

Thank you for joining us for
2017 Hawaii NEURO!



2017 HAWAII NEURO

Neuroscience EdUcation & Research Outreach



Saturday, August 26, 2017

St. Francis Medical Center

2230 Liliha St. #104

Honolulu, HI 96817



*Innovation in Research and
Empowerment in Education...*

Special Mahalo to judges
Henry Lew, MD, PhD, CCC-A
Enrique Carrazana, MD
Kore Kai Liow, MD, FACP, FAAN
Jerry Boster, President of HPA

Special acknowledgement to
Hawaii Parkinson's Association
for providing refreshments



Abstracts

Characteristics of Patients Evaluated for A Randomized, Double-Blind, Placebo-Controlled and Delayed-Start Clinical Trial to Investigate the Safety and Efficacy of an investigational product in Mild Alzheimer's Disease Dementia

Jasen Ocol¹, Alec Sheppard¹, Richard Ho^{1,2}, William Lew^{1,3}, Daniel Ota^{1,4}, Mitsuki Ota^{1,5}, Adam Schadler^{1,2}, Jennifer Rose del Castillo, MD¹, Levy Jo Manuntag, MD¹, Kore Kai Liow, MD, FACP, FAAN^{1,6,7,8}

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INTRODUCTION: Alzheimer's dementia is a progressive neurodegenerative disease that affected roughly 27,000 individuals over the age of 65 in Hawai'i this past year. Some individuals afflicted with Alzheimer's dementia only experience Mild Cognitive Impairment (MMSE 18-23), while others experience Severe Cognitive Impairment (MMSE 0-17). One of the physical indicators of Alzheimer's dementia is a high density of amyloid beta plaque (A β) in the brain, which is a product of the cleavage of the amyloid precursor protein, which is carried out by beta secretase BACE. LY3314814/AZD3293 is a human Beta-site amyloid precursor protein-cleaving enzyme 1, inhibiting beta secretase BACE from cleaving and preventing the production of A β plaque. LY3314814/AZD3293 may potentially modify the progression of Alzheimer's dementia. **OBJECTIVES:** The Center for Healthy Aging, Memory and Brain Health at Hawaii Pacific Neuroscience is one of the selected sites in the US currently conducting a randomized, double-blind, placebo-controlled and delayed-start study of LY3314814/AZD3293 for the treatment of patients with Mild Alzheimer's Disease Dementia. The primary objective of this project was to describe the patient population that may be suited for this study. **METHODS:** A systematic retrospective review was performed on patients referred to Hawaii Pacific Neuroscience between January 2010 and July 2017. Data was extracted from patient charts using ICD-10 codes for dementia. **RESULTS:** Of 156 patients, 61 were male (39.1%) and 95 were female (60.9%). Of the total sample population, 46 were Asian (29.5%), 44 were Caucasian (28.2%), and 31 were Pacific Islander (19.9%). Of the four AD medications, Donepezil (52.8%) was the most common, followed by Memantine (37.3%), Rivastigmine (8.1%), and Galantamine (1.9%). Alongside Alzheimer's Disease, Vascular Dementia (53) was common among this patient population, followed by Mixed Dementia (48), Parkinson's Disease (12), Fronto-temporal Dementia (7), and Lewy Body Dementia (4). From 156 patients, Asians (32) portrayed MMSE scores indicating Mild Cognitive Impairment and Severe Cognitive Impairment, followed by Pacific Islanders (27), Caucasians (24) and Other Minorities (9). Pacific Islanders (.037427) portrayed statistical significance in AD patients with MMSE scores indicating MCI. Caucasians (.005515) and Pacific Islanders (.025159) revealed statistical significance in AD patients with MMSE scores indicating MCI and SCI. **CONCLUSIONS:** Statistical analysis shows that there is a significant correlation between Pacific Islanders (.037427) and MMSE scores indicative of Mild Cognitive Impairment, while there is no significant correlation to any other ethnicity within this patient population. With Hawai'i's diverse community, this correlation may be attributed to differences in lifestyle between Pacific Islanders and the other ethnicities represented. Mild and Severe Cognitive Impairments have a significant correlation with the Caucasian (.005515) and Pacific Islander (.025159) patients. The correlation between Pacific Islanders and Cognitive Impairment support the theoretical idea of lifestyle differences within this ethnically diverse population, which makes them predisposed to developing Cognitive Impairment.

Program Agenda

- 9:00 a.m.** Introduction and Opening Remarks
Kore Kai Liow, MD, FACP, FAAN
- 9:30 a.m.** "Neuroscience Translational Research (Bench to Bedside): Life and Career in the Biomedical Industry"
Enrique Carrazana, MD
- 10:15 a.m.** Break
- 10:45 a.m.** "Neuroscience Clinical Research in Head Injury: Life and Career in Academic Medicine"
Henry Lew, MD, PhD, CCC-A
- 11:30 a.m.** Conclusion and Presentation of Certificates
Faculty, Student Leaders
- 12:00 p.m.** Poster Reviews
- 1:00 p.m.** Education Outreach Activities:
- Memory tests
 - Gene mouth swabs
 - Parkinson's Disease fall prevention protocol
 - Seizure first aid
 - Brain games
- Appearances by:
- Hawaii Parkinson's Association
 - Epilepsy Foundation of Hawaii
 - Alzheimer's Association
 - National Multiple Sclerosis Society

Abstracts

Characteristics of Psychogenic Nonepileptic Seizure Patients in Hawaii Pacific Neuroscience

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INTRODUCTION: Psychogenic nonepileptic seizures (PNES) are sudden and time-limited disturbances of motor, autonomic, cognitive, sensory, or cognitive function. This study analyzes all of the patients that exhibits PNES diagnosis, concurrent or nonconcurrent of epilepsy and categorize patients into clusters based on the movements shown in the video EEG summary reports or history present illness from doctor's notes. These clusters include rhythmic motor, hypermotor, complex motor, dialeptic, non-epileptic auras, and mixed when symptoms from two or more clusters are shown. **OBJECTIVE:** To describe the sociodemographic and clinical characteristics of a sample of patients that had gone under an overnight video EEG at this clinic and to compare between patients with different ethnicities of their presentations of psychogenic nonepileptic seizures. **METHODS:** A systematic retrospective review of patients referred to Hawaii Pacific Neuroscience up until July 2017. Data was extracted from patient charts using ICD-10 codes and VEEG referral and monitoring. **RESULTS:** Of 133 patients evaluated for Psychogenic Nonepileptic Seizures, 61 were male (46%) and 72 were female (54%). Caucasian (25.6%) was the most represented ethnic group, followed by Pacific Islander (24.8%), Asian (18.0%), and other Minorities (10.5%). 56 patients were identified with Depression, 35 with Anxiety, and 11 with Post-Traumatic Stress Disorder. 63 patients were diagnosed with Epileptic Seizures and Psychogenic Non-Epileptic Seizures. 70 patients experienced somatic symptoms including: migraine, headache, abnormal pain, paresthesias, recurrent vomiting episodes, dyspnea without clear etiology. Of 17 patients identified with PNES via VEEG reports, 12 patients portrayed events clustered as Non-Epileptic Auras and 3 patient revealed Rhythmic motor. **CONCLUSION:** The result portrayed from this study had shown an expected sociodemographic presentation on an island in the Pacific. Most of the events seen on VEEG were non-epileptic auras and further analysis into the ethnic distribution to compares its similarities and differences amongst each other can provide valuable insight into the social-cultural aspects of psychogenic nonepileptic seizures.

Abstracts

Comparing Patient Age Groups and Analyzing Trends between Age and Levetiracetam, Lacosamide, Topiramate Usage

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INTRODUCTION: Epilepsy is a chronic disorder of the brain characterized by recurrent seizures that encompass symptoms including loss of consciousness, convulsions of the body, strange sensations, and confusion. The most common form of treatment for epilepsy are Anti-epileptic drugs (AED). Three AEDs, Levetiracetam (Keppra), Lacosamide (Vimpat), and Topiramate (Topamax) were prevalent in a majority of patients screened. **OBJECTIVE:** Hawaii Pacific Neuroscience is participating in a clinical trial evaluating the pharmacokinetics and efficacy of Diazepam Buccal Soluble Film in patients with epilepsy. This project was to determine if there is a correlation between a patient's age and the type of AED they are taking, specifically Levetiracetam, Lacosamide, and Topiramate. **METHODS:** A systematic chart review was performed on patients, ages 18 to 65 with Epilepsy at HPN using ICD-10 G40 codes. Descriptive statistics were performed on this cohort in Microsoft Excel. **RESULTS:** Within the age range of 18-25, 26-35, 36-45, 46-55, and 56-65, the percentages of Levetiracetam taken is 50, 54, 44.88, 52.52, and 66.88 respectively. The percentage of patients who had taken Lacosamide within age range is 5.26, 8.67, 11.02, 12.23, and 7.64 respectively. Topiramate resulted percentages of 11.84, 12, 18.11, 6.47, and 4.46 respectively. **CONCLUSIONS:** Percentage shows that all of the age groups had around half of patients using Levetiracetam and comparatively smaller number of patients used Lacosamide and Topiramate. There was no significant difference in AED usage between the age groups. No trends could be made between the age group and the type of AED used.

Abstracts

Psychosocial Factors Predictive of Agitation in Ethnically Diverse Patients with Dementia

Bryce Kalei Chang^{1,2}, Mitsuki Ota^{1,3}, Jasen Ocol¹, Richard Ho^{1,4}, William Lew^{1,5}, Carol Lu^{1,6}, Ryan Nip^{1,7}, Daniel Ota^{1,8}, Pat Borman, MD^{1,2,9}, Barbara L. Pitts, PhD^{1,9}, Kore Kai Liow, MD, FACP, FAAN^{1,2,9}

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INTRODUCTION: Currently, 6.9% of North Americans over the age of 60 have dementia—a neurodegenerative syndrome deteriorating cognitive processes severe enough to hinder activities of daily living—however, the proportion of dementia patients will grow by 150% over the next forty years. During the course of the disease, 60% of dementia patients will exhibit agitation, defined as verbal or motor disturbances resulting from unmet needs or confusion of the agitated individual. Dementia patients who exhibit agitation are more likely to experience earlier progression to severe dementia and poorer quality of life. There are currently no FDA approved treatments for agitation in patients with dementia. The American Psychiatric Association advises judicious use of antipsychotics may be appropriate for the management of agitation in dementia patients. In order to facilitate treatment discovery, better understanding of why some patients experience agitation is required. Few studies have examined what factors make a dementia patient more likely to experience agitation. For example, potential risk-factors of agitation have been identified in predominantly white nursing home patients with dementia. Cognitive status was an independent predictor of agitation. Additionally, sleep disturbances in nursing home residents with dementia can explain agitation independently of cognitive function. Comorbidities correlated to agitation in dementia patients include depression and anxiety. While some minority groups, such as African Americans and Latinos, may experience more dementia-related behavioral disturbances, no studies have examined predictors of agitation in ethnically diverse dementia patients. Hawaii is a unique state with ethnic diversity where non-Hispanic whites do not form a majority of the population. Given the growing heterogeneity of the mainland United States, a sample investigating ethnic differences is warranted since studies done with predominantly white patients may or may not hold for other ethnicities. This study examines factors predicting agitation in an ethnically diverse sample of dementia patients as a step toward developing preventive strategies and therapies for use in the unique patient population of Hawaii. **OBJECTIVES:** This study aims to analyze factors predicting agitation in Hawaii's ethnically diverse dementia. **METHODS:** A systematic retrospective review was performed on patients referred to Hawaii Pacific Neuroscience between January 2010 and July 2017. Data was extracted from patient charts using ICD-10 codes for dementia and statistical analysis was performed in SPSS. **RESULTS:** Of 350 patients, 135 were male (38.6%), 215 were female (61.4%). Of 350 patients, 107 were Asian (30.6%), 95 were Caucasian (27.1%), and 55 were Pacific Islander (15.7%). 109 patients were agitated, and 241 were not agitated. MMSE scores (-.170), measuring level of cognitive impairment, portrayed statistical significance in dementia patients with agitation. All other hypothesized factors revealed statistical significance: sleep disturbances (.176), depression (309), and anxiety (.452). **CONCLUSIONS:** Previous studies have shown associations between agitation and cognitive and psychosocial factors in samples of predominantly white dementia patients. In agreement with previous literature, we have shown that decreased cognitive function is a strong predictor of agitation. Cognitive impairment strongly predicts agitation because it underlies and influences the psychosocial factors predicting agitation, including sleep disorders, depression, and anxiety. Significant psychosocial factors, such as depression and anxiety, are clinically important because they also predict accelerated cognitive decline, institutionalization, and increased cost of care (Beaudreau & O'Hara, 2008; Gibbons, Teri & Logsdon, 2002).

Abstracts

Characteristics of Patients Being Screened for a Clinical Trial to Investigate the Safety and Tolerability of an Investigational Product as Adjunctive Therapy in Levodopa-treated Parkinson's Disease Patients Experiencing Motor Fluctuations

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INTRODUCTION: Parkinson's Disease (PD) is a neurodegenerative disorder of the central nervous system characterized by the progressive death of dopaminergic neurons in the substantia nigra. PD is the second most common neurological disorder, distinguished by four clinical parkinsonian motor features: bradykinesia, resting tremor, muscular rigidity, and postural and gait impairment. There is no cure for PD, but there are medications that can help treat its symptoms. The most common medication used to treat PD is levodopa—a synthetic precursor to dopamine. However, a wearing off phenomenon occurs in which levodopa does not provide the same effects as it used to. Because levodopa is not an entirely efficient drug, discovering new medications to treat Parkinson's is of utmost importance. **OBJECTIVE:** To characterize patients referred to Hawaii Pacific Neuroscience being screened for a clinical trial to investigate tozadenant as adjunctive therapy with levodopa-treated patients. **METHODS:** A retrospective chart review was conducted at the Parkinson's Disease, Movement Disorders, and Neurodegenerative Diseases Center at Hawaii Pacific Neuroscience between July 2011 and July 2017. **RESULTS:** Of the different types of Parkinsonian conditions, the frequency of Parkinson's Disease was the highest (57%), followed by Vascular (31%), Parkinsonism (7%), and Neuroleptic Induced Parkinsonism (6%). Of patients diagnosed with Parkinson's Disease, majority were Caucasian (34.2%), Asian (22.5%), and Native Hawaiian or Other Pacific Islander (8.8%). **CONCLUSION:** Due to the limited patient population at Hawaii Pacific Neuroscience, we are not able to make any significantly statistical conclusions. However, because the cause of PD is supposedly correlated with a combination of genetic and environmental factors, it would be of much benefit to increase the population size to include more Native Hawaiians and Other Pacific Islanders.

Abstracts

Characteristics of Patients Evaluated for A Randomized, Double-Blind, Placebo-Controlled, Parallel Group Study to Evaluate the Efficacy and Safety of an Investigational Product in Participants at Risk for the Onset of Clinical Symptoms of Alzheimer's Disease (AD)

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INTRODUCTION: Alzheimer's dementia (AD) is a progressive neurodegenerative disease characterized by memory loss and behavioral disturbances, precipitating physical, emotional, and financial burden. Over 5 million Americans are currently living with this affliction and as many as 16 million are projected to have the disease in 2050. Although we have not established the appearance of any specific biomarkers to the emergence of clinical symptomatology, the amyloid cascade hypothesis states that deposition of amyloid beta (A β) is an early event in the pathogenesis of AD, starting a decade or longer before the first clinical symptoms. A β is a product of the cleavage of the amyloid precursor protein, which is carried out by beta secretase BACE. A new drug currently under research serves as an orally active BACE-1 inhibitor and has been shown to reduce A β concentrations in cerebrospinal fluid (CSF) and the brain in animals by up to 90%. This investigational product may have a profound clinical and public health impact by helping to slow down or prevent the progression of AD by targeting preclinical AD, a newly defined stage of the disease, which reflects current evidence that measurable changes in brain biomarkers may occur years before symptoms appear. **OBJECTIVES:** The Center for Healthy Aging, Memory and Brain Health at Hawaii Pacific Neuroscience is one of the selected sites in the US currently conducting a randomized, double-blind, placebo-controlled, parallel group study of CNP520 for the evaluation of its efficacy and safety in the treatment of participants at risk for the onset of clinical symptoms of Alzheimer's disease (AD). The primary objective of this project was to describe the patient population that may be suited for this study. **METHODS:** A systematic retrospective review was performed on patients referred between August 2015 and August 2017 for complaints of memory loss selected with ICD-10 code F06.7. **RESULTS:** Of 194 patients with complaints of memory loss, 91 were male (46.9%) and 103 were female (53.09%). Among this population, 47 patients were shown to adhere to the inclusion and exclusion criteria of the study. Within this group, 20 (42.6%) were male and 27 (57.4%) were female. Of the sample population, 18 were Caucasian (38.3%), 15 were Asian (31.9%), and 4 were Native Hawaiian or Other Pacific Islander (8.5%). Between the medications proven to contribute to memory loss, painkillers (34.0%) were the most common, followed by statins (27.7%), hypertension drugs (19.1%), and sleep medications (17.0%). Of the conditions behavioral factors shown to be predictive of the decline into dementia, dyslipidemia (38.3%) was common among this population, followed by tobacco use (34.0%), alcohol use (25.5%), and hypertension (25.5%). Of 47 patients, 11 had MMSE scores and 10 had qualifying scores. The majority of these qualifying scores were of Asians, with 5 (50%) portraying MMSE scores representing a lack of cognitive impairment. **CONCLUSIONS:** Statistical analysis shows that there is a significant correlation between Caucasians (0.029818) and dyslipidemia while there is no significant correlation to any other ethnicity in the study group. However, it should be noted that the average age of the Caucasian group with dyslipidemia (68.89) is considerably higher than the average age of the pool of 47 patients (65.98) (Wang, S., Xu, L., Jonas, J., You, Q., Wang, Y., Yang H., 2011). As such, further analysis through logistic regression is likely needed to reach a more precise conclusion regarding the relationship between ethnicity and dyslipidemia. The significant correlation between hypothyroidism and the Caucasian patient pool (0.013521) is supported by national literature (Stoppa-Vaucher, S., Vliet, G., Deladoëy, J., 2011) and is attributed to the lack of genetic diversity and in turn a lack of inheritance of susceptibility to hypothyroidism. On the contrary, hyperthyroidism had a significant correlation with the Pacific Islander patients (0.003299). This correlation agrees with national literature (McLeod, D., Caturegli, P., Cooper, D. et. al., 2014) and supports the idea of lifestyle differences of Pacific Islanders within the ethnically diverse population of Hawaii. In particular, this correlation points to the high genetic diversity of the Pacific Islander population.

Abstracts

Characteristics of Dementia Patients Evaluated for a Phase III, Multicenter, Randomized, Double-Blind, Placebo-Controlled, Parallel Group Investigation of the Safety and Efficacy of an Investigational Product in Patients With Prodromal to Mild Alzheimer's Disease

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INTRODUCTION: One out of every nine Americans over the age of 65 is diagnosed with Alzheimer's Disease (AD)—progressive and fatal neurodegeneration. Current therapies for Alzheimer's Disease provide symptomatic relief, but there is currently no known cure for the disease. Research regarding therapy for Alzheimer's disease has recently been trending towards addressing and curing the disease itself, as opposed to treating its symptoms. One promising disease-modifying treatment of Alzheimer's disease involves innovative immunotherapy. A new medication currently under research is a fully humanized monoclonal IgG4 backbone antibody providing a reduced FC γ R binding affinity, inflammatory effector function, and risk of toxicity. This investigational product binds all forms of A β , inhibits A β peptide aggregation, and disaggregates A β Protofibrils. **OBJECTIVE:** The Center for Healthy Aging, Memory and Brain Health at Hawaii Pacific Neuroscience is one of the selected sites in the US currently conducting a phase III, multicenter, randomized, double-blind, placebo-controlled, parallel-group study of a fully humanized anti-A β monoclonal antibody for the treatment of patients with prodromal to mild Alzheimer's Disease. The primary objective of this project was to describe the patient population that may be suited for this study. **METHODS:** A systematic retrospective review was performed on patients referred to Hawaii Pacific Neuroscience between January 2010 and July 2017. Data was extracted from patient charts using ICD-10 codes for dementia. **RESULTS:** From 350 patients, 135 were male (38.6%) and 215 were female (61.4%). The majority of patients with dementia were Asian (30.6%), followed by White (27.1%), and Pacific Islander (15.7%). AD comprised the highest proportion of dementia cases (42.2%), followed by vascular (29.6%), mixed dementia (13.2%), Parkinson's (9.6%), fronto-temporal (3.6%) and Lewy Body (1.9%). Of the four drugs prescribed for symptomatic relief of AD, donepezil was the most used (54.8%), then memantine (37.1%). Comorbidities of dementia include aortic stenosis, orthostatic hypotension, myocardial infarction, CABG, asthma, COPD, sleep apnea, stroke, TIA, epilepsy, headache, neuropathy, tremor, hyperthyroid, hypothyroid, and diabetes. Hypertension (62%) and hyperlipidemia (50%) were most prevalent among the dementia patient population. **CONCLUSION:** Among Hawaii Pacific Neuroscience's patient population, dementia was common among Asians (30.6%) and Caucasians (27.1%). Native Hawaiians and Pacific Islanders, unique to this patient population, followed with 55 patients (15.7%). AD and vascular dementia comprise the highest prevalence of dementia, which agrees with national data. However, the observed proportion of AD (42%) is lower than the national prevalence of AD, which comprises 70% of dementia cases. Conversely, the proportion of vascular dementia (30%) exceeds the national prevalence, in which 10% of dementia is vascular. Hawaii's unique ethnic composition and high occurrence of hypertensive comorbidities may contribute to this trend. 15 patients met the inclusion and exclusion criteria for possible participation in clinical investigation of this investigational product, a monoclonal antibody inhibiting β -amyloid aggregation as a potential treatment for Alzheimer's Disease.