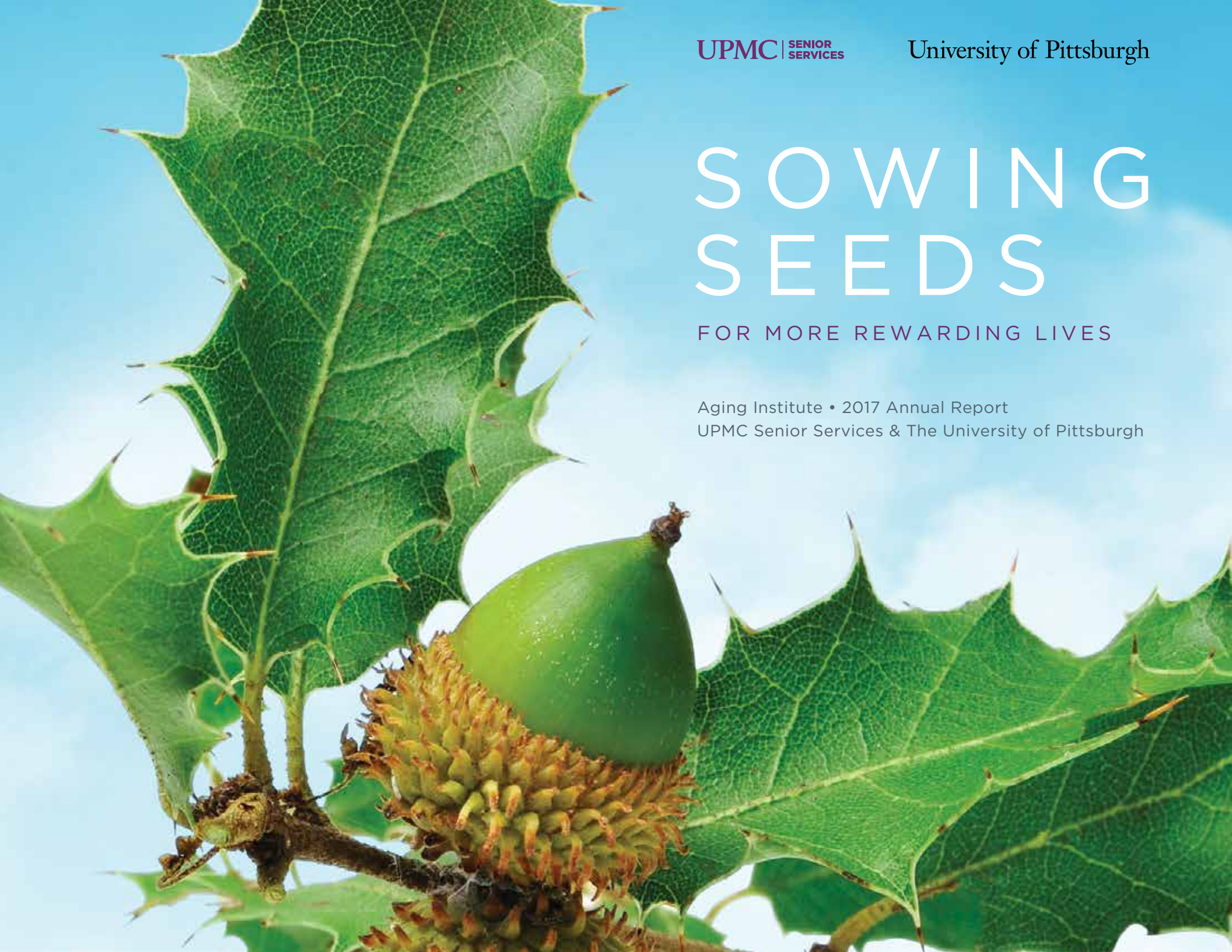


# SOWING SEEDS

FOR MORE REWARDING LIVES

Aging Institute • 2017 Annual Report  
UPMC Senior Services & The University of Pittsburgh



Aging Institute • 2017 Annual Report  
UPMC Senior Services & The University of Pittsburgh

“We are on a path together, at the same time,  
generations traveling together.

My past and future are at my side; you are  
never too far from your past or future.”

**Kathy Sanchez**  
*San Ildefonso Tewa*



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# Director's Message

## Reflections on Discovery: Of Molecules, Mice, and Men

I was just a boy of 14 when America launched its first astronaut into space. That mission would mark one of the greatest periods of scientific breakthrough in our history. It was a time that redefined our sense of possibility whenever we lifted our gaze to the skies.

Those of us in the field of aging are also dreamers ... and doers. We are at a critical frontier in our development as years of seminal research converge with groundbreaking clinical applications, forever changing the way we look at the aging process.

The Aging Institute of UPMC Senior Services and the University of Pittsburgh has been, and continues to be, a bellwether in this most important effort. Since its creation, the Institute has dedicated its efforts to bringing the brilliant talents and insights of UPMC and University of Pittsburgh researchers, scientists, educators, and clinicians to bear on the serious health care and lifestyle challenges facing older adults. Just as importantly, it is committed to finding new ways to achieve healthy, robust aging.

On a personal note, this year also marks some long-anticipated changes in my life. My wife Ellen and I have relocated to New England as we embark on a new chapter in our life together. Over the next several months, I'll be transitioning to my new roles as a distinguished professor emeritus at the University of Pittsburgh and immediate past director of the Aging Institute.

In making this move, I cannot help but recognize both our many achievements and the immensity of the task still before those working in the field of aging. Our nation faces unparalleled demands on its health care system and the caregivers who support it — all at a time when federal support for health care and scientific research is on the wane.

To address these and other challenges, the Aging Institute has steadily evolved into an organization shaped and driven by discoveries of molecules, mice, and men.

I'm greatly heartened by the progress that the Institute and its research partners have made in recent years to advance our understanding of how and why we age, and how that process relates to diseases on a cellular and subcellular level. By better understanding the pathogens of aging, like cancer and Parkinson's disease, we can develop rational interventions to delay and mitigate them. That direction will most certainly continue under the very able leadership of the Institute's new director, **Toren Finkel, MD, PhD**, who brings impressive credentials to the position from his work at the National Institutes of Health.

As you'll read throughout this report, the basic and clinical research of our workgroups continues to contribute to our understanding of the impact of lifestyle modification — exercise, activity, diet, and socialization — on the aging process. You will also find reassuring confirmation that our commitment to improving the quality of clinical care for older adults remains at the very heart of the Institute's efforts.

Pittsburgh is that rare community where you're invited to step out of your silo and collaborate. I am enormously grateful for the opportunity I've had to work with the remarkable men and women who comprise the Aging Institute, and whose hopes for the future of aging drive its mission. Together, we've helped bring to reality a vision of commitment to aging through research, policy, practice, and education — all focused on ensuring a successful, active journey into aging. I offer my great thanks for seven rewarding, exciting, and wonderful years.



*Charles F. Reynolds III, MD*

## **Charles F. Reynolds III, MD**

*Immediate Past Director, Aging Institute of UPMC Senior Services and the University of Pittsburgh\*  
Distinguished Professor of Psychiatry and UPMC Endowed Professor in Geriatric Psychiatry (Emeritus)  
University of Pittsburgh*

*\* Retiring Fall 2017*

## With Appreciation

**Collaboration has always been central to the success of the Aging Institute.** As I leave the Aging Institute, I would like to take this opportunity to offer my sincere thanks to the following individuals whose support over the last seven years has been indispensable to our work:



It has been a pleasure to partner with Deborah S. Brodine, MHA, MBA, president of UPMC Community Provider Services. The Institute's work has benefited greatly from the insights she brings from the hospital and provider perspective, giving substance to our efforts to bridge science and service.

Additionally, I have been gifted with a splendid support staff, whose work was always exemplary and their support tireless under the able leadership of Taafoi Kamara, MPH.

It has been an honor to work with Mary Ann Sander, MHA, MBA, NHA, who has helped bridge the work of the Institute with UPMC Aging and Disabilities

Services. I've also valued greatly the opportunity I've had to work with the UPMC Health Plan under the leadership of Diane Holder, MS, executive vice president of UPMC and president of UPMC's Insurance Services Division, and John Lovelace, MS, MSIS, president of UPMC *for You*.

I am deeply indebted to each of the members of the Aging Institute's Executive Committee — Robert Arnold, MD; Deborah S. Brodine, MHA, MBA; Susan Greenspan, MD; Taafoi Kamara, MPH; Neil Resnick, MD; Edmund Ricci, PhD, MLitt; Loren Roth, MD, MPH; Mary Ann Sander, MHA, MBA, NHA; Richard Schulz, PhD; and Bennett Van Houten, PhD — some of whom have been involved since the Institute's founding. Without the benefit of their leadership and expertise, our work would have been rudderless. Their multidisciplinary insights enabled the Institute to develop meaningful initiatives in every area of endeavor — from research and new service models to workforce development and education.

And profound thanks to Stephen Shapiro, MD, chief medical and scientific officer of UPMC and the University of Pittsburgh Schools of the Health Sciences; Ben Van Houten, PhD, leader of the

University of Pittsburgh Cancer Institute Molecular and Cellular Cancer Biology Program and the Stimulating Pittsburgh Research in Geroscience (SPRIG) Working Group; and the deans of the University's Schools of the Health Sciences: Thomas Braun, DMD, PhD, School of Dental Medicine; Anthony Delitto, PhD, PT, FAPTA, 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; Patricia Beeson, PhD, provost of the University of Pittsburgh; and Larry Davis, MA, MSW, PhD, dean of the School of Social Work. Their advocacy and shared resources have been instrumental to the success we have achieved.

I shall miss working with you and extend my best wishes to you, Dr. Finkel, and the Institute for great success in the years to come.

**Charles F. Reynolds III, MD**

When it comes to aging, the math is relatively simple. On average, our life expectancy is now 30 years longer than that of our great-grandparents. More and more of us are growing old — and most importantly, *older* — than ever before. By the year 2025, 1.2 billion people worldwide will be 60 years of age or older.

That's where the science of aging becomes harder to factor. We know that getting older brings with it the increased risk of aging-related illness and disease, but we don't completely understand why. But, exciting, interdisciplinary discoveries are taking place every day on the cellular and molecular levels — including right here in Pittsburgh — that are bringing us closer to those answers. By yielding improvements in health care delivery and disease prevention, those discoveries hold profound implications for our medical systems, economy, society, and the world.

As a cardiology researcher at the National Institutes of Health (NIH), I became increasingly fascinated by the connection between aging and age-related disease. I followed with great interest the initiatives of the Aging Institute in identifying and implementing innovative care models for older adults. And because I know how key interdisciplinary collaboration is to future discoveries, I was especially impressed by the

## Looking Forward: Building on a Tradition of Innovation

remarkable expertise of the scientists, researchers, scholars, and educators it assembled — including those in basic science and geroscience.

I knew, too, that the University of Pittsburgh and UPMC combined devote more resources to the field of aging than nearly any other academic medical center in the country, with one of the nation's largest portfolios of aging-related research. It's a remarkable model for both groundbreaking research and scholarship, and world-class health care delivery.

For these reasons, I am deeply honored to continue the great work of Dr. Reynolds at the Aging Institute. I am looking forward to building on the great collaborative alliances he has forged both at UPMC and the University of Pittsburgh, and beyond.

Among our future initiatives will be efforts to identify signaling pathways and therapies that target the process of aging, with the ultimate goal of extending our health span to achieve a long life, free of disease. Another major initiative of the Aging Institute will be the development of drugs that will enhance our fundamental resilience to age and prevent age-related complications, such as atherosclerosis, lung fibrosis, and neurodegenerative diseases.

By illuminating the root causes of the diseases that we associate with aging — be they cardiovascular disease, cancer, or many neurodegenerative disorders — we can address them in their appropriate biological context: aging itself.

Inspired by its sense of purpose and energized by the prospect of discoveries soon to come, there's never been a more exciting time to be part of the Aging Institute. I am most grateful for this opportunity.

Sincerely,

**Toren Finkel, MD, PhD**  
*Director, Aging Institute of UPMC Senior Services and University of Pittsburgh Professor of Medicine, University of Pittsburgh School of Medicine, Division of Cardiology*



## Introducing Dr. Finkel

Dr. Toren Finkel joins the Aging Institute following a distinguished 25-year career at the NIH, where he most recently served as chief of the Center for Molecular Medicine at its National Heart, Lung, and Blood Institute (NHLBI). He previously served successive terms as chief of NHLBI's Translational Medicine Branch and Cardiology Branch.

The author of more than 200 manuscripts in journals ranging from *Science* (where he is a member of the board of reviewing editors) to the *New England Journal of Medicine*, Dr. Finkel is considered one of the leading voices in both aging research and cardiovascular disease.

His research includes a focus on the role of cellular metabolism and oxidative stress in aging and age-related diseases, an interest that emerged from an early, counterintuitive discovery that hydrogen peroxide — a reactive oxygen species (ROS) — could act as an intracellular signaling molecule activated by certain growth factors.

From 2006 to 2010, Dr. Finkel was a recipient of the Senior Scholar Award in Aging by The Lawrence Ellison Foundation, which supports basic biomedical research on aging relevant to understanding lifespan development processes and age-related disabilities. His research also has been funded by the Leducq Foundation in Paris, where he currently serves as the U.S. coordinator for a transatlantic network studying cardiac regeneration.

Dr. Finkel's interest in aging and metabolism has led to three predominant research avenues in his laboratory: autophagy in aging and age-related diseases, the function and regulation of mitochondrial calcium levels, and substrate utilization as a determinant of cell fate. As part of his appointment to the faculty of the University of Pittsburgh School of Medicine, new labs will be created in 2017-18 at the University's Bridgeside Point facilities to support these initiatives.





## Aging Institute Workgroups

The workgroups of the Aging Institute contribute meaningful insights and practical solutions to many of the significant health care issues facing older adults and their caregivers. Over the years, workgroup findings have generated immediate clinical applications, produced measurable health care cost savings, provided the initial validation needed to pursue external funding for more large-scale studies (see RAVEN on page 19) and, most importantly, improved the quality of life for older adults.

Contributing to the unique findings of the Aging Institute's workgroups has been its firm commitment to fostering interdisciplinary discovery. The Institute serves as a unifying agent, soliciting and capitalizing on the expertise of scientists, researchers, educators, clinicians, and health care providers at both the University of Pittsburgh and UPMC — which together represent one of the nation's most accomplished centers of aging research.

### Healthy Brain Aging Workgroup

For most of us, the threat of cognitive impairment is one of the most daunting prospects of growing old. Our ability to think clearly and function independently is integral to a quality, purposeful life. But as yet, there is no clear path to avoiding or reversing the decline or loss of memory, language, judgment, and executive function skills experienced by many older adults.

In 2014, three promising research proposals by University of Pittsburgh faculty that focused on brain health in humans and animals were selected to receive funding under the **Aging Institute's Seed Grant Program**:

### **Does Environmental Enrichment and Associated Exercise Promote Healthy Aging that Can Be Detected by Peripheral Biomarkers?**

*Principal Investigator: Michael J. Zigmond, PhD*

### **Examining the Contribution of Physical Activity to Brain Health and Cognition in Older Adults**

*Principal Investigator: John M. Jakicic, PhD*

### **Improvement of Memory Functions in Rodent Models of Accelerated Aging**

*Principal Investigator: Peter Wipf, PhD*



(l to r) Judy L. Cameron, PhD; Kirk Erickson, PhD; Meryl A. Butters, PhD; Abbe N. de Vallejo, PhD

This trio of research projects formed the framework for the Aging Institute's **Healthy Brain Aging Workgroup**. Over the last three years, the Workgroup has attracted the involvement of a multidisciplinary team whose members are exploring how physical activity can offer preventative and interventional strategies in healthy brain aging.

Indeed, the Workgroup's multidisciplinary approach is its core defining strength, according to Workgroup chair **Judy L. Cameron, PhD**, professor of psychiatry and director of the Pitt Science Outreach Program at the University of Pittsburgh.

"We are not looking for a single factor, but a set of factors in this study that correlate with improved brain function," she notes. "To do so requires a very different kind of model for working together. Our

workgroup includes experts from sports medicine, neurology, and cognitive neuroscience, to radiology, immunology, and psychiatry."

Completed in 2016, the Workgroup's **basic science pilot study** — *Does Environmental Enrichment and Associated Exercise Promote Healthy Aging that Can Be Detected by Peripheral Biomarkers?* — examined how living in an enhanced environment (EE) with younger rats might promote increased physical activity and/or improve brain health in older rats. That study, led by **Michael Zigmond, PhD**, professor of neurology at the University of Pittsburgh, demonstrated that the EE led to increases in movement, play, and social interactions, but no improvement in fitness, anxiety, learning, or memory measures. Changes in the brains of older rats were evident in a micro-array profile of gene expression, but it is not known if these changes were due to the social housing, cognitive enrichment, or increased activity. Dr. Zigmond and co-workers have submitted a follow-up grant application to better understand where the benefits of social housing come from in older rats.

The research interests of **Peter Wipf, PhD**, professor of chemistry at the University of Pittsburgh, include the total synthesis of natural products and the discovery of new drugs. In his 2014 pilot seed grant, *Improvement of Memory Functions in Rodent Models of Accelerated Aging*,

Dr. Wipf tested a compound he developed known as XJB-5-131. A synthetic antioxidant that fights oxidative stress at a cellular level, XJB-5-131 has attracted the attention of a number of researchers nationwide for its potential to improve cellular survival.

This year marked the conclusion of the exercise phase of the Workgroup's **clinical research pilot study**, which looked at the effect of exercise on the brain health of older adults. Specifically, the study sought to determine if an exercise regimen involving brief, multiple periods of moderate intensity physical activity every day over a six-month period could improve working memory compared to lighter-intensity activity. The study, *Examining the Contribution of Physical Activity to Brain Health and Cognition in Older Adults*, was led by **John M. Jakicic, PhD**, chair of the Department of Health and Physical Activity at the University of Pittsburgh.

The pilot — conducted in two age groups — involved a total of 19 participants aged 65 to 75, and six participants over the age of 75. Half of all participants engaged in stretching exercises while the other half of each group were assigned more rigorous physical activity. All but one study participant remained engaged throughout the exercise phase of study, which ended in May 2017.

"While the number of participants is small, this level of engagement is exceptional," notes Dr. Cameron. "It tells us that the structure of the study — which included a high level of social interaction, such as group meetings and regular follow up phone calls, as well as a very carefully designed and user-friendly exercise protocol using videos on electronic tablets — is doing something right. These adults clearly felt connected and that they were contributing to something larger than themselves. While this kind of engagement has been critical to the success of this study, it also offers tremendous implications for getting older adults involved in exercise in general."

In addition to age requirements, this clinical study was limited to adults with a high school education or below. "Earlier research has established that education has a neuroprotective effect: in general, the more we use

our brain, the more neurocircuits kick in, and this offers protection to deteriorating cognitive function as we age," adds Dr. Cameron. "We wanted exercise, not education, to be the controlling factor for any brain changes we saw in this study."

A variety of data was collected on each participant at the baseline and conclusion of the exercise phase, including:

- Fitness measures
- Blood samples
- Cognitive function
- Anxiety testing
- 7T structural MRI
- fMRI (during cognitive tests in the 7T)

This data is now being used to map possible integrative indices of successful aging through the

analysis and evaluation of the brain health of pilot participants in the following three areas:

#### Cognition Assessment

"Exercise has been shown to improve executive function, but its effect in other areas of cognition has been less consistent," says **Meryl A. Butters, PhD**, associate professor of psychiatry and clinical and translational science at the University of Pittsburgh, who is assessing the cognition changes of participants before and after the exercise study. "Part of the larger goal of this study is to help normal older adults function better in all aspects of their lives," she explains. "That's why our testing is looking at all the cognitive domains, from attention and memory to language, visual and spatial skills, and executive function. We'll be looking at both accuracy and speed of performance in our assessments.

#### Structural and Functional Imaging

To determine what areas of the brain are changed by exercise and why, the Healthy Brain Aging Workgroup is using powerful neuroimaging tools such as the 7-Tesla MRI (magnetic resonance imaging). "This technology allows us to see much finer aspects of the brain than a standard MRI," explains Dr. Cameron. "For example, it allows us to look at the individual blood vessels in the dentate gyrus, which is part of the brain's memory center, the hippocampus — which is positively impacted by exercise."





Structural imaging, essential to evaluating brain function, is being studied by **Caterina Rosano, MD, MPH**, professor of epidemiology at the University of Pittsburgh School of Public Health. She will be identifying pre- and post- study changes in the shape, size, and integrity of the brain and blood vessels in study participants.

Certain parts of the brain have higher activity levels when undertaking cognitive tasks. **Kirk Erickson, PhD**, professor of psychology and director of the Brain Aging and Cognitive Health Lab at the University of Pittsburgh, is leading the functional imaging analysis, which measures brain activity by detecting changes in blood flow. Data was collected on study participants while testing their working memory function using a task that carefully assesses memory.

“This project has yielded rich neuroimaging brain data on older adults,” notes Dr. Erickson. “It’s giving us different pieces of information that collectively will help us better understand the characteristics of the brain related to cognitive health and mood health.”

#### **Biomarkers of Healthy Brain Aging**

On the molecular and cellular levels, the Workgroup is now looking at biomarkers of healthy brain aging that are associated with increased exercise. This is being accomplished by assaying blood samples taken of all participants before and after six months of exercising. **Abbe N. de Vallejo, PhD**, an immunologist

at Children’s Hospital of Pittsburgh of UPMC, is undertaking this evaluation using next-generation RNA sequencing to assess differential gene expression, as well as using Proteomic approaches by reviewing 70 proteins that have been linked to aging in previous studies.

As an immunologist, Dr. de Vallejo has a special interest in what these biomarkers will reveal about the immune systems of study participants. “The immune system matters a great deal, because it protects our bodies from infections and other dangers,” he says. “Cells of the immune system are the only ones that travel through the entire body, including the brain. When you compare people with and without cognitive impairment, we already know that they have distinct immune systems. And so an important question is how immune and brain function work together to promote healthy aging, and whether and how physical activity influence that brain-immune communication.”

#### **Next Steps**

All physiologic, cognitive, imaging, and blood analysis will be completed during the summer of 2017. “While all the analysis is yet to be completed, the study has yielded some very promising indicators that can significantly inform future research involving exercise in older adults,” says Dr. Cameron. Contingent on these findings, broader external funding will be sought for a more large-scale research effort.

#### **Aging Institute Caregiver Video Series Supports National Geriatrics Workforce Enhancement Program**

The Aging Institute is developing a series of videos designed to support the specialized needs of family caregivers, supported by the insights and research findings of its **Dementia Workgroup**.

The video project also has offered the Institute an ideal opportunity to collaborate as a partner with the University of Pittsburgh, which is locally spearheading initiatives for the federally funded **Geriatrics Workforce Enhancement Program (GWEP)**.

The Aging Institute’s first two videos were developed to welcome caregivers to both the challenges and satisfaction of caring for a spouse, family member, or friend. Both provide tips on how to adapt the home for caregiving safety, manage stress and avoid burnout.

- Appearing in an introduction to the caregiving video is the Aging Institute’s immediate past director, **Charles F. Reynolds III, MD**.
- A second video on caregiver stress management features **Rick Morycz, PhD**, associate professor of psychiatry, medicine and social work, University of Pittsburgh School of Medicine; director of Geriatric Services, Western Psychiatric Institute and Clinic of UPMC; and a member of the Aging Institute Board of Directors.





In February 2017, these videos were shared with a representative focus group of caregivers led by Dr. Morycz to solicit their reactions, identify expanded educational and communication opportunities, and discuss a range of potential subjects for future videos.

Based on that group's feedback, the Institute's third video targeted some of the practical daily lifestyle issues faced by caregivers. "We focused on specific measures that caregivers can take into the kitchen, bedroom, and bath to avoid falls and improve room function," says Dr. Morycz. "We demonstrated 'before and after' modifications that can be taken to improve safety."

Serving as technical advisor for the home video was **Pamela Toto, PhD, OTR/L, BCG, FATOA**, associate professor, and **Kelly Dixon, MS**, occupational therapy doctoral candidate, both of the Department of Occupational Therapy in the School of Health and Rehabilitation Sciences at the University of Pittsburgh.

In 2017-18, the Aging Institute plans to complete three additional videos targeted at meeting the needs of caregivers. These videos will include:

- **Managing behavioral problems** in older adults with dementia, such as wandering, aggressiveness, and impulsiveness
- **Caregiver communications**, covering the essential communications that caregivers must have with those they care for, other family members, and the health care system (including primary care physicians)

- **End-of-life decision making**, particularly for individuals with terminal illnesses such as Alzheimer's, addressing the need for a living will, identifying preferences, and establishing durable power of attorney.

The video will be distributed to interested caregivers and professionals. They can also be accessed on the Institute's website under the Resources for Caregiver tab.

#### **Additional Aging Institute Initiatives with the GWEP**

As a GWEP partner, the Aging Institute is working to build a regional, community-based outreach and resource center designed to connect caregivers and older adults to home-based care options, self-management strategies, social and emotional support, and education and training.

Central to this initiative is the expansion of some of the Institute's already robust offerings — which include its website and Help and Referral Line — as well as the development of new communication materials, including the caregiver videos.

Leading GWEP locally is the **University of Pittsburgh's University Center for Social and Urban Research (UCSUR)**, which is headed by the Aging Institute's associate director, **Richard Schulz, PhD. Judith Tabolt Matthews, PhD, MPH, RN**, associate director of UCSUR's gerontology program, served as acting director of the GWEP program while Dr. Schulz was on sabbatical in 2016-17.

The three-year, \$38.7 million **Geriatrics Workforce Enhancement Program (GWEP)** initiative was launched by the U.S. Department of Health and Human Services in 2015 to address the growing need for skilled health care services for older adults in the face of a dramatic shortfall in available geriatric specialists and providers.

The University of Pittsburgh is among 44 sites nationwide receiving GWEP funding to conduct regional programs designed to improve the health outcomes of older adults through innovative training projects targeting the primary care workforce. Each GWEP site was encouraged to develop tailored activities that respond to specific regional and community needs, as well as address national guidelines for the program.

According to Dr. Matthews, GWEP builds on the educational initiatives of its predecessor, the Geriatric Education Center (GEC) of Pennsylvania, which also had been administered locally by UCSUR. "Where the GEC targeted a more academic model targeting professionals, GWEP features applied learning in practice settings, focusing on changing behavior and attitudes," she notes.

Other areas of the University of Pittsburgh collaborating on the GWEP initiative are the **School of Nursing**, the **School of Social Work**, and the **School of Medicine, Division of Geriatric Medicine**.

In addition to the Aging Institute, other clinical and community partners include:

- **Alzheimer's Association – Greater Pennsylvania Chapter**
- **Alzheimer Disease Resource Center (ADRC) of the University of Pittsburgh**
- **Geriatric Research, Education and Clinical Center (GRECC) of the Veterans Administration (VA) Pittsburgh Healthcare System**
- **Center for Healthy Aging of the Pennsylvania State University**

"Through a series of distinctive GWEP projects, we're reaching out to the next generation of professionals in medicine, health sciences, and social work who are now in school, as well as practicing professionals in such primary care settings including clinics, ambulatory care, and long-term care facilities," says Dr. Matthews. "And, a distinguishing aspect of our program is our additional outreach directly to older adults and caregivers."

#### **Future Prospects**

Funding for the current GWEP initiative ends in June 2018, and preparation for reapplication is already underway for a renewal grant. "We are optimistic, given the strength and performance of our projects," says Dr. Matthews. "The need is great for continued innovation in aging and we're fortunate to have many great strengths in this region that contribute to a compelling case for ongoing support."

An elderly man with white hair and glasses is looking at a laptop screen. He is wearing a dark grey sweater over a blue and white checkered shirt. The background is a blurred indoor setting, possibly a home or a care facility, with wooden paneling and a framed picture on the wall.

## Research

The research of the Aging Institute — and its innovations, interventions, and connections — is investigating questions to help us better manage age-related conditions, illnesses and diseases, advance our understanding of the emotional and psychological effects of aging, and pioneer new insights into the molecular-level evolution of the aging body.

## RAVEN PHASE I & the Aging Institute

In October 2012, the Centers for Medicare and Medicaid Services (CMS) awarded **UPMC Senior Services** and the **Aging Institute** a four-year, \$19 million Innovation Award with the goal of both improving the quality and reducing the cost of care for nursing home residents enrolled in Medicare and Medicaid. It was one of only seven such Innovation Awards nationwide.

The award recognized and sought to replicate the model that led to a 38 percent reduction in hospital readmission rates at UPMC Senior Communities' skilled nursing facilities. Contributing to that success was the research and findings of the Aging Institute's **Unplanned Hospital Readmission and Palliative Care Workgroups**, and the collaborative efforts of the UPMC Palliative and Supportive Institute and UPMC Senior Communities. Working together, they introduced **broader staff education and training, evidence-based communication tools, and the presence of nursing practitioners and enhanced care staff** at each skilled nursing facility.

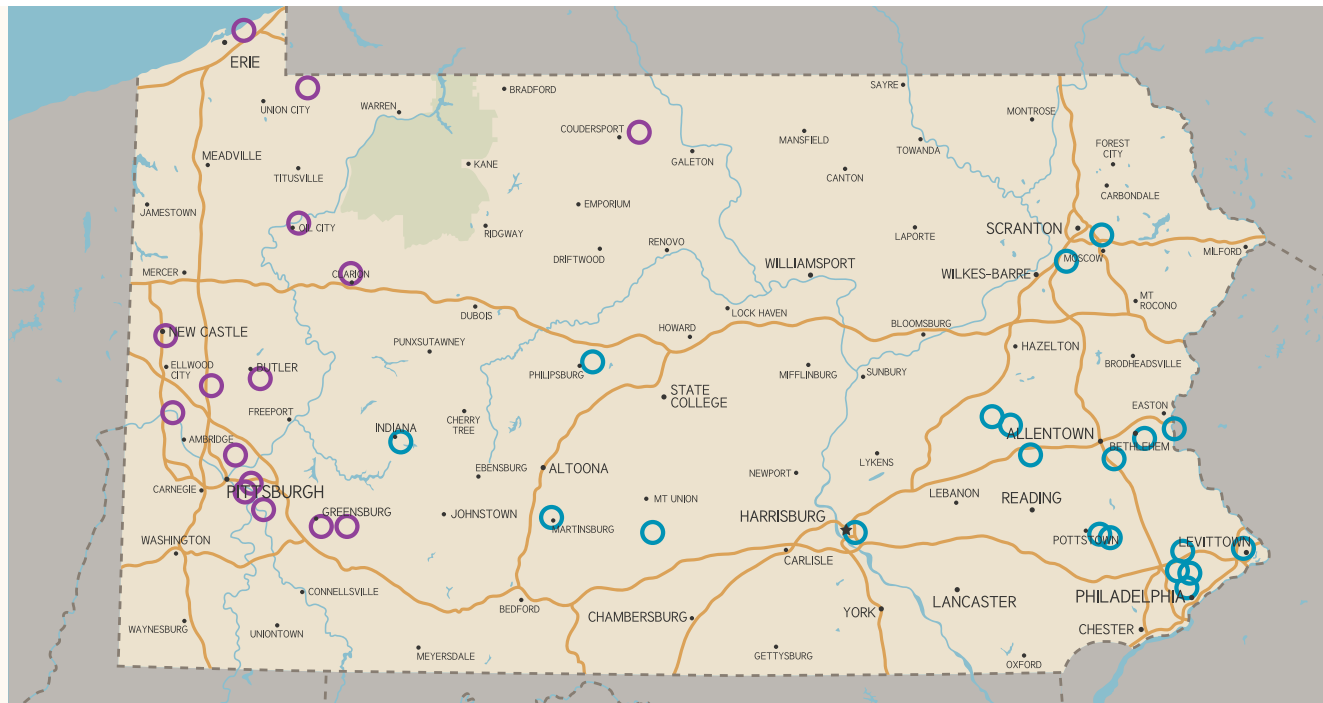
From 2012 to 2016, Phase I of the RAVEN project implemented these same interventions at 18 long-term care facilities — as well as exciting new innovations such as **telemedicine** and **enhanced medication review and pharmacy engagement** — with the goal of reducing avoidable hospitalizations among nursing home residents. The successful trends and outcomes demonstrated during this period led to the awarding of the new RAVEN Phase II grant starting in 2016.

## RAVEN Phase II: Building on Four Years of Progress

### Reducing Avoidable Hospitalizations Using Evidence-Based Interventions for Nursing Facility Residents (RAVEN)

In October 2016, the Aging Institute and the University of Pittsburgh embarked on a second four-year RAVEN grant, funded by the Centers for Medicare and Medicaid Services (CMS). The \$20 million project is testing the effects of a new payment model that provides reimbursement to skilled nursing facilities and practitioners for the treatment of six specific conditions (pneumonia, congestive heart failure, COPD/asthma, skin ulcers/cellulitis, dehydration, and urinary tract infection) that account for the majority of potentially avoidable hospitalizations of nursing home residents. The objective is to test whether payment structures can incentivize behavior among skilled nursing practitioners that will enhance care onsite and reduce avoidable hospitalizations.

“Our Phase I project introduced numerous innovations in clinical care to nursing facilities that helped to change their fundamental culture and introduce new approaches to resident care,” says **Mary Ann Sander, MHA, MBA, NHA**, vice president for Aging and Disability Services, UPMC Community Provider Services. “Phase II is now



underway, continuing our clinical interventions and testing new payment models to encourage treating residents in place. What happens during the next four years will likely play a defining role in how Medicare reimburses nursing homes — now and in the future.”

Two distinct test groups of nursing facilities have been formed for the Phase II RAVEN payment model project, totaling 35 locations statewide:

- **Group A — 20 New Facilities**  
(Payment Model Only)
- **Group B — 15 Continuing Facilities**  
(Clinical Interventions + Payment Model)

“This is a very exciting opportunity to lead change in CMS payment practices and make a real difference in

the care of nursing home residents,” says **April L. Kane, MSW, LSW**, director of the RAVEN project. “Through a novel payment structure, we’re hoping to engage both the facilities and physicians in greater face-to-face patient care onsite in the nursing home.” According to Ms. Kane, patient care and payment submissions are already underway at all participating facilities.

“It’s been very satisfying to be on the cutting edge of something new, especially having been involved in long-term care for decades now. This kind of progressive thinking on the part of CMS demonstrates its recognition of the acuity levels in nursing homes — and that the best way to treat them is in their home,” says Ms. Sander.

## RAVEN Phase I Result Highlights

A report commissioned by CMS found that UPMC and its community partners in Year 3 of the RAVEN Project reduced avoidable hospitalizations nearly 25 percent and potentially avoidable emergency department visits by more than 40 percent. The reduction in health care utilization led to a net savings to CMS of more than \$5 million. And while all sites showed a general reduction in Medicare expenditures, the Year 3 evaluation report found the UPMC RAVEN program was one of two programs that significantly reduced avoidable hospitalizations and costs.

In March 2017, as described in a Year 4 CMS report, and noted in Health Affairs, for the second year in a row, the partnering long-term care (LTC) facilities at all seven sites collectively showed a decline in all-cause hospitalizations and potentially avoidable hospitalizations, relative to a comparison group. UPMC RAVEN showed significant reductions in expenditures for all-cause hospitalizations.

UPMC RAVEN, along with two other sites, used a Phase I model that featured consistent, hands-on clinical care for nursing facility residents on a daily basis. All three sites using this model demonstrated greater changes in facility culture, greater support for the need to reduce avoidable hospitalizations, and greater overall buy-in to the initiative from facility staff as compared to sites that featured intermittent clinical care and facility training as their primary intervention.

## 11th Annual Research Day on Aging

### Showcasing the Latest Research on Aging and Rehabilitation

More than 200 participants and guests attended the Aging Institute's 11th Annual Research Day on Aging on May 10, 2017 at the University of Pittsburgh — the biggest turnout to date.

First held in 2006, Research Day is a signature event of the Institute, providing a crucial forum for clinicians and researchers from UPMC, the University of Pittsburgh, Carnegie Mellon University, Duquesne University, Robert Morris University, and other academic institutions to socialize, network, and view posters showcasing the latest in aging research.

This year's event featured 83 poster presentations by junior faculty, current students, clinical practitioners, and post-doctoral researchers and fellows. Seven presenters were selected to present five-minute "Lightning Presentations" on their projects.

In addition, participants heard from keynote speakers **Jonathan F. Bean, MD, MS, MPH**, associate professor of Physical Medicine and Rehabilitation at Harvard Medical School, and **Nathan K. LeBrasseur, MS, PhD**, associate professor of Physical Medicine and Rehabilitation at the Mayo Clinic.

The event was a collaborative initiative that brought together the Aging Institute with the University of Pittsburgh's Department of Physical Medicine and

Rehabilitation, School of Health and Rehabilitation Sciences, University Center for Social and Urban Research, UPMC Rehabilitation Institute, and the Stimulating Pittsburgh Research in Geroscience (SPRIG) Workgroup.

### Research Day 2017 Abstract Winners Selected Presenters

**Maureen Bieltz, PharmD**, Clinical Pharmacist (RAVEN grant - CMS Innovation Project)



*RAVEN Initiative: Implementation of an Intervention to Reduce Antipsychotic Use in the Nursing Home Setting*

**Marta Bueno, PhD**, Research Assistant Professor of Medicine, Division of Pulmonary and Critical Care Medicine

*PINK1 Deficiency in AECII Triggers Release of Mitochondrial DAMPS that Initiate Pro-inflammatory and Pro-fibrotic Responses in the Lung*



**Catherine Corey**, Lab Manager (Shiva Lab)  
*The Effects of Aging on Platelet Bioenergetics*

**Dominic DiSanto**, Undergraduate Researcher  
*Characterizing Factors Related to Employment Stability in the First Five Years After Traumatic Brain Injury*

**John Frampton, MD**, Resident (PGY-3)  
*Comparing a Novel, Simplified Classification System to Established Classification Systems in Adults with Spina Bifida*

**Nayana Nagaraj, MBBS, MPH, CPH**, Pre-Doctoral Trainee (Epidemiology)  
*Association Between Reproductive Factors and Physical Function in Later Life: A Life-Course Hypothesis*

**Chelsea Stillman, PhD**, Postdoctoral Scholar, Psychiatry Department  
*Changes in Brain Perfusion Following Weight Loss Are Associated with Changes in Body Mass Index*

### Junior Faculty First Place

**Andrea Rosso, PhD, MPH**, Department of Epidemiology, Graduate School of Public Health, University of Pittsburgh  
*Slowing Gait and Risk for Cognitive Impairment: The Hippocampus as a Shared Neural Substrate*

### Honorable Mention

**Andrea Hergenroeder, PT, PhD**, Department of Physical Therapy, School of Health and Rehabilitation Sciences, University of Pittsburgh  
*Accuracy of Activity Monitors for Counting Steps in Older Adults*

**Jacobo Sellares, MD**, Division of Pulmonary, Allergy, and Critical Care Medicine, School of Medicine, University of Pittsburgh  
*The Potential Role of Intracellular Heat Shock Protein 70 Deficiency in Aging and Pulmonary Fibrosis*

**Sarah Stahl, PhD**, Department of Psychiatry, School of Medicine, University of Pittsburgh  
*Measuring Participant Effort in a Depression Prevention Trial: Who Engages in Problem-Solving Therapy?*

### Master's-Level Students and Candidates for Doctoral Degrees First Place

**Yashar Aucie**, Department of Bioengineering, University of Pittsburgh  
*Innovative Shoes Induce Locomotor Learning Correcting Step Asymmetry*

### Honorable Mention

**Helmet Karim, BSc**, Department of Bioengineering, University of Pittsburgh  
*Association between Change in Brain Gray Matter Volume, Cognition, and Depression Severity: Pre- and Post-Antidepressant Pharmacotherapy for Late-Life*

**Dylan Royston, BS**, Center for the Neural Basis of Cognition, University of Pittsburgh  
*Using Enriched Covert Imagery to Map Hand Representations in Human Sensorimotor Cortex*

**Amrita Sahu, MS**, Department of Environmental and Occupational Health, Graduate School of Public Health, University of Pittsburgh  
*Age-Related Declines in Klotho Drive Dysfunctional Muscle Progenitor Cell Bioenergetics and Impaired Skeletal Muscle Regeneration*

### Medical/Nursing/Student Honorable Mention

**Mengchi Li, BSN(c)**, School of Nursing, University of Pittsburgh  
*Correlates of Cognitive Impaired Older Adults' Willingness to Participate in Research*

**Ihuoma Njoku, BS**, Department of Physical Medicine & Rehabilitation, School of Medicine, University of Pittsburgh  
*Effect of Galantamine on Attentional Set-Shifting Performance After Experimental Brain Trauma*

### Post-Doctoral Researchers and Fellows First Place

**Diana Álvarez, MD**, Division of Pulmonary, Allergy, and Critical Care Medicine, School of Medicine, University of Pittsburgh  
*IPF Lung Fibroblasts Have a Senescent Phenotype*

**Misagh Mansouri Boroujeni, PhD**, Department of Physical Medicine & Rehabilitation, School of Medicine, University of Pittsburgh  
*Using Biomimetic Models and Intramuscular EMG for Control of Myoelectric Prostheses*



#### Honorable Mention

**Andrea Braganza, PhD**, Vascular Medicine Institute, School of Medicine, University of Pittsburgh  
*The Role of Parkin in Age-Dependent Platelet Mitochondrial and Thrombotic Dysfunction*

**Santosh Chandrasekaran, MS, PhD**, Department of Physical Medicine & Rehabilitation, School of Medicine, University of Pittsburgh  
*Electrical Stimulation of the Cervical Dorsal Spinal Cord and Rootlets for Sensory Restoration in Upper-Limb Amputees*

**Mary Kotlarczyk, PhD**, Division of Geriatric Medicine, School of Medicine, University of Pittsburgh  
*Accuracy and Acceptability of Commercial Activity Monitors in Older Adults*

#### Resident Physicians and Clinical Fellows

##### Honorable Mention

**Karthik Kota, MD, MPH**, Division of Geriatric Medicine, School of Medicine, University of Pittsburgh  
*Do Internal Medicine Residents Know How to Deprescribe?*

**Anne Tita, MD**, Department of Physical Medicine & Rehabilitation, School of Medicine, University of Pittsburgh  
*Correlation between Neurologic Impairment Grade and Ambulation Status in the Adult Spina Bifida Population*

#### 2017 Pilot Seed Grant Awardees

The theme for the Aging Institute's 2017 Pilot Seed Grant program was **From Molecules to Man — The**

**Sciences of Aging and Rehabilitation of Age-Related Disabilities**. Now in its 10th year, the grant program encourages junior faculty to explore new areas of research in aging that have a potential for further funding from outside sources.

Open to junior faculty researchers from the basic, social, and applied sciences throughout the schools of the University of Pittsburgh and UPMC, **awards totalled \$300,000**.

Supported by the Aging Institute, this year's program received additional funding from the **University of Pittsburgh's Department of Physical Medicine & Rehabilitation, School of Health and Rehabilitation Sciences, UPMC Rehabilitation Institute**, and the **Stimulating Pittsburgh Research in Geoscience (SPRIG) Workgroup**. Funded by **Steven B. Shapiro, MD**, UPMC senior vice president and chief medical and scientific officer and administered by the Aging Institute, SPRIG is a collaborative community of scientists from the University of Pittsburgh and affiliate institutions who are investigating the basic mechanisms underlying the diseases associated with aging, including mitochondrial disorders, cancer, cardiovascular disorders, and neurodegenerative disease. SPRIG serves as a resource for the exchange of communication, tools, and techniques related to mitochondria, aging, and metabolism.

Selected projects focused on the extension of the health span and staving off decline in function as a person ages,

and promoting and maintaining health and function of individuals with disabilities during aging.

#### 2017 Pilot Seed Grant Recipients

The Aging Institute awarded seed grants to the following projects:

*Associations Between Physical Activity Participation and Inflammatory Biomarkers in Individuals with Lumbar Spinal Stenosis – A Secondary Data Analysis*  
**Gustavo J. Almeida, PT, PhD**, research assistant professor, Department of Physical Therapy, School of Health and Rehabilitation Sciences, University of Pittsburgh

*Does Transcranial Magnetic Stimulation Have an Effect on Bladder Volume in Urgency Urinary Incontinence?*  
**Becky Clarkson PhD**, research instructor, Division of Geriatric Medicine, University of Pittsburgh

*Moving Brain Computer Interface Success into Stroke*  
**Jennifer L. Collinger, PhD**, assistant professor, Department of Physical Medicine & Rehabilitation

*Video Modeling for Family Training After Traumatic Brain Injury*  
**Gary Galang, MD**, director, Brain Injury Program, UPMC Rehabilitation Institute, UPMC Mercy

*GATE: Geriatric Auditory Testing for Everyone*  
**Catherine Palmer, PhD**, director, Audiology and Hearing Aids, UPMC, and associate professor of Communication Science and Disorders, School of Health and Rehabilitation Sciences

*Neuromolecular Pathways of Mobility Improvement in Older Adults*

**Caterina Rosano, MD**, Department of Epidemiology, University of Pittsburgh Graduate School of Public Health

*Improving Measures of Physiologic Reserve in Elderly Surgical Patients*

**Allan Tsung, MD**, Roberta G. Simmons Associate Professor, Division of Hepatobiliary and Pancreatic Surgery, UPMC

#### Seed Grant Research Profiles

[2015 SPRIG Pilot Grant: Unlocking the door to the power of telomeres](#)

When **Patricia L. Opresko, PhD**, was starting her lab at the University of Pittsburgh in 2006, **Roderick “Roddy” O’Sullivan, PhD**, was working on the opposite end of the country as a postdoctoral fellow at the Salk Institute for Biological Research in La Jolla, California. Although they didn’t know one other at the time, both



were investigating roles for the protein defects in Werner Syndrome, a premature aging disease, in maintaining telomeres. “We later learned our research was complementary and that our findings supported a mutual hypothesis that telomere defects contribute to aging and disease,” says Dr. Opresko, associate professor at the University of Pittsburgh Cancer Institute (UPCI).

Today, working in offices just a few feet apart at UPCI, telomeres continue to play a prominent role in both Dr. Opresko’s and Dr. O’Sullivan’s research on aging. Currently, they are collaborating on the **2015 SPRIG pilot grant — Investigating a non-canonical function of DNA Polymerase ETA (Polη) in the maintenance of telomere integrity**. The grant, now entering its second year of activity, builds on their shared interests in telomere function in normal and cancer cells.

Telomeres are the caps at the ends of chromosomes. Comprised of DNA and proteins, they are essential to ensuring that the DNA strands are repaired and copied correctly. As cells divide over time, telomeres shorten and accelerate the breakdown of chromosomes and the normal cell operations. When they’re damaged, telomeres shorten, and if they become too short, the cell can’t divide again, or may even die. If the cell survives, then the damaged telomeres can cause chromosomal changes that promote cancer. The short telomeres become markers for the onset of age-related diseases — including cancer.

Telomeres are especially vulnerable to damage by free radicals, notes Dr. Opresko. “Most people are aware that free radicals can damage skin cells, but they affect other parts of the body too. Factors like stress, smoking, alcohol, and exposure to the sun’s ultraviolet rays are just some of the ways free radicals are generated in our bodies. On a cellular level, they contribute to telomere shortening,”

“Damage to our telomeres actually starts the day we’re born. It’s like driving a new car off the lot; the minute you do, the car starts to depreciate,” explains Dr. O’Sullivan, who serves on the pharmacology and chemical biology faculty of the University of Pittsburgh School of Medicine and is a member of University of Pittsburgh Cancer Institute (UPCI). “Certain factors — having a well-made car, getting regular service, keeping it in the garage, using quality gas — can help keep it in good shape. But depreciation will continue to happen, regardless of those efforts. The question is how can we control the rate and level of depreciation?”

“Think of telomeres as the protective plastic tips on a shoelace that prevents the strand from fraying and doing its job. Patty’s focus is on the structure of the cap, while my research explores the protein that comprises it,” says Dr. O’Sullivan.

Cell reproduction is critical to life. “But there’s growing evidence of an association between telomere length

and cancer,” says Dr. Opresko. “Telomeres are right at the interface of cancer and aging. DNA repair must be tightly controlled: too much and it’s like running amuck with scissors, creating further damage. In this SPRIG research project, we’re focusing on the specific role of DNA polymerase eta (Polη) in telomere integrity to better understand that relationship.”

The project’s aims are two-fold:

- Investigate the non-canonical role of Polη following direct replicative damage at the telomeres, accomplished by exposing cells to a drug that inhibits the enzyme that replicates DNA, aphidicolin; and
- Achieve biochemical determination of the mechanism of telomere extension by Polη.

Polη is a protein critical to telomere repair when exposed to harmful UV rays from the sun. The loss of this gene results in xeroderma pigmentosum (XP) a rare, hereditary condition characterized by an extreme sensitivity to the sun’s UV rays, and which carries a very high risk of skin cancer. Individuals with this condition also have many other early age-related problems, including a reduced life span, accelerated wrinkling of the skin, decreased immune systems, nearsightedness, and a variety of neurological problems. As part of the SPRIG seed grant project, Dr. Opresko and Dr. O’Sullivan are studying XP telomeres, accessing cell repositories provided by individuals with the disease. “What makes this of particular interest to us

is that XP involves a single mutation that renders that protein (Polη) inactive,” says Dr. Opresko.

In the canonical role, DNA damage by sunlight acts like a boulder, explains Dr. O’Sullivan. “When the cell tries to replicate its genome, it hits this roadblock. Polη’s canonical function is its ability to bypass that boulder. But we discovered a non-canonical role for Polη in replicating telomeres even in the absence of sunlight exposure.”

“By targeting telomeres, present in every cell and chromosome — including cancer cells — our ultimate goal is to apply what we learn to every form of cancer,” says Dr. Opresko. “Telomeres may end up being an Achilles heel, allowing us to develop interventional therapies that can prevent or delay the onset of aging-related diseases, including cancers.”

The data generated in this study will be used to pursue external funding and be submitted for review and publication in a peer-reviewed manuscript.

#### 2016 Seed Grant: Exploring the Link Between Aging and Sarcoma Cachexia

Cachexia is often referred to as the “wasting syndrome,” so dubbed because of its signature symptoms of involuntary weight loss and diminishing muscle strength.

For patients with cancer and their caregivers, the diagnosis of cachexia and its ultimate prognosis can



be devastating. “At the moment, there’s no effective treatment or lifestyle change that makes a difference,” says **Kurt R. Weiss, MD**, a UPMC orthopaedic surgeon and musculoskeletal oncologist, and a

physician researcher at the University of Pittsburgh. “The physical toll of cachexia often forces patients to stop cancer treatments and robs them of their quality of life.”

Similarly, aging-associated cachexia (AAC) — also known as sarcopenia — can strike older adults without warning, unaccompanied by and unrelated to other illnesses. “Elderly individuals can lose muscle mass at an alarming rate, increasing their risk of other illnesses and decreasing their life expectancy,” he says.

In 2016, Dr. Weiss was awarded a two-year Aging Institute Seed Grant targeted at studying Mechanisms of Sarcoma and Aging-Associated Cachexia. It’s believed to be the first project of its kind focused on understanding the commonalities between SAC and AAC.

His project collaborator is **Rocky S. Tuan, PhD**, distinguished professor and director of the Center for Cellular and Molecular Engineering at the University



of Pittsburgh. “Dr. Tuan is a world-renowned leader in the field of regenerative medicine. His expertise is bringing the aging focus to this project,” says Dr. Weiss.

Physicians and researchers remain perplexed by the root cause of cachexia. “The greatest obstacle faced by patients with SAC and ACC is the lack of investigative studies on their common features and potential therapeutic studies,” says Dr. Weiss, who also leads the University of Pittsburgh’s Musculoskeletal Oncology Laboratory, where he directs a basic science laboratory dedicated to the study of sarcomas and cancer that spreads to the bone.

“Our goal is to discover the molecular factors behind cachexia,” says Dr. Weiss. “Based on some of our previous research, we believe it’s caused by a combination of systematic inflammation and high levels of Notch, which is a cell receptor that appears to be linked to muscle loss in both aging and cancer. Our challenge is to prove it.”

According to Dr. Weiss, Notch acts in the body’s natural healing response. “Picture yourself after a really intense workout or after injuring yourself while working in the garden,” he says. “Events like these can decrease the levels of Notch signaling to allow the healing process to start. The problem is when the inflammatory state caused by the cancer stays on too long, Notch levels remain high, keeping muscle stem cells from doing their primary job: regenerating muscle cells.”

For their Aging Institute Seed Grant, Drs. Tuan and Weiss are using human cells with the goal of reversing the muscle wasting process they saw in mice. “We’re co-culturing human sarcoma cells with human muscle stem cells,” he says. The University of Pittsburgh’s Musculoskeletal Oncology Tumor Registry (MOTOR) and Tissue Bank is giving them access to data and cell lines of sarcoma patients who have cachexia. “It’s allowing us to gain unprecedented insights into sarcoma-associated cachexia’s molecular pathways.”

Conversely, the two researchers will be looking at “the seed in the soil” — the seed being the muscle stem cell and the soil being the environment in which it lives. “Dr. Tuan has been able to create a myomatrix in mice that combines aged and new muscle cells so we can see how they grow,” says Dr. Weiss. “We also will be looking at what happens when we add Notch inhibitors. Can we make old muscle stem cells begin to act like young ones?”

The duo have submitted the first batch of human sarcoma cells for stringent review, with 31 of the 33 samples found to be unique and pathogen-free.

“We’re extremely excited about the opportunities the Aging Institute Seed Grant is providing us,” says Dr. Weiss. “Our primary goal is to validate our theories on the cellular activity. But if we’re able to identify and modulate abnormal Notch activity, the results could have profound implications for people with sarcoma-associated cachexia and aging-associated cachexia.”

*Editor’s Note: In April 2017, Dr. Weiss began work on a two-year R21 grant from the NCI on “Exploring the Mechanisms of Sarcoma-Associated Cachexia.”*

## Late Life Depression

**Building on decades of pioneering research to meet the changing mental health needs of older adults**

In October 2016, the immediate past director of the Aging Institute, **Charles F. Reynolds III, MD**, was awarded the prestigious **Pardes Humanitarian Prize in Mental Health** by the Brain & Behavior Research Foundation, which recognizes individuals whose transformative work have made a profound and lasting impact in mental health. Dr. Reynolds was honored for his pioneering work in geriatric psychiatry and in the prevention and treatment of late-life depression.

The award was the latest in numerous career recognitions that Dr. Reynolds has received for his groundbreaking work at the University of Pittsburgh’s **Advanced Center in Intervention and Services Research in Late Life Depression Prevention (ACISR/LLMD)**. While he recently retired from his leadership role as the center’s director, Dr. Reynolds will continue to be involved as a co-investigator or advisor on many of its projects.

The ACISR/LLMD recently was awarded nearly \$9 million in new funding from the **National Institutes of Mental Health (NIMH)** to further its work in depression prevention and treatment among older



adults. This federally funded Center of Excellence will be conducting three major new research studies in depression prevention among vulnerable older adults, in addition to existing initiatives.

#### [Changing the Perception and Treatment of Late-Life Depression](#)

Treating depression in older adults requires a different approach from early- and mid-life depression, says Dr. Reynolds. “Even the stressors old adults face that can be the source of depression — chronic pain and disease, the death of a spouse or close friend, and declining physical abilities — are unique to this group.”

In America, more than 6.5 million adults over 65 experience late-life depression that can last for months and even years, yet many older adults and their caretakers don’t seek treatment. Additionally, the symptoms of late-life depression — irritability, social isolation, poor sleep, loss of appetite, and memory loss — are often dismissed, overlooked, or misdiagnosed by health care professionals. “And because many older adults are on medications, they have a higher risk of possible drug interactions,” says Dr. Reynolds.

“Depression erodes quality of life, productivity, and the ability to have fulfilling relationships,” he continues. “Untreated, late-life depression puts older adults at risk for significant declines in their mental and physical health. It can be so debilitating that it threatens their ability to live independently.”

Dr. Reynolds summarizes the ACISR/LLMD’s decades of research on the treatment and prevention of depression among older adults around three distinct themes.

#### [Theme #1: The importance of maintaining treatment.](#)

“I tell my patients that simply getting well isn’t good enough — it’s staying well,” says Dr. Reynolds. Over the last several decades, the ACISR/LLMD’s research has confirmed the value of combining long-term use of antidepressants with certain types of psychotherapies in treating depression in older adults. “Our long-term follow-up studies show a 20 to 25 percent improvement over an eight- or nine-year period,” he says.

The ACISR/LLMD also led the country’s largest NIMH-funded multisite study of treatment-resistant depression in older adults. “That study demonstrated that the addition of a second prescription with the primary antidepressant can help address this very difficult challenge,” says Dr. Reynolds. The ACISR/LLMD is continuing its work on treating resistant depression through a major new 5-year, multistate study, now underway, funded by the Patient-Centered Outcomes Research Institute (PCORI).

#### [Theme #2: The importance of treating depression in the primary care setting.](#)

As America ages, the need for mental health care is growing. But with fewer than 2,000 geriatric psychiatrists in the country, that treatment must be

delivered by other health care professionals who care for older adults.

“We’re strongly committed to taking the evidence we’ve collected on caring for depression and importing it to the world of primary care,” says Dr. Reynolds. “We know that older adults who do seek help for depression do so with their primary care doctors. They’re a trusted and convenient source of care. According to Dr. Reynolds, the evidence is clear that depression care can be effectively transferred to primary care doctors. “We see reductions in both depression and in suicidal ideation, which is a major mental health problem in the United States,” he says.

Additionally, because primary care doctors are at the frontline of care, they can be instrumental in identifying at-risk patients to help prevent depression.

#### [Theme #3: The importance of preventing depression in at-risk older adults](#)

Over the last five years, the ACISR/LLMD has studied older adults who are at greater risk of depression, including those who are:

- medically frail
- experiencing limited mobility due to osteoarthritis and related issues
- facing mild cognitive impairment

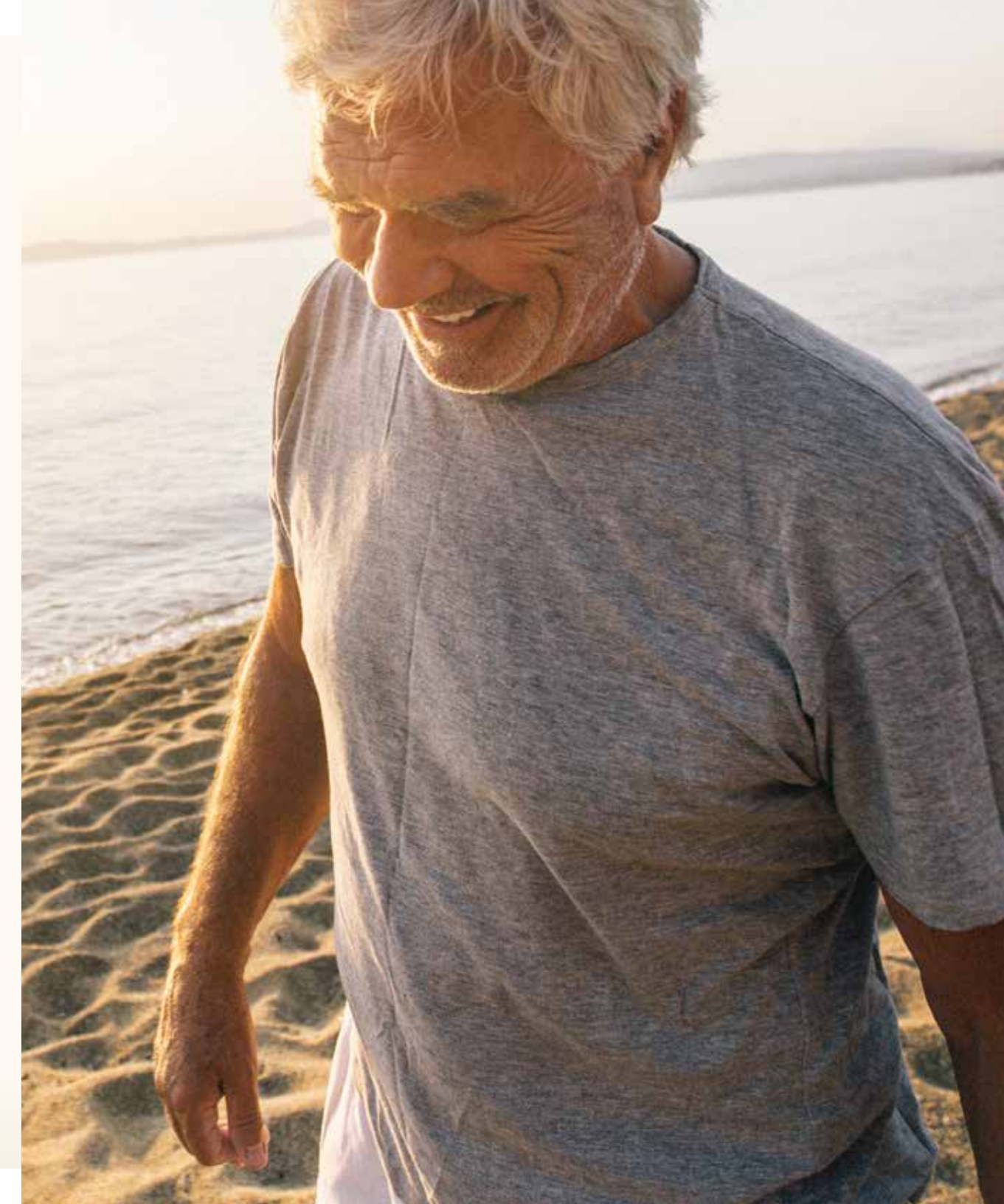
“Because there are simply not enough geriatric professionals in the health care system to treat older

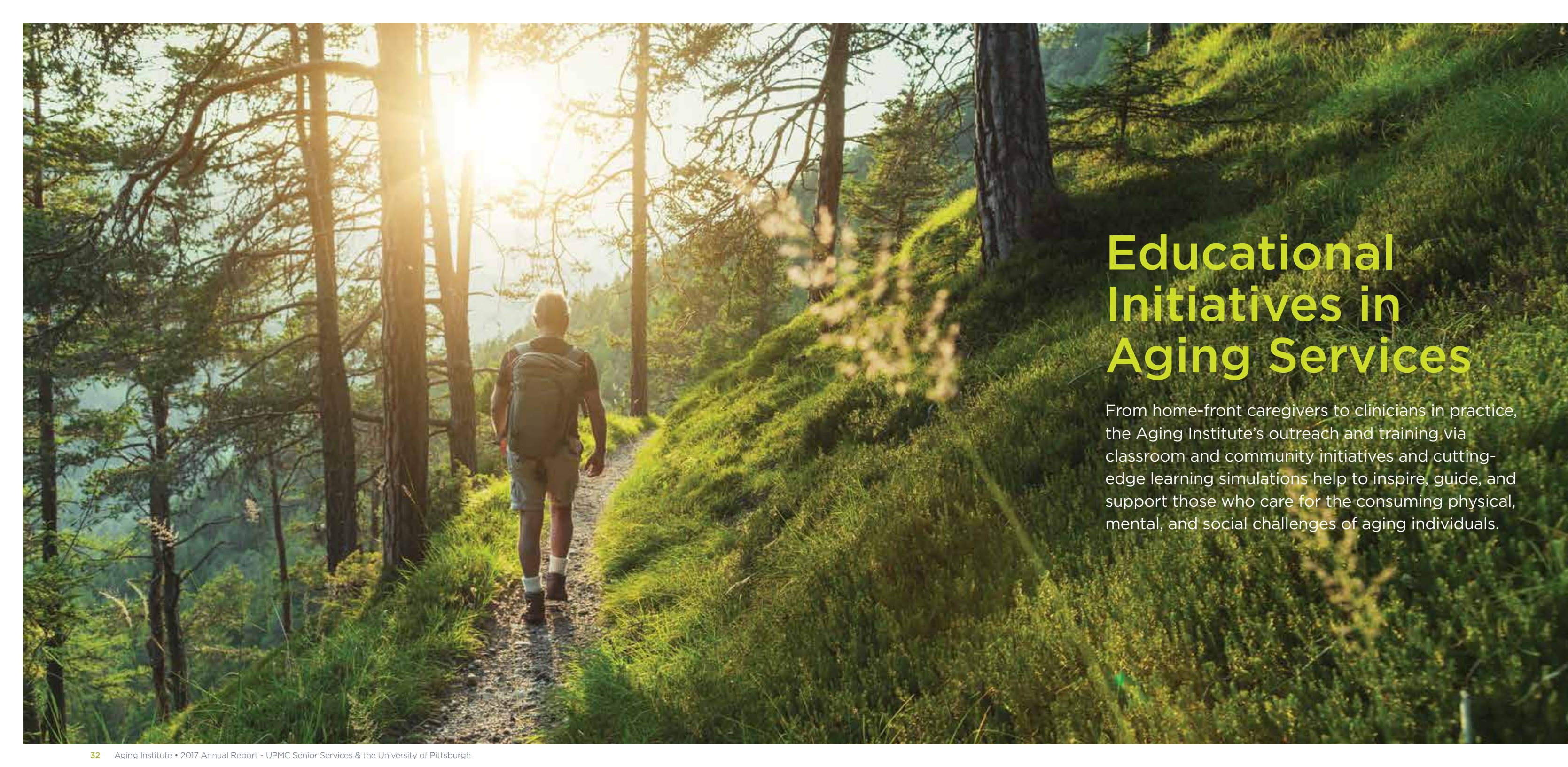
adults with significant depression, a central part of our strategy at the ACISR/LLMD is a focus on prevention, particularly among at risk-groups,” says Dr. Reynolds. “Long-term treatment strategies can help prevent its recurrence; equally important, it can delay dementia in depressed patients with mild cognitive impairment.”

#### [Complicated Grief](#)

The ACISR/LLMD was a participating site in a pioneering study of complicated grief, a condition in which individuals become “stuck” in the grieving process after the death of a loved one. The four-year, multisite collaborative study, led by **M. Katherine Shear, MD**, of Columbia University, undertook what was believed to be the first placebo-controlled randomized clinical trial to evaluate the effectiveness of antidepressant pharmacotherapy, with and without complicated grief therapy, in the treatment of complicated grief.

“We learned that the overall characteristics of complicated grief are similar among people of all age ranges, from young to old,” says Dr. Reynolds. “And while our study demonstrated that people with prolonged grief benefit from complicated grief therapy for a more meaningful life, the combination of both therapy and medication is best for optimal treatment.”



A photograph of a person with a backpack walking away on a dirt path through a sunlit forest. The sun is low in the sky, creating a warm, golden glow and long shadows. The path is surrounded by tall trees and lush greenery.

## Educational Initiatives in Aging Services

From home-front caregivers to clinicians in practice, the Aging Institute's outreach and training via classroom and community initiatives and cutting-edge learning simulations help to inspire, guide, and support those who care for the consuming physical, mental, and social challenges of aging individuals.

### WISER Geriatric Simulation:

#### Critical Thinking Skills in Caring for Older Adults

After a year in development, a geriatric simulation program developed by the Aging Institute and the Peter M. Winter Institute for Simulation Education and Research (WISER) was launched in late 2016.

The newly designed course from the Aging Institute, "**Critical Thinking Skills in Caring for Older Adults,**" provides interactive training and practice in handling medical situations on a "simulated patient" in a safe, hands-on environment. UPMC Health Plan case managers took part in the first classes held last December, while nurses from Magee-Womens Hospital of UPMC underwent training in February 2017.

"Older adults represent the core patients of health care institutions, and they bring complex and chronic health conditions to our hospitals," says **Betty Robison, MSN, RN-BC**, the Aging Institute's gerontology educator. "The critical thinking skills of nurses are put to the test daily by this important patient population. If they're to promote the best possible health outcomes, nurses need to be ready to quickly assess and analyze competing, and often multiple, geriatric syndromes."

The program features two hours of simulation with two scenarios presented — a patient with hospital induced delirium and a patient with delirium superimposed on dementia. The simulations are followed by lectures and discussion. Joining Ms. Robison as a co-instructor for the WISER training was **Nancy Keller, MSN, MS, RN**, post-acute hospital RN liaison.

“We use simulated mannequins and a live “patient” to give staff actual hands-on experience in working with older adults. It’s a terrific way to deliver education — very interesting and interactive,” says Ms. Robison.

Assessments conducted before and after each simulation showed a dramatic increase in the ability to detect delirium in patients. “We saw a profound increase in their levels of confidence and sense of competency,” notes Ms. Robison. We expected to see some degree of improvement among some staff, but not across the board — and certainly not at the dramatic levels we saw.”

Accredited by the Society for Simulation in Healthcare, WISER courses are eligible for continuing education credits. The initial courses were held at the main WISER facility on McKee Place in Oakland, Pittsburgh. Additional courses will be offered in 2017-18 to UPMC Passavant nursing staff at the WISER satellite site located at the hospital’s McCandless campus.

### Ageless Wisdom™ and the Train the Trainers Program

Awareness of the physical challenges that come with aging is the focus of the Aging Institute’s geriatric sensitivity training program, **Ageless Wisdom**.



Participants experience aging through exercises designed to simulate what it’s like to handle everyday tasks while dealing with such age-related changes as vision and hearing loss, mobility, and balance issues.

The UPMC Health Plan would like to have all staff participate in sensitivity training. In 2017, 15 Health Plan staff members began that process by taking part in the **Ageless Wisdom Train the Trainer** program. As certified trainers, they will now conduct sensitivity training classes for other Health Plan employees.

### Successful Techniques in the Search and Rescue of Persons With Dementia

In August 2017, the Aging Institute and the University of Pittsburgh teamed up to present a special day of training for EMS workers, police and fire departments,

and social workers to help them search for older adults with dementia who wander away.

Held at Cumberland Woods Village, the event — **Lost Person Behavior: Strategies for Searching for an Individual with Dementia** — featured speaker Robert J. Koester, PhD, an internationally renowned expert in search and rescue. A member of the Appalachian Search and Rescue Conference since 1981, Dr. Koester has also worked for the U.S. Coast Guard, NASA, the National Park Service, and Federal Emergency Management Agency.

He is the author of numerous books and articles on search and rescue. The Aging Institute’s Wandering Assessment Form — made available through its educational program **Lost: When Wandering Turns Dangerous** — is based on his books.

In a separate event, the Aging Institute presented an educational program on how to approach an older patient who is confused to members of the **EMMCO West (Emergency Medical Management Cooperative)** in Meadville. Seventy-five people attended the program.

### Other Collaborative Education Programs Offered by the Aging Institute

The Aging Institute is proud of its community partnerships and collaborative efforts with the region’s leaders in health care, research, and higher education, including:

- In October 2016, the Aging Institute hosted a half-day program at **UPMC Hamot** focused on **brain health, dementia, and delirium**. The 66 participants included nurses, social workers, and area home health care staff. The event provided an update on Alzheimer’s disease and information on delirium and the impact of medication on older adults.
- **The Aging Brain** was the featured topic in an Aging Institute presentation in May 2017 to the **Pennsylvania Assisted Living Association** at the UPMC Cumberland Woods Village Conference Center in Allison Park. The “lunch and learn” event was teleconferenced to members throughout the state. The nonprofit trade association represents personal care homes and assisted living residences

## Ongoing Training and Outreach Programs

Throughout the year, the Aging Institute offers a variety of other educational and training opportunities for physicians, nurses, other health care professionals, health care educators, caregivers, and the general public. They include:

- **Ageless Wisdom™ Interactive Geriatric Sensitivity Training Program**
- **Ageless Wisdom™ Train the Trainer Program**
- **Critical Thinking Skills in Caring for Older Adults**
- **INSPIRE for Advanced Caregiving (Inspiring New Solutions and Providing Individualized Resources and Education)**
- **Graduate Certificate in Gerontology (through the University of Pittsburgh)**
- **Gerontology Certificate Program for Nurse Aides and Nurses**
- **Gerontology Certification Review Courses for RNs and LPNs**
- **Gerontology Concentration, Health Career Scholars Academy for High School Students**
- **LINKS: Lessons to Inspire Networking with Kids and Seniors**
- **Lost: When Wandering Turns Dangerous**

For details on these and other programs — or to request a presentation or training program — visit the Aging Institute’s website at **Aging.UPMC.com** or call **1 866 430 8742**.

operated by small owners, as well as large state and national corporations.

- In spring 2017, two presentations on **brain health and normal and abnormal aging** were made at the **Greater Washington County Food Bank's** Healthy Habits Training Center.
- Also in 2017, a **two-day training program** was conducted to familiarize nurses at **UPMC Community Life** with issues involved in caring for older adults. The nonprofit program provides all-inclusive care for the elderly focused on supporting them to remain at home while preserving their dignity, independence, and quality of life. A similar program was conducted in July 2016 for **Mon Yough Community Services**.
- The Aging Institute hosted its **Annual Education Conference** at Magee-Womens Hospital of UPMC in July 2017. The half-day program, which featured a new clinical emphasis, addressed venous thromboembolism in older adults, sepsis in aging, stroke protocol, and the management of chronic obstructive pulmonary disease. Presenters were nursing professionals representing Magee, UPMC St. Margaret and UPMC McKeesport.
- In July 2017, the Aging Institute launched a new training program — **Caring for the "ME" in Dementia** — for 300 employees of **Redstone**

- **Highlands** in Westmoreland County. Conducted over an 8-day period, the 6-hour dementia program included techniques for dealing with difficult families as well as patients.
- In May 2017, Betty Robison presented an **educational program on caring for those with dementia** to members of **VOICE** (Voice of Inspired Change for Elders in Pennsylvania). The interactive program was broadcast via live teleconferencing to 22 long-term care facilities statewide. Formerly known as the Pennsylvania Culture Change Coalition, the organization strives to empower the state's elders, and their care partners, to make informed choices.

### Gerontology Scholarship Winners

Engaged and informed professionals in virtually every field of endeavor are needed in the workplace and community to help advocate for and serve the unique needs of older adults. To address that need at UPMC, the Aging Institute encourages full-time employees to develop a greater insight and understanding of aging by awarding two \$2,500 scholarships toward studies at the University of Pittsburgh's Graduate Certificate in Gerontology Program. The interdisciplinary studies certificate — offered by the Center for Social and Urban Research and the College of General Studies — enables UPMC staff members to tailor their studies for meaningful and innovative

application to their daily work. Past participants have included employees representing such areas as nursing, communications, human resources, physical medicine and rehabilitation, and provider services.

#### Nicole Fedeli-Turiano

Director, Public Policy and Government Relations  
UPMC Community Provider Services

**"To know that we know what we know, and to know that we do not know what we do not know — that is true knowledge."**

— *Nicolaus Copernicus*



Nicole Fedeli-Turiano works hard to establish the value proposition of UPMC's post-acute and community services division with state and federal lawmakers and policy influencers. She's very aware how critical it is for her to make a compelling case to those constituencies, particularly in today's unpredictable political and health care environment. "Helping to preserve the integrity of

programs like the Medicare Home Health and Hospice benefits and champion new legislation to promote services that are vital to 'aging in place' are key parts of my job," she says.

Conversely, her work also entails working with geriatricians, physicians, clinical nurse specialists, supportive care staff, and social workers throughout UPMC. "Knowing how to present current issues to them in a meaningful way and how to be an effective advocate for them are equally important parts of my responsibilities," says Ms. Fedeli-Turiano.

Inspired by the words of Copernicus, she applied for the Aging Institute's Graduate Certificate in Gerontology Scholarship. "That quote captures the essence of why I felt the need to return to the classroom after a two-decade absence," she says. "There's much to be said about the value of learning from experience, but I knew that the courses offered through this certificate program would give me a firmer understanding of the core issues in aging and help me build a stronger case for good health policy in my daily work."

Enrolled since September 2016, Ms. Fedeli-Turiano says that "the lessons I'm learning affirm the values of healthy living that my parents and grandparents have long embraced. This experience is giving me a richer insight into and understanding of what we can do as a

health care system and community to make these values a reality."

#### Amy Kowinsky

Improvement Specialist

Donald D. Wolff Jr. Center for Quality, Safety, and Innovation at UPMC

**"Dementia is a heartbreaking disease. I want to improve the quality of life not only of people with dementia, but their caregivers, too."**



Amy Kowinsky knows first hand what it's like to care for an aging family member. She helped her parents care for their mothers as their health declined — both dying within six weeks of each other.

"As my family was going through this, I found myself thinking that aging does not have to look like this," says Ms. Kowinsky, who is now pursuing a graduate certificate in gerontology as a scholarship recipient from the Aging Institute.

And though she initially worried about taking on another major commitment in her life, Ms. Kowinsky has found her studies to be surprisingly doable. "I had always thought about further education, but made the commitment to pursue the certificate in gerontology while going through the experience with my grandmothers," she says. "This has been a wonderful experience, and I'm putting the lessons I learn to practical use at work every day."

Now in her final semester of study, Ms. Kowinsky — a dietitian by training — says her class in Prevention and Healthy Aging especially resonated with her. Its goals include translating evidence-based strategies into community outreach services that can help prevent or delay common conditions of aging and emphasizing the importance of healthy behaviors throughout the life span.

"I wish I had known what I know now when my grandmothers were ill," she says. Ms. Kowinsky already has put her knowledge to work through UPMC projects aimed at preventing delirium in hospitalized patients, including those already diagnosed with dementia. "I'm painfully aware of how health care can fail people. On a personal level, this program is giving me a broader understanding of the issues so I can make a difference in what I do."

## 2017 Health Careers Scholars Academy

Encouraging tomorrow's caring geriatric professionals

Every summer, the Aging Institute participates in the **Health Careers Scholars Academy** — a unique program offered to gifted high school students statewide by the University of Pittsburgh.



These bright teenagers come together to examine critical issues and emerging career opportunities in health care. Students who choose the geriatrics concentration are offered an in-depth look at geriatrics and aging by staff and board members of the Aging Institute, featuring some of the field's leading researchers and clinicians.

During various sessions, students explore healthy aging and important issues such as chronic pain and mood

disorders, falls and difficulty walking, memory problems and dementia, and other complex health problems affecting the elderly. They also gain an understanding of the challenges of aging through hands-on exercises that demonstrate the impact of vision and hearing loss, arthritis, and other forms of disability.

The 2017 program was held June 25 to July 17. Associate Director **Neil Resnick, MD**, talked to students about opportunities in geriatric medicine. Gerontology Educator **Betty Robison, MSN, RN-BC**, led a session on mental status changes while Board Member **Michael Boninger, MD**, director of the UPMC Rehabilitation Institute, teamed up with Jan Scheuermann, who is a quadriplegic, to demonstrate brain computer interface technology.

Other Aging Institute staff and board members presenting at the academy included Aging and Disability Coordinator **Ronnie Edwards, MSW, LSW**, who led sessions on senior living options and the importance of psychosocial assessments; and **Judy Cameron, PhD**, professor of psychiatry and chair of the Institute's Healthy Brain Aging Workgroup, who provided highlights of the Workgroup's research on the relationship between physical activity and brain health.

Other presenters and topics included **Sandra Gilmore, RN**, geriatric outreach nurse, and **Eve McConnell**, geriatric social worker, who discussed aging in place; **Amy Martello**, therapeutic services

coordinator at Animal Friends, who talked about the organization's pet therapy program; **Edward Cheppa, DMD**, who spoke about career opportunities in geriatric dentistry; and **Ashli Molinero, DSc**, director of the UPMC Disabilities Resource Center, who talked about adaptive sports and disability awareness.

## Mini-Fellowships in Geriatric Mental Health

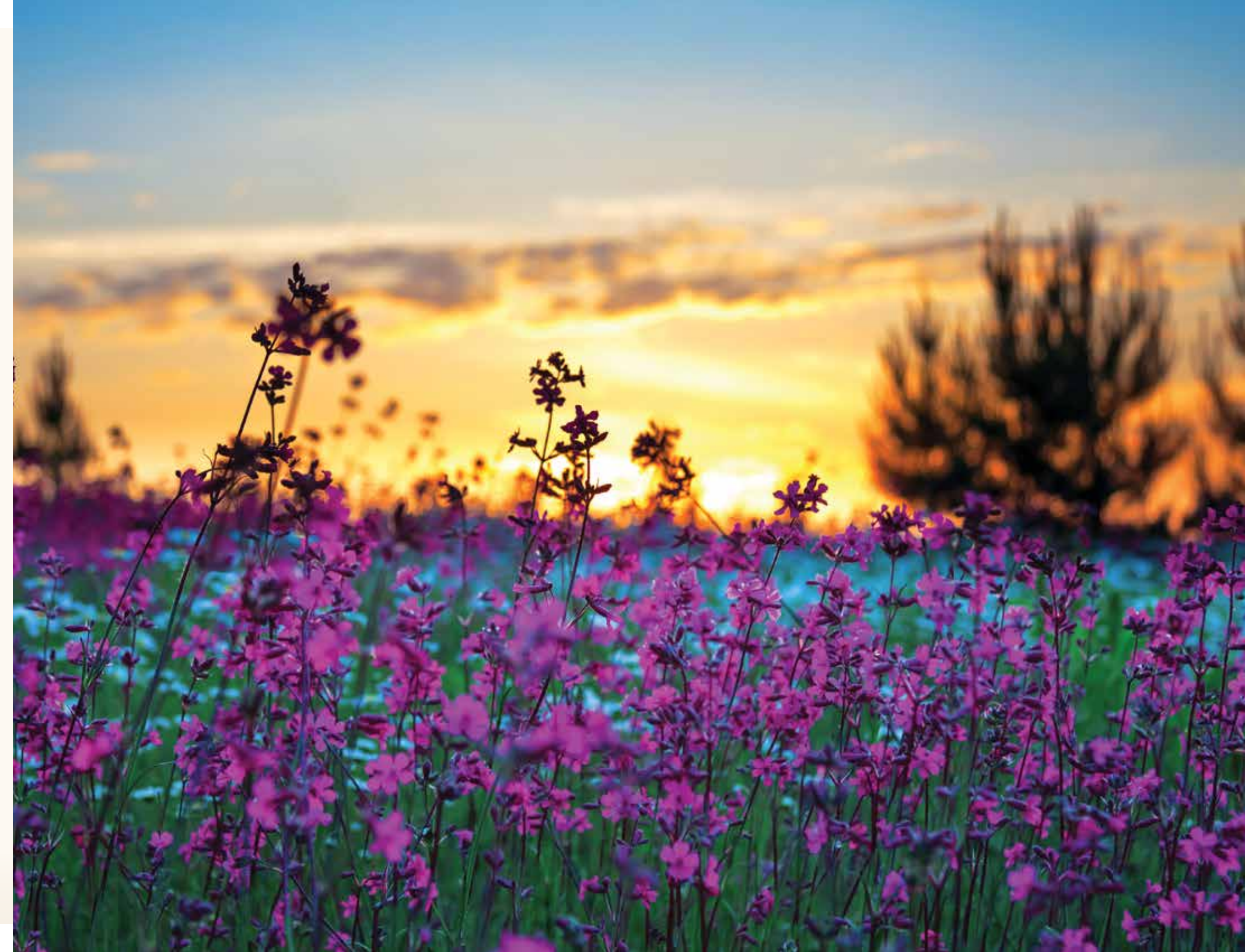
Addressing the Shortage of Professionals Trained in Geriatric Mental Health

There is a growing shortage of mental health professionals available to provide services to older adults — a situation that will become more dire as increasing numbers of baby boomers join the ranks of the 65 plus.



"The tsunami is coming," says **LalithKumar K. Solai, MD**, service chief and medical director of geriatric psychiatry at Western Psychiatric Institute and Clinic of UPMC and associate professor of psychiatry at the University of Pittsburgh. "And we are not ready to deal with its occurrence."

To better prepare the next generation of health care providers for the challenges that face them, Dr. Solai



leads the University of Pittsburgh's Geriatric Mental Health Mini-Fellowship program. Offered once a year through funding from the John A. Hartford Foundation, this inter-professional training program brings together advanced graduate students and residents in nursing, rehabilitation, pharmacy, social work, and family medicine to introduce them to fundamental late-life mental health issues.

The mini-fellowship has three key objectives for its trainees:

- Improve their **understanding of the roles other disciplines play** in caring for elderly with mental health problems
- Improve their **knowledge of geriatric mental health** and **increase their comfort level** in working with older adults
- Increase their **awareness of geriatric mental health issues**

"As a geriatric psychiatrist, I don't work alone," explains Dr. Solai. "I'm part of a larger, critical team involving social workers, physical therapists, pharmacists, nurses, and primary care physicians. This program tries to emulate that kind of inter-professional collaboration across the health care disciplines that is so crucial for patients."

Training is provided by faculty from the University of Pittsburgh's Schools of Health Sciences — including pharmacy, psychiatry, nursing, medicine, and health and rehabilitation.

Since it began in 2014, 80 residents and advanced graduate students have completed the program. Now offered in an intense five-day format, the mini-fellowship features:

- One day on normal aging and the roles of each discipline
- Three days focusing on delirium, depression, and dementia
- One day on palliative care

"In this timeframe, we certainly can't teach students everything they need to know, but we can help them better recognize mental health conditions in older adults, understand the role of other disciplines in caring for them, and know where to get help," says Dr. Solai.

**"This program is extremely relevant — it's about living and practicing medicine. I work with pharmacists, RNs, therapists, and social workers on a daily basis. I learned how to better understand the motivations of my other team members, how to break down barriers, and the importance of good communication."** *Mini-Fellowship Participant*

### On the Frontline of Outreach

Immersing social work students in the challenges and triumphs of aging through hands-on field experiences.

As an extension of its commitment to educate the next generation of geriatric professionals, the Aging

Institute — and its partners in UPMC Senior Services and UPMC Community Provider Services — work with the University of Pittsburgh School of Social Work to connect undergraduate and graduate social work students to a wide variety of experiences working with older adults.

"We're committed to helping provide a full picture of what aging looks like in our community — from assisted living to healthy aging in place at home," says **Rick Morycz, PhD**, a member of the Aging Institute's board of directors and associate professor of psychiatry, medicine, and social work at the University of Pittsburgh, who served as gerontology consultant when the Hartford Fellowship was created.



And before students ever leave the classroom, **Beth Mulvaney, MSW**, a faculty lecturer, has been trained to teach the Aging Institute's Ageless Wisdom sensitivity course to help break down aging stereotypes and introduce students to the unique physical changes older adults face.

Social work field experience placements with UPMC include:

- Aging Institute of UPMC Senior Services and the University of Pittsburgh
- Community Life — East End, Homestead, McKeesport and Tarentum
- UPMC Benedum Geriatric Center
- UPMC Canterbury Place
- UPMC Heritage Place
- UPMC Palliative and Supportive Institute
- UPMC Senior Services Living-at-Home Program
- Western Psychiatric Institute and Clinic of UPMC — Geriatric Inpatient Unit

### Social Work and Geriatrics: A Partnership

**Amy DeGurian, MSW**, field education coordinator for the University of Pittsburgh School of Social Work, has a message for anyone considering a career in social work. If you don't think you'll work with older adults — think again.



By 2030, one out of every five Americans will be over the age of 65. The rising number of aging baby boomers is creating a growing demand for professionals who can understand and address the distinct social, environmental, and personal needs of people as they age.

According to Ms. DeGurian, about 12 percent of the school's 200 students plan to specialize as geriatric social workers. But the reality is, approximately 75 percent of all graduates will work with older adults, usually within their first five years of graduation.

Given the demographics, the school is working hard to ensure all its students have some exposure to geriatric training, particularly in terms of hands-on experiences. "It's important that every social worker understands and appreciates the unique circumstances of older adults," says Ms. DeGurian.

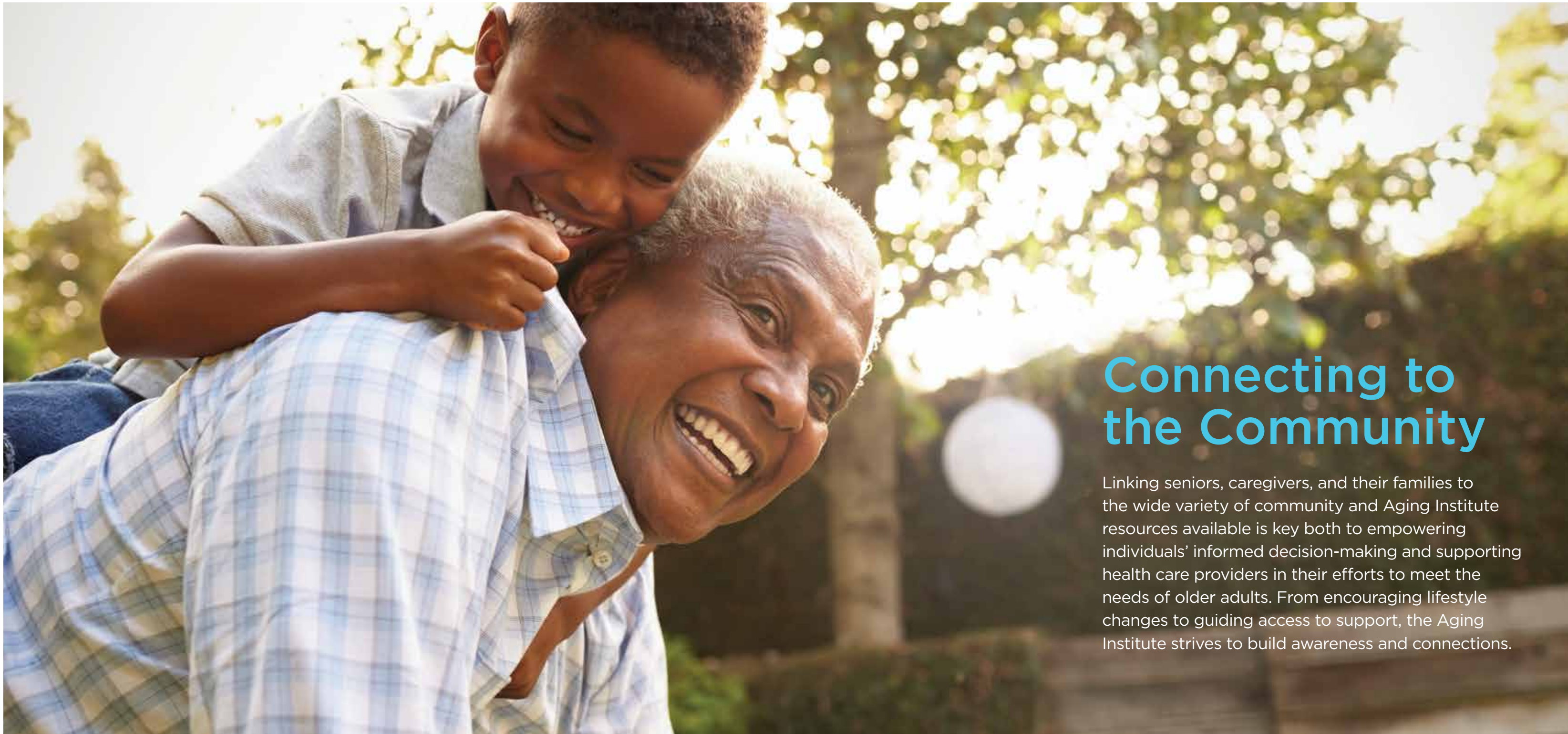
The School of Social Work offers a variety of geriatric training options:

- Students who plan to focus on geriatrics are strongly encouraged to pursue a geriatric fellowship through the **Hartford Partnership Program for Aging Education**. Offered to both graduate and undergraduate students, the program provides a rich educational program designed to enhance both direct practice and leadership skills in gerontology. Hartford fellows rotate through various field

experiences, working with healthy to frail older adults while learning first-hand about the breadth of services and diverse needs of the aging population. Additionally, fellows gain valuable experience working together on a community enhancement project.

- Students pursuing a Master of Social Work (MSW) can add to their professional credentials by pursuing a **Gerontology Certificate**, which requires an additional 12 credits in geriatrics-related courses. Certificate requirements also include a geriatric-focused, 720-hour field experience.
- All MSW students are, at minimum, encouraged to take at least one elective in an aging-related course.

"Our students need to be prepared; they need to have a level of understanding and fluency in the field — to understand the language, the issues, the concerns facing older adults. We want them to be able to stand in that place of helping others with understanding and compassion," says Ms. DeGurian. "They emerge from their field experiences with not only with a greater understanding of the role of social work in the field of gerontology, and also of value of life and the meaning of human existence."



## Connecting to the Community

Linking seniors, caregivers, and their families to the wide variety of community and Aging Institute resources available is key both to empowering individuals' informed decision-making and supporting health care providers in their efforts to meet the needs of older adults. From encouraging lifestyle changes to guiding access to support, the Aging Institute strives to build awareness and connections.

### MOVE UP: The Mobility and Vitality Lifestyle Program

Helping seniors lead healthier lives through exercise and diet

Older adults involved at the Aging Institute at UPMC McKeesport are currently participating in a nationwide study led by epidemiologist

**Anne B. Newman, MD, MPH**, a long-time Institute board member who has dedicated her life's research and clinical practice to advancing our understanding of the medical, behavioral and genetic factors that influence healthy aging.



It was only natural for Dr. Newman, professor and chair of epidemiology at the University of Pittsburgh School of Public Health, to involve McKeesport in this national research effort: a number of her past research projects have studied that community's large aging population.

**MOVE UP: A Mobility and Vitality Lifestyle Program** is a community-based lifestyle research study of the University of Pittsburgh Center for Aging and Population Health's Prevention Research Center (PRC), funded by the Centers for Disease Control and Prevention (CDC). Dr. Newman is the primary investigator for the multi-year, interdisciplinary study, with added support from University of Pittsburgh co-investigators **Steven M. Albert, PhD, MS**, chair of Community and Behavioral Health Science in the Graduate School of Public Health; **John M. Jakicic, PhD**, chair of the Department of Health and Physical Activity; **Lora Burke, PhD, MPH, RN, FAAN**, professor of nursing and epidemiology in the School of Nursing; and **Janice C. Zgibor, RPh, PhD**, former associate professor of epidemiology (now at the University of South Florida).



Pittsburgh is one of 26 PRCs nationwide participating in the MOVE UP program and the only one aimed at helping older adults lose weight through a more active and healthy lifestyle. UPMC McKeesport — as well as UPMC independent living community Vanadium Woods — is among 26 area locations participating in the program.

Participants are between the ages of 60 and 75, with a body mass index between 27 and 45. The program targets weight loss and maintenance through healthy eating habits, behavior modification, and self-directed, moderate-intensity physical activity (usually walking) that builds in small increments to 175 minutes a week.

Dr. Newman finds herself especially optimistic about this study's findings and lasting impact.

"In talking with older adults on previous research projects, we expected to learn that falls were their

top health concern, but surprisingly, they told us that mobility is the greatest threat to their independence," says Dr. Newman, "Obesity not only threatens mobility directly, but indirectly too, through chronic diseases such as arthritis, high blood pressure, and diabetes. This project is targeting both mobility and weight loss."

Dr. Newman believes that the most essential element is MOVE UP's use of community health workers as group leaders and lifestyle coaches. Each receives training on nutrition, exercise, healthy lifestyle habits and more, and is supervised and supported by faculty and staff. "These individuals know, understand and care about the communities in which they're working," she says. "Their involvement puts a personal face to this project."

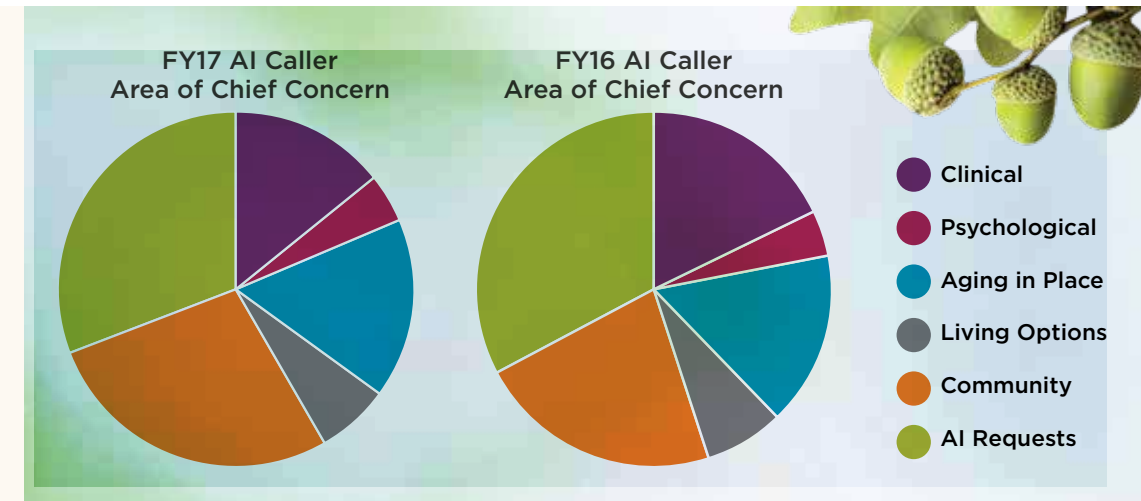
And while the study is still in progress, early indicators of both weight loss and participation are promising. "Among our first group of participants, engagement at meetings typically ranged from 80 to 90 percent, which is an extremely impressive rate," says Dr. Newman. "And while long-term participation isn't part of the study, many of the groups are remaining involved through their community sites."

### The Aging Institute Help and Referral Line

"Being a caregiver, although rewarding, can be overwhelming, exhausting, and challenging work," says **Ronnie Edwards, MSW, LSW**, aging and disability coordinator. "The Aging Institute's Help and Referral Line is a valuable resource on aging issues for the entire community that's being utilized more and more as older adults choose to age in place."

**"There are honestly so many reasons why I really enjoy being a community health worker. I'd say the main reason is because of the positive effect the program I am delivering has on the participants. They've expressed to me on numerous occasions how transformed they are becoming through the program, and it is such an amazing feeling, knowing you played such a role."**

*MOVE UP Community Health Worker  
Thelma Lovette YMCA, The Hill District*

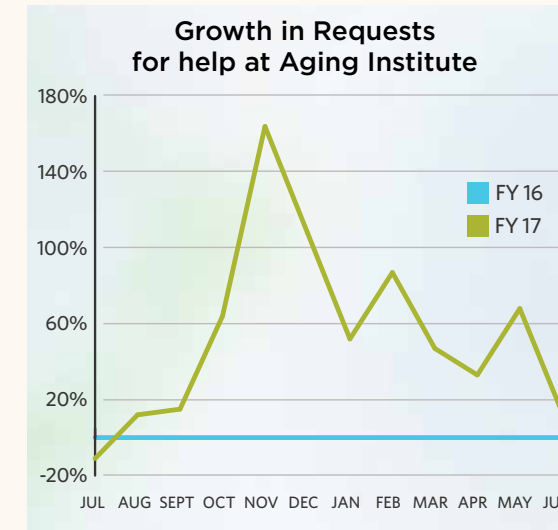


### Who's Calling?

In 2016-17, callers included a mix of caregivers, older adults, their family members, and the medical professionals who support them. Over the last year, call volume has grown, and efforts were focused on obtaining more specific information about callers. Daybreak, a referral software program, enables Institute staff to collect detailed information, such as the source of the call. "It helps us to identify callers who are caregivers, something important for us to know."

The Help and Referral Line is led by Ms. Edwards, a licensed social worker. "We take great pride in providing callers with a highly professional level of care that's responsive to their needs," she says.

Ms. Edwards remembers one caller whose husband had dementia and refused to leave her side. His behavior made it impossible for her to discuss his condition over the phone. "We came up with a plan



to communicate by email so that she could share openly and we could connect her with the appropriate services and support," says Ms. Edwards. "If we don't have answers at our disposal, we have the connections in the community to get them."

In addition to the telephonic and web-based services of the Institute, the Aging Institute at UPMC McKeesport Resource Center, located right on the hospital campus, serves as a physical location where older adults, caregivers and family members can find the resources and educational programming they need.

### Aging Well and Living Independently

Research shows that the vast majority of older adults want to age in place — to remain in their homes as long as they can — by accessing services that will help them do that comfortably and safely.

As that trend continues to grow, callers to the Aging Institute are becoming interested in different topics. For example, over 30 percent of calls received last year were for transportation-related services, geriatric medical care, in-home support, and education and training opportunities.

For the Aging Institute's help line professionals, taking the time to talk with people and learn about their particular situation is the first step in linking them with resources and options to best serve their needs. "Our focus is on results, not call volume," says Ms. Edwards. "We're able to support the people who call the help line because of the strong relationships we've forged with a wide range of health care providers and community agencies and organizations."





#### A Call Away from a Helping Hand

**Anne Immekus**, a major gifts officer with the University of Pittsburgh and UPMC's Medical and Health Sciences Foundation, has one word to describe her septuagenarian cousin: positive.



"She has a wonderful outlook and has refused to be limited by a terrible accident that happened in her mid-30s, when a young student driver hit her as she was walking home," says Ms. Immekus. "She nearly died and spent a month in intensive care. But ever since, she's lived her life with independence, strength, and grace."

"I have pain every day — always have," her cousin once confided to Ms. Immekus. "The question is: how much." To help with her pain, she's had both hips replaced, as well as a knee replacement.

"But on Thanksgiving Day in 2016,... she fell in her basement and it triggered a different level of pain — one that was excruciating and relentless," says Ms. Immekus.

Because of her work with UPMC, Ms. Immekus was aware of the Aging Institute through a former colleague in her office. "But I really didn't know the extent of its resources until I emailed them for suggestions on how I might help my cousin," she says.

**Ronnie Edwards, MSW, LSW**, coordinator of the Institute's Help and Referral Line, immediately contacted Ms. Immekus. "She asked me all the right questions to help me reach the answers I needed and even linked me with sources I should contact within the larger community," recalls Ms. Immekus. "She was so knowledgeable and compassionate. I have to admit I felt more optimistic after just talking with Ronnie."

Ms. Edwards also armed her with "a host of very comprehensive and helpful materials for me to share with my cousin, as well as details on services offered through her insurance provider.

Ultimately, Ms. Immekus secured an appointment with a pain specialist in the University of Pittsburgh Division of Geriatric Medicine to help get her cousin on the road to recovery. "I was extremely impressed by the help the Aging Institute offered. Its focus was always on the best interests of the person and family."

#### Alcohol, Medication, and Older Adults

According to the National Institute on Alcohol Abuse and Alcoholism, approximately 40 percent of people ages 65 and older drink alcohol. That behavior can cause serious problems for older adults, whose

drinking can exacerbate existing health problems or lead to dangerous interactions with their medications.

From 2015 to January 2017, UPMC Senior Services partnered with researchers at the University of Pittsburgh School of Nursing to conduct "Alcohol, Meds, and Me" educational sessions for residents at these senior living facilities and community agencies:

- Shady Park Place
- Cumberland Woods Village
- I.W. Abel Place Apartments
- Avenue Apartments
- Rankin Christian Center
- Allentown Senior Center
- Legacy Apartments

**Deborah S. Brodine**, president of UPMC Community Provider Services, said the project offered an opportunity to partner with the School of Nursing on an important issue facing older adults. Designed as a wellness and preventive risk reduction program, the sessions provided participants with recommended drinking guidelines for those 65 and over, plus information on commonly used prescription and over-the-counter medicines that interact with alcohol.

The initiative was an extension of a much larger School of Nursing study led by **Ann Mitchell, PhD, RN, FAAN**, professor of nursing and psychiatry. The study was designed to provide nurses and nurse practitioners with the skills needed to help patients who are at risk

for substance abuse using screening, brief intervention, and referral to treatment (SBIRT) techniques.

“We appreciated this opportunity to go into the senior communities and learn more about this group,” says Dr. Mitchell. “It added to our goal of teaching nurses how to begin that important conversation with patients.” Dual funding for the project was provided by the Centers for Disease Control (CDC) and the Substance Abuse and Mental Health Services Administration (SAMHSA).

### Supporting Caregivers at Work

In recent years, the Aging Institute has embarked upon numerous initiatives aimed at helping caregivers. It is now helping to apply the knowledge it has gained in those efforts by supporting United Way of Southwestern Pennsylvania’s **United for Caregivers@Work**. The program’s goal is to change workplace culture to provide a more supportive environment for employees working a “second shift,” caring for older loved ones in their off hours.

Workplaces commonly offer flexible hours and support for new parents. Those benefits aren’t always as available for workers with caregiving responsibilities for aging spouses, parents, and siblings. According to AARP, nearly 60 percent of family caregivers helping older adults work full or part-time.



“Three of every four seniors who get help in their daily lives at home only get that support from family caregivers,” says **Heather Sedlacko**, director of United Way’s Programs for Seniors and People

with Disabilities. “As a community, we need to support these caregivers in every way possible — and that starts in the workplace.”

The financial impact of the services caregivers provide cannot be underestimated, Ms. Sedlacko adds. “The combined value of their contributions is bigger than the entire Medicare budget.”

In 2016, UPMC joined Deloitte LLP Pittsburgh in signing on for United Way’s **United for Caregivers@Work**, an initiative to help companies strategize about ways to meet the needs and challenges of their employees who care for older loved ones.

Lisa Bonacci, who retired in April 2017 as UPMC vice president of human resources, served on United Way’s United for Caregivers committee before her departure, and helped to spearhead the pilot program at UPMC. Its goal is to reshape the perception of caregiving and increase support for working caregivers.

“When you have a baby, everybody celebrates. But when you’re caring for an older adult, no one talks about it,” she says. “We want employees to come to the workplace and not be ashamed to identify as caregivers. And we want family caregivers to know where to turn when they need help.” She knew from first-hand experience: her own father became ill and passed away during her involvement in setting up the program.

The Aging Institute participated on a team of UPMC representatives from human resources, LifeSolutions, aging and disabilities services, and corporate communications to survey employees in order to identify caregivers and their issues and address their needs.

“As the team looked into the employee experience, it became clear that our managers needed and wanted training and education, tools and resources, and communication support,” says **Christal Morris, EdD**, vice president for human resources, international and corporate at UPMC, who is now championing the project’s implementation with **Sharon Czyzewski, MS**, vice president, human resources, UPMC Insurance Services division.

The group also discovered that one of the biggest challenges is getting people to self-identify as caregivers. Based on that information, the team began developing education programs for managers.



It also took several steps aimed at making UPMC a caregiver-friendly work environment, including:

- Compiling a list of caregiver resources available through the University of Pittsburgh, UPMC, and the Aging Institute
- Creating HALO (Helping Aging Loved Ones) — an outreach program for employee caregivers
- Launching a communication plan to promote awareness and provide support tools and ideas
- Organizing a caregiver resource fair
- Training managers to be front-line supporters of their employees caring for older loved ones

“We’re working to change the conversation on caregiving,” says Dr. Morris. “Supporting older adults means supporting the family. We’re not just helping a senior; we’re helping the spouse, son, daughter, grandchild, or even a neighbor who is providing care.”

#### Measuring Success

When United Way first began planning its United for Caregivers@Work initiative, it reached out to the leadership of national organizations for insights on best practices — including **AARP** and **ReACT (Respect A Caregiver’s Time)**, a corporate coalition dedicated to supporting caregivers in the workplace which represents more than 1 million employees. Both AARP and ReACT have made it a priority to pursue a research agenda focused on the needs and issues of caregiving in the workplace.

“One of the attractions of participating in this program is the opportunity UPMC has been given to collaborate with AARP and ReACT on research,” says Dr. Morris. “When we started this project, part of our task was to understand what works and what doesn’t with our 60,000-plus employees. These national organizations are supporting our efforts by giving us access to hard, scientific data and the resources for tracking and analyzing information.”

Data gathered over the three-year program will be measured pre- and post-campaign to analyze the impact of increased employer engagement, flexibility, and a transparent and supportive environment on reducing employee absenteeism and increasing productivity. Ultimately, the project has the potential to be used to establish a national model for caregiver support in the workplace.

#### The Crisis in Family Caregiving: A National Call to Action

*“As a society, we have always depended on family caregivers to provide the lion’s share of long-term services and supports for our elders. Yet the need to recognize and support caregivers is among the most significant overlooked challenges facing the aging U.S. population, their families, and society.”*

*Supporting Family Caregivers of Older Americans*  
A 2016 Report of the National Academy of Medicine of the National Academies of Sciences, Engineering, and Medicine

It’s said that it takes a village to raise a child, but it will take the commitment of a nation to support the growing needs of nearly 18 million caregivers in the United States, whose responsibilities range from helping with the daily tasks of living, like eating, bathing, dressing, and medication management, to care coordination and decision making.

From fall 2014 to spring 2016, **Richard Schulz, PhD**, associate director of the Aging Institute and the distinguished service professor of psychiatry at the University of Pittsburgh School of Medicine, chaired an ad hoc committee of the National Academy of Medicine (formerly the Institute of Medicine) to study family caregiving for older adults. Its findings were sobering.

- More and more people are living longer, and with that extended life span comes increasing physical, social, and cognitive problems for many older adults — particularly the “oldest old.”
- The responsibility of caring for these individuals typically falls to family members — including 8.5 million who help care for older adults with complex medical and self-care needs created by conditions like dementia.
- For most family caregivers, caregiving is neither a short-term obligation nor a choice. The median number of years of family care for older adults with high needs is five years.

- The proportion of older adults who are most likely to need intensive support from family caregivers — those in their 80s and beyond — is projected to climb from 27 percent in 2012 to 37 percent by 2050.
- Although family caregivers are integral to providing care for older adults with disabilities and complex health needs, they are often marginalized or ignored by health care and community providers.
- In addition, providers expect family caregivers with little or no training to handle technical procedures and equipment — such as feeding and drainage tubes, catheters, and tracheostomies — and monitor care.

And the very availability of family caregivers is increasingly threatened by changes in our nation’s social structure, notes Dr. Schulz, “due to the growing number of childless, single, or divorced older adults, adult children who live a far distance away, and the number of women now working full time in the workforce.”

Family caregivers have higher rates of depressive symptoms, anxiety, stress, and emotional difficulties. “Ignoring them leaves them unprepared for the tasks they are expected to perform, bringing significant economic and personal burdens,” says Dr. Schulz. “If the needs of the caregivers are not addressed, we as a society are compromising the well-being of elders. Supporting family caregivers needs to be an integral part of the nation’s collective responsibility for caring for its older adult population.”

Supporting Family Caregivers of Older Americans calls for the creation of a National Family Caregiver Strategy that promotes their wellbeing through the development of policies and practices that make person- and family-centered care a reality. This national strategy should include:

- Measures to adapt the nation’s systems for health care, workplaces, and long-term services and supports to engage family caregivers and support their health, values, and social and economic well-being.
- Efforts to address the needs of an increasingly culturally and ethnically diverse caregiver population.
- Effective mechanisms within Medicare, Medicaid, and the U.S. Department of Veterans Affairs to ensure that family caregivers of older adults are routinely identified, assessed, and supported.
- Provider payment reforms by the Centers for Medicare & Medicaid Services that will motivate providers in engaging family caregivers across all modes of payment and models of care.
- New federal policies to provide economic support for working caregivers.

“Quite simply, there needs to be an extensive and more formal integration of family caregivers in our society,” says Dr. Schulz, “And this need is urgent.”



## Family Caregiving by the Numbers

- 17.7 Million** Number of people serving as caregivers to older loved ones
- 5** The median number of years caring for someone with very high need
- 32%** Caregivers who are themselves older adults
- 41%** Increase in the size of the over 65 population between 2012 and 2030
- \$234 Billion** Congressional Budget Office estimate of the economic value of unpaid family caregiving in 2011

# Celebrating Senior Champions

UPMC Senior Services and the Aging Institute honor extraordinary individuals and organizations who contribute significant time and energy to serving seniors throughout western Pennsylvania. The ninth annual Celebrating Senior Champions event was held on October 19, 2017.

“We are proud to shine a light on three distinguished awardees whose extraordinary and diligent work benefits countless seniors and caregivers in our region. We are a stronger, healthier community for their contributions to the cause of aging well,” says Deborah Brodine, President of UPMC Community Provider Services.

## Grand Champion



**Arthur S. Levine, MD** is honored as the Grand Champion. Dr. Levine became Senior Vice Chancellor for the Health Sciences and Dean of the School of Medicine at the University of Pittsburgh in 1998. He was named the John and Gertrude Petersen Dean of Medicine in 2013. He is also Professor of Medicine and Molecular Genetics in the School of Medicine. Dr. Levine is a driving force of fundamental research into aging processes at the cellular and subcellular levels. His own molecular biology-based laboratory is focused, in part, on the role of DNA damage in promoting premature aging. Additionally,

he continues to have a marked influence upon growing the next generations of scientists and clinicians in geriatrics and gerontology and has elevated the profiles of both the University of Pittsburgh and UPMC.

Dr. Charles F. Reynolds, immediate past director of the Aging Institute, notes that Dr. Levine’s leadership “has proven to be wise and nimble in helping the Schools of the Health Sciences adapt to a rapidly changing environment. There are few, if any, institutions stronger than the University of Pittsburgh and the Medical Center in geriatrics and gerontology.”



## Community Champion

The **Jewish Healthcare Foundation (JHF)** is recognized as the Community Champion. Under the leadership of **Karen Wolk**

**Feinstein, PhD**, President and CEO, JHF and its two operating arms, the Pittsburgh Regional Health Initiative (PRHI) and Health Careers Futures (HCF), perform a unique mix of grant making, research, teaching, coaching, and project management. Together, these entities have become a leading voice in patient safety, healthcare quality, and related workforce issues.

“Having an organization that is laser focused on ensuring patient interests are addressed with dignity and the right to make decisions is a profound gift to a senior population that often reaches advanced years in a position of vulnerability,” says Darryl Ford Williams, Vice President of Content for WQED Multimedia.

## Caregiver Champion



**Eric G. Rodriguez, MD** is our 2017 Caregiver Champion. Dr. Rodriguez is an Associate Professor of Medicine within the University of Pittsburgh’s Division of Geriatrics and serves as a geriatrics medical consultant at the UPMC Senior Care-Benedum Geriatric Center at UPMC Presbyterian/Montefiore Hospital. Additionally, he is the Medical Director for UPMC’s Living-at-Home and Staying-At-Home programs, which support seniors in their desire to age in place, and a Medical Director of Care

Management at UPMC Presbyterian Shadyside.

Dr. Rodriguez has been an internal medicine physician specializing in geriatrics for more than 30 years. His primary expertise is in the care of patients with complex, interacting comorbidity and polypharmacy, especially those suffering from dementia. Says Missy Sovak, Director of UPMC’s Geriatric Care Coordination Program, and a long-time colleague, “His devotion to all of his patients is evident in his daily practice, as we have heard repeatedly from our clients throughout the years. His extensive knowledge of geriatric syndromes and medications is invaluable to our program.”





## Partners

With the idea that collaborating with other professional agencies on the issues of aging is requisite for advancement of knowledge and innovation, the Aging Institute has long supported and become engaged in the activities of professional organizations that share its commitment to improving the health and quality of life of older adults.

### The Pennsylvania Geriatrics Society – Western Division

A leading force in geriatric education and awareness

The Aging Institute is a proud partner with the **Pennsylvania Geriatrics Society – Western Division**. Now in its third decade, the Society has always been on the frontlines of the movement to professionalize — and expand — geriatric medicine regionally and nationwide. In recognition of the Society's mission to improve the health and well-being of older persons, the Aging Institute provides the Society with critical planning and funding support for many of its events and activities, as well as access to expert speakers and presenters.

Initially started in 1990 to help local physicians prepare for the nation's first board certification exams in geriatric medicine, the Society has broadened to embrace practicing and aspiring health care providers from all disciplines in the western Pennsylvania area who share a passion for quality medical care for older adults.

Today, the Society's annual Clinical Update in Geriatric Medicine has grown into the region's largest continuing medical education event. The organization also has evolved into one of the most successful, active, and largest regional affiliates of the American Geriatrics Society, supporting its efforts in patient care, research, professional education, and public policy.



Currently serving as the president and secretary-treasurer of the Society are its two original co-founders, **Fred Rubin, MD,**

professor of medicine at the University of Pittsburgh School of Medicine and chair of the Department of Medicine at UPMC Shadyside, and **Judy S. Black, MD, MHA,** who presently serves as physician advisor to the Jewish Healthcare Foundation.

“We’re now a proud, mature and inclusionary organization,” says Dr. Rubin. “We’re a big tent with room for everyone.”

**The Society's Focus on Education**

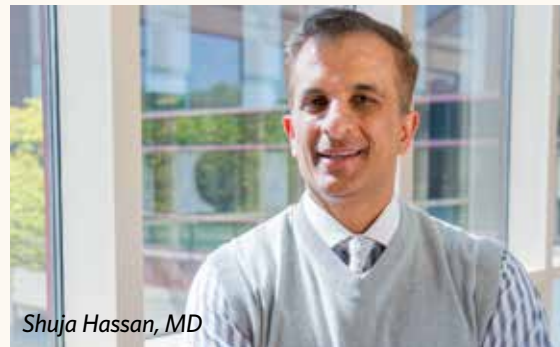
Education continues to be a key focus as the Society strives to foster professional and public awareness in geriatric medicine and inspire more physicians and other health care professionals to care for the aged.

Serving as its education course directors are Dr. Black, **Shuja Hassan, MD,** a faculty member of the University of Pittsburgh School of Medicine’s Division of Geriatric Medicine and medical director of UPMC

Canterbury Place, and **Neil M. Resnick, MD,** associate director of the Aging Institute and chief of the University of Pittsburgh School of Medicine’s Division of Geriatric Medicine.

Annual educational programs sponsored by the Society include:

- **Clinical Update in Geriatric Medicine** — initially created in 1988 as a geriatric review course for certification, the annual program has evolved into a premier educational conference attracting nearly 400 geriatrics professionals to the three-day event.
- **International Hospital Elder Life Program (HELP) Conference** is held in conjunction with the Clinical Update each year. Founded by Sharon K. Inouye, MD, MPH, a professor of medicine at the Beth



*Shuja Hassan, MD*

Israel Deaconess Medical Center, Harvard Medical School, the program is designed to educate HELP teams on strategies for delirium prevention.

- **Controversies in Geriatric Medicine** — established in 2015, this unique program features timely and topical case studies involving elderly patients. It includes a presentation followed by a dynamic and lively discussion of medical and ethical implications involving both panelists and participants.
- **Fall Educational Program** — this annual dinner provides a clinical review and update of common problems affecting the elderly. Participants have the opportunity to network while earning continuing medical education and other health care credits.

This year’s presentation will feature Dr. Toren Finkel, the new Director of the Aging Institute, on “Geroscience and the Promise of Eternal Youth”.

In addition to educational programming, the Society has created notable opportunities for recognition including the David C. Martin, MD Award, established in 1999, recognizing medical students for academic excellence in the field of geriatric medicine. In 2015, the Society initiated the Geriatrics Teacher of the Year Award. This award is presented to two outstanding



teachers — a physician and a non-physician health care professional — for their dedication and commitment to geriatric education. Betty Robison, MSN, RN-BC, the Aging Institute’s gerontology educator, received the first non-physician Teacher of the Year award in 2016.

### **PMDA: The Pennsylvania Society for Post-Acute and Long-Term Care Medicine**

#### **A Guiding Light in Long-Term Care**

Another valuable partner of the Aging Institute is **PMDA: The Pennsylvania Society for Post-Acute and Long-Term Care Medicine**. Long-term and post-acute care facilities have undergone tremendous transformation in recent years, from the delivery of increasingly complex medical supports to complying with ever-changing regulations and insurance plans. PMDA has been there every step of the way to help its professionals navigate these challenges.

“Our organization approached the Aging Institute several years ago for help in sponsoring our statewide regional meetings,” says PMDA board member **Tracy Polak, CRNP, MSN**, vice president of clinical operations for Curavi Health, Inc.

Editor’s Note: Curavi is a wholly owned subsidiary of UPMC that was developed by UPMC Enterprises.

Curavi provides a telemedicine solution, specifically designed for the nursing home setting.

“Three times a year, the Institute now acts as a facilitator for these educational forums. Its involvement has helped to nearly triple participation at the meetings. The Institute’s support has been a very important resource for us.”

The PMDA regional forums are simulcast to satellite venues statewide in eight locations:

- Bethlehem
- Erie
- Harrisburg
- Lancaster
- Muncy
- Philadelphia
- Pittsburgh
- Pittston/Scranton

The regional meetings explore important issues in the practice of long-term care medicine, focused on peer-assisted professional growth. They also provide



a sounding board for sharing innovative care in both the clinical and administrative realm.

Additionally, the Aging Institute’s immediate past director, **Charles F. Reynolds III, MD**, will speak in October 2017 at PMDA’s annual symposium in Hershey, Pennsylvania, as part of its 25th anniversary celebration.

**David A. Nace, MD, MPH, CMD**, a member of the Aging Institute’s former Dementia Workgroup and the current chief of medical affairs for UPMC Senior Communities, is an active leader in PMDA and its national organization, AMDA (see below). Dr. Nace currently chairs AMDA’s infections advisory committee and is vice chair of both its public policy committee and work group on the corporate practice of medicine.

#### **About PMDA**

Established in 1992 as the Pennsylvania Medical Directors Association, the organization once limited its membership to medical directors. But today, PMDA is among the largest and most active affiliates of the **AMDA: The American Society for Post-Acute and Long-Term Care Medicine** (formerly the American Medical Directors Association).

Both organizations champion the need for quality medical care by providing advocacy, education, and professional development opportunities to an increasingly diverse and interdisciplinary health care team. PMDA and AMDA members now include medical directors, family physicians, nurse practitioners, nursing home administrators, pharmacists, physical medicine and rehabilitation specialists, and other health care professionals.



One of PMDA’s first members was **Daniel R. Steiner, MD, CMD**, who served for 18 years as medical director of The Willows of Presbyterian Senior Care in Oakmont, Pennsylvania, and is now in private practice.

“Even though I’m no longer a medical director, I remain involved in PMDA because I found it to be an organization of incredibly good people with very good intentions,” says Dr. Steiner, a former president and the current treasurer of PMDA’s board of directors. “I continue to learn essential information that forms the quality of care I can offer my patients.”

Ms. Polak is one of two licensed advanced practitioners on PMDA’s board. She is a gerontological nurse practitioner with inpatient and outpatient care experience.

“What I especially value about PMDA is its efforts to support both the clinical and administrative aspects involved in this environment,” she says. “It’s committed to the needs of everyone involved in long-term care, as well as the entire continuum of post-acute care — from the hospital to the home.”

Both PMDA and AMDA are vocal advocates for this health care sector, particularly in today’s ever-shifting insurance and payment environment. According to Ms. Polak, PMDA is one of the few state chapters of AMDA with an active public policy committee, and the organization also partners with other long-term care providers for added impact.

“There’s power in numbers and we have and continue to influence policy changes on the national and state levels. For example, Dr. Nace’s work was essential to influencing recent state policy changes on quality assessment,” notes Dr. Steiner. “We see ourselves as collaborators, working toward a common goal of better health care. Having a voice at the table is key to that success.”

## **A Leadership Voice on Pennsylvania’s Long-Term Care Council**

In October 2016, **David A. Nace, MD, MPH, CMD** was appointed to the newly created **Pennsylvania Long-Term Care Council**. Dr. Nace, director of the University of Pittsburgh’s School of Medicine Long-Term Care and Flu Programs and chief of medical affairs for UPMC Senior Communities, plays an active role on a number of PMDA and AMDA committees.

The mission of the new council (which replaced the Intra-Governmental Council on Long-Term Care) is to study, observe and recommend improvements to Pennsylvania’s long-term care systems. The 35-member body is charged with making recommendations on regulations, licensure, financing, and other responsibilities of the departments and agencies related to the state’s long-term services and supports system.



## Research of the Aging Institute's Partners

Focused on improving the care and quality of life of older adults, the University of Pittsburgh remains among the foremost institutions of higher education to conduct research in the field of geriatrics. The scope, depth, and continuity of work conducted by the Aging Institute's partners — in such diverse disciplines as medicine, public health, nursing, social science, psychiatry, epidemiology, and ethics — positions our region among the nation's leading centers of aging-related research and innovation.

### Centers of Excellence Research Publications Highlights

Following is a representative sampling highlighting 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 2016-17.



### Center for Late-Life Depression Prevention and Treatment (CLLDPT)

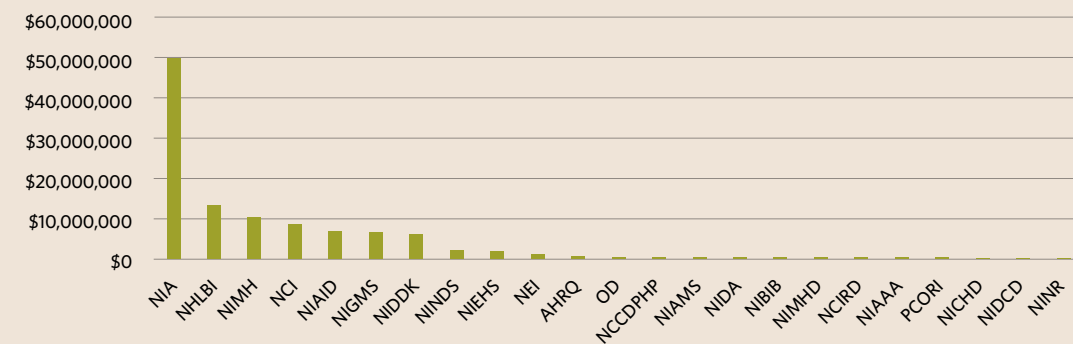
**Director: Charles F. Reynolds III, MD**

The CLLDPT 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.

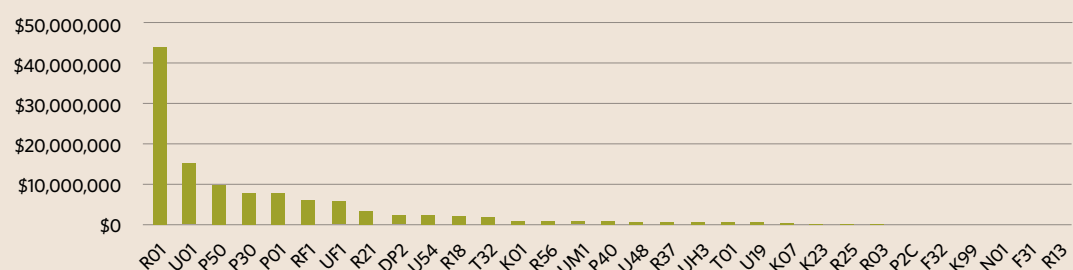
Diniz BS, Reynolds III CF, Sibille E, Lin CW, Tseng G, Lotrich F, Aizenstein HJ, Butters MA. Enhanced Molecular Aging in Late-Life Depression: the Senescent-Associated Secretory Phenotype. **The American Journal of Geriatric Psychiatry.** 2017 Jan 31;25(1):64-72.

Kogan JN, Schuster J, Nikolajski C, Schake P, Carney T, Morton SC, Kang C, Reynolds III CF. Challenges encountered in the conduct of Optimal Health: A patient-centered comparative effectiveness study of interventions for adults with serious mental illness. **Clinical Trials.** 2017 Feb;14(1):5-16.

### Sources of FY16 Aging-Related Federally Sponsored Research at the University of Pittsburgh



### Funding Mechanisms of FY16 Aging-Related Federally Sponsored Research at the University of Pittsburgh



Smagula SF, Wallace ML, Anderson SJ, Karp JF, Lenze EJ, Mulsant BH, Butters MA, Blumberger DM, Diniz BS, Lotrich FE, Dew MA, Reynolds III CF. Combining moderators to identify clinical profiles of patients who will, and will not, benefit from aripiprazole augmentation for treatment resistant late-life major depressive disorder. **Journal of Psychiatric Research.** 2016 Oct 31;81:112-8.

Reynolds III CF, Patel V. Screening for depression: the global mental health context. **World Psychiatry.** 2017 Oct;16(3):316-317.

### 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. The publications of the ADRC highlight a focus on imaging biomarkers, neuropsychiatric characterization including the provision of high quality, behaviorally characterized samples for genetic and postmortem studies, and early stage disease.

Lingler JH, Schulz R, Terhorst L, Gentry A, Lopez OL. Illness Perceptions among Patients and Family Members affected by Mild Cognitive Impairment. **The Gerontologist.** 2016 Oct; 56(5): 886-895.

Weamer EA, DeMichele-Sweet MA, Cloonan YK, Lopez OL, Sweet RA. Incident Psychosis in Subjects With Mild Cognitive Impairment and Alzheimer's Disease. **The Journal of Clinical Psychiatry.** 2016 Dec;77(12):e1564.

Irwin DJ, Grossman M, Weintraub D, Hurtig HI, Duda JE, Xie SE, Lee, Vivianna EB, Van Deerlin M, Lopez OL, Kofler JK, Nelson PT, Jicha GA, Woltjer R, Quinn JF, Kaye J, Leverenz JB, Tsuang D, Longfellow K, Yearout D, Kukul WI, Keene CD, Montine TJ, Zabetian CP, Trojanowski JT. Neuropathological and genetic correlates of survival and dementia onset in synucleinopathies: a retrospective analysis. **The Lancet Neurology.** 2017 Jan; 16(1):55-65.

Snitz BE, Lopez OL, McDade E, Becker JT, Cohen AD, Price JC, Mathis CA, Klunk WE. Amyloid- $\beta$  imaging in

older adults presenting to a memory clinic with subjective cognitive decline: a pilot study. **Journal of Alzheimer's Disease.** 2015 Jan 1;48(s1):S151-9.

Nadkarni NK, Lopez OL, Studentship SA, Snitz BE, Perera S, Erickson KI, Mathis CA, Nebeks RD, Redfern M, Klunk WE, MD, PhD2,3. The Cognition-Mobility interface is associated with cerebral amyloid in older adults without cognitive or mobility impairment.

**Journal of Gerontology Series A: Biological sciences and Medical Sciences** 2016 2017 Mar 1;72(3): 431-437.

### 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.

Jacob ME, Yee LM, Diehr PH, Arnold AM, Thielke SM, Chaves PH, Gobbo LD, Hirsch C, Siscovick D, Newman AB. Can a healthy lifestyle compress the disabled period in older adults? **Journal of the**

**American Geriatrics Society.** 2016 Oct 1;64(10):1952-61.

**Finding:** Using the actual lived experience of the Cardiovascular Health Study Cohort, we demonstrated that individuals with a healthy lifestyle not only lived longer, but had fewer years of disability and overall a higher proportion of life without disability.

Santanasto AJ, Goodpaster BH, Kritchevsky SB, Miljkovic I, Satterfield S, Schwartz AV, Cummings SR, Boudreau RM, Harris TB, Newman AB. Body composition remodeling and mortality: the health aging and body composition study. **Journals of Gerontology Series A: Biomedical Sciences and Medical Sciences.** 2016 Aug 27;72(4):513-9.

**Finding:** Based on long term follow up of the Health ABC cohort, we demonstrated the importance of change in body composition for mortality risk. Individuals who lost more lean mass especially those with excessive lean loss relative to weight loss have higher rates of death. This suggests that sarcopenia is better defined by rate of change than at a single point in time.

Hadley EC, Kuchel GA, Newman AB. Report: NIA workshop on measures of physiologic resiliencies in human aging. **The Journals of Gerontology: Series A.** 2017 Jul 1;72(7):980-90.

**Finding:** Resilience is proposed as an important aspect of aging that can inform response to stressors. This report summarizes an NIH workshop that outlines new directions for research to move tests of resilience towards improving the care of 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.*

Hanlon JT, Zhao X, Naples JG, Aspinall SL, Perera S, Nace DA, Castle NG, Greenspan SL, Thorpe CT. Central nervous system medication burden and serious falls in older nursing home residents. **Journal of the American Geriatrics Society.** 2017 Jun;65(6):1183-1189.

**Finding:** This nested case control study included 5556 adults  $\geq 65$  years newly admitted to a nursing home with a history of a recent fall. In the ensuing 3-12 months, those on a high cumulative dose of

agents that affect the brain were nearly twice as likely to suffer a serious fall. Clinicians should focus on reducing total CNS medication burden to decrease the risk of falls, and eliminating agents that are no longer indicated.

Tyagi S, Perera S, Brach JS. Balance and Mobility in Community-Dwelling Older Adults: Effect of Daytime Sleepiness. **Journal of the American Geriatrics Society.** 2017 May 1;65(5):1019-25.

**Finding:** Although insomnia is associated with increased risk for falls and fractures, the relationship may be confounded by use of sleep medications. In this study of 120 community-dwelling seniors (average age=78), the half who reported daytime sleepiness had slower gait speed, step width, and balance confidence. The association persisted after adjusting for covariates, including use of sedating medications. Subjective sleep assessment should be considered when evaluating falls and falls risk.

Tyagi S, Perera S, Clarkson BD, Tadic SD, Resnick NM. Nocturnal Polyuria in Older Women with Urge Urinary Incontinence: Role of Sleep Quality, Time in Bed and Medications Used. **The Journal of Urology.** 2017 Mar 31;197(3):753-8.

**Finding:** Excess nighttime urine production is common, bothersome, and the most common cause of awakening in the elderly. Such awakening

increases the risk of falls, fractures, depression, institutionalization, and death. This study found that body mass index, use of some antihypertensives (angiotensin converting enzyme inhibitor/ angiotensin receptor blockers), time in bed, and time until first awakening to void were all associated with nightly urine production. Since each of these factors is potentially modifiable, simple interventions may improve sleep and also reduce the risks associated with insomnia as well as the need for sleep medications.

Nayak S, Greenspan SL. Osteoporosis Treatment Efficacy for Men: A Systematic Review and Meta-Analysis. **Journal of the American Geriatrics Society.** 2017 Mar 1;65(3):490-5.

**Finding:** Two million American men, or 1 in 5, will sustain a fracture in their lifetime, and the associated mortality and morbidity are greater than among women. Yet men are less well studied and treated. This study found that bisphosphonates reduce the risk of vertebral fractures in men and possibly the risk of nonvertebral fractures.

Weiner DK, Marcum Z, Rodriguez E. Deconstructing Chronic Low Back Pain in Older Adults: Summary Recommendations. **Pain Medicine.** 2016 Dec 1;17(12):2238-46.

**Finding:** This article summarizes recommendations from a 12-part series that guides an approach to

evaluating and treating chronic low back pain as a syndrome in older adults, i.e., a final common pathway for the expression of multiple contributors. The 12 previous articles targeted hip osteoarthritis, fibromyalgia, myofascial pain, sacroiliac joint syndrome, lumbar spinal stenosis, lateral hip/thigh pain, leg length discrepancy, insomnia, maladaptive coping, depression, anxiety, and dementia.

Forman DE, Arena R, Boxer R, Dolansky MA, Eng JJ, Fleg JL, Haykowsky M, Jahangir A, Kaminsky LA, Kitzman DW, Lewis EF, Myers J, Reeves GR, Shen WK; American Heart Association Council on Clinical Cardiology; Council on Cardiovascular and Stroke Nursing; Council on Quality of Care and Outcomes Research; and Stroke Council. Prioritizing functional capacity as a principal end point for therapies oriented to older adults with cardiovascular disease: A Scientific Statement for healthcare professionals from the American Heart Association. **Circulation.** 2017 Apr 18;135(16):e894-918.

**Finding:** Although functional capacity is a priority for older adults, physicians traditionally focus on the heart for those with cardiovascular disease. Comorbidity, inflammation, mitochondrial metabolism, cognition, balance, and sleep all bear on cardiorespiratory function and become more relevant with age. This important consensus statement prioritizes function as a major therapeutic goal. It also reviews the

physiology underlying functional capacity at systemic, organ, and cellular levels, as well as the clinical skills needed to assess realms of function (e.g., aerobic, strength, balance, and even cognition) relevant to older patients. Finally, it provides practical recommendations for use in each healthcare setting.

Wright RM, Tabas G. A case of neurocognitive decline. **Annals of Internal Medicine.** 2016. <http://vp.acponline.org/virtualpatients>.

Puri A, Wright RM. Care of the patient with hip fracture. **Annals of Internal Medicine.** 2017; <http://vp.acponline.org/virtualpatients>.

**Finding:** These articles are part of the American College of Physicians' online virtual patient series available for CME and MOC credits. They also represent an original synthesis of applicable data difficult to find anywhere else.

### 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.*

Stetler RA, Gao Y, Leak RK, Weng Z, Shi Y, Zhang L, Pu H, Zhang F, Hu X, Hassan S, Ferguson C, Homanics GE, Cao G, Bennett MV, Chen J. APE1/Ref-1 facilitates recovery of gray and white matter and neurological function after mild stroke injury. **Proceedings of the National Academy of Sciences.** 2016 Jun 21;113(25):E3558-67.

**Finding:** It is known from prior investigations that have manipulated levels of the repair protein APE1/Ref-1 that oxygen-deprived brain cells engage this protein to protect against cell death. The current study sought evidence for the role of intrinsic APE1 levels in brain cell recovery following stroke. It found that mice that are unable to express APE1 recover poorly from mild stroke and provided evidence that endogenous APE1 protects both white and gray matter and facilitates functional recovery following stroke.

Liu H, Li W, Rose ME, Hickey RW, Chen J, Uechi GT, Balasubramani M, Day BW, Patel KV, Graham SH. The point mutation UCH-L1 C152A protects primary neurons against cyclopentenone prostaglandin-induced cytotoxicity: implications for post-ischemic neuronal injury. **Cell Death & Disease.** 2015 Nov;6(11):e1966.

**Finding:** UCH-L1, a protein found in the brain, has been associated with neurodegenerative diseases such as Parkinson's and Alzheimer's, but has not been thoroughly studied in stroke. Dr. Liu and colleagues found that 15dPGJ2, an omega-6 inflammatory fatty acid, binds to UCH-L1 and disrupts its function. Neurons from mice with a mutation in UCHL1 that prevents binding of 15dPGJ2 were resistant to injury from oxygen deprivation and inflammation. Thus the UCH-L1 fatty acid binding site may be a new target for drug development for treatment of stroke and neurodegenerative diseases.

Mi Z, Halfter W, Abrahamson EE, Klunk WE, Mathis CA, Mufson EJ, Ikonovic MD. Tenascin-C Is Associated with Cored Amyloid- $\beta$  Plaques in Alzheimer Disease and Pathology Burdened Cognitively Normal Elderly. **Journal of Neuropathology & Experimental Neurology.** 2016 Jul 19;75(9):868-76.

**Finding:** Tenascin-C (TN-C) is a protein associated with the inflammatory process in diseases including Alzheimer Disease (AD). This study examined TN-C in autopsy brain tissue samples from patients with and without AD and with and without amyloid- $\beta$  (A $\beta$ ) plaques and deposits that are associated with the disease. The pattern of TN-C distribution that was discovered suggests a role for TN-C in A $\beta$  plaque development and its potential use as a biological marker and therapy target in AD.

Fritz JM, Rundell SD, Dougherty P, Gentili A, Kochersberger G, Morone NE; Raja SN, Rodriguez E, Rossi MI, Shega J, Sowa G, Weiner DK. Deconstructing Chronic Low Back Pain in the Older Adult--Step by Step Evidence and Expert-Based Recommendations for Evaluation and Treatment. Part VI: Lumbar Spinal Stenosis. **Pain Medicine.** 2016 Mar 1;17(3):501-10.

**Finding:** Lumbar spinal stenosis (LSS) exists not uncommonly in older adults with chronic low back pain (CLBP) and is the most common condition for which they undergo spinal surgery. The authors present an evaluation and treatment algorithm to guide the care of those with LSS and a clinical case to illustrate that with function-focused management, a rational approach to conservative care, and attention to other conditions contributing to pain and disability, LSS can often be managed without surgery.

#### **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 Veterans Administration. 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.*

DiNapoli EA, Pierpaoli CM, Shah A, Yang X, Scogin F. Effects of Home-Delivered Cognitive Behavioral Therapy (CBT) for Depression on Anxiety Symptoms among Rural, Ethnically Diverse Older Adults. **Clinical Gerontologist**. 2017 May 27;40(3):181-90.

**Finding:** The effects of home-delivered cognitive-behavioral therapy (CBT) for depression on anxiety symptoms in an ethnically diverse, low resource, and medically frail sample of rural, older adults was examined. Compared to a minimal support control condition, CBT for depression resulted in significantly greater improvements in symptoms of anxiety and phobic anxiety from pre-treatment to post-treatment.

Fischer CE, Sweet RA. Psychosis in Alzheimer's disease: a review of recent research findings. **Current Behavioral Neuroscience Reports**. 2016 Dec 1;3(4):308-17.

**Finding:** In this review, Drs. Sweet and Fischer examine the clinical, genetic, brain imaging, and neuropathologic correlates of the occurrence of psychotic symptoms within individuals with Alzheimer disease.

Krivinko JM, Erickson SL, Abrahamson EE, Wills ZP, Ikonovic MD, Penzes P, Sweet RA. Kalirin reduction rescues psychosis-associated behavioral deficits in APP<sup>swe</sup>/PSEN1<sup>dE9</sup> transgenic mice. **Neurobiology of Aging**. 2017 Jun 30;54:59-70.

**Finding:** Drs. Sweet and colleagues demonstrate that mice that contain transgenes carrying Alzheimer-disease causing mutations in APP and PSEN1 develop increasing levels of psychosis-associated behaviors between age 6 and 12 months. Germline reduction of the protein, kalirin, in these mice protect against the progression of psychosis-associated behaviors during this time period.

### 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.*

Hanlon JT, Zhao X, Naples JG, Aspinall SL, Perera S, Nace DA, Castle NG, Greenspan SL, Thorpe CT. Central nervous system medication burden and serious falls in older nursing home residents.

**Journal of the American Geriatrics Society**. 2017 Jun;65(6):1183-1189.

**Finding:** In this nested case control study of 5556 residents aged 65 and older with a recent fall history admitted to a nursing home in 2010, the investigators found that older nursing home residents with a history of falls and high CNS dosage burden, (i.e., those taking three or more standardized daily doses of specific antidepressants, antiepileptics, antipsychotics, benzodiazepine and opioid receptor agonists), had a nearly two-fold increased odds of serious falls. For residents with a high CNS burden and taking an unnecessary CNS medication (i.e., no indication, not effective, therapeutic duplication, or too long of a duration), providers should consider discontinuing this CNS medication by cautiously tapering it over a period of time to avoid the small risk of an adverse drug withdrawal event.

Nadkarni NK, Perera S, Snitz BE, Mathis CA, Price J, Williamson JD, DeKosky ST, Klunk WE, Lopez OL. Association of brain amyloid- $\beta$  with slow gait in elderly individuals without dementia: influence of cognition and apolipoprotein E  $\epsilon$ 4 genotype. **JAMA Neurology**. 2017 Jan 1;74(1):82-90.

**Finding:** The goal of this study was to examine the association between amyloid- $\beta$  (A $\beta$ ) and gait speed in elderly individuals without dementia, and to examine the influence of cognition and APOE  $\epsilon$ 4 on this association. In a sample of 183 elderly individuals without dementia, brain A $\beta$  deposition was present

at high levels in 54.6% of the oldest old and was associated with slower gait speed independent of demographics, cardiac risk, hippocampal volume, and small-vessel disease. The association between brain A $\beta$  deposition and gait speed was influenced by global cognitive and executive function capabilities and APOE  $\epsilon$ 4 carrier status. To our knowledge, this is one of the first reports to highlight the influence of cognition and APOE  $\epsilon$ 4 on the association between global and regional A $\beta$  deposition and gait speed in elderly individuals without dementia and in cognitively normal elderly individuals.

Santanasto AJ, Glynn NW, Lovato LC, Blair SN, Fielding RA, Gill TM, Guralnik JM, Hsu FC, King AC, Strotmeyer ES, Manini TM, Marsh AP, McDermott MM, Goodpaster BH, Pahor M, Newman AB; LIFE Study Group. Effect of Physical Activity versus Health Education on Physical Function, Grip Strength and Mobility. **Journal of the American Geriatrics Society**. 2017 Jul;65(7):1427-1433.

**Finding:** The Lifestyle Interventions and Independence for Elders (LIFE) was a multi-centered, single-blind randomized trial of 1635 adults aged 78.9  $\pm$  5.2 years. The investigators found that lower extremity performance was significantly higher in the physical activity group compared with health education group. Changes in chair-stand score explained a considerable portion of the effect of physical activity





on the reduction of major mobility disability—consistent with the idea that preserving muscle strength/power may be important for the prevention of major mobility disability.

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Tyagi S, Perera S, Brach JS. Balance and Mobility in Community-Dwelling Older Adults: Effect of Daytime Sleepiness. **Journal of the American Geriatrics Society**. 2017 May 1;65(5):1019-25.

**Finding:** The goal of the study was to examine the effect of self-reported daytime sleepiness on performance-based balance measures and self-reported balance confidence in 120 community-dwelling older adults. They found that forty-five percent of participants reported daytime sleepiness. Self-reported daytime sleepiness was associated with slower gait speed and poor balance confidence in community-dwelling older adults. Subjective sleep assessment should be considered when assessing balance and implementing interventions for improving balance in older adults.

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Dukes AA, Bai Q, Van Laar VS, Zhou Y, Ilin V, David CN, Agim ZS, Bonkowsky JL, Cannon JR, Watkins SC, Croix CM, Burton EA, Berman SB. Live imaging of mitochondrial dynamics in CNS dopaminergic neurons in vivo demonstrates early reversal of mitochondrial transport following MPP+ exposure. **Neurobiology of Disease**. 2016 Nov 30;95:238-49.

**Finding:** Mitochondrial dysfunction has been suggested to be an important driver in the development of Parkinson's disease (PD). Mitochondria are highly dynamic organelles undergoing rapid cycles of fission and fusion and transport through the cell. However little is known about how mitochondrial dynamics influence PD. Using a transgenic zebrafish model to follow mitochondria movement in neurons in living animals this team has found that exposure to a known toxicant, MPP+ that induces Parkinsonian like symptoms in mammals, they have found that this toxicant causes a change in the transport of mitochondria in dopaminergic neurons. Specifically they found that low none toxic dose caused a 300% increase in retrograde mitochondrial transport and a 30% decrease in anterograde transport. In contrast, exposure to higher concentrations caused an overall reduction in mitochondrial transport. Their findings are compatible with a model in which damage at presynaptic dopaminergic terminals causes an early

compensatory increase in retrograde transport of compromised mitochondria for degradation in the cell body. These data are important because manipulation of early pathogenic mechanisms might be a valid therapeutic approach to PD.

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Garcia-Exposito L, Bournique E, Bergoglio V, Bose A, Barroso-Gonzalez J, Zhang S, Roncaioli JL, Lee M, Wallace CT, Watkins SC, Opresko PL, Hoffmann JS, O'Sullivan RJ. Proteomic profiling reveals a specific role for translesion DNA polymerase  $\eta$  in the alternative lengthening of telomeres. **Cell Reports**. 2016 Nov 8;17(7):1858-71.

**Finding:** Cancer increases with age and neoplastic cells require the maintenance of the ends of the chromosomes, their telomeres, to survive the multiple cell divisions to form a tumor. There are two major pathways that help maintain telomeres, including the alternative lengthening of telomeres (ALT) pathway. In this study the authors used a novel approach to identify proteins involved in the ALT pathways. They found that a specialized DNA polymerase, pol eta, plays an important role in managing replicative stress at ALT telomeres, maintaining telomere recombination at tolerable levels and stimulating DNA synthesis.

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Mora AL, Bueno M, Rojas M. Mitochondria in the spotlight of aging and idiopathic pulmonary fibrosis.

**The Journal of Clinical Investigation.** 2017 Feb 1;127(2):405-14.

**Finding:** Idiopathic pulmonary fibrosis (IPF) is a chronic age-related lung disease with high mortality that is characterized by abnormal scarring of the lung parenchyma. There has been a recent attempt to define the age-associated changes predisposing individuals to develop IPF. Age-related perturbations that are increasingly found in epithelial cells and fibroblasts from IPF lungs compared with age-matched cells from normal lungs include defective autophagy, telomere attrition, altered proteostasis, and cell senescence. These divergent processes seem to converge in mitochondrial dysfunction and metabolic distress, which potentiate maladaptation to stress and susceptibility to age-related diseases such as IPF. Therapeutic approaches that target aging processes may be beneficial for halting the progression of disease and improving quality of life in IPF patients.

Kong M, Liu L, Chen X, Driscoll KI, Mao P, Böhm S, Kad NM, Watkins SC, Bernstein KA, Wyrick JJ, Min JH, Van Houten B. Single-molecule imaging reveals that Rad4 employs a dynamic DNA damage recognition process. **Molecular Cell.** 2016 Oct 20;64(2):376-87.

**Finding:** Sun light produces specific photoproducts in our DNA that causes premature aging and skin cancer. These lesions are removed by a process called nucleotide excision repair (NER), mediated by over 30 proteins in human cells. Deficiencies in seven of these proteins can lead to premature aging and highly elevated levels of skin cancer. This study examined how a specific DNA NER protein targets sunlight-induced DNA damage at the single molecular level. Dynamic high resolution studies of fluorescently labeled XPC molecules found that this protein can be attracted to a specific lesion and oscillate back and forth around the lesion without directly binding to the lesion, providing a recognition at a distance to allow other repair proteins to come in and fix the lesion.

#### UPMC Palliative and Supportive Institute (PSI)

**Director: Robert Arnold, MD**

*The PSI 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.*

Kavalieratos D, Corbelli J, Zhang D, Dionne-Odom JN, Ernecoff NC, Hanmer J, Hoydich ZP, Ikejiani DZ,

Klein-Fedyshin M, Zimmermann C, Morton SC, Arnold RM, Heller L, Schenker Y. Association between palliative care and patient and caregiver outcomes: a systematic review and meta-analysis. **JAMA.** 2016 Nov 22;316(20):2104-14.

**Finding:** This systematic review and meta-analysis of 43 randomized clinical trials of palliative care interventions involved 12,731 patients and 2,479 caregivers. Palliative care interventions were associated with improvements in patient quality of life and symptom burden, but there was no significant association between palliative care and survival. This manuscript's rigorous review of scales and questionnaires used in palliative care practice and research was recognized by AHRQ (Agency for Healthcare Research and Quality) and is heavily cited in their current Assessment Tools for Palliative Care, which was published in May 2017.

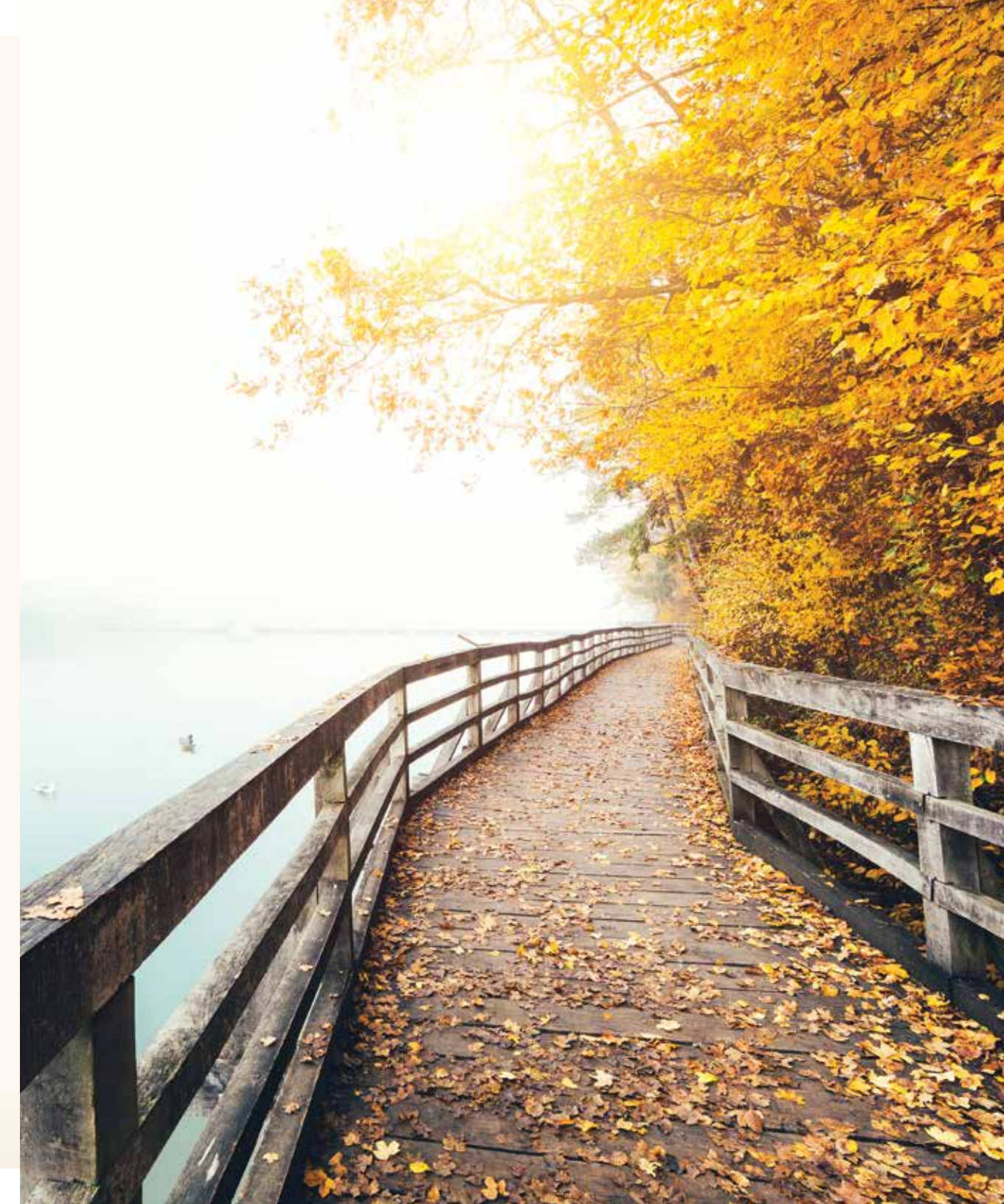
Becker CL, Arnold RM, Park SY, Rosenzweig M, Smith TJ, White DB, Smith KJ, Schenker Y. A cluster randomized trial of a primary palliative care intervention (CONNECT) for patients with advanced cancer: Protocol and key design considerations. **Contemporary Clinical Trials.** 2017 Mar 31;54:98-104.

**Finding:** This paper describes the protocol for "CONNECT," a National Cancer Institute-funded cluster randomized trial comparing nurse-led primary

palliative care to standard oncology care alone for patients with advanced cancer. Outcomes of the trial include patient quality of life (primary), symptom burden, and mood; caregiver burden and mood; and healthcare resource use. The randomization process and comprehensive outcome measures for this study will enable an unbiased, multi-faceted understanding of the impact of primary palliative care in patients with advanced cancer.

Schenker Y, Arnold R. Toward Palliative Care for All Patients With Advanced Cancer. **JAMA Oncology.** 2017 May 18.

**Finding:** Recently, the American Society of Clinical Oncology (ASCO) recommended that all patients with advanced cancer receive specialty palliative care in addition to active treatment. In this paper, Drs. Schenker and Arnold explain that although this is a noble goal, it is simply not attainable with the current palliative care workforce. They propose, instead, delivering palliative care to patients through a scalable public health approach in which resources are directed towards integrating palliative care in existing oncology practices and outcomes are regularly monitored to track feasibility and efficacy.



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