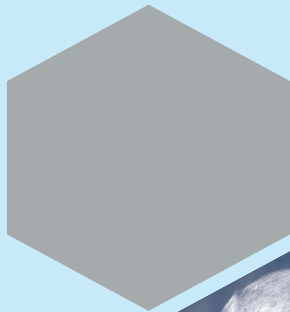




afar

**Paul B. Beeson
Emerging Leaders
Career Development
Awards in Aging**

2016 Report featuring
the 2014 Scholars



About Paul B. Beeson, MD (1908-2006)

Dr. Paul B. Beeson, a renowned physician, researcher, and teacher, was the inspiration behind the creation of the Paul B. Beeson Emerging Leaders Career Development Awards in Aging Program. It was his vision to increase the number of physicians with a combined clinical, academic, and scientific expertise to care for a growing older population.

At the time of his death, Dr. Beeson was professor emeritus of medicine at the University of Washington. Although “retired,” he remained active in the field of aging research, attending meetings and advising many Beeson Scholars. In his long and distinguished career, he profoundly influenced the career paths of many physician-scientists and was stalwart in his concern for the care and dignity of patients.

To date, 219 scholars supported by the Beeson Program have become leaders in geriatric medicine and aging research throughout the United States and the Island of Ireland. The careers of these remarkable Scholars serve as a lasting testament to Dr. Beeson’s enduring legacy as they seek to provide the best possible care for older adults and train the next generation of leaders in aging research and geriatrics.

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Letter from Thomas M. Gill, MD

Chair of the Program Advisory Committee

A wonderful feature of the Beeson Program is the diversity in disciplines that are represented each year. We are delighted to introduce the 2014 Beeson Scholars—eight talented and accomplished researchers who are carrying this tradition forward. Among them, only one discipline—geriatrics—is represented more than once. The scholars also include a geriatric cardiologist, a neurologist, a transplant hepatologist, an endocrinologist, a geriatric psychiatrist, and a PhD psychologist.

This diversity makes the Beeson Program strong. Each scholar pursues a line of investigation that originates in his or her own discipline. The Beeson Program brings together these remarkable investigators from different backgrounds, with different interests, all committed to the field of aging research. In so doing, it encourages cross-fertilization, collaboration, and the pursuit of areas of research that might not otherwise be followed.

In terms of diversity, it also is worth noting that five out of eight awardees in this class are women. In different medical organizations and professional groups, there is much concern that women have not achieved the same levels of advancement as men. Historically, that has been less true in geriatrics and aging research than in other medical fields. The Beeson Program, too, has had success in attracting women.

We have an opportunity now to build on this achievement and be more proactive in attracting investigators from ethnic and racial minority groups into the field and the Beeson Program. What can we do? One place to start is to foster the success of scholars in the stage of training that prepares them to apply for the Beeson Program. Some of these clinicians, for example, are participating in the National Institute on Aging's Butler Williams Scholars Program. Within our own institutions, we can work to attract the most outstanding medical students, residents, and fellows among underrepresented ethnic and racial groups and encourage them to pursue new scientific questions in aging. We can be role models and mentors.

As the population of older adults grows increasingly diverse, the biological and socioeconomic factors underlying health and aging must be rigorously evaluated. There is clearly a mismatch between the needs of our field and the number of clinicians from ethnic and racial minorities coming up the ranks. Think of all the scientific questions that have not yet been asked, let alone answered. Diversity, in all its facets, drives our field ahead.

The Beeson community is charged with leadership. Going forward we can take a leading role in promoting diversity in aging research and in the Beeson Program.

Thomas M. Gill



NIA Enhances Leadership Focus of Beeson Award

Career development award programs, known as “K” programs, from the National Institutes of Health (NIH), have long played a key role in training physician-scientists. Even so, securing funding to pursue research remains a perennial challenge for early-career investigators. To help ease this difficulty, as of February 2016, the NIH stipulates that all NIH institutes allow up to \$100,000 plus fringe benefits towards an applicant’s salary to cover the percentage effort requested on NIH K08 and K23 awards. Current K08 and K23 awardees can:

- Request up to \$100,000 (at a maximum) plus fringe benefits for percentage effort, which must be 75% of full-time effort or greater. In the final two years of the award, if an investigator receives a federal research award, they are permitted to maintain 75% total research effort while maintaining a minimum of 50% effort on the career award.
- Request \$25,000 in research costs with a maximal allowance of \$50,000 to support patient accrual costs.

In contrast to other NIH K mechanisms, the Paul B. Beeson Awards have had a more flexible award structure to accommodate applicants from many specialties. The recent changes to the NIH K08 and K23 programs made it necessary for the National Institute on Aging (NIA) to reevaluate these funding mechanisms to see if they would be suitable to preserve the unique programmatic, review, and salary guidelines of the Paul B. Beeson Award. Going forward, to point up the Beeson Program’s role in fostering leadership, NIA officials made the following changes:

- A new K award number for the Beeson Program: K76
- The name of the award is now the Paul B. Beeson Emerging Leaders Career Development Award in Aging
- New eligibility requirements, different from other mentored K awards: having already received competitively awarded research support as a Program Director/Principal Investigator at the faculty level, and prior leadership responsibilities in the clinical or research domain.

“By creating a new, unique, K mechanism, with new eligibility requirements, we are underscoring our commitment to nurturing leaders in the field of aging research,” says Chyren Hunter, PhD, Deputy Director and Training Officer at the NIA’s Division of Extramural Activities. “Clinically-trained scientists have a unique perspective when it comes to focusing research questions on areas of greatest clinical need and leading teams that are translating science to practice.”

Highlights from the 2015 Beeson Meeting

clockwise:

Over 100 Beeson Scholars, mentors, and foundation supporters convened in Tarrytown, NY.

2012 Beeson Scholar Amy Kelley with 1998 Beeson Scholar and Program Advisory Committee member Ray Yung.

2012 Beeson Scholar Alex Smith led a session on using social media to enhance your academic career.

For updates on Beeson Scholars in the news, please visit www.afar.org or follow AFARorg



Letter from Richard Besdine, MD

AFAR Medical Officer

A career path in academic medicine can have many twists and turns, and for aspiring professors beginning the journey, it can be exciting as well as nerve-wracking. For those who have received the Beeson Award, it has become their secure and stable rock during a time of increasing pressures to generate clinical revenue and of diminishing institutional research support. The Beeson Award is a wonderful vehicle to get to a career in academic medicine.

The program was named in honor of the pioneering Dr. Paul B. Beeson, and it embodies his vision of increasing the number of physicians with the combined clinical, academic, and scientific expertise to lead the way in delivering optimal care for a growing older population. The program inspires these emerging junior faculty to explore the exciting opportunities that come with working in gerontology and geriatrics.

The 2016 report highlights the exciting work of the Beeson Scholars who joined the program in 2014. This group of talented investigators represents the 20th cohort of Scholars funded through this program. At the end of this publication, you will also find information about all the classes of Beeson Scholars, including the ones who have just entered the program.

We are proud that the Beeson Program has supported 219 talented Scholars, along with a similar number of mentors. The program has created a powerful leadership network; we look forward to helping this dynamic network grow and thrive as they work towards enhancing the health and health-related quality of life for older people.

Richard Besdine



Kumar Dharmarajan, MD, MBA

Assistant Professor of Medicine (Cardiology),
Yale School of Medicine

Mentor: Harlan M. Krumholz, MD, SM

Geriatric Conditions and Readmission After Acute Myocardial Infarction



In the United States, 1 in 5 older adults who is admitted to a hospital with a heart attack, treated, and discharged, is readmitted within 30 days. Most of the time, the re-admission is not related to their heart condition. Hospitalization, a notoriously stressful experience, in fact makes older adults vulnerable to a host of medical issues for an extended period of time.

And while it's true that many cardiac patients have more than one chronic condition—high blood pressure, kidney disease, diabetes or other ailments—Kumar Dharmarajan, MD, MBA, argues that the traditional focus on diseases misses the most important predictors of future health.

What may be more important are “factors like cognitive function, the ability to take care of oneself and manage a household, the ability to walk,” says Dr. Dharmarajan. “A patient is not just a sum of diseases. Integrated measures of well-being are a much more patient-centered way of gauging somebody's health.”

Dr. Dharmarajan's Beeson project focuses on understanding how these measures impact vulnerability after hospitalization for a heart attack. Current models for predicting hospital readmission do not account for either multiple medical conditions or common geriatric impairments. So, using data from more than 500 older adults in the Medicare Current Beneficiary Survey, he is investigating whether a model that incorporates these characteristics can better predict this risk.

The next phase of the project takes place in the clinic. For a series of patients admitted to the hospital for heart attack or heart failure, Dr. Dharmarajan is doing a comprehensive in-hospital geriatric assessment. Then he is following up with home visits for these patients one week after hospital discharge.

“The goal here is not just to show whether certain conditions predict readmission, but to understand if factors like cognition, functional status, and mobility are dynamically changing between the time patients are discharged and a week later,” he explains. “We want to understand whether factoring in how patients are doing in that im-

mediate recovery period provides further information on future readmission risk.”

“No one has detailed data on trajectories of recovery after cardiac hospitalization,” says Dr. Dharmarajan. “Big Medicare data sets are great for looking at things like mortality and readmission. But they don't provide information about recovery from the patient's perspective, information on things like, how are you feeling? Are you in pain? How's your breathing? These are critical gaps.”

The ultimate goal is to provide a basis for better health-care systems, and thereby improve the care and lives of older adults. “If we can show that these patient-centered measures of health are actually more important to hospital readmission than whether a person had anemia or lung disease, it could shift how we support patients after they leave the hospital,” says Dr. Dharmarajan. For a patient with dementia, for example, focusing on interventions that help with adapting to memory impairment might mitigate the risk of hospital readmission.

As a Beeson Scholar, Dr. Dharmarajan himself is receiving essential support for developing his career. “The funding the Beeson Program provides for early stage investigators is critical,” he says. “Without it, there is no way I would have the time and resources to dig in to this important area of research,” he says.

“The other huge benefit of the Beeson Program,” he adds, “which is incredibly unique and powerful compared to other NIH early career awards, is the network it provides at the yearly meeting. It creates a community with whom you can collaborate and actually amplify your work. It's not just about promoting individual careers—it helps all of us do better work to improve the lives of older patients.”

Annie Hiniker, MD, PhD

Clinical Instructor of Neuropathology,
University of California, San Francisco

Mentor: Scott A. Oakes, MD

Chemical-Genetic Approaches to Define LRRK2 Kinase Function in Parkinson's Disease



The research of Annie Hiniker, MD, PhD, centers on a key protein in Parkinson's disease, and understanding this molecule requires an intimate knowledge of its shape—its twists, loops, and folds. Dr. Hiniker's interest in proteins and their shapes dates back to her freshman year in college. "I started working in an Alzheimer's lab," she says, "and I just fell in love with what I think of as diseases of protein folding—neurodegenerative diseases and anything where abnormal protein structure seem to play a prominent role in disease mechanisms."

"My dad inspired me to work hard in science," Dr. Hiniker adds. She went on to do doctoral research on protein folding. Then, while she was in medical school, her father was diagnosed with Parkinson's, a turn of events that has added to her motivation to focus on this disease.

Parkinson's is the second most common neurodegenerative disease after Alzheimer's. It affects nearly one million Americans. And, like Alzheimer's, it also is a disease of aging—most cases are diagnosed in people over the age of 60.

Movement symptoms like tremor and slowness, as well as nonmotor symptoms including depression and constipation, develop when dopamine neurons die in a part of the brain called the substantia nigra. Although drug therapies can treat many Parkinson's symptoms, the cause of the underlying cell death has remained elusive.

But genetics is providing some clues. Although only a small percentage of cases can be attributed entirely to genetics, studies of families with a strong history of Parkinson's have uncovered about a dozen genes in which mutations either directly cause, or increase the risk of developing the disease.

Dr. Hiniker's research focuses on mutations in the gene known as LRRK2 (pronounced "lark 2"), the most common genetic cause of Parkinson's. "LRRK2 mutations are often single-point mutations," she explains. "One particular DNA change is enough to give you about a 70 to 80 percent chance of getting the disease."

Like all genes, LRRK2 codes for a protein, and as proteins go, it's a huge molecule. Researchers have begun to map its topography—the areas where it interacts with other proteins, as well as two sites that allow it to do the chemical work of an enzyme. Yet they know little about what function the protein normally serves in cells, and how this changes with the mutations seen in Parkinson's.

For her Beeson project, Dr. Hiniker is using mass spectrometry to seek out the molecular partners that interact with the LRRK2 protein. Some studies are done in cell culture. In addition, as a neuropathologist, Dr. Hiniker also has access to normal human substantia nigra tissue from autopsies. She uses this to test for substances that "stick" to LRRK2 in the tissue. For example, she says, from this tissue, "I push the proteins into solution, then I either pull out LRRK2 from the human brain or add in purified LRRK2 protein, and see what proteins come out with LRRK2. And I can change whether I use the wildtype protein—the kind that everybody has—or a Parkinson's mutant and see if they differ." Ultimately, the hope is to discover targets for new drugs against Parkinson's.

Among recent Beeson Scholars, bench scientists are in the minority. Dr. Hiniker observes that bringing bench scientists and clinicians together enriches the work of both. "The annual meeting helps me think about the big picture, how my work relates to aging in patient populations, and what clinicians who see patients are thinking about," she says. At the same time, "I do think it's good that basic scientists are represented at this meeting strongly. It's good for the clinicians to be reminded about the basic benchwork and what it takes to even begin to develop an intervention."

Jennifer C. Lai, MD, MBA

Assistant Professor of Medicine,
University of California, San Francisco

Mentor: Kenneth Covinsky, MD, MPH

Frailty and Functional Status in Older Liver Transplant Patients



Many of the patients that Jennifer Lai, MD, evaluates for a liver transplant are in their 50s and 60s—“hardly geriatric, in the traditional sense of the word,” she says. “But what I have noticed is that my patients are physiologically old as a result of their chronic liver failure. Cirrhosis is just so taxing on the body that even though a patient’s age on the chart is 57, I sometimes walk into the room and find someone who looks 75.”

This observation inspired Dr. Lai to apply research on aging to patients with cirrhosis and investigate whether concepts developed in geriatric medicine can help predict how well a person will recover from liver transplant surgery. In 2012, she established the Functional Assessment in Liver Transplantation (FrALIT) Study, to measure frailty, physical function, and disability in patients with cirrhosis who are awaiting liver transplantation. The study includes more than 900 liver transplant candidates. Already it has demonstrated that patients with cirrhosis—with an average age of 58 years old—are physiologically equivalent to healthy individuals aged 85 years and older, in terms of frailty and functional impairment.

With support from the Beeson Program, Dr. Lai is building on this work. In addition to enrolling new participants in this prospective cohort, she also is following patients after liver transplant to compare their pre-transplant measures of frailty and functional status with their outcomes two years after surgery, and to characterize these measures throughout the first year after transplant.

When combined with cirrhosis, frailty doubles a person’s risk of death even before a liver transplant—a risk that Dr. Lai hypothesizes will carry through into the year after the surgery. Her study will expand to include five additional liver transplant centers in the United States by the end of 2016. Dr. Lai hopes that data from the FrALIT Study will compel all other transplant centers to incorporate assessments of frailty into the routine care of liver transplant patients.

Diagnosing frailty also opens the door to addressing it in preparation for surgery. “I firmly believe that certain components of frailty are modifiable, or even completely reversible—I wouldn’t be doing this research if I didn’t

feel that I could do something about it for my patients,” says Dr. Lai. “Nutrition, muscle strength, cardiopulmonary fitness—these factors have all been shown to be modifiable in other geriatric populations, including those about to undergo surgery.”

At the Beeson meetings, she says, “I learn not just about frailty, but also other concepts of geriatrics I can apply to my patients.” For example, polypharmacy, a term referring to the use of many drugs for the same condition (a common situation for older adults), is particularly dangerous for transplant patients—even fatal, if they become confused by complex regimens and fail to take medications to prevent organ rejection. Dr. Lai also has introduced palliative care into her practice, recognizing the need to prepare patients for the possibility that they may not get a transplant.

“Frailty is a multi-organ concept,” says Dr. Lai. “It involves every system of the body. But hepatology and transplant training focuses on evaluating laboratory tests and managing complications specific to liver disease. I have learned from my geriatrics colleagues to think more holistically about my patients—how does chronic liver failure impact their ability to get out of bed in the morning? Stand up from a chair?—impairments that ultimately reflect their likelihood of achieving a high quality of life after transplant. Integrating aging research into my own research in hepatology and liver transplantation has allowed me to advance my field. And integrating geriatrics into my clinical practice has greatly improved the care that I provide to my patients.”

Kasia J. Lipska, MD, MHS

Assistant Professor of Medicine,
Yale School of Medicine

Mentor: Harlan M. Krumholz, MD, SM

Predicting Severe Hypoglycemia Among Older Adults with Diabetes



People with diabetes perform a daily balancing act, countering the food they eat with medication to regulate blood sugar levels. The short-term goal, as advocated by medical professionals for the past decade, is to achieve an average blood sugar concentration, or HbA1c, of 7 percent or less. In the long term, this may reduce the risk of diabetes complications like painful neuropathy.

“But the balance between the benefits and the harms of getting blood sugars tightly controlled really changes as people age and as their life expectancy changes,” explains Kasia Lipska, MD, MHS. And the 11 million older Americans with type 2 diabetes may be particularly susceptible to the risk of hypoglycemia, a low blood sugar reaction with symptoms that range from mild dizziness to loss of consciousness, and even death.

For her Beeson Award, Dr. Lipska is developing a tool to help clinicians and patients estimate a person’s risk for having a severe hypoglycemic episode in the near future. Beyond identifying people at high risk, the goal is for this clinical risk tool to help in making more informed decisions about the trade-offs in treatment. “How can we do better with our medication regimens for diabetes?” asks Dr. Lipska. “We don’t want high levels of glucose, but we want to control it more safely.”

Among the factors that conspire to increase the risk of hypoglycemia as people age are: less efficient kidney function, which can allow insulin and other drugs to accumulate in the body; interactions between diabetes medications and treatments for other chronic conditions, resulting in lower blood glucose; and fewer warning symptoms when blood sugar dips, and less time to react before hypoglycemia becomes severe.

The first step toward creating a clinical risk score is to estimate the annual incidence of severe hypoglycemia among older adults with type 2 diabetes. To do this Dr. Lipska is taking advantage of OptumLabs, a large repository of patient medical records data, to look at different drugs prescribed for diabetes to different groups of patients, their glycemic levels, and the incidence of severe hypoglycemia. Based on these data, she plans to develop a score that provides a personalized estimate of

severe hypoglycemia risk based on patient characteristics and their treatment regimen.

Already Dr. Lipska and her colleagues have found that the rate of severe hypoglycemia is especially high among people who have multiple other serious chronic conditions and people aged 75 years or older.

“Keep in mind that we are looking really at the tip of the iceberg—events that we can see in the emergency room or during a hospital admission. These are presumably the most severe events, but certainly not all that are occurring.”

The next step will be a small pilot study to understand the impact of the risk score on how physicians and patients make decisions about treating diabetes. For some patients, for example, a high risk of hypoglycemia may outweigh the potential long-term benefits of tight glycemic control, and result in a decision to reduce the intensity of treatment. With this Beeson-supported research to lay the groundwork, Dr. Lipska plans to test the clinical risk score for hypoglycemia in other health-care settings.

“My interest in the intersection of diabetes and aging came through my experiences in clinic seeing patients who struggle with their diabetes, but at the same time have multiple other issues going on,” she says. “Hypoglycemia is an example of one harm of a very disease-focused approach. I want to help us figure out how to do better for this type of patient.”

With the Beeson Award, “the mentorship has been great,” says Dr. Lipska. And the Beeson annual meetings “have been a fantastic way to forge new collaborations—but also just a really fun time. It’s good to hear about what types of projects other people are working on, put out my own ideas, and get their feedback.”

Donovan T. Maust, MD, MS

Assistant Professor of Psychiatry,
University of Michigan

Mentors: Helen C. Kales, MD, and Frederic C. Blow, PhD

Preventable Hospitalization in Dementia: The Impact of Neuropsychiatric Symptoms



According to a small but growing body of research, older adults with dementia are at higher risk for being hospitalized than their peers who do not have cognitive issues. For these patients, being in the hospital can lead to more cognitive difficulties and further loss of independence. And many times older adults with dementia are brought to the emergency department for infections or other conditions that could be treated in an outpatient setting by a primary care doctor. So why do they end up in the hospital, and how could hospital stays be prevented?

The focus so far has been mainly on the medical conditions for which people with dementia are hospitalized. "As a psychiatrist," says Donovan Maust, MD, "I wondered whether the behavioral symptoms of dementia also affected a person's risk of being hospitalized."

These symptoms can initiate a chain of events that, over time, culminates in a medical crisis. For example: "If, because of your dementia, you have more symptoms of depression or apathy or irritability, those aspects of the dementia might make it difficult for you and your caregiver to take care of your other chronic medical conditions," says Dr. Maust. "You may actually remember to take your insulin or diuretic, for example, but you just don't take it because you are depressed or don't have the motivation." Then, as a result of chronic conditions not being managed well, a person ends up in the hospital.

In other cases, patients with more moderate dementia and pain with urination from a urinary tract infection might have trouble interpreting the sensation of localized pain and reporting it. "They're uncomfortable but have a hard time explaining why, and the discomfort gets expressed as wandering or agitation," says Dr. Maust. If caught early, a primary care provider could treat such an infection. But by the time a caregiver brings the agitated patient to the emergency department, the infection has advanced enough to require hospitalization.

For his Beeson Award, Dr. Maust is developing a way to identify older adults with dementia who are at highest risk for hospitalization by documenting a range of red flags, including behavioral symptoms. To this end he is analyzing 270,000 electronic health records available

through the Veterans Administration, matching patients with dementia and potentially preventable hospitalizations with non-hospitalized patients with dementia. Comparing these records can provide insight on the events leading up to a person's hospitalization—the number of phone calls made to the primary care physician, for example, or new prescriptions for sedatives or antipsychotic medications. In addition, using text-mining software, he is searching the clinicians' notes in these records to identify behavioral symptoms recorded in advance of hospitalizations.

Ultimately, the goal is to make a risk predictor that could run in the background of a health care system's electronic medical records and send an alert when a patient's risk of hospitalization appeared to be increasing. Then, ideally, a social worker or a nurse would visit the patient and caregiver at home, and—accounting for the patient's individual difficulties, the relationship with the caregiver, and aspects of the home environment—provide education about strategies for handling the behavioral symptoms of dementia without medication.

Says Dr. Maust: "The challenging part is thinking about matching the level of risk with the appropriate intervention and the appropriate provider to deliver that intervention, while also recognizing some patients really do need to be hospitalized."

Participating in the community of Beeson Scholars supports Dr. Maust's current project as well as his long-term aim of using risk stratification models to improve both health care delivery and the care of older adults with late-life mental health disorders. In particular, he cites the cross-fertilization of ideas across disciplines as a benefit. "I've met several people from emergency medicine who I wouldn't see at a geriatric psychiatry meeting, for example," he says. "It's great to have this opportunity to discover common interests with scholars from other specialties."

John C. Newman, MD, PhD

Assistant Professor,
University of California San Francisco

Mentor: Eric Verdin, MD

Epigenetic Regulation of Healthspan and Longevity by Ketone Bodies



John Newman, MD, PhD, is among only a handful of geriatricians in this country who do basic research. “I’m a geriatrician, and I love being a geriatrician,” he says. “The Beeson Award is helping to push me into the next stage of my career, which is being an independent scientist along with continuing to be a geriatrician.”

Inspired by his patients, Dr. Newman aims to find therapies that help older adults get through major stresses like hospitalization while maintaining their independence. “Therapies that could, for example, help prevent delirium or muscle loss from inactivity would help ensure that people don’t lose their independence,” he says.

To this end, Dr. Newman’s Beeson Award is seeking the molecular basis for a decades-old observation: mice and other animals kept on a restricted-calorie diet live longer and healthier lives than their counterparts who eat normally. In fact, until recently caloric restriction was the only way known to increase longevity in mammals.

But reducing calories by a third, even if proven to be effective for people, is not a practical way to improve healthspan—our years of optimal health as we age—especially for frail older adults. What’s needed is an understanding of the molecular mechanisms that underlie the health effects of caloric restriction, in order to devise therapies that give the same result.

At least in part, the answer may lie in substances called ketone bodies, says Dr. Newman. “Ketone bodies are small molecules that serve in place of glucose as the body’s currency for energy when glucose is low. When you fast, when you exercise, when you eat less, when you calorically restrict—your body makes ketone bodies.”

But ketone bodies are more than a circulating source of energy. They also work as signaling molecules, binding to receptors or inhibiting enzymes, to help cells respond to stresses like oxidative stress or inflammation. Understanding these signaling functions is key to finding ways of coping better with age-related changes and to developing interventions.

Dr. Newman’s study focuses on the main ketone body, beta-hydroxybutyrate. The first part of the research is to determine whether giving laboratory mice different amounts of beta-hydroxybutyrate through their diet can make them healthier and longer-lived. In studies with both normal aging mice and mice engineered to have Alzheimer’s disease, he is systematically and rigorously testing the diet’s effects on cognition, strength, activity, mobility and other measures of function. Already he has found that administering beta-hydroxybutyrate improves cognition in the Alzheimer’s mice.

Understanding the aspects of health affected by beta-hydroxybutyrate guides the second part of Dr. Newman’s project—investigating the diverse network of molecular mechanisms through which the molecule exerts its effects. About a half-dozen ways in which this ketone body serves as a signal are known, including the ability to reprogram gene expression.

“The kind of molecular pathways that are turned on by caloric restriction, and fasting probably would benefit a frail older adult, if you could turn them on without all of the side effects of actually eating less and losing weight,” says Dr. Newman. “That’s the goal—figuring out how to turn on those pathways without the physiological sledgehammer of fasting. So the next step would be to design therapies that jump in at that level, to turn on genes, or activate the appropriate receptors in a targeted way.”

Dr. Newman credits the Beeson Program with bringing together a unique cross-section of scholars. “Everyone is focused on improving the care of older adults—everyone is coming at it from different directions, but everyone has that common purpose,” he says. “I think it’s unusual to have people from such different backgrounds and different kinds of research, all getting together to support each other and learn from each other.”



Kelly M. Trevino, PhD

Assistant Professor of Psychology in Medicine,
Weill Cornell Medicine

Mentor: Holly G. Prigerson, PhD

Managing Anxiety from Cancer (MAC): A Cognitive-Behavioral Intervention

“Getting older can be challenging,” says Kelly Trevino, PhD. “People are often experiencing declines in health, reduced mobility, and shrinking of their support network. When people get a diagnosis of cancer on top of those other age-related issues, it can feel very overwhelming.”

Yet older adults also have many strengths to draw from when it comes to coping with anxiety after a cancer diagnosis, says Dr. Trevino. For her Beeson Award, she is developing a psychological intervention that helps older adults and their caregivers identify these values and skills, and use them to manage anxiety.

Dr. Trevino notes that approximately half of advanced cancer patients who meet the diagnostic criteria for a psychiatric disorder do not receive treatment. One reason is that, in older adults, anxiety often manifests as physical symptoms rather than feelings of worry or tenseness. A provider might overlook these symptoms, or just not be aware that an older adult is experiencing psychological distress if they talk about a racing heart or sweaty palms.

The interplay between anxiety and illness makes the situation even more complex. “Part of the challenge when you’re working with patients with cancer is that the symptoms aren’t necessarily just medical or just psychological,” explains Dr. Trevino. “If the patient has difficulty breathing—say, they have lung cancer—certainly that’s attributable to the cancer. If they’re anxious, that may compound the difficulty breathing.” Medical problems need to be addressed first, of course. But learning to manage anxiety could also help reduce symptoms like breathlessness.

Recognizing and treating anxiety is all the more important because people who are anxious appear to have a harder time engaging with their cancer treatment, says Dr. Trevino. “For example, they have more difficulty communicating with health care providers, and they are more likely to have a treatment disruption, like delays in their chemotherapy or dose reductions.”

The intervention that Dr. Trevino is developing and testing is based primarily on cognitive behavioral therapy, which

is the gold standard in terms of psychological treatments for anxiety, and also integrates techniques from other empirically supported psychological treatments.

Leveraging the values and strengths of older adults is key. “Older adults often have a more clear idea of the things that are important to them than younger adults,” says Dr. Trevino. “We also identify areas of expertise that might help people learn to manage their anxiety. These can be skills developed in their work lives, or in their social lives, or in hobbies. It might be in their religious or spiritual lives. Some people are able to harness their experience managing other illnesses.”

To help make the intervention accessible, a therapist will speak individually to each patient over the phone. That way, patients do not have to travel to an appointment and providers do not have to have office space available. The goal is to provide six weekly sessions, with patients learning a new skill for managing anxiety each week. To date, a treatment manual is in development. Ultimately Dr. Trevino will oversee a small, randomized clinical trial of the therapy.

It was the strengths of older adults that initially attracted Dr. Trevino to her specialty, geropsychology. The Beeson Program is helping her develop a career in academic medicine. “It has provided me with the resources that I needed to protect my time and launch my research career,” she says.

And with the Beeson Award, you also “are automatically part of a network of current and former Beeson Scholars who are very open to providing mentorship around research issues or career development issues. In my experience, they have been very generous with their support of other Beeson Scholars. I found that to be really valuable.”

Kathleen T. Unroe, MD, MHA

Assistant Professor of Medicine,
Indiana University

Mentor: Christopher M. Callahan, MD

Delivering Hospice and Palliative Care Services to Nursing Home Patients



“Nursing homes are an important and underappreciated site of care for end of life,” says Kathleen Unroe, MD. “About a quarter of Americans die in nursing homes.” But it turns out that many nursing homes—residential facilities that provide medical care for older adults and chronically ill people who cannot be cared for at home—are not expert providers of end-of-life care focused on quality of life. In fact, nursing homes provide access to specialized palliative care inconsistently, and in some parts of the country not at all.

“Through my work as a geriatrician with an interest in policy, I came to believe that much of the answer to addressing the quality of care in nursing homes is around enhancing access to palliative care,” says Dr. Unroe.

But doing this requires first understanding the services delivered to patients through the hospice benefit—the mix of providers, for example, and how services differ depending on diagnoses, or among people living in nursing homes versus at home. The hospice benefit is the predominant formal mechanism for providing palliative care services in nursing homes, but is an imperfect fit for many patients. Despite the tremendous growth in the use of hospice care the last 30 years, few studies have attempted to characterize these services. Dr. Unroe’s Beeson project is laying this essential groundwork. With tens of thousands of patient records from a large multi-state hospice and palliative care provider, she has analyzed care provided in three settings: at home, in nursing homes, and in assisted living facilities.

In her study, Dr. Unroe also has looked at the providers of hospice care, especially nurses, social workers, and nurse aides. She found that patients in different settings receive a different mix of services. But patients in all settings tend to receive more intense services at the initiation of hospice care and at the end of life, even those with very long lengths of stay. In between, patients need stable chronic care.

The patients who stay on hospice care for extended periods lie at the crux of a heated policy debate. On one side, there is concern about whether such nursing home

patients are being enrolled appropriately. At the same time, says Unroe, “we have a huge problem with late referral to hospice. A third of people are on hospice care for very short periods of time.”

Understanding the middle period of chronic care needs for patients who spend months on hospice care is central to Dr. Unroe’s long-term goal of developing a model for palliative care, especially for long-stay residents of nursing homes.

“Right now, the only formal way that palliative care services are available to nursing home residents is via the Medicare hospice benefit,” she explains. “If you don’t enroll your patient in hospice, you may have limited other opportunities to get them the services that you feel they need,” including pain management and supportive care that aligns with patients’ advance directives.

“As I look at the hospice, I’m always thinking about what we can learn from the way hospice provides care, to think of how to do it outside the Medicare benefit as well,” says Dr. Unroe. Her Beeson-supported research on health policy goes hand-in-hand with her work to implement improvements in the quality of nursing home care. Since 2012 she has led a demonstration project, known by the acronym OPTIMISTIC, which aims to optimize chronic disease management and reduce hospital transfers in nursing homes and will soon expand to include more than 40 nursing homes in Indiana.

As a Beeson Scholar, Dr. Unroe says she has learned from others who are working on both implementation and health services research, about how to put research into action. “Additional mentorship through the Beeson Program also is really unique,” she says. “The award comes at an important stage in your career to have that kind of external support—not just the funding support to protect your time, but the feeling that you are part of a network that’s promoting research and leadership in geriatrics.”

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