



## KU Alzheimer's Disease Center Prepares Region for the Rising Tide of Alzheimer's Disease

NATIONALLY RECOGNIZED CENTER PROVIDES RESEARCH, TRAINS PHYSICIANS AND SCIENTISTS AND DEVELOPS INNOVATIVE MODELS OF CARE

By Jeffrey Burns, MD, MS

Since receiving designation from the National Institute of Aging (NIA) in 2011 as one of the country's 31 Alzheimer's centers, the KU Alzheimer's Disease Center has made tremendous strides in preparing the region for the rising prevalence of Alzheimer's disease. Our vision for the KU ADC is to impact the lives of every patient and family dealing with Alzheimer's in the region through our research, education and clinical care. This takes key investments in the backbone of both our research and medical care delivery enterprise to transform the region to be "dementia-capable" and "research-ready."

### WHERE ARE WE NOW?

Currently in the fight against Alzheimer's disease, our tools are limited but it is important to stress two points:

- Doctors can make an accurate and early diagnosis in life.
- We have proven medications that help slow the decline.

Thus, we can think of Alzheimer's as a treatable condition right now. At the same time, however, we must strive to improve our limited diagnosis and treatment options. Even the most specialized centers misdiagnose 15 to 20 percent of patients whose cognitive decline is related to conditions that mimic Alzheimer's. Moreover, our current treatments do not yet stop, reverse or cure the disease. The best effect of the currently available

drugs is to only partially slow the inevitable cognitive decline that occurs with the disease.

### WHERE ARE WE HEADED?

The KU ADC is hard at work to better diagnose the disease and develop a cure. We believe the day will come when doctors will recognize the disease years before the onset of its earliest symptoms and in time to start new drugs that will stop, reverse, or cure the disease before it starts. We believe it is no longer a matter of if we will be able to do this, but it is a matter of when.

Why do we believe this? Rapid advances in PET scanning now allow us to see microscopic changes linked with Alzheimer's disease—amyloid plaques and neurofibrillary tangles. Before this, we could only see these changes by examining the brain under the microscope after someone had died. This new technology works using FDA-approved tracers that are injected into the bloodstream, cross the blood brain barrier, and bind to their target, the amyloid plaque. PET scanners detect the tracer's radioactivity, allowing us to measure the presence, location and burden of amyloid. A similar technique to detect neurofibrillary tangles is now widely used in the research arena, including at the KU ADC.

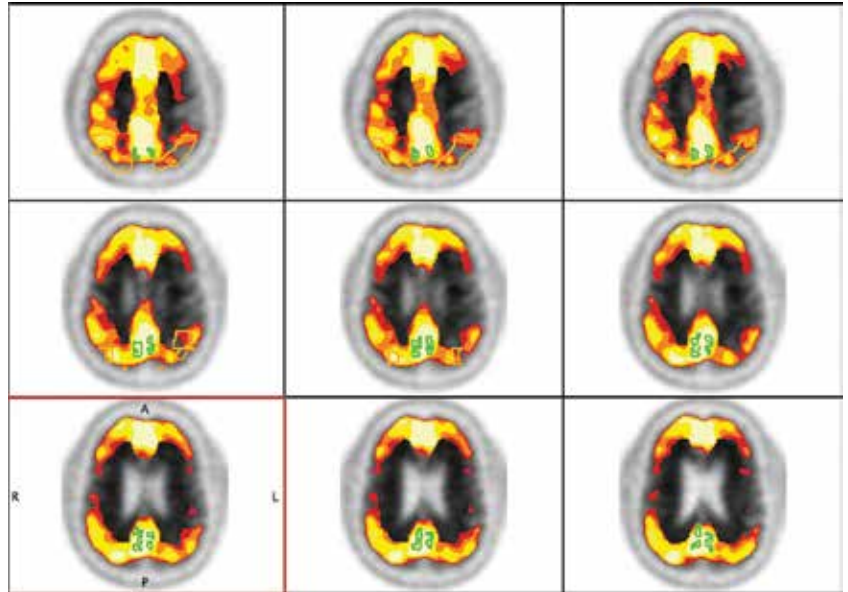
Amyloid PET scanning is available in the clinic, though its wide use is de-

terred primarily by expense and lack of reimbursement coverage. Without clear evidence that using these scans provides benefits to patient care beyond a routine clinical interaction, the use of these scans will remain limited. To determine whether it should foot the bill, Medicare recently completed enrollment of 18,000 patients around the country, including here in Kansas City, into a study testing whether amyloid PET scanning benefits clinician decision making and patient outcomes. Early results from that study (called the IDEAS study) should be available in 2018.

This entirely new vision into the brain is likely to have broad implications in the future fight against Alzheimer's. First, our ability to more accurately diagnose the disease should improve as amyloid PET scans are incorporated into the routine diagnostic algorithm. Second, these imaging techniques may play a role in choosing specific therapies targeting these molecular pathologies for individual patients in the future as we enter an era of more personalized medicine.

### DRUG DEVELOPMENT EFFORTS

The KU ADC is at the forefront of clinical trials, currently running over 25 clinical trials testing a variety of approaches to stop or slow the disease. As one of 35 national sites selected to be part of the NIA's Alzheimer's Clinical Trial Consortium, we bring the most



(Left) A patient undergoes testing with an exercise research coordinator.  
(Above) Nine brain scan images show amyloid plaques.

innovative and cutting edge trial opportunities to Kansas City. For example, we are testing approaches that target amyloid through the immune system (anti-amyloid antibody infusions), enzyme inhibitors that block the creation of amyloid, and a combination of these two approaches to potentially reduce amyloid in the brain. We are also testing new approaches that may stop the spread of tangles via anti-tau antibody infusions. And, we are most proud of our own drug development efforts testing the metabolic hypothesis that increasing metabolism of brain and body cells could have an impact on Alzheimer's disease.

We have made key investments in our clinical trial infrastructure to speed the time it takes to achieve a cure. We have partnered with the Global Alzheimer's Platform to deploy innovative recruitment tools to address the single biggest slowdown of finding volunteers to participate in our trials. Our centralized recruitment team now triages patients and participants more quickly into trials of interest. Additionally, we seek to

provide value to participants through a growing educational program for caregivers and those interested in the latest on prevention. Our goal is for everyone to benefit from our program, regardless of their eligibility for a trial. Our efforts are paying off. Our enrollment into studies has increased nearly five times from a year ago, and the time it takes to enroll someone into a trial has decreased by 50 percent. Our approach is recognized nationally as a model to be imitated.

#### NEW FIELD OF PREVENTION SCIENCE

These advances in drug development and molecular imaging have led to the emergence of an entirely new field of prevention science. We have known for some time that amyloid plaques are present up to 10 to 15 years before changes in memory can be detected. A remarkable one out of three healthy older adults without signs of cognitive decline have the presence of amyloid buildup in the brain, suggesting they are at higher risk of ultimately developing the disease (importantly, however, not all will). We

have ongoing studies testing various approaches—from study drugs to physical exercise—to reduce the long-term risk in these higher-risk individuals. Though it is still early, we are well on the way to testing whether these approaches may one day prevent the disease.

We have also created an Alzheimer's prevention program called LEAP! (Lifestyle Empowerment for Alzheimer's Prevention). LEAP! provides exercise and nutrition strategies that empower people struggling with AD risk factors to reduce their risk for AD through healthy eating, exercise, cognitive engagement and better management of sleep and stress. We have offered our LEAP! Foundations course at seven retirement communities and reached over 250 individuals. We also have a rural program that has delivered 25 events across Kansas and Missouri. Not only are we spreading information on the latest in AD prevention, we are building collaborations and bridges to benefit more and more people through both states. The ultimate validation of this program came

earlier this year in the form of a five-year grant from the NIA to test the LEAP! approach through the Kansas City YMCA network. In this study, we are providing physicians who are struggling to leverage lifestyle, diet and exercise with a tool for their at-risk patients that reduces their chance for AD.

new collaborative care clinic. This model will deploy dedicated nurse practitioners and social workers to co-manage patients alongside primary care physicians in the community who are struggling to deliver the needed care and counseling. Although, we continue to grow our highly specialized memory clinic

mer's Platform. We believe that a public health crisis of this magnitude requires a unified community approach that aligns all the key stakeholders, with primary care physicians being at the forefront.

### TRAINING THE NEXT GENERATION OF SCIENTISTS AND CLINICIANS

Lastly, more experts dedicated to fighting this disease are needed to truly transform the Kansas City region. Our training programs are successfully launching young physicians and scientists into the fight. Our first physician trainee, Megan Baumgardner, DO, joined our practice full time in July. In the last year, three of our young scientists received prestigious career development awards from the National Institutes of Health, with two more expected in 2018. Other young scientists are on the verge of winning career-defining grants that would not have been possible without the KU ADC.

Thanks to the support of the Kansas City community, we are speeding the pace of discovery and shortening the path to a cure by improving the way clinical trials are conducted, training the next generation of Alzheimer's researchers, and developing innovative ways to deliver better patient care. With continued community support, we can continue to be a model for the country in how to fight this disease. ☺

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Russell Swerdlow, MD, center director, and Jeffrey Burns, MD, center co-director.

### DEVELOPING INNOVATIVE MODELS OF CARE: MYALLIANCE FOR COGNITIVE HEALTH

Nationally and here in Kansas City, the field is struggling to provide optimal care to the growing population of people affected by Alzheimer's. That is why we are launching MyAlliance for Cognitive Health (MyAlliance), an effort designed to extend the reach of our care to every patient in the Kansas City region.

MyAlliance will use proven educational programs to train primary care providers with the skills and tools for optimal diagnosis and treatment. MyAlliance will also provide direct support to primary care providers by streamlining access to social services through a navigator program. And, we are developing a

with additional neurologists, we do not believe the answer to the rising tide of Alzheimer patients is to simply expand the number and size of specialized clinics. MyAlliance represents an innovative model for extending our reach to more efficiently distribute the most appropriate levels of care to the right patients.

This early effort to align physicians in the Kansas City region has started successfully. We have 20 physicians who are part of our alliance and they have referred over 100 patients to our research program. In 2018, our alliance clinicians will have an exciting research opportunity to test an innovative cognitive screening program with research referral to the KU ADC (as opposed to clinic referral) in collaboration with the Global Alzhei-