



# The VA Parkinson Report

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## Inside this Issue:

San Francisco Update.....3  
Philadelphia Update.....5

Portland Update.....6  
Southeast/Richmond Update....7

Southwest.....9  
Houston Update.....10

## Dietary Modifications in Parkinson's Disease

Shital Shah, DO and John E. Duda, MD, Philadelphia VAMC

Parkinson's Disease (PD) is the second most common neurodegenerative disease worldwide, with the prevalence expected to more than double in the next fifteen years. [1] Many mechanisms have been implicated in the pathogenesis of PD such as oxidative stress, mitochondrial dysfunction, protein dysfunction, and inflammation. Currently, medications are available to treat some of the disabling symptoms of PD but interventions to slow the progression of disease are lacking. Therefore, it is increasingly important to recognize alternatives that may prevent, slow, or relieve symptoms of PD. Evidence suggests that dietary modifications have beneficial and/or deleterious effects in PD.

Phytochemicals are non-nutrient compounds found in plant-based foods that are receiving a great deal of attention as a source of disease prevention and increasing evidence suggests these compounds may offer neuroprotection in neurodegenerative diseases as well. [2,3]

Oxidative reactions are an essential part of cell metabolism but results in the formation of reactive oxygen species (ROS). Glutathione (GSH) is the primary antioxidant in the brain. [4] Postmortem examination demonstrated that GSH levels are reduced in the substantia nigra of people with PD. [5,6] Antioxidants scavenge free radicals, reduce hydroperoxides, stimulate antioxidant enzymes, and inhibit ROS formation. [7] Flavonoids, the largest group of phytochemicals, directly scavenge ROS and have been proposed as neuroprotective agents in neurodegeneration. [8] Certain flavonoids that cross the blood brain barrier based on their polarity and lipophilicity may offer neuroprotection by modulating intracellular signaling, affecting gene expression of antioxidant enzymes and mitochondrial functioning. [9]

Mitochondrial dysfunction is known to contribute to the pathogenesis of PD. MPTP's toxic metabolite, MPP+, interferes with mitochondrial complex I electron transport chain and is toxic to dopaminergic neurons. [10] The potential benefit of phytochemicals in mitochondrial dysfunction has been established in animal models. Quercetin, a flavone found in foods such as teas, grapes, onions, apples, tomatoes, and berries was found to augment ETC complex I in rotenone treated rats, a rodent model of PD, and enhances antioxidant enzyme activity. [11,12]

Inflammation has also been implicated in many neurodegenerative diseases, including PD. Activated microglia lead to neuronal degeneration [13]. Plant derived flavonoids may inhibit inflammation in the brain by suppressing iNOS gene expression and subsequent release of NO. [14] Luteolin, a flavone found in beets, brussels sprouts, cabbage and cauliflower inhibits pro-inflammatory cytokines and suppresses microglial activation, resulting in increased dopamine uptake and reduced NO production. [15]

Protein aggregation is also a common pathophysiologic feature common to many neurodegenerative diseases. Fortunately, mechanisms are in place to degrade abnormal aggregates, and interactions between molecular chaperones, the lysosomal pathway, and the ubiquitin-proteasome pathway combine to degrade most abnormal proteins. [16] Dysfunction of two mechanisms in place for protein removal, the ubiquitin-proteasome system and autophagy-lysosome pathway, have also been implicated in the pathogenesis of PD. The ubiquitin-proteasome system (UPS) rids the cell of abnormal proteins by ubiquitination and subsequently transporting them to proteasomes to be degraded. [17] The autophagy-lysosome pathway (ALP) is another mechanism responsible for protein regulation that degrades stable proteins as well organelles. Autophagosomes merge with lysosomes, with the contents then hydrolyzed. Breakdown anywhere along this multistep process will cause protein aggregation, subsequently leading to cell death. The structure of certain flavonoids allow them to bind alpha-synuclein, allowing for protein stabilization and inhibition of alpha-synuclein. [18] Other flavanols, such as EGCG (epigallocatechin-gallate), found in green tea, also inhibit alpha-synuclein fibril formation by converting large aggregates into smaller non-toxic aggregates. [19]

## Dietary Modifications (continued from page 1)

A higher intake of fruits and vegetables containing flavonoids is associated with a decreased risk of PD. [2] Compared to a diet with a high intake of red meats, refined grains, refined sugars, and high-fat foods, a diet rich in fruits, vegetables, and whole grains reduced the risk of PD. [20] Japanese and Chinese teas, black teas, and coffee are associated with a reduced risk of PD. [21] Teas offered protection of PD independent of caffeine suggesting other compounds in teas are beneficial. [21] Caffeine improves the motor symptoms of PD and may increase the clinical effect of levodopa. [22] Caffeine antagonizes adenosine A2A receptors, which are found on neurons in the basal ganglia. Animal studies suggest that inhibiting the adenosine A2A receptors could be neuroprotective. [23] A large prospective study confirmed the protective effect of caffeine in PD. [24] Cinnamon is another spice that contains flavonoids and antioxidant properties. Some preliminary evidence suggests that the metabolite responsible for its anti-inflammatory properties, sodium benzoate, protects the cell against inflammatory cytokines and suppresses nitric oxide production. [25] MPTP mice treated with cinnamon were also shown to have preserved dopamine function and improved motor function. [25] Uric acid, derived from a diet rich in purines, is an antioxidant that scavenges free radicals and protects against apoptosis. High serum urate levels have been associated with a decreased risk of PD and those patients with PD that have higher serum urate levels have a lower rate of disease progression. [3,26] Vegetables high in purines include asparagus, cauliflower, spinach, lentils, and legumes.

Despite the evidence supporting dietary modifications as a treatment for PD, few studies have attempted to implement lifestyle modifications that would test this possibility. Interventional studies of this sort are difficult to conduct due to feasibility issues, compliance, and monitoring dietary changes. One preliminary study, by Baroni and colleagues, compared a plant-food menu to an omnivorous menu in 25 patients with PD and found improvements in assessments of motor function in the group eating a plant-based diet after only four weeks. [27]

One problem in implementing long-lasting nutritional modifications is a lack of education and support in making the appropriate dietary choices. To address this problem, we concluded a pilot study of plant-based dietary modification in PD patients involving rigorous education regarding the basics of nutrition, why a plant-based diet may be beneficial in PD, and advice on how to transition from an omnivorous menu to a plant-based menu in May 2015. The trial included 3 months of bi-weekly sessions of education, food preparation and nutritional expertise support. Outcome measures will evaluate the feasibility of transitioning to a diet higher in phytochemical content, and the effect on constipation, quality of life, and motor symptoms of PD.

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## San Francisco PADRECC update

### San Francisco VA Physician Honored at White House

**Caroline M. Tanner**, MD, PhD, FAAN, the Director of the Parkinson's Disease Research, Education and Clinic Center (PADRECC) at the San Francisco Veterans Affairs Health Care System (SF-VAHCS), was recently honored at a White House ceremony as a "Champion of Change" for her commitment to caring for people with Parkinson's disease, her research to improve treatment, and identifying causes with hopes to someday prevent the disease.

*"I am proud to represent the many people with Parkinson's disease, friends, family, health care providers and researchers who have already accomplished so much, and who will continue to work to understand the causes and, ultimately, prevent or cure Parkinson's Disease," says Dr. Tanner. "Happily, they are too many to name. They are all Champions of Change."*

*"My dream is to prevent Parkinson's disease," says Dr. Tanner. "As a medical student, I was inspired to see immobile people walk after taking the simple chemical, L-dopa, but at the same time frustrated by the disabling side effects that often followed. I became a neurologist to tackle this problem, and later I trained in clinical neuropharmacology, environmental health science and epidemiology, to give me the skills I needed. I have been privileged to be a small part of a large dedicated community of people with Parkinson's disease, their friends and families, neurologists, laboratory scientists, epidemiologists and other medical practitioners and researchers who share my dream."*

The Parkinson's Disease Champions of Change are inspiring volunteers, doctors, educators, and citizens who are building awareness and investing in research that may one day save the lives of the 500,000 to 1.5 million Americans living with Parkinson's disease.

The full list of PD Champions of Change: <https://www.whitehouse.gov/champions/parkinson-s-disease>



### San Francisco PADRECC's Scan-Echo

Scan-Echo is the acronym for *Specialty Care Access Network – Extension for Community Healthcare Outcomes*. It represents an extension of VA video health care beyond treating individual patients. Scan-echo's goal is to generate expertise across practices and extend specialty care to those who need it.

Unlike usual video teleconferencing (VTEL), which links *one* patient with *one* provider in another location, SCAN ECHO uses VTEL technology to link several care providers simultaneously to a specialist.

The San Francisco *Parkinson's Disease Research, Education, and Clinical Center* (PADRECC), uses their monthly Scan-Echo to discuss aspects of Deep Brain Stimulation. Each 1.5 hour session, includes a presentation from one or more movement disorders specialists, discussion of case studies, and can review specific patients submitted by providers. SF PADRECC's regular attendees are from Honolulu, HI; Palo Alto, CA; Phoenix, AZ; Albuquerque, NM; Minneapolis, MN; Salt Lake City, UT; and Denver, CO.

PADRECC believes in the Scan-Echo program's ability to generate communication and expertise across practices and by extension, deliver that quality to patients. VA providers interested in San Francisco PADRECC's Deep Brain Stimulation Scan-Echo, can call the Parkinson's Center at (415) 379-5530.



## San Francisco PADRECC Update (continued)

### San Francisco VA Health Care System uses Telehealth to Reach Yountville Veterans

The San Francisco VA *Parkinson's Disease Research, Education, and Clinic Center* (PADRECC) recently held its first "Clinical Video Telehealth" (CVT) visit to the Veteran Home of California in Yountville, much to the delight of some residents there.

Many Yountville residents receive their health care at the San Francisco VA Health Care System (SFVAHCS) — 59 miles away. Although transportation is provided for residents to and from SFVAHCS, the trip itself can be especially challenging for Parkinson's patients, who often require caregiver support for travel. Now Parkinson's patients living at the (California state) Veterans Home in Yountville can have most of their medical appointments without traveling.

The Clinical Video Telehealth (CVT) visits allow VA practitioners to see Parkinson's patients at the Yountville Veterans Home without the burden of travel. The patient does not have to give up an entire day for a one-hour appointment and patients can stay in their familiar surroundings at the Yountville Home to have their appointment: bringing specialty care closer to the patient.

Telehealth technology for Veteran outreach has been an ongoing goal of the PADRECC (Parkinson's Center). "We open Telehealth clinics between VA facilities as needed", explained Susan Heath, MSN, RN, "but this is our first Agency to Agency connection, allowing us access to Veterans at the California (state) Veterans home. The collaboration amongst the SFVAHCS Telehealth, V21 Telehealth, CalVet, and PADRECC teams is a testament to the focused determination to achieve this long-desired goal to bring access and quality care to our Veterans who reside at Yountville."

San Francisco PADRECC practitioners are so pleased to connect with Yountville and are grateful to our Telehealth team: Isa Baca of CalVet; Alan Jessen, Administrative Officer, Yountville State Home/CalVet; Sandra Murphy, VISN21 Telehealth Lead; PADRECC Movement Disorders Clinical Nurse Specialist Susan Heath, MSN, RN; Facility Telehealth Coordinator Nurse Manager Elaine Der, NP; CVT Lead Monica Smith; and SFVAHCS Telehealth Technician Michael Casdia."

VA providers from any location wishing to refer Veterans can call the PADRECC (Parkinson's Center) at SFVAHCS at (415) 379-5530.



### Shake-it-up-Baby! NPF Walk in San Francisco

San Francisco PADRECC Patient & Caregiver Support Group chose "Shake it up Baby" as their team name and warrior's cry for the 2015 National Parkinson Foundation fundraising Walk.

This year's walk was heralded by a Bag Pipe band, had 30 walkers from our San Francisco support group, and was number two in fundraising, collecting \$13,000 for the Foundation. We're proud of our *Shake it up Baby* walkers and a good time was had by all!

The San Francisco PADRECC Parkinson's disease **Patient and Caregiver support groups** meet monthly (with separate breakout sessions) on the third Tuesday of each month, 4:00pm – 5:30pm PST. These are held at the San Francisco VA Medical Center, 4150 Clement Street, building 200, room 1A-122 with free parking by the flag pole. Any questions: please call 415-379-5530.



### Teach the Teacher: SAFRA at San Francisco PADRECC

Edmond J. Safra Nurse Faculty Education program was held at San Francisco VA Health Care System's *Parkinson's Disease Research, Education, and Clinical Center* (PADRECC), July 13-14, 2015. This is the third year that PADRECC's Susan Heath (MSN, RN, CNS) has coordinated this Train-the-Trainer event, which educates Nursing Faculty about Parkinson's disease.

<http://www.edmondsafra.org/science-and-medicine/visiting-nurse-faculty-education-program>

The course includes an impressive two-day didactic and 16-18 hours of clinical experience; it is taught by movement disorders specialists in neurology, neurosurgery, pharmacy, speech pathology and physical therapy.

Nurses are critical to the medical management of the Parkinson's patient. Upon completing the coursework, nurse educators will be able to care for the Parkinson's disease patient and family, design teaching methods appropriate for student nurses and clinical nurses, integrate learning in to community settings, and will become a *Safra Nurse Scholar* in Parkinson's disease. If you are a Nurse Educator and interested in 2016 SAFRA training in San Francisco, you are welcome to call Susan Heath 415-379-5530.



## Philadelphia PADRECC Update

The Philadelphia VA was recently renamed the Corporal Michael J. Crescenz VAMC in recognition of Vietnam War Medal of Honor Recipient Michael J. Crescenz. Corporal Crescenz is the only Philadelphian native to receive the Medal of Honor. The Philadelphia PADRECC is proud to be supported by this facility and continues to provide state-of-the-art clinical care, research and education to Veterans with movement disorders in the Northeast corridor of the United States.

### Clinical News

#### Telehealth

The PADRECC telehealth initiatives have expanded to include home quantitative assessments of patients with Parkinson's disease. It is widely recognized in the neurology community that seeing a patient in clinic is extremely limited, as this "snapshot" of approximately thirty minutes may not accurately reflect their true clinical status and treatment needs. Over the last year, the Philadelphia PADRECC has worked to secure equipment and develop a clinical program that will allow monitoring of symptoms over the course of an entire day and/or multiple days. As of this month, the Philadelphia PADRECC has four Veterans enrolled in this program.

### Research News

**Telehealth and Parkinson's Disease:** Dr. Jayne Wilkinson has concluded a study evaluating the use of telehealth in treating Parkinson's disease. Telehealth allows a patient to be seen by a provider using a video connection either to their home, or to a closer VAMC facility. The results of the study demonstrated promising findings. Dr. Wilkinson found that telehealth visits were associated with a high level of overall patient satisfaction and improved patient satisfaction regarding convenience and accessibility, when compared with in-person visits. The study also demonstrated that telehealth results in financial savings related to travel and potentially impacts patient utilization of the healthcare system. Clinical outcomes remained the same as in-person visits, demonstrating that telehealth is a viable way to deliver effective care. Findings were presented at the annual American Academy of Neurology Meeting in April 2014 and will be submitted for journal publication. The study was Dr. Wilkinson's thesis for her Masters in Clinical Epidemiology, which she received from Perelman School of Medicine in May 2015.

**Parkinson's Disease & Motor Symptoms:** Dr. James Morley, Associate Research Director of the PADRECC, continues to study whether computerized movement tests can identify early signs of PD and allow for more accurate diagnosis. Data is being analyzed from patients who performed several movement tests using electronic monitoring devices. This included walking on a mat with sensors and moving their fingers and feet while wearing movement monitors.

**Medication-Induced Parkinsonism:** Dr. James Morley is conducting a study to understand how Parkinson-like symptoms caused by medications are related to PD. Symptoms of PD can be mimicked by certain medicines (usually used for schizophrenia and some psychiatric conditions) that block dopamine—the major brain chemical missing in PD. Not everyone's symptoms improve after the medicines are switched or stopped, so it is possible that the medicines uncover very early PD in some cases. Dr. Morley's team is comparing medication-exposed patients with and without Parkinson's symptoms using questionnaires, physical exam, blood tests and a brain scan that examines the system in the brain most responsible for causing PD motor symptoms. These patients are then followed prospectively after the medication is switched or stopped. Their goal is to determine whether these tests can predict which patients are at higher risk of developing PD.

**Nutrition and Parkinson's Disease:** Dr. Shital Shah, PADRECC Movement Disorders Fellow, Dr. John Duda, and Heidi Watson, RN, recently completed a study to determine the ease of following plant-based diet with the proper education and resources in addition to studying the effects of such a diet on the symptoms of Parkinson's disease. The study includes 3 months of bi-weekly sessions of education, food preparation and nutritional expertise. It is hoped that this study will allow patients to feel comfortable to change their diet to one that may improve the symptoms and progression of PD.

**Caregivers & Parkinson's Disease:** Dr. Jayne Wilkinson, Gretchen Glenn, LCSW, and Eileen Hummel, RN, BSN conducted a study to examine a telephone support group that aims to help empower family caregivers to maintain their health, well-being and capacity to care. The telephone support group consisted of 8 weekly, 90 minute telephone conversations of spouse caregivers of patients with Parkinson's disease. The support group phone calls were facilitated by a masters prepared nurse, a registered nurse and a social worker. Caregivers found this support group helpful in taking care of a loved one with PD. The results of this study were published in Geriatric Nursing:

<http://dx.doi.org/10.1016/j.gerinurse.2015.02.002>

**Parkinson's Disease & Blood Pressure Medication:** Dr. Shital Shah, PADRECC Movement Disorders Fellow, and Dr. James Morley are currently conducting a study to demonstrate the effects of a medication that increases blood pressure on symptoms of dizziness in patients with Parkinson's Disease. This study is based on a prior study conducted at the PADRECC by Dr. Amy Hellman using continuous non-invasive arterial pressure monitoring to show abnormal control of blood pressure responses in some PD patients. It is hoped that the results of this study will provide additional treatment options for disabling dizziness experienced with Parkinson's Disease.

**Traumatic Brain Injury:** Dr. John Duda, PADRECC Director, and his colleagues, Drs. Kacy Cullen and John Wolf, from the Department of Neurosurgery at the University of Pennsylvania, continue studies funded by the Rehabilitation Research and Development Service of the Department. The aim of these studies is to develop animal models of Chronic Traumatic Encephalopathy (CTE) that can develop years after traumatic brain injuries. The goal is to develop novel treatments and preventive strategies. It is hoped that these studies will lead to treatments to prevent the development of these neurodegenerative diseases in Veterans and others who have suffered head injuries.

**Neurorestoration in Parkinson's Disease:** Drs. Duda and Cullen, and colleagues from the recently established Center for Neurotrauma, Neurodegeneration, and Restoration (CNNR) at the Philadelphia VA Medical Center, were awarded a two-year grant from the Michael J. Fox Foundation for Parkinson's Research to investigate experimental reconstitution of the nigrostriatal path-way (the pathway that degenerates in PD and causes the motor symptoms) in animal models of PD in a grant titled, 'Restoring the nigrostriatal pathway with living micro-tissue engineered axonal tracts'.

## Philadelphia PADRECC Update (continued)

### Education News

**Monthly Case Conference:** Monthly case conference calls continue to be held with service area Consortium Centers to share case studies and discuss diagnosis and treatment of difficult cases.

**The 9<sup>th</sup> Annual PADRECC/MIRECC Symposium on Neurodegenerative Diseases Advances in the Treatment of Neurological and Psychiatric Disorders** was held on October 24, 2014 at the Philadelphia VAMC. The focus of the symposium was *"From Electrical to Electronic"* exploring the role of DBS in the treatment of PD and other movement disorders, affective disorders in the general population and Alzheimer's Disease. The symposium also discussed the use of technology to deliver and make more accessible many treatments for a range of mental health and cognitive disorders and the use of genetic profiling and personalized mental health treatment.

**Patient & Caregiver Education/Support Group Program:** This program runs from April-December and meets once a month for one hour to provide support and education on topics related to PD. The group continues to be broadcasted to Ft. Dix and Willow Grove CBOCs using telehealth technology.

**Stress Management in Chronic Illness:** This program was done in collaboration with the PVAMC Neurology Clinic and was offered to Veteran's diagnosed with PD and MS. It was held at the PVAMC and also broadcasted to Ft. Dix and Willow Grove CBOC via telehealth technology. The purpose of the program was to educate participants on the impact stress can have on PD/MS and learn stress management techniques.

**Creativity Program for Veterans:** On April 10<sup>th</sup>, 2015 the Philadelphia VA PADRECC hosted its first Creativity Session. The session was facilitated by a PADRECC patient who discovered his artistic talents after being diagnosed with PD. Veterans and their care partners were invited to participate in creative activities and experiment with artistic expression. Participants also talked about the benefits of creativity in coping with mental and physical challenges and promoting overall well-being.

**Community Health Fairs:** The Philadelphia PADRECC had information tables at the **Shake It Off PD** "PD500 Rock 'n' Roll Bike Ride" and the Partners in Parkinson's Philadelphia Symposium. Both events were held in Pennsylvania in October 2014.

## Portland PADRECC Update

According to Madhulika Agarwal, MD MPH, VA Deputy Under Secretary for Health for Policy and Services, more than 717,000 Veterans accessed VA care through telehealth in FY14, taking advantage of services in more than 45 different specialty areas.<sup>1</sup> Timely and effective use of technology has become increasingly important in the expansion of Veteran access to care. For Parkinson's disease (PD) and movement disorder patients, telehealth modalities can be of particular benefit to Veterans who have difficulty accessing specialty services.<sup>2</sup> Teleneurological care can increase effective management of chronic disease processes for PD patients, resulting in improved health status.<sup>3</sup> Since 2011, the NW Parkinson's Disease Research, Education, and Clinical Center (NW PADRECC) has leveraged the use of telehealth modalities to advance mission-critical goals in the areas of clinical care, patient education, and provider education.

Clinical video teleconferencing (CVT), where local neurologists examine patients at remote VA sites, has become a regular part of Portland PADRECC clinical practice for the management of PD and other movement disorders, including evaluation and follow-up for deep brain stimulation (DBS) surgery. As of this writing, NW PADRECC neurologists in Portland have conducted **103 CVT** appointments this fiscal year, providing care to Veterans in 15 unique VA locations in Oregon, Washington, Idaho, and Montana.

Patient response to CVT has been largely positive, but provider feedback has been more mixed. PADRECC neurologists have at times been dissatisfied with aspects of neurological examination not conducive over teleconference, such as muscle tone testing. Anecdotally, physicians report they don't feel patients ask as many questions over CVT, indicating that rapport may not be optimal compared to face-to-face visits. However, neurologists note that for certain kinds of visits, such as evaluation for DBS, essential tremor evaluation, and routine follow-up care, CVT works very well without necessitating extra travel for the patient.

Additionally, the NW PADRECC's tele-education initiative has become pivotal to the provision of timely information to Veterans in outlying areas. Patient lectures historically available only to local audiences are broadcast using v-tel technology to as many as 12 separate locations concurrently. For three patient events this fiscal year, 346 registrants attended from remote locations in Oregon, Washington, Idaho, and Alaska, while 190 attended in Portland. The events drew almost twice as many attendees to remote sites as to the local VA. Patient feedback has been overwhelmingly affirmative. An unintended positive side-effect of these broadcasts has resulted in Veterans and family members connecting with other Veterans with similar diagnoses by virtue of attending the events together at their local VA.

CVT has become a standard part of Fellow orientation and training for their clinical duties. NW PADRECC staff outfitted all of the VA Portland Specialty Clinic exam rooms with CVT equipment to facilitate a smooth incorporation of CVT appointments into the regular clinic schedule. In addition to regular clinics, a dedicated CVT clinic has been added to Thursday afternoons to accommodate the growing number of patients wishing to be seen remotely.

The NW PADRECC offers an annual provider symposium available by V-tel, and currently has plans to expand provider education activities to include one-on-one V-tel outreach to remote providers. Psychiatric residents would be supervised at their local VA, and receive mentoring and feedback from Portland PADRECC neurologists via CVT in real-time while seeing in-person movement disorder patients at their site.

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## Southeast/Richmond PADRECC Update

### Provider News

Congratulations to **Jessica B. Lehosit, DO** who was recently promoted to Southeast/Richmond PADRECC Interim Director. Also in 2015 she was honored as an A.B. Baker Teacher Recognition Award Recipient by the American Academy of Neurology (AAN) A.B. Baker Section of Neurologic Educators. This award recognizes excellent teachers and their contributions to improving neurology now and in the future, along with the ideal that teaching binds students, residents, faculty, other clinicians, researchers, and patients together in a meaningful way.

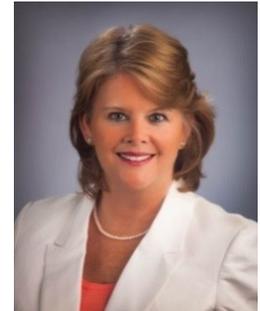


PADRECC providers, left to right:  
Drs. W. Maragos, J. Lehosit, A. Qutubuddin, M. Baron

**Mark S. Baron, MD** was named Interim Director at Virginia Commonwealth University Parkinson's Disease and Movement Disorders Center in 2015. He continues to serve as Southeast PADRECC Deputy Director, seeing clinic patients, and doing both clinical and lab research.

**William Maragos, MD, PhD**, Chief of Neurology at McGuire VAMC is a movement disorder specialist and also staffs the PADRECC clinic.

Nurse Practitioner **Debra Dellinger, MSN, ACNP-BC**, joined the PADRECC team in May 2015. She is an



D. Dellinger MSN, ACNP-BC

Acute Care Nurse Practitioner, and a graduate of the Virginia Commonwealth University School of Nursing, with extensive experience in intensive care and Neurology. Debbie is active in the Greater Richmond Area Chapter of the Virginia Council of Nurse Practitioners (VCNP), as a board member - President Elect and a Stroke Certified Registered Nurse (SCRN).

### Welcome New Consortium Center

Please welcome Director, Ramon L. Rodriguez, MD and a new Center in the National VA Parkinson's Disease Consortium at the Orlando VA Medical Center. The Movement Disorders Clinic at Orlando VAMC provides specialty care for those veterans affected by Parkinson's disease, Dystonia, Tremors, Huntington's disease, Parkinson Plus syndromes and other movement disorders in Central Florida. The Clinic operates under the supervision of Dr. Ramon Rodriguez, fellowship trained Movement Disorders Specialist. The clinic provides access to the latest medical and surgical procedures for patients suffering from movement disorders. In addition, Dr. Welwin Liu, Fabian Rossi, Aunali Khaku and Michael Hoffmann provide their neurological expertise, creating a comprehensive center that covers all the aspects of neurological care of this population. For more information, please contact (407) 631-1050 for appointments.

### DBS Update



M. Hirsch (l); Dr. Kap Holloway (r)

For the past 14 years, the Southeast PADRECC Deep Brain Stimulation (DBS) program, directed by Neurosurgeon, **Kathryn Holloway, MD** has provided improved functioning and a restored sense of hope to hundreds of veterans with medically refractory movement disorders such as Parkinson's disease (PD) and essential tremor (ET). Dr. Holloway has been an implanting surgeon since 1997 and has performed over 500 DBS surgeries. In addition, she and her interdisciplinary clinical and research team are involved in numerous research projects aimed at improving the DBS technique and our understanding of the procedure.

Dr. Holloway served as primary investigator and implanting surgeon at the Southeast PADRECC and Virginia Commonwealth University Medical Center, two of twelve centers that participated in the CSP #468 Study: A comparison of Best Medical Therapy to Deep Brain Stimulation of Subthalamic Nucleus and Globus Pallidus for the Treatment of Parkinson's Disease and its 5-year follow-up. This 13 year study was the largest multicenter trial examining the different brain targets for DBS in Parkinson's disease. The data that has been generated has contributed to a better understanding of DBS and the long-term effects of this treatment modality.

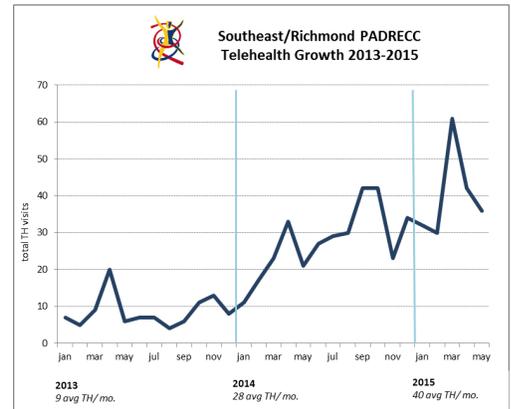
Other research interests of Holloway and her team include the development of improved frameless methods for DBS placement, the use of brain scanning technologies during DBS surgery, the creation of a mapping system or "GPS" to help improve surgical accuracy and outcome and the exploration of sub-regions of efficacy within DBS brain targets or the brain's "sweet spots." Dr. Holloway is also interested in the potential for DBS for the treatment of other brain disorders such as dementia and severe depression. *by Miriam Hirsch, MS, RN, CCRC, DBS Coordinator*

## Southeast/Richmond PADRECC Update (continued)

### Telehealth Update

The Southeast/ Richmond Parkinson's Disease Research Education and Clinical Center (PADRECC) Telehealth (TH) program continues to expand, with appointment numbers more than tripling since 2013.

PADRECC's TH nurses schedule new consults and follow up visits for the Veteran by matching appointment time and TH space at the remote site, with clinic schedule and provider time slots at Richmond, the movement disorder specialist site. Veterans' care is managed with reinforcement of the treatment recommendations to the referring provider and ongoing education/support. Now more than ever before, Veterans at CBOCs and VAMCs in the more rural areas in the Southeast, unable to travel easily or long distances to Richmond, have access to neurology movement disorder specialty care through TH technology! *by Jackie Johnson, RN, Telehealth Nurse*



### Rehab Medicine

Physiatry, or rehabilitation medicine, is one of the PADRECC components of a comprehensive approach to Parkinson's disease treatment. Attending rehabilitation physician, **Abu Qutubuddin, MD, MBBS** and the rotating Fellows from the VCU Department of Physical Medicine and Rehabilitation (PM&R) provide state-of-the-art rehabilitation approaches to PADRECC patients' needs. Patients are evaluated for functional limitations caused by postural instability, slowed motor movements (bradykinesia), pain and/or limited range of motion. Patients then receive exercise suggestions or complete exercise regimens with individualized exercise protocols monitored for effectiveness.

An integral part of the rehabilitation team involves consultation with specialized services such as physical therapy, occupational therapy, speech and language therapy and kinesiotherapy. These services are especially helpful in instructing, monitoring, and motivating patients in various challenges which face people with Parkinson's. A recent exciting focus has been on collaborating with the Richmond VAMC's PM&R department to secure a designated space and designated therapists to work exclusively with PADRECC patients.

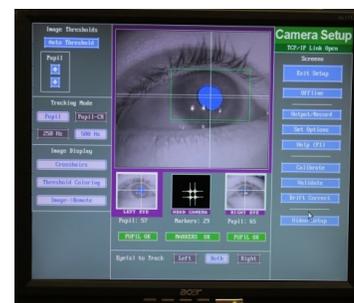
Another specialized service offered by PADRECC rehabilitation physicians involves neurotoxin injections for the following conditions: torticollis, sialorrhea, blepharospasm, dystonia and skeletal muscle spasticity. To date, over 15 cases of blepharospasm, 10 cases of torticollis, twenty cases of sialorrhea and several dozen cases of dystonia have been treated successfully.

Finally, joint pain is frequently seen in the Parkinson's population. This condition is often responsive to the use of adaptive equipment (in consultation with the hospital prosthetics service) and/or injection of the joint with agents designed to reduce inflammation and provide easier movement. These injections, often steroids or Synvisc, can provide up to six months of pain relief for individuals with painful knees and shoulders. *By Abu Qutubuddin, MD, Physiatrist*

### Research

The largest research project currently underway is studying the eye movements of patients in the Southeast PADRECC. Coordinated, purposeful eye movements require precise control from all areas of the brain, working in concert with microsecond precision. Dysfunction of any one brain location will affect the way that our eyes move in a quantifiable, recordable manner. Almost 3,000 subjects have been enrolled to date, and the results are exciting. Data suggest the ability to differentially diagnose any neurological movement disorder, with very high sensitivity and specificity, both approaching 98+%. According to the literature, 60% of patients with movement disorders have had their diagnosis changed at least once, due to the fact that there is no test for these disorders and clinical exams are subjective. We believe that this test may offer a unique way to meaningfully quantify these diseases, and provide a likely diagnosis at a patient's first consult.

Additionally, studies are underway in patients with REM sleep behavior disorder who are asymptomatic for movement disorders, and 55% show eye movements consistent with Parkinson's disease. Functional imaging (DaTscan) in these patients agrees with eye movement data, showing normal scans in predicted normals, and unilateral reduction of dopamine uptake in those we predict will develop PD. These data suggest the ability to reliably detect people with preclinical Parkinson's disease, potentially a decade before outward symptoms are visible. In short, we believe that not only is this research useful as a universal diagnostic test; but it may also provide an accurate, specific pre-clinical biomarker for Parkinson's disease. This easy, inexpensive, rapid, painless, and non-invasive test has the ability to redefine how we diagnose movement disorders, and provide better quality of care to our veterans, and then later to the entire population. To date, three articles have been published on this research, with two further articles prepared for submission very shortly.



Screen of eye tracking program

## Southeast/Richmond PADRECC Report continued



left to right: P. Wetzel, PhD, G. Gitchel, PhD,  
M. Baron, MD

Over the past 6 years, through a collaborative effort with the Virginia Commonwealth University Department of Biomedical Engineering, we have developed a device to investigate muscle rigidity in patients with movement disorders. The computerized and automated device utilizes a high torque motor and very sensitive load cell, to recreate a clinical exam of rigidity; but do so computationally. We anticipate IRB approval and enrollment of subject soon, and hope to report results on the nature of rigidity.

The Richmond PADRECC is also a participating site for the Rhythm pharmaceuticals RM-131 study, which is a phase 2 study investigating a potential treatment for chronic constipation in patients with Parkinson's disease. In the near future, we plan to study gait in patients with movement disorders. Gait disturbances and postural instability are some of the most disabling symptoms to patients, significantly limiting mobility, quality of life, and independence. We aim to study the unique differences

in gait and posture between Parkinson's disease and its mimics. *by George Gitchel, PhD, Research Health Science Specialist*

## Southwest PADRECC update

### Greater Los Angeles Healthcare System

**Dr. Karen Connor** and **Dr. Barbara Vickrey**, Principal Co-Investigators and research team have designed a model of care delivery to provide preventive/proactive care coordination across the care continuum for Veterans with Parkinson's disease (PD). The multi-center VISN 22 (Greater Los Angeles or GLA, Las Vegas, Long Beach, Loma Linda, San Diego) study, "Improving Quality of Care in Parkinson's Disease: A Randomized Controlled Trial," is a telephone-based, nurse-led PD care management intervention called, "Coordinating Care and Activities for Health Promotion in PD" (CHAPS) that commenced in May 2012. The aim of the study is to determine if the nurse-led intervention improves PD quality indicator adherence and if Veterans' health outcomes will improve in those subjects enrolled in the intervention arm. A secondary aim is to gather cost data for VA decision makers for potential dissemination to other PADRECCs if the intervention is found to be efficacious. The study was funded over \$1 million by VA HSR&D, Nursing Research Initiative.

In addition, **Virginia Janovsky, RN** at the GLA site initiated and leads an economical and effective telephone-based education and support group for people with PD and their families or caregivers in response to barriers faced by Veterans and their families—lack of transportation, traffic congestion, parking shortages, difficult mobility, distance, assistive aid needs, and self-consciousness of their Parkinson's symptoms. Meetings are on the second Tuesday of every month through the VA toll-free telephone conference line and available across the nation. Two-way conversation and discussion is possible. Additional benefits included convenience not only for Veterans, caregivers, and family but also for the speakers, encouraging even more voluntary participation.

### Albuquerque, New Mexico VA Health Care System

**Sarah Pirio Richardson, MD**, a movement disorders specialist, and **JoAnn Harnar, RN** run the PADRECC clinic in Albuquerque, New Mexico. Clinical activities include specialty care for patients with tremor, ataxia, Parkinson's disease and dystonia. Botulinum toxin injections and deep brain stimulation programming is done for patients in VISN 18 from eastern Arizona, southern Colorado, New Mexico and western Texas. Teleneurology and nurse education sessions are important parts of these services. Research efforts are focused on utilizing transcranial magnetic stimulation to improve dystonia symptoms. A recent publication from the group shows improvement in cervical dystonia symptoms with repetitive transcranial magnetic stimulation, published April 2015 on the PLOS One website. **Dr. Pirio Richardson** has also co-authored a forthcoming book, *Fundamentals of Neurologic Disease* (Springer, 2d Ed., 2015), with **Larry E. Davis, MD**, Chief of Neurology.

### Las Vegas, Southern Nevada Healthcare System

**Dr. Selina Parveen** provides movement disorder, deep brain stimulation and botulinum toxin management to a large catchment area in Nevada, Arizona and Utah in VISN 22. She often is a guest speaker at the community support group, Friends of Parkinson's in which many Veterans attend. She also was an invited speaker for the Davis Phinney Foundation's Victory Summit held on February 7, 2015 at the University of Nevada in Las Vegas. She is also the site Principal Investigator for the study led by **Dr. Karen Connor**, Improving Quality of Care in Parkinson's Disease: A Randomized Controlled Trial.

### Long Beach Healthcare System

**Dr. Steven Schreiber** is Chief of Neurology at the VA Long Beach Healthcare System where he oversees the local PADRECC. In 2011, **Dr. Schreiber** started one of the first Teleneurology programs in the VA system that was focused mainly on Parkinson's disease and other movement disorders. The program has since grown and now encompasses a broad spectrum of neurological diseases, a third of which are Movement Disorders. In a recent study **Dr. Schreiber** showed that healthcare delivery through Teleneurology can be as efficacious and rewarding in the urban setting as it is in more rural and medically-underserved areas. He recently received a grant to develop a telehealth program with a non-VA facility, **Catalina Island Medical Center**, to provide care for Veterans with Parkinson's disease and other medical problems. He also serves as local Principal Investigator for PADRECC-related studies, including most recently, **Dr. Karen Connor's** study on "Improving Quality of Care in Parkinson's Disease: A Randomized Controlled Trial."

## Southwest PADRECC update (continued)

### Loma Linda Healthcare System

**Dr. Dorothee Cole** manages the movement disorder clinic at the VA in Loma Linda, CA, which provides specialty care for patients with Parkinson’s disease including deep brain stimulation programming. She also administers botulinum toxin injections for various kinds of dystonia and treats other movement disorders such as ataxia and tremor. She also is the Loma Linda site Principal Investigator for the multi-center VISN 22 study, “*Improving Quality of Care in Parkinson’s Disease: A Randomized Controlled Trial*,” headed by **Dr. Karen Connor** at the West Los Angeles VA.

The Loma Linda VA also offers a new and unique Parkinson’s disease support group through the **Primary Care Mental Health Integration Clinic** for both caregivers and Veterans. The four week program meets every Friday and includes a Lee Silverman Voice Treatment session with the speech pathologist, both Veteran and caregiver breakaway sessions with the psychologist and social worker, and singing as a speech exercise strategy at the end. **Dr. Cole** and other neurologists provide guest talks.

### San Diego Healthcare System

**Dr. Stephanie Lessig** is the Principal Investigator (PI) for an investigator-initiated study sponsored by Parkinson’s Disease Foundation, “Self-Reported Benefits from Tremble Clef Participation in Parkinson’s Disease”. The Tremble Clefs are a group of Parkinson’s patients in San Diego who meet once a month to practice singing (vocal exercises) and who perform at local events a few times per year. The aim of the study is to test through standardized questionnaires whether regular singing can improve speech and swallowing. In addition, **Dr. Lessig** is the site PI for the multi-site, randomized study to assess quality of care of Veterans with Parkinson’s disease by comparing a nurse-led telephonic care management program to usual care. Other additional services include telehealth and a VA support group through the San Diego neuropsychology service.

### Tucson, Southern Arizona Healthcare System

**Scott Sherman, MD, PhD** and his research laboratory focus on developing novel therapies for Parkinson’s disease (PD) and have several translational projects that could impact the management of PD. His research led to the discovery that neurotrophic factors, Vascular Endothelial Growth Factor-B and a factor derived from the retina are neuro-protective. Another study explores the use of a compound for the treatment of PD dyskinesia for which he has applied for a patent and plans to initiate clinical trials in the upcoming months. In addition, his pluripotent stem cell study can hold great promise in the field of regenerative medicine because they can propagate and be used to replace PD damaged cells. His research laboratory will be part of a new Regenerative Medicine Initiative at the University of Arizona.

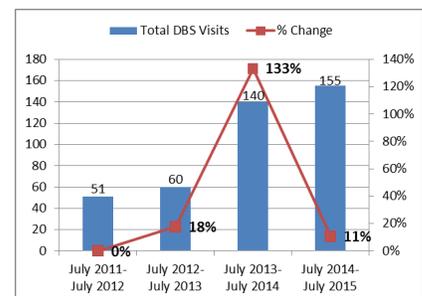
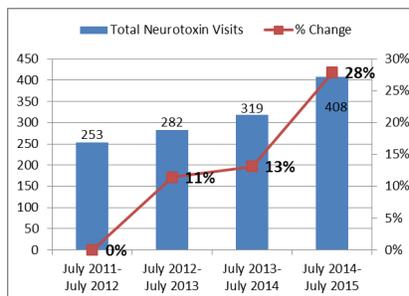
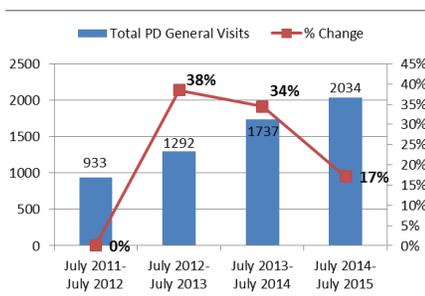
## Houston PADRECC update

### Clinical News

Houston’s Parkinson’s Disease Research, Education and Clinical Center (PADRECC) housed in the Michael E DeBakey VA Medical Center continues to provide state of the art medical and surgical services to Veterans with Parkinson’s disease and related movement disorders who reside in the Southcentral and Midwestern United States.

Since fiscal year (FY) 2012, year by year, our center has experienced an annual growth rate of approximately 17%. Within the overall increase in clinical care, there has been an average increase of 29% in the general patient encounters, 17% in neurotoxin injection procedures, and 54% in Deep Brain Stimulation (DBS) clinic visits.

Our skilled neurosurgeon performed 16 DBS surgeries in FY-15 using both conventional and frameless techniques with equally good clinical outcomes. This is in comparison to 10 DBS surgeries performed in FY-14 (60% increase)



The center has launched an initiative with the Departments of Neurosurgery and Radiology to make the DBS surgery under sedation available to our patients in the coming years.

Despite the increasing volume and no corresponding expansion of resources, the center has maintained a high patient satisfaction rating throughout its service cycles. In keeping with the Veterans Health Administration’s strategic business plan “Blueprint to Excellence” to deliver first-class healthcare, our PADRECC Director was awarded a **Certificate of Appreciation** by the **Specialty (Patient) Care Services** on February 05, 2015.

## Houston PADRECC update (continued)

### Education News

Our center has created an alliance with the Department of Veterans Benefits' Vocational Rehabilitation Program for qualified Veterans to engage in "On the Job Training" (Non-Paid Work Experience). From April to September 2015, Houston PADRECC has trained and benefited from the excellent volunteer services of Ms. Sheila Cruz (Certified Medical Assistant) and Ms. Demetrius Moore (Certified Nurse Assistant) to support our clinical and educational programs.

Houston PADRECC has a vacant nurse position since Dec., 2014, that also functioned as the Associate Director for Education. Houston PADRECC had to seek temporary volunteer and hospital provided nursing support to sustain our broad patient and medical professionals based educational program that includes:

**Patient directed clinic based education:** Key part of specialty patient care. Provided 4 clinic days a week, involves 1:1 education in the clinics and provision of printed educational materials

**Monthly patient and caregiver educational support group:** Offered on the first Thursday of each month. Informal educational sessions with the patients and care providers lead by a RN or MD, duration: 1-2 hours, lunch is provided by the VA hospital.

**Patient and caregiver educational forum:** a quarterly patient directed lecture series by an expert on Parkinson's disease followed by a question and answer session with PADRECC physicians; 2-3 hours, lunch is provided by the hospital.

Recent Quarterly educational forums:

"Advances in Deep Brain Stimulation for the Treatment of Movement Disorders", by Dr. Viswanathan; June 6, 2014:

"Parkinson's Disease: GI Pearls and Pitfalls"; by Dr. Rhonda Cole, September 5, 2014:

"The ABC's of Dementia in Parkinson's Disease", by Dr. Jackson, Friday, March 6, 2015

"Medication Management in Parkinson's Disease", by Dr. Sarwar, Friday June 5, 2015

### Annual Educational Conference:

Annually, the Houston PADRECC in collaboration with Houston Area Parkinson's Society (HAPS) organizes an all-day educational program that includes various lecture and discussion sessions by movement disorders experts for the PD patients and their care providers. In addition, Houston PADRECC also partners with other national and community organization for Parkinson's disease and other movement disorders to provide the latest disease related information to Veterans and non-Veterans with PD.

### Recent Annual symposiums:

The 5th annual CAREGIVER CONFERENCE: *What now? What next?* sponsored by Houston PADRECC and the Houston Area Parkinson Society was held at the United Way Resource Center on December 6, 2014. Approximately 100 PD caregivers attended the program.

PADRECC staff had an information table at the Houston Area Parkinson's Society's 26th Annual Educational Symposium on Saturday, May 2, 2015. The symposium, *Beyond Shaking and Slowness: Understanding the other symptoms of Parkinson's*, attended by nearly 300 people.

Houston PADRECC will have a table with information at the upcoming in the Partners in Parkinson's Houston symposium, a free educational event for people with Parkinson's and their families and will take place September 12, 2015 at the George R. Brown Convention Center.

**Medical Professionals based educational initiatives:** have included our ongoing weekly education programs to include: monthly journal club, monthly case conference, monthly live lecture series and guest/ audio lecture series.

### EES Lecture Series:

Houston PADRECC Director was the speaker for the EES Movement Disorders lecture series last September and delivered a lecture on Sleep Disorders in Parkinson's Disease.

### Medical trainees Program:

Houston PADRECC is also the site for a mandatory clinical elective for senior neurology residents from Baylor College of Medicine. Dr. Sarwar, the PADRECC director, is the rotation mentor and director of the clinical course. In the last fiscal year the center trained 11 residents in the basics of movement disorders diagnosis and management including basics of DBS programming. The center received excellent feedback from its trainees.

In addition, the center maintains a robust post-doc research trainee program, where post-graduate MD physicians are able to utilize a without compensation training option to train with the center for 6-24 months. One such volunteer researcher was trained in the last fiscal cycle.

### Update on Consortium based Education and Clinical Support:

Houston PADRECC has also expanded its educational activities within its consortium during the last year by increasing the frequency of educational interactions with the consortium members, adding regular case discussion and clinical brain storming during the consortium calls in addition to initiating groundwork for future collaborative research initiatives. We have added 4 additional consortium members to our network (James Torrisi, in Biloxi, MS, Lipika Nayak, in Kansas City, MO, Divya Singhal, in Oklahoma City, OK and Qinghua Liang, in San Antonio, TX) in the last cycle and have just approved the addition of VA Robert J Dole MC in Wichita, KS (Lynn Chouhfeh, MD, a Neurologist) as a new Consortium Center within our sphere of responsibility. Efforts are underway to further develop consortium based learning, clinical support and research development.



PADRECC Staff, Farah Atassi, Linda Fincher, and Anthony Washington at the HAPS Annual Educational Symposium

## Houston PADRECC update (continued)

### Educational Newsletters:

Recent issues of the Houston PADRECC patient/family newsletter "PADRECC Pathways" included these themes: "Tai Chi for Patients with Parkinson's Disease", Summer 2014; "Nutrition and Parkinson's Disease, Fall 2014; and "Mental Health, Mental Illness, and Parkinson's Disease", Summer 2015.

### Honors and Awards:

In recognition of her educational endeavors, Houston PADRECC director was awarded the Fulbright and Jaworski L.L.P. Faculty Excellence Award in Educational Leadership at the Baylor College of Medicine in December 2014 which was preceded by the Fulbright & Jaworski LLP Faculty Excellence Award for Teaching and Evaluation in April 2014.

She was also inducted into the Baylor College of Medicine's Academy of Distinguished Educators which recognizes the educational scholarship of faculty members involved in all of the educational missions of Baylor College of Medicine.

### Research News

**CIRCADIAN RHYTHM AND SLEEP IN PD** – Because of the prevalence of sleep problems in Parkinson's disease, this study lead by Dr. Sarwar is being conducted to study sleep related circadian rhythm and to characterize sleep patterns in a group of PD patients followed at Houston PADRECC. 200 subjects have been recruited so far. To augment previously collected scale and questionnaire data, a funded pilot study collected objective data on a subset of subjects, utilizing a wristwatch-like device to record movement/activity (actigraphy) and laboratory based melatonin measures from saliva (Dim Light Melatonin Onset). Future work will involve development of methodology for home-based saliva collection in PD study participants to expand the data collection to those patients who cannot travel to the facility sleep lab for overnight collection.

**ANALYSIS OF HUMAN BASAL GANGLIA ELECTROPHYSIOLOGICAL RECORDINGS AND TARGETED STIMULATION FOR OPTIMIZATION OF DEEP BRAIN STIMULATION** – Microelectrode recording and local field potential analysis of the basal ganglia is an established and essential intraoperative adjunct during the placement of deep brain stimulator (DBS) electrodes in the treatment of various neurological disorders including, but not limited to, Parkinson's Disease, Essential Tremor, and Dystonia. This collaborative project between the Houston PADRECC, Baylor College of Medicine and University of Houston utilizes recent advances in electrode design and recording technology that allow for recording of neural data from large numbers of electrodes at various spatial resolutions during stimulation. The sensing module fused with a signal processing engine will provide useful information for the optimization of stimulation based on local field potential characteristics from the target structure. This would allow one to understand the real-time effects of stimulation on the target structure, and drive the stimulation module adaptively, setting the framework for individualized therapy.

**LONGITUDINAL STUDY OF CHRONIC TBI IN OEF/OIF/OND VETERANS/SERVICE MEMBERS** – The overall goal of this VA funded multi-center collaborative project is to characterize the long-term effects of TBI on cognition, neuroimaging, and functional outcome in veterans and service members who have been deployed to Iraq or Afghanistan and perform multiple assessments to track recovery and decline. Specifically, the project will investigate the chronic effects of TBI on cognition, the relation of secondary pathology to the chronic effects of TBI on cognition, neurological status to include movement disorders, and functional outcome in OEF/OIF/OND veterans and service members over time both clinically and by using multimodal imaging. Additionally, the role of specific genes (catechol-O-methyltransferase (COMT), apolipoprotein E (APOE), and brain derived neurotrophic factor (BDNF) on cognition and functional outcomes will be explored. As an exploratory aim we plan to identify and characterize individuals who exhibit cognitive, functional, and neurological decline between the baseline and 24 month follow-up assessment periods.

**EXERCISE AND PD** –The importance of exercise for patients with Parkinson's disease is well established. This funded, VA Career Development Award will analyze changes in gait, balance, motor and non-motor symptoms of PD from the multidirectional treadmill training (MDTT), and the carryover benefits of the training. Study subjects come in to the research laboratory for multiple training sessions using an exercise treadmill.

**EXERCISE AND TREMOR** – Pilot data from a funded seed grant award was used to secure funding for a future study to look at the effect of progressive resistance exercise on manual dexterity and tremor in persons with Parkinson's disease. The subjects will receive training at the research site but will perform the required 6 weeks of progressive resistance exercise of hand and arm at home.

**VITAMIN D DEFICIENCY AND PD** –Published studies have reported vitamin D deficiency in Parkinson' disease patients compared with controls. The current study will use medical record review to characterize vitamin D deficiency in those PD patients who have been screened for vitamin D deficiency and to describe the use and frequency of vitamin D testing in this patient population.

**PD AND MELANOMA** – PD patients have been reported to be at increased risk for melanoma. Because the VHA is unique in having both a large national database with diagnostic codes as well as a national electronic medical record, combining ICD-9 CM code searches with multi-site medical record review is being used to find those Veterans with dual diagnoses of both PD and Melanoma at all ten medical centers within our service network.

**GEOGRAPHIC DISTRIBUTION OF PD PATIENTS WITHIN THE VHA** – We have used national VA data to examine the geographic distribution of Parkinson's disease patients within the VHA. The information has been used to look at urban/rural comparisons; to compare PD prevalence in farming vs. non-farming counties; and to link to US Department of Agriculture crop census data and land use data. Recent software licensing acquisition by the Department of Veterans Affairs will now allow all of the PADRECCs the use of commercially available geographic information system software.

<b>Consortium Coordinating Center</b> Dawn McHale Coordinator 215-823-5800 x 2238	<b>Consortium Center Referral Line</b> 800-949-1001 x 5769 Tonya Belton, Program Assistant 215-823-5800 x 5769	<b>Newsletter Editor-in-Chief</b> Aliya I. Sarwar, MD, Director Newsletter Editor Linda Fincher, RN, Assoc. Dir. of Education Houston PADRECC
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**PADRECC Centers:**

Center	Medical Center	City, State	Director	Telephone
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Southwest	West Los Angeles VAMC	Los Angeles, CA	Jeff Bronstein, PhD, MD	310-478-3711 ext. 48001
Northwest	Portland VAMC VA Puget Sound Health Care System	Portland, OR Seattle, WA	Joe Quinn, MD	Portland: 503-721-1091 Seattle: 206-277-4560
Philadelphia	Corporal Michael J. Crescenz VAMC	Philadelphia, PA	John Duda, MD	215-823-5934 or toll free 888-959-2323
Southeast	Hunter Holmes McGuire VAMC	Richmond, VA	Jessica B. Lehosit, DO	804-675-5931 or toll free 800-784-8381 ext 5931
San Francisco	San Francisco VAMC	San Francisco, CA	Caroline Tanner, MD	415-379-5530

