minute daily exercise sessions, using electronic tablets with activity videos that demonstrate each exercise, which were developed by the University of Pittsburgh's Department of Health and Physical Activity specifically for this study. The goal is to make it easier for study participants to know how to do their exercises in the convenience of their own homes. Periodically, participants also will wear an activity monitor to allow investigators to examine patterns of total activity over the study period. The project also examines whether the cognitive and physical function of participants improves with an increase in physical activity.

"One of our early challenges was to identify the right level of activity in the exercises," says Dr. Jakicic. "Our goal is to have participants reach 50 to 70 percent of their maximum heart rate. That's greater than what you would get strolling around the mall window shopping but still sufficiently vigorous to provide a stimulus that can impact health outcomes."

Recruitment efforts targeted a broad representation of the community. By late spring, 22 participants between 65 and 75 — mostly female — were recruited toward the total goal of 30 participants. All participants had to pass a walking test, sign a physical consent form, and complete neurological and psychological reviews to begin the program. The first cohort began the exercise protocol in the summer of 2015.

Will lifestyle intervention through physical activity actually slow the typical markers of aging?

"Since beginning this project, we've received a great deal of interest from research colleagues in the fundamental basic biology biomarkers of aging," says

Dr. Jakicic. "Mitochondrial function markers are especially important. As such, we are trying to collect samples in such a way as to allow for a wide variety of investigative uses."

The Delirium Workgroup

Changing Perceptions of Delirium

In 2014–15, members of the Aging Institute's Delirium Workgroup finalized initiatives set into action last year to generate increased recognition of delirium by health care professionals in both hospital and senior community settings, as well as to better educate the public about this growing problem.

- A brochure on the causes and signs of delirium, *What's Wrong With My Mother?*, was developed for distribution in hospitals and physician offices.
- Three training videos created last year in conjunction with the Donald D. Wolff Jr. Center for Quality, Safety, and Innovation at UPMC on hypoactive, hyperactive, and Intensive Care Unit (ICU) delirium became **mandatory training** in 2015 at all UPMC Senior Communities skilled nursing facilities. The videos, which feature dramatic vignettes of patients experiencing delirium, also can be viewed on the Aging Institute website at **Aging.UPMC.com**.

The Dementia Workgroup

Exploring the Potential Health Cost Benefits of Caregiver Interventions

Few paths are as arduous as the one faced by caregivers of older adults with Alzheimer's or dementia — diseases that progressively rob loved ones of their cognitive, physical, and functional abilities. For the last three years, the **Dementia Workgroup** of the Aging Institute has focused its efforts on addressing the evolving needs of caregivers through the stages of the disease.

In 2014–15, plans took shape for an innovative research project to explore the potential health cost benefits of caregiver interventions. The project is being led by Dementia Workgroup members **Richard Schulz, PhD**, who chairs an Institute of Medicine committee on family caregivers of older adults; **Howard B. Degenholtz, PhD**, associate professor of health policy and management at the University of Pittsburgh's Graduate School of Public Health; **Rick Morycz, PhD**, associate professor of psychiatry, medicine, and social work, Western Psychiatric Institute and Clinic of UPMC; and **John Lovelace, MS, MSIS**, president, government programs and individual advantage at UPMC Health Plan.

"It's been well established that caregiving is a risk factor that threatens the health and well-being of the caregiver and, ultimately, the care recipient. Fortunately, there are a host of viable support interventions available to assist them," says Dr. Degenholtz. "In an ideal world, a multidisciplinary team of health care providers work together to conduct assessments and connect caregivers with these services. But in reality, most caregivers don't have such access."

One of the major problems confronting the health care system in delivering interventions is that there is no standard way to identify caregivers. "They aren't systematically tracked in medical records, by insurers, or even by doctor's offices," says Dr. Degenholtz.

Through this cooperative initiative with UPMC Health Plan, the project will conduct a survey of Health Plan members as a means to identify unpaid care providers. In-depth phone interviews will then be conducted with a small sample of these caregivers. The Health Policy Institute of the University of Pittsburgh will provide data analysis.

"Once we've reached out to the caregivers, we can begin to introduce interventions, with the goal of determining whether they can make a difference in overall health care cost outcomes," says Dr. Schulz.

The research team will evaluate the overall conditions of both the caregivers and care recipients. "We'll look at their utilization profiles, analyze how they are doing, and determine how we can effectively triage intervention," says Dr. Schulz. "By better understanding the scope of the problem, we can begin to introduce solutions." It is hoped that ultimately an algorithm could be developed for insurers to proactively identify caregivers who may need help.

Leading the Family Caregiver Committee of the Institute of Medicine

Delivering public and private policy recommendations

Richard Schulz, PhD, associate director of the Aging Institute and the distinguished service professor of psychiatry at the University of Pittsburgh School of Medicine, is currently chairing an ad hoc committee of the Institute of Medicine (IOM) to study family caregiving for older adults.

Formed in October 2014, the committee is charged with providing recommendations for public and private sector policy to support the capacity of family caregivers to perform critical care tasks, minimize the barriers they face, and improve the health care and long-term services and supports for care recipients. In developing its policy recommendations, the IOM committee will consider relevant federal programs and policies, private and public health insurance benefits and reimbursement rules, workplace issues, and other factors.

"Family caregivers are an essential but little understood part of the American health care system. Their existence is widespread, and their financial impact is seriously understated," says Dr. Schulz. "This study is taking a detailed and comprehensive look at what caregivers do and evaluating the health effects of being a caregiver. Among other things, we're looking at the intersection of caregiving and the workplace, particularly among middle-aged women."

A draft of the committee's report was submitted in December 2015, with publication expected in spring 2016.

Research

A core mission of the Aging Institute is to foster novel, cross-disciplinary, age-related research among all the departments, laboratories, and centers throughout the University of Pittsburgh and UPMC. Through such collaborations, it brings the talents of gifted scientists, researchers and clinicians to bear in developing solutions to the rising health, social, economic, ethical, and legal challenges that our nation faces as its aging population steadily grows.

UPMC's RAVEN Grant: Year Three

Reducing **AV**oidable Hospitalization Using **E**vidence-based Interventions for **N**ursing Facility Residents

Hospitalizing nursing home residents often triggers a downward spiral that leads to expensive, disorienting, and even dangerous outcomes for frail older adults. It is estimated that upwards of half of all hospital admissions could be avoided while leading to better patient care and safety, and generating billions in health care savings.

For the last three years, UPMC Community Provider Services, the Aging Institute, UPMC Palliative and Supportive Institute, and four community partners have combined forces with 19 non-UPMC nursing facilities to implement practical interventions to reduce avoidable hospitalizations of nursing home residents. Co-directors for the RAVEN project are the Aging Institute's Director **Charles F. Reynolds III, MD**,and **April L. Kane, MSW, LSW**.

UPMC's four-year, $19.3 million RAVEN grant is one of seven such initiatives nationwide that are seeking innovative solutions for this widespread health care issue. Funding is provided by the Centers for Medicare and Medicaid Services (CMS).

"The first years of our RAVEN grant focused on developing and implementing the core program components at participating nursing facilities throughout western Pennsylvania," says **Mary Ann Sander, MHA, MBA, NHA**, vice president for Aging and Disability Services, UPMC Community Provider Services. The program expands on successful interventions that led to a 38 percent reduction in hospital readmission rates at UPMC Senior Communities skilled nursing facilities.

The core elements of the UPMC RAVEN interventions are:

- Placement of **facility-based nurse practitioners and enhanced care** nursing staff
- Implementation of innovative **staff education tools and training** (including one-on-one mentoring and coaching)
- Development of **evidence-based communication** tools to improve clinical assessment and staff communication on changes in patient conditions
- **Enhanced medication review and pharmacy engagement** to reduce the risk of potential adverse medication events (AMEs) and complications
- Use of **telemedicine and information technologies** to enhance after-hours communication and provide increased health care access

RAVEN has made a big difference in the functional status of the residents at our facility because they don't have to be in the hospital and dealing with post-hospitalization recovery or therapy.

"The focus of the second year was to gain traction in the core components that were becoming part of everyday practice at our partner nursing facilities. Throughout our third year, we honed in on quality improvement, asking: 'What's working and why? What can we do to achieve better results?'" says Ms. Sander.

For example, 2014–15 saw **increased utilization of telemedicine** at the partner facilities that was due, in part, to new, easier-to-use software and training. Metrics for evaluating the success of the telemedicine program, tailored to each facility, also were established.

The pharmacy team collected data to conduct a **comprehensive medication management review** on every RAVEN-eligible resident. The team also updated the Resident Encounter Form to include an automatically generated email request from the nursing staff for real-time pharmacy interventions.

Staff educational initiatives were revised to provide greater "just-in-time education" to allow staff to get information in more manageable pieces. Coach/mentors also were assigned to each facility to provide monthly check-ins. Educational efforts were expanded to provide onsite palliative care education to family members and caregivers to introduce important issues related to planning for palliative and end-of-life care.

RAVEN's Potential National Impact: A View From CMS

"The RAVEN initiative is a critical stepping stone for what hopefully will become a model to help nursing homes provide better care for their patients," says **Nicole Perry, MS**, RAVEN project officer for CMS.

According to Ms. Perry, each of the seven organizations participating in the CMS Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents is using a slightly different approach in its interventions to reduce avoidable hospital admissions. "Our goal is to see which efforts deliver the best results. We've already learned great lessons through the process," she says.

She said that the demonstrated successes at the participating nursing facilities — as well the feedback CMS has received — indicate that the use of nurse practitioners and enhanced care nurses is an incredible resource. "UPMC's RAVEN program has done an excellent job supporting these professionals. They truly 'hit the nail on the head' defining the critical leadership role they can play in supporting the nursing staff and promoting end-of-life and palliative care planning," says Ms. Perry.

The use of telemedicine is unique to the UPMC RAVEN project. "Telemedicine can offer nursing facilities rapid clinical intervention, particularly those in rural areas," says Ms. Perry. "While there are some technical challenges to overcome, we're very impressed with early implementation and the potential telemedicine offers in this process."

She also applauded the consistent commitment to improve patient care that is evident at the participating nursing homes in western Pennsylvania. "There's a real passion to do whatever is needed to better serve residents and their families."

"Year three served to affirm that we're on the right track with our initiatives," says Ms. Sander. "The program is building strong skill sets that are resulting in better care and outcomes for patients who bring more complex conditions to today's nursing homes."

RAVEN in Action

How RAVEN is making a difference in improving patient care and reducing hospitalizations.

In February 2015, **Kerry Ryan, DNP, CRNP, FNP-BC**, a RAVEN nurse practitioner, began working for Kane Ross, one of the 19 nursing home facilities participating in the UPMC RAVEN initiative. Since joining Kane, she has used the RAVEN system to help multiple patients and residents avoid unnecessary hospitalizations.

"We've definitely had patients and residents here that we have prevented from having to go into the hospital by using telemedicine technology on weekends and in the evenings during the week," Ms. Ryan says. "We're starting to use the 'Telly' cart more because it really provides hands-on care that is helpful in preventing hospitalizations."

Ms. Ryan has a specific individual whom she feels has benefited greatly from RAVEN initiatives: an oncology patient with multiple comorbidities who was losing weight during her treatment. Through frequent monitoring of her weight and other symptoms from chemotherapy, the patient was able to gain 10 pounds in six weeks and maintain that weight.

In addition, Ms. Ryan was able to work closely with the RAVEN pharmacy to review the patient's medication list to ensure that the medications were dosed properly to maintain kidney function and avoid complications. The pharmacy team was able to review the list and make any necessary suggestions remotely.

Ms. Ryan believes that multidisciplinary teams working together make a huge impact on patient outcomes and greatly contributes to the success of the RAVEN initiative in her facility.

"Overall, I feel that RAVEN helps formulate the multidisciplinary approach," Ms. Ryan says. "You have the physician groups, the enhanced care nurses, and the pharmacy and telemedicine resources. All of those multidisciplinary teams can keep residents out of the hospital. I think RAVEN has made a big difference in the functional status of the residents at our facility because they don't have to be in the hospital and dealing with post-hospitalization recovery or therapy."

Seed Grant Awards 2015: Informing Aging Policy for Better Health

Fostering relevant and innovative research to impact health policy and practice changes.

When launched in 2007, the Aging Institute's Seed Grant Program was designed to encourage junior faculty researchers to explore new areas of research in aging that would hold the potential of attracting future funding from external sources. Nearly $1.5 million in funding has been provided.

Following the theme of **Health Policy and Aging**, the 2015 awards are aimed at supporting collaborative, multidisciplinary projects that apply scientific research to health care for the aging population with the goal of making clearly defined, well-supported health policy recommendations.

2015 Seed Grant Recipients

Project Title: Understanding Barriers to Access and Effective Use of Patient Portals to Promote Engagement of Older Adults in Their Health Care

Principal Investigator: Annette DeVito Dabbs, PhD, RN, ACNS-BC, FAAN

Project Title: Risk Factors for Hospitalization Among Aged Medicaid Home and Community-Based (HCBS) Services

Principal Investigator: Howard B. Degenholtz, PhD

2015 Seed Grant Spotlight

Pennsylvania's Medicaid waiver program provides home and community-based services (HCBS) to income-eligible seniors who require nursing facility care but elect to live in their own homes or in other community living arrangements. It is a valuable alternative to nursing home care for many older, low-income Pennsylvanians and their families, particularly those in rural parts of the state where assisted-living options are limited.

Decreasing the Use of Antipsychotic Drugs in Nursing Homes

As many as one in four nursing home residents — many with dementia — receive at least one antipsychotic medication. A number of these medications, however, have been proven to have serious and even fatal side effects. In 2012, CMS created its National Partnership to Improve Dementia Care in Nursing Homes to promote improved approaches to behavioral health care and to limit the use of antipsychotic medications.

In 2014–15, the UPMC RAVEN pharmacy team — **RxPartners**, part of UPMC Community Provider Services — introduced an intervention to reduce inappropriate use of antipsychotic medication that is aligned with the CMS initiative. The intervention is based on the interdisciplinary team approach to reducing psychoactive medications developed by RxPartners and utilized with great success at UPMC skilled nursing facilities. With leadership support by **David Nace, MD, MPH, CMD**, co-medical director of the RAVEN project and chief of medical affairs for UPMC Senior Communities, the team also designed a toolkit of educational and training resources for staff, clinicians, administrators, and caregivers.

The program's funding primarily supports social services, such as home health and personal care services, home modifications, and medical supplies and equipment. But are these seniors — many of whom have serious medical and cognitive problems — receiving adequate care needed to remain healthy and independent, and avoid hospitalization?

Howard B. Degenholtz, PhD, associate professor of health policy and management at the Graduate School of Public Health, University of Pittsburgh, received a two-year seed grant to fund a retrospective study of the risk factors for hospitalization among waiver participants. It will determine the hospitalization and readmission rates of HCBS users and compare them to the rates of nursing home residents, using Medicaid claims data available through research done by the University of Pittsburgh's Health Policy Institute. Dr. Degenholtz also plans to work with the Department of Aging to merge data on Medicaid Waiver beneficiary services with Medicare claims data. Supporting him on the project is

Mijung Park, PhD, MSN, MPH, RN, assistant professor, University of Pittsburgh School of Nursing, a 2013 Aging Institute Seed Grant recipient.

"Helping older adults stay in their homes and communities is an important goal. But when something is wrong, are systems in place? Can they get appropriate medical supervision and care to prevent hospitalization?" asks Dr. Degenholtz. "There's a real void in terms of what is known about this population. Any hospitalization is a serious risk for these older adults because it's the first — and often irrevocable — step toward being placed in a nursing home."

By combining information on the clinical health and the services participants receive, Dr. Degenholtz hopes to determine if there's a "missing ingredient" — such as medical care or clinical oversight — that puts them at risk.

Dr. Degenholtz believes the study also has significant policy interest for the state, which has invested heavily in

programs to help people living in nursing homes transition back to the community.

Seed Grants History

The Aging Institute Seed Grant program marked its ninth cycle in 2015, and it remains true to its original goal: to fund projects in aging that can lead to new lines of research with independent funding and promote new multidisciplinary collaborations, especially across schools within the University of Pittsburgh. Through this program, recipients have formed strong research partnerships, secured further funding, and have created collaborations throughout the University of Pittsburgh and beyond.

Following is a summary of past Seed Grant projects and the current positions of recipients.

2007 Seed Grants

Inhibition of NF-kB Transcriptional Activation to Retard Aging
Laura J. Niedernhofer, MD, Associate Professor, Department of Metabolism & Aging, The Scripps Research Institute

Genetic Contribution of Serotonin to the Molecular Signature of Aging in the Human Brain
Etienne Sibille, PhD, Campbell Family Chair in Clinical Neuroscience, Campbell Family Mental Health Research Institute and Professor, Department of Psychiatry, and of Pharmacology and Toxicology, University of Toronto

2008 Seed Grants

Improving Quality of Life in Nursing Homes through Structured Resident Interviews
Howard B. Degenholtz, PhD, Associate Professor of Health Policy and Management at the University of Pittsburgh's Graduate School of Public Health

Exploring Neural Mechanisms of Attention Control in Memory and Aging
Mark E. Wheeler, PhD, Associate Professor, School of Psychology, Georgia Institute of Technology

2009 Seed Grants

Use of Chromatin Immunoprecipitation to Identify DAF-12 Target Genes
Alfred L. Fisher, MD, PhD, Associate Professor, Department of Medicine, University of Texas Health Science Center at San Antonio (UTHSCSA), and Associate Director for Research, San Antonio Geriatric Research, Education and Clinical Center (GRECC) at the VA

The Effect of Known Metabolic Drug - Drug Interactions Involving Psychotropic Drugs on the Risk of Experiencing a Fall in the Nursing Home Setting
Steven M. Handler, MD, PhD, CMD
Associate Professor, University of Pittsburgh School of Medicine, Director, Geriatric Telemedicine Programs Chief Medical Informatics Officer, UPMC Community Provider Services

2010 Seed Grants

The Anti-Aging Effect of Electrical Stimulation on Aged Skeletal Muscle Regenerative Potential
Fabrisia Ambrosio, PhD, MPT, Assistant Professor, Department of Physical Medicine and Rehabilitation

Impaired Lipid Oxidation in Elderly Muscle
Bret Goodpaster, PhD, Director of the Exercise Metabolism Core and Senior Investigator at the Translational Research Institute for Metabolism and Diabetes

Mechanisms Linking Hot Flashes to Cardiovascular Risk
Rebecca C. Thurston, PhD, Associate Professor of Psychiatry, Psychology, Epidemiology, and Clinical and Translational Science, and Director, Women's Behavioral Health Laboratory, University of Pittsburgh

2011 Seed Grants

On the Move: Optimizing Elder Exercise Inside the Health Care System
Jennifer S. Brach, PhD, PT, Associate Professor, Department of Physical Therapy, University of Pittsburgh

Development of Protocol for Disclosing Amyloid Imaging Results in Mild Cognitive Impairment
Jennifer Hagerty Lingler, PhD, CRNP, Associate Professor, School of Nursing, University of Pittsburgh

Elucidating the Role of Lamin B1 in Aging Dependent Demyelination
Quasar Saleem Padiath, MBBS, PhD, Assistant Professor of Human Genetics, Graduate School of Public Health, University of Pittsburgh

Inflammation in Cognitive Aging
Anna L. Marsland, PhD, Associate Professor, Department of Psychology, University of Pittsburgh

Use of Functional MRI to Validate NIRS Investigation of Brain Control During Urgency and Urge Urinary Incontinence
Stasa Tadic, MD, MS, Associate Professor, Department of Medicine, University of Pittsburgh

2012 Seed Grants

Zebrafish Parkinson's Disease Models for Drug Discovery and Evaluation of the Role of Aging in Pathogenesis
Edward A. Burton, MD, DPhil, FRCP, Associate Professor, Department of Neurology, Molecular Genetics and Biochemistry, University of Pittsburgh

Structural and Functional Brain Reorganization for Sensory Substitution in the Elderly and Blind
Kevin C. Chan, PhD, Assistant Professor of Ophthalmology and Bioengineering, School of Medicine, University of Pittsburgh

Ultra-Structural Characteristics of Microvasculature and Hippocampal Sub-Regions in Response to Two-Year Physical Activity Intervention
Caterina Rosano, MD, MPH, Professor of Epidemiology, Graduate School of Public Health, University of Pittsburgh

Howard J. Aizenstein, MD, PhD, Professor of Psychiatry, Associate Professor of Bioengineering and Clinical and Translational Science, Department of Psychiatry, University of Pittsburgh

Client-Centered Assessment for Geriatric Primary Care: A Feasibility Study
Pamela Toto, PhD, OTR/L, FAOTA, BCG, Assistant Professor, Department of Occupational Therapy, School of Health and Rehabilitation Sciences, University of Pittsburgh

Auricular Point Acupressure to Manage Chronic Low Back Pain in Older Adults
Chao-Hsing Yeh, PhD, RN, Associate Professor, School of Nursing, University of Pittsburgh

2013 Seed Grants

Investigation of Types of Situations That Trigger Urgency and Leakage in People With Urge Urinary Incontinence
Becky Clarkson, PhD, Research Instructor, Division of Geriatric Medicine, University of Pittsburgh

Role of Telomere and Mitochondria Cross-Talk in Cellular Aging
- **Patricia Opresko, PhD**, Associate Professor, Department of Environmental and Occupational Health, University of Pittsburgh
- **Bennett Van Houten, PhD**, Richard M. Cyert Professor of Molecular Oncology, Department of Pharmacology and Chemical Biology, and Graduate Faculty in Molecular Biophysics and Structural Biology (MBSB) at the University of Pittsburgh and Carnegie Mellon University

Feasibility and Acceptability of Adding Family Components to Evidence-Based Collaborative Care Model for Older Adults With Depression and Chronic Medical Conditions
- **Mijung Park, PhD, MPH, RN**, Assistant Professor, School of Nursing, University of Pittsburgh
- **Charles F. Reynolds III, MD**, UPMC Endowed Professor of Geriatric Psychiatry and Professor of Neurology, Behavioral and Community Health Sciences, and Clinical and Translational Science, University of Pittsburgh

Relationship Between Frailty, Falls, and Measures of Mobility, Cognition, and Functional Neuroimaging in Residents of Long-Term Care (LTC) Facilities
- **Patrick Sparto, PhD, PT**, Associate Professor, Department of Physical Therapy, University of Pittsburgh
- **Susan L. Greenspan, MD**, Professor of Medicine, Division of Geriatric Medicine, University of Pittsburgh

Communications About Type 2 Diabetes Treatment Decisions in Older Patients With Comorbid Dementia
Carolyn T. Thorpe, PhD, MPH, Assistant Professor, School of Pharmacy, University of Pittsburgh, and Research Scientist, Center for Health Equity Research, VA Pittsburgh Healthcare System

2014 Seed Grant

Does Environmental Enrichment and Associated Exercise Promote Healthy Aging That Can Be Detected by Peripheral Biomarkers?
Michael J. Zigmond, PhD, Professor of Neurology, University of Pittsburgh

Examining the Contribution of Physical Activity to Brain Health and Cognition in Older Adults
John M. Jakicic, PhD, Professor and Chair, Department of Health and Physical Activity, University of Pittsburgh

The Continuing Impact of Seed Grant Research

The research of **Edward A. Burton, MD, DPhil, FRCP**, associate professor of neurology at the University of Pittsburgh and a 2012 Aging Institute seed grant recipient, was featured in a 2015 *TIME* magazine video entitled *Pittsburgh, The Comeback*.

Dr. Burton uses zebrafish in his research efforts to explore the cause, treatment, and cure of Parkinson's disease (PD). The University of Pittsburgh has one of the largest zebrafish facilities in the world. His 2012 Aging Institute seed grant supported using zebrafish to test new drugs for PD and explore the role of cellular aging on the development of the disease.

"Surprisingly, zebrafish are very closely related to humans. They're vertebrates just like we are, so the basic body pattern of the way that the brain, spinal cord, and peripheral nervous system is arranged is almost identical to humans," says Dr. Burton in the video.

"What we're working on is making genetically modified zebrafish that recapitulate certain aspects of the pathology of Parkinson's disease. So, if we have a large library of potential drugs that we'd like to screen that could potentially be effective treatments for Parkinson's disease, we can screen very, very quickly against the zebrafish model.

Photo courtesy of Joshua Franzos

"[Many of the] patients I look after have diseases that are incurable. For them, research is hope — and they're hoping that one day this is going to translate into something that's going to improve their quality of life or even cure their disease." Dr. Burton's research continues today through additional funding from the Mitochondrial Aging and Metabolism Workgroup.

In addition to Dr. Burton, the *TIME* video featured comments by Steven Shapiro, MD, UPMC executive vice president, and Arthur Levine, MD, Dean of the University of Pittsburgh School of Medicine.

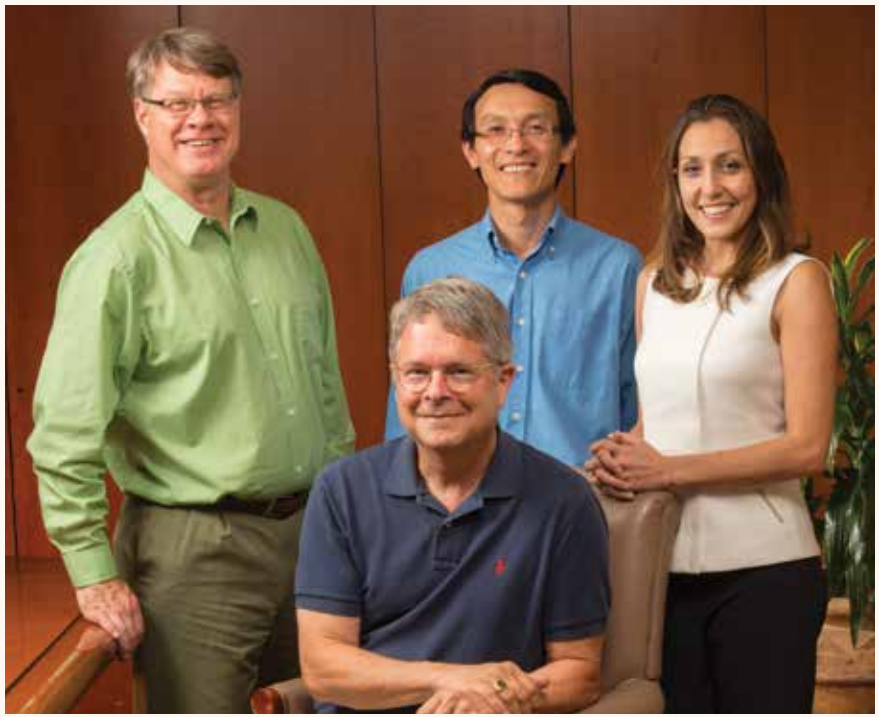
The video can be viewed at: **Time.com/pittsburgh.**

Improvement of Memory Functions in Rodent Models of Accelerated Aging
Peter Wipf, PhD, Distinguished University Professor of Chemistry, University of Pittsburgh

Biology of Aging Pilot Seed Grant Program

With funding from the office of Dr. Steven Shapiro, a new pilot seed grant program was established in 2014–15 to support novel and collaborative new research directions in the study of mitochondria, aging, and metabolism.

"The goal of this particular grant program is to promote highly innovative, team-based, transdisciplinary, and translational science among the outstanding pool of nationally and internationally renowned investigators in aging and bioenergetics at the University of Pittsburgh," says **Bennett Van Houten, PhD**, co-leader of the University of Pittsburgh Cancer Institute's molecular and cellular cancer biology program and the Aging Institute's associate director for basic research. "It is hoped that funded projects will lead to highly impactful science and future external funding."



More than 30 letters of intent were submitted from across the University of Pittsburgh community, representing the collaborative efforts of 70-plus investigators across campus. Thirteen were invited to submit full proposals for internal and external review. Ultimately, the following four pilot grants of $50,000 each were awarded in January 2015.

Principal Investigator: Edward A. Burton, MD, DPhil, FRCP, associate professor of neurology, University of Pittsburgh
Pilot Title: *Neuronal mitochondrial quality control in vivo: live imaging of mitophagy in dopamine neurons during aging and age-related neurodegeneration*

Principal Investigator: Charleen T. Chu, MD, PhD, professor of pathology, University of Pittsburgh
Pilot Title: *Mitochondrial calcium in aging and degenerating neurons*

Principal Investigator: Laurie H. Sanders, PhD, assistant professor, University of Pittsburgh School of Medicine
Pilot Title: *Assessment of peripheral mtDNA damage and dysfunction as a biomarker of Parkinson's disease*

Principal Investigator: Daniel E. Forman, MD, FACC, professor of medicine, University of Pittsburgh
Pilot Title: *Study of the utility of oral nitrite therapy to improve skeletal muscle bioenergetics and physical capacity in older heart failure patients*

Three of the four initial projects are examining mitochondrial mechanisms underlying age-related neurodegeneration associated with Parkinson's disease. A future goal is to establish a **quarterly workgroup** to bring these researchers together as a team to investigate the mechanisms underlying prevalent diseases associated with aging, including mitochondrial disorders, cancer, cardiovascular disorders, and neurodegenerative disease.

In 2015–16, the Aging Institute will join in sponsoring the Basic Biology of Aging Workgroup's pilot seed grants, which will focus on the relationship of cancer and aging. A new round of funding has since been expanded to $500,000, thanks to generous ongoing support from UPMC.

Research Day on Aging 2015

The Ninth Annual Aging Institute Research Day was held on March 31, 2015, on the campus of the University of Pittsburgh. This year's session was once again chaired by Charles F. Reynolds III, MD, and featured a poster session and panel discussion. The theme was Health Policy and Aging and featured keynote speaker Donald S. Burke, MD, Dean of the Graduate School of Public Health at the University of Pittsburgh.

The panel for this year's discussion on the topic of Health Policy and Aging included: Jennifer H. Lingler, PhD, CRNP, University of Pittsburgh School of Nursing, Susan M. Meyer, PhD, University of Pittsburgh School of Pharmacy; Daniel Rosen, PhD, University of Pittsburgh School of Social Work; and Elizabeth Skidmore, PhD, OTR/L, University of Pittsburgh School of Health and Rehabilitation Sciences.

The poster session at this year's event featured over 50 presenters on a range of topics. Winners in the different categories of submissions included the following researchers and clinicians.

Candidates for Clinical or Research Doctorates or Master's Level Students

First Place

Brittney Lange-Maia, MPH, Department of Epidemiology, Graduate School of Public Health, University of Pittsburgh
Sensorimotor Peripheral Nerve Functioning and the Longitudinal Relationship with Endurance Walking in the Health, Aging, and Body Composition Study

Honorable Mention

Mini Jacob, MBBS, MD, Department of Epidemiology, Graduate School of Public Health, University of Pittsburgh
Can Late-Life Lifestyles Influence End-of-Life Morbidity

Honorable Mention

Samannaaz Khoja, PT, MS, Department of Physical Therapy, School of Health and Rehabilitation Science, University of Pittsburgh
Physical Activity in Adults with Arthritis and Its Contribution to Health Outcomes

Post Doctorates

First Place

Brian Henry, MD, PhD, Heart and Vascular Institute, Department of Cardiology, University of Pittsburgh
Relaxin Suppresses Atrial Fibrillation in 24-Month Old Rats by Reversing Atrial Fibrosis and Upregulating Sodium Channels

Honorable Mention

Tanja Krainz, PhD, Department of Chemistry, University of Pittsburgh
Improvement of Memory Functions in Rodent Models of Accelerating Aging

Honorable Mention

Daniel Nguyen, MD, Internal Medicine, Department of Medicine, University of Pittsburgh
Depression Following Coronary Artery Bypass Graft Surgery Predicts Increased All-Cause Mortality

Junior Faculty

First Place

Bethany Barone Gibbs, PhD, School of Education, Department of Health and Physical Activity, University of Pittsburgh
Reducing Sedentary Behavior vs. Increasing Moderate-to-Vigorous Intensity Physical Activity in Older Adults: a 12-Week Randomized, Clinical Trial

Honorable Mention

Darlene Monlish, PhD, and **Jane Cavanaugh, PhD**, School of Pharmacy, Duquesne University
Age-Dependent Increases in Erk5 Activation in Breast Cancer

Honorable Mention

Rami Namas, MD, Department of Surgery, University of Pittsburgh
Analysis of Principal Drivers and Dynamic Networks of Systemic Inflammation Suggests Complex Interaction Between Age and Injury Severity

Clinical Practitioners Doing Quality or Practice Improvement

First Place

Patricia Griffin, BS, Department of Medicine, University of Pittsburgh
Robust Innate Immunity Underlie Protection from Acute Endotoxemia in a Long-Lived Mouse Model of Successful Aging

Honorable Mention

Namita Ahuja, MD, UPMC Insurance Services Division, UPMC Health Plan
Enhanced Care Program for Transitional Care to Home Upon Acute Care or SNF Discharge: A Quality Improvement Study

Honorable Mention

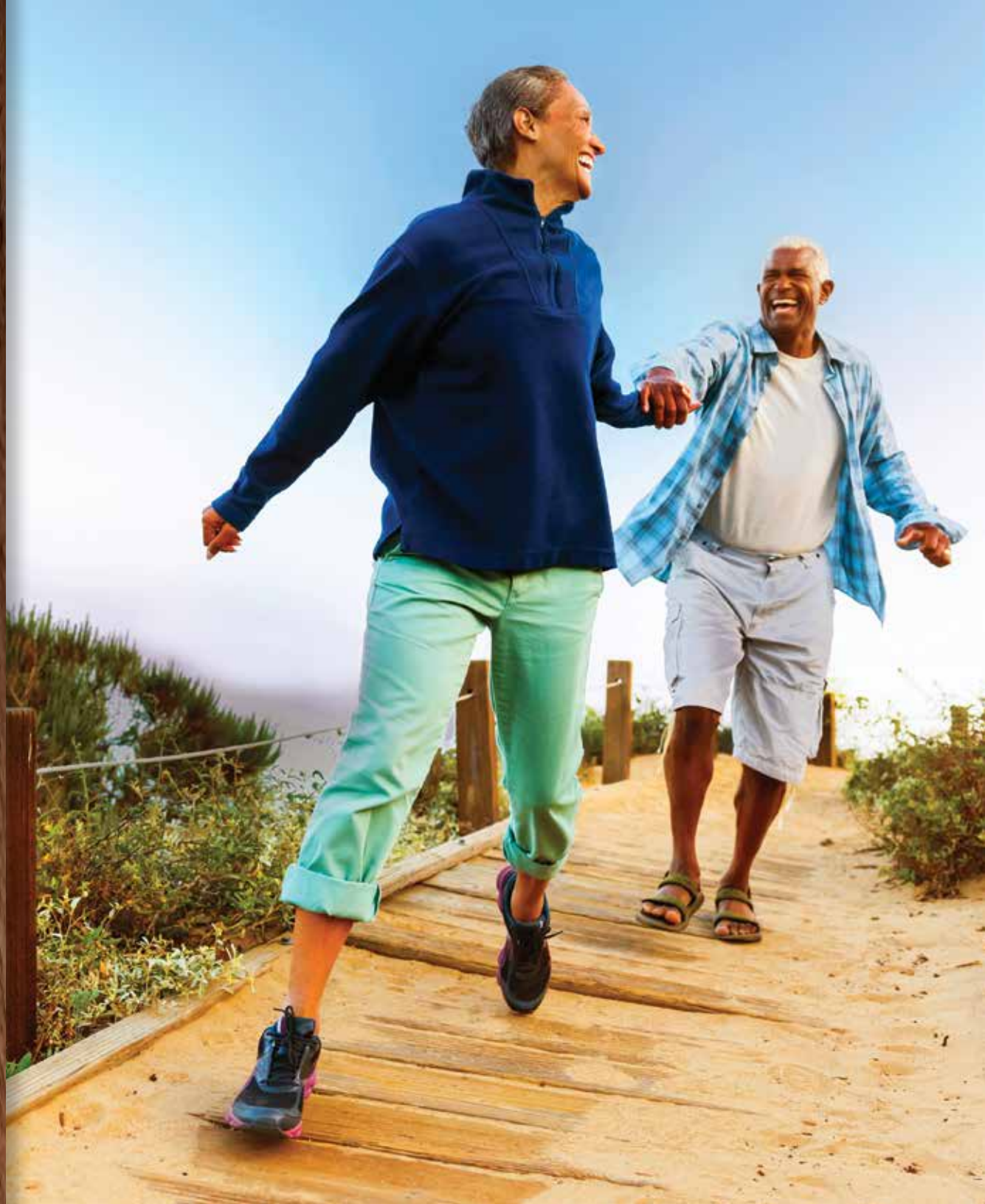
John G. Hennon, EdD, Geriatric Education Center, University of Pittsburgh
Evaluating an Evidence- Based Training Program for Improving Advance Care Planning Conversations in Nursing Homes

Honorable Mention

Barbara Usher, RN, PhD, GCNS-BC, AHPN, Palliative and Supportive Institute, UPMC and GEC
Evaluating a Pain Reporting and Management Plan for Confused and Non-Verbal Long Term Care Residents

Educational Initiatives in Aging Services

Through ongoing investments in developing new educational training programs, presentations, and literature, the Aging Institute is educating audiences from clinicians to caregivers on the immense physical, mental, and social challenges faced by older adults. The 2014–15 year marked impressive growth in its efforts in these areas.



Expanding the Reach of the Aging Institute

Improving the clinical skills of geriatric providers and supporting the information needs of family caregivers of older adults continues to be a top priority of the Aging Institute. Its wide range of programs — and its increasing focus on outreach — has made it a leading regional provider of aging-related education and training programs for caregivers, health care professionals, health care students, community organizations, and the public. Demand for these training sessions has skyrocketed, assisted by an increased use of social media to promote available offerings.

During 2014–15, the Aging Institute conducted 116 training sessions at 70 locations — a significant 42 percent increase over the previous year's 82 training sessions. The programs were presented at 55 UPMC facilities and 15 outside sites — a 21 percent increase over the previous year. The number of program participants also jumped significantly in 2014-15, soaring from 2,211 to 3,395 — a 54 percent increase.

Whenever possible, the Aging Institute works to ensure that appropriate professional continuing education units are offered to eligible participants.

LOST: When Wandering Turns Dangerous

When an elderly neighbor with dementia was found dead 30 days after wandering from home, the Aging Institute's gerontology educator, **Betty Robison, MSN, RN-BC**, began researching the topic to explore ways to help families avoid similar tragedies.

Lost: When Wandering Turns Dangerous, the latest educational initiative offered by the Aging Institute to support patients with dementia and their caregivers, brings attention to the dangers of wandering — a common behavior in patients with Alzheimer's disease and other forms of dementia. According to Ms. Robison, there are 125,000 lost incidents a year across the United States. Statistically, nearly half of those who wander off will die if not found within 24 hours.

"Wandering can be very dangerous for those with dementia — and a frightening situation for caregivers. The possibility of becoming lost, injured, or dying is alarmingly high," says Ms. Robison. "The good news is there are many things that families and communities can do to keep those who wander safe."

The Aging Institute developed a variety of tools on the subject in 2014–15, including tips for recognizing those at risk of wandering, steps to take to prevent wandering, and information about what to do when a loved one wanders away. A Wanderers Information Sheet also was created that can be filled out in advance and later shared with law enforcement if a person is missing. Since all searches begin with an investigation to gather this information, completing the sheet before a loved one wanders off can save precious time.

Materials can be found online at the Institute's website at **Aging.UPMC.com**

Common reasons people wander:

- Inability to remember instructions to wait, not leave, stay in the car, or stay in the house
- Agitation, or possible onset of delirium
- A sudden new routine or situation
- Response to something they hear or see
- Looking for something related to their past
- A desire to "go home" even though they are home

Aging Institute Training Programs	FY 2013–14	FY 2014–15	% Change
Training Programs			
No. of Training Sessions	82	116	+ 42%
No. of Participants	2,211	3,395	+ 54%
Training Locations			
UPMC	41	55	+ 34%
Non-UPMC	17	15	– 12%
TOTAL	**58**	**70**	**+ 21%**

125,000

Number of wanderer incidents a year in the United States — half of whom will die if not found within 24 hours.

Signs a Person With Dementia May Be at Risk for Wandering

- Saying things like "I want to go home," "I need to go to work," or "I have to go shopping"
- Not recognizing they are home
- Having to be reminded about the location of their bedroom or the bathroom
- Restlessness or pacing
- Not remembering to come back inside when they are outside
- Inability to stay on task
- Forgetting what they are doing or where they are

Steps to Take to Prevent Wandering

Create a secure environment:

- Put locks on doors
- Install door or window alarms
- Secure car keys
- Use tamper-proof door knob covers
- Don't leave the person alone at home or in a car
- Have the person wear a location tracking device

Manage restless behavior with:

- Activities to occupy attention
- Regular physical exercise
- Adequate sleep
- Inform the doctor of behavior changes or increased confusion

2014–15 Educational Programming

Advances in Geriatric Health Symposium

In May 2015, the Aging Institute hosted a two-day symposium at Robert Morris University that featured presentations by leading geriatric researchers, clinicians, and other professionals from UPMC and the University of Pittsburgh. The event provided information on the latest developments in the field of geriatric medicine.

More than 150 participants from throughout western Pennsylvania attended the symposium, including physicians, nurses, physical therapists, dietitians, social workers, and nursing home administrators and staff. Professional continuing education units were offered in several areas.

Topics covered included:

- Telemedicine
- End-of-life conversations
- Hospital-associated disability
- ICU delirium
- Inappropriate medications in the older adult
- Preventing hospitalizations
- Sexuality and the older adult
- Brain health
- Chronic heart failure in older adults
- Skin tears
- Feeding strategies and swallowing problems
- Hospital-acquired infections
- Goals of care and treatment preferences
- Emergency care of older adults

Transitions in Geriatric Health Care Conference

In October 2014, the Aging Institute hosted a one-day conference at UPMC East for geriatric health care providers. The event featured presentations by speakers from the UPMC Health Plan, Allegheny County Area Agency on Aging, UPMC, and others.

Eighty professionals attended the conference, which explored the transition process for older adults moving through the various stages of a chronic illness. Topics covered included:

- Preventing hospital readmissions
- Palliative care transitions
- Transitions in the home setting
- Ethical considerations in transitions of care
- When wandering turns dangerous
- Handling crisis situations

Geriatric Resource Nurse Program

The Aging Institute's Geriatric Resource Nurse Certificate is aimed at helping registered nurses (RNs) enhance their knowledge and understanding of aging and caring for older adults. Focusing on the biological, psychological, and sociological aspects of aging, the curriculum addresses falls prevention, nutritional needs, urinary incontinence, dementia, depression, advance directives, pain, and end-of-life concerns. Students receive a certificate after successfully completing training and an exam.

UPMC Altoona Educational Sessions

The Aging Institute hosted its first events at UPMC Altoona on June 3, 2015, with two educational sessions that focused on mental health concerns in the older adult. The event, covered by local media, featured a webinar on "Pharmacologic Treatments for Alzheimer's Disease" by **Jennifer Hagerty Lingler, PhD, CRNP**, and

Recognizing the Risk of Wandering

Anyone who has memory problems and is able to walk is at risk for wandering. Even in the early stages of dementia, a person can become disoriented or confused at times.

"Once a person begins to show signs of wandering behaviors, they are at a high risk of wandering away or becoming lost," explains Ms. Robison.

The exact causes of wandering behavior are not fully understood. Some individuals may be searching for something or trying to get back to a place they remember, like a job or favorite destination. Sometimes, people just wander or walk away because they are restless or agitated.

an onsite presentation on "Confusion in the Elderly" by **Betty Robison, MSN, RN-BC**, gerontology educator for the Aging Institute.

Professional Organizations

The Aging Institute's education outreach continues to network with leading organizations that have a direct interest in aging adults, including:

- The Western Pennsylvania Chapter of the National Gerontological Nursing Association (NGNA)
- Pennsylvania Medical Directors Association (PMDA) Regional Meetings of the Pennsylvania Society for Post-Acute and Long-Term Care Medicine

Caregiver Support

In 2014–15, the Aging Institute continued to build its portfolio of caregiver programs, including:

- **Powerful Tools for Caregivers**, a 6-week caregiving series developed by the UPMC Health Plan that focuses on addressing the growing need to support caregivers in caring for themselves. The program covers such topics as how to create an action plan, connect to community resources, and reduce stress.
- **INSPIRE** (*Inspiring New Solutions and Providing Individualized Resources and Education*), an advanced program designed to develop the skills of caregivers. Topics include all basic geriatric syndromes from dementia to late-life depression and incontinence, as well as guidance on such subjects as how to set up a house to be safe.
- Other caregiver programs developed in part by the Aging Institute include **I AM HERE: Interventions for Assessment of Mental Health in Elders with Resources and Education** and **Realities of Care Dementia Training**.

Aging Institute Gerontology Scholarships

Each year, the Aging Institute awards $2,500 scholarships toward graduate studies in gerontology at the University of Pittsburgh. The program is open to full-time UPMC employees in any field who work with older adults or aspire to do so.

The innovative Graduate Gerontology Certificate Program offers specializations in dentistry, gerontechnology, mental health, nursing, occupational therapy/rehabilitation, public health, and social work, as well as multidisciplinary tracks in general and prevention/healthy aging studies.

Edward Zak, MS-HLTMS, MS-MOIS, MBA
Systems Analyst Expert
UPMC Community Provider Services

"Being in information technology, I think it's important to better understand the population we are serving. This certificate will help further my knowledge in gerontology and geriatric issues so I can contribute to improving health care for older adults."

A lifelong learner with three master's degrees, Edward Zak has continued to build on his expertise and his credentials as an information technology (IT) manager. While pursuing a master's in health management systems at Duquesne University, he completed a fellowship with the Pittsburgh Regional Health Initiative (PRHI) on a process improvement project in Skilled Nursing and Rehabilitation. It was then that he began to grasp the needs of the region's growing geriatric population.

At UPMC Community Provider Services, Edward leads a team managing the IT needs of more than 900 visiting clinicians, health aides, and office staff who make up the UPMC Visiting Nurses Association (VNA). He hopes to use the knowledge gained through the program to improve the home care experience of patients and their caregivers. "Working in IT, understanding the population, and partnering with business leadership offers opportunities to make a positive impact on health care," says Edward.

Margaret McCollum, BS
Practice Manager, UPMC CancerCenter at UPMC Mercy, and Practice Manager, Physical Medicine and Rehabilitation at UPMC Mercy

"I wanted to better understand the unique needs of older patients faced with a cancer diagnosis or going through rehab. They have different needs, different outlooks, and different motivations."

Inspiring Tomorrow's Geriatric Professionals

What graduates of the Health Career Scholars Academy's geriatric track say about its impact on their career paths.

Every summer, gifted high school students from throughout Pennsylvania and neighboring states journey to Pittsburgh to examine critical issues and emerging career opportunities in health care as participants in the University of Pittsburgh's Health Career Scholars Academy. Students who choose the geriatric concentration are offered an in-depth look at geriatrics and aging by staff and board members of the Aging Institute, working with some of the world's leading researchers and clinicians in their disciplines.

Students explore aging issues such as chronic pain and mood disorders, memory problems and dementia, balance disorders, falls and difficulty walking, and other complex problems affecting older adults. It's an eye-opening experience that can impact career choices and improve understanding of the individual needs and wishes of seniors.

Rachel Verbanac, a 2011 scholar who is now an undergraduate studying natural sciences at the University of Pittsburgh, says the program inspired in her a passion to work with older adults.

"The program showed me a new field I never would have considered," says Rachel, who plans to pursue a career in public health, working on policies relating to the at-risk geriatric population. She currently provides in-home care for an elderly couple, one of whom is disabled.

"I discovered an appreciation and love for the senior community. I learned to understand the lifestyle changes and challenges they may be faced with and how to communicate effectively concerning their needs," she adds.

Samantha Bowen, who is pursuing a master's degree in occupational therapy at the University of Pittsburgh, says the program provided a "solid base" for her career and future work with older patients.

Michael Kozlowski, a 2008 scholar, says the gerontology concentration's emphasis on quality of life made a lasting impression. Currently a doctoral student in the medical science program at Jagiellonian University Medical College in Krakow, Poland, he plans to specialize in palliative care. He currently works with older adults on a palliative care unit.

"It was an amazing experience," says **Casey Heinbaugh**, a junior social work major at Elizabethtown College. Casey says the gerontology concentration provided knowledge that has already enhanced her work with older adults. A certified nursing assistant, Casey has completed 30 service hours in a retirement facility through her school's social work department. She aspires to be a medical social worker, working with patients of all ages and their families.

At UPMC Mercy, Margaret McCollum wears two hats as a practice manager at both the UPMC CancerCenter and the Department of Physical Medicine and Rehabilitation. She has a long-time interest in maintaining a quality of life for patients, especially older adults. "The challenges faced by older patients are different than those faced by younger people," says Margaret.

She chose a multidisciplinary track for her gerontology certificate, focusing on healthy aging, prevention, dementia, and nutrition. The courses have helped her to better recognize cognitive issues, assist patients in choosing foods that promote strength and healing, and provide needed support and resources. "I'm grateful for this scholarship and this opportunity to help older adults," she says. "This is my passion."

Sheila Adams, COTA

Certified Occupational Therapy Assistant, Transitional Care Unit, UPMC Northwest

"There is a void, a lack of awareness, especially among the younger generation, about the aging process. The more we know about geriatrics, the better we can serve older adults."

Every day in her job as a certified occupational therapy assistant at UPMC Northwest, Sheila Adams works with older patients to prepare them for their transition home. Her patients face a wide range of health and aging-related issues, including Alzheimer's, dementia, anxiety, depression, orthopaedic conditions, COPD, and cancer. "I wanted to be able to serve them better by learning more about aging," she says.

Through her gerontology certificate courses, she has gained a better perspective on aging and the challenges faced by older adults and their families. She also has learned to recognize signs and symptoms of dementia and other diseases, and is more cognizant of disease processes. "It helps me do my job better," says Sheila. "It helps to have someone who is aware — someone who can advocate for older patients."

Geriatricizing the Nursing Workforce

Preparing Professionals Who Can Care for an Aging America

Today's paucity of skilled health care workers specializing in the care of older adults portends an even greater health policy crisis in the years to come. In its landmark 2008 report, *Retooling for an Aging America: Building the Health Care Workforce,* the Institute of Medicine pointedly stated: "Unless action is taken immediately, the health care workforce will lack the capacity (in both size and ability) to meet the needs of older patients in the future."

More than 45 million people in the United States are ages 65 and older, but this number will more than double to 98 million by 2060. The "oldest old" — those over age 85, who require the greatest medical care — will increase to more than 19 million.

Nurses comprise the single largest segment of America's health care workforce, according to the American Association of Colleges of Nursing (AACN), yet less than one percent of all 3 million registered nurses are certified in geriatrics.

"Nursing is now at the vanguard of increasing the capacity of geriatric

professionals," says **Jacqueline Dunbar-Jacob, PhD, RN, FAAN**, dean and distinguished service professor of nursing, University of Pittsburgh School of Nursing, and a member of the Aging Institute General Board of Directors. "Because we're on the front line of care, nurses bring a different, more urgent perspective to the health care policy table."

The faculty of the University of Pittsburgh School of Nursing is working to address the need for a nursing workforce that is better prepared to care for older adults through expanded educational and clinical opportunities, as well as an increased research focus. The school has a national reputation for excellence: it is ranked fifth in the *U.S. News & World Report 2016 Best Nursing Graduate Schools* issue and sixth in National Institutes of Health (NIH) funding among schools of nursing.

According to Dr. Dunbar-Jacob, the richness of geriatric research and education across the University of Pittsburgh — coupled with the diversity of clinical geriatric experiences at UPMC — create an ideal environment to influence nursing practices with older patients. "We're seeing much stronger roles for nurse practitioners (NPs) in geriatric care — both in primary and long-term settings. In response, nursing accrediting bodies have changed the educational requirement of adult NPs to require education and certification as Adult Gerontology NPs," says Dr. Dunbar-Jacob.

"By far and away, the vast majority of people in today's hospitals are older adults," she adds. "When our undergraduate nurses enter the profession, they're providing direct nursing care. It's critical that they have a strong understanding of normal aging." At the University of Pittsburgh, undergraduate nursing students receive both in-class training and clinical experience in geriatrics. Nationally, however, only one in three nursing schools offer such preparation.

The Schools of Nursing, Pharmacy, and Medicine recently collaborated on a Josiah Macy Jr. Foundation grant that supported an interprofessional educational initiative in which students from all three schools received onsite training at a long-term care facility.

"Our focus is not only on preparation of the workforce in geriatrics but in advancing knowledge and best practices through research," adds Dr. Dunbar-Jacob. "Our faculty members historically have been very involved with the Aging Institute's research and workgroups." Nursing faculty members **Annette DeVito Dabbs, PhD, RN, ACNS-BC, FAAN**, and **Mijung Park, PhD, MSN, MPH, RN**, are primary and secondary investigators, respectively, for this year's two Aging Institute seed grant programs. Dr. Park also was a 2013 Aging Institute Seed Grant winner.

School of Nursing faculty **Jennifer Hagerty Lingler, PhD, CRNP**, associate professor, and **Judy Tabolt Matthews, PhD, MPH, RN**, research associate professor and associate director of the gerontology program at University Center for Social and Urban Research (USCUR), also will be involved in the new regional Geriatric Workforce Enhancement Program (GWEP).

Preparing Social Workers With Expertise in Aging

America's aging baby boomers are redefining our expectations of growing old. They also are creating a tremendous demand for a new generation of social workers with expertise in working with older adults. With their advanced training, geriatric social workers are equipped to help older adults and their families address the challenges and changes that come with age.

The Aging Institute and UPMC Health System and Community Provider Services continue to collaborate with the University of Pittsburgh's School of Social Work to offer both clinical and community-based internship placements for students pursuing a Master in Social Work (MSW) degree. These settings provide students with the opportunity to gain hands-on experience in the field.

Full-time MSW students are required to complete many hours of fieldwork. This year, 16 aging-related student placements were arranged at the following UPMC sites:

- Aging Institute of UPMC Senior Services and UPMC
- UPMC Benedum Geriatric Center
- UPMC Community Provider Services
  - > Living-at-Home
  - > Staying-at-Home
- UPMC Palliative and Supportive Institute
  - > Magee-Womens Hospital of UPMC
  - > UPMC East
  - > UPMC Mercy
- UPMC Senior Communities
  - > Canterbury Place
  - > Heritage Place
- UPMC St. Margaret
- Western Psychiatric Institute and Clinic of UPMC

Connecting to the Community

Sharing knowledge and resources with the community is a key objective of the Aging Institute. Through our outreach, we empower older adults, families, and their caregivers to make informed choices and streamline access to support for those in need. These crucial community connections have made the Aging Institute a highly visible and trusted source of information and assistance.

The Aging Institute Help and Referral Line

For caregivers of older adults, the Aging Institute's Help and Referral Line can be a lifeline of affirming support and counsel.

"Caregivers can call here and find help without judgment," explains **Rick Morycz, PhD**, a member of the Aging Institute's Dementia Workgroup and associate professor of geriatric services at Western Psychiatric Institute and Clinic of UPMC, who serves as the Referral Line's clinical consultant.

"Frequently, one of the most important services we provide caregivers is to simply listen when they are feeling most vulnerable."

Each year, a growing number of adults, caregivers, relatives, friends, and health care providers are turning to the Aging Institute's Help and Referral Line for support, which is offered free of charge. This year, **calls to the Aging Institute Help and Referral Line increased 37 percent — including a dramatic increase in the number of calls seeking community services for caregivers**.

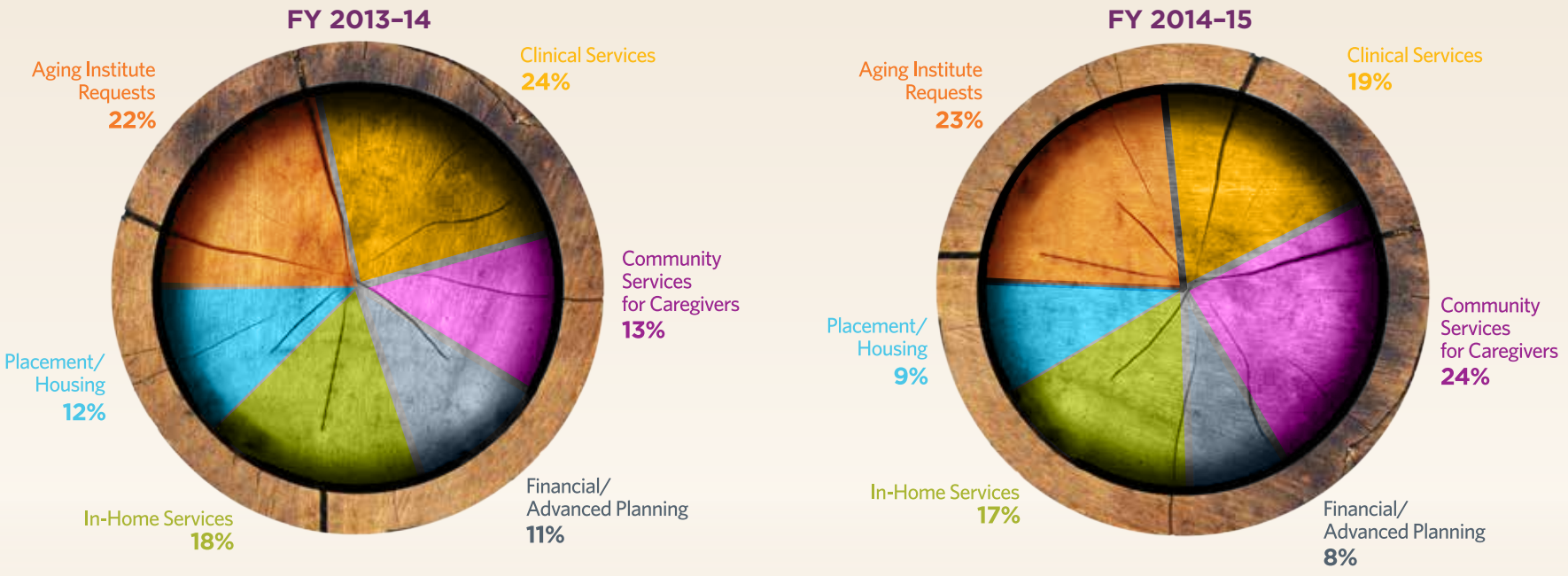
Staff members work with callers to determine their needs and link them to the wealth of clinical and community resources available to seniors in western Pennsylvania.

Caller questions involved a wide range of topics, such as:

- Caregiver support
- Financial assistance
- Advanced planning
- In-home services, including housekeeping and personal care
- Assisted living and nursing home care
- Depression, dementia, and other mental health issues

To contact the Aging Institute's Help and Referral Line, toll-free, call **1-866-430-8742**.

Caller Concerns by Interest Area



Caring for the Caregiver

Insights from the Aging Institute's Help and Referral Line for dementia caregivers.

Over the last 15 years, the number of family members and friends who are caregivers in the United States has tripled. While caring for an aging parent or loved one may be a labor of love, it comes with a price. Many are juggling work and family responsibilities, and most report that their efforts come with both emotional and financial strains.

37 billion hours of care

Annual hours of caregiving in the United States. Three of four caregivers work full-time while providing an average of 20 hours a week of in-home assistance.

$470 billion

Estimated value of annual caregiver service — more than Medicaid spends in a year.

$303,880

The average loss in income and benefits to caregivers over their lifetime.

"Most care providers are ill-prepared for what they will be dealing with on a day-to-day basis," says Aging Institute Board and Dementia Workgroup member

Rick Morycz, PhD, associate professor of psychiatry, medicine, and social work at the University of Pittsburgh and part of geriatric services at Western Psychiatric Institute and Clinic of UPMC. "That's especially true for caregivers of individuals with Alzheimer's disease and other dementias, whose behaviors can be unpredictable. Caregivers are seeking education so they can better understand why someone who was once highly functional can no longer shop, balance a checkbook, or even get dressed."

The Aging Institute Help and Referral Line saw a significant increase in requests from caregivers in 2014–15, accounting for more than a third of all calls according to Dr. Morycz, who also serves as the Help and Referral Line's clinical consultant.

That increase spurred efforts by the Dementia Workgroup to expand its database of information and support services for individuals with dementia and their caregivers. "An educated caregiver is more confident," explains Dr. Morycz. "Evidence-based studies show that targeted educational, problem-solving, and stress management interventions help reduce stress and relieve depression in caregivers."

A Call for Help

While the reasons people call the Help and Referral Line are as varied as the callers themselves, they all share one thing in common: they need help. Following are some of the areas of support provided by the Aging Institute Help and Referral Line:

Solving a particular problem. Performing simple daily tasks — such as dressing, bathing, or making a salad for lunch — can be difficult for a person who's struggling with memory loss or dementia, and can be a source of frustration for a caregiver. "We help caregivers break down tasks into verbal step-by-step instructions that can be followed by someone with dementia," says Dr. Morycz. "Being able to help manage certain behaviors and activities allows caregivers to see things in a new light and gives them a greater sense of confidence and control over the situation."

Caring for the caregiver. While rewarding, caregiving can be challenging, stressful, and isolating. Simply talking with someone who understands and can recommend coping strategies can make it easier to get through the day. "There is strength in knowing you aren't alone," says Dr. Morycz. "Often, it's a matter of helping caregivers better manage their own reaction and tone of voice. We encourage more non-verbal interactions: a smile and touch on the shoulder can do more to calm someone with dementia than trying to rationalize or repeatedly over explain."

Recognizing caregiver burnout. Caregivers are often so focused on their family members that they neglect their own emotional and physical health. "We look for signs of caregiver burnout, encouraging them to take advantage of routine respite care services and other available resources, such as daycare, companion aides, and support groups like the Alzheimer's Association," says Dr. Morycz. "Research shows that caregivers who are stressed are more at risk of poor health, isolation, depression, and a premature desire to institutionalize care receivers. Distressed spousal caregivers can have a greater risk of

mortality. The burdens of caregiving can also increase the prospect of elder abuse."

Suggesting coping mechanisms. "Thinking differently and finding alternative ways to manage negative emotions can help caregivers better deal with the burden of providing care. The regular use of meditation, relaxation, and mindfulness techniques can also play an invaluable role in helping caregivers. Finally, regular breaks from caregiving are essential," says Dr. Morycz.

The Cost of Caregiving

"The vast majority of caregiving is done by family and friends, not professionals," says Dr. Morycz. "Their efforts represent immense cost savings and reduced hospitalizations. It's vital that we support them in the critical care that they provide." In particular, he points to the need to develop health policies that encourage employers to recognize the need to accommodate caregivers. "We're also hopeful that Pennsylvania will expand its financial resources to support caregivers based on the suggestions of the State Plan for Alzheimer's Disease and Related Disorders."

Balancing a Love of Independence With a Heartfelt Appreciation for Help

A self-described "high-functioning older adult," Phyllis Trout is determined to change public preconceptions about people like herself. Her message: one size doesn't fit all.

Phyllis Trout is a healthy, independent, energetic, and active retiree who demurs when asked her age — and for good reason. She doesn't want to be defined by it.

"I don't consider myself old — just older than I was. To me, age is a state of mind. You can't let it define who you are and what you do," says Phyllis, a widow with no immediate family.

Busier than most people decades her junior, she's up most days just after dawn. Weekdays, she volunteers with a host of organizations, including the AARP Allegheny County Team, McKeesport Healthier Communities PartnerSHIP, Mon Yough Area Chamber of Commerce, and UPMC McKeesport, where she's involved with the Aging Institute and Golden Wellness Club.

"When you're concerned only about your own little world, you can't see what others are going through," says Phyllis, who urges her peers to stop sitting at home, focusing on their problems. "I've always been involved, and it's made a world of difference in my life."

On weekends, Phyllis drives to local dances where you can find her "cutting the rug," dancing every style from swing to salsa. "I go dancing not because I'm pain free — I'm not — but because I forget about all that once I start dancing," she says.

Despite her energy and activity, Phyllis feels she and others like her are missing something. Retiring from jobs, losing friends and spouses to death and illness, and having family members move out of the area can leave older people without support and stimulation, which can have a direct impact on mental and physical health. She's made it her mission to encourage people in the community to reach out to "on our own" seniors like herself to lend a helping hand at home or offer a place to go for the holidays.

"High-functioning older adults like me don't fit the mold. One size doesn't fit all," she says. "We need ways to stay connected, too. We may not need the usual answers and services — but we do need help and friendship so we don't go downhill. It's the little things that can help keep us independent and involved."

Celebrating Senior Champions

UPMC Senior Services and the Aging Institute annually honors inspiring and dedicated men and women whose work in the many disciplines and services that seek to help, support, and transform the lives of older adults goes beyond the ordinary. Once again, three extraordinary individuals and organizations were recognized for their efforts during the seventh annual celebration that was held on October 21, 2015, in Pittsburgh.

Grand Champion

Charles F. Reynolds III, MD

UPMC Endowed Professor in Geriatric Psychiatry

Director, Aging Institute

Dr. Reynolds' decades of research and practice as a clinician, the countless individuals he has mentored and inspired, his ability to influence positive policy changes at the governmental level have all, quite literally, changed the lives of seniors throughout the world.

"Chip Reynolds has done more than anyone else to put Pittsburgh on the map as an international center for aging research, education, and clinical services."

Richard Schulz, PhD
Distinguished Service Professor of Psychiatry, School of Medicine
Professor of Epidemiology, Sociology, Psychology, Community Health, Nursing, and Health and Rehabilitation Sciences
Director, University Center for Social and Urban Research
Director, Geriatric Education Center of Pennsylvania

Community Champion

The Pittsburgh Foundation

Maxwell King, President and CEO

The Pittsburgh Foundation has been an instrumental part of the changes Pittsburgh has undergone since it was founded in 1945. Those changes include how we care for a large, growing population of older adults with a unique set of needs, in terms of their health and health care and the key role they inhabit in the social fabric of our communities.

"They have committed to trying to make tomorrow's care for older people better than today's through identifying and promoting research."

Neil M. Resnick, MD
Chief, Division of Geriatric Medicine and Gerontology
Thomas P. Detre Professor of Medicine
Director, John A. Hartford Foundation Center of Excellence in Geriatric Medicine
University of Pittsburgh School of Medicine and UPMC

Caregiver Champion

Brian Catale

Operation Veteran Benefits, a service of Brian Catale & Associates

Operation Veteran Benefits, a free service offered to veterans of the United States military or their surviving families, has helped innumerable local residents navigate the often confusing and daunting task of applying for and receiving benefits available to them through the Aid and Attendance Benefit.

"Brian is doing this for free. He doesn't charge anybody anything to facilitate the process, to get them their benefits that they deserve. And he continues to help with constant follow up afterward. Just seeing the relationships he has built with the people that he's helped, I can't say enough about this young man."

John Desiderato
Manager, Lighthouse Pointe Village at Chapel Harbor, A UPMC Senior Community

Partners in Innovation

The history of the Aging Institute is one of innovation through partnerships. It has served as a catalyst, bringing together a wide array of stakeholders to work in a collaborative way on shared interests and projects geared to improving the health and lives of seniors.

Perhaps no other medical specialty relies more on collaborative input than geriatrics. That spirit of teamwork inspired the Division of Geriatric Medicine to create the forerunner of what today is known as the Aging Institute — and drives its continued contributions and support.

"When I came to Pittsburgh in 2000, some of the best minds in the world were doing aging-related research and clinical care in disciplines throughout the University of Pittsburgh and UPMC," says Neil M. Resnick, MD, division chief and Thomas Detre Professor of Medicine. "Because that great work was often happening in independent silos, however, some tremendous opportunities to create, link, leverage, and apply new knowledge were being missed."

To create the collaborative bridge that would ultimately promote the translation of research findings into improved care for older adults, the University of Pittsburgh Institute on Aging (UPIA) — the precursor to today's Aging Institute — was established in 2002, led by Dr. Resnick and Richard Schulz, PhD, director of the University Center for Social and Urban Research and now Distinguished Service Professor of Psychiatry.

Much of the UPIA's original structure and many of its early initiatives — from its innovative new clinical programs, seed grant program, call center, educational programming, and career tracks for clinicians and caregivers to its pioneering research studies on the biology of aging, delirium, and falls prevention — remain important elements of the Aging Institute's current work.

"Our Division is proud to continue to be an integral partner of the Aging Institute and its ongoing efforts to improve the health and well-being of older adults," says Dr. Resnick, associate director of the Aging Institute and a member of its executive committee. "The challenges are great, but there's never been a more exciting time to be involved in age-related research and care."

Division of Geriatric Medicine

"Providing superb clinical care, training others to do the same, and conducting research to ensure that tomorrow's care is better than today."

Mission Statement—Division of Geriatric Medicine School of Medicine, University of Pittsburgh

The University of Pittsburgh's Division of Geriatric Medicine is one of the largest and most respected academic geriatric divisions in the country. Led by **Neil M. Resnick, MD**, it is recognized for its focus on innovation in geriatric clinical care, research, and education.

- The Division recently received competitive renewal of its designation as a Hartford Foundation Center of Excellence in Geriatric Medicine.
- *U.S. News and World Report* consistently includes the Division among the nation's top geriatric programs in its "Best Hospitals" and "Best Graduate Schools" rankings.
- The breadth of the Division's research initiatives contribute to the University of Pittsburgh's stature as one of the top recipients of National Institutes of Health (NIH) funding in aging research.

Clinical Activities

"If America is going to improve the care of older adults, new care models are essential," says Dr. Resnick. Thus, the Division is critically evaluating its approach in every care delivery setting, including the hospital, office, home, and institution. "We are deconstructing the traditional clinical approach to geriatric care and reconstructing it to be proactive, preventive, team-based, and IT-augmented," he says. "We are driven by the belief that while on the one hand geriatric care has to be more personalized, on the other hand it needs to be more reliable and efficient. Moreover, given the dearth of geriatricians, we are also developing innovative approaches that are based on geriatric principles and that can be delivered automatically and embedded in routine workflow."

For an academic geriatrics program, the Division's clinical volume is high:

each year, it is responsible for nearly 16,000 ambulatory visits, more than 1,000 hospital admissions, and nearly 7,000 long-term care visits at 13 different facilities.

"We also are one of the few programs in the country whose fellowship-trained physicians often have dual training in both geriatrics and a subspecialty. A large proportion of our faculty have additional formal training in such aging-related areas as cardiology, chronic pain, gait and mobility, sarcopenia, falls, endocrinology, osteoporosis, sleep disorders, voiding dysfunction and incontinence, rheumatology, depression, dementia, and palliative care," says Dr. Resnick. "Additionally, we offer one of the few geriatric pharmacotherapy programs in the country."

One of the Division's signature successes is its comprehensive, interdisciplinary, and team-based Acute Care and Transitions (ACT) program at Magee-Womens Hospital of UPMC. This program is designed to assure the best possible care of at-risk older and chronically ill adult patients during hospitalization and through their transition back home or to other care options. ACT's system-level approach has been implemented throughout Magee to treat not only geriatric patients, but all patients.

"The program is based on the premise that optimal geriatric care requires anticipating problems and preventing their occurrence," says Dr. Resnick. "We also believe that improved 'systems' can help accomplish that goal — and that good geriatric care is actually good medical care for everyone."

Research Activities

The Division's research activities utilize a multidisciplinary, multisystem, and translational perspective that integrates biology, physiology, clinical medicine, behavior, social support, community, and family health systems.

"Our research focuses on conditions that are common, costly, and important sources of suffering, and yet are often neglected by traditional researchers," says Dr. Resnick. "We target areas in which we feel we can make a substantial difference."

The Division's numerous, high-profile research projects include:

- NIH P30 funding for the Pittsburgh Claude D. Older Americans Independence Center, recently renewed for another 5-year cycle
- An NIH Leadership K07 to create a Center of Excellence in Geriatric Pharmacotherapy
- A multisite Patient-Centered Outcomes Research Institute (PCORI) study to prevent injurious falls among high-risk elderly
- Newly-funded research in geriatric syndromes, including heart failure, falls, osteoporosis, delirium, and incontinence, as well as innovative new approaches to antibiotic stewardship
- A portfolio of long-term care research, including identification of and proactive, interventions for patients at risk of deterioration, prevention of infections across facilities, prevention of adverse drug reactions, and use of a multicomponent approach — including telemedicine — to reduce the need to transfer such patients to acute care. The latter program is funded by a large *Health Care Innovation Award* from Medicare's Innovation Center

Other areas of inquiry include the biology of longevity, successful aging, sarcopenia, chronic pain, cardiac rehabilitation, and frailty, among others.

Educational Activities

"Our commitment to devising and delivering quality geriatric education is just as compelling as our clinical and research work," says Dr. Resnick. "Our Division offers interdisciplinary training at every level, from introductory studies in geriatrics for high school students to an award-winning course for practicing physicians. We also teach trainees in pharmacy, nursing, psychology, chaplaincy, physical and occupational therapy, and social work."

Although most medical schools offer exposure to geriatrics, the Institute of Medicine found that it was generally inadequate. "In contrast, all third-year medical students at the University of Pittsburgh are required to complete a 35-hour course in geriatrics as part of our

efforts to educate medical professionals on the unique aspects of older adult care," says Dr. Resnick. Additionally, the Division offers residents a novel four-year "geriatrics area of concentration" that leads to a certificate in geriatrics, as well as a month-long geriatric experience in clinic, home, hospital, and nursing home settings.

Alzheimer Disease Research Center

A pioneering force in translating research advances into improved diagnoses and care for people with Alzheimer's disease.

For the past 30 years, the University of Pittsburgh Alzheimer Disease Research Center (ADRC) has been among the country's leading research centers specializing in the diagnosis of Alzheimer's disease (AD) and related disorders. Internationally recognized for its research in amyloid imaging and cardiovascular disease, the ADRC has received continuous funding by the National Institute on Aging (NIA) and recently secured federal funding for another five-year cycle through 2020.

One of the first 10 ADRCs in the country, Pittsburgh's ADRC has promoted research designed to gain an understanding of the etiology and pathogenesis of AD and the mechanisms underlying the cognitive and neurobiological changes.

A longtime friend and crucial partner of the Aging Institute, the ADRC has been a core source of support regionally and nationally, providing resources, patients, tissue, and expert consultation for research, clinical, and training activities. "The Aging Institute's work has greatly been informed by the pioneering insights of the ADRC," says the Institute's director, **Charles F. Reynolds III, MD**.

Pittsburgh is home to one of the largest ADRCs in the country. Since its inception, approximately 5,000 people from the tri-state area with suspected Alzheimer's disease and other forms of dementia have been evaluated at the ADRC, which also provides support for patients and families as they begin treatments, enter clinical trials, or undergo further evaluation. More than 800 of these patients have contributed their brains for ongoing scientific examination.

"We owe a tremendous debt to these men and women, who display a remarkable degree of altruism for what we do," says **Oscar L. Lopez, MD**,

One of the ADRC's most acclaimed achievements is the development of Pittsburgh Compound B (PiB), a revolutionary amyloid imaging agent that detects plaques associated with Alzheimer's disease. It was developed by ADRC's co-director Dr. William Klunk, MD, PhD, and Chet Mathis, PhD, UPMC endowed chair of positron emission tomography (PET) research and distinguished professor of radiology.

director of the ADRC and professor of neurology at the University of Pittsburgh. "Their willingness to participate in our research is critical to our advancement of knowledge."

William E. Klunk, MD, PhD, co-director of the ADRC and distinguished professor of psychiatry at the University of Pittsburgh, also points to the legacy of professional development at the ADRC, whose multidisciplinary research team includes psychiatrists, neuropsychiatrists, epidemiologists, geneticists, and other specialists. "Over the last 30 years, hundreds of researchers have been mentored at the ADRC. They've taken that knowledge to advance meaningful research around the world," he says.

NIA funding does not cover the full cost of the ADRC's work, says ADRC's administrator, Leslie Dunn, MPH. "For this reason, we rely heavily on public and private philanthropy for support, as well as clinical trials, which offer our patients access to cutting-edge therapies that aren't available elsewhere."

"After years of disappointments, we now have promising trials of a drug that is decreasing the pathologies and slowing the progression of AD," says Dr. Lopez. "These trials are happening now, right here in Pittsburgh, giving our patients access to greater opportunity and hope."

The Basic Biology of Aging Workgroup

Focusing on biological aging across the lifespan: from molecules to man.

One of the Aging Institute's newest alliances is the **Basic Biology of Aging Workgroup**. Established in 2013, the group already has shown remarkable progress in bringing scientists and clinicians together as intellectual partners to investigate the biological processes that drive the aging phenotype and age-related pathologies.

Spearheading the group are **Bennett Van Houten, PhD**, co-leader of the University of Pittsburgh Cancer Institute's molecular and cellular cancer biology program and the Aging Institute's associate director for basic research; **Fabrisia Ambrosio, PhD, MPT**, assistant professor, department of physical medicine and rehabilitation; and **Nam Vo, PhD**, assistant professor, department of orthopaedic surgery, University of Pittsburgh.

"Organismal aging is a complex biological phenomenon. Even though many questions remain unanswered, it's an exciting time to work towards bringing an enhanced understanding of the biology of aging into translational applications," says Dr. Ambrosio.

"Our primary goal is to better understand the factors that can promote healthy aging through multidisciplinary bench science and clinical translation," says Dr. Vo. "Building a collaborative community of scientists and rehabilitation clinicians was our first step in that process."

The Basic Biology of Aging Workgroup leverages support and infrastructure from four key institutions within the University: the Aging Institute, the Center for Metabolism and Mitochondrial Medicine (C3M), the Pittsburgh Claude D. Pepper Older Americans Independence Center, and the University of Pittsburgh Cancer Institute. The Workgroup also acts as a mediator to bring all four centers together to promote aging research. "It's hard not to be impressed with the rare willingness to collaborate that we're seeing throughout the University and UPMC," says Dr. Van Houten.

Serving as the Advisory Board for the Workgroup are the Aging Institute's Director, **Charles F. Reynolds III, MD**; **Steven Shapiro, MD**, UPMC chief medical and scientific officer; and **Nancy Davidson, MD**, director of the University of Pittsburgh Cancer Institute. Over the past year, the group also established an External Advisory Board, securing three **nationally recognized experts** in aging as members: **Judith Campisi, PhD**, and **Julie Andersen, PhD**, of the Buck Institute for Research on Aging in Marin County, Calif., and **Peter Rabinovitch, MD, PhD**, of the Nathan Shock Center for the Basic Biology of Aging at the University of Washington.

To help promote the exchange of knowledge, tools, and techniques in aging research, the Workgroup began a

monthly seminar series. Presentations — such as *A Twist of Fate: Unmasking a Role for the Longevity Protein, Klotho, on Muscle Stem Cell Regenerative Potential*, which was presented in March 2015 by Dr. Ambrosio, a 2010 Aging Institute Seed Grant recipient — provide opportunities to showcase the cutting-edge investigations related to aging and metabolism research that are currently underway at UPMC and the University of Pittsburgh.

In June 2015, the Workgroup held its second annual **Healthy Aging Advance**, a half-day symposium designed to bring in outside experts in the field of healthy and basic aging, promote collaboration, and highlight new aging research directions. This year's event featured a keynote address by **Julie Andersen, PhD**, of the Buck Institute, on the topic of *Brain Aging and Cellular Senescence*, and remarks by **Steven Shapiro, MD**, of UPMC, who provided a $200,000 grant to fund **four pilot programs** related to the diseases of aging.

Looking to the Future

A **Basic Biology of Aging Scholars Program** was established in the fall of 2015 to support graduate student and post-doctoral training and development. The program includes travel awards, a monthly trainee Work-in-Progress seminar series, a post-doctoral pilot project funding program, and a Post-Doctoral fellowship in the Biology of Aging.

"Such a program will offer junior researchers incredible opportunities to develop as scientists," says Dr. Van Houten. "Ultimately, our goal is to establish a **Center of Excellence in Biology of Aging** that will serve as a leading research, training, and mentoring resource for the University."

In order to better emphasize its mission, beginning in 2015–16, the Basic Biology of Aging Workgroup will change its name to the **Stimulating Pittsburgh Research in Geroscience (SPRIG) Workgroup**.

Pittsburgh Claude D. Pepper Older Americans Independence Center

Advancing scientific knowledge to maintain and restore independence in older persons through research and research career development.

Falls prevention is an essential goal in maintaining the health and independence of older adults. The **Pittsburgh Claude D. Pepper Older Americans Independence Center** is one of 15 National Institute on Aging (NIA)-funded Centers of Excellence in Geriatric Research dedicated to promoting the functional independence of older Americans through research on mobility, balance, and aging.

Based in the University of Pittsburgh's Division of Geriatric Medicine, the Pepper Center was initially funded in 2004; the NIA recently renewed its grant for a third five-year cycle.

Both the Pepper Center and Aging Institute share a common mission: to promote the health and well-being of older adults. "Our relationship with the Aging Institute is a wonderful win-win because the Center's programs and investigations are closely aligned with its initiatives and interests," says **Susan L. Greenspan, MD**, director of the Pittsburgh Pepper Center and associate director, clinical and translational research, Aging Institute. "Together, we're able to leverage our resources to link expertise from investigators throughout UPMC and the University of Pittsburgh to explore a problem."

In addition to supporting multidisciplinary research related to balance, mobility, and aging, all Pepper Centers nationally provide support and training for young research investigators. "With the new funding, we'll be able to expand activities in this area and offer our own KL2 — or Mentored Career Development Award — creating an exciting career development pipeline for future research leaders," says Dr. Greenspan.

The Pittsburgh Pepper Center also has several distinguishing initiatives, including a **clinical and population outcome core**. Over the past decade, it has created a community registry of 3,000 Pittsburgh area residents age 60 and older who are available for participation in Pepper-approved research studies. The Pittsburgh Center is now in the process of developing a long-term care registry of residents available for research studies and data collection concerning resident demographics, health-related conditions, and medications.

"Through our **data management, analytics, and informatics core**, we're able to offer impressive statistical and data management support to partners like the Aging Institute," says Dr. Greenspan. "We are very excited about a potential initiative we're exploring with the RAVEN program in the area of telemedicine. Our centralized data management, statistical analysis service, and informatics expertise can help RAVEN achieve a valuable economy of scale."

The Pepper Center also offers an **integrative systems core** that provides state-of-the-art facilities to support research in neuroimaging, biomechanics, physiology, and biology. "For example, we've pioneered novel imaging and non-invasive technology for researchers interested in the connection between brain balance and brain exercises," says Dr. Greenspan.

With the new NIA funding, the Pittsburgh Center plans to pursue research examining the interactions between body tissues and organelles (nerves, muscles, mitochondria), biosystems, and their relationship to balance and health.

"We're also planning to expand the use of our mobile lab to take translational and clinical research to long-term care facilities," adds Dr. Greenspan. "We currently offer a variety of portable tests from brain imaging to assessing skeletal health. Our goal is to add telemedicine technology that would enable investigators to work onsite with patients for evaluations and measurements."

Geriatric Education Center of Pennsylvania

A nationwide directive with local impact: celebrating 30 years of leadership in geriatric education — and a new mission in 2015–16.

For the past three decades, the **Geriatric Education Center of Pennsylvania (GEC-PA)** consortium has been a guiding force behind efforts to improve geriatric training and expertise among professionals who serve older adults throughout the state.

Established in 1985, the GEC-PA was among the first of 45 Geriatric Education Centers established across the United States by the U.S. Department of Health and Human Services Health Resources and Services Administration (HRSA) to improve the health and functioning of older adults by strengthening the geriatric expertise of the health care workforce.

Anchored by the University of Pittsburgh, the consortium partnership also includes the Pennsylvania State University and UPMC. The consortium has been headed by **Richard Schulz, PhD**, director since the GEC-PA's founding in 1985, and **John G. Hennon, EdD**, co-director since 1996.

"We're a locus point for change, with a focus on quality improvement initiatives," says Dr. Hennon. "In Pittsburgh, we're fortunate to have access to a large community of geriatric professionals, so we're able to engage that expertise in our work. While we have few full-time staff, we have many part-time researchers, faculty, and health care professionals involved from the University of Pittsburgh and Pennsylvania State University. If a project involves geriatric education, the GEC-PA likely has had a hand in it."

Across the nation, all GECs share five common goals:

- Improve education in geriatrics
- Develop curriculum for different providers, including physicians, nurses, and physical therapists
- Provide continuing education for current health care professionals
- Provide clinical training for pre-professional studies
- Promote faculty development, such as helping health care faculty better understand the needs of older adults

The GEC-PA measures its impact in three areas, says Dr. Hennon. "Have we improved provider knowledge and attitudes? Did that result in changes in behavior practice? And most of all, what is the impact on the patient?"

In Pittsburgh, the GEC-PA initially focused on faculty development, says Dr. Hennon. "By 1992, our main focus shifted to continuing education programs that were aimed at building competency and understanding in geriatrics and aging issues."

One of the GEC-PA's most visible programs was to assist in the development of the curriculum for a university-wide gerontology certificate program at the University of Pittsburgh. The certificate program now spans specializations in such areas as internal medicine, nursing, public health, and law programs, as well as multidisciplinary tracks. The GEC-PA also was instrumental in developing a geriatric dentistry program for the University's School of Dentistry. "These programs are often used as models for other schools around the country," says Dr. Hennon.

The number of professionals who have undergone training has increased dramatically over recent years, a testament to both the intense demand for quality continuing geriatric education in the region and to the commitment of the GEC-PA to build new relationships with organizations that serve older adults. "Over the past five years, we've focused our efforts on interprofessional team training for aspiring and practicing professionals, evidence-based demonstrations, and Alzheimer's disease education," says Dr. Hennon.

In addition to serving as an important voice on many of the Aging Institute's workgroups and such programs as the RAVEN grant, the GEC-PA has accomplished a tremendous amount of work in dementia and related mental health issues, teaming up with such local resources as the Western Psychiatric Institute and Clinic of UPMC, home to the largest geriatric psychiatry program in the country, and the Alzheimer's Disease Research Center.

The GEC-PA also has developed an evidence-based, interprofessional palliative care program to provide training for physicians, nurses, social workers, and nursing home administrators. "Our efforts in palliative care coincided with a UPMC system-wide initiative on the subject," says Dr. Hennon. "That synergy helped make UPMC a pioneer in palliative care."

Future Directions

The University of Pittsburgh, in collaboration with the Aging Institute and UPMC, recently received a three-year, $2.6 million grant to establish a new regional **Geriatric Workforce Enhancement Program (GWEP)**. The new program is part of a national strategy to prepare a health care workforce to meet the needs associated with advancing age.

"The University of Pittsburgh and the Aging Institute have a long-standing commitment to training geriatric health professionals. These efforts will be enhanced with this new grant from the Health Resources and Services Administration," says Dr. Schulz.

The re-organized GEC-PA consortium that was established to implement the GWEP — the University of Pittsburgh, Pennsylvania State University, the VA Pittsburgh Healthcare System, the

Aging Institute, and UPMC — is one of 44 organizations in the United States to be awarded HRSA funding. This collaborative partnership is tasked with improving the geriatrics education and training of health professionals, students, faculty, and practitioners throughout western Pennsylvania.

UPMC Rehabilitation Institute

Combining extensive clinical experience with advanced technology and research to offer older patients cutting-edge treatments aimed at restoring function and independence.

Researchers and clinicians from the **UPMC Rehabilitation Institute** are key advisors and participants in many of the Aging Institute's multidisciplinary Workgroups and research projects.

"This is a very good partnership," says **Michael L. Boninger, MD,** director of the UPMC Rehabilitation Institute and a member of the Aging Institute Board of Directors. "We share the same goals across both institutions: keeping older adults healthy and in their homes — and getting them up and moving more quickly at the hospital," he adds.

"Working together, we help add to the powerhouse that is UPMC and the University of Pittsburgh in gerontology, research, and aging. That kind of strength-upon-strength collaboration is what makes Pittsburgh unique."

The Rehabilitation Institute is part of the Department of Physical Medicine and Rehabilitation at the University of Pittsburgh, which ranks among the top five recipients of funding from the National Institutes of Health for rehabilitation-related research. Additionally, the Rehabilitation Institute is one of only seven programs in the country to be designated as a Center of Excellence in both brain and spinal cord injury care.

With western Pennsylvania's substantial aging population, the Rehabilitation Institute has developed a deep expertise in the needs of older patients — from stroke patients to older adults recovering from falls. "Our multidisciplinary focus means our emphasis is on function and quality of life, not just on treating the injury. As a result, we're creating new models of care."

Its rehabilitation specialists work closely with regenerative medicine scientists in the development of clinical protocols designed to optimize functional recovery. They've also examined the impact of physical activity related to aging and ways of incorporating technology to encourage exercise.

An example of such work are investigations by **Fabrisia Ambrosio, PhD, MPT**, assistant professor and research scientist in the Department of Physical Medicine and Rehabilitation and co-chair of the Basic Biology of Aging Workgroup. "She's examining ways of making rehabilitation protocols more effective at promoting the intrinsic healing capacity of the body, from the molecular to the cellular to the tissue levels," says Dr. Boninger.

He also points to the pioneering work of **Gwendolyn Sowa, MD, PhD**, associate professor and vice chair for clinical outcomes and quality care in the Department of Physical Medicine and Rehabilitation and co-director of the Ferguson Laboratory for Orthopaedic and Spine Research at the University of Pittsburgh. "Her focus on the basic biology of the back and how exercise and motion impact the back has helped redefine treatment practices."

"Exercise is rehabilitation. We know that the more you move, the more active you are, and the healthier you'll be," notes Dr. Boninger. "Its impact on the quality of life is unequivocal for people of every age."

Aging, Health, and Government Policy

In their quest for innovative solutions to manage the profound impact of older adults on our nation's health care, social services, and economic resources, policymakers on the federal, state, and local levels are increasingly turning to the Aging Institute for insight and expertise. Our members are making a difference in redefining the public agenda through expert testimony, committee service, and research insights.

The Aging Institute's Role in Pennsylvania's Overhaul of Long-Term Care Services

In February 2015, Governor Tom Wolf unveiled a package of legislative and budgetary actions aimed at improving the quality of care for seniors and people with disabilities. His plan, which calls for an overhaul of long-term care services through a new managed care program, is based on recommendations from the **Pennsylvania Long-Term Care Commission**.

"Despite significant public funding and enormous investments in human and financial capital, it was clear to the commission's members that our state needs a more efficient system to better meet the needs of those who are our most vulnerable," says Aging Institute Director, **Charles F. Reynolds III, MD**, who was appointed by former Governor Tom Corbett to the 23-member statewide committee. Dr. Reynolds also served as the lead on the commission's workgroup on prevention and caregiver support.

Spearheading the commission was former Secretary of Aging Brian Duke and Beverly D. Mackereth, former secretary of the Department of Public Welfare (now the Department of Human Services). Other committee members included legislators, business leaders, insurance specialists, medical professionals, and health care providers.

The commission was charged with reviewing the long-term services and supports (LTSS) received by older adults and adults with physical disabilities. In Pennsylvania, these LTSS are provided in private homes, non-residential and residential settings, and licensed facilities.

In its final report, presented to and accepted by Governor Corbett in December 2014, the commission outlined four key recommendations and strategies to achieve them, including:

- **Improving care coordination in the long-term services and supports (LTSS)** system to ensure consumers have access to person-centered supports and services
- **Improving service delivery** in the LTSS system by streamlining the Medical Assistance LTSS eligibility process, increasing education to promote personal planning for LTSS needs, and expanding access to appropriately qualified providers of care
- Improving **quality and outcomes** in the LTSS
- Making the LTSS system more **fiscally sustainable**

"I'm pleased that the commission's hard work has played such an instrumental role in guiding the planned improvements in Pennsylvania's long-term care services and supports," says Dr. Reynolds. "We look forward to the implementation of a system that successfully expands access to high quality home- and community-based services."

According to Governor Wolf's plan, the proposed managed care program would be rolled out in phases over the next several years. It would assign newly contracted care managers to oversee government-funded medical and social support services for Medicaid-eligible seniors and young adults with disabilities. This Medicaid Managed Long-Term Services and Supports (MMLTSS) program will create a capitated model that will improve care coordination and health outcomes while allowing more individuals to live in their communities.

In making the announcement, Governor Wolf said, "My actions are just the first step in rebalancing our long-term care system and increasing opportunities for home care workers. This package is designed to provide choices for seniors, efficiencies in home- and community-based care delivery, and protections so that seniors receive the high quality level of care that they seek in their homes."

1.7 million

Number of Pennsylvanians living with physical disabilities who need assistance with self-care, mobility, and independent living

300,000

Number of Pennsylvanians over age 80

42%

Increase in the percentage of Pennsylvania's population of adults 85 years and over through 2025

2%

Growth of Pennsylvania's total population through 2025

$5 billion

Annual expenditures of Pennsylvania's current long-term services and support (LTSS) system

Over the summer of 2015, the Department of Human Services and Pennsylvania Department on Aging met with recipients, caregivers, advocates, providers, and other stakeholders to gather public input on the plan. The plan is currently under review.

Looking Ahead: Future Prospects for Older Adults and Their Caregivers in Pennsylvania

The challenges are great, but the will and the talent are strong, says former Pennsylvania Secretary of Aging Brian Duke.

Brian Duke, MHA, MBE, gained a firsthand understanding of the challenges faced by Pennsylvania's older adults and their families as a caregiver to his late mother, who had Alzheimer's disease. He also brought years of hands-on professional experience as a health care administrator and Area Agency on Aging director to his four-year tenure as the state's Secretary of Aging under Governor Tom Corbett.

These experiences also informed his role as the chief architect of the **Pennsylvania State Plan for Alzheimer's Disease and Related Disorders** and as the co-chair of the state's **Long-Term Care Commission Report**. Participating on both initiatives was the Aging Institute's Director, Charles F. Reynolds III, MD.

"Pennsylvania has the fourth highest percentage of elderly residents in the country, and as our seniors age, they need increasingly more complex and extensive health care and social service interventions," says Mr. Duke, who is currently a member of the committee convened by the Institute of Medicine to study family caregiving of older adults. He noted that the commonwealth also is among the most rural states in the nation, which can make getting appropriate medical support and caregiver services hard — if not impossible — for many older adults.

"With both reports, our focus was on identifying ways we could better collaborate as a state to provide effective, practical solutions to make a difference in the lives of older adults," he says. "How can we improve access to care? How can we help Pennsylvanians thrive in their living setting of choice?"

Mr. Duke hopes that the Pennsylvania Long-Term Care-Commission's Final Report will inspire Pennsylvanians to think more about their own future, and engage providers of health care and long-term services and supports in the development of innovative approaches to medical care and social services. "The reality is that 70 percent of us will need some form of long-term care during our lives, be it in a nursing home, in-home care, or in another setting," he says.

"Simply put, there is a tremendous need for more coordinated, innovative, and sustainable services and programs in Pennsylvania. Thankfully, there is both great will and great talent that can be put into play to respond to this need," says Mr. Duke. "We have strong pharmaceutical and biomedical industries, two nationally recognized Alzheimer's Disease Research Centers, novel research happening at our universities statewide, innovative advancements in our health care systems, and a network of Area Agencies on Aging responsive to needs at the local level. Pittsburgh's Aging Institute is a great example of that leadership. Working together, Pennsylvania can make a real difference for older adults."

Taking on Alzheimer's Disease

Mr. Duke is grateful for the completion of the State Plan for Alzheimer's Disease and Related Disorders, which was released in February 2014.

"The plan is the result of dedicated service by a remarkably talented and diverse group of key stakeholders who were committed to achieving consensus on what is needed to address the growing crisis of Alzheimer's disease and related disorders in our state," says Mr. Duke. "The collaborative spirit of all at the table included legislative leadership from both parties (represented by the majority and minority chairs from the House and Senate Aging and Health Committees),

advisors to the committee, and the support of staff of the Pennsylvania Department of Aging and facilitators."

He points to the great grassroots advocacy, including the voice and support of both chapters of the Alzheimer's Association in Pennsylvania, that drove the development of the state plan. "We explored the nature of the disease and then went out and listened to Pennsylvanians and their caregivers across the state," says Mr. Duke. "We heard their hopes, learned what works and what is needed, discovered how they get their information, and reviewed the effectiveness of current services. The challenge for Pennsylvania and our nation is to determine how to balance the tremendous need for care with the urgent search for a cure for this terrible disease.

"The report really reflects the voice of Alzheimer's in our state. The committee unanimously approved seven recommendations (*see inside front cover*), but we could not — indeed, would not — prioritize them due to the breadth of Alzheimer's disease. All of them must happen to have the results needed."

A Local Perspective: The State of Aging in Allegheny County

A close-up look at a county that was long ranked among the oldest in America.

In 2004, a major population-based survey was undertaken by the University of Pittsburgh's University Center for Social and Urban Research (UCSUR) to characterize the state of aging in Allegheny County, ed by **Richard Schulz, PhD**, director of UCSUR.

On the 10th anniversary of that report, UCSUR and *Pittsburgh Today* undertook an update of that study, expanded to include baby boomers and adults in their 50s. More than a thousand individuals participated in in-depth phone interviews from January to April of 2014 for The State of Aging in Allegheny County. Collaborators included the Allegheny County Area Agency on Aging, the United Way of Allegheny County, and the Aging Institute of UPMC Senior Services and the University of Pittsburgh.

"Thanks to comprehensive surveys such as this, we know more about our older adults in Allegheny County than anywhere else in the United States," says Dr. Schulz. "This report has generated great interest because of our unique demographics, which provide an advance look at what will be happening nationally by 2050." The report already is being recognized locally as an important resource in planning the utilization of services for the elderly.

Allegheny County no longer reigns as the nation's oldest population center, which peaked during the period of 1995–1997. "Today, the county ranks only slightly above the national average," says Dr. Schulz.

The report integrates survey data collected from a representative sample of older county residents, with secondary data available from federal, state, and county agencies. It offers an invaluable "snapshot" of older individuals on a wide range of topics, including work and income; retirement; living arrangements; neighborhood; transportation and mobility/migration; physical; mental and social health; functional status and disability; caregiving; volunteering and elder service use; and demographics.

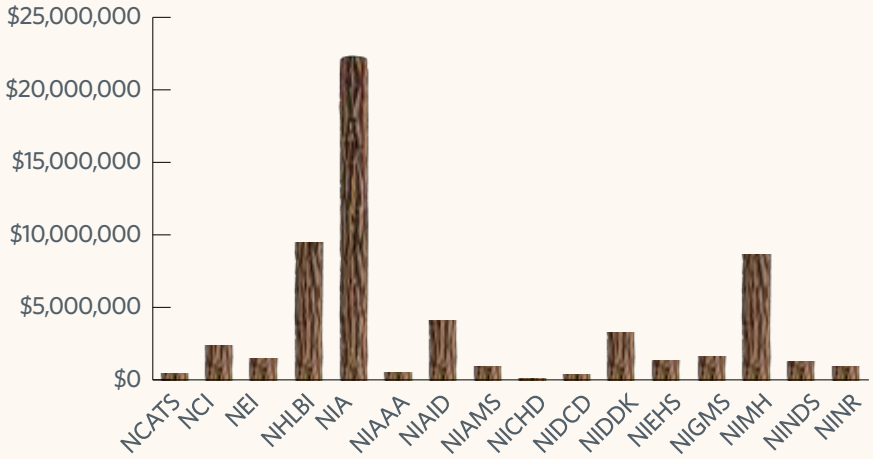
"We learned that economically, our older adults are relatively well-off compared to the rest of the nation. Thanks in large part to our region's legacy of unions and good pensions, they express confidence in their ability to live comfortably," says Dr. Schulz. "Racial disparities were evident, though, with members of our African-American community worse off, both economically and health wise. African-American women are the most vulnerable."

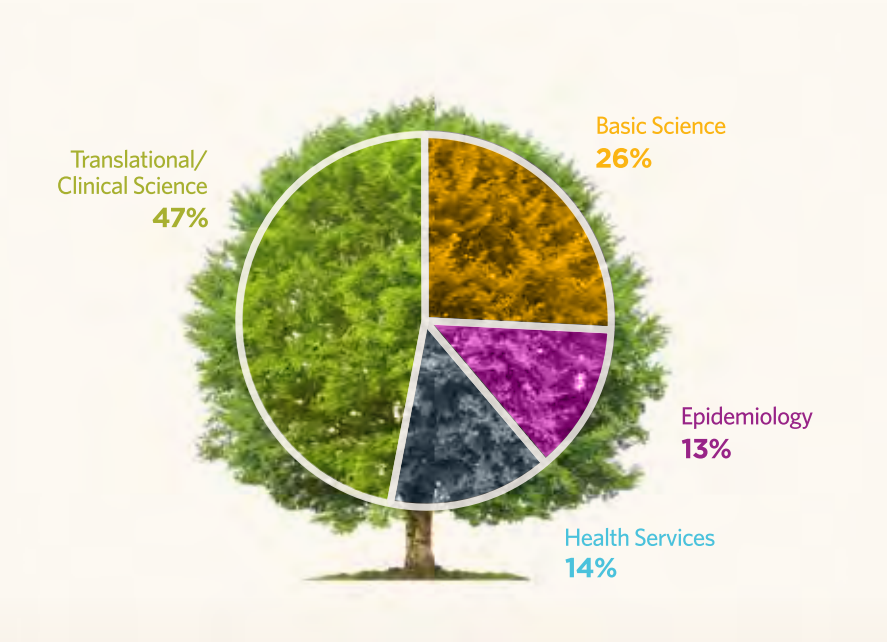
Full copies of the report and survey data tables are available at **ucsur.pitt.edu/wp-content/uploads/2014/11/State-of-Aging-in-Allegheny-County.pdf**.

Research of the Aging Institute's Partners

The University of Pittsburgh was among the first — and remains among the foremost — institutions of higher education to conduct research in the emerging field of geriatrics. Here, leading experts in disciplines as diverse as medicine, public health, nursing, social science, psychiatry, epidemiology, and ethics are collaborating to advance scientific knowledge — and to improve the care and quality of life of older adults.

Aging-related research at the University of Pittsburgh has influenced and advanced the field of geriatrics worldwide. It is among the most highly funded centers of aging-related research in the country, as the following graphics illustrate:





Centers of Excellence Research Publications Highlights

Following is a representative sampling that highlights the remarkable range and diversity of aging-related research initiatives undertaken by researchers, scientists, and clinicians at the University of Pittsburgh and UPMC that were published in peer-reviewed journals in 2014–15.

Advanced Center in Intervention and Services Research in Late-Life Depression Prevention (ACISR/LLMD)

Director: Charles F. Reynolds III, MD

A Hartford Center of Excellence, ACISR/LLMD provides a research infrastructure to promote investigations that ultimately will improve real world practice in the care of elderly living with depression and other severe mood disorders. It focuses on prevention and rehabilitation; improving care of difficult to treat late life mood disorders and providing assistance to families; and identifying and removing barriers to effective treatment practices in the community, especially among older primary care African Americans, in the nursing home, and in the rehabilitation setting.

Jimenez DE, Lê Cook B, Kim G, Reynolds CF III, Alegría M, Coe-Odess S, Bartels S. Relationship between general illness and mental health service use and expenditures among racially-ethnically diverse adults 65 years. **Psychiatric Services**, 2015 Mar 16 (Epub ahead of print).

Finding: This study highlighted the important role of comorbid physical illness as a potential contributor to using mental health services and suggests intervention strategies to enhance engagement in mental health services by older adults from racial/ethnic minority groups.

Reynolds CF III. Promoting healthy brain aging. **JAMA Psychiatry**, 2015 Jun 1; 72(6):619-20. Invited commentary. PMCID exempt.

Finding: There exists a need for convergent scientific approaches to meet the challenge of promoting healthy brain aging and cognitive fitness into the last years of life. The convergence of expertise from epidemiology, behavioral, and basic science in the biology of aging, and brain health are all necessary "to move the needle" in the demographic challenge that confronts the entire globe.

Lenze EJ, Mulsant BH, Blumberger DM, Karp JF, Newcomer JW, Anderson SJ, Dew MA, Butters MA, Stack JA, Begley AE, Reynolds CF III. Efficacy, safety, and tolerability of augmentation pharmacotherapy with aripiprazole for treatment-resistant depression in late life: a randomized placebo-controlled trial. **Lancet**, 2015 (in press).

Finding: In older adults who fail to achieve remission from depression with a first-line antidepressant, the addition of aripiprazole is effective in achieving and sustaining remission. Tolerability concerns include potential for akathisia and Parkinsonism.

Diniz BS, Sibille E, Ding Y, Tseng G, Aizenstein H, Lotrich F, Becker JT, Lopez OL, Lotze MT, Klunk WE, Reynolds CF III, Butters MA. Plasma biosignature and brain pathology related to persistent cognitive impairment in late-life depression. **Molecular Psychiatry**, 2015; 20:594–601. Published online 2014 Aug 5.

Finding: Cognitive impairment in LLD seems to be related to greater cerebrovascular disease along with abnormalities in immune-inflammatory control, cell survival, intracellular signaling, protein and lipid homeostasis, and clotting processes. These observations suggest that individuals with LLD and cognitive impairment may be more vulnerable to accelerated brain aging and shed light on possible mediators of their elevated risk for progression to dementia.

Alzheimer's Disease Research Center (ADRC)

Director: Oscar Lopez, MD
Co-Director: William E. Klunk, MD, PhD

The ADRC performs and promotes research designed to gain an understanding of the etiology and pathogenesis of Alzheimer's disease (AD) and the mechanisms underlying the cognitive and neurobiological changes. It also develops strategies targeted at effective early diagnoses and treatments for AD and other dementias. Its research centers around the areas of genetics, neuroimaging, neuropathy, and minority outreach. A major focus is matching participating patients and family members with volunteer opportunities for AD-related studies.

Lopez OL, Klunk WE, Mathis C, Coleman RL, Price J, Becker JT, Aizenstein HJ, Snitz B, Cohen A, Ikonomovic M, McDade E, DeKosky ST, Weissfeld L, Kuller LH. Amyloid, neurodegeneration, and small vessel disease as predictors of dementia in the oldest-old. **Neurology**, 2014; 83: 1804-1811. PMCID: PMC4240431.

Finding: The mean amyloid deposition in five brain regions (measured with PiB PET), the mean hippocampal volume, and mean white matter lesions volume (as a marker of small vessel disease) were all predictors of incident dementia in individuals age >85 followed for a two years period. In addition, we found that AD and vascular pathology is common in old age, and is also present in individuals who remained cognitively normal.

Klunk WE, Koeppe RA, Price JC, Benzinger TL, Devous MD Sr, Jagust WJ, Johnson KA, Mathis CA, Minhas D, Pontecorvo MJ, Rowe CC, Skovronsky DM, Mintun MA. The Centiloid Project: Standardizing quantitative amyloid plaque estimation by PET. **Alzheimer's & Dementia**, 2015; 11:1-15. PubMed ID: 25443857. PMC-ID: 4300247.

Finding: This paper describes a process to standardize quantitative amyloid imaging data across centers to improve combination of multi-center data. It is hoped that widespread use of the Centiloid standardization method will facilitate: (1) direct comparison of results across labs even when different analysis methods or tracers are employed; (2) clear definition of cutoffs for the earliest signs of amyloid-positivity in cognitively normal controls; (3) further definition of the range of amyloid positivity characteristic of AD (AD-like levels vs. earliest evidence of positivity in controls); (4) more consistent representation of longitudinal change in standard units (rather than as percent change); (5) direct comparison of the characteristics of different tracers.

Yau W-YW, Tudorascu DL, McDade EM, Ikonomovic S, James JA, Minhas D, Mowrey W, Sheu LK, Snitz BE, Weissfeld L, Gianaros PJ, Aizenstein HA, Price JC, Mathis CA, Lopez OL, Klunk WE. Longitudinal change of neuroimaging and clinical markers in autosomal dominant Alzheimer's disease: a prospective cohort study. **Lancet Neurology**, 2015; (in press).

Finding: This paper describes the longest longitudinal biomarker follow-up (up to 11 years) in participants with autosomal dominant Alzheimer's disease (AD) reported to-date. We were able to provide evidence to support the hypothetical biomarker model of Jack et al. within individual subjects followed across time.

We found an initial progressive amyloid phase, followed by a stable amyloid-positive phase prior to a progressive phase of neurodegeneration.

Center for Aging and Population Health

Director: Anne B. Newman, MD, MPH

The Center for Aging and Population Health (formerly the Center for Healthy Aging) generates new solutions to the challenges of an aging society through population-based research that promotes healthy aging, longevity, and prevention of disability. Supported in part by the Centers for Disease Control and Prevention's (CDC) Prevention Research Centers Program, the Center orchestrates epidemiologic and public health research on aging, trains professionals in population research methodology, and conducts community outreach with a goal of keeping older adults healthy.

Minster RL, Sanders JL, Singh J, Kammerer CM, Barmada MM, Matteini AM, Zhang Q, Wojczynski MK, Daw EW, Brody JA, Arnold AM, Lunetta KL, Murabito JM, Christensen K, Perls TT, Province MA, Newman AB. Genome-wide association study and linkage analysis of the healthy aging index. **Journals of Gerontology Series A: Biological Sciences and Medical Sciences**, 2015 Aug; 70(8):1003-8. doi: 10.1093/gerona/glv006. Epub 2015 Mar 10. PubMed PMID: 25758594; PubMed Central PMCID: PMC4506316.

Finding: Using a novel Healthy Aging Index, we examined genome-wide and linkage signals in 3,140 individuals in the Long Life Family Study. There was evidence for a quantitative trait locus on chromosome 9p24-p23 and a suggestive association with ZNF704 on chromosome 8q21.13.

Glynn NW, Santanasto AJ, Simonsick EM, Boudreau RM, Beach SR, Schulz R, Newman AB. The Pittsburgh Fatigability scale for older adults: development and validation. **Journal of the American Geriatrics Society**, 2015 Jan; 63(1):130-5. doi: 10.1111/jgs.13191. Epub 2014 Dec 31. PubMed PMID: 25556993.

Finding: The 10-item physical fatigability score from the Pittsburgh Fatigability Scale was demonstrated to be a valid and reliable measure of perceived fatigability in older adults.

Santanasto AJ, Glynn NW, Jubrias SA, Conley KE, Boudreau RM, Amati F, Mackey DC, Simonsick EM, Strotmeyer ES, Coen PM, Goodpaster BH, Newman AB. Skeletal muscle mitochondrial function and fatigability in older adults. **Journals of Gerontology Series A: Biological Sciences and Medical Sciences**, 2014 Aug 28; pii: glu134. [Epub ahead of print] PubMed PMID: 25167867.

Finding: Using NMR spectroscopy of muscle mitochondrial function, we showed that lower capacity for oxidative phosphorylation in the quadriceps was associated with higher fatigability in older adults.

Division of Geriatric Medicine

Director: Neil M. Resnick, MD

Designated a National Center of Excellence by the John A. Hartford Foundation, the University of Pittsburgh's Division of Geriatric Medicine is committed to excellence in geriatric research, clinical care, and training. Its research includes the biology of aging, cancer, dementia, depression, falls, frailty, heart disease, incontinence, infections, mobility, osteoporosis, pain, pharmacotherapy, resilience, and sarcopenia. The division also has NIH support for a Cancer and Aging Center, an Older Americans Independence Center (Pepper), and several NIH-funded research training grants.

Greenspan SL, Perera F, Nace DA, Resnick NM. Efficacy and safety of single-dose Zoledronic acid for osteoporosis in frail elderly women: a randomized clinical trial. **JAMA Internal Medicine**, 2015; 175(6): 913-921.

Finding: Although bisphosphonates are effective in preventing and treating osteoporosis in healthy elderly, little is known about their efficacy or safety in frail elderly, the group at highest risk for fracture. This knowledge gap, combined with the high prevalence in frail elders of multimorbidity, polypharmacy, and impaired mobility, has contributed to the infrequent use of bisphosphonates in this population.

To address this problem, Greenspan and colleagues began by conducting this two-year, randomized, placebo-controlled, double-blinded study. This initial study was designed to assess both bisphosphonate's safety and impact on bone mass and biomarkers of bone turnover. Results were mixed: the single dose of Zoledronic acid was well tolerated and led to sustained improvement in bone mass and bone turnover. Yet, such improvement was not associated with even a trend towards fracture reduction. Although the study was neither designed nor powered to assess fracture reduction, the result raises the possibility that, in frail elders, an increase in bone mass may not correlate with an increase in bone strength. The data underscore the importance of a follow-up study to assess the impact on fractures before any change in nursing home practices is recommended.

Griffiths D, Clarkson B, Tadic SD, Resnick NM. Brain mechanisms underlying urge incontinence and its response to pelvic floor muscle training. **Journal of Urology**, 2015 Sep; 03.102 Vol. 194, 1–8. Epub 2015 Mar 28.

Finding: Urinary incontinence (UI) affects more than a third of seniors, causes substantial medical and psychosocial morbidity, and costs tens of billions of dollars annually. The etiology of urge incontinence, the most common form in seniors, remains largely unknown. As a result, treatment of this condition has improved little in the past 50 years. Drs. Resnick, Clarkson, and Griffiths decided to use the most commonly recommended treatment for UI (biofeedback) as a therapeutic probe to identify possible causes, reasoning that this approach could help to disentangle changes due to aging from those causing or contributing to incontinence. Since their previous work focused on the lower urinary tract, this study explored the brain mechanisms governing bladder control.

In the largest and most detailed study to date, they discovered two distinct patterns of brain activation, and these patterns predicted response or non-response to therapy. In addition, therapeutic response correlated with a change in brain activation among responders, while there was no change in non-responders. These findings suggest that UI may comprise at least two phenotypes, one of which responds to biofeedback by facilitating deactivation of the prefrontal cortex. Pharmacotherapy may work better in the other, a hypothesis that they hope to explore in their next R01. These data, especially when combined with findings from their ongoing studies that suggest a structural/functional correlation between white matter damage and brain activation, could lead to new insights into the brain's role in incontinence and suggest novel new therapeutic approaches.

Nace DA, Lin CJ, Ross TM, Saracco S, Churilla RM, Zimmerman RK. Randomized, controlled trial of high-dose influenza vaccine among frail residents of long-term care facilities. **Journal of Infectious Diseases**, 2015; 211(12):1915-1924. Epub 2014 Dec 17. doi:10.1093/infdis/jiu622.

Finding: Vaccinated residents of long-term care facilities remain at high risk of influenza-related morbidity and mortality, signaling the need for more effective vaccine options for this population. This randomized, single-blinded, controlled trial comparing high-dose to standard-dose influenza vaccines (2011–2012, 2012–2013 seasons) administered to some 200 frail, elderly residents of long-term care facilities resulted in superior results for those who received the high-dose vaccine. These results applied across all strains with the exception of Influenza A or H1N1.

Geriatric Research Education and Clinical Center (GRECC)

Director: Steven Graham, MD, PhD

The GRECC is funded by the Department of Veterans Affairs and provides an integrated program of basic biomedical, clinical, and health services research; education of trainees and practitioners; and clinical demonstration projects designed to advance knowledge regarding the care of the elderly, with an emphasis on stroke. Its research focus includes neuronal-cell death in stroke, gene therapy in cerebrovascular disease, depression in the elderly, polypharmacy in long-term care, and end-of-life care.

Hula WD, Doyle PJ, Stone CA, Austermann Hula SN, Kellough S, Wambaugh JL, Ross KB, Schumacher JG, St Jacque A. The Aphasia Communication Outcome Measure (ACOM): dimensionality, item bank calibration, and initial validation. **Journal of Speech, Language, and Hearing Research**, 2015 Jun 1; 58(3): 906-19.

Finding: Provides the result of an investigation of the structure and measurement properties of the Aphasia Communication Outcome Measure (ACOM), a patient-reported outcome measure of communicative functioning for community-dwelling persons with aphasia. The ACOM provides reliable and valid measurement of patient-reported communicative functioning in aphasia, and it represents an advance over previously available patient-reported measures for aphasia.

Weiner DK. Deconstructing chronic low back pain in the older adult: shifting the paradigm from the spine to the person. **Pain Medicine Journal**, 2015 May; 16(5):881-5.

Finding: Introduction to a forthcoming series of articles on how to rethink our approach to evaluating and designing management for older adults with chronic low back pain (CLBP). Each article will present an illustrative clinical case, a treatment algorithm, and other supportive materials that address one of twelve important contributors to pain and disability in older adults with CLBP. The algorithms were created using a modified Delphi process by 38 interdisciplinary specialists.

Suenaga J, Hu X, Pu H, Shi Y, Hassan SH, Xu M, Leak RK, Stetler RA, Gao Y, Chen J. White matter injury and microglia/macrophage polarization are strongly linked with age-related long-term deficits in neurological function after stroke. **Experimental Neurology**, 2015 Mar 31 (Epub ahead of print.)

Finding: Stroke mainly afflicts the elderly and the majority of experimental stroke studies rely on data gathered from young adult animals. The present study established a model of stroke with low mortality in aged (18 month) male mice and contrasted their pathophysiological changes with those in young (2 month) animals. Aged mice exhibited greater deterioration in functional outcomes than young mice, and these effects were associated with reduced cerebral perfusion, larger infarct volumes, white matter injury, and dysregulation of M2 microglia/macrophage polarization. Since white matter injury and impaired M2 polarization were strongly correlated with long-term functional deficits, these might serve as future therapeutic targets to promote post-stroke recovery.

Mental Illness Research, Education, and Clinical Centers (MIRECC)

Site Director: Gretchen L. Haas, PhD

The Mental Illness Research, Education and Clinical Centers (MIRECC) were established by Congress with the goal of researching the causes and treatments of mental disorders and using education to put new knowledge into routine clinical practice in the VA. Specialized mental health centers of excellence (MH CoE) are an essential component of the VA's response to meeting the mental health needs of veterans.

Kasckow JW, Morse J, Begley A, Anderson S, Bensasi S, Thomas S, Quinn S, Reynolds CF. Treatment of post-traumatic stress disorder symptoms in emotionally distressed individuals. **Psychiatry Research**, 2014 Dec 15; 220(1-2):370-375.

Finding: This study examined whether Problem Solving Therapy-Primary Care (PST-PC) would lead to improvement in PTSD symptoms in patients with subsyndromal depression and a history of psychologic trauma; the control condition was dietary education (DIET). Participants (n=60) were age 50 or older with scores on the Center for Epidemiologic Studies-Depression scale of 11 or greater and history of psychologic trauma. Exclusions stipulated no major depression and substance dependence within a year. Mixed effects models showed that improvement of PTSD Check List scores was significantly greater in the DIET group over two years than in

the PST-PC group (based on a group time interaction).

Kasckow JW, Klaus JR, Morse J, Oslin DW, Luther J, Fox L. Reynolds CF, Haas GL. Using problem solving therapy to treat veterans with subsyndromal depression: a pilot study. **International Journal of Geriatric Psychiatry**, 2014 Dec; 29(12):1255-1261.

Finding: A pilot study was conducted comparing problem solving therapy for primary care (PST-PC) to a dietary education control condition in middle-aged and older veterans with symptoms of emotional distress and subsyndromal depression. This was a two-site study at the VA Pittsburgh Healthcare System and Philadelphia VA Medical Center and included veterans >49 years of age referred from primary care clinics who were eligible if they obtained a pre-screen score >11 on the Centers for Epidemiologic Studies Depression (CES-D) scale. Using regression models in completers that examined outcomes at end of treatment while controlling for baseline scores, there were significant differences between treatment groups in SF-36 mental health component scores but not in depressive symptoms (as assessed with either the 17-item Hamilton Rating Scale for Depression or the Beck Depression Inventory), social problem solving skills, or physical health status (SF-36 physical health component score).

Wang X, Lopez OL, Sweet RA, Becker JT, DeKosky ST, Barmada MM, Demirci FY, Kamboh MI. Genetic determinants of survival in patients with Alzheimer's disease. **Journal of Alzheimer's Disease**, 2015; 45(2):651-658.

Finding: There is a strong genetic basis for late-onset of Alzheimer's disease. In addition to causing disease, genes may also affect the natural history of Alzheimer's disease, such as length of survival. We found that genes previously identified as increasing risk for Alzheimer's disease had some small effects on the duration of survival of individuals with Alzheimer's disease. We also identified two new genes (CCDC85C and NARS2) that appeared to have larger effects on the duration of survival. These new genes should be considered preliminary until they are replicated in an independent group of individuals with Alzheimer's disease. Our findings highlight the importance of focusing on additional characteristics of Alzheimer's disease, not merely the presence or absence of the diagnosis, to identify additional genes relevant to Alzheimer's disease.

Pittsburgh Claude D. Pepper Older Americans Independence Center

Director: Susan L. Greenspan, MD

Balance disorders in older people are common, disabling, and often complex. A concentrated, multidisciplinary effort is needed to understand its causes and consequences — and to develop innovative treatments. The team of investigators at the Claude D. Pepper Older Americans Independence Center offers complementary expertise, outstanding research productivity, and ongoing studies to address this problem. The center brings together faculty from five schools within the University of Pittsburgh: medicine, nursing, public health, allied health, and engineering.

Greenspan SL, Perera S, Ferchak MA, Nace DA, Resnick NM. Efficacy and safety of single-dose zoledronic acid for osteoporosis in frail elderly women: a randomized clinical trial. **JAMA Intern Medicine**, 2015 Jun; 175(6):913-21. doi:10.1001/jamainternmed.2015.0747. PubMed PMID: 25867538.

Finding: We conducted a 2-year, randomized, placebo-controlled, double-blinded study to determine the efficacy and safety of zoledronic acid to treat osteoporosis from December 2007 through March 2012. Included were 181 women 65 or older with osteoporosis, including those with cognitive impairment, immobility, and multimorbidity, who were living in nursing homes and assisted-living facilities. In this group of frail elderly women with osteoporosis, 1 dose of zoledronic acid improved BMD over 2 years.

Odden MC, Yee LM, Arnold AM, Sanders JL, Hirsch C, deFilippi C, Kizer JR, Inzitari M, Newman AB. Subclinical vascular disease burden and longer survival. **Journal of the American Geriatrics Society**, 2014 Sep; 62(9):1692-8. PubMed Central PMCID: PMC4176817.

Finding: This study was conducted to determine the contribution of gradations of subclinical vascular disease (SVD) to the likelihood of longer survival and to determine what allows some individuals with SVD to live longer. The findings concluded that a lower burden of SVD is associated with longer survival, independent of intermediate cardiovascular events. Abstinence from smoking, better kidney function, and lower inflammation may attenuate the effects of higher SVD and promote longer survival.

Nadkarni NK, Nunley KA, Aizenstein H, Harris TB, Yaffe K, Satterfield S, Newman AB, Rosano C. Health ABC Study. Association between cerebellar gray matter volumes, gait speed, and information-processing ability in older adults enrolled in the Health ABC Study. **Journals of Gerontology Series A: Biological Sciences and Medical Sciences**, 2014 Aug; 69(8):996-1003. doi: 10.1093/gerona/glt151. Epub 2013 Oct 29. PubMed PMID: 24170673; PubMedCentral PMCID: PMC4095927.

Finding: Cross-sectional associations between cerebellar gray matter volumes (GMV), gait speed, and information-processing ability were explored in 231 community-dwelling adults (mean age: 83 years, 48% black, 58% female). Larger cerebellar GMV correlated with faster gait speed and superior DSST scores (both $p < .001$) independent of age, gender, atrophy, and small vessel disease. After adjusting for age, gender, and atrophy, larger cognitive cerebellar GMV correlated with both faster gait speed ($p = .04$) and higher DSST scores ($p < .001$), larger sensorimotor cerebellar GMV correlated significantly with DSST alone ($p = .02$), and the vestibular cerebellar GMV with neither.

Marcum ZA, Hanlon JT, Strotmeyer ES, Newman AB, Shorr RI, Simonsick EM, Bauer DC, Boudreau R, Donohue JM, Perera S. Health, Aging and Body Composition Study. Gastroprotective agent underuse in high-risk older daily nonsteroidal anti-inflammatory drug users over time. **Journal of the American Geriatrics Society**, 2014 Oct; 62(10):1923-7. doi: 10.1111/jgs.13066. Epub 2014 Oct 3. PubMed PMID: 25284702; PubMed CentralPMCID: PMC4206578.

Finding: The objective of this study was to examine whether older adults taking nonsteroidal anti-inflammatory drugs (NSAIDs) decreased the underuse of gastroprotective agents over time. The results of the study were daily NSAID use decreased from 17.6% to 11.3% ($P < .001$), and gastroprotective agent underuse decreased from 23.5% to 15.1% ($p=.008$). Controlling for important covariates, having prescription insurance was somewhat protective against underuse in the preperiod (adjusted odds ratio (AOR) = 0.78, 95% confidence interval (CI) = 0.46-1.34; P = .37), but more so and significantly in the postperiod (AOR = 0.41, 95% CI = 0.18-0.93; P = .03).

University of Pittsburgh Cancer Institute

Bennett Van Houten, PhD, Leader, Molecular and Cell Biology Program

Advancing the understanding, diagnosis, and treatment of cancer through basic, translational, clinical, and population-based research programs.

Yu YP, Ding Y, Chen Z, Liu S, Michalopoulos A, Chen R, Gulzar ZG, Yang B, Cieply KM, Luvison A, Ren BG, Brooks JD, Jarrard D, Nelson JB, Michalopoulos GK, Tseng GC, Luo JH. Novel fusion transcripts associated with progressive prostate cancer. **American Journal of Pathology**, 2014 Oct; 184(10):2840-9. doi: 10.1016/j.ajpath.2014.06.025. PubMed PMID: 25238935; PubMed Central PMCID: PMC4188871.

Finding: This multi-center study of 289 patients with prostate cancer, found that novel gene-fusion events are associated with aggressive prostate cancer. Specifically, three specific fusion events were associated with prostate cancer recurrence and death.

Leibowitz B, Qiu W, Buchanan ME, Zou F, Vernon P, Moyer MP, Yin XM, Schoen RE, Yu J, Zhang L. BID mediates selective killing of APC-deficient cells in intestinal tumor suppression by nonsteroidal anti-inflammatory drugs. **Proceedings of the National Academy of Sciences USA**, 2014 Nov 18; 111(46): 16520-5. doi: 10.1073/pnas.1415178111. Epub 2014 Nov 3. PubMed PMID: 25368155; PubMed Central PMCID: PMC4246283.

Finding: Colon cancer is the third leading cause of cancer-related death in the US. Epidemiology studies have indicated that nonsteroidal anti-inflammatories (NSAID) such as aspirin or sulindac may have a chemopreventive effect on colon cancer. This study showed that NSAID treatment activates the extrinsic programmed-cell death pathway in human intestinal adenomas through the cleavage of the pro-apoptotic protein BID.

Wang J, Li J, Santana-Santos L, Shuda M, Sobol RW, Van Houten B, Qian W. A novel strategy for targeted killing of tumor cells: Induction of multipolar acentrosomal mitotic spindles with a quinazolinone derivative mdivi-1. **Molecular Oncology**, 2015 Feb; 9(2):488-502. doi: 10.1016/j.molonc.2014.10.002. Epub 2014 Oct 17. PubMed PMID: 25458053; PubMed Central PMCID: PMC4305024.

Finding: Traditional antimitotic drugs for cancer chemotherapy often have undesired toxicities to healthy tissues, limiting their clinical application, particularly in the aging populations. This group discovered that mdivi-1 (mitochondrial division inhibitor-1), which was originally reported as an inhibitor of mitochondrial fission protein Drp1, specifically disrupts the part of the cell cycle during chromosome condensation and segregation during cell division (M phase) in only human tumor cells, and not in normal human cells such as fibroblasts or epithelial cells.

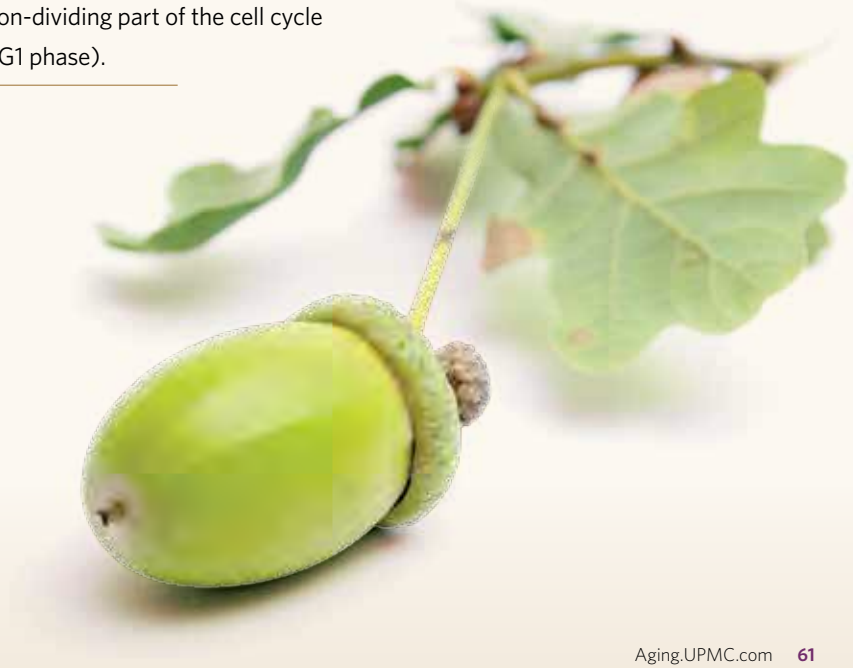
Wei L, Nakajima S, Böhm S, Bernstein KA, Shen Z, Tsang M, Levine AS, Lan L. DNA damage during the G0/G1 phase triggers RNA-templated, Cockayne syndrome B-dependent homologous recombination. **Proceedings of the National Academy of Sciences USA**, 2015 Jul 7; 112(27):E3495-504. doi: 10.1073/pnas.1507105112. Epub 2015 Jun 22. PubMed PMID: 26100862; PubMed Central PMCID: PMC4500203.

Finding: This group found that recruitment of essential proteins, such as Rad51 for error-free homologous recombination is associated with transcription. Mutations in the Cockayne syndrome B gene are associated with premature aging phenotype. This study also found that the CSB protein encoded by this gene plays an important role in RNA-templated recombination repair during the non-dividing part of the cell cycle (G0/G1 phase).

UPMC Palliative and Supportive Institute (PSI)

Director: Robert Arnold, MD

The Supportive and Palliative Care Program at UPMC was established to improve the quality of life of patients whose diseases are no longer responsive to curative treatments. Its team of health care professionals offers care for patients with life-limiting illnesses, and provides comfort and support to those patients and their families. The following publications are relevant to today's trend of focusing on patients' desires for care at the end of life and the importance of communicating clearly with the patient and physician or clinician.



Schenker Y, White DB, Arnold RM. Commentary: What should be the goal of advance care planning? **JAMA Internal Medicine**, 2014 Jul; 174(7): 1093-4. doi:10.1001/jamainternmed.2014.1887. PMID: 24861458

Finding: The systematic review by Auriemma et al provides a valuable synthesis of the evidence on stability of end-of-life (EOL) treatment preferences. This review provides an important opportunity to reflect on why we care about preference stability and its implications for EOL decision making. However, we argue that evidence of preference stability alone cannot achieve this aim. Furthermore, we discuss why efforts to ensure accuracy in EOL decision making for incapacitated patients are unrealistic and suggest an alternative focus on "authenticity," meaning the extent to which a decision represents a patient's core values and beliefs.

Arnold RM, Back AL, Barnato AE, Prendergast TJ, Emlet LL, Kapov I, White PH, Nelson JE. The Critical Care Communication Project: Improving fellows' communication skills. **Journal of Critical Care**, 2015 Apr; 30(2):250-4. doi: 101.1016/j.jcrc.2014.11.016. Epub 2014 Dec 2. PMID: 25535029.

Finding: The aim of this study was to develop an evidence-based communication skills training workshop to improve the communication skills of critical care fellows. The method and results of the study are described in detail. The result of this study indicated that the communication skills training program increased critical care fellows' self-reported family meeting communication skills.

Hall DE, Hanusa BH, Fine MJ, Arnod RM. Do surgeons and patients discuss what they document on consent forms? **Journal of Surgical Research**, 2015 Jul; 197(1):67-77. doi: 10.1016/j.jss.2015.03.058. Epub 2015 Mar 25. PMID: 25891679.

Finding: The goal of this study was to determine how the discussions shared between surgeons and patients correspond to the VA's standardized consent forms. The method and results of the study are described in detail. The results of this study challenge the initial reports suggesting the need to remediate surgeon's practice of informed consent. There was a discrepancy between the information documented and discussed, which demonstrates that there is an opportunity to improve the iMed system so that it better reflects what surgeons discuss and more frequently includes all the information patients need.

Schenker Y, White DB, Rosenzweig M, Chu E, Arnold RM. Care management by oncology nurses to address palliative care needs: A pilot trial to assess feasibility, acceptability, and perceived effectiveness of the CONNECT intervention. **Journal of Palliative Medicine**, 2015; 18(3):232-40. doi: 10.1089/jpm.2014.0325. Epub 2014 Dec 17. PMID: 25517219 PMCID: PMC4347888.

Finding: Specialty palliative care is not accessible for many patients with advanced cancer. There is a need to find alternative palliative care strategies in oncology clinics. The objective of the study was to assess the feasibility, acceptability, and perceived effectiveness of an oncology nurse-led care management approach to improve primary palliative care. The results of this study showed that oncologists unanimously agreed that Care Management by Oncology Nurses (CONNECT) improved the quality of care provided for patients with advanced cancer. An oncology nurse-led care management intervention is feasible, acceptable, and was perceived to be effective for improving provision of primary palliative care. A randomized trial of CONNECT is warranted.

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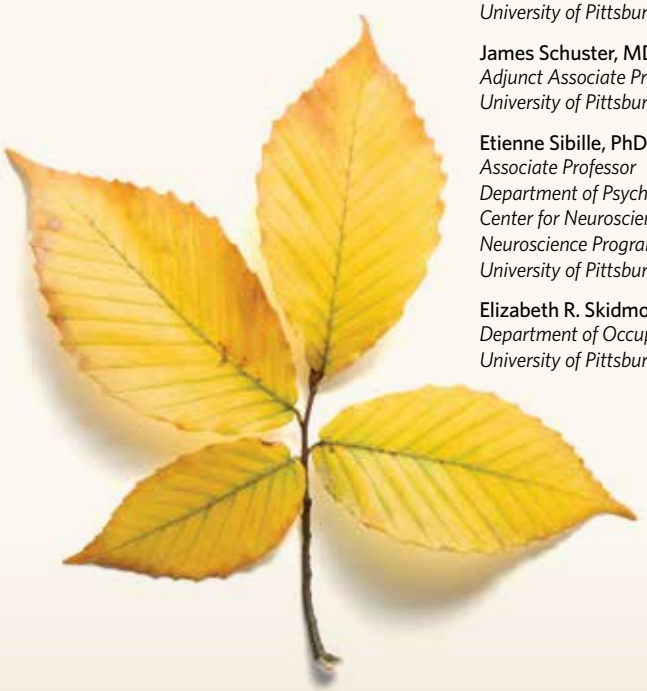

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