BUADC Bulletin

Boston University Alzheimer's Disease Center FUNDED BY THE NATIONAL INSTITUTE ON AGING



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BU ADC Announces Center for the Study of **Traumatic Encephalopathy**

n esearchers at the Boston University Alzheimer's Disease Center (BU ADC) have announced a formal collaboration with the non-profit Sports Legacy Institute (SLI) to establish the Center for the Study of Traumatic Encephalopathy (CSTE). The Center, jointly located at Boston University School of Medicine (BUSM) and the Edith Nourse Rogers Memorial Veterans Hospital, will study Chronic Traumatic Encephalopathy (CTE). CTE is a progressive degenerative disease of the brain found in athletes with a history of repetitive concussions.

CTE has been known to affect boxers since the 1920s. However, recent reports have been published of neuropathologically confirmed CTE in retired professional football players and wrestlers who have a history of head trauma. This trauma, which includes multiple concussions, triggers a progressive neurodegeneration associated with the development of memory loss, confusion, impaired judgment, paranoia, aggression, depression, and dementia.

The multidisciplinary BUSM team will be led by Dr. Ann McKee, Associate Professor of Neurology and Pathology at BUSM and Director of the BU ADC Neuropathology Core, and Dr. Robert Stern, Associate Professor of Neurology at BUSM and Associate Director of the BU ADC Clinical Core. Interdisciplinary support for this endeavor has been provided by

the BUSM Departments of Neurology, Pathology, and Neurosurgery, the Health and Disability Research Institute at the BU School of Public Health, and the VA New England Geriatric Research, Education, and Clinical CTSE continued on page 4 >



Ted Johnson, former New England Patriots star, was the first living athlete to join the CSTE brain donation program.

New Alzheimer's Disease Treatment Study

The Boston University Alzheimer's Disease Center (BU ADC) is pleased to announce its involvement in a new multi-center, Phase III study to examine a potential treatment for mild to moderate Alzheimer's disease (AD). The study, referred to as "Interrupting Alzheimer's Dementia by Evaluating Treatment of Amyloid Pathology," or "IDENTITY," will compare two doses of an experimental medication, LY450139, LY450139 was developed by Eli Lilly and Company.

LY450139 inhibits the action of the enzyme gamma secretase in order to reduce amyloid beta (Abeta). Abeta clumps together in the brains of AD patients to create amyloid plaques, which are thought to be the initial cause of AD. The IDEN-TITY study will investigate whether LY450139, compared to a placebo or sugar pill, slows the rate of AD progression by examining cognitive and functional abilities among study participants. Though some participants will receive a placebo at the beginning of the study, all participants will eventually receive the active drug LY450139 before the end of the study. However, the exact timing of when the placebo will be switched to the active drug will be unknown to both the participants and study investigators.

The IDENTITY study is seeking participants who are medically stable, over 55 years of age, and have a diagnosis of probable AD. All participants should have a caregiver who is in frequent contact with the participant and who will monitor the administration of medications. For more information about this study, please contact Ms. Stephanie Sikora at 617-414-1078 or sasikora@bu.edu.

Alzheimer's in the News

The 11th International Conference on Alzheimer's Disease (ICAD), sponsored by the Alzheimer's Association, was held this past July in Chicago, IL. The meeting consisted of over 5,000 participants, which was the largest number of Alzheimer's disease (AD) researchers to have ever gathered for such a meeting. Researchers and healthcare providers presented cutting-edge research results and current educational initiatives related to AD.

Several clinical researchers from the Boston University Alzheimer's Disease Center (BU ADC) attended this meeting, with many faculty members and affiliates presenting their research findings. Dr. Robert Green, BU ADC Clinical Core Director, gave a talk entitled, "Safety and efficacy of tarenflurbil in subjects with mild AD: Results from an 18-month multi-center Phase III trial." Tarenflurbil (Flurizan) had shown promising results in prior trials and is known to lower levels of amyloid beta peptide, which is thought to be a contributing cause in AD. The most recent Phase III trial revealed that patients taking tarenflurbil did not significantly differ from patients who took a placebo, or sugar pill, in cognition, performance of everyday activities, or a rating of dementia severity.

The next ICAD meeting is scheduled to be held in Vienna, Austria on July 11-16, 2009. More information about this conference can be found online at www.alz.org/icad/.

Greater Boston Memory Walk

The Memory Walk is the Alzheimer's Association's largest fundraising event. Walks take place annually in more than 600 communities nationwide. On Sunday, September 28th, the faculty, staff, participants, and friends of the Boston University Alzheimer's Disease Center (BU ADC) participated in the Greater Boston Area Memory Walk in Cambridge, Massachusetts.



The BU ADC team raised approximately \$10,000 for the Alzheimer's Association

Select Presentations by BU ADC Investigators & Affiliates at the International Conference on Alzheimer's Disease (ICAD)

Dr. Carmela Abraham, "Klotho, aging and Alzheimer's disease (AD)"

Dr. Nancy Emerson Lombardo, "Feasibility of evidence-based brain healthy nutrition in clinical practice with individuals and private groups"

Dr. Lindsay Farrer, "Distinct variants in SORL1 are associated with cerebrovascular and neurodegenerative changes related to AD," and "Comparison of AD and vascular dementia patients using MRI-based measures of atrophy"

Dr. Brandon Gavett, "The diagnostic utility of the NAB list learning test in the assessment of AD and mild cognitive impairment (MCI)"

Dr. Lee Goldstein, "AD beta-amyloid pathology in down syndrome cataract"

Dr. Robert Green, "Safety and efficacy of tarenflurbil in subjects with mild AD: Results from an 18-month multi-center Phase III trial;" "Impact of a condensed protocol for disclosing APOE genotype to first-degree relatives of people with AD;" and "The impact of an education and risk evaluation protocol on perceived benefits and risks of genetic susceptibility testing for AD."

Dr. Angela Jefferson, "Systolic function is associated with brain aging: The Framingham Heart Study"

Dr. Ann McKee, "Epigenetic modification in a monozygotic twin with AD"

Dr. Robert Stern, "At the crossroads: Development and evaluation of a dementia caregiver group intervention to assist in driving cessation;" "Development of a new scale measuring psychological impact of genetic susceptibility testing for AD;" and "Cognitive complaints in MCI and AD"

Dr. Benjamin Wolozin, "Use of angiotensin receptor blockers is associated with a lower incidence and progression of AD;" and "LRRK2 regulates the stress response in *C. elegans* and mammalian cells"

Research Update

Emotional Memory and Memory Distortions

Dr. Andrew Budson was invited this July to participate in a symposium for the XXIX International Congress of Psychology in Berlin, Germany, where he gave a lecture entitled, "Emotional memory and memory distortions in Alzheimer's disease (AD): Evidence from laboratory studies and the attacks of September 11th, 2001." These studies found that emotional items and events were perceived as being more familiar, regardless of whether they were actually experienced or not. Distortions of memory, including remembering things that never happened, were more common in patients with AD.

Intracellular Mechanisms Related to AD

In AD, amyloid precursor protein (or APP) fragments are generated within a cellular compartment known as the endosome. Current evidence suggests the machinery that transports APP out of the endosome may be defective, causing APP to remain in this compartment where toxic amyloid beta (Abeta) peptides are formed. Dr. Peter Morin's laboratory and others have found that the endosomal machinery implicated in AD also regulates signaling through the Wnt pathway, which is regulated by presenilin 1. Dr. Morin has received a Veteran's Administration Merit Award to study endosomal transport proteins that are abnormal in AD.

Risk Evaluation and Education for AD

In the REVEAL III study, Dr. Robert Green and colleagues have disclosed Apolipoprotein E (APOE) genotype and AD risk assessment to 255 participants at four study sites around the country. Participants are being followed with assessments for mood and emotional responses, behavior changes, risk perception, and general satisfaction with the disclosure process. A recently accepted article in the Journal of Genetic Counseling addresses determinants of baseline risk perception of AD in participants. In addition, two methods papers have recently been accepted from REVEAL data. Findings to be published in Alzheimer's Disease and Associated Disorders used an iterative principal component analysis to develop a more sensitive tool for assessing the psychological impact of genetic testing. A recently published article in Genetics in Medicine addressed the scientific and ethical issues involved in creating risk models based on genetic testing for African American participants.

Screenings for Drugs to Reduce Neuropathologic Changes

Dr. Carmela Abraham and her colleagues are in the midst of two exciting screens for drugs that could alleviate pathologic changes that occur in the brain as a result of normal aging and for drugs that could inhibit the formation of the toxic Abeta peptide. Many academic and pharmaceutical groups are now testing disease-modifying drugs that are aimed at reducing Abeta in the brain. In collaboration with the Laboratory for Drug Design in Neurodegeneration at the Harvard Medical School, Dr. Abraham's laboratory is using a novel approach in their screen for the Abeta inhibitor. This research is supported by a grant from the National Center for Drug Discovery in Neurodegeneration.

Pilot Grant Award Recipients

The Boston University Alzheimer's Disease Center (BU ADC) is pleased to congratulate the 2008-2009 BU ADC Pilot Program Award recipients, including Dr. Brandon Gavett for his project entitled, "Ecological validity of neuropsychological assessment in dementia," Dr. Ci-Di Chen for a project entitled, "The role of the anti-aging protein Klotho in Alzheimer's disease (AD) animal models," and Dr. Anil Nair for his project entitled, "Risk evaluation and disclosure for mild cognitive impairment."

The BU ADC is now accepting Pilot Grant Program proposals for 2009-2010 in research related to AD. The Center anticipates that at least two proposals will be funded in the amount of \$25,000 per award in direct costs for one year. This funding mechanism is intended to support new investigators, experienced investigators just beginning AD research efforts, or feasibility testing of innovative drug and management approaches. Proposals that leverage BU ADC resources, BU ADC data, or community-based partnerships are strongly encouraged. The selected grants will be funded from July 1, 2009 through June 30, 2010 and are not renewable.

Applications for the 2009-2010 cycle are due on February 15, 2009. Please see the BU ADC website for further information about the requirements of the Pilot Grant Program and the application process or contact Ms. Beverly Young at 857-364-4702 or bmyoung@bu.edu.

Center. In addition, Drs. McKee and Stern recently received a \$100,000 award from the National Institute on Aging to supplement the BU ADC's funding to support CTE research.

The non-profit SLI was founded by Mr. Chris Nowinski, a former Harvard football player and professional wrestler who retired at age 24 due to multiple concussions, and his neurosurgeon, Dr. Robert Cantu, a world-renowned concussion expert, Chief of Neurosurgery Service at Emerson Hospital, and Clinical Professor of Neurosurgery at BUSM. Their goal was to advance the health and wellness of athletes and the safety of sports and athletic endeavors. SLI promotes medical and scientific research, prevention and advocacy of sports injury issues, and education. The organization was conceived after SLI and their colleagues discovered four cases of CTE in professional athletes. At the time of their deaths, all four athletes, who were under 50 years of age, had remarkable early cell death and excessive amounts of the protein tau throughout their brains.

The seriousness of CTE was tragically revealed when 40-year-old professional wrestler Chris Benoit murdered his wife and 7-year-old son and then committed suicide. Mr. Nowinski was aware of Chris Benoit's severe concussion history, so SLI sought and analyzed Benoit's brain, discovering the most advanced case of CTE yet. "We are pleased to partner with SLI to research the long-term effects of repetitive concussion in athletes," explains Dr. Stern. "By preventing the development of future cases in children, teenagers, and young adults, and by treating the progression of the disease in former athletes, we hope to eradicate the tragedies that inspired this collaboration."

The newly formed CSTE will develop a research program designed to advance knowledge and understanding of the lifelong cognitive, emotional, and health effects of sports-related brain injuries. An important first step in this new collaboration is the establishment of a brain donation program for current and former athletes who wish to have their brain tissue examined by scientists after they die. Ted Johnson, former New England Patriots star and three-time Super Bowl champion, was the first living athlete to join the brain donation program, and 16 other professional athletes have followed. The CSTE research team will establish a "brain bank" for tissue from deceased athletes that will be available to BUSM researchers and other scientists. For more information regarding the new CSTE, please call Ms. Megan Wulff at 617-638-6143 or visit our website at www.bu.edu/alzresearch.

HOPE Participants Provide Feedback

The Boston University Alzheimer's Disease Center (BU ADC) Education & Information Transfer Core (EITC) developed two exciting projects this summer to gain important feedback from HOPE participants, including a Participant Satisfaction Survey and Focus Groups. The survey provided information about participants' perceptions of the HOPE study and their reasons for participating or not participating in other BU ADC studies. This information will help BU ADC faculty and staff improve participant experiences and contribute to higher rates of study participation and participant satisfaction. The BU ADC is extremely grateful to the 250 HOPE participants who have returned their surveys, and the Center hopes that more participants will continue to do so. If you are a HOPE participant or study partner and have not completed a survey, please contact Ms. Kristen Huber, EITC Coordinator, at 617-414-1193 or khuber22@bu.edu.

In addition to the survey, the EITC completed three focus groups related to Black elders' perceptions of brain donation. Through information provided by 15 Black and African American HOPE participants, the BU ADC will enhance the Center's educational practices about the process and benefits of brain donation. Based on suggestions from the focus group members, the BU ADC has recently appointed Ms. Elana Cook (617-414-1192 or ecook@bu.edu) as the African American brain donation contact. The Center is now developing a brain donation brochure specifically for Black elders and thanks all of the focus group participants for offering their valuable time and insight.



Members of the third focus group: (top row, left to right) Lenore Pereira, Catherine Brown, Shelley Prout, Annette Hazelwood, John Howard, (bottom row) Robert McCoy, June Carter

Actively Recruiting StudiesStudy Type Study Title Study Description

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BU ADC Research Registry	HOPE: Health Outreach Program for the Elderly	This longitudinal study increases our understanding of age-related changes in memory and thinking. It serves as the Boston University Alzheimer's Disease Center (BU ADC) research registry, where participants agree to be contacted about other BU ADC-approved studies. HOPE participants are encouraged to participate in the actively recruiting studies summarized below.
Caregiving Support & Education	CARE-Plus	This study examines whether an educational intervention with caregivers can reduce behavioral problems in patients with Alzheimer's disease (AD) and improve caregivers' emotional well-being. Participation consists of a 5-week intervention with weekly sessions on AD, its symptoms, and tips for improving communication and interactions. The individual with AD is not involved in this study.
	Health Pathways *new study	This study looks at how caring for a person with dementia affects one's physical and emotional health. The study is recruiting caregivers age 60 and older who currently care for someone with AD. Participants attend four yearly face-to-face interviews where they will be asked questions about their health and about the person they care for.
	Home Safety Education	This study compares two types of education to find out if they help caregivers make home safety modifications. Eligible participants include persons with AD (or related dementia) and caregivers living with a person with AD (or related dementia). This study includes two home visits for data collection and safety education. After three months, each participant is offered the alternative education.
	PAIRS Program	This program pairs first-year Boston University medical students with patients with early-stage AD or related cognitive impairment. The program educates medical students about the care and support-related issues faced by patients with AD and provides patients with the opportunity to informally mentor students. Student-patient pairs meet monthly to participate in activities together throughout the academic year.
Memory & Cognition	Understanding False Memory in AD	This study seeks to understand why patients with AD and other dementias frequently remember things that never happened. The goal of this NIA-sponsored study is to provide ways to reduce false memories in patients with dementia.
Neuroimaging	Heart & Brain Aging	This study uses heart and brain imaging and cognitive measures to better understand relations between heart and brain health among aging adults with mild memory loss. Participants attend a single study visit and undergo cognitive testing and brain and heart imaging.
Treatment	IDENTITY *coming soon	This multi-center treatment trial will evaluate whether an oral medication, "LY450139," can slow the progression of mild or moderate AD. This new compound inhibits the action of gamma secretase in order to reduce amyloid beta (Abeta), a peptide that is thought to be a contributing cause in AD. Study participation is for adults over 55 years of age with a diagnosis of AD.
	Investigational Clinical Amyloid Research in Alzheimer's	This multi-center treatment trial will evaluate whether a new medication, Bapineuzumab, increases the clearance of Abeta from the brain. Abeta is believed to be the initial cause of AD. This treatment study is looking for adults between 50 and 89 years of age with an AD diagnosis. Participants will need a study partner who can accompany them to study visits.
		ner who can accompany them to study visits.

For more information, please contact the BU ADC Outreach & Recruitment Coordinator, Ms. Stephanie Sikora, at 617-414-1078 or sasikora@bu.edu

BU ADC Happenings

Welcome

The Boston University Alzheimer's Disease Center (BU ADC) welcomes new staff members: Stephanie Sikora, MA, Outreach & Recruitment Coordinator; Elana Cook, HOPE Study Psychometrician; Amanda Gentile, MRes, Heart & Brain Aging Study Coordinator; Kristen



Stephanie Sikora, new **BU ADC Outreach & Recruitment Coordinator**

Huber, PAIRS Program Coordinator and Education & Information Transfer Core Coordinator; Natalie Joffe, HOPE Study Psychometrician and Brain Donation Coordinator; Pallavi Joshi, Research Assistant; Sumati Raghavan, MBBS, MD, Clinical Trials Specialist; and Beverly Young, BU ADC Administrator.

We also extend a warm welcome to our new student trainees: Lyndsay Root, a co-op student from Northeastern working with Dr. Brandon Gavett; Morgan McGillicuddy, a Simmons College student working with the HOPE Study; and Mari Stackpoole, a nurse practitioner student working with the HOPE Study.

Congratulations

The BU ADC would like to congratulate Dr. Robert Stern, Dr. Angela Jefferson, and Dr. Nancy Emerson Lombardo for their recently awarded Investigator Initiated Alzheimer's Association grants. Dr. Stern's research will focus on determining driving safety in the elderly, including patients with mild cognitive impairment and early Alzheimer's disease. Dr. Jefferson's study will investigate the association between heart and brain health in cognitively normal adults and those with mild cognitive impairment. Dr. Nancy Emerson Lombardo's research will examine the association between nutrition and brain health.



Alzheimer's Association grant presentation (left to right): Gerald Flaherty, Vice President, MA/NH Alzheimer's Association Medical & Scientific Programs; Sanford Auerbach, MD, Chair, Medical & Scientific Advisory Committee, MA/NH Alzheimer's Association; Grant recipients: Melvin Delgado, PhD, Judith Gonyea, PhD, Angela Jefferson, PhD, Nancy Emerson Lombardo, PhD, Robert Stern, PhD; James Wessler, MA/NH Alzheimer's Association President/CEO; Nancy Nichols, Manager, MA/NH Alzheimer's Association Medical & Research Education

The BU ADC would like to congratulate Dr. Benjamin Wolozin for his recent receipt of two grant awards, including a Retirement Research Foundation grant, "Assessing the potential for angiotensin receptor blockers in prevention and treatment of dementia," and a National Institute on Aging-funded Exploratory/Developmental (R21) grant, "Suppression of the heat shock response in aging and neurodegeneration." Dr. John Wells recently received a grant from the Edith Nourse Rogers Memorial Veterans Affairs (VA) Geriatric Research, Educational and Clinical Center Research Post Fund to investigate the role of the progranulin gene in frontotemporal dementia. Dr. Brandon Ally recently received an NIH Career Development (K23) Award, "Using pictures to understand recognition memory in Alzheimer's disease."

Congratulations to Dr. Anil Nair, who was selected

as one of ten members for the United Council for Neurologic Subspecialties Examination Committee for Neurology, and to Dr. John Wells, who was appointed to a three-year term on the VA Central Institutional Review Board in Washington, D.C., which will oversee multi-site VA-funded research projects.

Goodbyes

Many thanks and best wishes to the BU ADC staff who have recently left to pursue new directions: Melissa Barrup, HOPE Study Psychometrican and Brain Donation Program Coordinator, is completing a nurse practitioner program at the Massachusetts General Hospital Institute of Health Professions; Laura Byerly, PAIRS Program Coordinator, is attending medical school at the Oregon Health & Science University; Janet Callaghan, BU ADC clinical trials nurse, is transitioning to a role in the BU General Clinical Research Center; David Essaff, ADNI Study Coordinator, is attending medical school at Western University of the Pacific; Brian Gonzales, HOPE Study Psychometrician, is pursuing a Master's degree in clinical social work at the University of Denver; Sabrina Poon, Research Assistant, is attending medical school at Vanderbilt University; Erin Whalen, HOPE Study Associate Coordinator, has taken a position at Senior Living Residences; Judy DeCarteret, BU ADC Administrator, is transitioning to a position at the Edith Nourse Rogers Memorial VA Hospital.

Thank you and best wishes to our recent student trainees, Emily Kahoud and Brittany Alperin, who worked with the HOPE Study; Ravi Kahlon and Jami Johnsen, who completed independent research projects through the BU Medical Student Summer Research Program; and Dr. Laura Eggermont, a neuropsychology post-doctoral trainee.

Alzheimer's Disease Center Leadership

The Boston University Alzheimer's Disease Center (BU ADC) is primarily supported through a grant from the National Institute on Aging. The BU ADC supports cutting-edge research and provides education and clinical care to families affected by Alzheimer's disease. Its leadership is listed below, alphabetically by Center Core.

Neil Kowall, MD, Center Director, Administrative Core Director, and Translational Animal Core Co-Director

Richard Fine, PhD, Administrative Core Associate Director

Robert Green, MD, MPH, Clinical Core Director and Center Associate Director

Robert Stern, PhD, Clinical Core Associate Director

Christine Chaisson, MPH, Data Core Director

Kathy Horvath, PhD, RN, Education & Information Transfer Core Co-Director

Angela Jefferson, PhD, Education & Information Transfer Core Co-Director

Ann McKee, MD, Neuropathology Core Director

Alpaslan Dedeoglu, MD, PhD, Translational Animal Core Co-Director

The BU ADC Bulletin is published twice annually (Dr. Angela Jefferson, Editor; Dr. Kathy Horvath, Co-Editor; Kristen Huber, Editorial Assistant).

Honorary and Memorial Donations

The Boston University Alzheimer's Disease Center (BU ADC) is involved in a variety of clinical, research, and education activities. These activities are funded by grants awarded from the National Institutes of Health and non-profit organizations. Often, research study participants, families, or community members wish to contribute to the fight against AD, and these private donations are equally important to advancing the BU ADC's mission. The BU ADC welcomes honorary or memorial donations, as these gifts are an excellent way to pay tribute to a family member or friend while making a contribution to the advancement of research in the field of AD. Please call Catherine Pfau at 1-888-458-2823 or visit us online at www.bu.edu/alzresearch if you would like to make a donation.

In Memory of Tobin F. Rossi and Albert Abbruzzese

Mr. and Mrs. John Scannell

In Memory of Barbara Ahern Ms. Mary Evans

In Memory of Richard AmortMitchell and Frances Kurker

In Memory of Francis Burkhardt Carroll Lucas

In Memory of Patricia Barrup Dean, Bonnie, Matthew and

Adam Birchard Gordon and Lucille Oakes Dale Somerville In Memory of Rose Constantino

Cardone Family

In Memory of Vincent DiDonato

Mr. and Mrs. Thomas Ellsworth and Family

In Memory of Martin Korman

Ms. Olga Rakich

In Memory of Gertrude C. Molloy

Mitchell and Frances Kurker

In Memory of Rita Paradis

Raymond and Dina E. Wedler

In Memory of Almeda Pearl Schnur

Al and Gloria Olson Glen and Karen Olson Bob and Denise Bauman Doug and Darcy Noyes Gene and Nancy Stump

In Memory of Julia Silvia

Ms. Marilyn Masaitis

In Memory of John J. Sirois

Mr. and Mrs. David Burke Ms. Denise Hamel Mr. and Mrs. Phillip Sirois Ms. Claire Stone-Belisle

Clinic Information Exceptional CARE, WITHOUT EXCEPTION





The memory clinics affiliated with the Boston University Alzheimer's Disease Center (BU ADC) provide comprehensive care for older adults with memory loss. BU ADC clinicians offer memory diagnostic workups, medical treatment, support to patients and families, ongoing consultation, and cutting-edge research opportunities, including clinical trials. BU ADC clinicians are available at the following locations:

Alzheimer's Disease Clinical & Research Program (ADCRP)

ADCRP Memory Clinic Boston Medical Center 715 Albany Street Robinson Suite 7800 Boston, MA 02118 Telephone: 617-638-7100

Boston University Neurology Associates (two locations)

Memory Assessment Clinic Boston Medical Center Doctor's Office Building, 7th Floor 715 Albany Street Boston, MA 02118 Telephone: 617-638-8456

Memory Assessment Clinic 1221 Main Street, Suite 401 Weymouth, MA 02190 Telephone: 781-331-9944

Edith Nourse Rogers Memorial Veterans Hospital Geriatric Research, Education, & Clinical Center (GRECC; for veterans only)

GRECC Dementia Management Clinic 200 Springs Road, GRECC Bedford, MA 01730 Telephone: 781-687-2701

GRECC Memory Diagnostic Clinic 200 Springs Road, GRECC Bedford, MA 01730 Telephone: 781-687-3240





