HPD RESEARCH DAY

February 12, 2016

College of Osteopathic Medicine
College of Pharmacy
College of Optometry
College of Health Care Sciences
College of Medical Sciences
College of Dental Medicine
College of Nursing

NSU
NOVA SOUTHEASTERN UNIVERSITY
Health Professions Division

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3. Set up EndNote citation management system to organize all resources; assist with citation formatting and accuracy
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NOVA SOUTHEASTERN UNIVERSITY

Message from the Health Professions Division Chancellor

Today is indeed a proud day for Nova Southeastern University's Health Professions Division (NSU-HPD), because it marks the fifth important milestone in our evolution as a collaborative multidisciplinary and clinical research venue. In the eight years since the inaugural HPD Research Day, NSU has continued to expand and develop into a fine example of what dedicated researchers can accomplish when given the support and encouragement of their institution.

Thanks to the proactive nature of Dr. Patrick Hardigan, who chairs the HPD Research Committee, the committee agreed it would be an excellent opportunity to create a showcase for student and faculty involvement in what NSU traditionally calls scholarly activity, much of which is actually research. Interestingly, many people view research as working in a laboratory and using test tubes and specialty equipment when the fact is research extends far beyond that restrictive definition. Our multidisciplinary researchers do some of the finest statistical and clinical research that can be found in the nation. This research is being conducted in an applied research lab using sophisticated research methodology and advanced statistical analysis techniques.

Before I continue, I would like to thank and acknowledge the HPD Research Day Committee members who have been working so diligently to ensure the project's success. They are Dr. Peter Gannett, Dr. Cristina Garcia-Godoy, Dr. Janet Hamstra, Dr. Brianna Kent, Dr. Jo Ann Kleier, Dr. Harvey Mayrovitz, and Dr. Julie Rodman.

Research Day allows our talented students to be present at one place at the same time so they can participate in and view various poster presentations as well as attend multiple discussion groups. This project has proven to be a truly time-consuming undertaking, so I commend the wonderful commitment of our deans and various program leaders who have allowed us to move forward with this multidisciplinary interchange in the area of research and scholarly activity.

Although it's impossible to predict the outcomes that will be realized in the weeks and months following Research Day, I have no doubt our students will be vastly enriched by the experience. I believe they will come away with a realization of the importance of research in the formative accumulation of knowledge individuals go through regardless of what HPD program they're participating in here at NSU.

I'm proud to say we've come a long way in a relatively short period of time. We now have multiple numbers of well-known and respected academic researchers in our institution that encompass the health professions spectrum. When Southeastern University of the Health Sciences merged with Nova University in 1994, we only had about $400,000 in externally funded research. Today the Health Professions Division is over the $31 million mark, while the university is over $78 million.

Now that we've demonstrated our capabilities and showcased our acumen and research prowess, it's become apparent that we're viewed from a more-esteemed perspective than ever before. Thank you for your participation.

Sincerely,

Fred Lippman, R.Ph., Ed.D.
Chancellor, Health Professions Division

Welcome to HPD Research Day

February 12, 2016

The Health Professions Research Division is excited to welcome you to Nova Southeastern University's Health Professions Division Research Day (HPD Research Day). All seven academic colleges of the Health Professions Division—Dental Medicine, Health Care Sciences, Medical Sciences, Nursing, Optometry, Osteopathic Medicine, and Pharmacy—have banded together to offer poster displays and oral presentations of their current research.

Research Day reflects the important contributions to NSU's mission as it relates to academic excellence, intellectual inquiry, leadership, research, and commitment to community through engagement of students and faculty members in a dynamic, life-long learning environment. This is an opportunity to learn about the research that our faculty, residents, fellows and graduate students have conducted as a critical part of their educational experience.

Adding to the festivities will be door prizes and awards for best student presentations. People from other colleges across NSU will visit our division to learn more about us and see the work we do here. Students and faculty from all HPD's Regional Campuses will participate via videoconferencing. This event promises to be more than a day-long celebration of research and scholarly activities. It is also an opportunity for students and faculty from multiple disciplines to interact with each other and with the larger research and NSU communities. I am so pleased you are able to be a part of this academic research event.

Patrick C. Hardigan, Ph.D.
Director, HPD Research

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Poster Presentation Abstracts
12:15 P.M. to 1:15 P.M.

PLATFORM PRESENTATIONS

Auditorium A

Auditorium A 9:45-10:15 a.m.

COMMUNITY GARDENS FOR SPECIAL NEEDS AND NURSING HOME COMMUNITIES, A PARTICIPATORY ACTION RESEARCH STUDY

Mary Ellen Mitchell-Rosen, Associate Professor, College of Nursing
Kristi Ray, OMS-IV, College of Osteopathic Medicine
Karla Treminio, Entry-level Student, College of Nursing

Objective. The quality of life priorities that this study addressed are obesity, autism, mental health, and elderly services. The project objectives were to create a collaborative research project with community stakeholders and residents as well as opportunities for medical and nursing students to take part in a research experience. Additionally the study provided an opportunity to provide participates with interventions on healthy nutrition and opportunities to for group activities in the garden. **Background.** There has also recently been a correlation between obesity and physical and/or mental disabilities. Along with these growing issues, there is also a high prevalence of depression problems occurring in the population of those disabled, and especially high in the community within skilled nursing facilities and nursing homes. Improving the way community health providers approach problems of obesity and mental health in conjunction with healthy eating and therapeutic gardening techniques can have broad public health implications. This study will look the experience of geriatric populations and people with intellectual and developmental disabilities in Broward County, Florida that participate with health professions students in a garden project. **Methods.** The research design that was best suited to this study is a qualitative approach using the participatory action research (PAR) method. Focus group interviews were used to collect data. The goal of the researchers was to include the participants in the design of the research as well as discover what the experience was like for the participants. **Results.** The data has been collected and analysis is being completed. Themes, field notes and photo voice will be presented in the presentation. **Conclusion.** By creating community gardens at Special Olympics South Florida and two local nursing homes, the participants and stakeholders at the facilities have requested that more gardens be placed at there sites. The stakeholders report a positive change in nutritional choices and improved mental status of the clients at their facilities. **Grants.** Quality of Life Grant 2014 with a no cost extension until November 30, 2015.

Auditorium A 10:15 a.m.-12:15 p.m.

CRITICAL READING OF THE RESEARCH LITERATURE

Raymond Ownby, M.D., Ph.D., MBA, Professor, College of Osteopathic Medicine

In this session, Dr. Ownby will review the elements of a research paper as a step by step guide to understanding how to critically evaluate published reports of empirical research. After a general discussion of the contents of each section, he will focus on critical problems the reader and writer may encounter in each. A second portion of the session will include more detailed review of issues in understanding reports of clinical trials, evaluations of prognosis, reports on diagnostic tests, and research reviews.

Auditorium A 2:15-2:45 p.m.

EVALUATION OF THE THEORY OF PLANNED BEHAVIOR QUESTIONNAIRE IN PHYSICAL ACTIVITY AMONG HIV-POSITIVE INDIVIDUALS

Stefanie La Manna, PhD, MPH, ARNP, FNP-C, Assistant Professor, College of Nursing
Randy Denis, MSN Student, College of Nursing

Objective. The Theory of Planned Behavior Questionnaire in Physical Activity has been found to be valid and reliable among those in the general population. The primary aim of this study is to understand whether this questionnaire can help health care providers and public health professionals predict intention to engage in physical activity among patients with HIV or AIDS, or both? The secondary aim of this study seeks to expand the questionnaire to measure actual physical activity among this population. **Background.** There are over 1.1 million Americans living with HIV/AIDS and highly active antiretroviral therapy (HAART) medication has decreased AIDS-associated mortality and morbidity. However, the side effects of these medications are known to increase various cardiovascular disease risks. Some of these risk factors can be controlled with the implementation of physical activity, especially to control lipid disorders and impaired glucose tolerance, which are both associated with these HAART medications. Various studies have revealed that physical activity has been found to help manage negative effects associated with these medications. **Methods.** A cross sectional analysis will be conducted with outpatient clinic patients who have been diagnosed with HIV/AIDS. The study design will allow for the exploration of various attitudes, subjective norms, perceived behavioral control, and intention to engage in physical activity, and actual engagement in physical activity. **Results.** Pending. **Conclusion.** Pending. **Grants.** None.

Auditorium A 2:45-3:15 p.m.

SOCIETAL ATTITUDE TOWARD ADULTS WITH AUTISM AMONG NURSES IN AN ACUTE CARE SETTING

Jo Ann Kleier, PhD, EdD, Professor, College of Nursing
Barbara Barrett, DNP, BBA, Assistant Professor, College of Nursing

Objective. It is likely that the majority of the current health care workforce has not had training on the approach and management of adults with autism. As a result, today's health care providers are inadequately prepared to provide competent and compassionate care for these patients when they are admitted into an acute care facility. The objective of this study is to objectively measure and describe the societal attitude toward adults with autism among multi-level nurses working in an acute care environment. **Background.** Autism is diagnosed in 1 out of every 45 children. Many of these children are aged out of pediatric care. Due to a high incidence of co-morbidities, most all of these individuals eventually will require health care in an acute care facility. The attitude of the health care provider toward these individuals can be a strong determinant of the type of care provided. **Methods.** This is a descriptive study to measure the societal attitude of nurses working in acute care settings related to adults with autism. **Results.** Forty nurses provided survey data. Results found the nurses generally had a moderate to high societal attitude towards adults with autism. However, their attitude was less positive toward providing care for these patients in the hospital setting. **Conclusion.** Health care providers would benefit from interventions designed to better understand adults with autism and improve their societal attitude toward these individuals as patients. **Grants.** None

Finkelstein Auditorium

Finkelstein Auditorium 9:45-10:15 a.m.

FACILITATING TOBACCO DEPENDENCE TREATMENT THROUGH NURSING EDUCATION: AN EVIDENCE-BASED PRACTICE EDUCATIONAL INTERVENTION

Kelly Henson-Evertz, DNP, MA-Nursing, BSN (CTTS), Assistant Professor, College of Nursing

Objective. The purpose of the project was to increase nursing students': (a) knowledge of tobacco, tobacco dependence, and available evidence-based tobacco dependence treatments; (b) skills to counsel patients to quit tobacco; and (c) self- efficacy to treat tobacco dependent patients. **Background.** Tobacco dependence is a major public health issue that kills 480,000 Americans annually, and a chronic relapsing condition that requires intervention with effective treatments. Nurses are in a unique position to make an enormous impact in tobacco cessation. Studies illuminate a large tobacco dependence treatment educational gap in nursing curricula that leaves nurses ill-prepared to treat tobacco dependent patients. **Methods.** An evidence-based tobacco dependence treatment education intervention was provided to undergraduate and graduate nursing students. **Results.** Comparison of pre- and post-intervention measures demonstrated increases in the areas of knowledge, skills, and self-efficacy. **Conclusion.** Providing tobacco dependence treatment education to undergraduate and graduate nursing students increases students' knowledge, skills, and self-efficacy to treat tobacco dependent patients. **Grants.** N/A

Finkelstein Auditorium 10:15-10:45 a.m.

IDENTIFICATION OF SUPPORT AND BARRIERS TO HEALTH PROFESSIONS AMONG UNDERREPRESENTED MINORITY YOUTH

Alicia Bolden, MPAS, PA-C, Assistant Professor, College of Health Care Sciences
Jermaine Leclerc, MMS, Assistant Professor, College of Health Care Sciences
Sandra Dunbar, DPA, OTR/L, FAOTA, Chair and Professor, College of Health Care Sciences
Michael Imon, Ph.D., AA-C, Assistant Professor, College of Health Care Sciences
Michael Stout, MMS, AA-C, Program Director, College of Health Care Sciences

Objective. To determine factors in support of or barriers against under-represented youth towards health profession careers. **Background.** Despite decades of efforts, the health professions in the U.S. have not mirrored the diversity within the communities they serve. The Institute of Medicine has stated that a lack of diversity among health providers may result in an unequal quality of care for diverse patients. According to the 2013 U.S. census, Black or African-American (BOAA) comprised 13.2% of the population. In the most recent data, BOAA accounted for only 6.3% of U.S. physicians. Similar inequalities have been found in enrollment for most health professions. To address health disparities, educational institutions must improve their ability to recruit, enroll, and retain BOAA students in the health profession careers. This study aims to identify barriers and supportive factors among this population towards health professions. **Methods.** 149 subjects randomly selected using convenience sampling of participants attending the T. Leroy Jefferson Career Symposium. Subjects completed an anonymous pre and post survey questionnaire. Data was analyzed using IBM SPSS version 23 software. **Results.** Supportive factors identified: 45% strong interest in healthcare, 36% plan set, 12% available finances, 7% supportive family. Barriers identified: 42% lack of finances, 30% lack of interest, 25% inability to develop a plan, and 3% lack of family support. **Conclusion.** Health profession institutions should increase financial support and generate interest among health careers in order to improve recruitment and enrollment of under-represented minorities. Grants. This grant was funded by the CHCS Dean's Research Committee.

Finkelstein Auditorium 10:45-11:15 a.m.

IMPROVED VISUAL FUNCTION IN A RANDOMIZED CONTROLLED TRIAL OF ELECTRO- STIMULATION THERAPIES FOR RETINITIS PIGMENTOSA

Samantha Kayser, OD-3, College of Optometry
Kenneth Seger, OD, Associate Professor, College of Optometry
Albert Woods, OD, Associate Professor, College of Optometry
Deborah Mendelsohn, MS, Assistant Professor, College of Health Care Sciences - Medical Sonography
Jorge Han, MD, Assistant Professor, College of Health Care Sciences - Medical Sonography
Patricia Vargas, MHSc, Assistant Professor, College of Health Care Sciences - Medical Sonography
Ava Bittner, PhD, Associate Professor, College of Optometry

Objective. We sought to determine if there were vision changes following transcorneal electrical stimulation (TES) or electro-acupuncture (EA) in retinitis pigmentosa (RP) patients. **Background.** TES and EA are relatively inexpensive, non-invasive, minimal risk therapies, previously reported to improve vision in small-scale studies in RP. **Methods.** Twenty-one RP subjects were randomized (1:1:1) to TES at 6 weekly half hour sessions (n=7), EA (n=7) or sham inactive laser acupuncture (placebo control; n=7) at 10 half hour sessions over 2 weeks. They completed visual acuity (VA), quick Contrast Sensitivity Function (qCSF) testing, Goldmann visual fields (GVF), Humphrey 10-2 visual fields (HVF), and AdaptDx dark-adaptation at two baseline visits, then within 1 week and 1 month post-intervention. **Results.** Four of 7 TES subjects (57%), 2 of 7 EA subjects (29%), and none of the 7 control subjects (0%) had a significant improvement in visual function outside of baseline test-retest variability (99% coefficient of repeatability) at both follow- up visits. In the worse seeing eyes at baseline, VA improved for two TES subjects by 4-10 lines, GVF improved in two TES subjects, and HVF mean sensitivity of the four most central points improved in one of these TES subjects. One TES and one EA subject had significant improvements in qCSF log area under the curve. Another EA subject had significantly improved dark-adaptation. No subjects developed a significant visual loss. **Conclusion.** TES or EA appears to improve visual function in some RP patients. Additional studies with larger sample sizes are needed to determine the longevity of these responses and efficacy of retreatments. **Grants.** NIH R21 EY023720; NSU PFRDG award.

Finkelstein Auditorium 1:15-3:15 p.m.

CRITICAL READING OF THE RESEARCH LITERATURE

Raymond Ownby, M.D., Ph.D., MBA, Professor, College of Osteopathic Medicine

In this session, Dr. Ownby will review the elements of a research paper as a step by step guide to understanding how to critically evaluate published reports of empirical research. After a general discussion of the contents of each section, he will focus on critical problems the reader and writer may encounter in each. A second portion of the session will include more detailed review of issues in understanding reports of clinical trials, evaluations of prognosis, reports on diagnostic tests, and research reviews.

Hull Auditorium

Hull Auditorium 9:45-10:15 a.m.

CORRELATION BETWEEN mfERG RESPONSES AND VISUAL ACUITY IN MACULAR DISEASE

Hua Bi, PhD, Assistant Professor, College of Optometry
Cristina Escobar, OD-2, College of Optometry

Objective. This study aimed at determining the correlation between retinal electrophysiological responses and visual acuity in subjects with macular diseases. **Background.** Macular disease and optic neuropathy often have overlapping clinical presentations and both can result in central vision loss. Detection of central retinal dysfunction is valuable in differentiating macular disease from optic neuropathy. Multifocal electroretinogram (mfERG) testing provides topographic mapping of macular function. Investigation of the relationship between mfERG responses and visual acuity in macular disease will help delineate the contribution of retinal dysfunction to visual acuity loss. **Methods.** Best-corrected visual acuity (BVA) and mfERG responses in twenty subjects with macular diseases were analyzed quantitatively and calculation of the correlations between mfERG response parameters and visual acuity were performed. **Results.** Central mfERG amplitude attenuation was observed in 75% of subjects. High correlation was found between mfERG response amplitude in the central ring and visual acuity (median 20/50) ($r = 0.85$). **Conclusion.** Our findings suggest that mfERG testing is a sensitive tool in detecting central vision loss resulting from retinal dysfunction in macular disease and therefore is valuable in differentiating macular disease from optic neuropathy. **Grants.** None

Hull Auditorium 10:15-10:45 a.m.

BLOOD FLOW IN THE CENTRAL RETINAL ARTERY DURING A RANDOMIZED CONTROLLED TRIAL OF ELECTRO-STIMULATION THERAPIES FOR RETINITIS PIGMENTOSA

Ava Bittner, OD, PhD, Associate Professor, College of Optometry
Jorge Han, MD, Assistant Professor, College of Health Care Sciences - Medical Sonography
Deborah Mendelsohn, MS, Assistant Professor, College of Health Care Sciences - Medical Sonography
Patricia Vargas, MHSc, Assistant Professor, College of Health Care Sciences - Medical Sonography
Brennan Nelson, OD-4, College of Optometry

Objective. We explored whether blood flow velocities in the central retinal artery (CRA) were repeatable and related to baseline vision loss in retinitis pigmentosa (RP), and determine any changes following transcorneal electrical stimulation (TES) or electro-acupuncture (EA). **Background.** A previous study found reduced blood flow velocities in the CRA of RP patients compared to normal controls using color Doppler imaging (CDI). **Methods.** We measured the CRA peak systolic velocity (PSV) and end diastolic velocity (EDV) in 22 RP patients using CDI twice in a month at baseline, then within 1 week and 1 month post-intervention. At each visit, visual acuity (VA) and 10-2 Humphrey visual fields (HVF) were completed. PSV and EDV were used to calculate mean flow velocity (MFV); correlations with vision were adjusted for age and gender. **Results.** Mean within- and between-visit coefficients of variation were 16-22% for PSV and EDV. In eyes with reduced mean VA >0.3 logMAR (20/40), MFV was significantly lower ($p=0.037$) than in eyes with better VA. For HVFs with the size III target, reduced MFV was significantly associated with lower HVF mean deviation scores ($p=0.007$). Subjects with worse vision who completed the HVF with the size V target had significantly reduced MFV with decreased mean sensitivity at the 4 most central test locations ($p=0.004$). There were statistically significant improvements ($p<0.05$) in the CRA blood flow (PSV and EDV) after two TES sessions or within 1 week of EA when compared to controls. **Conclusion.** Blood flow measures were reliable, related to visual loss, and improved following TES or EA in RP. **Grants.** NIH R21 EY023720; NSU PFRDG award

Hull Auditorium 10:45-11:15 a.m.

A MORE ENGAGING VISUAL FIELD TEST TO INCREASE USE AND RELIABILITY IN PEDIATRICS

Heather Gauger, OD-3, College of Optometry
Erin Jenewein, OD, Assistant Professor, Pennsylvania College of Optometry
Dominique Larman, former undergraduate student, Nova Southeastern University
Ava Bittner, OD, PhD, Associate Professor, College of Optometry

Objective. We created a prototype device to make visual field (VF) testing more engaging for young children, thus increasing their attention and consistency of responses to test stimuli, which in turn should improve VF reliability. **Background.** Poor VF reliability has been a longstanding, major issue since it leads to an increased number of tests and/or longer time to determine true vision losses. VF tests are rarely obtained in children since inconsistent results are of doubtful value and challenging to interpret. **Methods.** Children between ages 5-8 who are glaucoma suspects or have low vision were randomized to complete Humphrey VF testing with the video/audio intervention (n=4) versus without (i.e., usual care; n=3) in each eye at two visits ~1 week apart. The intervention includes a 1.5" micro-display video screen displaying popular cartoon characters as the fixation target and audio clips of an impersonated cartoony voice, presented by the test operator to provide instructional feedback during testing. **Results.** Mean false positive responses during VF testing at both visits were statistically significantly greater by 10% on average in children randomized to usual care testing compared to those who received the intervention (95% CI: 1-18%; p=0.03) after adjusting for age group and eye. Additional children are scheduled for study testing to increase the sample size and allow us to explore intervention effects on the reliability of VF mean deviation scores. **Conclusion.** False positives affect the accuracy and reliability of VF results; reductions with our novel intervention could translate to improved diagnosis and care for young childrens' peripheral vision loss. **Grants.** NSU PFRDG award

Hull Auditorium 11:15-11:45 a.m.

YOU'VE GOT SOME NERVE: CASE SERIES OF OPTIC NERVE ANOMALIES

Pinar Haytac, O.D., Optometry Resident, College of Optometry

Introduction. Optic nerve anomalies are a group of structural malformations of the optic nerve head and surrounding tissues, which may cause congenital visual impairment and blindness. Each entity in this group of optic nerve anomalies has individually become more prevalent as our ability to differentiate between them has improved due to better characterization of cases. **Case Presentation.** Discussion of a case series of optic nerve anomalies with topics including optic nerve hypoplasia, optic pit, morning glory, megalopapilla, myelinated nerve fibers and disc drusen. **Deviation from Expected.** This case series will a) recognize the appearance and understand the description of anomalous optic nerves b) understand testing needed to further diagnose, rule out and monitor conditions. c) further understand, signs, symptoms, associations, complications and management of conditions. **Discussion.** When optic nerve abnormalities are detected, it is essential to differentiate between anatomical and pathological causes. This is because certain irregularities may require additional testing and or intervention. **Conclusion.** Optic nerve anomalies can sometimes be overlooked when the appearance is subtle. Careful evaluation, testing and monitoring is essential for proper care in order to decrease future risks of complications in those which may progress to a visually debilitating status.

Hull Auditorium 11:45 a.m.-12:15 p.m.

SPECIALTY CONTACT LENS FITTING THE IRREGULAR CORNEA

Stacy Zubkousky, O.D., Optometry Resident, College of Optometry

Introduction: When light enters the eye, the cornea is the first focusing lens. Any irregularity of the cornea can disrupt this focus, whether it is post traumatic, post inflammatory, post surgical or a primary, progressive corneal ectasia. Specialty contact lenses can minimize the irregular surface and enhance the vision of a patient suffering from one of these conditions. **Case Presentation:** Case reports of three patients with common corneal irregularities will be discussed. The first, a 26 year old African American keratoconus patient with a central cone. The second, a 50 year old Caucasian male keratoconus patient with an inferior cone. The final, a 53 year old Hispanic woman with a history of radial keratotomy (RK). **Deviation from**

Expected: This report will discuss various contact lens fitting options available for various keratoconus presentations and will also highlight contact lens options for post refractive surgery ectasias. **Discussion:** Keratoconus the most common primary corneal ectasia with a prevalence of approximately 54 per 100,000.[1] Corneal ectasias following surgery are defined by progressive corneal thinning and irregular astigmatism and can be seen in patients post graft or refractive surgery.[4] Fitting options for both conditions include rigid gas permeable lenses, hybrid lenses and scleral lenses. **Conclusion:** Specialty contact lens fitting can improve vision in patients with irregular corneas that could otherwise not be achieved though conventional contact lenses or spectacles. This report will expose the primary eye practitioner to specialty contact lens options available for patients with irregular corneas.

Hull Auditorium 2:15-2:45 p.m.

NEGATIVE THOUGHTS (CATASTROPHIZING) DURING HUMPHREY VISUAL FIELDS ARE RELATED TO DECREASED TEST RELIABILITY IN GLAUCOMA PATIENTS

Natalie Diaz, OD-4, College of Optometry
Joseph Sowka, OD, Professor, College of Optometry
Samantha McIntosh, OD-4, College of Optometry
Miriam Anglo, Resident-Primary Eye Care, College of Optometry
Alexia Holovatyk, Graduate student, Center for Psychological Studies
Ava Bittner, OD, PhD, Associate Professor, College of Optometry

Objective. We sought to gain a better understanding of whether glaucoma patients' negative thoughts during Humphrey visual field (HVF) testing were related to HVF variability. **Background.** HVF tests are often unreliable in glaucoma patients, but continue to play a vital role in glaucoma clinical trials and clinical decision-making. **Methods.** We adapted the Pain Catastrophizing Scale to assess negative thoughts (e.g., can't stand it; feel it's awful; fear of failing or doing poorly; something serious may happen; anxiously want it to end) related to vision loss and HVF test performance. We administered this catastrophizing questionnaire to 52 glaucoma patients within 20 minutes of HVF test completion during a routine clinic visit. HVF variability of the mean deviation score [coefficient of variation (CoV)] was based on the last 3-4 tests obtained in the past 4 years. **Results.** A quarter of patients (13/52) demonstrated catastrophizing during HVF testing (i.e., their responses mapped well to the questionnaire items), while the others had little to no catastrophizing. Increased catastrophizing (i.e., Rasch analysis person measure score) was significantly associated with higher mean HVF false positives ($p=0.03$) and increased HVF CoV ($p=0.03$). Catastrophizing was not significantly correlated with HVF false negatives or fixation losses ($p>0.50$). Catastrophizing was significantly greater among subjects who reported increased sleepiness (i.e., relaxed, not fully alert) vs. wide awake ($p=0.045$). **Conclusion.** Glaucoma patients who have negative thoughts (catastrophizing) are more prone to exhibit false positive responses and reduced HVF test reliability. Future research should evaluate behavioral interventions for at-risk patients to attempt to improve accuracy for detecting functional vision losses. **Grants.** HPD research grant award

Hull Auditorium 2:45-3:15 p.m.

QUICK CONTRAST SENSITIVITY FUNCTION TESTING IN ADULTS WITHOUT OCULAR DISEASE

Manonmani Murgappan, Undergraduate student, Nova Southeastern University
Jeslyn Vayalil, Halmos College of Natural Sciences and Oceanography, Nova Southeastern University
Annete Bade, OD, Associate Professor, College of Optometry
Ava Bittner, PhD, OD, Research Associate/Instructor, College of Optometry

Objective. We sought to determine the reliability and range of normative results for quick contrast sensitivity function (qCSF) testing in adults. **Background.** Contrast sensitivity declines with aging and previously validated tests can produce highly variable results across and within individuals. A new test (qCSF) provides rapid assessment of contrast across various spatial frequencies to determine the area under the curve (AUC), but the typical range of responses has not yet been established. **Methods.** Contrast sensitivity declines with aging and previously validated tests can produce highly variable results across and within individuals. A new test (qCSF) provides rapid assessment of contrast across various spatial frequencies to determine the area under the curve (AUC), but the typical range of responses has not yet been established. **Results.** Compared to subjects aged 20-49 years (mean AUC 1.99, 1.68 or 1.06 for qCSF testing binocularly or with the better eye, respectively),

participants between the ages of 50-69 had statistically significantly reduced AUC measures (mean 1.68, 1.44 or 0.90), and those aged 70-89 had an even further statistically significant reduction (mean 1.37, 1.17 or 0.55). Contrast reductions according to age were found across all spatial frequencies but were most apparent at higher spatial frequencies. Subjects aged 20-49 had a slightly lower mean test-retest coefficient of variation than older subjects >50 years when testing binocularly (4% vs. 9%; p=0.0001), monocularly with the better eye (7% vs. 12%; p=0.047) or with the filter (9% vs. 19%; p=0.02). **Conclusion.** An age related decline in qCSF occurred in the 5th decade of life, with a further decline among people in their 70's. The qCSF test can provide reliable results across younger and older adults with normal vision. **Grants.** NIH R21 EY023720; Adaptive Sensory Technology

Jonas Auditorium

Jonas Auditorium 9:45-10:15 a.m.

THE EFFECTIVENESS OF AN EDUCATIONAL INTERVENTION ON ELEMENTARY SCHOOL STUDENT KNOWLEDGE OF DENGUE FEVER AND ITS PREVENTION

Kyrus Patch, MSPAS, DHSc, Assistant Professor, College of Health Care Sciences - Physician Assistant

Objective. The goal of this study was to evaluate the effectiveness of an educational intervention about dengue in a group of fifth-grade science students. Training in mosquito-control may help students become effective public health agents. **Background.** Dengue, a potentially fatal mosquito-borne viral disease, is spreading rapidly including in previously unaffected areas in the southern United States. Public health officials consider vector control and personal protection the best ways to control the spread of dengue in the absence of a safe and effective vaccine. Children are especially vulnerable to the severe complications of dengue and must be educated about the disease. **Methods.** Thirty- seven Naples, Florida fifth-graders participated in a quasi-experimental study to assess differences between the scores of pre- and posttests about dengue and its prevention. An active, hands-on educational intervention preceded the administration of the posttest. **Results.** Significant ($p<.001$) improvement in dengue knowledge test scores followed the educational intervention, and participants discovered several containers in which mosquitoes could breed during a search of the school grounds. **Conclusion.** The significant improvement in scores between the pre-and posttest indicate dengue knowledge attainment and confirms the study hypothesis. Including dengue and mosquito control lessons in schools in southern states may improve student knowledge and promote public health efforts to control mosquito habitat. **Grants.** no grants

Jonas Auditorium 10:15-10:45 a.m.

SIMULATION AND THE DEVELOPMENT OF CLINICAL JUDGMENT: A QUANTITATIVE STUDY

Susan Holland, Ph.D, MSN, BSN, Assistant Professor, College of Nursing

Objective. To study the effects of using the Nursing Education Simulation Design framework as a guide during simulation and to compare the difference between a control group and an intervention group as students engaged in simulation. **Background.** The development of clinical judgment in nurses is crucial to the provision of safe care, yet opportunities for clinical experiences can be diminished due to competition for clinical sites. Exposure to simulated clinical scenarios can provide an opportunity for students to practice nursing skills in a safe learning environment without the fear of harming a patient, but there is limited evidence of quantitative educational methods that promote clinical judgment. **Methods.** Quantitative data were collected using the Lasater Clinical Judgment Rubric (LCJR), the educational practices scale, and the Simulation Design Scale. **Results.** The results indicated that the total mean score improved in both groups, but significant differences ($p < .05$) were found in five of the eleven LCJR subscale scores for only the intervention group and the null hypothesis was rejected. **Conclusion.** The results provide additional evidence that simulation is an effective educational strategy. Students also perceived that a greater number of the educational practices of active learning, collaboration, diverse ways of learning, and high expectations, components of the Nursing Education Simulation design, were important simulation design features. Also noted, was that the simulation design features of goals and objectives, support, problem solving, feedback, reflection, and fidelity enhanced the learning outcomes in simulation. **Grants.** None

Jonas Auditorium 10:45-11:15 a.m.

A MULTI-DISCIPLINARY APPROACH TO MANAGEMENT OF VISUAL SEQUELAE IN TRAUMATIC BRAIN INJURY

Pavanjeet Ubhi, Resident-Pediatrics, College of Optometry
Katherine Green, Resident-Pediatrics, College of Optometry

Introduction. Traumatic brain injury (TBI) is defined as any “direct or indirect impulse to the head or body with

accompanying neurological symptoms"(1). Symptoms of visual dysfunctions are commonly observed following TBI, including eyestrain, blurry vision, intermittent double vision, poor tracking skills, and headache (2,3). These symptoms affect quality of life (4,5) and can be experienced for years after TBI (2,3). **Case presentation.** We present two cases of TBI with visual sequelae. The first patient, a 17-year-old Caucasian female, presented with visual symptoms following a horseback riding fall 1.5 months prior, while the second patient, a 28-year-old Caucasian male, presented with visual symptoms after multiple sports concussions 5-15 years prior. Treatment with vision therapy has resolved symptoms in both cases. **Deviation From the Expected.** Visual dysfunctions after TBI may go unnoticed as they commonly occur in context of normal visual acuity at distance and near (2). Education among health care providers about the visual effects of TBI can help improve quality of life for individuals with these symptoms. **Discussion.** Approximately 8 million people suffer TBI annually (2), of which 40-90% experience visual dysfunction (1). Office-based vision therapy with home reinforcement has proven to be an effective means to reduce visual symptoms (6). **Conclusion.** Many believe decreased vision is the primary indication for a comprehensive eye examination. However, most individuals with TBI experience non-specific symptoms that affect accommodation, vergence, and ocular motility systems without affecting visual acuity. These visual dysfunctions can be recognized by a comprehensive eye examination and treated effectively through in- office vision therapy. **Grants.** No grant or funding was used or required.

Jonas Auditorium 1:15-1:45 p.m.

INCREASED 'NOISE' IN V2 NEURONS OF AMBLYOPIC MONKEYS

Bin Zhang, MD, PhD, Professor, College of Optometry

Objective. To investigate the possible origin of increased internal noise in non-human primates with anisometropic amblyopia. **Background.** Experiencing early strabismus or chronic monocular defocus due to anisometropia often causes amblyopia unless treated early. Besides reduced acuity and contrast sensitivity, a broad range of more complex spatial and temporal vision deficits have been reported in amblyopes. Increased neural noise in their visual brain has been proposed as one of the sources for reduced visual functions. **Methods.** We recorded from multiple nearby neurons in Visual Area V2 of adult monkeys reared with monocular defocus between 3 weeks and 3 months of age and developed moderate ansiometropic amblyopia. Stimuli were drifting gratings (3.1 Hz) that were optimized for orientation, spatial frequency, and size for each neuron and were presented at low (25%) and high (80%) contrast for 100 times. For individual neurons, the variance of inter-spike intervals and variance to mean ratio (VMR) of spike counts were calculated. For multiple neurons recorded at the same site, noise correlation was computed. **Results.** 1) There was no difference in variance of inter-spike interval among neurons driven by the amblyopic eye, those driven by the fellow eye, and normal V2 neurons. 2) With low contrast stimuli, the VMR (trial-to-trial fluctuation) was significantly elevated in V2 neurons driven by both the amblyopic and fellow eyes compared to that in normal monkeys. With high contrast gratings, there was no difference. 3) Noise correlation in amblyopic monkeys was significantly higher than that in normal monkeys at both low and high contrasts. **Conclusion.** Our results suggest that the more variable (noisy) responses of individual neurons and the elevated noise correlation in V2 of amblyopic monkeys, combined with abnormal response dynamics and disorganized subfield structures of V2 neurons, may affect signal processing down stream, which in turn may limit their visual performance. **Grants.** R01-EY08128

Jonas Auditorium 1:45-2:15 p.m.

A DESCRIPTIVE CASE STUDY OF FAITH IN SUBSTANCE USE DISORDERS AND ADDICTION RECOVERY PROCESS IN A FAITH-BASED REHABILITATION PROGRAM

Chitra Paul Victor, MSN, MD (AM), CNE, Assistant Professor, College of Nursing
Judith Treschuk, PhD, Professor, University of Phoenix
Marie Peoples, PhD, Research Associate/Instructor, University of Phoenix
Mary Lewis, PhD, DNP, EdD, Research Associate/Instructor, University of Phoenix

Objective. A qualitative case study to describe a faith-based substance use disorders recovery program and the influence of this program on the healing of body, mind, and spirit and the restoration of hope for women recovered from substance use disorders (SUD). **Background.** Substance use disorders (SUD) and addiction leads to significant socio-economic costs. Addiction is a complex phenomenon. A comprehensive treatment of SUD and addiction requires a holistic approach, which

include spiritual principles and religious concepts. Faith, which provides hope and alleviates fear, is a reflection of moral and spiritual maturity. It will be worth to study the holistic concept of faith and faith-based recovery process for substance use disorders. **Methods.** The case in this single embedded case study is a single, faith-based drug rehabilitation center. The embedded units of analysis involve, female drug addicts recovered from a faith-based rehabilitation center, caregivers, and artifacts that include counseling materials. An in-depth interview will be conducted to understand the faith-based recovery process. Purposive sampling method is used to recruit women in recovery and their care providers of a single faith-based recovery program. This study is guided by a Social Process Theory: Understanding God as a Sponsor. Data analysis will involve N-Vivo-10 software. **Results.** Multiple units of analysis are necessary for triangulation of the data. The study design would prove how each unit of analysis is necessary and complements the data to provide a holistic perspective. Triangulation is necessary to establish the credibility of the case study. The three subunits of analysis in this study would provide rich, in-depth data in a real-world context from a different perspective. This study will explore the holistic concepts of faith, hope, and healing of body, mind, and spirit during the process of recovery from drug addiction. **Conclusion.** The three subunits within a single case would establish the concept of faith and faith-based recovery process in substance addiction recovery. Even though, the literature suggests that case study design is a difficult task in all of social research method, this study would identify the ways a faith-based recovery program influences the alleviation of fear and the instillation of hope in the recovery process from addiction by collecting a variety of rich contextual data through various sub-units of analysis. **Grants.** None

Jonas Auditorium 2:15-2:45 p.m.

CONFRONTING THE STIGMA OF HIV/AIDS IN JAMAICA: A PHENOMENOLOGICAL INQUIRY

Blondel Martin, PhD, Assistant Professor, College of Nursing

Objective. To explore and describe the lived experiences of Jamaican nurses caring for patients diagnosed with AIDS or HIV and give voice to those nurses in articulating their own experiences to gain an understanding of the meaning of their lived experiences. **Background.** At the beginning of AIDS, no one could have predicted how the epidemic would spread across the world and how many lives would be impacted or changed. Devastating families, communities, and countries, HIV/AIDS is an international epidemic crossing all oceans and all borders. HIV/AIDS patients present complex challenges for health care professionals who are at the forefront of prevention, care, and treatment. An important aspect of health care that has emerged is how nurses will adapt to these challenges and care for these HIV patients. **Methods.** A qualitative research design following van Manen's hermeneutic phenomenological traditions was used to explore the lived experience of Jamaican nurses. Data collection was obtained with the use of an audio-tape recorder to conduct semi-structured face-to-face interviews with selected participants. **Results.** Four related themes of fear of infectiveness, transitioness, powerlessness and anger, and compassioness emerged through this phenomenological investigation. These themes illuminated the Jamaican nurses experiences caring for patients with HIV/AIDS, and Starck's (2003) middle range theory of meaning provided a framework for gaining a deeper understanding of this phenomenon. **Conclusion.** This research study exposed the challenges Jamaican nurses face when caring for patients with HIV/AIDS in Jamaica and their efforts to find meaning in their duties. The findings of the study highlighted the essence of their experiences by revealing that despite their fear of contracting HIV/AIDS, they displayed compassion in caring for this vulnerable population. Therefore, understanding the depth at which this experience affects health care providers can be fundamental in providing effective and culturally sensitive support to nurses. **Grants.** none

Jonas Auditorium 2:45-3:15 p.m.

INSTRUMENT TRANSLATION AND PSYCHOMETRIC PROPERTIES OF A HAITIAN-CREOLE LANGUAGE VERSION OF THE CENTER FOR EPIDEMIOLOGY DEPRESSION SCALE

Randy Denis, MSN Student, College of Nursing
Darbouze Rose, DNP Student, College of Nursing
Jo Ann Kleier, PhD, Professor, College of Nursing
Rigaud Eglintine, PhD, Assistant Professor, College of Nursing

Objective. The primary aim of this study is to determine the psychometric properties of the newly translated Center for Epidemiological Depression Scale – Haitian Creole Version (CES-D-Creole). **Background.** It is estimated that approximately

830,000 Haitians are currently living in the United States. Unfortunately, depression is a common mental health condition in the general population. The Centers for Disease Control and Prevention estimates approximately 9.1% of the United States population to meet the current definition of depression, including 4.1% who meet the criteria for Major Depression Disorder. Prompt recognition and treatment of depression symptoms is known to improve healthcare outcomes and prevent adverse health outcomes, such as suicide. However, there are no validated questionnaires to screen for depression in the Haitian-Creole language. **Methods.** Participants taking part of the study are adult bilingual (English and Haitian Creole) community members. Participants are asked to complete a demographics questionnaire, a 2-item validated PHQ-2 depression inventory, and the new CES-D-Creole. **Results.** The CES-D-Creole was found to be highly reliability (20 items; Chronbach's Alpha = 0.95; n= 27). **Conclusion.** Further data collection is needed to quantify internal reliability and external validity associated with this newly translated questionnaire. **Grants.** None

Melnick Auditorium

Melnick Auditorium 9:45-10:15 a.m.

SINGLE NUCLEOTIDE POLYMORPHISMS IN CHRONIC FATIGUE SYNDROME: POSSIBLE GENETIC FACTORS INFLUENCING PATHOPHYSIOLOGY

Irma Rey, MD, Assistant Professor, College of Osteopathic Medicine
Benjamin Eike, OMS-II, College of Osteopathic Medicine
Joseph Palmer, OMS-II, College of Osteopathic Medicine
Franco Garcia, OMS-II, College of Osteopathic Medicine

Objective. The purpose of this research is to explore the prevalence of specific single nucleotide polymorphisms within the Chronic Fatigue Syndrome population that may influence the onset and course of the disease. **Background.** Chronic Fatigue Syndrome is an extremely debilitating disease characterized by overwhelming fatigue, post-exertional malaise, sleep dysfunctions, chronic pain manifestations, and a variety of other neurological, autonomic, and immune abnormalities. Though the CFS research community is making great progress in increasing the understanding of the disease, a definitive disease model still remains elusive. **Methods.** In the current study, SNP genotype data is being collected from CFS Patients who were tested using a DNA micro array method by a third party. The resulting data is being analyzed by comparing specific CFS relevant genotype prevalence within the patient dataset to the corresponding prevalence within a control dataset sourced from the NIH funded 1000 Genome project. **Results.** Preliminary data show promising differences between the prevalence of several gene polymorphisms when comparing the CFS patient data to the data of the 1000 genome project. These polymorphism have the potential to influence many processes, including innate immune function, humoral immunity, antioxidant defense, autophagic processes, and the metabolism of catecholamines, folate, and glutamic acid. **Conclusion.** This study revealed several single nucleotide polymorphisms of interest. Further research is needed to determine the significance of these findings in the pathophysiology of Chronic Fatigue Syndrome. **Grants.** N/A

Melnick Auditorium 10:15-10:45 a.m.

REDUCED EXPRESSION OF DNA REPAIR GENES IN THE BLOOD OF AUTISTIC CHILDREN OF YOUNGER FATHERS

Nisha Chaudhari, Student, Nova Southeastern University
Neha Narang, Student, Nova Southeastern University
Stephen Grant, Ph.D., Associate Professor, College of Osteopathic Medicine

Objective. The purpose of this study was to evaluate whether genes in the five human DNA repair pathways, namely Base Excision Repair, Mismatch Repair, Homologous Repair, and Non-homologous End Joining are underexpressed in autistic children of younger fathers, since they would inherit fewer DNA mutations in their sperm than those with older fathers. **Background.** Autism and autism spectrum disorder are complex neurodevelopmental disorders whose prevalence has increased 30% in recent years. A known risk factor for autism is advanced paternal age, which is known to be associated with high rates of de nova mutation in sperm. **Methods.** First, we designed sets of probes for all of the primary genes in the five human pathways of DNA repair. We then performed a secondary data analysis on gene expression microarray data archived in the GEO database by Alter et al. (2001) PLos One 6: e16715 on blood lymphocytes from patients and controls with fathers of known ages. **Results.** Genes from all five DNA repair pathways were significantly underexpressed in samples from patients with younger fathers. There was also significant skewing towards underexpression of all the genes in the three base repair pathways. **Conclusion.** Our data support the concept that increased somatic mutation, affecting either specific genes or the entire genome, is involved in the etiology of autism. In patients with older fathers, these mutations are inherited. In patients with younger fathers, the patients themselves are more susceptible to developing mutations from genotoxic exposures and replication errors. **Grants.** None

Melnick Auditorium 10:45-11:15 a.m.

DEVELOPMENT OF A BLOOD-BASED MOLECULAR SIGNATURE FOR AUTISM

Jordan Spaw, Ph.D.-Molecular Medicine and Pharmacogenomics, College of Pharmacy
Ana Maria Castejon, Ph.D., Associate Professor, College of Pharmacy
Stephen Grant, Ph.D., Associate Professor, College of Osteopathic Medicine

Objective. This study was conducted to validate and optimize a proposed gene expression signature for autism across two independent sets of patients, potentially providing the basis of a biological test for this disorder. **Background.** Autism is presently diagnosed using a variety of behavioral assessments. Significant gene expression differences in peripheral blood leukocytes found in 11 common genes (log-ratio> 1.5; $p< 0.05$; q^2 0.05) from children with autism as compared with neurotypical controls were proposed as a potentially diagnostic "signature" for the disease by Gregg et al. **Methods.** Microarray datasets were downloaded from the Gene Expression Omnibus data archive established by the National Center for Biotechnology Information. The data was converted into a format analyzable using Microsoft Excel. Validation and optimization studies were performed using the previously described gene signature in the much larger Alter et al. dataset, in order to best differentiate the autistic subjects from controls across both datasets simultaneously. **Results.** 7 of 11 original genes in the signature were also significantly differentially expressed in the Alter et al. dataset. Through subset analyses, a group of 31 genes were developed as an optimized signature that was able to distinguish neurotypical from autistic subjects with a specificity of 0.96. **Conclusion.** The validation and optimization of this group of genes across two independent sets of patients suggests that there is a shared gene expression signature for autism that could potentially provide the basis of a biological test for this disorder. **Grants.** N/A

Melnick Auditorium 1:15-1:45 p.m.

OXIDATIVE STRESS IN LYMPHOBLASTOID CELL LINES FROM AUTISTIC CHILDREN

Jordan Spaw, Ph.D.-Molecular Medicine and Pharmacogenomics, College of Pharmacy
Ana Maria Castejon, Ph.D., Associate Professor, College of Pharmacy

Objective. In this study, we evaluated the in vitro susceptibility of autistic children to various oxidative stressors as compared with to unaffected, age-matched controls. **Background.** Numerous studies have suggested oxidative stress plays a role in the pathogenesis of autism. Oxidative stress results from an imbalance between the production of reactive oxygen species (ROS) and a decrease in either the efficiency of the endogenous antioxidant defense mechanisms or the ability to effectually scavenge free radicals. We propose that there is a direct link between oxidative stress and cell death in children with autism, with deficient glutathione levels as the underlying mechanism. **Methods.** Lymphoblastoid cell lines (LCLs) from affected and control children from the Autism Genetic Research Exchange (AGRE) and Coriell Cell Repository were treated with the pro-apoptotic agent, DMNQ, for different times. Cell viability, cell death, apoptosis, and necrosis rates were analyzed in these treated cell lines, both at baseline and in the presence of oxidative stressors, using flow cytometry. In addition, the formation of ROS was quantified using fluorescence. **Results.** Preliminary results have shown increased levels of ROS in those LCLs from children with autism as compared to controls at baseline conditions. Significantly higher apoptotic rates were found in the control LCLs ($p<0.05$) at almost all time points, whereas the autistic LCLs had higher proportion of cell death ($p<0.1$). **Conclusion.** Overall, the results from this study will provide a better understanding of the underlying molecular mechanisms surrounding the pathogenesis of autism particularly looking at mechanisms of programmed cell death in this condition.

Melnick Auditorium 1:45-2:15 p.m.

NUCLEOTIDE EXCISION REPAIR IS ELEVATED IN COMMERCIALLY AVAILABLE LATE STAGE BREAST CANCER CELL LINES AS COMPARED TO EARLY STAGE EXPLANTS

Homood As Sobeai, Ph.D.-Molecular Medicine and Pharmacogenomics, College of Pharmacy
Jennifer Johnson, M.D., Ph.D., Assistant Professor, Jefferson University Hospital
Nancy Lalanne, M.D., Clinical Adjunct Professor, Case Western Reserve University
Omar Ibrahim, Ph.D.-Molecular Medicine and Pharmacogenomics, College of Pharmacy
Stephen Grant, Ph.D., Associate Professor, College of Osteopathic Medicine

Sharon Wenger, Ph.D., Professor, West Virginia University
Jean Latimer, Ph.D., Associate Professor, College of Pharmacy

Objective. To determine functional nucleotide excision repair (NER) capacity and relative NER gene expression in a series of commonly used stage IV breast cancer-derived cell lines relative to stage I breast tumor and non-diseased breast reduction primary cultures. **Background.** Genomic instability is a hallmark of human carcinogenesis. Sporadic stage I breast tumors exhibit deficient NER capacity relative to non-diseased breast reduction primary cultures. We investigated whether this feature of early human breast cancer is maintained in cell lines established from late stage tumors. **Methods.** NER function was determined using the unscheduled DNA synthesis assay in six established breast cancer cell lines. JL BTL-12, derived from a stage III breast tumor, was included to represent an advanced stage tumor cell line established in our culture system. These cultures were compared to 23 non-diseased breast reduction and 19 stage I breast tumor primary cultures. NER gene expression was determined by gene expression microarray in 5 established cell lines, JL BTL-12 and representatives of normal (JL BRL-6) and stage I tumor cultures (JL BTL-8). **Results.** The commercial cell lines and JL BTL-12 had significantly higher NER capacity when compared to stage I tumors. Supervised analysis based on expression of 20 NER genes clustered JL BTL-12 and the five commercial cell lines in one group, while JL BTL-8 and JL BRL-6 clustered together separately. Four NER genes were upregulated significantly in JL BTL-12 and all commercial cell lines relative to JL-BTL-8. **Conclusion.** Late stage breast tumor cell lines differ significantly from the types of tumors most prevalent at diagnosis.
Grants. DOD, NIH, Komen for the Cure.

Melnick Auditorium 2:15-2:45 p.m.

NUCLEOTIDE EXCISION REPAIR (NER) IN ACUTE LYMPHOBLASTIC LEUKEMIA (ALL) AS A PREDICTOR OF EARLY RELAPSE

Omar Ibrahim, Ph.D.-Molecular Medicine and Pharmacogenomics, College of Pharmacy
Homood As Sobeai, Ph.D.-Molecular Medicine and Pharmacogenomics, College of Pharmacy
Stephen Grant, Ph.D., Associate Professor, College of Osteopathic Medicine
Jean Latimer, Ph.D., Associate Professor, College of Pharmacy

Objective. To determine whether expression of NER DNA repair genes affects development of drug resistance and relapse in ALL. **Background.** Relapse in ALL is associated with the development of resistance to primary therapy. NER is a metabolic pathway that protects cells from the effects of genotoxic agents, such as chemotherapy drugs. **Methods.** We studied the role of NER in ALL by secondary analysis of 2 independent gene expression microarray studies: Staal et al. (Set A) and Hogan et al. (Set B). Both studies analyzed matched diagnosis-relapse leukemic cells of ALL patients (41 and 49 pairs, respectively). **Results.** In Set A we found that 17/20 NER genes were overexpressed at time of relapse, 4 of which were individually significantly increased: ERCC1, ERCC8, ERCC4 and DDB1. Subset analysis of Set B, based on patients who have early (<3 years) vs. late (> 3 years) relapse gave distinct results. NER gene expression at the time of diagnosis of patients in the early relapse group was increased in all 20 NER genes when compared to the late group (p=0.001). 7 genes showed individually significant increases in expression: XPE, DDB1, RPA3, RPA2, ERCC2, ERCC1 and ERCC8. In Set A, 18/20 NER genes were upregulated at the time of diagnosis in early relapse patients vs. the late group. 4 genes were significantly increased: RPA1, CCNH, DDB1 and RPA2. **Conclusion.** We have discovered that early relapse in ALL is associated with elevated NER gene expression at the time of diagnosis. Pharmacogenomic targeting of such patients might include dose escalation.
Grants. Children's Leukemia Research Association

Melnick Auditorium 2:45-3:15 p.m.

ALTERATIONS IN DOUBLECORTIN EXPRESSION IN HUMAN NEURONAL STEM CELLS IN RESPONSE TO ANGIOTENSINERGIC STIMULATION IN PROLIFERATION AND DIFFERENTIATION

Leena Couling, Research Associate
Brigitte Blanco, 1st year student, Duke University
Nadia Siddiqi, Student, Halmos College of Natural Sciences and Oceanography
Robert Speth, M.A., Ph.D., Professor, College of Pharmacy
James Munoz, Ph.D., Assistant Professor, College of Pharmacy

Objective. To determine if selective stimulation of AT1 and AT2 subytpes in neuronal stem cells affects doublecortin expression under differentiation versus proliferation conditions. **Background.** Angiotensin II (Ang II) has been reported to affect cell proliferation and differentiation in cultured neuronal cells. **Methods.** Neural stem cells (H-9) obtained from Life Technologies were grown in a cell culture medium that was supplemented with epidermal growth factor and fibroblast growth factor (proliferation medium) or without added growth factors (differentiation medium). The cells were treated with a nonselective agonist of Ang II receptors (Sar1, Ang II, 100 µM once daily) in the presence of the AT2 receptor blocker PD 123319 (10 µM once daily) to selectively stimulate AT1 receptors, CGP42112 a selective AT2 receptor agonist (100 µM once daily), PD123319 a selective AT2 receptor antagonist (10 µM, once daily), or saline for two weeks. The cells were fixed and stained with doublecortin antibody and the cell nuclei were stained with dapi. Cells were counted for number of dapi labeled nuclei and for doublecortin (DCX) immunoreactive material. The proportion of cells positive for the neuroblast marker DCX was determined in all 8 conditions and analyzed by a two-way ANOVA. **Results.** Doublecortin expression was reduced by AT1 selective stimulation in differentiation conditions relative to control (Control 70.9 ± 17% and AT1 14.0 ± 6.2%, $p<0.01$), AT2 stimulated (AT2 86.7 ± 0.6%, $p<0.01$) and AT2 antagonized with PD123319 (PD123319 64.4 ± 9.3%, $p<0.05$). In proliferation conditions, doublecortin expression was reduced by AT2 selective stimulation and AT2 antagonism compared to control and AT1 selectively stimulated cells ($p<0.01$: Control 96.5 ± 1.1% ; AT1 88.7 ± 1.6% ; AT2 9.1 ± 6.1% ; PD123319 2.6 ± 1.0%). **Conclusion.** These results suggest that angiotensinergic inhibition of doublecortin expression is dependent upon the presence of the growth factors EGF and FGF-2. **Grants.** R.C. Speth: Research Grant; Significant; NIH HL-113905; Cardiovascular Neuroscience Research Fund, Nova Southeastern University. J. Munoz: President's Faculty Research Development Grant, Nova Southeastern University.

Morris Auditorium

Morris Auditorium 9:45-10:15 a.m.

ARB DRUGS AND ALDOSTERONE IN HEART FAILURE: THE ADRENAL BETA-ARRESTIN1 CONNECTION

Anastasios Lymperopoulos, Ph.D., Associate Professor, College of Pharmacy
Malika Jefferjee, OMS-II, College of Osteopathic Medicine
Thairy Reyes Valero, OMS-II, College of Osteopathic Medicine
Christine Marrero, OMS-II, College of Osteopathic Medicine
Katie McCrink, P2-Pharm.D., College of Pharmacy
Ava Brill, P4-Pharm.D., College of Pharmacy

Objective. To examine the relative potencies of all the currently used in the clinic AT1R antagonist drugs (angiotensin receptor blockers, ARBs) at preventing activation of the signaling mediators G proteins and beta-arrestins, thereby suppressing aldosterone production. **Background.** The known angiotensin II (AngII) physiological effect of aldosterone synthesis and secretion is mediated by either Gq/11 proteins or beta-arrestin1, both of which can couple to its type 1 receptors (AT1Rs), present in adrenocortical zona glomerulosa (AZG) cell membranes. **Methods.** We measured beta- arrestin1 activation by the AT1R bound to different drugs in AZG cells in vitro. We also measured aldosterone production in response to the various drugs in these cells, as well as circulating aldosterone levels in experimental rats having heart failure (HF) and treated in vivo with ARBs. **Results.** While all ARBs are potent inhibitors of G protein activation, candesartan and valsartan are the most potent at blocking AngII-induced beta-arrestin1 activation, translating into excellent efficacies at aldosterone suppression in AZG cells. Conversely, irbesartan and losartan are the least potent beta-arrestin inhibitors and aldosterone suppressors. As a result, in vivo, candesartan and valsartan are the most potent aldosterone suppressors in HF animals improving cardiac function, whereas irbesartan and losartan appear ineffective at combating HF-related hyperaldosteronism in vivo. **Conclusion.** Candesartan and valsartan may be the most appropriate agents of the ARB drug class to use in HF treatment. **Grants.** 1) American Heart Association (AHA #09SDG2010138, National Center) 2) Nova Southeastern University's President's Faculty Research and Development Grant (PFRDG) NSU #335320

Morris Auditorium 10:15-10:45 a.m.

VALIDATION OF A SIMPLE DISINTEGRATION TEST FOR RAPIDLY DISINTEGRATING TABLETS

Rawan Bafail, Ph.D.-Drug Development (Pharmaceutics), College of Pharmacy
Aodah Alhussain, Ph.D.-Drug Development (Pharmaceutics), College of Pharmacy
Mutasem Qalaji, Ph.D, Associate Professor, College of Pharmacy

Objective. For rapidly disintegrating tablets (RDTs), the current USP method does not accurately measure very short disintegration times nor discriminate between different RDTs formulations. For the purpose of evaluating the effect of making changes in RDT formulations on disintegration time and for formulation development, a simple and novel disintegration test was developed and validated. The impact of disintegration medium's temperature and volume and the agitation level on various RDTs' disintegration was evaluated in this study. **Background.** The disintegration test, although not a required USP test, it is very crucial for drug development, especially for the development of rapidly disintegrating tablet (RDT) formulations. The current USP method for measuring the disintegration time (DT) of RDTs does not accurately measure very short DTs nor discriminates between different RDT formulations. Several methods have been developed before to measure the DT of RDTs, however, they lacked the simplicity, the adaptability by other laboratories, or the ability to control for various test conditions that impact the DT. Therefore, we designed and developed a simple adaptable but sensitive disintegration test to evaluate the effect of making formulation changes on RDTs' DT. The impact of disintegration medium's temperature and volume and the agitation level on various RDTs' disintegration was evaluated in this study. **Methods.** The disintegration apparatus consisted of a stainless steel cylindrical basket, 36.8 ± 0.1 mm height and 23.6 ± 0.1 mm diameter, and mesh size 10. A motorized shaft was used to induce three levels of agitation (40 rpm, 60 rpm, and 80 rpm). Two volumes of deionized water (2 mL or 20 mL), as a disintegration medium, were evaluated at 37 ºC or 25 ºC. Five different RDTs formulations were used to validate this disintegration test. Of which, two sublingual RDTs sizes, 150 mg and 50 mg tablet-weight, containing 2

mg atropine sulfate (AS) were used to evaluate the effect of tablet size on disintegration time. Three RDTs containing 2 mg, 4 mg, and 8 mg AS and weighing 50 mg were used to evaluate effect of drug load on tablet disintegration time. Claritin RDTs (RediTabs®) containing 10 mg loratadine and weighing 20 mg were used as an example for Zydis® fast dissolve technology to evaluate the ability of this disintegration test to measure extremely short disintegration times. The disintegration endpoint was determined as defined in USP disintegration test. Means±SD (n=3) were calculated and statistically compared using ANCOVA and Tukey-Kramer test, $p < 0.05$. **Results.** All the three covariates (medium volume, agitation level, and medium temperature) affected the RDTs' disintegration time significantly ($p < 0.05$). There was a significant disintegration difference ($p < 0.05$) between the two RDTs sizes, 150 and 50 mg (93±2 and 18±1 sec at 2 mL, 40 rpm, and 25 °C). Also, there was significant disintegration difference ($p < 0.05$) was detected between various drug loads, 2 mg, 4 mg, and 8 mg (18±1, 22.6±0.3, and 26±1 sec at 2 mL, 40 rpm, and 25 °C). This test was able to measure a significant disintegration difference ($p < 0.05$) between Claritin (6.8±0.3 sec) and all the previous three drug loads. **Conclusion.** This disintegration test was simple, robust, and can be easily adapted for measuring very small disintegration differences during RDTs formulation development or for comparing various RDTs formulations and technologies. Disintegration medium's volume and temperature and the agitation level are important factors that should be considered during the measurement of RDSTs' disintegration time.
Grants. SACM

Morris Auditorium 10:45-11:15 a.m.

DEVELOPING IN-VITRO TESTS FOR SOLID-STATE ABUSE DETERRENCE CAPACITY

Srinath Muppalaneni, Ph.D.-Drug Development (Pharmaceutics), College of Pharmacy
Arghavan Kariman, P4-Pharm.D., College of Pharmacy
David Mastropietro, PhD, Assistant Professor, College of Pharmacy
Hossein Omidian, PhD, Professor, College of Pharmacy

Objective. The main objective of this study was 1) to develop standard testing practices to be used when evaluating crush resistance properties of abuse deterrent formulations, and 2) to determine which methods of particle size reduction (manual or electrical) are the most discriminatory for measuring crush resistance of tablet dosage forms. **Background.** Crushing, or particle size reduction, is often the first step to make a medication easier to snort, to dissolve for injection, or to destroy slow-release mechanisms in order to achieve greater euphoric effects. However, no standard methods exist on testing crush resistant properties of prescription medications susceptible to abuse. Such testing is crucial for comparative purposes and to obtain abuse-deterrent labelling for the newly-marketed abuse-deterrent products. **Methods.** Tablets containing poly(ethylene oxide) as a deterrent agent and acetaminophen as model drug were formulated on tablet press (2000 pounds) before undergoing a post compaction thermal process reported for a crush-resistant marketed formulation. Crush resistance was then assessed using manual (i.e., pill crusher, pestle-mortar) and mechanical (i.e., hardness tester, ball mill, high shear grinder, domestic blender) methods at different time durations and sample mass. The resultant product was then analyzed by sieve analysis. **Results.** Significant differences were observed between the particle size distributions using different methods. The domestic blender and high shear grinder had better ability to differentiate products compared to other tooling. **Conclusion.** There is no universal method to measure crush resistance, and methods used to perform particle size reduction can display different level of resistance to manipulation
Grants. NSU grants # 335357 and 335829

Morris Auditorium 11:15-11:45 a.m.

ABUSE VULNERABILITY OF CURRENTLY-MARKETED ABUSE-DETERRENT MEDICATIONS

Yogesh Joshi, Ph.D. – IV Drug Development (Pharmaceutics), College of Pharmacy
David Mastropietro, Ph.D., Assistant Professor, College of Pharmacy
Hossein Omidian, Ph.D., Professor, College of Pharmacy

Objective. Determine the effect of high temperatures on the stability and abuse deterrent functionality of PEO. **Background.** PEO is used as the main component in many recently marketed medications having resistance to abuse. When heated and cooled, PEO becomes extremely hard and is resistant to crushing. Additionally, it forms viscous solutions when mixed with small amounts of liquid to prevent being injected. However, one major drawback of PEO is its susceptibility to heating processes used in manufacturing. **Methods.** For each heat treatment, 500 mg of PEO (Polyox™ WSR Coagulant) powder was

placed in a hot air oven and subjected to temperatures of 80, 110, 150, and 180 degrees Celsius for 1 hour. Thermal analysis on cooled samples was then performed using DSC at a heating/cooling rate of 10 degrees Celsius per minute under nitrogen purge. Structural changes were examined using FTIR spectrometer. Viscosity of 2% w/v aqueous solutions from treated samples was measured by using a cone-plate rheometer. **Result.** DSC showed a decrease in enthalpy, melting point, and onset of melting with increased treatment temperatures. FTIR also showed degradation peaks (1720 cm^{-1}) resembling polymer depolymerization at higher temperatures. Similarly, solution viscosities were found lower for samples treated at higher temperature. The PEO solutions treated at temperatures above 150 degrees Celsius showed almost no viscosity. **Conclusion.** PEO is thermally degraded at high temperatures, losing its abuse deterrence potential. If abusers attempt to heat the medication at high temperatures, they can abuse the drug by insufflation and by injection, therefore necessary provisions need to be made to proper processing PEO – containing formulations at higher temperatures. **Grants.** #PFRDG 335357, #PFRDG 335867

Morris Auditorium 11:45 a.m.-12:15 p.m.

EXPLORING ISSUES IN ANALYZING NATIONAL DATABASES USING LOGISTIC REGRESSION: APPLICATION OF MEDICAL EXPENDITURE PANEL SURVEY (MEPS)

Abdullah Althemery, Ph.D.-Social and Administrative Pharmacy, College of Pharmacy
Leanne Lai, Ph.D., Professor, College of Pharmacy

Objective. The study investigated three main issues when applying logistic regression in nationally representative multistage survey data: subgroup analysis, multicollinearity, and receiver operating characteristic (ROC) curves. **Background.** Most national data use a complex stratified multistage probability design including cluster, strata, and weight adjustment to extrapolate study results to a national level. Survey procedures are available in Statistical Analysis System 9.2. However, several issues might occur if not used appropriately. Moreover, no clear agreement exists on detecting multicollinearity and generating ROC curves in these recent survey logistic procedures. The current study using Medical Expenditure Panel Survey (MEPS) data discussed and compared the available principles and techniques. **Methods.** First**,** a subpopulation analysis was conducted using two procedures with and without domain statements. Also, various multicollinearity methods were conducted and compared. Lastly, a ROC curve in survey logistics was generated and compared with and without survey procedures. **Results.** The study results showed that the estimates without domain statements yielded potentially overestimated standard errors. The tolerance test and variance inflation factor (VIF) for detecting multicollinearity were similar to two applied procedures: the linear regression procedure and the adjusted weight matrix by maximum likelihood algorithm procedure. ROC curves accounting for the national estimation were successfully generated and offered more reliability. **Conclusion.** Accounting for total population weights when analyzing a subgroup in national databases is important. New methods are required for exploring multicollinearity in survey logistic regression procedures.

Morris Auditorium 2:15-2:45 p.m.

DUODENAL CARBOHYDRATES IN PIGLETS TREATED WITH PROBIOTICS

Radomira Nemcova, DVM, Professor, Microbiology,University of Veterinary Medicine
Lori Dribin, Ph.D., Professor, College of Medical Sciences
Andrew Mariassy, Ph.D., Professor, College of Medical Sciences

Objective. Objective. This experiment was performed to assess the effect of Lactobacilus casei probiotics on the expression of duodenal carbohydrates as detected with lectin probes. **Background.** Background. Epithelial expression of carbohydrates is altered in response to wide array of agents. Many carbohydrate residues are known to be receptors for attachment of microorganisms. Specific probiotic are known to interfere with colonization by pathogenic microflora. **Methods.** Methods. We examined the lectin detectable histochemical expression of carbohydrates in the duodenum of probiotic, Lactobacilus casei treated (3), and control (3) weaned piglets. Fixed and paraffin embedded duodenal sections were reacted with 7 biotinylated lectins and localized carbohydrates were detected with Vector ABC kit®. The lectin- binding patterns of the duodenal mucosa were scored from 0 to +4. ANOVA statistical analysis was used to compare carbohydrate reactivity between the two animal groups. **Results.** Results. Epithelial glycocalyx ranged from 0 to +4, epithelial goblet cells from 0 to +3, were stained only with BSA, UEA and GNL, occasional epithelial cell from 0 to +3 bound BSA, MAL and GNL lectins. Mucous cell in the duodenal glands, bound BSA, UEA and GNL lectins, while only some gland cells were stained with UEA. The lectin binding

of the probiotic treated piglet duodenum generally increased in intensity, glycocalyx decreased and goblet cells increased in reactivity. **Conclusion.** Taken together, the results suggest an alteration of the carbohydrate environment of the duodenum which adversely effects the expression of carbohydrate receptors, thus preventing the attachment of pathogenic microflora. **Grants.** Supported by NSU Faculty Research Grant.

Morris Auditorium 2:45-3:15 p.m.

A COMMUNITY-BASED, INTER-PROFESSIONAL DIABETES SELF-MANAGEMENT EDUCATION PROJECT

Patricia Dittman, PhD, Associate Professor, College of Nursing
Jo Ann Kleier, PhD, EdD, Professor, College of Nursing
Devada Singh-Franco, PharmD, Associate Professor, College of Pharmacy
Andrea Levin, PharmD, Assistant Professor, College of Pharmacy
Megan Colas, PhD, Assistant Professor, College of Health Care Sciences - Exercise and Sport Science
Elizabeth Swann, PhD, Professor, College of Health Care Sciences - Exercise and Sport Science
Arlene Brett Gordon, PhD, Professor, College of Osteopathic Medicine

Objective. The is to implement a 5-week, 15-hour, community-based, inter-professional diabetes self-management education program directed towards adults with poorly controlled type 2 diabetes to determine if engagement with the program was an effective intervention to improve (1) attitude toward diabetes, (2) perception of social motivation to self- manage diabetes, (3) empowerment toward diabetes self-management and (4) actual glycemic control. **Background.** The effects of diabetes are costly to the individual, family and society as a whole. The negative effects of diabetes may be largely reduced by diligent control of blood glucose but this requires that the individual with diabetes consistently practice self-management of diet, exercise and medication. Too many individuals with diabetes do not engage in self- management, continue to have elevated blood glucose and suffer from the consequent negative health outcomes which severely affect their quality-of-life. **Methods.** This is a descriptive study of the effectiveness of an intervention among 50 eligible individuals. Variables of the theory or planned behavior are measured and the theoretical model will be tested. **Results.** Pending **Conclusion.** Pending **Grants.** NSU Quality of Life grant.

Resnick Auditorium

Resnick Auditorium 9:45-10:15 a.m.

THE EFFECT OF ABUTMENT RECONNECTION AND DISCONNECTION ON PERI-IMPLANT MARGINAL BONE: A SYSTEMATIC REVIEW AND META-ANALYSIS.

Fatemeh Gholami, PG-Periodontology, College of Dental Medicine
John Raynolds, M.S., Research Associate/Instructor, Nova Southeastern University
Theofilos Koutouzis, D.D.S., M.S., Associate Professor, College of Dental Medicine
Georgios Kotsakis, D.D.S., M.S., Assistant Professor, University of Washington

Objective. The aim of the present systematic review and meta-analysis was to evaluate the effect of abutment disconnection and reconnection on peri-implant marginal bone. **Background.** It has been reported that multiple abutment disconnections and reconnections following implant placement may compromise the peri-implant mucosal seal and may lead to increased marginal bone loss. **Methods.** This review was conducted according to the PRISMA guidelines for systematic reviews. An electronic search was conducted in databases including Ovid Medline, Elsevier EMBASE, and EBSCO CINAHL from January 1937 up to Oct 2015 to find clinical studies to evaluate the effect of abutment reconnection and disconnection on peri-implant marginal bone. Two reviewers independently screened titles and abstracts for potential inclusion. Meta-analyses were conducted for the primary outcome: peri-implant marginal bone level change. The mean differences of peri-implant marginal bone loss between implants received final abutments at the time of implant placement and implants submitted to multiple abutment reconnections and disconnections were estimated as the effect-size measures. **Results.** A total of 392 titles and abstracts were identified after de-duplicating the electronic search. 383 articles were excluded as irrelevant to the PICO question. Scrutiny of the full-text articles from the remaining 9 articles led to the exclusion of 2 studies after application of the pre-specified exclusion criteria. In total, 7 clinical studies were included in this review. All studies reported changes in peri-implant marginal bone level as an outcome. Meta- analysis of seven studies showed an increased in mean (95% confidence interval) marginal bone loss of 0.19 (0.06- 0.32) mm. **Conclusion.** Multiple abutment reconnections and disconnections are associated with statistically significant increased marginal bone loss, when compared to final abutment placement at the time of implant surgery (one abutment one time). **Grants.** N/A

Resnick Auditorium 10:15-10:45 a.m.

THE ETHICAL "COLLATERAL DAMAGE" OF QUASI-EUGENICS

Almos Trif, MD, PhD, JD, Masters in Medical Ethics, Professor, College of Medical Sciences

Objective. My goal was to find a new terminology for such techniques (i.e., Prenatal diagnosis, Prenatal Screening Program, PGD - pre-implantation genetic diagnosis, PGS - pre-implantation genetic selection, Three Parent In Vitro Fertilization babies, designer babies), and to emphasize their flaws as "collateral damage", including the extreme costs and the limited applicability for a few select people. **Background.** "Eugenics" is "a science dealing with the improvement (as by control of human mating) of hereditary qualities of a race or breed." This definition is not entirely suitable for the new advanced techniques in genetically engineering human beings, purposely amending the human race and its perspectives for the future. **Methods.** An electronic search was performed in PubMed; Medline; Ovid to identify English language articles from 1996 through 2012 containing the words eugenics, new-eugenics, genetically engineering humans, biomedical ethics, and the named techniques. 128 articles were identified, 58 were screened and excluded based on title and abstract, and 23 based on the content. **Results.** 36 articles making direct or indirect reference to the ethically challenged methodologies were included in the study. Attention was given to the articles including controversies and innovative terms. The author expresses his concerns and opinions over the ideas expressed on both sides of the aisle. **Conclusion.** The term "quasi-eugenics" is considered the most adequate by the author, when compared to previously coined terms for such technologies. Thus, it does not deny the shady legacy of "authentic" eugenics, as improvement of heredity, but it shows the use of different means. **Grants.** None

Resnick Auditorium 10:45-11:15 a.m.

CHILDREN'S EXPOSURE TO SECONDHAND SMOKE, PARENTAL NICOTINE DEPENDENCE AND MOTIVATION TO QUIT SMOKING

Jo Ann Kleier, PhD, EdD, ARNP, ACNP-BC, Professor, College of Nursing
Mary Mites-Campbell, PhD, RN, CTTS, Assistant Professor, College of Nursing
Kelly Henson-Evertz, DNP, RNC, CTTS, Assistant Professor, College of Nursing

Objective. The extent of children's exposure to second hand smoke, the most frequent sites for exposure, the degree of the parents' dependence on nicotine, and their level of motivation to stop smoking were measured. Comparisons were made between income levels and ethnic/racial groups. **Background.** More than 600,000 people die each year as a result of exposure to secondhand smoke; 28% of those deaths are children. **Methods.** This descriptive, correlational study used data provided by a convenience sample of 184 smoking parental-figures representing 376 children recruited in community settings. Potential subjects were approached by the researchers in public places as train stations, shopping centers, and grocery store parking lots. Individuals that reported being smokers were asked if they had children and if they would volunteer to complete the research instrument. **Results.** Children's exposure to secondhand smoke was low; Asian children had the highest likelihood of exposure. The areas of most frequent exposure were multiunit residential communities and in a vehicle. The parents' dependence on nicotine was moderately high and parental motivation to quit smoking was high. However, those parents who were the most dependent on nicotine were the least motivated to quit. **Conclusions.** Nurses working with both adult and pediatric populations should address the opportunities for exposure to secondhand smoke for their patient population. Community health nurses should specifically target workplaces, businesses and communities with high numbers of Asian residents for public health education related to childhood exposure to secondhand smoke.

Resnick Auditorium 11:15-11:45 a.m.

EFFECT OF BROMELAIN ON OSTEOGENIC DIFFERENTIATION OF HUMAN GINGIVA DERIVED STEM CELLS

Shaileen Ejtemai, D1, College of Dental Medicine
Selin Avman, PG-Pediatric Dentistry, College of Dental Medicine
Christine Manguno

Objective. The aim of this study was to investigate the effect of bromelain on cell proliferation and osteogenic differentiation of human gingiva derived mesenchymal stem cells (HGMSCs). **Background.** HGMSCs are highly proliferative with the ability to differentiate into osteogenic precursor cells. While dexamethasone is a traditional inducer of osteogenic differentiation, many antioxidants play a vital role in enhancing osteogenic differentiation and offer a potential alternative to dexamethasone. Bromelain, an antioxidant derived from pineapple extract, is known to modulate NF kappa B signaling. Previous studies showed that the inhibition n of NF-kappa B significantly enhanced MSC-mediated bone formation. **Methods.** Cryopreserved HGMSCs were used for the study. The cells obtained from passage 4 were seeded onto a 96- well plate and treated with different concentrations of bromelain (1, 2.5, 5, 7.5, 10 and 15 mg/mL) and cell viability was determined by MTT assay. Osteogenic differentiation was examined by osteogenic marker gene expression at 2 weeks. Results: While cells exposed to bromelain on day 1 showed significant increase in the proliferation at 1 µg/ml concentration, on day 3, there was significant increase in cell proliferation ($P<0.05$) at all concentrations. The cells induced with bromelain for 2 weeks showed significant upregulation of several genes such as alkaline phosphatase, osteonectin, osteoprotegerin. **Results.** While cells exposed to bromelain on day 1 showed significant increase in the proliferation at 1 µg/ml concentration, on day 3, there was significant increase in cell proliferation ($P<0.05$) at all concentrations. The cells induced with bromelain for 2 weeks showed significant upregulation of several genes such as alkaline phosphatase, osteonectin, osteoprotegerin. **Conclusion.** The findings from the study demonstrated that bromelain treatment induced cell proliferation. Nevertheless, the survival of HGMSCs is concentration dependent. The results of the study suggests that bromelain can induce osteogenic differentiation of HGMSCs. **Grants.** HPD grant.

Resnick Auditorium 11:45 a.m.-12:15 p.m.

BIOMIMETIC SELF-ASSEMBLING NANOFIBROUS SCAFFOLD FOR BONE TISSUE REGENERATION

Umadevi Kandalam, PhD, Associate Professor, College of Dental Medicine

Objective. The aim of the study was to evaluate the ability of PurmatrixTM to support the cell growth and differentiation in human gingiva derived stem cells (HGMSCs) and umbilical cord derived stem cells (HUMSCs). **Background.** Therapeutic management of bone loss in the craniofacial region as a consequence of trauma, tumor surgery or congenital malformation presents clinical challenge. Biomaterials play a role in interacting with cells in the formation of tissue. PuraMatrixTM is a commercially available self-assembled synthetic peptide hydrogel. PuraMatrixTM, upon contact with physiological conditions can instantly polymerize forming matrices providing three-dimensional architecture to the cells. The nanofiber structures of these peptides surround the cells and form an extracellular matrix and enable the cells to grow within the gel. **Methods.** HGMSCs and HUMSCs were isolated and cultured under standard culture conditions. Proliferation of the cells encapsulated in puramatrix scaffold was observed at 1, 3, 5 and 7 days. Osteogenic differentiation was investigated at 1 and 2 weeks. **Results.** Puramatrix embedded cells were viable during the entire period of study in both cell types. Significant increase in osteogenic marker-alkaline phosphatase (ALP) activity was observed in cell- gel constructs when compared with monolayer cultures. Notably, cells in puramatrix showed significant upregulation of genes such as collagen type 1, ALP and osteopontin at two weeks of culture period in both cell types. **Conclusion.** Our in vitro studies demonstrate that Puramatrix in combination with these stem cells have potential to regenerate bone **Grants.** This research was supported by HPD and PFRDG.

Resnick Auditorium 2:15-2:45 p.m.

SMALL MOLECULES IN OSTEOGENIC DIFFERENTIATION

Sravanthi Kadiyala, D3, College of Dental Medicine
Selin Avman, PG-Pediatric Dentistry, College of Dental Medicine
Umadevi Kandalam, PhD, Associate Professor, College of Dental Medicine

Objective. The objective of this study was to investigate the osteogenic potential of curcumin induced human gingiva derived mesenchymal stem cells (HGMSCs) **Background.** Mesenchymal stem cells have multilineage potential thus being an attractive source in regenerative medicine. Stem cell differentiation and modulation of functional activities are generally modulated by growth factors and small regulatory molecules. Dexamethasone (Dex) and curcumin are such well-known small molecules. While Dex is a traditional osteogenic inducer, the role of curcumin in inducing osteogenic differentiation needs to be determined. It has been proved that curcumin has anti-inflammatory property and inhibits osteoclastic activity. **Methods.** The HGMSCs obtained from human gingival tissue were cultured under standard culture conditions. Cells were treated with curcumin (2, 5 and 10uM) for 2 days, and then transferred to osteogenic medium. Cells in medium devoid of curcumin was used as control. Osteogenesis was assessed by alkaline phosphatase (ALP) gene expression and the ALP enzyme activity was measured by pNPP assay. **Results.** Compared to controls, curcumin enhanced ALP gene expression in a dose dependent manner. A significant increase in ALP activity was observed on day 7 and 14. The upregulation was comparable with Dex treated cells. **Conclusion.** The results of this study suggested that curcumin induces osteogenic differentiation of HGMSCs. **Grants.** NSU-HPD Grant.

Resnick Auditorium 2:45-3:15 p.m.

AN ANALYSIS OF RESPONSE RATE AND ECONOMIC COSTS BETWEEN MAIL AND WEB-BASED SURVEYS AMONG PRACTICING DENTISTS: A RANDOMIZED TRIAL

Patrick Hardigan, Ph.D., Professor, College of Osteopathic Medicine

This study explored the economic costs and response rate of mail and web-based surveys with practicing dentists. A random sample of 6,000 practicing dentists was randomly assigned into three groups of 2,000: choice (mail or web-based), postal mail, or web-based. The Florida Tobacco Control Survey 2009, which is composed of 28 questions (including subject demographic questions), served as the survey instrument. A total of 1,232 surveys were returned by the three different groups (21% overall response rate). Response rates were best for the mail (26%) with the worst response rate coming from the Web group (11%). However, a cost-effectiveness analysis revealed that web surveys were 2.68 times more cost effective.

Steele Auditorium

Steele Auditorium 9:45-10:15 a.m.

PRIVATE REPORTING OPTION THROUGH CODED TEXT MESSAGES (PROTEXT)

Robert Parkes, MD; Assistant Professor; College of Osteopathic Medicine
Alina Alonso, MD; Assistant Professor; College of Osteopathic Medicine
Gabriel Suciu, Ph.D., Associate Professor of Biostatistics; College of Osteopathic Medicine
Diana Connor, MPH; Epidemiology Fellow; Palm Beach County Health Department

Objective. This study was conducted to determine if notification of STD results using coded text messages would lessen the time between laboratory result availability and time to treatment. **Background.** Over 66% of the chlamydia and gonorrhea cases in Palm Beach County are from clients aged 15-24 years. In order to limit transmission, it is imperative there is timely treatment. **Methods.** A coded text message was sent to the client for negative or positive lab results; this was done in English, Spanish or Haitian Creole. Patients with positive results would call to make an appointment for treatment. **Results.** During the period April 7, 2014 through April 7, 2015, 1,881 individuals chose to be notified of their results using Private Reporting Option through coded TEXT messages (PROTEXT). Demographic profile of PROTEXT users who called back as protocol required were: median age of 25 years, spoke English and Black non-Hispanic (88%). Of those clients who had PROTEXT notification and called for appointment, none exceeded the Florida Department of Health STD Program recommended time to treatment goal of less than 14 days, all were treated within12 days; this was statistically significant when compared to all notification groups (p=0.043) and the PROTEXT group that did not call back (p=0.029). **Conclusion.** PROTEXTs have proven to be an efficient notification system that informs clients of their results and whether or not they need to return for STD treatment, ultimately shortening the period between notification and treatment. **Grants.** This study was not funded by a grant.

Steele Auditorium 10:15-10:45 a.m.

INFLUENCES OF FIRST-YEAR OSTEOPATHIC MEDICAL STUDENTS' READINESS TO UTILIZE HEALTH INFORMATION TECHNOLOGY

Hassan Iqbal, OMS-III, College of Osteopathic Medicine
Robin Jacobs, Ph.D. M.S.W., M.S., Associate Professor, College of Osteopathic Medicine
Zaid Rana, OMS-III, College of Osteopathic Medicine
Arif Rana, Ph.D., Ed.S., M.S., Assistant Professor, College of Osteopathic Medicine

Objective. Objective. This study was conducted to determine osteopathic medical students' (OMS) attitudes toward health information technologies (HIT) used in medical practice and how these factors might influence their readiness to utilize HIT in future practice. **Background.** Background. Attitudes towards HIT may influence medical students' successful adoption, willingness to learn, and utilization of HIT tools to improve patient outcomes. Yet scarce information is available on which factors influence students' readiness for HIT engagement and utilization prior to clinical training. **Methods.** Methods. A cross-sectional study using validated measures was conducted via pen-and-paper questionnaire administered to first-year l OMS (2015). Multivariate regression modeling was used to determine if knowledge, attitudes, behaviors, and personal characteristics will predict OMS' readiness to utilize HIT tools in future practice. **Results.** Results. A multivariate linear regression was calculated using SPSS to predict HIT readiness in students (N=474) based on gender, age, HIT knowledge, IT self-efficacy, attitudes toward HIT, and IT utilization. A significant regression equation was found, $F(6, 368) = 27.77$, $p<.001$, R2 (adjusted) of .250. Greater IT self-efficacy when using computer technology, higher scores on openness to change, more favorable attitudes toward HIT utilization, younger age, and being male were associated with readiness to utilize HIT in future practice. **Conclusion.** Conclusion. Innovative approaches to HIT education and design an Internet-age medical school curriculum that has medical informatics woven into its fabric are needed using specially designed classrooms where students are motivated, and not merely instructed, to learn how to use HIT technologies. **Grants.** Grants. This study was funded by a grant from the HPD Research Fund.

Steele Auditorium 10:45-11:15 a.m.

SUNBURN RISK AND FLORIDA RESIDENTS: A CROSS-SECTIONAL STUDY EXAMINING DEMOGRAPHIC, DERMATOLOGICAL AND ATTITUDINAL FACTORS.

Sergey Arutyunyan, OMS-III, College of Osteopathic Medicine
Sarah Alfonso, Research Associate
Nilda Hernandez, Research Associate
Tracy Favreau, DO, Assistant Professor, Broward Health Medical Center
M. Isabel Fernandez, Ph.D., Professor, College of Osteopathic Medicine

Objective. This study was conducted to identify predictors of having had a red or painful sunburn among people living in Florida. **Background.** Skin cancer is the most common malignancy in the US. Rates of skin cancer are elevated in states, such as Florida, where the amount of ultraviolet radiation is high. Sunburn is both significant and easily preventable risk factor for skin cancer. For instance, the risk of melanoma - the deadliest type of skin cancer - nearly doubles for individuals with history of sunburn. **Methods.** A total of 619 Florida residents, 18 years of age or older, were recruited from public places and on-line to complete an anonymous cross-sectional survey to assess demographic, dermatological, knowledge, attitudinal and behavior factors associated with main outcome variable - sunburn. Sunburn was defined as having a red or painful sunburn lasting a day or more in the last 12 months. **Results.** In multivariate logistic regression, younger age was the most significant predictor of sunburn. Other significant predictors included identifying as non-white, reporting higher levels of skin sensitivity to the sun, having had a full body skin exam by clinician, having high perceived vulnerability to skin cancer, and having a less favorable attitude towards sun protection. The model was statistically significant at $p<.001$ and correctly classified 78% of participants. **Conclusion.** The findings highlight the urgency of developing tailored sunburn prevention programs particularly aimed for younger individuals. The link between attitudinal factors and sunburn suggests that such programs might benefit from promoting changes in attitudes. **Grants.** NSU COM Research Fellowship Program

Steele Auditorium 1:15-1:45 p.m.

PREDICTORS OF NATURAL DISASTERS PREPAREDNESS AMONG ELDERLY RESIDENTS OF HIGH RISK AREAS IN SOUTH FLORIDA

Deirdre Krause, Ph.D., Associate Professor, College of Nursing

Objective. This study will test the theoretical model of natural disaster preparedness among a group of elderly residents living in a high risk geographical area by measuring their natural disasters risk perception, perceived control over natural disasters outcomes, intentions to carry out natural disasters preparedness and actual natural disaster preparedness.
Background. Hurricanes are extreme forces of nature that destroy property and lives. Residents of vulnerable areas are repeatedly advised to prepare for hurricane season but residents are often complacent and do not prepare adequately. When disaster strikes, no matter the location, the elderly are the most adversely affected. **Methods.** This is a descriptive, correlational study that will collect data from the target population using an established instrument. **Results.** Pending **Conclusion.** Pending **Grants.** Pending

Steele Auditorium 1:45-2:15 p.m.

SUN EXPOSURE AND PROTECTION PRACTICES OF CAREGIVERS FOR YOUNG CHILDREN LIVING IN SOUTH FLORIDA

Joann Kleier, PhD, EdD, Professor, College of Nursing
Andra Hanlon, PhD, Professor, College of Nursing
Barbara MacDougall, bmacdoug@nova.edu, Assistant Professor, College of Nursing

Objective. This study was conducted to determine sun exposure and use of sun protection that caregivers implement for their young children and compare these practices between groups based on children's age, gender, and the racial/ethnic group living in south Florida. **Background.** Skin cancer is on the rise even among young children. Children are particularly susceptible to the harmful effects sun exposure which drastically increases the likelihood of developing skin cancer. Sun

protective strategies maybe helpful in reducing risks but children are dependent on caregivers to consistently implement these strategies. **Methods.** For this study a sample of 172 consenting caregivers were recruited in public places and provided survey information which was analyzed by descriptive statistics, t tests, and ANOVAs. **Results.** Children experienced low levels of sun exposure, few sunburns, and medium levels of sun protection. Differences were found for sun exposure between age groups and specific sun protective behaviors based on gender and racial/ethnic group. **Conclusion.** Caregivers were generally aware of the need to provide sun protection but did so inconsistently. Fashion may increase the risk of sun exposure for females. Black/African-Americans need information related to their risk for sun injury. **Grants.** None

Steele Auditorium 2:15-2:45 p.m.

THE SIDNEY PROJECT IN SPIRITUALITY AND MEDICINE AND COMPASSIONATE CARE™: TRANSFORMING MEDICAL EDUCATION

Janet Roseman, Ph.D., Assistant Professor, College of Osteopathic Medicine

Objective. The objective of the Sidney ProjectTM presentation is to educate the audience about the efficacy of a program in spirituality and medicine and compassionate care that can change the culture of medicine and the way that residents think about the often taboo topics of spirituality and medicine and compassionate care. **Background.** The Sidney Project™ was created over three years ago and began as a pilot program at two hospitals: University Hospital in Tamarac, Florida and Broward Hospital, Ft. Lauderdale. Since its inception the program has grown to include additional hospitals who have utilized the curricula in the program on an ongoing basis. As the program has grown, more residents have had the opportunity to be exposed to the concepts of spirituality and medicine and compassionate care and have learned hands on tools for implementing these topics in patient care. In addition, the program has provided for a "safe place" for residents to discuss topics that are not usually spoken about. The program was created in honor of my dad, Sidney, who lost his life needlessly in a hospital setting. **Methods.** The methods used included preliminary surveys that would distributed to participants to examine their beliefs about the importance of spirituality and medicine and compassionate care in patient care, self-care, spiritual assessments, and previous exposure to the topics. A post-survey was also distributed to participants at the end of the program (a year later.) In addition, each lecture that was given also received evaluations from the participants. The data has been analyzed by an independent observer and culled. **Results.** The results indicate that an overwhelming number of participants have changed their mind (positively) about the importance of integrating spiritual topics with their patients as a result of the program. They also indicated that they "understand the importance of compassionate care". 95% of participants learned strategies to implement compassionate care, and participants also learned the how to's of a spiritual assessment as an important tool in the patient history taking process. **Conclusion.** I am pleased that the program has been implemented as part of clinical education because it needs to be integrated in medical education for residency training. The program has been so successful that at one site, Osceola Medical Center, the residents who participated in the first year of training in the program requested a second year of training so currently I am providing sessions with the new residents as well as the second year residents. I believe that this speaks volumes about the quality and validity of the program. **Grants.** I received a grant from the Arnold P. Gold Foundation for this research.

Steele Auditorium 2:45-3:15 p.m.

EFFECT OF TREATMENT OUTCOME ON THE SURVIVAL OF ELDERLY WOMEN WITH OVARIAN CANCER: FLORIDA CANCER REGISTRY (2004-2009)

Gabriel Suciu, PhD, Associate Professor, College of Osteopathic Medicine – Public Health
Paula Howard, MPH

Introduction. Approximately fifty percent of women diagnosed with ovarian cancer (OC) are elderly. Despite the higher prevalence of malignant neoplasms, treatment is often less aggressive than that in younger patients. This study examined a group of elderly women with stage III and stage IV epithelial OC, histologically typed as adenocarcinoma and papillary serous cystadenocarcinoma (PSC), for the effects of treatment outcome on survival. **Methods.** This study considered 6514 females, aged 65 and older, with OC from the Florida Cancer Registry (January 1, 2004 through December 31, 2009). Surveillance data with a follow-up period with maximum of 6 years were available. Some analyses are based upon frequency tables reported at one point in time. Survival analyses were performed using Kaplan-Meier method, and nonparametric comparison techniques

were used. Chi-Square test of independence with a two-sided p-value was reported for frequency comparisons. **Results.** Stage III and IV PSC cases received surgery plus chemotherapy (SCT) more frequently than surgery alone (S) ($p = 0.0003$). Stage does not impact the median months of survival nor the three year survival time with treatment by S or SCT. For adenocarcinoma and PSC cases, survival was increased in stage III and IV cancers with SCT. Caucasian survival with adenocarcinoma and PSC was increased in stage III and IV cancers with SCT. Survival results were similar with non-married patients. Married patients had increased survival with SCT with stage III and IV PSC. **Conclusion.** Study demonstrated increased OC survival when patients were treated with SCT.

Terry Auditorium

Terry Auditorium 9:45-10:15 a.m.

IT'S BETTER WITH A TEAM: A PT/OT INTERPROFESSIONAL LEARNING EXPERIENCE USING SIMULATION

Adrienne Lauer, EdD, OTR/L, Assistant Professor, College of Health Care Sciences - Occupational Therapy
Coverdale Jerry, OTD, OT/L, CHT, Assistant Professor, College of Health Care Sciences - Occupational Therapy
Shari Rone-Adams, PT, MHSA, DBA, Associate Professor, College of Health Care Sciences - Physical Therapy
Stern Debra, PT, DPT, MSM, DBA, Associate Professor, College of Health Care Sciences - Physical Therapy
Kim Smith, PT, DPT, Assistant Professor, College of Health Care Sciences - Physical Therapy

Objective. In an effort to promote coordinated interprofessional care in the acute-care setting, the Occupational Therapy (OT) and Physical Therapy (PT) faculty created a cardiac simulation lab for second year students. **Background.** Interprofessional education (IPE) is a collaborative approach to develop healthcare students. IPE facilitates understanding of student's own professional identity while gaining understanding of other professionals' roles in patient care. **Methods.** Using the nursing simulation lab, groups of PT and OT students worked together with one student playing the role of patient. Each group developed and carried out a treatment plan based on a standardized case. The "SimMon" app was used on iPADs during the experience allowing faculty to manipulate and project the patient's vital signs while the students carried out their treatment plans at bedside. The simulation experience required students to adapt their client interactions in response to changing vital signs. Pre and post surveys measuring understanding of the other profession were completed by the students. **Results.** The activity allowed students in each discipline to come to a clearer understanding of what the other does in acute care and how they can work together for the best patient outcomes. Pre and post surveys indicated students were able to better distinguish between the role of Physical Therapy and Occupational Therapy after the interprofessional experience. Survey results indicated students learned about the scope of practice of the other profession and learned that communication is key to effectiveness and efficiency. **Conclusion.** This experience accomplished the goal of interprofessional development. **Grants.** N/A

Terry Auditorium 10:15-10:45 a.m.

DOES LSVT BIG IMPROVE BALANCE CONFIDENCE AND PERCEIVED DIFFICULTY WITH WALKING IN PATIENTS WITH PARKINSON DISEASE?

Suzana Simoes, DPT, Assistant Professor, College of Health Care Sciences - Physical Therapy
Kim Smith, DPT, Assistant Professor, College of Health Care Sciences - Physical Therapy

Introduction. Parkinson disease (PD) affects mobility and balance increasing fall risk. Patients with PD may experience decreased balance confidence limiting activity. LSVT BIG (LSVTB) a protocol to treat patients with PD integrates concepts of neuroplasticity. This case is a first looking at the effect of physical therapy (PT) using LSVTB on balance confidence and perceived walking difficulty in a patient with PD. **Case presentation.** 73 year-old sedentary female diagnosed with PD in 2012 with a history of falls and fracture. Patient lives alone with aide assistance for am dressing. Patient had 16 PT sessions (4x/week) using the LSVTB protocol. Outcome measures included the Activities Balance Confidence Scale (ABC) and the BIG functional task assessment of the patient's perceived level of difficulty (7 levels from "not difficult" to "unable") performing 9 self-selected tasks. **Deviation From the Expected.** Previous tasks she was unable to do on admission she was able to perform with minimal to no difficulty at discharge. **Discussion.** Outcomes showed improvements of 3-6 levels in perceived difficulty in 8/9 tasks. Scores on the ABC balance confidence scale improved from 32% to 57.5% and perceived difficulty with walking improved 4 levels on perceived difficulty. This case suggests the intensity and task specific training of the LSVTB helped achieve the PT outcomes of improved balance confidence, and ability to walk and perform functional tasks. **Conclusion.** LSVT Big Protocol as a PT treatment for PD shows efficacy in re-establishing balance confidence and reducing perceived difficulty in walking and other functional tasks. **Grants.** No grants

Terry Auditorium 10:45-11:15 a.m.

CHANGING PERSPECTIVE: ASSESSMENT OF PHYSICAL THERAPY STUDENT INTERPERSONAL SKILLS USING GOOGLE GLASS VS. IPAD VIDEO RECORDING

Kim Smith, DPT, Assistant Professor, College of Health Care Sciences - Physical Therapy
Alicia Fernandez-Fernandez, PhD, Associate Professor, College of Health Care Sciences - Physical Therapy
Michael Buck, PhD, Associate Professor, Ithaca College
Debra Stern, DPT, DBA, Associate Professor, College of Health Care Sciences - Physical Therapy
Heather Hettrick, PhD, Associate Professor, College of Health Care Sciences - Physical Therapy
Megan Hotchkiss, DPT, Assistant Professor, Ithaca College
Nicholas Smith, DPT Student, College of Health Care Sciences - Physical Therapy

Objective. To compare the information obtained by Google Glass, a point-of-view device, versus conventional video, in interpersonal skills assessment in physical therapy students. **Background.** Optimal patient care requires training and objectively assessing affective skills in health care students. Video feedback enables students to critically self-reflect on their own practice; Wearable point-of-view technology such as Google Glass, permits encounters to be recorded from the patient perspective in contrast to the observer perspective of conventional recordings. **Methods.** Eleven entry-level physical therapy students interviewed a standardized patient and were recorded using both Google Glass and iPad. Students self-assessed before and after watching their video recordings, and were also assessed by groups of student peers and faculty and non-faculty who viewed their videos. **Results.** Similar themes emerged from qualitative data gathered during focus group discussions. Recorded students concluded that the two videos allowed them to "relive" the interaction and enhanced self-reflection. The iPad recording was valued overall for revealing body motions and visualizing the patient. However, students and peers perceived and preferred the Google Glass recording as more valuable for eye contact and facial expressions, with peers citing increased understanding of the patient's perspective. Whereas, faculty and non-faculty expressed the belief that the complementary perspectives of both videos was best to fully assess and understand an interaction. **Conclusion.** Point-of-view technology offers a unique perspective to complement or augment existing technologies for student assessment, training, and improvement of interpersonal skills in preparation for patient-centered activities. **Grants.** This study was funded by an NSU HPD grant.

Terry Auditorium 11:15-11:45 a.m.

THE EFFECTIVENESS OF USING GLENOHUMERAL JOINT TOTAL ROTATIONAL RANGE OF MOTION MEASUREMENTS TO GUIDE INJURY PREVENTION INTERVENTIONS

Peter Sprague, PT, DPT, OCS, Associate Professor, College of Health Care Sciences - Physical Therapy
Rudy Rodriguez, Jr., ATC, LAT, Instructor, Athletics Department, Nova Southeastern University
Dustin Gatens, MS, ATC, LAT, Instructor, Athletics Department, Nova Southeastern University

Purpose/Hypothesis. Upper extremity injuries in softball have been shown to account for 33% of all injuries in softball in NCAA athletes. Glenohumeral joint micro instability and total rotational range of motion deficits (TRROM-d) are associated with shoulder and elbow injuries in overhead athletes from high school through professional. The effects of targeted interventions addressing impairments in the shoulders of NCAA softball players was retrospectively explored. **Materials/Methods.** 25 different softball players were measured over 2 consecutive competitive seasons (2013-2014 and 2014-2015), accounting for a total of 35 player-seasons. Prior to the start of each season, bilateral glenohumeral joint total rotational range of motion measurements (TRROM) and Functional Movement Screen shoulder mobility test (FMS-SMT) scores were recorded. Student-athletes were divided into three groups; A mobility deficit group (MDG, N = 16, TRROM-d > 10% of the TRROM of the non-dominant shoulder or TRROM < 170° or a score of one on the FMS-SMT), A hypermobility group (HG, n = 13, dominant arm glenohumeral TRROM > 180°), non-intervention group (NG, n = 7, TRROM 170°-180°, normal FMS-SMT). Before each practice and game the MDG performed stretching and mobility interventions for the glenohumeral joint and thoracic region and the HG performed band resisted exercises for the rotator cuff and scapular musculature. **Results.** No upper extremity injuries occurred over the two competitive seasons vs. 25 injuries over the two consecutive years prior. **Conclusions.** Injury prevention measures designed to address specific impairments in collegiate softball players may reduce injury rates.

Terry Auditorium 11:45 a.m.-12:15 p.m.

RELATIONSHIP BETWEEN FUNCTIONAL MOVEMENT SCREEN SCORES AND BODY COMPOSITION IN NCAA DIVISION II ATHLETES

Peter Sprague, PT, DPT, OCS, Associate Professor, College of Health Care Sciences - Physical Therapy
G. Monique Mokha, PhD, ATC, CSCS, Associate Professor, College of Health Care Sciences - Exercise and Sport Science
Steven Orris, MS.Ed, Lecturer, Athletics Department, NSU
Dustin R. Gatens, MS, ATC, LAT, Lecturer, Athletics, NSU

Purpose/Hypothesis. The Functional Movement Screen (FMS) is a tool that is used to identify deficiencies in movement patterns linked increased injury risk in active populations, including NCAA Division II athletes. A lack of fitness and higher percent body fat has also been implicated in increasing injury risk in athletic populations. Our study sought to identify a relationship between FMS scores and body composition. We hypothesized that high percent body fat would correlate with low FMS composite scores and low individual test scores in NCAA Division II student-athletes. **Materials/Methods.** 279 NCAA Division II student-athletes underwent Functional Movement Screen testing and body composition testing in the BodPod during standard pre-participation examination prior to the competitive season of 2014-15. Correlational statistics were performed using Spearman's rank order correlation to examine the relationship between student-athletes with high percent body fat and scores of one on the individual tests of the FMS, high percent body fat and composite FMS scores less than 15, high percent body fat and the presence of an asymmetry on the FMS. **Results.** High percent body fat correlated with scores of one on individual movement tests of the FMS ($r_s = .127$, $p = .033$) and composite scores of less than fifteen ($r_s = .161$, $p = .007$) but not with the presence of an asymmetry on the individual movement tests of the FMS ($r_s = -.046$, $p = 441$). **Conclusions.** High percent body fat correlates with low FMS composite and individual test scores.

Terry Auditorium 2:15-2:45 p.m.

EVIDENCE-BASED PRACTICE IN AND OUT OF ACADEMIA—STUDENTS' KNOWLEDGE, ATTITUDES, AND BELIEFS VS. WHAT IS EXPERIENCED IN THE CLINIC

Cheryl J. Hill, PT, DPT, PhD, Professor, College of Health Care Sciences - Physical Therapy
M. Samuel Cheng, PT, ScD, Associate Professor, College of Health Care Sciences - Physical Therapy
Bini Litwin, PT, PhD, Associate Professor, College of Health Care Sciences - Physical Therapy
Shari Rone-Adams, PT, DBA, Associate Professor, College of Health Care Sciences - Physical Therapy
Madeleine Hellman, PT, EdD, Associate Professor, College of Health Care Sciences - Physical Therapy

Objective. This study had two objectives. First, we wanted to determine how each of the research courses offered in the entry-level program affected the student's knowledge, attitudes, and beliefs about evidence-based practice. Second, we wanted to determine how the final internship affected the student's knowledge, attitudes and beliefs about evidence-based practice. (This second objective is reported in a separate abstract/presentation.) **Background**. Using evidence to inform clinical decision-making is an important skill in a physical therapist's arsenal of treatment tools. However, there is little research concerning learning outcomes for students and how those outcomes are affected by what is experienced in the clinic during clinical rotations. **Methods.** For the first objective, the EBP Profile Questionnaire (EBP2) and the Knowledge of Research Evidence Competencies (K-REC) were administered to subjects at 4 points during the didactic part of the curriculum. **Results.** The results indicate that the K-REC scores improved significantly after the first research course. There were no further significant changes. **Conclusion.** Students showed improvement in their knowledge and confidence level about EBP after the first research course and sustained that knowledge and confidence throughout the curriculum. **Grants.** This study was funded by a grant from NSU HPD Research Committee and the Physical Therapy Department.

ENTRY-LEVEL EVIDENCE-BASED PRACTICE IN AND OUT OF ACADEMIA—STUDENTS' PERCEPTIONS FOLLOWING FULL TIME CLINICAL EXPERIENCES

Bini Litwin, PT, PhD, Associate Professor, College of Health Care Sciences - Physical Therapy
Cheryl J. Hill, PT, DPT, PhD, Professor, College of Health Care Sciences - Physical Therapy
M. Samuel Cheng, PT, ScD, Associate Professor, College of Health Care Sciences - Physical Therapy
Shari Rone-Adams, PT, DBA, Associate Professor, College of Health Care Sciences - Physical Therapy
Madeleine Hellman, PT, EdD, Associate Professor, College of Health Care Sciences - Physical Therapy

Objective. The purpose of this part of the study was to determine the how the student's final full time clinical experiences affected the student's knowledge, attitudes and beliefs about evidence-based practice. **Background**. Using evidence to inform clinical decision-making is an important skill in a physical therapist's arsenal of treatment tools. However, there is little research concerning how those outcomes are affected by what is experienced in the clinic during clinical rotations. **Methods.** Nine students were randomly chosen and agreed to participate in a focus group to explore student perceptions towards EBP *following* their final clinical experiences. **Results.** Three major themes were identified from the focus group: 1) Foundational knowledge of EBO during didactic education can promote confidence and enhance communication with the patient and CI, 2) Clinical experience enhances the value of EBP from their perspective, and 3) Contextual issues influence application of EBP in a clinical setting, including both academic and clinical factors. Students recognized the value of EBP in promoting the best practice, noting that responsibility for such rests with the individual PT clinicians. **Conclusion.** This study suggested students value their academic EBP courses and show a greater appreciation for EBP following clinical experiences, noting the positive impact on clinical reasoning and patient outcomes. **Grants.** This study was funded by a grant from NSU HPD Research Committee and the Physical Therapy Department.

UPP 113

UPP 113 9:45-10:15 a.m.

THE IMPACT OF UTILIZING AN ELECTRONIC MEDICAL RECORD IN THE ENTRY-LEVEL NURSING SIMULATION LAB ON THE QUANTITY AND QUALITY OF STUDENT DOCUME

Ana Fernandez, DNP, Assistant Professor, College of Nursing
Melissa Morris, MSN, Instructor, Nova Southeastern University
Jo Ann Kleier, PhD, Professor, College of Nursing

Objective. The purpose of this study was to determine if the use of the electronic medical record (EMR) in the simulation lab increased the student's documentation tendency. The primary focus was to determine if there would be an increase in the quantity and quality of documentation for the simulated patients' medical record by students participating in a simulated clinical experience. **Background.** Documentation in the medical record provides a basis for communication with the health care team. Professional nurses must have the ability to communicate effectively in the medical record to convey patient status to other health care team members. The introduction of the EMR has facilitated access and communication. Education of nursing students in regards to the EMR is necessary for optimal progression into clinical practice. **Methods.** A non-experimental descriptive study was used to audit data obtained from entry level nursing students' documentation in simulation learning experiences. **Results.** The findings determined that an educational EMR slightly increased documentation but, the incorporation of a teaching EMR (alone, without a bar code system) did not statistically significantly close the gap of the documentation deficiency and that further educational interventions are required. **Conclusion.** Utilization of an education EMR marginally increased student documentation in the simulation setting. **Grants.** None.

UPP 113 10:15-10:45 a.m.

THE HEALTH BELIEF MODEL AND CERVICAL CANCER SCREENING AMONG AFRICAN-AMERICAN WOMEN LIVING IN SOUTH FLORIDA

Eglintine Rigaud, PhD, MS, ARNP, WHNP-BC, Assistant Professor, College of Nursing
Mary Mites-Campbell, PhD, MSN-Adm, RN, CTTS, CCHP, Assistant Professor, College of Nursing
Chitra Paul Victor, RN, RM, MSN, MD (AM), CNE, Assistant Professor, College of Nursing
Jo Ann Kleier, PhD, EdD, ARNP, ACNP-BC, Professor, College of Nursing

Objective. The purpose of this study is to examine the perceptions of African-American women regarding cervical cancer screening. The perception of personal susceptibility for cervical cancer will be compared to the risk calculated based on known risk factors. **Background.** Cervical cancer screening rates fall short of the recommended level. **Methods.** This is a descriptive, correlational study to measure specific constructs of the HBM related to cervical cancer screening among a group of age-appropriate Black/African-American women and compare perceived susceptibility to susceptibility based on known risk factors for the disease. **Results.** Pending **Conclusion.** Pending **Grants.** N/A

UPP 113 10:45-11:15 a.m.

FAMILY MANAGEMENT OF THE NURSING HOME PLACEMENT PROCESS

Sarah Koplow, PhD, RN, Assistant Professor, College of Nursing

Objective. This study examines the experiences of the caregiver involved in the placement process of an older family member into a nursing home facility. **Background.** The caregiving journey is both complex and challenging. Family caregivers provide many time and labor intensive tasks that have been associated with increased stress and burden. Caregivers are often unable to maintain care at home and have to consider nursing home placement. The caregiver's role within the nursing home placement process and their continued responsibility post-placement has not been well explored. **Methods.** This qualitative descriptive study utilized the Family Management Style Framework to understand how caregivers define, manage,

and perceive the consequences of the nursing home placement process. 10 primary family caregivers were interviewed shortly after placement and then again 3-months post-placement. The results of the study were organized to understand the contextual influences of each individual case and to explore differences and similarities across cases and over time. **Results.** Caregivers had similarities across key aspects of the caregiving experience, especially caregivers with similar types of familial relationships (e.g., spousal caregivers and adult-children caregivers). The spousal caregivers described the caregiving to be a natural part of their partnership and continued to maintain responsibility for their family member's needs post-placement. The adult-children caregivers viewed familial responsibility and obligation as guiding their approach to care and continued involvement post-placement. **Conclusion.** Healthcare professionals appreciating the perceptions and experiences of primary family caregivers undergoing a crucial transition is an important step in being able to address the needs of caregivers and older adults. **Grants.** This study was funded by the University of Illinois at Chicago Chancellor's Education Award Fund; Illinois Area Health Centers Network, Health Professions Student/Fellowship Grant; Midwest Nursing Research Society Dissertation Research Grant; Sigma Theta Tau International, Alpha Lambda Chapter Research Award; and the University of Illinois at Chicago Seth and Denise Rosen Research Award.

UPP 113 11:15-11:45 a.m.

A CASE STUDY COMPARISON OF DIFFICULT AND SMOOTH NURSING HOME PLACEMENT TRANSITIONS

Sarah Koplow, PhD, RN, Assistant Professor, College of Nursing

Objective. This case study analysis was conducted as part of larger research study to explore the challenges associated with the nursing home placement process for family caregivers of older adults **Background.** Family caregivers provide essential assistance to older adults who are unable to complete daily activities due to cognitive and/or functional impairment. Caregivers report difficulty balancing the extensive needs of their family members with other life responsibilities and may have to consider nursing home placement. Caregivers describe emotional and situational challenges with nursing home placement and need practical information to encourage a smooth transition. **Methods.** This case study report utilized the interview data from two caregivers who participated in a larger qualitative study of 10 primary family caregivers involved in the nursing home placement of an older family member. The cases exemplified a smooth and a difficult transition. **Results.** Four major contextual issues summarized the differences between the smooth and difficult transition: the caregiver's relationship, the circumstances surrounding placement, support systems, and continued involvement post-placement. The primary family caregiver eventually made the nursing home placement decision when they were no longer able to manage caregiving circumstances at home. The assistance of their family and the nursing home staff greatly influenced the ease of the transition. **Conclusion.** Caregivers face great challenges. Nursing home staff have opportunities to improve the transition with nursing home placement and can ultimately improve the quality of life for both the caregiver and older family member. **Grants.** This study was funded by the University of Illinois at Chicago Chancellor's Education Award Fund; Illinois Area Health Centers Network, Health Professions Student/Fellowship Grant; Midwest Nursing Research Society Dissertation Research Grant; Sigma Theta Tau International, Alpha Lambda Chapter Research Award; and the University of Illinois at Chicago Seth and Denise Rosen Research Award.

UPP 113 11:45 a.m.-12:15 p.m.

INFORMATICS KNOWLEDGE, SKILLS, ATTITUDES, AND OPPORTUNITIES AMONG UNDERGRADUATE NURSING STUDENTS IN FLORIDA

Lynne Bryant, EdD, Associate Professor, College of Nursing
Jo Ann Kleier, PhD, EdD, Professor, College of Nursing

Objective. This study was conducted to measure informatics knowledge, skills, attitudes, and opportunities among entry-level nursing students in Florida. **Background.** Various accrediting agencies have emphasized the need for inclusion of informatics in nursing programs, and informatics competencies (knowledge, skills, attitudes) related to for prelicensure students have been developed. Few studies have been completed to measure these competencies. **Methods.** An instrument to measure informatics knowledge, skills, attitudes, and opportunities was developed and tested at a nursing student convention in 2014. Over 300 surveys were tested and results revealed all four components a high internal consistency and reliability. The

instrument was distributed to over 200 attendees at a 2015 nursing student convention to measure these four components. **Results.** Pending. **Conclusion.** This instrument can be used to explore the current informatics attitudes, knowledge, and skills of undergraduate students in other nursing programs throughout the United States in order to get a more thorough picture of the current state of informatics education in nursing programs. The data measuring the attitudes, knowledge, and skills of undergraduate students in Florida is pending, so no conclusion can be drawn. **Grants.** This study was funded by a grant from Nova Southeastern University Health Professions Division.

UPP 113 2:15-2:45 p.m.

ROLE EXPECTATIONS AND JOB FUNCTIONS OF DERMATOLOGY NURSES

Denise Howard, DNP, Assistant Professor, College of Nursing

Objective. To identify the role expectations and job functions unique to the role of RNs and ARNPs specializing in the care of the dermatological patient. **Background.** Little is known about the role expectations and job functions of nurses working in dermatology practices. **Methods.** An online survey was designed to provide descriptive information to better understand and to compare the roles and job functions of RNs and ARNPs working in a dermatological setting in the State of Florida for a minimum of one year. The comparative design examined commonalities and differences between RNs (N = 8) and ARNPs (N = 34) in dermatology practices for a total of 42 participants. **Results.** After analysis, the data suggested that both RNs and ARNPs are not utilized to the full extent of their basic education even though additional job functions were required. The RNs may be working outside of their scope of practice and licensure. Although, both RNs and ARNPs considered becoming certified in dermatology, they did not feel that certification in dermatology was important to them. RNs cited working with a dermatologist as their primary source of education, while ARNPs acquired their primary knowledge from workshops, conferences, physicians, and industry training. **Conclusion.** Role expectations and job functions of RNs and ARNPs vary based on their level of education, scope of practice, and physician practice. Although certification in dermatology demonstrates to the consumer that they are receiving quality patient care, the majority of RNs and ARNPs are not certified in dermatology. **Grants.** none

UPP 113 2:45-3:15 p.m.

ATTITUDES AND KNOWLEDGE WITH PARTICIPATION IN AN INTERPROFESSIONAL EDUCATION EXPERIENCE BETWEEN NURSING AND PHYSICAL THERAPY STUDENTS

Sarah Koplow, PhD, RN, Assistant Professor, College of Nursing
Lisa Soontupe, EdD, RN, CNE, Associate Professor, College of Nursing
Heather Hettrick, PT, PhD, CWS, CLT, CLWT, Associate Professor, College of Health Care Sciences - Physical Therapy
Shari Rone-Adams, PT, MHSA, DBA, Associate Professor, College of Health Care Sciences - Physical Therapy

Objective. The objective of this study was to understand nursing and physical therapy students' attitudes and knowledge of other disciplines before and after participation in a patient-based case study with simulation experiences. **Background.** Interprofessional collaboration and teamwork is an integral part of promoting patient safety, improving quality of care, and improving health outcomes. Incorporating interprofessional case-based scenario experiences early in the curriculum of health science programs fosters this collaboration and allows students to develop an understanding of their own responsibilities as well as that of other disciplines. To understand the effectiveness of interprofessional education, students' attitudes and knowledge must be assessed using valid and reliable methods. **Methods.** Participants completed a brief pre- and post- test survey consisting of an adapted version of the Readiness for Interprofessional Learning Scale and several short answer questions. **Results.** 10 nursing students and 49 physical therapy students completed the pre- and post- surveys. Prior to the experience the students indicated they knew very general information about the other profession. Post experience they were able to articulate more specific information about the profession and their role in healthcare. Both sets of students indicated they learned about the scope of practice and recognized the potential to benefit the patient, improve communication, and foster teamwork through collaboration. Students recognized the benefit of improved quality of care for patients when professionals work together. **Conclusion.** Students showed increased knowledge of the other profession, appreciated the opportunity for interprofessional learning and are interested in having more interprofessional learning experiences. **Grants.** NA

POSTER PRESENTATIONS

Atrium

Atrium – Poster 1 12:15-1:15 p.m.

ROLE OF ANGIOTENSIN III ON ERK1/2 AND P38 MITOGEN ACTIVATED PROTEIN (MAP) KINASES IN WISTAR RAT VSMCS

Ahmed Alanazi, Ph.D.-Molecular Medicine and Pharmacogenomics, College of Pharmacy
Michelle Clark, Ph.D, Associate Professor, College of Pharmacy

Objective. We investigated whether angiotensin (Ang) III induces ERK1/2 and p38 mitogen activated protein (MAP) kinases protein phosphorylation in isolated rat vascular smooth muscle cells (VSMCs). **Background.** The molecular mechanisms by which Ang III induces various biological effects have not been fully investigated. Most studies have shown that MAP kinases mediate Ang II apoptosis and growth promoting effects in VSMCs. Moreover, Ang II induces vascular remodeling in these cells leading to increases in blood pressure. MAP kinases regulate or induce two crucial actions in VSMCs, proliferation and migration, which are associated with atherosclerosis and restenosis. **Methods.** Primary cultures of VSMCs were isolated from the thoracic aorta of adult Wistar rats by the explant technique. VSMCs were treated with Ang III ranging in concentration from 0.1 nM to 1000 nM for 10 minutes or with 100 nM Ang III for 1 minute to 30 minutes. Western blotting technique was used to determine whether Ang III induces ERK1/2 and p38 MAP kinases protein phosphorylation. **Results.** Concentration studies showed that Ang III caused a dose-dependent increase in ERK1/2 and p38 MAP kinases protein phosphorylation. The effects of Ang III on both MAP kinases phosphorylation were maximal between 10 nM and 100 nM concentrations. The peptide effects were rapid and significant, occurring within minutes of treatment and the maximal effects on MAP kinases phosphorylation was observed by 10 min. **Conclusion.** These findings provide insight into the molecular nature of the actions of Ang III and offer possible mechanism by which Ang III physiological and possibly pathological actions occur in VSMCs.
Grants. Funding for this project was provided through a Nova Southeastern University Health Professions Division Grant and Saudi Arabian Cultural Mission.

Atrium – Poster 2 12:15-1:15 p.m.

THE NEUROPROTECTIVE EFFECT OF OXYTOCIN AGAINST APOPTOSIS AND OXIDATIVE STRESS

Mohammed Alanazi, Ph.D.-Molecular Medicine and Pharmacogenomics, College of Pharmacy
Francisco Puerta, Ph.D, Research Associate/Instructor, M.D. Anderson Cancer Center
Jan Bakos, Ph.D., Professor, Institute of Experimental Endocrinology-SAS
Zuzana Lestanova, Ph.D. student, Comenius University
Martina Zatkova, Ph.D. student, Comenius University
Ana M. Castejon, Ph.D., Associate Professor, College of Pharmacy

Objective. In this proposed study, we will evaluate both the proliferative and the protective role of oxytocin against apoptosis and oxidative stress in two different neuronal cell lines. **Background.** The neuropeptide oxytocin, released from the posterior pituitary into the systemic circulation has been implicated in several vital physiological processes, ranging from reproduction to social and non-social behaviors. Oxytocin has been recently associated with cell proliferation, protection against apoptosis and cytoskeletal proteins expression. These findings might be relevant since certain neurological disorders have been linked to low systemic levels of oxytocin. **Methods.** In order to test our hypothesis, we developed in our laboratory two Oxytocin Receptor Knockdown cell lines, U87MG_KD OXT-R (astrocytes) and SH- SY5Y_KD OXT-R (neurons), to further analyze 1) proliferation rates in absence and presence of oxytocin; 2) apoptosis rates both, in the absence and presence of pro-apoptotic agents such as DMNQ, H2O2 or Camptothecin; 3) effect of oxytocin on cellular morphology after apoptosis induction; and 4) the underlying mechanisms by which oxytocin is affecting those cellular processes. **Results.** Preliminary results have shown a potential correlation between oxytocin and apoptosis/cell death rates and cellular development, being

significantly different in the knockdown cell lines in which oxytocin receptors have been impaired, when compared to their controls. **Conclusion.** The outcomes of this study will contribute, not just to, a better understanding of the key role that oxytocin plays in multiple physiological processes, but also to a new approach for studying and treatment of some current relevant neurological disorders such as autism. **Grants.** PRESIDENT'S FACULTY RESEARCH & DEVELOPMENT GRANT

Atrium – Poster 3 12:15-1:15 p.m.

THE ASSOCIATION OF VITAMIN D DEFICIENCY AND GLUCOSE CONTROL AMONG DIABETIC PATIENTS IN THE UNITED STATES

Mansour Almetwazi, Ph.D.-Social and Administrative Pharmacy, College of Pharmacy
Ahmed Noor, Ph.D.-Social and Administrative Pharmacy, College of Pharmacy
Ioana Popovici, Ph.D., Assistant Professor, College of Pharmacy
Catherine Harrington, Ph.D., Associate Professor, College of Pharmacy

Objective. To evaluate the association between the level of vitamin D and glycemic control among patients with diabetes **Background.** The complications of the diabetes are very serious health problems that should be prevented. Vitamin D level could be one factor that contributes to diabetes control. **Methods.** We analyzed data collected from NHANES 2003- 2006. We included only non-pregnant adult diabetic persons 18 years or older. We used student's t test to compare the difference in HbA1c means between diabetic patients with and without a vitamin D deficiency. We used a multivariate logistic regression model to predict the relationship between glucose control (HbA1c <7% [53 mmol/mol]) and vitamin D deficiency (serum level < 20 ng/ml). We used race/ethnicity, BMI, age, gender, type of diabetic medication used, having health insurance or not, and comorbid conditions (hypertension, anemia, cholesterol, liver disease, and kidney disease) as control variables. **Results.** The study population included a total of 929 non-institutionalized, non-pregnant, diabetic adult persons. About 57% of patients with diabetes had a vitamin D deficiency. Blacks (non-Hispanic patients) with diabetes had the highest rate of vitamin D deficiency (79%). The unadjusted means of HbA1c were significantly different between diabetic patients with no vitamin D deficiency and those with a vitamin D deficiency (7.06% [54 mmol/mol], 7.56 % [59 mmol/mol], respectively, P<0.0001). Multivariate adjustment showed a small but not significant, increase in odds (11%) of having uncontrolled diabetes in patients with a vitamin D deficiency after adjustment for other factors **Conclusion.** Vitamin D deficiency is very common in patients with diabetes. We found no significant association between vitamin D level and glycemic control in patients with diabetes after adjustment for control variables. **Grants.** The study was not funded.

Atrium – Poster 4 12:15-1:15 p.m.

THE SAFETY OF APIXABAN COMPARED TO CONVENTIONAL ANTICOAGULANT THERAPY: SYSTEMATIC REVIEW AND META-ANALYSIS

Omar Almohammed, Ph.D.-Social and Administrative Pharmacy, College of Pharmacy
Catherine Harrington, Ph.D, Associate Professor, College of Pharmacy

Objective. Investigating the safety of apixaban compared to warfarin (± enoxaparin) in combined patient populations. **Background.** The safety of apixaban has been studied in specific different patient populations. However, the cumulative safety of apixaban has not been studied before. **Methods.** The Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE and ClinicalTrials.gov were searched up to November 2015. Six original articles comparing apixaban with warfarin ± Enoxaparin were included. All data regarding bleeding were pooled in Review Manager Software, using Mantel-Haenszel methods with a Random-effects model. Heterogeneity was assessed using the I2 test. The risk ratios (RR) and 95% confidence intervals of each study were calculated and pooled. **Results.** Apixaban was associated with a lower risk of major bleeding (RR=0.50, 95%CI (0.26, 0.97), I2=56%), clinically relevant non- major bleeding (RR=0.60, 95%CI (0.53, 0.69), I2=48%), major or clinically relevant non-major bleeding (RR=0.61, 95% CI (0.56, 0.67), I2=79%), minor bleeding (RR=0.73, 95%CI (0.69, 0.78), I2=51%), and any bleeding event (RR=0.65, 95%CI (0.62, 0.69), I2=74%). **Conclusion.** Apixaban was found to be safer than conventional anticoagulant therapy in a combined population. **Grants.** No grant was used for this project.

Atrium – Poster 5 12:15-1:15 p.m.

SUBLINGUAL PERMEABILITY OF ATROPINE SULFATE USING NOVEL RAPIDLY DISINTEGRATING TABLETS FOR THE POTENTIAL TREATMENT OF ACUTE ORGANOPHOSPHATES

Rawan Bafail, Ph.D.-Drug Development (Pharmaceutics), College of Pharmacy
Alhussain Aodah, Ph.D.-Drug Development (Pharmaceutics), College of Pharmacy
Mutasem Qalaji, Ph.D, Associate Professor, College of Pharmacy

Objective. In some countries, Atropine Sulphte (AS) is available as IM auto-injector for veterans as an antidote for OPs chemical attacks. We hypothesized that AS administered sublingually using rapidly disintegrating sublingual tablets (RDSTs) may have the potential as an alternative dosage form for the treatment of organophosphates toxicity. Our aim in this study was to evaluate, ex vivo, the permeation of AS using RDSTs formulation. **Background.** Organophosphates (OPs) are being used as pesticides and nerve agents. According to the American Association of Poison Control Center, OPs were responsible for ten thousand toxicity cases between 2011 and 2013 due to their use as pesticides in the United States. Also, OPs have been used against civilians several times as weapons of mass destruction, although prohibited by the United Nations and the Organization for the Prohibition of Chemical Weapons. For the treatment of OPs toxicity, atropine sulfate (AS) 2 mg, as antidote, should be administered intramuscularly (IM) as soon as possible, alone or with other therapeutic agents. However, AS IM injections are not readily available for civilians in most OPs toxicity cases and require a health care professional for their administration. AS auto-injectors are only available for veterans' use in some countries. These devices are expensive, bulky to carry, invasive, unavailable for civilians and veterans in many countries. Also, multiple devices are required for the administration of multiples doses of AS to treat OPs toxicity. We hypothesized that AS administered sublingually using rapidly disintegrating sublingual tablets (RDSTs) may have the potential as an alternative user-friendly dosage form for the treatment of organophosphates toxicity. Our aim in this study was to evaluate the feasibility of ex vivo permeation of AS using RDSTs formulation. **Methods.** Four batches of AS RDSTs, AS 2 mg RDSTs weighing 150 mg (B1), and AS 2 mg, 4 mg, and 8 mg RDSTs weighing 50 mg each (B2, B3, and B4, respectively), were manufactured by direct compression using a previously developed formulation. The ex vivo permeation of AS RDSTs was evaluated through excised porcine sublingual membrane using Franz cells (n=4). Phosphate buffer, pH 6.5, was used as a permeation medium. AS RDST was placed in the donor chamber that contained 2 mL of phosphate buffer. Aliquot samples, 200 μL, were withdrawn from the receptor chamber at several time-intervals. AS 2 mL solution, 1 mg/mL, was used as a reference (n=4). **Results.** Mean ± SD AUC0-90 AS permeation and influx (J) from B4 (11037 ± 3661 $\mu g/cm^2$/min, 3.89 ± 1.38 $\mu g/cm^2$/min, respectively) were significantly higher ($p < 0.05$) than B3 (7753 ± 2002 $\mu g/cm^2$/min, 1.57 ± 0.69 $\mu g/cm^2$/min), B2 (3650 ± 1499 $\mu g/cm^2$/min, 1.22 ± 0.54 $\mu g/cm^2$/min), B1 (2895 ± 370 $\mu g/cm^2$/min, 0.953 ± 0.36 $\mu g/cm^2$/min), and the reference (2292 ± 648 $\mu g/cm^2$/min, 0.92 ± 0.28 $\mu g/cm^2$/min). Mean ± SD AUC0-90 AS permeation and influx (J) from B2 and B1 was not significantly different ($p > 0.05$) form the reference. Increasing AS dose in the RDSTs increased the cumulative AS permeated linearly, R2=0.999. **Conclusion.** The permeation of AS through the sublingual mucosa was feasible and increasing AS dose increased its permeation linearly. These novel RDSTs released AS and promoted its permeability similar to the reference solution. AS RDSTs may have the potential as an alternative non-invasive, user-friendly dosage form for the treatment of organophosphate toxicity. Dose-ranging animal studies are required to confirm these results and to determine the relative sublingual bioavailability of AS. **Grants.** SACM

Atrium – Poster 6 12:15-1:15 p.m.

THE EFFECT OF MCC GRADE ON THE PHYSICAL PROPERTIES OF ATROPINE SULFATE RAPIDLY DISINTEGRATING SUBLINGUAL TABLETS

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Mutasem Qalaji, Ph.D, Associate Professor, College of Pharmacy

Objective. This study was performed to optimize a previously developed Atropine Sulfate Rapidly Disintegrating Sublingual Tablets (AS RDSTs) to enhance tablet's physical properties and manufacturability. **Background.** : A previously developed AS RDSTs 8 mg using MCC grade PH-301, (A) as filler, resulted in rapid tablet disintegration, however, on the expense of tablet hardness (A1 and A2). Therefore, a newer MCC grade (UF-702) was investigated in this study. **Methods.** AS RDSTs 8 mg and weighing 50 mg using MCC grade UF-702 (B), as filler, was manufactured by direct compression. The compression

force was normalized before manufacturing. The following physical quality control tests were evaluated and compared to A1 and A2 RDST formulations: powder flowability, hardness, friability, wetting time, water uptake, disintegration time, and content uniformity. **Results.** Mean±SD of angle of repose were significantly lower ($p<0.05$) at 42°±2°, 32°± 0.5° forA and B powders mixtures, respectively. Mean±SD of hardness, friability, wetting time, water uptake (%), disintegration time, and content uniformity acceptance value for A1 (1.6±0.05 KgF, 0.09% loss, 11±1 sec, 229±5%, 8.3±0.4 sec, and 3.72 respectively), A2 (3.0±0.3 KgF, 0.009%, 76±6 sec, 186±9%, 238±3 sec, and 2.01 respectively), and B (3.3±0.2 KgF, 0.05% loss, 17.5±1.5 sec, 284±8.1%, 7.6±0.5 sec, and 13.9, respectively). **Conclusion.** Using MCC grade UF-702, as filler, enhanced AS RDSTs hardness without compromising their physical properties. **Grants.** This project was partially funded by Saudi Arabian Cultural Mission bench fees.

Atrium – Poster 7 12:15-1:15 p.m.

CANCER GENE THERAPY TARGETED TOWARDS METHIONINE METABOLISM: CHARACTERIZATION OF METHIONINE GAMMA LYASE-DEAMINASE (MGLD)

Sean Baksh, OMS-I, College of Osteopathic Medicine
Kallidaikurichi Venkatachalam, PhD., Professor, College of Medical Sciences

Objective. Our objective was to characterize the recombinant, overexpressed, purified Mgld enzyme in order to better use Mgld as a therapeutic target for cancer and related diseases. **Background.** Methionine is a key nutrient that is activated into s-adenosylmethionine (SAM) which is the universal donor for various intracellular methylations. Venkatachalam et al., studied the effects of cytoplasmic methionine deprivation using methionine degrading enzyme methionine gammalyase-deaminase (Mgld) gene constructs that was transfected on to various cancer cell types. It was reported that upon Mgld transfection there was either severe cell aggregation and/or moderate (10-30%) cell death depending on the cancer cell types. The vector that causes the expression of Mgld protein in the cytoplasm is called C-Mgld. Venkatachalam et al., have molecularly cloned the Mgld into a new vector that has nuclear localization signal (NLS) DNA sequence upstream to Mgld gene (NLS-Mgld). Characterizing the Mgld would facilitate the optimization of the target for cancer cell therapeutics. **Methods.** Mgld gene was cloned into bacterial overexpression vector was transformed into BL-21 strain of E.coli. The recombinant colony was selected with kanamycin and the colonies were grown in bulk in special growth medium (Terrific Broth, TB) that contained 50 µg/mL. The culture was then induced with isopropyl β-D-1-thiogalactopyranoside (IPTG) and the cells were grown further for 7-9 hours. The culture media was centrifuged, pellet lysed with buffer that contained protease inhibitor, purified by Ni^{+} affinity chromatography, TEV cleaved and further purified by DEAE column chromatography. Peak fractions were pyridoxal phosphate (PLP) exchanged. The purity was tested by SDS-PAGE. PLP antibody further confirmed the purity of the holoenzyme. **Results.** We feel the recombinant bacteria cultured in TB broth yielded higher amounts of Mgld protein. The purified PLP exchanged protein had characteristic 425 nm absorption peak. The purified protein had maximal activity at pH above 7.5. The enzyme exhibited temperature optimum between 37-55ºC. The lyase half reaction of Mgld exhibited a Km of ~0.6 mM for methionine and a Vmax of 58 µMols/min. The overall reaction of lyase-deaminase activity in forming α-ketobutyrate exhibited Km of 1.0 mM, Vmax of 5.27 µmol $min^{-1}mg^{-1}$, and a monomeric kcat/Km of 3729.3 $M^{-1}s^{-1}$. **Conclusion.** Mgld enzyme cleaves and deaminates methionine into methylthiol, ammonia and α-ketobutyrate at an appreciable rate that would dwindle intracellular methionine significantly in cancer cells while it is transfected.Therefore, we conclude persistent expression of Mgld in cancer cells would hamper cancer cell division. Hence, we feel Mgld gene is good therapeutic target for cancer cell death. **Grants.** President's Faculty Research and Development Grant 2015-2016.

Atrium – Poster 8 12:15-1:15 p.m.

DEVELOPMENT AND PILOT TESTING AN INSTRUMENT THAT MEASURES THE ATTITUDES OF PATIENTS TOWARD PHARMACISTS' CARE SERVICES VIA SOCIAL MEDIA

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Jesus Sanchez, Ph.D., Associate Professor, College of Pharmacy
Nile Khanfar, Ph.D., Associate Professor, College of Pharmacy

Objective. The aim of this pilot study was to develop and pilot test an instrument that was created to measure the attitudes of patients toward pharmacists care services via social media. **Background.** There was little prior research on impact of social

media networking on the pharmacist-patient communication in depth as no prior study had evaluated patients' perceptions about introducing pharmacists' interventions via social media. Therefore, measuring the attitudes of patients regarding pharmacists' care services via social media was an essential approach. **Methods.** The validity and reliability of the instrument was tested in this pilot study. The content validity was determined by sending the instrument to a group of experts that included 7 PhD students in Nova Southeastern University (Pharmacy College) to check if the wording of the items and scale that was developed were appropriate and comprehensible. After validating the instrument, a pilot-mocking test has been developed and the survey was sent to all PhD students (34 students) in Nova Southeastern University (Pharmacy College). After collecting the response from the students, factor analysis has been conducted by using SPSS, certain items were excluded. **Results.** The response rate was about 22 in total. Certain Items were excluded. The 5 dimensions of the construct will include the following: usefulness, health benefits, personal innovativeness, barriers, and confidentiality. **Conclusion.** In conclusion, the results of this pilot study provided the basis for refining the instrument. **Grants.** There was no special funding or grants included in the study

Atrium – Poster 9 12:15-1:15 p.m.

COMPARISON OF ARTERIAL BLOOD PRESSURES OBTAINED FOLLOWING FOUR DIFFERENT REST INTERVALS

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Donald Shaw, Ph.D, Professor, Franklin Pierce University
Eder Garavito, DPT, Assistant Professor, Duke University

Introduction. Immediate cuff re-inflation, when acquisition of an initial arterial blood pressure (ABP) is missed, is thought to promote venous congestion and render spurious ABP values. **Purpose.** The purpose of this study was to determine if the imposition of differing rest periods between serial ABPs significantly influenced pressure readings. **Design.** This was a prospective, repeated measures study utilizing a convenience sample of university health professions students. **Method.** Twenty subjects (5 males, 25.6±3.3yrs; 15 females, 25.6±4.3yrs) participated. Following informed consent, subjects were positioned in supine for 5 minutes of quiet rest. Each subject was then seated comfortably with a blood pressure cuff affixed to the left arm following standard protocol. A Welch Allyn Connex® 6000 was used to obtain ABPs in randomized order. The interval between each initial pressure was: 1) no rest interval, 2) 30 s, 3) 60 s, and 4) 120 s. A 60 s recovery was interposed between each new interval. Alpha level was set at $p \leq 0.05$; data were analyzed using SPSS Version 21 software. Bonferroni adjustment was provided for all repeated measure comparisons. **Results.** Data analysis revealed no significant differences between ABPs at any interval. Mean±SD mmHg for systolic and diastolic ABPs respectively were: no rest – 112.7±13.1, 72.6±9.1; 30 s – 111.9±11.4, 72.5±8.7; 60 s – 112.3±9.4, 72.7±9.2; and 120 s – 110.5±10.2, 72.4±8.6. **Conclusions.** Based on this study authors conclude that absence of a rest interval, or rest intervals of up to 120 s, does not significantly impact resting ABP when a second measurement is needed.

Atrium – Poster 10 12:15-1:15 p.m.

APPLICATION OF 3D PRINTING IN BENCH PHARMACEUTICAL SCIENCE RESEARCH

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Natalie Builes, P2-Pharm.D., College of Pharmacy
John Reynolds, MLIS, Research Associate/Instructor, College of Pharmacy
Robert Speth, Ph. D., Professor, College of Pharmacy

Objective. This project was conducted to find a customizable, cost-effective alternative to purchasing current bench laboratory equipment utilizing 3D printing. **Background.** With the high cost of scientific equipment, along with decreases in funding, current scientific advances balance the price of materials with the potential for results. The need for cheap and reliable tools lends itself easily to the current advances in 3D printing. Through the use of filaments and customizable designs, 3D printing evades the cost associated with manufacturing on the industrial scale. Moreover, utilizing computer-aided design (CAD) Software, 3D printing aids scientists with the sharing of protocols and instruments with other laboratories. **Methods.** Laboratory equipment including brain cutting matrices, slide grips, and microscope slide holders were designed with Tinkercad, a free CAD software program, and created using a 3D printer. These tools were then compared to the industrially

produced unit sale equivalent both financially and practically. **Results.** 3D printed tools provide a cheap alternative to normally expensive equipment. Additionally, the ability to customize tools gives the 3D printed instruments a practical advantage over their stock counterparts. **Conclusion.** The dissemination of the tools made by the 3D printer can ultimately reduce cost and expand creativity of the scientist while increasing productivity within a laboratory setting. Moreover, 3D printing is limited only by the selected extruding fiber as well as the creativity of the designer. **Grants.** N/A.

Atrium – Poster 11 12:15-1:15 p.m.

EMERGENCE OF AUTOCHTHONOUS CHIKUNGUNYA IN PALM BEACH COUNTY, FLORIDA

Diana Connor
Vladimir Senatorov
Sandra Warren
Shamilla Lutchman
Samantha Alford-Morales
Robert Parkes
Karen Thomas
Alina Alonso

Background. On July 7, 2014 Florida Department of Health Palm Beach County received a report of a patient that had symptoms consistent with chikungunya fever but denied history of travel outside the USA. On July 17, 2014 the CDC declared this as one of the first chikungunya virus disease cases acquired in the continental United States. **Methods.** Cases were identified through active and passive surveillance. A field investigation was conducted. All homes within 100 meters of the autochthonous case-patient were visited, residents were interviewed, symptomatic or asymptomatic persons were identified. Risk factors were evaluated; blood samples were obtained from willing participants. An environmental assessment was conducted. **Results.** By October 4, 2014, through active surveillance four autochthonous cases with chikungunya virus (CHIKV) infection were identified in Palm Beach County, FL. 78 households were visited. No additional symptomatic or asymptomatic persons were identified. A total of eight asymptomatic individuals associated with the first case were tested and none were positive for CHIKV. The field teams identified mosquito-breeding sites on all of the interviewed properties and drained and covered the stagnant water. None of the potential breeding sites contained larvae currently. No CHIKV infections were found to be associated to any of the autochthonous cases. **Conclusions.** There was no clear epidemiological link established through geo-spatial relationships during incubation and infective periods among imported and/or autochthonous case-patients. Isolation of case-patients during the viremic phase likely diminished transmission risk among household members and local community members. **Public Health Implication.** If local transmission continues, there is a risk that the virus will thrive and become endemic in these new areas.

Atrium – Poster 12 12:15-1:15 p.m.

CHARACTERIZATION OF 125-I-ANGIOTENSIN (1-7) BINDING TO MOUSE FOREBRAIN AND LIVER AND RAT LIVER

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Andrea Linares, Research Associate
Leena Couling, Research Associate
Mariana Morris, Ph.D, Professor, College of Osteopathic Medicine
Katia De Angelis, Ph.D, Professor, Universidade Nove de Julho
Robert Speth, Ph.D, Professor, College of Pharmacy

Objective. To assess the saturability of 125I-Ang 1-7 binding to mammalian tissue **Background.** Angiotensin II (Ang II) is a potent regulator of blood pressure and is pathogenetic for cardiovascular disease. Identification of the ACE homologue ACE2, which forms Ang 1-7 from Ang II, and the GPCR Mas as a functional Ang 1-7 receptor has provided biochemical and molecular tools to study the role of Ang 1-7 as a counterregulator of the pathogenesis of Ang II. Despite the physiological importance of Ang1-7, no one has demonstrated saturable 125I-Ang 1-7 binding in mammalian tissue. To date, only single concentration, specific binding of 125I-Ang 1-7 to mouse kidney has been reported. **Methods.** We prepared a low specific

activity 125/127I-Ang 1-7 by radioiodinating Ang 1-7 with 1 part 125I:19 parts 127I, using chloramine T at pH 7.5 to limit radioiodination to tyr4, and pH 8.5 to radioiodinate both tyr4 and his6, with subsequent purification of monoradioiodinated Ang 1-7 using reverse-phase HPLC. Forebrains from adult male athymic mice (nu/+) were dissected and homogenized in water and the membranes were precipitated by centrifugation at 48 kxG. Membranes were resuspended in Tris:EDTA (50:5 mM) pH 7.3 and incubated with 12 concentrations of 125/127I-Ang 1-7 ranging from 3-110 nM for 30 min at 22 C, after which bound 125/127I-Ang 1-7 was collected on GF/B filters and counted. **Results.** Both radioligands showed specific (100 µM Ang 1-7 displaceable) saturable binding: 35±8.3 and 35±4.2 fmol/mg initial wet weight (mean±SEM) with KD = 42.6±19.2 and 47.9±13.9 nM, for pH 7.5 and pH 8.5 preparations, respectively. This suggests that the presence of iodine on tyr4 or tyr4 + his6 does not differentially affect binding of Ang 1-7 to mouse brain membranes. Preliminary studies indicate that Ang II, Ang IV, Ang 3-7, Ang 4-7, Sar1,Ile8 Ang II, losartan and PD123319 have low affinity for the 125/127I-Ang 1-7 binding site in mouse brain membranes. 125/127I- Ang 1-7 (prepared at pH 8.5) binding to mouse liver using 50 mM Tris: 5 mM MgCl2, pH 7.2, also was saturable 179±10 fmol/g with KD = 20.4±4 nM. 125/127I-Ang 1-7 (prepared at pH 7.5) binding to rat liver membranes using 50 mM Tris: 5 mM MgCl2 pH 7.2 also was saturable 66.7±1.8 fmol/g with KD = 7.1±1.7 nM. No saturable binding was observed in rat heart. **Conclusion.** Future studies will assess whether this binding is to the mas protein using other rodent tissues, e.g., kidney, as well as mas knockout mice. If these studies document that 125/127I-Ang 1-7 binds to mas, this radioligand can be used to assess the binding functionality of mas as well as to measure differences in the binding functionality of mas in animal models of cardiovascular disease. **Grants.** F.F. Conti: CAPES: 99999.008874/2014-00; M. Morris: DOD grant W81XWH-13-2-0085; R.C. Speth: NIH HL-11390, Pilot Award from the Translational Technologies Component of the Georgetown, Howard Universities Center for Clinical and Translational Science [UL1TR000101] and Cardiovascular Neuroscience Research Fund, Nova Southeastern University.

Atrium – Poster 13 12:15-1:15 p.m.

PRAXIS OF COMPLEX OCULAR COMORBIDITIES: CLINICAL MANIFESTATION OF CENTRAL RETINAL ARTERY OCCLUSION (CRAO) IN A PATIENT WITH DIABETIC RETINOPATHY (DR)

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Janet Leasher, OD, Associate Professor, College of Optometry
Diana Shechtman, OD, Professor, College of Optometry

Introduction. CRAO manifests as unilateral inner retinal swelling associated with a cherry-red spot. Non-proliferative diabetic retinopathy (NPDR) is characterized by bilateral increased micro-vascular permeability, often associated with dot and blot hemorrhages, lipid exudates and micro-aneurysms. Although both entities have been well established in the literature, we report a rare case of simultaneous presentation in a relatively young patient. **Case Report.** A 47-year old black male presented with sudden painless vision loss in his right eye x 5 days. Medical history revealed HTN and DM. BVA was LP OD and 20/20 OS. Pupils revealed APD OD. DFE OD revealed scattered dot and blot hemorrhages, flame-shaped hemorrhages and exudates in the posterior pole, whitish areas of intra-retinal edema associated with a cherry red spot were noted in the posterior pole. DFE OS revealed scattered dot hemorrhages with hard exudates. The initial clinical impression was NPDR OU in addition to CRAO OD. **Discussion.** Due to the overall clinical picture, the patient was asked to seek medical care for further evaluation, to include Carotid Doppler, echocardiogram, CBC with differentials, Sickledex (Streck), re-evaluation of FBS and HbA1C. In addition, the patient was asked to get a fluorescein angiography due to the likelihood that decreased choroidal perfusion attributed to the severe vision loss. **Conclusion.** CRAO and diabetic retinopathy presenting concomitantly in the same eye, may attribute to a diagnostic predicament. This rare case highlights the importance of establishing a complete diagnosis that is crucial to provide appropriate and prompt medical work-up and management.

Atrium – Poster 14 12:15-1:15 p.m.

NEUREGULIN-1 PROMOTES REDOX-DEPENDENT NEURONAL COBALAMIN METABOLISM BY STIMULATING CYSTEINE-DEPENDENT GLUTATHIONE SYNTHESIS

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Nathaniel Hodgson, PhD, Research Associate/Instructor, Harvard School of Medicine
Malav Trivedi, PhD, Assistant Professor, College of Pharmacy
Matthew Schrier, Ph.D.-Molecular Medicine and Pharmacogenomics, College of Pharmacy

Yiting Zhang, 5th year Ph.D. student, Northeastern University

Objective. To investigate the ability of the neurotrophic factor neuregulin-1 (NRG-1) to influence the status of vitamin B12 (cobalamin; Cbl) in cultured human neuroblastoma cells. **Background.** Neuregulin-1 (NRG-1) is an epidermal growth factor (EGF)-like growth factor that plays critical roles in development of the central nervous system by influencing neuronal differentiation, regulation of neurotransmitter receptor expression and oligodendrocyte development. Methionine synthase (MS) catalyzes the conversion of homocysteine (HCY) to the essential amino acid methionine, utilizing a methyl group derived from 5-methyltetrahydrofolate. Methionine can further receive an adenosyl moiety from ATP to form S-adenosylmethionine (SAM), which is the universal methyl donor providing methyl groups to more than 250 different methylation reactions including DNA and histone methylation. MS activity depends upon its cofactor cobalamin (Cbl), also known as vitamin B12. In a recent study we observed more than five-fold lower Cbl levels in postmortem human frontal cortex of schizophrenia subjects when compared to samples from age-matched controls. While the factors leading to this abnormally low Cbl status remain unknown, in vivo studies of EGF-knockout neurodegenerative mouse models revealed crosstalk between Cbl metabolism and the EGF system, and EGF can regulate the neurotrophic effects of Cbl in brain, suggesting the possibility that NRG-1 may play a role in regulating neuronal Cbl metabolism. We previously showed that growth factor stimulation of the phosphatidylinositol 3-kinase (PI3K)/Akt signaling pathway promotes EAAT3-mediated cysteine uptake and subsequently increases GSH levels in neurons. Since NRG-1 is capable of initiating the PI3K/Akt signaling cascade, we hypothesized that NRG-1 may promote neuronal Cbl metabolism by stimulating EAAT3-mediated cysteine uptake and increasing GSH synthesis, making more GSCbl available for active Cbl species formation. Using the SH-SY5Y human neuroblastoma cell line, we examined the influence of NRG-1 on levels of six individual Cbl species. **Methods.** Cbl extraction and measurement were performed under dim-red light. After pretreatment culture media was removed and SH-SY5Y cells were washed 3X with 4 mL of Dulbecco's phosphate buffered saline (DPBS). Cells were then lysed, scraped and collected in a 1.5 mL microcentrifuge tube. 100 microliters of cell lysate was aliquoted for protein quantification by Lowry protein assay and 900 microliters of the remaining cell lysate was mixed and incubated with 1.35 mL ice-cold absolute ethanol for 10 min. Protein precipitates were removed by centrifugation at 10,600 RPM for 3 min. The supernatant was dried in a speedvac, resuspended in 300 microliters DPBS and filtered through 0.22 micron syringe-driven filter unit. 200 microliters of sample was added to a conical micro autosampler vial, blown with nitrogen, capped and kept at 4 degrees C in the autosampler (ESA model 542). 30 microliters of Cbl sample was injected into an ESA CoulArray HPLC system equipped with an Agilent Eclipse XD8-C8 (3×150 mm; 3.5 microns) reverse- phase C8 column and an Agilent Eclipse XDB-C8 (4.6×12.55 mm; 5 microns) guard column. A dual mobile phase gradient elution was used: mobile phase A contains 0.1% acetic acid in water, adjusted to pH 3.5 with 6.0 N ammonium hydroxide and mobile phase B contains 0.1% acetic acid in acetonitrile. The system was run at a flow rate of 0.6 mL/min at ambient temperature with the following gradients: 0-2 min 0% B, 2-12 min 10% B, 12-15 min 15% B and 15-35 min 20% B. Cbls were measured by electrochemical detection at an operating potential of 1,000 mV. Peak area analysis was performed by CoulArray software and standard curves were generated for each Cbl species. Cbl levels were normalized against protein content. **Results.** We found that NRG-1 stimulates neuronal synthesis of bioactive Cbl species adenosylcobalamin (AdoCbl) and methylcobalamin (MeCbl) in SH-SY5Y neuronal cells by both promoting conversion of inactive to active Cbl species and increasing neuronal Cbl uptake. Formation of active Cbls is glutathione (GSH)-dependent and NRG-1-initiated increase is dependent upon its stimulation of cysteine uptake by excitatory amino acid transporter-3 (EAAT3), leading to increased GSH. The stimulatory effect of NRG-1 on cellular Cbl uptake is associated with increased expression of megalin, which facilitates Cbl transport in ileum and kidney. MeCbl is a required cofactor for methionine synthase (MS) and we demonstrate the ability of NRG-1 to increase MS activity, as well as affecting levels of methionine methylation cycle metabolites. The ability of lithium to promote megalin-related transport activity has been previously described. Lithium treatment (10 mM) for 1 or 4 hrs caused a significant increase in cysteine and GSH levels along with an increase in methylation capacity and a decrease in Cbl content. **Conclusion.** Our results identify novel neuroprotective roles for NRG-1 in terms of stimulating antioxidant production and synthesis of active Cbl species, as well as novel actions of lithium on redox and methylation status. These findings provide a potential mechanistic link between impaired NRG-1 signaling and neurological disorders such as schizophrenia. **Grants.** This work was partially supported by a grant from the Autism Research Institute.

Atrium – Poster 15 12:15-1:15 p.m.

VARIBAR THIN BARIUM® VS. "ULTRATHIN": OCCURRENCE OF PENETRATION/ASPIRATION IN PATIENTS DIAGNOSED WITH DYSPHAGIA AS MEASURED THROUGH MBSS

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Barbara O'Connor Wells, Ph.D., Assistant Professor, College of Health Care Sciences - Speech-Language Pathology
Debra Tarakofsky, M.S., Adjunct Professor, College of Health Care Sciences - Speech-Language Pathology

Objective. The purpose of this study is to determine if diluting Varibar Thin Barium® with water by 50% (referred to as "Ultrathin") will capture more instances of penetration and/or aspiration during a Modified Barium Swallow Study (MBSS), than the currently available product consistency, labeled Varibar Thin Barium®. **Background.** Previous research has shown that the commercially available Varibar Thin Barium® may not be thin enough in viscosity to identify patients who are at risk for penetrating and/or aspirating a "true" thin liquid (e.g., water). In the Fink and Ross (2009) study, if the "Ultrathin" had not been used to identify patients at risk for penetration and/or aspiration, the patients would have tested safe for thin liquids and the recommendation of thin liquid consumption (e.g., water) following discharge from the MBSS would have been based on only assessing the use of Varibar Thin Barium®, which has a thicker viscosity and does not represent a "true" thin liquid placing the patients at risk for penetration and/or aspiration on thin liquid. **Methods.** A quasi-experimental research design will be used for this study to determine if the intake of "Ultrathin" versus the intake of Varibar Thin Barium® increases the occurrence of penetration and/or aspiration in patients with neurological dysphagia resulting from stroke. Patients suspected of presenting with penetration and/or aspiration as a result of neurological dysphagia will be physician referred for an MBSS as part of a diagnostic protocol at Swallowing Diagnostics, Inc. to rule out or confirm penetration and/or aspiration. **Results.** There will be an increase in penetration and/or aspiration events on the MBSS using diluted Varibar Thin Barium® ("Ultrathin") versus Varibar Thin Barium® in patients with neurogenic dysphagia. **Conclusion.** Our findings will support those of Fink and Ross (2009) in showing that the currently available Varibar Thin Barium® is not thin enough in viscosity to match a "true" thin liquid (e.g., water), and that an "Ultrathin" consistency needs to become the commercially available standard for thin liquid assessment during an MBSS. **Grants.** This study may be partially funded by the NSU CHCS Faculty Research and Development Grant and a grant offered by Bracco, who is the production company for Varibar Thin Barium®.

Atrium – Poster 16 12:15-1:15 p.m.

ASSESSMENT OF THE ROLE OF THE PHARMACIST IN ADHERENCE TO ANTIRETROVIRAL THERAPY IN PATIENTS OF CARIBBEAN DESCENT IN SOUTH FLORIDA

Akesha Edwards, Ph.D.-Social and Administrative Pharmacy, College of Pharmacy
Randi Agata, P4-Pharm.D., College of Pharmacy
Silvia Rabionet, EdD, Associate Professor, College of Pharmacy

Objective. The primary objective of this study is to assess the role of the pharmacist in HIV medication adherence. The secondary objective will be to determine factors that affect medication adherence to antiretroviral therapy in patients of Caribbean descent. **Background.** At the end of 2012, 1.2 million people in the United States were living with HIV. 1 In 2010, African Americans and Hispanic/Latinos made up 44% and 21% of new HIV infections respectively. People of Caribbean descent are a growing minority racial/ethnic group in the United States and are often misclassified with other minority groups. The Caribbean population is also grossly understudied and efforts need to be made to characterize HIV/AIDS in this population. There have been many breakthroughs in anti-retroviral therapy (ART), which not only have improved clinical and health outcomes, but also the patient's quality of life. Strict adherence to ART is needed for the most benefit.3,4 Pharmacists can help HIV-infected patients deal with barriers to medication access, and adhering to medication regimens. Medication adherence is critical to the efficacy of ART and pharmacists can have a significant impact in this area of HIV patient care. **Methods.** This is a cross-sectional observational community-based study currently being conducted using face-to-face interviews at a clinic in Hollywood, Florida. A convenient sample of adult patients diagnosed with HIV/AIDS, currently on anti-retroviral therapy, and either a Caribbean island native or the first generation born of a Caribbean island native will be included in this study. A total of 100 patients will be interviewed. Patients will be interviewed using open-ended, multiple-choice and Likert scale questions to determine factors that affect medication adherence. During the interview, patients will be asked the following: Everyone at this clinic is concerned with your health and your adherence to your medications. List the top 3 that in your opinion helped you the most with adherence to your HIV drugs. Participants were allowed to name the

providers spontaneously. However, the answer options for the patient include: social worker/case worker, counselor, pharmacist, lab technician, medical assistant, nutritionist, nurses, nurse practitioner, doctors or others. Medication adherence is the dependent variable in this study and measured by a 3 day self-report recall. Regression analyses will be performed to determine the impact of the pharmacist's role on adherence. Descriptive analyses (means, medians, ranges) will also be used to discuss the findings. **Results.** (Preliminary) 14.6% of patients listed the pharmacist as a health care professional that was concerned about their health and medication adherence 96.1% of patients missed a medication dose within the last 3 days before the interview Mean of the most recent CD4 count (absolute) of patients: 587.6 62.1% of patients had a most recent record of an undetectable viral load 82.5% of patients were born in the Caribbean; 17.5% of patients were born in the United States For the parents of the patients born in the United States: 29.4% were born in Jamaica, 17.6% were born in Puerto Rico and 53% were born in other Caribbean countries **Conclusion.** Nonadherence to antiretroviral treatment is relatively high in this population. There is a need for pharmacist intervention to improve adherence and to ultimately improve therapeutic outcomes. This population faces significantly more barriers to healthcare than other minority groups. These include economic and cultural barriers which can greatly impact access to medication, as well as their personal and public beliefs of their treatment and care. **Grants.** NIH/NIMH 5R25MH083617

Atrium – Poster 17 12:15-1:15 p.m.

DEVELOPMENT OF A MEASURE OF PATIENTS' PERCEPTION OF CULTURAL SENSITIVITY OF THEIR HEALTH CARE PROVIDERS

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Jesus Sanchez, PhD, Associate Professor, College of Pharmacy

Objective. To develop an instrument that can be administered to HIV positive patients of Caribbean Descent to measure their providers' cultural sensitivity. **Background.** It has become necessary for all health care providers to be increasingly culturally sensitive because of the growth of ethnic minority populations in the United States. A recurring theme amongst HIV/AIDS patients of Caribbean descent is the lack of cultural sensitivity of their providers. This insensitivity encourages them to be non adherent to their therapy and health care. **Methods.** A search of electronic databases was performed in October 2013. Results were limited to articles that were in English published between 2000 and 2013. Articles were collected and reviewed based on suitability for the research problem. Only those studies with instrumentation/measurements/interventions for cultural sensitivity reported by patients were extracted. A geographic limit was imposed to gather only those studies that were conducted in the United States. An initial search returned 116 articles of which only 3 were relevant to our objective. These final 3 articles specifically investigated patient reported cultural sensitivity. However, all the studies had different conceptualizations for cultural sensitivity. For this instrument, the concept involves two dimensions/scales: discrimination (Provider Discrimination scale) and acceptance of a patient's cultural beliefs and values (Provider Acceptance of Culture scale). These scales were subjected to five phases of expert/judges ratings. Judges were physicians, statisticians, clinicians, researchers, professors, graduate students (Pharm. D & Ph.D.) and HIV specialists. Their practice settings included hospitals, universities and private consultancy groups throughout different areas of the United States. After each round of judging, suggestions were made for improvement and the scales were refined. This measure is currently being pilot tested. It will be subjected to initial reliability and validity tests. **Results.** Items were sampled from the instruments put forth in the three articles that were isolated. After the rounds of expert judging and refinement the Provider Discrimination scale contains 12 items while the Provider Acceptance of Culture scale contains 17 items. **Conclusion.** Initial observations from the launch of pilot testing of this measure reveals there is adequate flow to the items in this instrument. This supports sampling from the literature and having several rounds of expert opinions in different settings when creating a novel instrument. **Grants.** Health Professions Research Grant

Atrium – Poster 18 12:15-1:15 p.m.

ON RAPID ASSESSMENT METHODS USING STATISTICAL MODELING: MULTIPLE LEAST SQUARES REGRESSION VS. LOGISTIC REGRESSION

Jay Fleisher, MA, MS, Ph.D., Associate Professor, College of Osteopathic Medicine

Objective. To introduce new methodology is assessing recreational water quality use and associated effects on Health **Background.** There is a need to develop rapid assessment of bacterial water quality. To this end many statistical models have been published mostly using-environmental variables to predict concentrations of a particular FIO. The majority of these statistical models have used Multiple Least squares regression in which the major indicator of the goodness of fit of these models have largely depended on the R2 value, which to date have been quite low. Since Beach management decisions have to be dichotomous in nature (Open/Close Beach) we explored the use of the Multiple logistic model in relation to the Multiple Lease Squares approach. **Methods.** 668 samples were utilized in this analysis. 10 major environmental variables and several FIO's were collected on each sample date. Both types of models were run on these data. **Results.** Our Best Multiple Least Squares Regression was computed with a R Square value of 0.26, while the Multiple Logistic Regression Model yielded a maximum Sensitivity of 72.9% and a maximum Specificity of 65.9% at a cut point = 0.1. A backward selection routine was used in both the Logistic and Least Squares Model. **Conclusion.** Since the Logistic regression yields a much less nebulous goodness of fit statistic coupled with the fact that the Beach Managers decision is a dichotomous one, more attention should be paid to research using the Multiple Logistic Model. **Grants.** Data collected during grant: $15000.00 Center of Excellence Oceans and Human Health Center, University of Miami.

Atrium – Poster 19 12:15-1:15 p.m.

OSTEOTOME SITE DEVELOPMENT TECHNIQUE: A SUCCESSFUL TREATMENT FOR MAXILLARY SINUS AUGMENTATION

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Introduction. Lateral window is a successful treatment for maxillary sinus augmentation. However, this technique is highly invasive and associated with additional morbidity, cost and long waiting periods prior to implant placement. (1-2) Crestal approach is an alternative technique have been described for augmenting the maxillary sinus floor for implant therapy. (4) However studies have shown that the minimum residual bone from the crest to floor of sinus for this technique should be 4-5 mm for the higher implant success rate otherwise is better to do osteotome site development technique and place implant on second stage. (5-7). The following 2 cases demonstrate the application of osteotome site development technique for maxillary sinus augmentation. **Case presentation.** Case 1: A 41 y.o female patient presented with missing tooth # 14, sinus pneumatization, and very limited available bone height (3.4 mm from the crest to the sinus floor confirmed with CBCT). A crestal incision was made from tooth # 13 to # 15, full thickness flap was raised and a crestal approach sinus kit and osteotomes were used to elevate the sinus membrane. Xenograft and collagen membrane were used for sinus augmentation. 4 month later, 5 x 11 mm implant was placed. Case 2: A 44 y.o. female patient presented with missing tooth # 3, inadequate available bone height due to maxillary sinus pneumatization on this site (5 mm from the crest to the sinus floor confirmed with CBCT) and need for an implant placement. After crestal incision and full thickness flap reflection, a crestal approach sinus kit and osteotomes were used to elevate the sinus membrane. Xenograft and collagen membrane were used for sinus augmentation. 4 month after sinus augmentation, a 5 x 11 mm implant was placed. **Deviation From the Expected.** Osteotome site development technique could be a successful alternative to lateral wall technique for the patients who need sinus graft for implant placement and have minimum bone from the crest to the floor of sinus **Discussion.** Both sinus grafts and implants healed uneventfully. 4 month after sinus augmentation, bone gain of 9 mm for case # 1 and up to 7 mm for case # 2 confirmed with a CBCT. Patients were seen at 1 week, 2 weeks, 4 weeks and 4 month after sinus augmentation and they followed up to 3 month after implant placement. After 3 months implants osseointegrated. Impressions were taken and final crowns were delivered. **Conclusion.** Osteotome site development technique could be a successful alternative to lateral wall technique for the patients who need sinus graft for implant placement. This technique is less aggressive, less time consuming and less expensive for the patient. **Grants.** This study was partially funded by a grant from the HPD Research Committee.

Atrium – Poster 20 12:15-1:15 p.m.

DEVELOPING PARTNERSHIPS BETWEEN AN ACCOUNTABLE CARE ORGANIZATION AND A COLLEGE OF PHARMACY TO BENEFIT STUDENTS AND PATIENTS

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Genevieve Hale, PharmD, BCPS, Assistant Professor, College of Pharmacy
Stephanie Gernant, PharmD, MS, Assistant Professor, College of Pharmacy

Objective. To identify the barriers, facilitators and lessons learned regarding one South Florida college of pharmacy's endeavor to partner with a local Accountable Care Organization (ACO). **Background.** In 2012 the Patient Protection and Affordable Care Act (ACA) authorized ACO formation to improve safety, costs, and quality of patient care. Pharmacists deliver high quality care in traditional fee for service models, but may be underutilized within ACOs and be unprepared for the ACA's emergent mandates. It is unknown how higher-education institutions and ACOs may best partner to ensure future healthcare providers are ready to practice within the revolutionized healthcare system. **Methods.** This non- randomized, qualitative study looks at partnership stakeholders, including ACO staff and college of pharmacy faculty members, who were invited to participate in semi-structured interviews to discuss motivations, roles and actions in partnership development. Transcripts of interviews will be coded to identify themes, common threads and major events. **Results.** Nine stakeholders were sought for interviews; of these, four college of pharmacy faculty members, one faculty administrator, one ACO physician, and one ACO practice staff members participated. One ACO chief executive officer and one physician declined to be interviewed. Results of this ongoing study will be submitted to the peer-reviewed American Journal of Health-System Pharmacy (AJHP) for publication. **Conclusion.** This description of partnership development may help other centers of higher healthcare education collaborate with ACOs to develop professionals prepared to practice within the new ACA's mandates.
Grants. None

Atrium – Poster 21 12:15-1:15 p.m.

FACE AND NECK SKIN FIRMNESS AND WATER CONTENT ASSESSED IN YOUNG WOMEN

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Jason Mammino, OMS-II, College of Osteopathic Medicine
Allen Abello, OMS-II, College of Osteopathic Medicine
Harvey Mayrovitz, PhD, Professor, College of Medical Sciences

Objective. Goals were to (1) test the hypothesis that skin hydration directly correlates with skin firmness and (2) develop skin water-firmness data to later assess age-related changes. **Background.** Stratum corneum water measurements suggest linkages between skin's mechanical properties and water content but the role of dermal water is unknown. **Methods.** Dermal water was assessed by tissue dielectric constant (TDC) at 300 MHz to 0.5 and 2.0 mm depths on four face sites and two forearm sites of 28 women (25.1±1.7 years). Skin firmness was determined by the FORCE (mN) needed to indent skin 1.3 mm. Skin firmness was also measured at two neck sites and total body water % (TBW) and fat % (TBF) were measured. **Results.** Among face sites, FORCE varied and averaged 33.6±7.2 mN with neck and forearm values of 28.2±9.1 and 58.4±18.9 mN. TDC averages varied by face site with averages of 35.4±3.8 at 0.5 mm and 37.2±4.1 at 2.0 mm depths. Forearm TDC values were less ($p<0.001$) being 31.4±4.1 and 27.1±4.3 for 0.5 and 2.0 mm depths respectively. Regression analysis showed an inverse correlation between FORCE and TDC on forearm but not face. Forearm and face TDC values correlated with TBW and inversely with TBF. **Conclusion.** Face and forearm skin water- skin-firmness relationships are different with none for face but a negative correlation for forearm. Although this is only partially consistent with the hypothesis the skin firmness data for face, neck and forearm for this young female group should provide reference data for subsequent comparisons of possible age affects.
Grants. None

Atrium – Poster 22 12:15-1:15 p.m.

NEONATAL EFFECTS OF MARIJUANA FOLLOWING MATERNAL ILLICIT DRUG USE: A LITERATURE REVIEW

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Jeniffer Perez Climent, P2-Pharm.D., College of Pharmacy
Malav Trivedi, Ph.D., Assistant Professor, College of Pharmacy

Objective. We sought to compile the most updated information on the use of marijuana during pregnancy and its effects on the neonate as well as the overall development of a child through all stages. **Background.** Many states have made marijuana either decriminalized or acceptable for medical use, which may potentially lead to increased marijuana use among pregnant women. It is essential to become aware of the effects that marijuana can have on neonates. **Methods.** Articles were selected from two databases using keywords. Searches were conducted for articles published between January 1, 2010 and October 1, 2015. Keywords used to search for the articles included: Marijuana, cannabis, pregnancy, gestation, neonatal, stillbirth and low birth weight. **Results.** Six publications were included in this review article. Each of the studies assessed different neonatal outcomes possibly affected by marijuana use during pregnancy including: birth weight <2500 grams, very low birth weight <1500 grams, NICU admission, five minute Apgar score, umbilical artery PH, mean gestational age at delivery, and stillbirths, of which all were shown to be statistically insignificant after adjusting for confounding factors. A significant effect was found regarding the possible negative impact on the immune system, and its effects on quality of life. **Conclusion.** This review offers a compilation of information for healthcare providers to take into account when discussing marijuana use during pregnancy with their patients. Many of the outcomes showed inconclusive results; further studies are critically needed to fully understand the effects of marijuana in neonates. **Grants.** No grants to disclose.

Atrium – Poster 23 12:15-1:15 p.m.

STATE LAWS REGULATING PRESCRIPTION DRUGS ABUSE AND DIVERSION: A REVIEW

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Ioana Popovici, Ph.D., Assistant Professor, College of Pharmacy

Objective. To identify studies that examine the effects of these state laws on outcomes including prescribing patterns, provider and patient behaviors, drug overdose deaths, substance abuse treatment admissions, drug diversion, and drug poison exposures. **Background.** The Center for Disease Control and Prevention (CDC) has recently classified prescription drug abuse, especially prescription opioid abuse, as an epidemic. Over the years, states have enacted different laws in an effort to regulate and mitigate prescription drug abuse and diversion. The CDC has identified eight law categories that could potentially reduce this epidemic: Prescription Drug Monitoring Programs, Physical Examination laws, tamper-resistant prescription forms laws, pain clinics regulations, prescription drug time and dosage limit laws, doctor shopping laws, patient identification laws, and immunity laws. **Methods.** We searched Embase, LexisNexis, and Google Scholar for the period between September/2014 and July/ 2015 for research articles that examine the effectiveness of state laws regulating prescription drug abuse and diversion. **Results.** Several articles evaluate the effectiveness of PDMPs. The data suggests that PDMPs are an effective state strategy in regulating prescription drugs abuse and its negative consequences. Only four studies examine the other state laws. Pain clinic and tamper-proof prescription laws are effective in decreasing opioids prescription, and overdose death rates. Also, pain clinic laws seem to reduce drug diversion. **Conclusion.** Data on the effectiveness of these state policies is scarce and inconsistent. Comprehensive evaluations of the impact of these laws are needed. **Grants.** None

Atrium – Poster 24 12:15-1:15 p.m.

ASSESSMENT OF PHYSICIAN ASSISTANT STUDENTS' KNOWLEDGE, EXPERIENCES, AND ATTITUDES OF MUSLIM AMERICANS

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Objective. To assess the cultural competence of NSU PA students towards Muslim Americans in knowledge, experiences, and attitude areas. **Background.** According to the Institute of Medicine's 2003 report, Unequal Treatment, sociocultural differences between patient and provider that are not appreciated, explored, understood, or communicated in the medical encounter results in poor adherence, poorer health outcomes, and racial/ethnic disparities in medical care. The American Academy of Physician Assistants (AAPA) lists, "sensitivity to a diverse patient population", as a competency of the PA profession. Perceptions of Muslims as terrorists are not uncommon. Public opinion polls have confirmed that negative perceptions of Muslims are on the rise. As an integral part of the health care team, PA's must be trained as cultural competent clinicians. **Methods.** One hundred and nine PA students (n=109) were given an anonymous, self-administered survey Outcomes measured were: knowledge using multiple choice questions, experiences using a list of activities, and attitude statements using Likert scales. Descriptive statistics were obtained on all variables. Statistical significance was $P < .05$. **Results.** Over 90% of physician assistant (PA) students correctly identified the religious book, head covering, and fasting holiday of Muslims. Many PA students have been in group projects, studied with, and shared a meal with a Muslim American There were limited experiences with travelling to a Muslim dominant country, visiting a mosque, watching a documentary on the culture, or lived with a Muslim. Many agreed that PA programs should teach more about beliefs from other religions. Most agreed that it is important for PA students to learn more about the Muslim religion. Most generally felt comfortable interacting with Muslim American **Conclusion.** Healthcare provider's diagnostic and treatment decisions are influenced by their perceptions and attitudes of a patients' race, religious, and sociocultural factors. The findings from this study suggest that PA education can be enhanced by providing more interactive intercultural opportunities to help promote consistency and equality in health care. **Grants.** Non-funded

Atrium – Poster 25 12:15-1:15 p.m.

FACTORS RELATED TO MEDICATION ADHERENCE IN A MULTIETHNIC SAMPLE OF OLDER PERSONS WITH MULTIMORBID CHRONIC CONDITIONS

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Marie Florent-Carre, D.O., M.P.H., Assistant Professor, College of Osteopathic Medicine
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Hassan Iqbal, OMS-III, College of Osteopathic Medicine
Zaid Rana, OMS-III, College of Osteopathic Medicine

Objective. We investigated psychological, behavioral and sociocultural factors associated with medication adherence in persons aged 50 and older with multimorbid chronic conditions (MCC) to guide the development of a theory-based intervention to improve medication adherence among this group for whom tailored interventions have not yet been developed. **Background.** Persons with MCC (e.g., diabetes, chronic heart disease) face particular challenges to reaching optimal medication adherence due to a variety of factors that influence motivation to adhere to medication, in addition complex medication regimens. **Methods.** We conducted face-to-face qualitative and quantitative interviews with 21 patients aged 51–77 years (M=60; SD=7.35) from a community clinic who were diagnosed with MCC. The interviews were guided by the Information-Motivation-Behavior (IMB) Skills model to investigate relevant factors associated with adherence. Descriptive and thematic analyses were conducted with the qualitative data. Quantitative data were analyzed using SPSS; descriptive data (measures of central tendency and standard deviation) are also reported. **Results.** The number of CC ranged from 2 to 8 (M=3; SD=1.53); the majority (62%) reported having 3 or more. The majority reported being Black or multiracial. This study identified several themes within sociocultural contexts relevant to understanding factors related to improve medication adherence in persons over 50 with MCC. Analyses revealed mood/depression, patient-doctor relationship, family support, spiritual/religious influences, and access to medications influenced adherence. **Conclusion.** The findings elucidate motivational factors and the influence of culture in adherence decision-making. For persons aged 50 and older with MCC, intervening to improve adherence will likely be most effective by targeting potential culturally relevant motivational barriers. **Grants.** This study was funded by a grant from Nova Southeastern University.

Atrium – Poster 26 12:15-1:15 p.m.

A COMPARISON OF THE EFFECTIVENESS OF ACUPUNCTURE IN VETERANS WITH CHRONIC LOW BACK PAIN AND RECEIVING OPIOIDS FOR PAIN MANAGEMENT COMPARED TO VETERANS WITH CHRONIC LOW BACK PAIN AND NOT RECEIVING OPIOIDS FOR PAIN MANAGEMENT: A PROSPECTIVE COHORT STUDY

Denise M. Josey, MD, MPH, MS
Ramon Cuevas, MD
Gabriel Suciu, MS, PhD, Associate Professor, College of Osteopathic Medicine

Introduction/Background. Low back pain is a common malady among veterans and there is a high prevalence of chronic pain and opioid medication management in this population. Anecdotal evidence has revealed that individuals receiving opiate analgesics for pain are likely to report other non-opiate measures of pain control ineffective so as not to have opiate therapy discontinued. **Research Question.** Will veterans who are receiving opiate therapy for low back pain have a significantly different score on the Patient Outcomes Questionnaire after 6 acupuncture sessions compared with veterans who are not receiving opiate pain management therapy for their low back pain after 6 acupuncture sessions? **Methods.** The necessary sample size to achieve a power of 80% will be 90 participants in each arm. The outcome measure will be the total score from the Patient Outcomes Questionnaire that includes a subjective pain assessment, and an assessment of functional abilities. The anticipated outcomes will be analyzed univariately. The categorical data will be presented in Chi Square tables and the p-value interpreted. Comparisons of Group A and Group B will be accomplished by using a non-parametric test (e.g., 2-sample Wilcoxin). **Results.** The results will be presented after the data is collected. **Discussion.** Information gleaned from this Performance Improvement project will enable the Veterans Affairs Hospital to incorporate more effective practices in pain management, and reduce opioid use in veterans who are at increased risk of unintentional overdose and suicide by offering acupuncture therapy to those who are most likely to benefit from it.

Atrium – Poster 27 12:15-1:15 p.m.

COMPLEXATION EFFICIENCY OF CROSCARMELLOSE SODIUM (CCS) AS AN EFFECTIVE ABUSE-DETERRENT AGENT

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Arghavan Kariman, P4-Pharm.D., College of Pharmacy
David Mastropietro, Ph.D., Assistant Professor, College of Pharmacy
Hossein Omidian, Ph. D., Professor, College of Pharmacy

Objective. To determine solution state drug complexation and physical entrapment characteristics of CCS using five model drugs. **Background.** CCS is a common inactive ingredient used in tablet formulations. However, CCS is known to bind with certain drugs in solution through ionic interactions to form insoluble drug-CCS complexes. These complexes prevent the drug from being easily released and absorbed. Furthermore, CCS is capable of rapidly swelling and entrapping aqueous solutions. These properties make CCS an ideal candidate in the development of medications which can resist abuse via intravenous injection. **Methods.** Aqueous drug solutions containing low (200 µg/mL) and high (1000 µg/mL) concentrations of either acetaminophen, diclofenac sodium, dextromethorphan hydrobromide, lidocaine hydrochloride, and verapamil hydrochloride were prepared. To simulate extraction conditions, increasing amounts of CCS (25, 50,100 mg) were then added to 10 mL of each drug solution. After 1 min, the solutions were centrifuged, the supernatant filtered, and drug concentration measured using UV-Vis spectroscopy at corresponding of 248, 275, 276, 263, and 278 nm, respectively. The amount of drug bound to CCS was determined indirectly from the amount of free drug remaining in the supernatant. **Results.** The percent of drug bound to CCS from solution greatly varied from 2.6% to 93% depending on the nature of the drug and starting concentration of drug and CCS. Overall, acetaminophen showed the least tendency to binding, whereas verapamil hydrochloride showed highest binding percentage over all concentrations. **Conclusion.** Owing to its anionic charge, CCS preferentially forms complexes with drugs that are cationic, resulting in highly selective drug binding property for cationic weak bases **Grants.** #PFRDG 335867

Atrium – Poster 28 12:15-1:15 p.m.

PREVENTION OF ACTIVE DRUG EXTRACTION USING ABSORBENT CLAY COMPOSITE

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Hossein Omidian, Ph.D., Professor, College of Pharmacy

Objective. To determine the affinity (entrapment efficiency) of bentonite to capture and entrap pharmaceutical actives in aqueous drug solutions. **Background.** Bentonite and other montmorillonites have large ion exchange capacities, and historically been used for oral detoxification. The main advantage of bentonite is its ability to entrap cationic drugs and swell to several times its own weight in water. These properties are useful in formulating abuse deterrent medications resistant to methods used for intravenous injection. **Methods.** Acetaminophen, diclofenac sodium, dextromethorphan hydrobromide, lidocaine hydrochloride, and verapamil hydrochloride were selected to represent different classes of amphoteric, anionic, and cationic structures. Drug solutions at low (200 µg/mL) and high (1000 µg/mL) concentrations were prepared for liquid state drug complexation and entrapment. In glass vials, increasing amounts of bentonite (25, 50 and 100 mg) were mixed with 10 mL of drug solution and vortexed for 5 seconds. After standing for 1 minute, the mixtures were centrifuged (1500 rpm) for 5 minutes to separate the swollen bentonite from free liquid. The supernatant was then filtered and measured for drug concentration using UV-Vis spectroscopy at corresponding drug wavelengths of 248, 275, 276, 263, and 278 nm, respectively. **Results.** Bentonite used in this study did not selectively bind to acetaminophen (non-ionic) or diclofenac sodium (anionic), whereas it selectively bound to all three cationic drugs with more than 80% binding capacity. **Conclusion.** By forming stable complexes with cationic drugs, bentonite clays can effectively be used in formulations of abuse-deterrent medications to prevent abuse by injection and possibly nasal insufflation. **Grants.** #PFRDG 335357

Atrium – Poster 29 12:15-1:15 p.m.

PREVENTING DRUG EXTRACTION VIA SURFACE ADSORPTION

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David Mastropietro, Ph.D., Assistant Professor, College of Pharmacy
Hamid Omidian, Ph.D., Professor, College of Pharmacy

Objective. To investigate the correlation between drug properties and percentage of drug adsorbed onto the surface of activated carbon (medicinal charcoal). **Background.** Developing medications that prevent the easy extraction of drugs from dosage form is one strategy being used to decrease prescription drug abuse. Proposed methods being studied include viscosity modification, prodrug formation, drug antagonism, and ionic drug complexation. In this study, we introduce a new mechanism of abuse deterrence via surface adsorption onto activated carbon particles. **Methods.** Aqueous drug solutions containing low (200 µg/mL) and high (1000 µg/mL) concentrations of acetaminophen, diclofenac sodium, dextromethorphan hydrobromide, lidocaine hydrochloride, and verapamil hydrochloride were prepared. To 10 mL of each drug solution, increasing amounts of activated carbon (25, 50,100 mg) were then added. After 1 min, the solutions were centrifuged, the supernatant filtered, and drug concentration measured using UV-Vis spectroscopy at their corresponding wavelengths of 248, 275, 276, 263, and 278, respectively. The amount of drug bound to activated carbon was determined indirectly from the amount of free drug remaining in the supernatant. **Results.** Irrespective of the type of the drug used for surface adsorption, activated carbon showed above 80% entrapment when high drug concentrations were present. When graphed, adsorption was found to be linear with respect to the amount of activated carbon. However, activated charcoal showed as low as 36.6% entrapment for lidocaine hydrochloride and maximum of 100% entrapment for dextromethorphan hydrobromide in low concentration solutions. **Conclusion.** Activated carbon displayed rapid and highly effective surface absorption, providing effective drug entrapment over a broader range of weak acid, weak base and nonionic drugs. **Grants.** #PFRDG 335357, #PFRDG 335867

Atrium – Poster 30 12:15-1:15 p.m.

THE EFFICACY OF PLATELET RICH PLASMA AS AN INTERVENTION FOR PATELLAR TENDINOPATHY: A CASE SERIES

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Blaze Emerson, OMS-III, College of Osteopathic Medicine
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Christy Liggins, DPT Student, College of Health Care Sciences - Physical Therapy

Objective. Determine the efficacy of platelet rich plasma (PRP) injections on pain, function, and tendon morphology among subjects with patellar tendinopathy. **Background.** Patellar tendinopathy is common among athletic individuals with a point prevalence ranging from 3 to 45%. The condition has a predilection for chronicity, with persistent symptoms reported up to 15-years following diagnosis. Interventions range from conservative to surgical with evidence suggesting more than 50% have recalcitrant symptoms despite care. PRP is a viable surgical alternative that may reverse the pathological cascade without the cost, risks, and down-time of surgery. **Methods.** A one-group pretest to posttest design using 5 athletic individuals (age 20-26) diagnosed with chronic patellar tendinopathy (symptom range 3-months to 4 years) based on musculoskeletal ultrasound (MSK/US) and clinical diagnosis. Subjects received 3 PRP injections over of 6-weeks. Pain, tenderness, and the patient specific functional scale (PSFS)) were assessed at baseline, 2-weeks, 1- and 3-months. Global rating of change (GROC) and tendon morphology using MSK/US was assessed at 2 weeks, 1- and 3 months following initial intervention. **Results.** At the 3-month follow-up all subjects demonstrated improvement on MSK/US with decreased thickening hypoechogenicity of tendon fibers. Average pain changed from a mean 4/10 to 1/10 with 4 subjects having complete resolution of tenderness. Functional-sport impairments improved from a mean 60% perceived limitation to 10% on the PSFS. The GROC identified self-perceived improvement among all participants. **Conclusion.** A 3-injection PRP intervention improved pain, tenderness, and function to a level that satisfied minimum clinically important differences with MSK/US images supporting overall healing. **Grants.** The authors would like to acknowledge the Nova Southeastern University President's Faculty Research and Development Grant as well as the Health Professions Division, Faculty Research Grant for providing funding.

Atrium – Poster 31 12:15-1:15 p.m.

A REVIEW ON THE CLINICAL FEATURES AND TREATMENT OF METHAMPHETAMINE INDUCED PSYCHOSIS

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Gabrielle Vaz, P3-Pharm.D., College of Pharmacy
Erin Scarpinato, P3-Pharm.D., College of Pharmacy

Objective. This is a review of the current treatments used to alleviate the psychotic symptoms associated with long-term abuse of methamphetamine. Clinical features, risk factors, and differential diagnostics were also reviewed from a meta-analysis. **Background.** According to the National Household Survey on Drug Abuse in 2012, over 1.2 million Americans reported methamphetamine use in the past year, and about 440,000 reported use in the past month. Routine methamphetamine use results in significant medical complications including psychiatric and neurologic deficits. Roughly 40% of methamphetamine users will display psychotic symptoms. Some may develop clinically diagnosable psychiatric conditions associated with methamphetamine use such as schizophrenia. Some patients may experience symptoms that do not correspond to a single distinguishable psychiatric disorder, which results in poor treatment outcomes. Common symptoms include irritability, anxiety, paranoia, mood disturbances, and more serious ones include auditory and tactile hallucinations as well as violent behavior. **Methods.** This review was conducted on the recent article "Methamphetamine Psychosis: Epidemiology and Management" which performed a meta-analysis on the literature published on PubMed. **Results.** There had to be an establishment of whether there was a primary psychiatric disorder present (pre-existing symptoms, symptoms beyond those expected with that amount of drug use, symptoms persisting after methamphetamine detoxification and withdrawal) or if there was a substance induced psychiatric disorder. Psychiatric and genetic risk factors, duration and recurrence were considered. Differential diagnosis was also established. Treatment options used included risperidone, olanzapine, and haloperidol. Drugs for withdrawal of methamphetamine include bupropion, naltrexone, mirtazapine, and methylphenidate. Psychosocial treatment is also documented. **Conclusion.** This review establishes the difficulty of differential diagnosis of psychiatric conditions induced by methamphetamine use as well as effective treatment options because of confounding factors or co-existing

conditions. While there are many etiologies, the risk factors considered remain the same- psychosocial, genetic, and drug use variables. These may extend the presence of MA induced psychosis. **Grants.** None

Atrium – Poster 32 12:15-1:15 p.m.

PHYSICAL ACTIVITY LEVELS OF OSTEOPATHIC MEDICAL STUDENTS AND PERFORMANCE ON THE COMPREHENSIVE OSTEOPATHIC MEDICAL LICENSING EXAMINATION

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Fatima Ramirez, OMS-III, College of Osteopathic Medicine
Peter Sprague, PT, DPT, OCS, Associate Professor, College of Health Care Sciences - Physical Therapy
Elliot Sklar, PhD, Research Associate/Instructor, College of Osteopathic Medicine
Theodore Lucas Hollar, PhD, Assistant Professor, College of Osteopathic Medicine – Public Health

Objective. 1) determine if osteopathic medical students are meeting The American College of Sports Medicine's (ACSM) recommendations of physical activity levels 2) identify the barriers that the osteopathic medical student may have to meeting these recommendations 3) test for a correlation between physical activity and Comprehensive Osteopathic Medical Licensing Examination of The United States (COMLEX) Level 1 scores. **Background.** Despite the known health benefits associated with physical activity, the positive impacts a physically active physician can have on patients, and the existence of recommended guidelines for physical activity, a variety of barriers exist that can pose a significant hindrance to meeting recommended physical activity levels in medical students. Although extensively studied in other populations, factors influencing physical activity in osteopathic medical students have not been investigated. This study will determine if osteopathic medical students are meeting minimum requirements to physical activity, the barriers that they may have to meeting these requirements, and test for a relationship, if any, between physical activity and medical school performance. **Methods.** We have obtained IRB approval and are currently collecting data until November 30, 2015. A survey tool is being used to gather data to support or refute the hypotheses of this study. We are specifically interested in identifying the relationship between the physical activity levels, barriers to physical activity, and COMLEX Level 1 scores of osteopathic medical students currently in their third and fourth year (the class of 2017 and 2016 respectively). The questionnaire is being sent out through Student Osteopathic Medical Association (SOMA), Student Government Association (SGA), and other associated online social networks. OMS-IIIs and OMS-IVs across the country are filling out these online questionnaires, which take less than 5 minutes to complete. As of now, we have 718 submitted responses and will close the survey on November 30, 2015. **Results.** Results and conclusions from this research will be presented. Conclusion. Results and conclusions from this research will be presented. **Grants.** Burnell Award application submitted on September 21, 2015. Outcome pending.

Atrium – Poster 33 12:15-1:15 p.m.

TRAINING "BINOCULAR CORTICAL NEURONS" IN ADULTS WITH AMBLYOPIA

Cristina Llerena Law, OD, Associate Professor, College of Optometry
Benjamin T. Backus, PhD, Associate Professor, SUNY State College of Optometry

Objective. The purpose of this study is to assess the validity of a perceptual learning paradigm that uses stimulation of visual cortex at corresponding retinal locations for treatment of adult amblyopia. **Background.** Binocular stimuli with mixed interocular contrast can improve vision in amblyopes. In a new training paradigm we exploited the fact that the receptive field (RF) structure of the typical binocular V1 neuron shows similar tuning for stimuli presented to left eye or right eye, by presenting Gabor patches to corresponding retinal locations. **Methods.** Stimuli were binocular hexagonal arrays of Gabor patches, of varied orientation, with sizes spanning 3 octaves, also scaled for cortical magnification. The pattern was updated at 30 Hz and subtended 30 deg wide x 40 deg tall on the plasma display, viewed at 145 cm through a four-mirror stereoscope. Monocular and binocular test trials of variable duration (controlled by a staircase procedure) alternated with 1-5 sec training trials. Test trial stimuli contained one octant within which all orientations were the same, and subjects indicated this octant as quickly as possible using a numeric keypad. Subjects were anisometropic amblyopes, divided into a Mixed-contrast group (non-unity interocular contrast ratio, ICR) and a Fixed-contrast group (ICR=1). ICR in the Mixed group was set using procedures adapted from Mansouri et al (2008) and Ding et al (2011), respectively. Each subject ran ten sessions of 40 minutes. **Results.** Duration thresholds decreased by 2.3 sec and 1.8 sec in the Mixed and Fixed groups, respectively, with a

significant difference ($p < 0.05$). Stereoacuity thresholds decreased by 0.68 log10 arcmin for Mixed, which was more than for Fixed (0.35; different at $p < 0.05$). LogMAR acuity improved by 0.16 for Mixed and 0.9 for Mixed, significantly different ($p < 0.05$). **Conclusion.** Dichoptic gabor pattern stimulation yielded rapid improvement in stereoacuity and visual acuity. This form of perceptual learning has potential for significant functional improvement in amblyopes. **Grants.** K23 EY022669 (NEI/NIH) to Dr. Law

Atrium – Poster 34 12:15-1:15 p.m.

THE SAFETY AND EFFICACY OF MEDICAL MARIJUANA IN THE US

Jennifer Le, P3-Pharm.D., College of Pharmacy
Jennifer Boisselle, P3-Pharm.D., College of Pharmacy
Maria F. Pinto, P3-Pharm.D., College of Pharmacy
Melanie Schreiber, P3-Pharm.D., College of Pharmacy

Objective. This study was conducted to review the various clinical uses for cannabis in regards to its efficacy and side effect profile. **Background.** Focuses on the mechanism of action of marijuana and the chemical compounds, including THC (delta-9-tetrahydrocannibol) and CBD (cannabidiol). We will examine the pharmacological and the toxicological effects on the brain, both short-term and long-term. Other topics that will be discussed include the addiction component, the theories around using marijuana as a treatment alternative, and the current state laws **Methods.** A comprehensive literature review was performed on several articles regarding the use and effectiveness of medical marijuana. **Results.** Most studies that have been made show some improvement in MS, depression, anxiety, appetite stimulation in AIDs/HIV, insomnia, Tourette's and glaucoma. Most were not statistically significant while others showed no evidence of improvement. **Conclusion.** Many of the claims for the effectiveness of medical marijuana seem to be anecdotal as opposed to being based on substantial clinical evidence. Randomized, controlled clinical trials are difficult to undertake due to legality issues; current studies focus more on adverse effects of cannabis and its potential for substance abuse rather than its therapeutic efficacy. In addition, the varying formulations and administration routes in these studies (namely, smoking herbal products) produce an array of results and adverse effects that may or may not be due to other psychoactive excipients. This, however, is always the case using natural products. Historically, if an herbal product is thought to have therapeutic properties, the standard protocol is to isolate the active components to study for possible clinical uses. More studies are needed with this protocol in mind to determine more substantial clinical evidence. **Grants.** None

Atrium – Poster 35 12:15-1:15 p.m.

HEROIN ADDICTION AND HIV ASSOCIATED NEURODEGENERATION INCLUDING ALZHEIMER'S DISEASE

David Leon, P3-Pharm.D., College of Pharmacy
My-Oanh Nguyen, P3-Pharm.D., College of Pharmacy
Jessica Phyu, P3-Pharm.D., College of Pharmacy
Monica Ortega, P3-Pharm.D., College of Pharmacy
Malav Trivedi, Ph.D, Assistant Professor, College of Pharmacy

Objective. To summarize findings which conclude that heroin abuse may lead to the simultaneous presence of a chronic disease state. The increased risk of contracting HIV infection, central nervous system illnesses such as Alzheimer's disease's onset and progression as a result of chronic heroin use will be examined while discussing TDP-43, alpha- synucleine, amyloid-beta 1-42, and p62-positive deposits. **Background.** Heroin abuse has been a compelling issue since the 1920s with over 200,000 users, with an increase in numbers every year. According to the CDC over 8,200 people died from heroin-related deaths in 2013, this is nearly four times as many heroin-related deaths that occurred in 2002. **Methods.** Sixteen published articles reporting on studies were reviewed from PubMed's database. The following search terms used "Heroin addiction", "Heroin Comorbidities", "Heroin Alzheimer". The articles reviewed the frequency of cases of heroin addiction associated with findings of progression of Alzheimer's disease, and HIV. **Results.** The articles used in this study reported a positive relationship of progression of Alzheimer's or HIV disease, or both diseases in chronic heroin users. The following protein deposits were reported TDP-43, alpha- synucleine, and p62-positive deposits. These studies did not have sufficient

information on amyloid-beta 1-42 proteins. **Conclusion.** Further research and studies are highly recommended, but there is a clear trend of tau phosphorylation correlated to the development of Alzheimer's disease, and HIV in chronic heroin users. **Grants.** N/A

Atrium – Poster 36 12:15-1:15 p.m.

HYPERTENSION RISK IN PEDIATRIC PATIENTS RECEIVING ADHD THERAPY

Shirin Madzhidova, PharmD, Instructor, College of Pharmacy
Jane Clare Miller, P2-Pharm.D., College of Pharmacy
Genevieve Hale, PharmD, BCPS, Assistant Professor, College of Pharmacy

Objective. To assess and evaluate the incidence of hypertension risk associated with stimulant versus non-stimulant ADHD therapy among US children and adolescents ages 2-19 years. **Background.** Attention-deficit/hyperactivity disorder (ADHD) is a common neurodevelopmental disorders of children and adolescents. The majority of these patients are successfully treated with stimulant medications; however, these agents are known to cause cardiovascular risks including increased risk of hypertension. Prevalence of developing hypertension in pediatrics being treated with stimulants compared to non-stimulants or serotonin-norepinephrine reuptake inhibitors (SNRI) is not well described. **Methods.** In our cross-sectional study, the National Health and Nutrition Examination Survey (NHANES) database was utilized to attain population data. The NHANES survey examines a representative sample of 5000 people each year across the country. Our population included two sample cohorts from the years 2009-2010 and 2011-2012. Our inclusion criterion includes individuals aged 2-19 years old who are taking at least one ADHD treatment medication at the time of the survey. Our exclusion criterion includes individuals with a past medical history of hypertension. **Results.** Our initial sample size included 183 subjects. Upon applying the exclusion criteria and eliminating missing or incomplete data, 147 subjects remained. Our preliminary results have shown our population to encompass 72.1% males, 42.2% Caucasian, and mean age of 11.8 years. 83.0% of patients were on 1 ADHD agent, 15.0% were on 2 ADHD agents, 2.0% were on 3 ADHD agents, and 0.6% were on 4 ADHD agents. Of these 76.5% of patients were treated with stimulants, 34.9% with non-stimulants, and 0.7% with serotonin-norepinephrine reuptake inhibitors (SNRI). Chi-squared analysis has shown that there is no significant difference in hypertension risk at any stage in relation to the number of agents used to treat ADHD ($p=0.252$). **Conclusion.** Pending the completion of results **Grants.** NA

Atrium – Poster 37 12:15-1:15 p.m.

ATTENUATION OF THE RELEASE OF MATRIX DEGRADING ENZYMES FROM IN VITRO CULTURE OF HBMEC BY LMWH-TISSUE PLASMINOGEN ACTIVATOR CONJUGATE

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Muhammad Sultan, Ph.D.-Drug Development (Pharmaceutics), College of Pharmacy
Young Kwon, Ph.D., Assistant Professor, College of Pharmacy

Objective. The purpose of this study is to examine whether or not the conjugation of Low-Molecular Weight Heparin (LMWH) to t-PA reduces the production of matrix degrading enzyme (MDE) (matrix metalloproteases; presumably MMP-9) from Human Brain Microvascular Endothelial Cells (HBMEC) in vitro. **Background.** Tissue plasminogen Activator (t-PA) is only FDA-approved drug for ischemic stroke treatment. However, t-PA can act as a cytokine that stimulates the production of MDE that may compromise the integrity of the blood-brain barrier (BBB), leading to intracranial hemorrhage (ICH). Therefore, a sterically hindered t-PA construct may be desired to control t-PA activity and diminish the production of MDEs at the brain capillary endothelial cells. **Methods.** A camouflaged-tPA construct that enables triggered plasminogen activation was used, wherein LMWH-tPA is a constituent. LMWH-tPA was synthesized, and then isolated by ion-exchange chromatography and centrifugal filtration. The construct activity was evaluated by an indirect chromogenic assay. An in vitro culture of HBMEC was used as a model constituent of human BBB to evaluate the effect of treatments on the production of MDEs. Gelatin zymography assay was used to evaluate the production of MMPs. Student t-test and one-way ANOVA were used. **Results.** The modified-tPA retained ~95% of enzyme activity compared to the native t-PA. The LMWH-tPA conjugate significantly reduced the production of MDEs compared to the native t-PA, from an in vitro culture of HBMEC. Student t-tests and ANOVA test showed statistically significant different when comparing the fold increasing in MDE levels among treatments ($p<0.05$). **Conclusion.** The generation of MDEs by the HBMEC was attenuated in the presence of LMWH-tPA

conjugate compared to the native t-PA. **Grants.** This study was supported by President's Faculty Research & Department Grant (PFRDG), NSU, and Saudi Arabian Cultural Mission (SACM).

Atrium – Poster 38 12:15-1:15 p.m.

THE ADAPTABILITY AND UTILITY OF THE BILOBED TRANSPOSITION FLAP

Christopher Mancuso, OMS-II, College of Osteopathic Medicine
Jason Mammino, OMS-II, College of Osteopathic Medicine
Logan Holman, OMS-II, College of Osteopathic Medicine
Joseph Francis, MD, Adjunct Professor, University of Florida Department of Dermatology

Objective. The purpose of our review is to catalogue the successes of the bilobed flap since it was first described by Esser in 1918, as well as the modifications created by other physicians. **Background.** The bilobed transposition flap began as a technique to repair the nasal tip. It is an extremely versatile procedure that has expanded its scope over the entire body. **Methods.** A PubMed Search from 1900 to 2015 for the words "bilobed flap" yielded 132 results—31 of the nose, 7 of the ear, 11 of the forearm, 19 of the hand, 9 of the cheek, 113 of the thorax, 10 of the genitals, 4 of the foot, 13 of the eye, 12 of the mouth, and 3 of the leg. Organizing the new adaptations around their various locations, we demonstrated the wide range of use of the surgical technique. In the 34 cases described, there were new developments in the design and/or use of the bilobed flap. Varying the angle of rotation from the original 180 degrees to 45 degrees, changing the length, and changing the width of the flaps allowed for variability of locations to meet the demand of the anatomy. **Results.** Each of the cases demonstrated the benefits of bilobed flap technique in allowing ample blood supply, proper healing, and preservation of anatomy. **Conclusion.** With the ability for the bilobed flap to be modified, the application and location of use are endless. The functional and aesthetic results achieved further validate the use of the bilobed flap in locations beyond its original description as a nasal flap. **Grants.** N/A

Atrium – Poster 39 12:15-1:15 p.m.

BAG-1 DIFFERENTIALLY REGULATES INTERMEDIATE FILAMENT-BASED HSP70 CHAPERONING OF APKC IN INTESTINAL CELLS UNDER PRO-INFLAMMATORY SIGNALING

Anastasia Mashukova, Ph.D., Assistant Professor, College of Medical Sciences
Pedro Salas, M.D., Ph.D., Professor, University of Miami Miller School of Medicine

Objective. Our goal was to identify the molecule(s) that block activity of Hsp70 chaperone in intestinal epithelium during inflammation. **Background.** Atypical protein kinase C (aPKC) plays an essential role in the establishment of epithelial polarity. aPKC acquires inactive conformation after normal activity and can be rescued from ubiquitinylation and degradation by Hsp-70- and intermediate filament-dependent mechanism. We have shown previously that aPKC was strongly downregulated by TNF-alpha –mediated signaling in intestinal epithelial cells and also in vivo during intestinal inflammation. Furthermore we have demonstrated that decrease of aPKC levels under pro-inflammatory conditions was mediated through inhibition of Hsp70 chaperoning activity, resulting in failure of the aPKC rescue machinery. **Methods.** We conducted a transcriptome PCR screen detecting chaperones and co-chaperones and compared mRNAs from control and TNF-alpha treated Caco-2 cells (human colon carcinoma). Subsequent validation experiments allowed us to focus on BAG-1, a multi-functional protein that assists Hsp70 in nucleotide exchange but also blocks its activity at higher concentrations. **Results.** We found that BAG-1 isoform BAG-1M was upregulated up to 3 fold in Caco-2 cells following stimulation with TNF-alpha. In addition, BAG-1M levels increased up to 6 fold in mouse enterocytes after treatment with dextran sodium sulfate (DSS) to induce colitis. Overexpression of BAG-1M in Caco-2 cells decreased levels of phosphorylated aPKCs, similar to TNF-alpha stimulation. In contrast, knockdown of BAG-1 abolished the TNF-alpha- induced decrease of phosphorylated aPKC. **Conclusion.** We conclude that BAG-1M mediates inhibition of Hsp70 chaperoning activity during epithelial inflammatory response. **Grants.** The Nova Southeastern University Health Professions Research Grant to Dr. Mashukova.

Atrium – Poster 40 12:15-1:15 p.m.

BINDING ENDURANCE AND DETERRENCE CAPACITY OF CROSCARMELLOSE SODIUM (CCS) IN VARIOUS SOLVENTS

David Mastropietro, Ph.D., Assistant Professor, College of Pharmacy
Hamid Omidian, Ph.D., Professor, College of Pharmacy

Objective. Examine the ability of CCS to resist drug extraction from assorted solvents readily available and commonly used by recreational drug abusers. **Background.** Tampering with a medication from its original form for the purpose of intravenous abuse can heighten its effects compared to the oral route. To help deter this and other types of abuse, formulations resistant to tampering methods are greatly needed. CSS is a common tableting ingredient having ionic functional groups capable of interacting with cationic drugs. The ability of CCS to bind an abusable medication and reduce its aqueous extraction was therefore investigated. Tramadol HCl was chosen as the model drug. **Methods.** In glass vials, 200 mg of CCS was added to 10 mL of 2.5 mg/mL tramadol HCl aqueous solutions prepared from 0.1 N HCl, 0.9% NaCl, 40% ethanol (EtOH), and hot water (near boiling). All samples were then vortexed, centrifuged, and the supernatant analyzed for drug concentration by UV-Visible Spectroscopy at 271 nm. **Results.** Almost 70% of the drug dose was prevented from being extracted in water at room temperature and near boiling. CCS-drug binding also showed good resilience in 40% EtOH, but was poor in saline and at low pH. Furthermore, CCS particles rapidly swelled and viscosified the extraction solvents making filtration and syringeability extremely difficult during testing. **Conclusion.** Most abused pain medications are formulated as cationic drugs easily extracted for intravenous abuse. CCS prevented tramadol from extraction in water and alcohol, however its binding to tramadol was desirably low at low pH, mimicking the gastric environment. **Grants.** N/A

Atrium – Poster 41 12:15-1:15 p.m.

COMPLEXING AGENTS TO PREVENT INTENTIONAL DRUG ABUSE BY RAPID EXTRACTION

David Mastropietro, Ph.D., Assistant Professor, College of Pharmacy
Hamid Omidian, Ph.D., Professor, College of Pharmacy

Objective. To evaluate the effectiveness of bentonite and crosslinked sodium carboxymethylcellulose (XCMC) to entrap an abusable drug during solution extraction attempts from sample tablets. **Background.** Organic and inorganic complexing agents were hypothesized to be used in tablet formulations to discourage and prevent drug extraction attempts by abusers attempting to inject medications intravenously. **Methods.** Tablet compositions containing 25 mg of tramadol HCl, 100 mg of Prosolv SMCC 90, and 200 mg of bentonite clay, XCMC, or crosslinked poly(vinyl pyrrolidone)(crospovidone) were prepared by direct compression on a single station Carver press at a compression force of approximately 1000 pounds using a 7/16' punch and die. Crospovidone was used as a control while a tablet containing only Prosolv SMCC 90 was used as a negative control. Prepared tablets were crushed and immediately mixed with 10 mL of water. After 2 minutes, the mixture was filtered and the extract solution measured for drug concentration by UV- Visible spectroscopy at 271 nm for the total amount of recovered drug. **Results.** High drug recovery was obtained from control tablets, while the complexing agents largely prevented fast extraction. XCMC and bentonite respectively captured approximately 73% and 92% of tramadol from being recovered. Additional factors such as entrapment of drug inside swollen particles of the complexing agents could also account for low drug recovery. **Conclusion.** Bentonite and XCMC were capable of binding tramadol HCl from crushed tablets within 2 minutes of aqueous extraction, and at a level statistically different from control tablets. **Grants.** N/A

Atrium – Poster 42 12:15-1:15 p.m.

GEL-FORMING EXCIPIENTS TO SLOW ALCOHOL ABSORPTION INTO SYSTEMIC CIRCULATION

David Mastropietro, Ph.D., Assistant Professor, College of Pharmacy
Hamid Omidian, Ph.D., Professor, College of Pharmacy

Objective. To preliminary study the alcohol absorption behavior of cross-linked polyacrylamide (CLP) in alcoholic and alcoholic-acidic media representing the gastric environment after ingestion. Background. Polymers which can swell in alcohol and quickly gel alcoholic drinks after ingestion are hypothesized to slow ethanol absorption into the bloodstream. With its

favorable structure for alcohol interactions, and rapid and high swelling in aqueous media, CLP was screened to be well suited for this purpose. Methods. CLP was commercially obtained (Hydrosource® CLP) and screened to a particle size retained on a 250 µm sieve. For swelling capacity measurement, 30 mg of CLP was allowed to soak in 10 mL of swelling media for 2 minutes. Using tea-bag and gravimetric methods, the volume and weight swelling ratios were then calculated in hydroalcoholic (5% to 80% v/v), acidic (pH 1 to pH 5), and acidic-hydroalcoholic solutions prepared by diluting acidic solutions with ethyl alcohol to 5% v/v. Results. The CLP superabsorbent polymer exhibited very high absorption capacity in hydroalcoholic solutions containing up to 40% v/v ethyl alcohol. Swelling was reduced at low pH, but quickly increased past 150 g/g in solutions at pH 3 and above, representing the environments of the stomach and upper intestines. Conclusion. Polymers such as CLP, when properly formulated in small doses, appear promising as an oral method to slow the rapid absorption of ethanol from the gastrointestinal tract. Grants. NSU President's grant # 335867 and the HPD Research Grant #335829

Atrium – Poster 43 12:15-1:15 p.m.

SUPERABSORBENT MATERIALS TO HINDER DRUG EXTRACTION AND SYRINGEABILITY

David Mastropietro, Ph.D., Assistant Professor, College of Pharmacy
Hamid Omidian, Ph.D., Professor, College of Pharmacy

Objective. This research was aimed at evaluating the kinetics and thermodynamics of water absorption of high swelling polymers when used in tablet formulations containing an abusable medication. **Background.** Superabsorbent polymers have large swelling capacities and rapidly swell in aqueous media. This property can be used to help deter different forms of prescription abuse, particularly injection of drug extracts from crushed products. SAPs can accomplish this by rapidly absorbing and limiting recoverable volume of extraction media and preventing aspiration into a syringe. **Methods.** Superabsorbent polymers based on acrylamide, sodium acrylate, and potassium acrylate were fashioned into one side of a bilayer tablet with the other side being an inactive drug-carrier layer; 175 mg each layer. Post-compaction swelling and deterrence properties were determined after the tablets were crushed and 10 mL of water added with no stirring or mixing. The time to complete gelation and final flow properties were then monitored for each sample. After complete gelation, the ability to draw any non-absorbed water or swollen superabsorbent particles through a 26-gauge needle was assessed. **Results.** Each crushed tablet completely turned into a gel mass in 60 seconds or less. The larger the swollen particles the more capable they were in clogging the needle and making it more difficult to draw up a noticeable amount of liquid compared to control tablets. **Conclusion.** Overall, the acrylic-based superabsorbents performed best with complete gelling in less than 30 seconds, which immediately made the extracting solution non-syringeable. **Grants.** Nova Southeastern University's President's Grants #335357 & #335867

Atrium – Poster 44 12:15-1:15 p.m.

AGE-RELATED CHANGES IN MALE FOREARM SKIN-TO-FAT TISSUE DIELECTRIC CONSTANT AT 300 MHZ

Harvey Mayrovitz, PhD, Professor, College of Medical Sciences
Nishant Patel, OMS-II, College of Osteopathic Medicine
Simona Bartos, OMS-III, College of Osteopathic Medicine
Kelly Corbitt, OMS-III, College of Osteopathic Medicine
Alexandra Grammenos, OMS-III, College of Osteopathic Medicine
Shannon Mohabir, OMS-I, College of Osteopathic Medicine

Objective. Our goals were to 1) characterize TDC values at various skin depths in young and older males, 2) determine the dependence of these values on body composition parameters and 3) establish inter-arm TDC ratios for use as normal male reference values. **Background.** Prior research suggests that tissue dielectric constant (TDC) values are useful to assess localized skin water in females for early diagnosing breast cancer treatment-related lymphedema and TDC values in young adults have shown gender differences. However, no TDC data is available for older males or have ageing effects been studied despite known shifts in water state and other skin age-related changes. **Methods.** TDC measurements were made to depths of 0.5, 1.5, 2.5 and 5.0 mm bilaterally on volar forearm skin in 60 males in three groups of 20 that had mean ages ± SD of 24.0±0.9, 40.0±12.9 and 71.0±8.0 years. Total body fat and water percentages were determined via bioimpedance at 50 KHz.

Results. 1) for all age-groups TDC values decreased with increasing depth, 2) TDC values were not statistically different among age-groups except at a depth of 0.5 mm, 3) TDC values were highly negatively correlated with total body fat and 4) inter-arm ratios varied little among age-groups and depths. **Conclusion.** It is concluded that 1) age-related larger TDC values at only the shallowest depth is consistent with skin water shifting state from bound to more mobile in the oldest group and 2) inter-arm ratios at any depth provide a basis to test for unilateral edema. Grants. N/A

Atrium – Poster 45 12:15-1:15 p.m.

AGE-RELATED DIFFERENCES IN TISSUE DIELECTRIC CONSTANT VALUES OF FEMALE FOREARM SKIN MEASURED NONINVASIVELY AT 300 MHZ

Harvey Mayrovitz, PhD, Professor, College of Medical Sciences
Arash Zarrin, OMS-II, College of Osteopathic Medicine
Shalaka Akolkar, OMS-II, College of Osteopathic Medicine
Sunny Parekh, OMS-II, College of Osteopathic Medicine
Anita Singh, OMS-II, College of Osteopathic Medicine

Objective. To test the hypothesis that reported age-related shifts in skin water from less to more mobile states result in increased skin tissue dielectric constant (TDC) values with increasing age. Further, since skin-to-fat TDC values are used as a tool for edema and lymphedema assessment, a second aim was to establish reference values suitable for young and older women. **Background.** TDC values depend strongly on water content and state and therefore changes in state likely effect the measured value of TDC. It has be stated that water state changes occur in aging but the effect of such changes on TDC values is undetermined. **Methods.** TDC was measured bilaterally on volar forearm skin in young women (20-40 years) and older women that were at least 60 years of age. There were four different age groups studied having 50, 50, 100 and 50 subjects per age-group. These groups had TDC measurements to depths of 0.5, 1.5, 2.5 and 5.0 mm respectively. **Results.** For each age-group TDC values decreased with increasing depth ($p<0.001$). TDC values at 0.5 and 1.5 mm were greater for older women ($p<0.001$). At 2.5 mm, there was no age-group difference ($p=0.108$). At 5.0 mm the direction of the difference reversed with older TDC values less than the younger ($p< 0.001$). **Conclusion.** Results are consistent with age-related shifts in water state from less-to-more mobile and explain depth-dependence differences between age-groups. Data also gives age-related TDC reference values for assessing local edematous or lymphedematous states. **Grants.** None

Atrium – Poster 46 12:15-1:15 p.m.

RACE-RELATED DIFFERENCES IN TISSUE DIELECTRIC CONSTANT MEASURED NONINVASIVELY AT 300 MHZ IN MALE AND FEMALE SKIN AT MULTIPLE SITES AND DEPTH

Harvey N. Mayrovitz, PhD, Professor, College of Medical Sciences
Fernando Doval, OMS-I, College of Osteopathic Medicine
Sharien Mahtani, OMS-IV, College of Osteopathic Medicine
Louis Michaelos, OMS-IV, College of Osteopathic Medicine
Eric Pitts, OMS-IV, College of Osteopathic Medicine

Objective. Goals were to (1) test the hypothesis that race-related differences in skin water are measurable by skin TDC values, (2) test if TDC inter-side ratios are race-dependent and (3) determine if TDC depends on total body water (TBW) and fat (TBF). **Background.** Reports indicate race-related differences in skin properties that are influenced by skin water. However, the role of skin water has not been evaluated in this context nor has the role of TBW or TBF been evaluated. **Methods.** TDC was measured to 1.5 or 5.0 mm depths bilaterally on chest, forearm, and ankle in 100 young (19-39 years) adults with 10 males and 10 females per race. Races were African-American, Asian, Asian-Indian, Caucasian, and Hispanic. **Results.** TDC values decreased from chest-to-forearm-to-ankle ($p<0.001$) independent of race with most values greater for males but with inter-arm TDC ratios independent of gender, site, depth or race. For females, forearm TDC values differed among races ($p<0.01$) with Asian and Asian-Indian values tending to be least. For males, chest TDC values differed among races ($p<0.01$) mainly due to larger African-American TDC values. For the composite group, TDC was strongly ($p<0.001$) positively correlated with TBW and negatively correlated with TBF. **Conclusion.** TDC dependence on race should be considered in assessing skin hydration comparisons. Further, the demonstrated relationship between TDC and body composition should be considered as an important

covariate. However, despite these variations, the inter-arm TDC ratio remains robust as a potential indicator of unilateral tissue water changes including assessing unilateral edema and lymphedema. **Grants.** N/A

Atrium – Poster 47 12:15-1:15 p.m.

TISSUE DIELECTRIC CONSTANT (TDC) AS AN INDEX OF LOCALIZED ARM SKIN WATER: DIFFERENCES BETWEEN MEASURING PROBES AND GENDERS

Harvey Mayrovitz, PhD, Professor, College of Medical Sciences
Jennifer Wong, OMS-II, College of Osteopathic Medicine
Daniel N. Weingrad, MD, Research Associate/Instructor, Cancer Healthcare Associates
Lidice B. Lopez, P.A., Research Associate/Instructor, Cancer Healthcare Associates

Objective. Our goal was to compare measured tissue dielectric constant (TDC) values between multi-probe and compact-probe devices with respect to effective sampling depth, anatomical site and gender and to compare compact- probe TDC values measured on women with and without breast cancer (BC). **Background.** An easily measured non- invasive quantitative estimate of local skin tissue water is useful to assess local lymphedema and its change. One method uses skin TDC values at 300 MHz that depend on free and bound water. Until now such measurements used a research- type multi-probe but recently a hand-held compact-probe has become available that is more clinically convenient. Since most published data is based on multi-probe measurements it is important to characterize differences between devices that unless known might lead to ambiguous quantitative comparisons between TDC values. **Methods.** TDC was measured bilaterally on forearms and biceps of 32 male and 32 female volunteers and on 16 female patients awaiting surgery for breast cancer (BC). **Results.** 1) TDC values at 2.5 mm depth were less than at 1.5 mm; 2) Female TDC values were less than male values; 3) TDC values were not different between females with and without BC and 4) dominant/non- dominant arm TDC ratios were not different for any probe among genders or arm anatomical site. **Conclusion.** These findings indicate that probe-type differences in absolute TDC values are present and should be taken into account when TDC values are compared. But, comparisons based on inter-arm TDC ratios are not statistically different among probes with respect to gender or anatomical location. Grants. N/A

Atrium – Poster 48 12:15-1:15 p.m.

TISSUE DIELECTRIC CONSTANT AS AN INDEX OF SKIN WATER IN WOMEN WITH AND WITHOUT BREAST CANCER: UPPER LIMB ASSESSMENT VIA A COMPACT DEVICE

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Madeline Fasen, OMS-II, College of Osteopathic Medicine
Daniel N. Weingrad, MD, Research Associate/Instructor, Nova Southeastern University
Lidice Lopez, P.A., Research Associate/Instructor, Nova Southeastern University

Objective. The goals of the study were to utilize the portable device to assess age-related differences of tissue dielectric constant (TDC) between younger healthy women vs. women with breast cancer, upper-arm site differences in women with breast cancer, and the device's limitations of a single measurement vs. averaged triplicate measurements. **Background.** Previous work showed tissue dielectric constant measurements at 300 MHz useful to evaluate local skin water and showed a new hand-held compact version provided values similar to an original multi-probe system when assessed in healthy subjects. **Methods.** A total of 84 women were included; 42 were young self-described healthy women and 42 were older women with recently diagnosed breast cancer who were awaiting surgery. In both groups tissue dielectric constant values were assessed on the anterior forearm. Women diagnosed with breast cancer were also measured at the hand, forearm, and biceps with all measurements bilateral and in triplicate. **Results.** Results showed the following. (1) Forearm TDC values are similar for the younger and older groups with no significant differences (NSD) between groups or between dominant and non-dominant sides or inter-arm ratios. (2) Hand TDC values are 21% greater than forearm and biceps values for hand, forearm and biceps of 1.027+/-0.180, 0.997+/-0.066 and 1.010+/-0.075 respectively. (3) Based on limits of agreement analyses, single TDC measurements are adequate for most forearm and biceps evaluations but multiple measurements are needed for hand measurements. (4) Theoretical detection thresholds for unilateral lymphedema using a 3SD limit of inter-arm ratios are 1.57, 1.20, and 1.24 for hand, forearm, and biceps. **Conclusion.** These values indicate likely useful forearm and biceps thresholds but are less useful ratio at the hand due primarily to the large variance in hand TDC values among patients. Grants. NA

Atrium – Poster 49 12:15-1:15 p.m.

YOUNG ADULT GENDER DIFFERENCES IN FOREARM SKIN-TO-FAT TISSUE DIELECTRIC CONSTANT (TDC) VALUES MEASURED AT 300 MHZ

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Kelly Corbitt, OMS-III, College of Osteopathic Medicine
Alexandra Grammenos, OMS-III, College of Osteopathic Medicine
Jason Mammino, OMS-II, College of Osteopathic Medicine

Objective. Our goal was to assess male-female differences in TDC values associated with differing skin depths. **Background.** Skin-to-fat TDC values depend on depth and gender but the role of gender is not clear. **Methods.** Bilateral forearm TDC measurements were made on young males and females with ages from 24.7 to 27.3 years. There were four measurement groups distinguished by TDC measurement depth including the following numbers of subjects for each gender; 30, 150, 60 and 50 for probe-measurement depths of 0.5, 1.5, 2.5 and 5.0 mm. Data were compared to values calculated with a simple 2-layer model. **Results.** For females and males there was a significant difference in TDC values among depths ($p<0.001$) with TDC values decreasing with increasing depth. Gender comparisons showed that TDC values of males were significantly ($p<0.001$) greater than values for females at each depth. Male-female percentage differences ranged from 14.8% to 22.0%. Model calculations suggest that gender-differences might be explained by skin thickness differences. **Conclusion.** Findings indicate that decisions with regard to skin water content among or between groups based on TDC measurements need to account for gender and are best made when corresponding skin thickness measurements are available. However, changes in TDC values assessed in individual patients and comparisons between corresponding skin areas in affected and non-affected sites are not limited. Thus, assessments of acute treatment effects and assessments of inter-arm or inter-leg TDC differences or ratios within genders are a useful and suitable method to characterize edema and lymphedema features. **Grants.** N/A

Atrium – Poster 50 12:15-1:15 p.m.

EFFECT OF NEEDLE SIZE AND SOLVENT ON INJECTABILITY OF POLYETHYLENE OXIDE (PEO) SOLUTIONS

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Srinath Muppalaneni, Ph.D.-Drug Development (Pharmaceutics), College of Pharmacy
David Mastropietro, PhD, Assistant Professor, College of Pharmacy
Hossein Omidian, PhD, Professor, College of Pharmacy

Objective. The objective of this study was to evaluate the effect of solvent, as well as needle length and thickness (gauge) on the injectability of PEO solutions. **Background.** To abuse drugs such as tablets intravenously, the products are first crushed and then dissolved in a small amounts of liquid. This mixture is then filtered and drawn into a syringe to extract the drug before being injected. High viscosifying agents such as PEO have been incorporated into abusable medications to deter this abuse. It is assumed that the more viscous a solution, the more difficult it would be drawing into and out (injectability) of a syringe. This was tested using solutions of PEO in common extraction solvents ejected through various needle configurations. **Methods.** Water, normal saline, pH3, and 40% ethanol were solvents used to make 2.5% w/v concentrations of PEO (Polyox™ WSR Coagulant NF). A texture analyzer was used to measure ease of injectability of solutions through a 19G, 22G or 25 gauge needed attached to a 3 mL syringe at a rate of 0.5 mm/sec. Resistance or Dynamic Gliding Force (DGF) was quantified as the average force obtained over the syringe distance using Texture Pro CT Software. **Results.** As the diameter of the needle decreased, DGF increased in all solvents tested. A two to four fold increase in DGF was seen when changing from a 19 to 25 gauge needle. **Conclusion.** PEO can deter injectability through small needles (gauge) virtually independent of extracting solvents. **Grants.** NSU grants # 335357 and 335829

Atrium – Poster 51 12:15-1:15 p.m.

KNOWLEDGE AND ATTITUDES TOWARDS PHARMACOGENETIC TESTING AMONG A COHORT OF PATIENTS AND PRESCRIBERS: DIFFUSION OF INNOVATION THEORY

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Nile Khanfar, PhD, Associate Professor, College of Pharmacy
Mohammad Shawaqfeh, PhD, Assistant Professor, College of Pharmacy
Loana Popovici, PhD, Assistant Professor, College of Pharmacy
Barry Bleidt, PhD, Professor, College of Pharmacy

Objectives. This study aims to test Rogers' Diffusion of Innovation theory on adoption of pharmacogenetics testing. **Background.** Healthcare providers play a key role in patient health care, their knowledge and attitudes may play a critical role in the incorporation of pharmacogenetic (PGx) testing and therapy into routine practice and that will contribute to improvement in health outcomes. Equally important, are the knowledge and attitudes of patients who will also determine the rate of diffusion and adoption of PGx testing. Although pharmacogenetics has the potential to improve drug safety and efficacy, its acceptance in medical practice is limited. **Method.** The study protocol will be submitted and approved through NSU's Institutional Review Board (IRB). Patients 18 years or older who are receiving simvastatin and/or clopidogrel will be offered PGx testing via buccal swab. Patients will also be invited to participate in an online survey. Physicians prescribing and monitoring medication therapy for potential study participants will be included in the study to determine their knowledge and attitudes toward PGx testing. A survey questionnaire based on Rogers' theory will collects data on demographics, knowledge and attitudes. **Results.** Although results for this particular study are not complete yet, previous and current studies have found that nearly 10% of physicians in the United States believe they have the adequate training and education required to use PGx testing. Some studies indicated physicians' positive attitude toward this new technology. Initial results from previous studies suggest that younger patients and higher educated patients were more likely to accept PGx testing and were eager to see how this new technology might help with their health outcomes. **Conclusion.** Numerous studies reported several barriers to the diffusion of Pharmacogenetics. Future studies are needed to have a better understanding of decision-making process towards PGx testing. **Grants.** This study will be funded by a grant from NSU/ Research Grant Program.

Atrium – Poster 52 12:15-1:15 p.m.

LITERATURE BASED EVIDENCE OF THE CLINICAL RELEVANCE OF PHARMACOGENETIC TESTING FOR SIMVASTATIN

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Nile Khanfar, PhD, Associate Professor, College of Pharmacy

Objective. To determine the strength of evidence present in the published literature for clinical relevance of pharmacogenetic testing for simvastatin **Background.** Pharmacogenomics or pharmacogenetics according to the FDA "allows one to identify sources of an individual's profile of drug response and predict the best possible treatment option for this individual." By analyzing a person's genetic profile it seems likely that the efficacy of the drug and possible adverse drug reactions can be predicted. This means that based on each patients genetic profile, an individualized treatment plan could be created to maximize optimal outcomes. Pharmacogenetic testing serves to identify the presence of genetic variants which may affect pharmacological outcomes, and allows for the selection of pharmacological therapy based on a patient's specific genetic make-up and, therefore, has the potential to become an invaluable resource in certain fields of medicine to provide patient-tailored pharmacotherapy to patients (Personalized Medicine) Literature evidence pertaining to the clinical relevance of pharmacogenetic testing has historically presented conflicting results and remains a topic of controversy. The strength of evidence pertaining the side effects associated with simvastatin among individuals with different genetic make-up has not been collected yet **Methods.** A systematic review of literature was conducted using the EMBASE and EBSCO host databases, identifying Cochrane reviews, controlled clinical trials, randomized control trials, meta-analyses and systematic reviews conducted on humans. Only English studies, full-text articles, and those conducted on humans were used included in the search. The search included literature published after 2009. A variety of search terms pertaining to pharmacogenetic testing related to simvastatin including the relevant gene name. Selected articles were evaluated and assigned ratings based on the level of evidence present using JADAD score. A rating of "A" was assigned for high level of evidence, "B" for moderate

level of evidence, and "C" for minimal level of evidence **Results.** The literature search will be presented as the total number of included studies and the results of the literature evaluation with the strength of evidence **Conclusion.** According to the findings of the literature review, the evidence of clinically relevant pharmacogenetic testing will be presented. Health care providers with be provided with additional information which may enable them to treat patients more efficiently by preventing adverse reactions and anticipating therapeutic responses. The future of pharmacogenetic testing is promising and expected to be welcomed by those whom are concerned with providing optimal pharmaceutical care **Grants.** NA

Atrium – Poster 53 12:15-1:15 p.m.

DYNAMIC GLIDE FORCE (DGF) TO MEASURE RESISTANCE TO INTRAVENOUS ABUSE

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Sampa Mondal, P2-Pharm.D., College of Pharmacy
David Mastropietro, PhD, Assistant Professor, College of Pharmacy
Hossein Omidian, PhD, Professor, College of Pharmacy

Objective. The purpose of this study was to evaluate the use of DGF as a quantitative measurement in estimating the level of abuse deterrence to intravenous injection. **Background.** In developing solid oral medications resistant to various forms of recreational abuse, proper selection of inactive ingredients that can resist common tampering methods is critical. Of particular concern is preventing abuse by injecting the drug extract intravenously or intramuscularly. Given the fact that there is no standards which to measure injectability of drug solutions extracted from abuse-deterrent medications, the injectability of such extracts needs to be performed using reliable and reproducible methods. As such, this study suggests the use of DGF as a standard measurement of injectability for quantitative and qualitative purposes related to parenteral resistance. **Methods.** Using a common abuse deterrent ingredient (Polyox™ WSR Coagulant NF), 2.5% w/v of Polyox solutions were prepared in water, normal saline, pH3 and 40% ethanol solvents. These solutions were loaded into 3 mL syringes with an attached needle (19G X 1.5"), and the DGF of each solution measured at four rates (0.5, 1, 2, and 4 mm/sec) using a texture analyzer equipped with a syringe fixture. **Results.** DGF increased gradually when rate of injection was increased for all solvents excluding 40% ethanol. DGF increased rapidly with increasing rate for 40% ethanol. **Conclusion.** DGF can reproducibly be used to measure injectability over a wide range of injection rates and extracting solvents. **Grants.** NSU grants # 335357 and 335829

Atrium – Poster 54 12:15-1:15 p.m.

EASE OF MANIPULATING DOSAGE FORMS FOR NASAL INSUFFLATION

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Objective. The main objective of this study was to evaluate the degree to which different manipulation methods can reduce the size of a standard tablet to particles suitable for nasal insufflation. **Background.** Prescription pain medications are among the most commonly-abused drugs and frequently manipulated for abuse via the nasal route. Manipulating the dosage forms involve chewing, crushing, breaking, milling, or grinding to accelerate drug release via snorting, oral ingestion, injection, or smoking. Using common methods employed by abusers to reduce particle size, the ability of each methods to produce small particles suitable for aerosolization (~ 250 microns) was determined. **Methods.** Tablets consisting of 80 mg acetaminophen and 320 mg high molecular weight polyethylene oxide (Polyox® WSR coagulant) were prepared on a single station Carver press at 2000 pounds of force. Tablets were then manipulated by various methods including two manual and four mechanical methods for one minute (n=3). The resultant product was then separated by particle size above and below 250 microns using sieve analysis. **Results.** Each method was highly capable of producing light particles from tablets with a measured breaking force of 124.2 N. The percentage of particles ~ 250 microns generated by each method was 20.3 ± 0.7, 45.5 ± 3.2, 43.5 ± 1.6, 20.0 ± 0.7 and 33.3 ± 0.4 for pill crusher, mortar-pestle, ball mill, high shear grinder and domestic blender, respectively. **Conclusion.** Standard tablets offer minimal resistance to particle size reduction. Tablets formulated with abusable medications should have enhanced mechanical properties to deter abuse. **Grants.** NSU grants # 335357 and 335829

FERMENTABLE CARBOHYDRATES AND ENTERAL NUTRITION INTOLERANCE: A RETROSPECTIVE STUDY IN CRITICALLY ILL PATIENTS

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Robert Goldberg, MD, Research Associate/Instructor, Mount Sinai Medical Center

Objective. The aim of our study is to observe whether FODMAP content of EN is associated with either diarrhea, distention or gastric residual volumes in critically ill patients. **Background.** The role of enteral nutrition (EN) in the critically ill patient has been well established as it maintains gut integrity and is associated with improved outcomes and decreased morbidity. Intolerance to enteral nutrition (EN) is a common problem and is usually manifested as diarrhea, distention and elevated gastric residual volume. When this occurs, EN is often held or infused at a lower rate which causes calorie deficits, further compromising outcomes. Multiple factors including osmolality and ingredients of enteral formula need to be considered when assessing EN intolerance. Recently short chain carbohydrates known as FODMAPs (Fermentable Olgio Di- Mono-Saccharides And Polyols) has been shown to be associated with increased risk of intolerance. In colonic bacterial environment the FODMAPs produce rapidly fermentable substrate generating excessive amount of gas with characteristic symptoms including abdominal pain, discomfort, bloating, distention and altered bowel habits. Hamos et al demonstrated that hospitalized patients receiving Isosource 1.5 (an enteral formula with a lower FODMAP content) had a considerable reduction in risk of developing diarrhea. **Methods.** This retrospective observational study was approved by the Intstitutional Review Board of Mount Sinai Medical Center, Miami Beach Florida. The electronic health record, of all ICU admissions that were either on Peptamen AF ® or Replete ® from July 2012 through September 2013 were reviewed. Patients on EN for three or more consecutive days were included. Diarrhea was defined as one episode of loose or watery stool and/ or three or more stools within a twenty four hour period regardless of consistency. Distension was defined as a distended and/ or firm abdomen as reported in the nursing or dietitian record. Gastric residual was counted if the volume was greater than 250 cc on at least one occasion. Formulas were assigned to patients based on the preference of the physician or dietitian. Peptamen AF ® contains 5.2 g/ L of FODMAPs which consist of inulin (1.6 g/ L) and fructooligosaccharides (3.6 g/ L), while Replete ® does not contain any. **Results.** Among 221 patients the incidence of gastric residuals was higher in the Peptamen AF® group (18.9% vs 9.2%, $P < 0.05$, odds ratio (OR) of 2.31). There was no significant difference in the occurrence of either diarrhea ($P=0.847$) or distension ($P=0.087$). We observed increased occurrence of diarrhea with longer duration of EN ($P<0.05$, OR 1.05). Abdominal distension was associated with renal replacement therapy (RRT) ($P<0.05$, OR 2.906), and gastric residuals was predicted by inotropes ($P<0.05$, OR 4.047) and RRT ($P=0.05$, OR 3.014). Logistic regression failed to show any significant differences in diarrhea, distension, or gastric residuals between the two groups. **Conclusion.** Duration of enteral nutrition, RRT and inotropes were significant independent predictors of EN intolerance. Although FODMAPs have been associated with diarrhea, it does not influence EN intolerance in critically ill patients. This observation may be influenced by multiple variables increasing the risk for gastric intolerance. Further prospective studies are warranted in this unique population to evaluate the causes of intolerance. **Grants.** No grants to disclose

A QUALITATIVE STUDY OF THE CHALLENGES AND STRATEGIES OF A RURAL HAITIAN HOSPITAL

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Mackenzie Rapp, OMS-IV, College of Osteopathic Medicine

Objective. To identify the strategies of success and the challenges relative to healthcare delivery in a hospital setting in rural Haiti. **Background.** As of 2012, ten departmental hospitals served the entire country of Haiti, and of its 700 health facilities approximately half were concentrated in the urban Port-au-Prince area. With almost half the population living outside of urban areas, the need for health care in the rural regions of Haiti is immense. Peredo Community Hospital is a new hospital funded by Haitian Christian Outreach and operated by Haitians in the resource poor and underserved rural countryside of the Southeast Department of Haiti and serving 300,000 people. **Methods.** In collaboration with Haitian Christian Outreach and the Peredo Community Hospital, surveys, focus groups with physicians, staff, and patients and interviews with leadership were collected. **Results.** The hospital faces challenges in a lack of resources, sociocultural barriers, and in the logistics of service delivery. Leaders employ strategies of capacity building, skilled labor training, ensured access to water and education,

and strong communication with community elders. **Conclusion.** This unique setting has the potential to serve as a learning opportunity for future hospitals in similar settings. Possible future strategies may include Doctors United for Haiti's health sponsorship program, incentives for skilled workers and expansion of the community health worker program. The presence of this hospital alone has created an atmosphere of great potential for this region of Haiti. **Grants.** No grants.

Atrium – Poster 57 12:15-1:15 p.m.

IMPORTANCE OF INITIATING TREATMENT FOR PRESUMPTIVE DIAGNOSIS OF ACQUIRED THROMBOTIC THROMBOCYTOPENIC PURPURA

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Esther Son, OMS-III, College of Osteopathic Medicine
David Vuong, OMS-II, College of Osteopathic Medicine

Introduction. Acquired thrombotic thrombocytopenic purpura (TTP) is a medical emergency with an incidence of 4-5 cases per million people per year. Diagnosis of TTP is based on clinical features and laboratory testing such as ADAMTS13 activity levels. Historically, untreated TTP had mortality rates of 100%. However, advances in treatment improved survival rates to 80-90%. Thus, prompt recognition and initiation of treatment is of the utmost importance. **Case presentation.** A 34-year-old African American male presented to the emergency department complaining of nausea, vomiting, and hematuria within the past 24 hours. His urine stream had significantly decreased since the start of his symptoms. The patient admitted having chills, headache, dizziness, shortness of breath, low back pain, and unintentional weight-loss. The patient was admitted and further workup started. Physical exam was unremarkable except for right CVA tenderness. Labs were suspicious for hemolytic anemia and decreased renal function. Imaging was negative for obstruction and hydronephrosis. Peripheral blood smear demonstrated schistocytes. Plasmapheresis was started the day of admission, before receiving results of ADAMTS13 activity levels. After 7 treatments, his anemia and renal function improved. **Deviation From the Expected.** The patient did not present with the classic pentad of symptoms for TTP, nor were laboratory results available for confirming TTP before initiating treatment. **Discussion.** This case demonstrated the prompt recognition and presumptive diagnosis of TTP leading to early treatment and optimal patient outcome. **Conclusion.** Further studies are needed to evaluate cost-effectiveness of early versus late treatment of TTP. Furthermore, guidelines for initiating TTP treatment need to be established. **Grants.** None

Atrium – Poster 58 12:15-1:15 p.m.

ANGII-MEDIATED REGULATION OF BETA-ARRESTINS EXPRESSION IN SPONTANEOUSLY HYPERTENSIVE RAT (SHR) AND WISTAR RAT ASTROCYTES

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Anastasios Lymperopoulos, Ph.D., Associate Professor, College of Pharmacy
Michelle A. Clark, Ph.D., Associate Professor, College of Pharmacy

Objective. Study the effect of angiotensine II (AngII) on the expression level of beta-arrestins in astrocytes isolated from the brainstem of SHR and Wistar rats. **Background.** The beta-arrestins (beta-arrestin1 and-2) originally discovered as terminators of G protein signaling by G protein-coupled receptors (GPCRs) are now known to also mediate their own signaling independently of G proteins. Little is known about the cellular distribution and regulation of beta-arrestins protein and gene expression in brain tissues. **Methods.** Primary cultures of brainstem astrocytes were isolated from the brains of 2-3 days old SHR and Wistar rat pups. To test the effect of AngII on the protein and mRNA levels of beta-arrestin1 and-2, primary astrocytes were treated with 100 nM AngII at different time points. Protein analysis was done using Western blotting technique and mRNA measurement was done using real time PCR technique. **Results.** Our results showed that beta-arrestin1 is the major arrestin protein in astrocytes in both SHR and Wistar rats. But at the mRNA level both beta-arrestin1 and-2 have comparable expressions. AngII upregulates beta-arrestin1 protein in Wistar rats, while in SHR AngII had no significant effect on protein expression. AngII down regulates both beta-arrestin1 and-2 mRNA expressions in both models. **Conclusion.** In this study, we showed that beta-arrestin1 is expressed in brainstem astrocytes and that its level are responsive to AngII. Further, our studies suggest that beta-arrestin1 protein expression maybe impaired in the hypertensive model and possibly may play a role in high blood pressure observed in this model. **Grants.** Funding for this research was provided through a Nova Southeastern University Health Professions Division Grant.

Atrium – Poster 59 12:15-1:15 p.m.

ARE WE THERE YET? ARE STUDENTS PREPARED FOR THE LEAP TO EMPLOYMENT?

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Shari Rone-Adams, PT, MS, DBA, Associate Professor, College of Health Care Sciences - Physical Therapy
Debra Stern, PT, DPT, MSM, DBA, Associate Professor, College of Health Care Sciences - Physical Therapy
Claudia Gazsi, PT, MS, PhD, Assistant Professor, Lebanon Valley College
Bini Litwin, PT, MBA, DPT, Phd, Associate Professor, College of Health Care Sciences - Physical Therapy

Objective. The purpose of this study was to determine the importance of entry-level expectations of Doctor of Physical Therapy graduates from the perspective of faculty, clinical instructors (CI), and employers in the inpatient rehabilitation, acute care and outpatient practice settings. **Background.** With the changes in the healthcare delivery system, the expectations of graduate therapists by employers, CIs and faculty needs to be evaluated. **Methods.** A survey was sent via web-link and asked participants to rank on a Likert scale the importance of 25 characteristics (identified by a Delphi study by Gaszi et al in inpatient rehabilitation) in the first 90 days of practice. **Results.** Usable surveys were received from 400 participants. Of the 25 characteristics, 2 characteristics –safe and reliable – were consistently rated as "very important" by 80% of all respondents across all settings. Seven of the characteristics demonstrated 70% of the respondents felt the characteristic was "important": safe, ethical, recognition of red flags, integrity, reliable, responsible, and respectful. Significant differences between group ratings of 3 characteristics were evident in the acute setting: recognition of red flags, critical thinker & team player. 17.6% of respondents felt graduates were not meeting expectations. The employer group was overall more negative that graduates were not meeting expectations. **Conclusion.** The results show there are some differences between academic faculty and employers and CIs in their expectations from new graduates that should be considered as curriculum continue to develop in the changing healthcare arena. **Grants.** Acute Care portion of this study was supported by the 2013–2014 CHCS & CON Research Grant.

Atrium – Poster 60 12:15-1:15 p.m.

THE USEFULNESS OF THE PAINCQ-33 IN IDENTIFYING PAIN MANAGEMENT PERCEPTION FROM THE NARRATIVES OF NURSING HOME RESIDENTS WITH CHRONIC PAIN

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Yvonne Scherer, EdD, Associate Professor, University at Buffalo, School of Nursing

Objective. To examine the usefulness of the PainCQ-33 survey as a measure of interdisciplinary pain management care based on the comments offered by older nursing home residents with chronic pain. **Background.** Residents have attitudes and beliefs about their pain condition and pain treatment, which can interfere with pain management care. Measures currently in place to assess how nursing home residents perceive their pain management care tend to be vague, and not able to identify the subjective nature of how pain management care is perceived. To date, no measures exist that can identify how older nursing home residents perceive their interdisciplinary pain management care. **Methods.** Focus groups were conducted at two nursing homes. A moderator used an interview guide developed with items from the PainCQ-33 survey. During each focus group, residents expressed how they perceived their pain management care. Transcripts and field notes from the focus group discussions were analyzed using descriptive content analysis. **Results.** Four themes emerged from the focus groups: (1) life with chronic pain, (2) how chronic pain defines me, (3) those who help manage my chronic pain, and (4) what works in managing my chronic pain. **Conclusion.** The PainCQ-33 survey has proven to be a useful tool for identifying how pain management care is perceived, which will help clinicians in developing resident-specific pain management care strategies. **Grants.** This research was partially funded by a grant from the Mark Diamond Research Fund managed by Director Sierra Adare-Tasiwoopa ápi. The grant covered survey materials and statistical software. This research was also partially funded by the Shirley D. DeVoe Doctoral Dissertation Award, which covered additional expenses including transcription software.

Atrium – Poster 61 12:15-1:15 p.m.

A SURPRISE SURGICAL FINDING: PIGMENTED VILLONODULAR SYNOVITIS

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Jon Chapekis, DO, Research Associate/Instructor, N/A

Introduction. Pigmented villonodular synovitis is a rare proliferative disorder of the synovial lining of joint, seen in just 2 cases per million. PVNS is typically a monoarticular process with two primary forms: localized and diffuse. The localized form occurs when pain and swelling is in just one area of the joint, and usually affects the small joints of the hands/feet. The diffuse form affects the entire synovial lining of the joint and typically involves the large joints, such as the knee (80% of cases). This form is significantly more common than localized PVNS and tends to be more destructive. **Case presentation.** We present a case of an 82-year-old male whose chief complaint was pain, swelling, and stiffness of his left knee. He had a history of smoking, cancer (CLL), and femur malunion with osteomyelitis. Physical exam revealed warmth and swelling. X-rays showed no acute fracture, but a lucent appearance in the femur along with diffuse demineralization, joint space narrowing, and osteophytes in the knee. MRI revealed degeneration of the cartilage and ACL, moderate joint effusion, grade 4 chondromalacia, and a "baker cyst." Whole body scan was negative in the lucent area of the femur, but there was uptake in the knee. The patient was diagnosed with degenerative osteoarthritis and scheduled for knee replacement surgery. During surgery when the capsule was breached, the synovial fluid appeared as a brown semi-liquid with multiple clots. The articular surface was infiltrated with hemosiderin and the bone was osteoporotic. A radical synovectomy was performed and the decision was made to forgo the knee replacement due to bleeding, osteoporotic bone, and high risk of infection. The pathology results indicated a hyperplastic synovium with papillary projections composed of foamy cells and hemosiderin containing macrophages. Within 3 months of physical therapy, the patient had little residual pain. **Deviation From the Expected.** The etiology of PVNS is uncertain, although repetitive trauma, intra-articular hemorrhage, and inflammation may play a role. Synovial inflammation can invade underlining cartilage and bone resulting in significant morbidity including pain, loss of function, and eventual joint destruction if left untreated. Recurrent atraumatic hemarthrosis is the hallmark of the disorder. The classification of PVNS is still a matter of contention. Classification as a reactive granuloma would be a sound conclusion on the basis of the histology exemplary of granulation tissue. However, invasive growth and a tendency to recur indicate a potential neoplastic origin. The diagnosis is often delayed because symptoms are nonspecific. **Discussion.** The diagnosis of PVNS is often difficult because symptoms are non-specific and radiographs can show joint space narrowing difficult to distinguish from primary OA. CT scans demonstrate a hyperdense soft-tissue mass in the joint, which is a reflection of repeated hemorrhage and blood degradation products within the joint. On bone scan, the hypervascularity and areas of erosion may result in increased radionuclide uptake. The imaging study of choice is MRI, which demonstrates various appearances ranging from low signal to hyperintense signals, reflecting the presence of blood and its degradation products. Hemosiderin appears as low signal on T1 and T2-weighted images. The presence and amount of hemosiderin is related to the extent of mechanical trauma that the lesion undergoes. Definitive diagnosis is made by biopsy and can be confirmed by a histopathological examination, with macroscopic findings showing the presence of pigmented lipid-laden foam cells and multinucleated giant cells interspersed with hemosiderin deposits. For the diffuse form, the treatment is total synovectomy. The reoccurrence rate is as high as 46%, especially in patients with an incomplete synovectomy and extra-articular manifestations. However, when total synovectomy is combined with adjunctive radiotherapy, risk of recurrence is reduced to 10-20%. **Conclusion.** The exact etiology of this proliferative disease still remains unclear. More research is essential for uncovering if PVNS is to some extent neoplastic in nature, since different therapeutic approaches will be required. **Grants.** N/A

Atrium – Poster 62 12:15-1:15 p.m.

WHEN GOOD BACTERIA GO WRONG

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Introduction. First case of iatrogenically caused endocarditis due to lactobacillus and strep bovis in the literature. **Case presentation.** 52 year old HIV- positive male (CD4 count 440) with a PMH of poly-substance abuse, DM type 2, and CKD lll who presented with sharp, nonradiating 10/10 back pain for one day. He had associated progressive shortness of breath with cough and diaphoresis. Vitals on initial presentation were 101.8F, 122 bpm, 23 breaths/min, and 118/69 mmHg. On physical exam he was ill appearing, tachycardic and diaphoretic with coarse breath sounds and rhonchi in the right lower lobe. CBC was pertinent for leukocytosis of 22k with 77% neutrophils and a bandemia of 5%. Pan cultures were negative. CT of the chest, abdomen and pelvis revealed a multiloculated right pleural effusion (without any parenchymal lung disease) with collection that seemed to be in connection with the mediastinum. The patient was empirically started on Vancomycin 1g IV BID and Ceftriaxone 1g IV QD. A diagnostic thoracentesis was performed and a right pigtail catheter was placed which

drained minimal clear serous fluid. A 2D Echo was performed for the persistent tachycardia and demonstrated anterior MV leaflet mobile echodensity/vegetation with an EF of 65-70%. **Deviation From the Expected.** The patient's history of recent retching and NBNB emesis with associated back pain led to a suspicion of an esophageal tear with subsequent leakage into the pleura which was confirmed when an esophagram revealed a mediastinal abscess with connection to the esophagus. The patient then had an emergent thoracotomy with decortication and drainage of the abscess. Wound cultures from the abscess grew Group D Strep/Lactobacillus and the patient was initially started on Unasyn 3g IV Q6/Flagyl 500mg PO Q8 which was then modified to a 4 week course including 2 weeks of unasyn and flagyl followed by 2 weeks of oral augmentin and flagyl to cover for his endocarditis. **Discussion.** Our case is a relatively typical presentation of a rare cause of endocarditis. Unlike the typical causes of endocarditis, the most common being Staph aureus, Viridans group strep, Enterococcus, or HACEK species, Lactobacillus and Strep Bovis are uncommon etiologies for acute endocarditis. In the literature Strep bovis is not as uncommon as lactobacillus however without colon cancer or recent gastrointestinal surgery there are very few discussed cases. We are attributing the seeding of the heart valve with these rare etiologies to the yogurt that he was served early in his hospital stay. It is assumed that due to his pre-existing esophageal tear a direct rout to the mediastinum as well as to the bloodstream was present allowing a transient bacteremia which likely seeded the valve. If this is the case this would have been the first iatrogenically caused endocarditis due to lactobacillus and strep bovis in the literature. **Conclusion.** Esophageal perforation is a deadly injury if not treated in a timely manner. **Grants.** None

Atrium – Poster 63 12:15-1:15 p.m.

RELATIONSHIP BETWEEN HAND/FOOT LATERALITY AND EYE DOMINANCE

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Objective. This study was conducted to determine if there is an association between hand dominance, foot dominance, and eye dominance. **Background.** Lateral dominance describes the asymmetrical preference and function of the human body. It is most commonly used when referring to handedness, that is to say, whether an individual prefers to use his or her right hand or left hand. However, it is unclear whether or not there is a correlation between hand preference, and the preference of other parts of the body, such as feet and eyes. Eye dominance, although researched extensively in the past, still remains a theoretical puzzle. **Methods.** Data was collected via an online survey sent to members of the general population (n=73, 33 males and 44 females). Questions about the participants included age, gender, ethnicity, and preferences in hand and foot laterality. Eye dominance was determined by asking participants to perform the Miles Test. **Results.** Most of the participants were right hand dominant (87.5%), while fewer participants were left handed (12.5%). The majority of right hand dominant people were right foot dominant (98%), and the majority of left hand dominant people were left foot dominant (67%). On the other hand, most people were right eye dominant whether they were left handed or right handed. **Conclusion.** A statistically significant relationship was found between hand and foot dominance ($p<0.001$), however, the same was not found to be true between hand and eye dominance ($p=1.0$). **Grants.** This study did not require any funding.

Atrium – Poster 64 12:15-1:15 p.m.

THE EFFECT OF STATE LAWS DESIGNED TO PREVENT NON-MEDICAL PRESCRIPTION OPIOID USE ON TREATMENT AND OVERDOSE DEATHS

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Johanna Catherine Maclean, Ph.D., Associate Professor, Temple University
Sharmini Radakrishnan, Ph.D., Research Associate/Instructor, Abt Associates

Background. The non-medical use of prescription drugs has reached epidemic levels in the United States. In 2013, according to National Survey on Drug Use and Health (NSDUH) about 70% of non-medical prescription drug users are opioid users with an estimated 4.5 million were nonmedical users of prescription opioids. Moreover, according to the Centers for Disease Control and Prevention (CDC), 16,235 deaths involved prescription opioids analgesic in the same year drug. Since 2009 deaths due to drug overdose are currently considered the leading cause of injury deaths in the United States exceed deaths due to

motor vehicle accidents. In addition, in 2007 prescription opioid abuse estimated to cost United States about $55.7 billion. Due to these high prevalence rates and social costs, federal, state, and local legislations and initiatives had been enacted in an effort to regulate and mitigate non-medical use of prescription opioids. Pain management clinic and doctor shopping laws are example of states laws that attempt to reduce the availability of prescription opioids to non-medical users. Pain management clinic laws require state oversight of clinics and/or regulate the ownership of operation of such clinics. Doctor shopping laws make it illegal for patients to withhold from practitioners that they have received either any controlled substance or prescription order from another practitioner, or the same controlled substance, or one of similar therapeutic use. These laws attempt to reduce the availability of prescription opioids to non-medical users by restricting healthcare providers' ability to dispense these medications and patients' ability to withhold information on medication seeking from multiple providers. Curtailing the supply of prescription opioids for non-medical use in this manner is potentially effective as healthcare providers represent the main source for prescription opioids for non-medical use. To date, there is little evidence on the effectiveness of these laws. **Methods.** A differences-in-differences design was used to study the impact of pain management clinic regulation and doctor shopping laws on opioid abuse treatment and opioid overdose death rates. The use of difference-in-differences design has become the gold standard in policy evaluation research. We study the effect of the laws on two measurable outcomes: opioid abuse treatment and opioid overdose death rates. We compare these outcomes between states that implemented the laws (treatment group) and states that have not implemented the laws (control group) (first difference). In addition, we compare the outcomes before and after law implementation (second difference). In other words, we take advantage of the differences among states in the timing of the law implementation which creates a natural experiment. **Results.** Pain management clinic regulation reduces the rates of prescription opioid overdose death by 23.2%. We find some evidence that pain management clinic regulation reduces the number of clients receiving opioid abuse treatment by 65.3%. **Conclusions.** Very little knowledge exists on the effectiveness of the laws under study. As policymakers are struggling to curb the prescription opioid abuse epidemic, they are searching for evidence that would help select the best state laws to address the epidemic. For example, pain management clinic regulation is more likely than doctor shopping laws to reduce opioid overdose death rates as well as the number of clients receiving opioid treatment.

Atrium – Poster 65 12:15-1:15 p.m.

A CASE STUDY: AN INCREASE IN BROWN RECLUSE SPIDER BITES SO BEWARE OF DARK SPACES

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J. Keith Williams, MPAS, PA-C, Assistant Professor, College of Health Care Sciences - Physician Assistant

Introduction. The emergency department presentation (ED) of Brown recluse (Loxosceles reclusa) spider bites often includes local symptoms followed by severe pain and pruritus. This case had an erythematous "bulls-eye" appearance at the bite site that can cause a life threatening cytotoxic and/or hemolytic clinical complication. Renal failure, seizures, disseminated intravascular coagulopathy (DIC), coma and death can result. A delayed or missed spider bite diagnosis can lead to these severe complications. Aggressive surgical intervention with deep tissue debridement and skin grafting is often required. **Case presentation.** A 17-year-old female presents to the ED for evaluation of a possible spider bite to the right leg 3 days ago. Initially the bite area on her right thigh was painful, itchy and the size of a quarter. She was seen by Urgent Care that night and prescribed antibiotics. The next day the wound looked worse and the patient was admitted to pediatrics with plastic surgery consultation. Results. Despite a high morbidity rate associated with brown recluse spider bites, this patient's wound healed by secondary intention after initial debridement and aggressive wound management. **Deviation From the Expected.** The local wound extensive necrosis, systemic and hemolytic or renal life-threatening complications associated with these spider bites were avoided. **Discussion.** The treatment of this condition was by surgical debridement and wound management that resulted with improvement of the patient's condition. **Conclusion.** Clinicians in an acute emergency department setting must maintain a high index of suspicion for spider bites that can present with neurological and hematologic symptoms **Grants.** No grants were utilized for this study.

Atrium – Poster 66 12:15-1:15 p.m.

THE ASSOCIATION BETWEEN SEX AND PROFESSIONAL CAREER ASPIRATIONS AND FIRST-YEAR OSTEOPATHIC MEDICAL STUDENTS' INTENT TO WORK WITH UNDERSERVED

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Rana Arif, Ph.D., Ed.S., M.S., Assistant Professor, College of Osteopathic Medicine
Robin Jacobs, Ph.D., M.S.W., M.S., Associate Professor, College of Osteopathic Medicine

Objective. We explored the association of medical student's sex and choice for future medical practice specialty with intent to work with underserved patients. **Background.** Fewer medical students are moving into primary care and the retention of physicians in medically underserved communities is declining. While the osteopathic medical school curricula is promotes primary care practice, most medical students desire to be in esteemed specialties. **Methods.** A cross-sectional, correlational research design was used to determine the association of student's sex and choice of future specialty on intentions to provide care to underserved groups. Data were collected from 239 first-year OMS. Participants completed the Medical Student Attitudes toward the Underserved (MSATU) questionnaire via a pen-and-paper. Chi- square tests were performed using SPSS. **Results.** Roughly half the sample were men. Chi-square tests showed that higher intentions to work with the underserved was associated with being female, $X2(1, N = 237) = 12.07$, $p < .01$. Also, a relationship between sex and future medical specialty practice choices: women chose pediatrics $X2(1, N = 237) = 21.1$, $p < .01$; men chose surgical medicine $X2(1, N = 237) = 5.42$, $p < .01$. Choice of pediatrics was associated with more intent to treat the underserved; surgical medicine was associated with less intent. **Conclusion.** Medical students' sex might influence future career choice and intentions to work in medically underserved communities. Findings from this study could help guide academic programming efforts that encourage all students to pursue primary care medicine in underserved areas where the need is great. **Grants.** This study was funded by a grant from Nova Southeastern University

Atrium – Poster 67 12:15-1:15 p.m.

CAN HISTORY'S MOST INSPIRATIONAL WOMAN WARRIOR JOAN OF ARC SERVE AS AN ENDURING MODEL OF EMPOWERMENT FOR WOMEN WITH A CANCER DIAGNOSIS?

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Objective. Although there are many different research studies that have proven that arts-based medicine is a viable and effective medical strategy to help people with cancer improve quality of life—there is little documentation that uses arts-based strategies from a historical narrative to help improve quality of life. This research study delved deep to find out how the use of arts-based medicine would affect (or not) women with cancer. **Background.** The author, a trained creative arts therapist, wrote a book called "If Joan of Arc Had Cancer: Finding Courage, Faith and Healing from History's Most Inspirational Woman Warrior" to help inspire women to seize and resurrect their own internal courage while traveling their journey with cancer. The book is based on the courageous journey of Joan of Arc's life and includes meditations; arts based therapies, narrative medicine and active instructions to help women resurrect their personal strengths and inner wisdom. **Methods.** The author contacted Gilda's Club in Ft. Lauderdale, one of the satellite programs sponsored by the Wellness Community, to offer a free 6 week seminar for women with cancer using excerpts from the book concentrating on particular themes that would offer the participants the opportunity to reach deep inside themselves for self-reflection and internal power. The sessions included curricula that addressed themes of valor, patience, surrender, prayer and support and ended with participants creating their own power shields through art and guided visualization exercises. IRB was obtained and all participants were told that they would be involved in a 6 week research study. **Results.** This study, conducted with a small yet representative group of women cancer survivors, showed that the use of arts-based medicine in general is effective and most particularly the use of Joan of Arc as a model for empowerment is particularly effective. Survivors indicated that they showed less anxiety and fear and noted that they had an improved quality of life and felt more empowered. **Conclusion.** The interaction of arts-based medicine that is cross-disciplinary and includes narrative, art creation in tandem with guided visualizations is a potent medical protocol that can be used with people with cancer to improve quality of life. **Grants.** No grants given.

Atrium – Poster 68 12:15-1:15 p.m.

HEMOCHROMATOSIS: AN INCIDENTAL FINDING OF A COMPOUND HETEROZYGOTE C282Y/H63D GENOTYPE

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Abstract/Introduction. Hemochromatosis (HH), most commonly due to mutations in the HFE gene, is an autosomal recessive disorder. The mutations leads to increased intestinal absorption of iron. Iron overload is defined as transferrin saturation >45% and/or serum ferritin >200 ng/mL in men and >150 ng/mL in women. The clinical manifestations of this disease are related to excess iron deposition in tissues including the liver, heart, pancreas, and pituitary. All patients evaluated for iron overload should have C282Y and H63D mutation analysis for diagnosing the presence of HH. (1) C282Y/C282Y genotype confirms diagnosis of HH. (2) C282Y/H63D genotype is compound heterozygote genotype. About 60% of patients have intermediate degree of iron loading, and 35%have normal iron levels. (3) C282Y/wild type genotype is heterozygous for HH. The patients are less risk for iron overload. (4) H63D/wild type or H63D/H63D genotypes is uncertain. Most patients will not have iron overload. **Case Presentation.** A 54 y/o Caucasian female, with past medical history of migraines and pulmonary embolism of unknown etiology, presented with abdominal pain, nausea and vomiting for 1 day. The pain began in the epigastric region radiating to RUQ and both shoulder blades. It was a pressure like stabbing pain, rated 10/10 on the pain scale. No alleviating or aggravating factors. Patient admitted to similar pain 2 weeks ago, however, it was not as severe and resolved by itself. Both episodes were preceded by steak dinners. Patient admits to non-bloody non bilious emesis, subjective fevers, diaphoresis, abdominal bloating, belching and denies diarrhea. However, she denied any previous abdominal problems including gallbladder and liver. She also denied any recent travel or sick contacts, alcohol, illicit drug or vitamin supplement use. She admits to taking Tylenol/ Advil 1-2 times monthly for occasional migraines. In the ED she was given 1L NS bolus, morphine IV 6 mg x 1, Zofran IV 4 mg x 1, Dilaudid IV 0.5 mg x 1. **Hospital Course.** Abdominal US revealed increased echogenicity and heterogenous appearance of the pancreas, and hepatomegaly with hepatic steatosis with a normal gallbladder, kidneys, spleen, and no signs of an abdominal aortic aneurysm. CT abdomen revealed an enlarged liver measuring approximately 21 cm and demonstrating steatosis, and cholelithiasis without evidence of cholecystitis was noted. The spleen, pancreas, adrenal glands, stomach, kidneys, urinary bladder, and uterus were within normal limits. CBC was unremarkable. CMP was remarkable for AST/ALT of 760/875 respectively, GGT was 431 with normal alkaline phosphatase, albumin, and lipase. Iron studies revealed ferritin level of 6,875.6, serum iron levels at 210, TIBC of 232 and Iron Saturation at 91%. Evidence of hyperbilirubinemia with a total bilirubin of 1.70 and direct bilirubin at 0.94 was also found. Toxicology screen was positive only for opioid use. Coagulation studies, Hepatitis panel, TORCH panel, HSV1-, HSV-2, and CMV were all negative. GI was consulted for cholelithiasis and a hematology consult was recommended for iron overload.

Atrium – Poster 69 12:15-1:15 p.m.

SKIN WATER IN PERSONS WITH DIABETES MELLITUS (DM) ASSESSED BY TISSUE DIELECTRIC CONSTANT (TDC) MEASURED AT 300 MHZ

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Irina Volosko, Student, Nova Southeastern University
Naushira Pandya, M.D., Clinical Professor, College of Osteopathic Medicine
Harvey Mayrovitz, PhD, Professor, NSU College of Medical Sciences

Objective. To test the hypothesis that skin water is inversely related to HbA1c in persons with DM. **Background.** Skin changes occur in about 1/3 of persons with DM. Glycation of proteins plays a role but it is unknown if skin water changes in proportion to HbA1c. **Methods.** Skin-to-fat tissue water was measured by TDC at anterior forearm, lateral calf and foot dorsum in 42 DM patients to depths of 0.5, 1.5, 2.5 and 5.0 mm below epidermis. Total body fat (TBF) and water (TBW) were determined via bioimpedance at 50 KHz. **Results.** TDC values monotonically decreased with measurement depth at all sites with TDC values at all depths significantly different from each other ($p<0.001$). At all depths except 0.5 mm there were differences in TDC values among sites ($p<0.001$) with foot values greater than leg and leg greater than forearm. TDC values were negatively correlated with HbA1c only for foot and then only at a 1.5 mm depth. There was also a small positive correlation between HbA1c and arm fat. **Conclusion.** Our initial hypothesis is weakly supported since the foot TDC-HbA1c

correlation explains only 11% of the observed variation. We conclude that over the range of HbA1c values evaluated there is little effect of HbA1c on skin water as judged by TDC measurements. This finding suggests that persons with DM may be evaluated with TDC methods without fear of possible confounding effects related to variations in HbA1c. Further, the TDC values herein obtained provide a DM-related TDC reference data set. **Grants.** N/A

Atrium – Poster 70 12:15-1:15 p.m.

CHANGES IN CHRONIC HEALTH CONDITIONS OF STUDENTS IN SCHOOLS OF PALM BEACH COUNTY, FLORIDA 2008-2013

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S. M. Darling
Gabriel P. Suciu, Ph.D., College of Osteopathic Medicine, Public Health
S. Kumar
A. Alonso
R. Wiewora

Background. School students are one of the most dynamic populations. Detailed knowledge of the epidemiological tendencies in the distribution of different types of chronic disorders is important for correct allocation of preventive services. Our objectives were to analyze possible alterations in chronic health conditions of students in the Palm Beach County (PBC) health district. **Methods.** Serial, cross-sectional study was performed for comparative analysis of chronic health conditions annually reported by all schools of PBC, Florida in 2008-2013. Chi-square tests and 95% confidence intervals were used to compare proportions for chronic health conditions. **Results.** There was a general tendency for an increase in the prevalence of chronic health conditions in 2008-2013 - from 10.1% (171,970 students) to 14.8% (181,190 students). Within this time, the largest change was noticed for 2009-2012. At the beginning of the study, the largest proportion of students had asthma (#1), allergies (#2), and ADHD (#3), followed by epilepsy (#4), psychiatric disorders (#5), cardiac condition (#6), and diabetes (#7). During 5 year period, the rates for allergies and psychiatric conditions increased from 29.9% to 34.3% and from 3.3% to 4.4%, respectively (significant increase for both, $p<0.05$). Interestingly, the psychiatric disorders increased in rank from #5 to #4. At the same time, there was a decrease in the rates of asthma (37.8% to 35.61%), ADHD (14.2% to 13.8%), epilepsy (3.4% to 3.0%), cardiac conditions (2.6% to 2.2%), and diabetes (2.0% to 1.4%), all $p<0.05$. **Conclusions.** During the last 5 years there was a general trend for elevation in chronic health conditions in school students of PBC. Proportionally, a significant increase was noticed in allergies and psychiatric conditions. Our data suggests the need for additional allocation of clinical and social resources to provide preventive health care for the growth in allergies and psychiatric conditions in school students of PBC.

Atrium – Poster 71 12:15-1:15 p.m.

HIGHER BODY MASS INDEX IS ASSOCIATED WITH WORSE CLINICAL OUTCOMES OF HYLAN G-F 20 INJECTIONS IN THE SHOULDER AND HIP JOINTS OF PATIENTS WITH OSTEOARTHRITIS

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Background. Intra-articular hyaluronan injections are approved by the Food and Drug Administration for the management of knee osteoarthritis. The effectiveness and safety of use of viscosupplementation in other joints are still unclear, and no evidence-based criteria are established to screen the patients for such treatment. **Research Question.** The effectiveness and safety of the use of viscosupplementation for the management of osteoarthritis of the shoulder and hip. **Protocol/Methods.** In a case series study, we retrospectively reviewed the charts of the 26 patients undergoing fluoroscopically-guided intra-articular Hylan G-F 20 injections for the management of osteoarthritis of the shoulder (21 injections) and hip (31 injections). Age, gender, body mass index, number of co-morbidities, use of opiates, severity, and location of osteoarthritis were assessed as possible prognostic factors. The number of months of pain relief and the degree of symptomatic improvement were considered outcomes for this study. **Results.** Our analysis showed that the injections provide effective pain relief for up to 4 months in

approximately half of the patients with a few patients experiencing pain relief during the whole observation period of 24-30 months. No adverse events were reported. We have also found statistically significant association of a higher body mass index with worse clinical outcome - shorter duration of pain relief and less symptomatic improvement in both joints. We did not find significant prognostic factors (i.e., age, race, the number of comorbidities, use of opiates, and the location (hip versus shoulder) and severity of degenerative joint disease) for the clinical outcomes of injections. **Discussion.** Our results point towards a strong relationship between positive responses to intra-articular Hylan G-F 20 injections performed using fluoroscopic guidance in individuals with lower BMI who suffer from intractable shoulder and/or hip OA-related pain. **Conclusion.** Intra-articular Hylan G-F 20 injections for the symptomatic management of shoulder and hip osteoarthritis appear to be safe with better efficacy in lean individuals regardless of severity.

Atrium – Poster 72 12:15-1:15 p.m.

ATTITUDES TOWARD "SMART DRUGS" USE AMONG COLLEGE STUDENTS: INSTRUMENT DEVELOPMENT

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Jesus Sanchez, Ph.D., Associate Professor, College of Pharmacy
Barry A. Bleidt, Ph.D, Pharm.D, RPh, FAPhA, Professor, College of Pharmacy

Objective. To review the literature about the attitudes toward the safety and fairness of the use of pharmaceutical cognitive enhancements or "smart drugs" among college students, and develop an instrument that will measure student's attitudes toward "smart drugs". **Background.** The use of "smart drugs" for non-medical reasons, and the misuse of prescription stimulant medications is a growing trend among high school and college students. However, there are many concerns about the appropriateness and fairness of their use among these students. **Methods.** A literature review of articles on attitudes toward "smart drugs" and cognitive enhancers among college students has been performed using the MEDLINE and EMBASE databases. The following terms were used to search for articles to be included in the review; "smart drugs", "college students", "cognitive enhancers", "ADHD", "attitudes", "drug misuse", and "drug abuse". SPSS factor analysis was done to validate the developed instrument. **Results.** The frequency of stimulants misuse as cognitive enhancers by college students was estimated at 3% to 10% with the majority of students taking them to prepare for exams, however, recent studies found that the non-medical use of smart drugs in the United States grew up to 34%. Research of the available literature about the concerns regarding the use of smart drugs found the most common ones were: medical safety, coercion, and fairness. Four dimensions were more prevalent to measure the attitudes toward the use of "smart drugs" among college students including; perceptions about "smart drugs", personal use, safety and fairness. A 24-item Likert scale was developed to measure these 4 dimensions. The results of SPSS factor analysis showed that the items were loading on 6 factors instead of 4, however, some of the items were loading on more than one factor, so we removed 4 items and did the factor analysis again, and we ended up with 4 factors as the original hypothesis. **Conclusion.** Students' attitudes toward the fairness and safety of smart drugs were different based on many factors, including users vs. non-users, need or reason to use smart drugs, social pressure and the improvement in academic performance. Research is needed to develop a comprehensive instrument that will measure students' attitudes. **Grants.** NA

Atrium – Poster 73 12:15-1:15 p.m.

LOCALIZED FOREARM SKIN WATER CHANGES ASSOCIATED WITH HEAT INDUCED HYPEREMIA

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Kevin Rechcigl, OMS-II, College of Osteopathic Medicine
Harvey Mayrovitz, PhD, Professor, College of Medical Sciences

Objective. Our goal was to test the hypothesis of a significant positive correlation between skin water and heat-induced hyperemic blood flow. **Background.** Skin water is important to skin physiology and is affected by multiple clinical conditions. We reasoned that localized heat-induced-vasodilation increases capillary filtration causing increased skin water. **Methods.** Skin water was assessed by stratum corneum (SC) capacitance and tissue dielectric constant measurements (TDC) on the forearm of 30 healthy subjects before and after localized skin heating to ~40 degrees celsius for 12 minutes. Skin water

loss was determined by transepidermal-water-loss (TEWL). Hyperemia was assessed with laser-Doppler methods. **Results.** Immediate post-heat peak blood flow increased from 2.6 ± 1.4 to 25.1 ± 8.5 units and a significant increase ($p<0.001$) in all skin water parameters. Male pre-and-post heating TDC values were significantly greater ($p<0.01$) than female values. Post-heat skin water parameters declined but remained above baseline ($p<0.001$) for at least 15 minutes. Post-heating SC and TEWL were positively correlated but the blood flow hyperemia was uncorrelated with any skin water parameter. **Conclusion.** Although all skin water parameters increased, there was no demonstrable relationship to the hyperemia. We thus reject our initial hypothesis and conclude that processes associated with altering skin water parameters are not importantly dependent on heat-induced vasodilation in healthy young adults. However, the role of vascular components in this process in aged persons and persons with compromised circulations should not be ruled out. These possibilities represent areas needing further investigation that will be aided by using the present data for reference comparisons. **Grants.** N/A

Atrium – Poster 74 12:15-1:15 p.m.

THE EFFECTIVENESS OF OSTEOPATHIC MANIPULATIVE TREATMENT FOR MECHANICAL LOW BACK PAIN

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Qureshi Yasmin, DPT, MHS(osteo), Associate Professor, College of Osteopathic Medicine

Introduction. Low back pain is a common complaint in primary care. Although pharmaceutical interventions are considered first line treatment, many patients report the pain does not fully resolve with their use alone. Persistent symptoms often lead to invasive procedures that often have variable efficacy. **Case presentation.** A 35 year-old hispanic male presented with a recent relapse of Mechanical Low Back Pain (MLBP). His symptoms included constant stabbing pain radiating down his lateral left thigh and leg, accompanied with a positive bilateral straight leg raise. A specific Osteopathic Manipulative Treatment (OMT) protocol was performed a total of 5 times over an 8-week period, which targeted several areas of somatic dysfunction. Results were evaluated using the Visual Analog Pain Scale (VAS) and Oswestry Disability Index (ODI) showing a decrease in both pain and functional disabilities over the course of treatment. **Deviation From the Expected.** Standard therapies have not been able to resolve the patient's symptoms, including a laminectomy and pharmaceutical treatments. **Discussion.** Through VAS and ODI scoring, diminished pain and functional disability of the patient was noted throughout the course of treatment. Besides the OMT protocol deployed, the improvement could be attributed the body's natural healing process following injury. **Conclusion.** Numerous studies have analyzed the efficacy of OMT treatment in the management of MLBP. Results from this case provide evidence to support that claim that OMT is a viable non-invasive treatment option for reduction of pain for people suffering with chronic MLBP with acute flare-ups. **Grants.** No funding received.

Atrium – Poster 75 12:15-1:15 p.m.

FUNFITNESS SCREENING—A COLLABORATIVE, INTERUNIVERSITY INTEGRATED CLINICAL EXPERIENCE (ICE) AND SERVICE LEARNING OPPORTUNITY TO BUILD PROFESSIONALISM AND CLINICAL SKILLS IN PHYSICAL THERAPY STUDENTS BETWEEN UNIVERSITIES

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Elsa Drevyn, PT, DPT, Instructor, University of Miami
Lisa Roberts, PT, DPT, GCS, Assistant Professor, Florida International University

Unique and Innovative. PT faculty and students from 3 universities participated in Special Olympics (SO) Funfitness Healthy Athletes Screening Program during Tennis competition in Miami. This was a unique Integrated Clinical Experience (ICE), an opportunity for service learning and opportunity for physical therapy programs to interact and collaborate. **Purpose.** To provide fitness screening to SO athletes in order to identify musculoskeletal challenges, instruct in basic exercise, and determine the need for referral as appropriate through interuniversity collaboration. **Foundation.** Providing service helps students develop a sense of commitment to the community. While it is expected that graduates work together in the clinic, little experience exists for students to work together during their education. **Description.** Faculty and 39 students from three PT programs participated in a structured program for screening fitness in individuals with intellectual and physical disabilities. Athletes rotated through 10 stations serviced by interuniversity teams. **Observations.** The SO population is unique, presenting

wide variations of disabilities. Students progressed from reserved interaction to energetic participation, becoming increasingly efficient and effective. By day's end, students had made plans as a group to meet socially. Students completed a survey after the event. Sample responses included "…great working with other programs" and "I learned so much." **Conclusions.** Participation in community screenings provides opportunities for students to be involved in integrated clinical experiences, community service and demonstration of professional cooperation and socialization. This activity reinforced development of core PT values while facilitating communication and professional skills that can be applied in the workplace. **Funding Source.** None.

Atrium – Poster 76 12:15-1:15 p.m.

EFFECT OF PLURONIC F127 AND TRYPSIN CONCENTRATIONS ON THE IN VITRO RELEASE PROFILE OF NPH

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Young M. Kwon, Ph.D, Assistant Professor, College of Pharmacy

Objective. This current study focuses on further investigation of the effect of varying the hydrogel and subcutaneous enzymes concentrations on the release profile of insulin from the modulated NPH. **Background.** Clinical evidence from previous studies has shown that NPH insulin release kinetics is characterized by a pronounced peak within the first few hours after a single subcutaneous injection, and then insulin level declines in less than one day which is insufficient to provide daily basal insulin requirement. In our previous work, NPH insulin-loaded Pluronic F127 (PF-127) hydrogel was prepared and its release was tested in an in vitro model. Also, we have been exploring the effect of subcutaneous enzymes on NPH dissolution. **Methods.** NPH Insulin crystals were loaded in different concentrations of Pluronic F-127 (PF-127). In vitro release of prepared NPH-hydrogel was conducted in phosphate buffered saline (PBS; with 0.01% Tween 80) at pH 7.4 and 37 °C in dialysis cartridges (MW-cutoff 1000 kDa). Trypsin, as a model subcutaneous enzyme, at different concentrations were added to the release medium during the study. Percent release at 6 hour time points between groups were compared using Student's t-test and ANOVA. **Results.** In vitro release profiles of NPH changed significantly in the presence of the gel matrix (PF127), especially during the first several hours, exhibiting relatively constant with reduced initial release. Changing the concentration of Pluronic F127 as well as the enzymes concentration exhibited proportional effects on the release of insulin ($p<0.05$). **Conclusion.** Insulin release from NPH crystals in an injectable matrix was affected by the polymer concentrations as well as the presence of enzymes. These findings may further pave ways for overcoming some of the drawbacks in microcrystals-based basal insulin therapy. **Grants.** This work was supported by Nova Southeastern University, Health Professions Division (HPD) Research Grant and Saudi Arabia Cultural Mission (SACM).

Atrium – Poster 77 12:15-1:15 p.m.

TOXINS AS TOOLS TO CHARACTERIZE THE ION CHANNELS UNDERLYING STIMULUS-SECRETION COUPLING IN PITUITARY MELANOTROPHS

P.S. Taraskevich, Ph.D., Professor, College of Medical Sciences
H.J. Lyons, Ph.D., Associate Professor, Florida Atlantic University

Objective. Identify the ion channels involved in stimulus-secretion coupling in melanotrophs by the use of toxins. **Background.** Hormone secretion from melanotrophs is dependent on Ca2+ entry through voltage-gated channels. Since melanotrophs are electrically excitable and exhibit spontaneous action potentials, the effects, on secretion, of toxins which alter the activity of voltage-gated channels were investigated. **Methods.** Melanotrophs were placed in a perifusion chamber and melanophore-stimulating hormone content of the perifusate was measured using the Anolis skin bioassay. Toxins did not affect the assay. **Results.** Tetrodotoxin, which blocks voltage-gated Na channels and abolishes Na spikes in melanotrophs, had no effect on basal secretion. FTX-3.3 blocks low threshold, T-type, Ca channels and inhibited basal but not K-stimulated secretion. FS-2, a blocker of high threshold, L-type, Ca channels blocked K-stimulated secretion but not basal secretion. Two other high threshold Ca channels blockers, omega-Agatoxin (P/Q-type channels) and omega-Conotoxin GVIA (N-type channel) did not affect either basal or K-stimulated secretion. **Conclusion.** The lack of effect of TTX on basal secretion

indicates that the Ca dependence of this secretion is not due to Ca2+ entry through voltage-gated channels opened by Na spiking. However, block of T-type Ca channels, which are active around resting potential, inhibited basal secretion implying that Ca2+ entry through T-type channels supports basal secretion. The inhibition of K-stimulated MSH secretion by an L-type Ca channel blocker and the lack of effect of P/Q and N-type blockers suggest that K-stimulated secretion is mediated by Ca2+ entry solely through high threshold, L-type Ca channels. **Grants.** Health Professions Division Research Award

Atrium – Poster 78 12:15-1:15 p.m.

CLINICAL AND PRE-CLINICAL EVALUATION OF THE EFFECT OF DIFFERENT TYPE OF BETA-CASEIN ON REDOX AND EPIGENETIC STATUS

Malav Trivedi, PhD, Assistant Professor, College of Pharmacy
Richard Deth, PhD, Professor, College of Pharmacy

Objective. To investigate the effects of A1 vs A2 type of beta-casein containing diet on antioxidant GSH levels and inflammatory status in pre-clinical and clinical trials. **Background.** Alterations in GSH levels are reported in neurological, inflammatory diseases as well as immune dysfunction. Several studies in animals and humans involving supplementation with whey protein or whey protein isolates from milk have documented increases in plasma and tissue glutathione concentrations along with reductions in oxidative stress, while the effects of casein on GSH are as yet not clear. **Methods.** A pre-clinical study was performed using mouse and rabbit animal models fed on A1 and A2 beta-casein containing diet. The clinical study was performed in collaboration with researchers in China (NCT02406469 https://clinicaltrials.gov/ct2/show/NCT02406469). We collected liver, brain and gut tissues in our preclinical study, whereas serum GSH was measured in our clinical study. In both cases HPLC coupled to an electrochemical gradient detector was used to evaluate GSH levels. **Results.** In our preclinical study we observed significant decrease in GSH levels (indicating oxidative stress) in liver, gut and brain samples from animals (both mice and rabbit, $p<0.05$, N=12) fed on an A1 beta-casein containing diet as compared to animals fed on A2 beta-casein containing diet. Concurrently, we also observed elevated TNFalpha levels and NFkB levels in gut tissues of mice and rabbit on an A1 beta-casein containing diet as compared to animals fed on A2 beta-casein containing diet, indicating elevated inflammatory status ($p<0.05$, N=12). Similarly, in our clinical trial, human participants consuming A1 beta-casein containing milk had decreased GSH serum ($p<0.05$, N=45). **Conclusion.** Absorption of whey-derived cysteine supports GSH synthesis. BCM-7 opiate peptide, released from digestion of A1-type beta-casein, can restrict cysteine absorption and limit the extent of GSH synthesis, especially in sensitive individuals. Milk free of A1 beta-casein might be beneficial in these individuals. **Grants.** NIH R21, The a2 Milk Company.

Atrium – Poster 79 12:15-1:15 p.m.

EVIDENCE OF EARLY CEREBELLAR DYSFUNCTION IN PRESYMPTOMATIC PARKINSON'S DISEASE: DATA FROM MRI AND BIOCHEMICAL ANALYSIS

Malav Trivedi, PhD, Assistant Professor, College of Pharmacy
Craig Ferris, PhD, Professor, Northeastern University

Objective. With the hope of identifying early biomarkers prior to any signs of PD we investigated the PINK1 (PTEN-induced putative kinase 1) knock-out (KO) rat. **Background.** Genetic models of Parkinson's disease (PD) that recapitulate many of the neurobiological and behavioral aspects of disease progression are highly desired as we look to identify early biomarkers of PD long before the symptomology. PINK1 is a mitochondrial protein kinase involved in protecting neurons from stress-induced mitochondrial dysfunction. Mutation in the PINK1 gene is a leading risk factor in familial PD. **Methods.** 3D segmented and annotated MRI rat atlas with quantitative anisotropy to identify sites of gray matter injury from 171 brain areas in wild type (WT) and PINK1 KO. **Results.** Cerebellum and the deep cerebellar nuclei as a potential areas vulnerable to change in early Parkinson's, along with elevated oxidative stress. Immunohistochemical analysis confirmed these results. Mitochondrial dysfunction was also identified in the cerebellum and the deep cerebral nuclei. Consistent with the previous results, cerebellum showed significant changes in ATP levels, GSH levels, oxidative damage and DNA methylation levels. These changes in cerebellum and cerebellar nuclei were more pronounced as compared to the SN / VTA. **Conclusion.** Dysfunction in Cerebellum and deep cerebral nuclei could be used as an early biomarker for identification of PD **Grants.** Michael J Fox Foundation, SAGE Labs.

Atrium – Poster 80 12:15-1:15 p.m.

THE ROLE OF MICRODOSE LITHIUM IN PATIENTS WITH ALZHEIMER'S DISEASE: A SYSTEMATIC REVIEW

Jose Valdes, PharmD, BCPP, Assistant Professor, College of Pharmacy
Jessica Greenwood, P2-Pharm.D., College of Pharmacy
Huy Pham, P2-Pharm.D., College of Pharmacy
Erika Canizares, P2-Pharm.D., College of Pharmacy
Melissa Espinosa, P2-Pharm.D., College of Pharmacy

Objective. The purpose of this study is to analyze whether administration of microdoses of lithium have an overall impact on the cognitive performance of patients with mild to moderate Alzheimer's disease. **Background.** Lithium is a potent inhibitor of glycogen synthase-kinase-3-alpha/beta which plays a role in the pathogenesis of Alzheimer's disease, implying that lithium can be used to prevent the progression of dementia for this subset of patients. The amount of studies for this subset is limited and there is no systematic review available on the effectiveness of microdoses of lithium for dementia. **Methods.** A systematic study was conducted where five different articles were analyzed based on the following criteria: Alzheimer's patients receiving microdoses of lithium and having measurable cognitive tests from either Mini-Mental State Examination (MMSE) or Assessment-Scale Cognitive (ADAS-cog). The differences in cognitive performance between the baseline and final data for both control and experimental groups were compared. **Results.** Regarding the MMSE data, three out of the five case studies showed no benefit with lithium (Macdonald, Forlenza and Hampel). Regarding the ADAS-cog data, three of the four case studies showed a benefit on lithium (Hampel, Lehye and Nunes). **Conclusion.** This review on research articles demonstrated variable results regarding cognitive performance measured by MMSE. However, when comparing the ADAS-cog data, lithium treated patients maintained or improved ADAS-cog scores. Patients with sub-standard microdoses of lithium may improve adherence and perhaps increase sample size in future studies. Additional long-term studies are still needed to support the benefit of microdosed-lithium therapy for dementia. **Grants.** Not Applicable

Atrium – Poster 81 12:15-1:15 p.m.

DO YOU HEAR THAT? SHHH…! REDUCING ALARM FATIGUE TO IMPROVE PATIENT SAFETY.

Jessica Vasquez, RN-BSN Student, College of Nursing
Martha Canizares, RN-BSN Student, College of Nursing
Marcos Ramirez, RN-BSN Student, College of Nursing
Loretta Bafaty, RN-BSN Student, College of Nursing
Lorna Miller, RN-BSN Student, College of Nursing
Hector Samlut, RN-BSN Student, College of Nursing
Irina Rosenfeld, MSN, Professor, College of Nursing

Objective. The aim of this project is to implement interventions to reduce alarm fatigue in the hospital environment. **Background.** Alarms in the hospital settings may create a false sense of security. Advancement in healthcare technology generate devices producing valuable information with the intent to serve as warning signs for the bedside clinician. The overwhelming amount of devices in clinical areas compiled with alarm triggers that require no action can create a noisy environment in which clinicians become disengaged to alarm alerts. The Joint Commission hospital national patient safety goal for 2016 calls for the improvement of the clinical alarm system to reduce patient harm. **Methods.** The review of 895 articles relating to alarms in clinical settings were appraised, and the interventions focused on the reduction of alarm fatigue were chosen for implementation in the hospital. **Results.** The review of the evidence-based literature has provided suggestions for interventions. The most feasible interventions for reduction or elimination of alarm fatigue were proposed for the hospital-wide initiative. The project provides education for the nursing staff and formation of interdisciplinary committees to establish protocols for alarms management. **Conclusion.** A project highlighted possible critical events caused by alarm fatigue and offered initiatives to reduce alarm fatigue. The alarm management requires a collaborative approach between clinicians, biomedical engineers, device manufacturers, and hospitals. The nursing staff can provide substantial feedback to improve clinical alarm system. This project entails further research to evaluate current initiatives and plan future research **Grants.** There is no current funding.

Atrium – Poster 82 12:15-1:15 p.m.

WHY DO RETINITIS PIGMENTOSA PATIENTS LOSE THEIR BLUE COLOR VISION FIRST?

Jeslyn Vayalil, Halmos College of Natural Sciences and Oceanography, Nova Southeastern University
Ava Bittner, O.D., Ph.D., Research Associate/Instructor, College of Optometry
Mariana Ferraz, Student, Illinois College of Optometry

Objective. We explored whether history of vision loss or current visual function status may predict which retinitis pigmentosa (RP) patients are susceptible to loss of short wavelength cones (i.e., s-cones for blue-violet colors). **Background.** Previous studies reported that some RP patients initially lose s-cones prior to longer wavelength cone function, but it is unknown how this relates to scotopic night vision loss. **Methods.** At two visits within a month, 22 RP subjects with visual acuity (VA) better than 20/400 completed the PC-based Innova Rabin Cone Contrast Test (CCT) and AdaptDx dark-adaptation in each eye. **Results.** Of 22 RP patients tested, 15 (68%) had measurable CCT results and they had VA better than 0.5 logMAR (20/60). All of the subjects who did not have any measurable rod function with the AdaptDx (n=10) had the greatest CCT loss for s-cone sensitivity (mean score of 23 across subjects) compared to l- and m-cones (mean scores 55 and 51, respectively), while those with rod function (n=5) had either normal s-cone function or relatively equal reductions for all three cones (mean scores 87, 88 and 84 for l-, m- and s-cones, respectively). Statistically significant predictors of reduced s-cone sensitivity were reduced VA and absence of current rod function ($p < 0.01$). **Conclusion.** In the absence of functional rods, there was a greater loss of s-cone sensitivity than l- and m-cones in RP patients. Future clinical trials should measure the responsiveness of specific cone types to therapeutic approaches to help yield further valuable insight into the mechanisms involved in s-cone loss. **Grants.** NIH funding to AKB: R21 award EY023720

Atrium – Poster 83 12:15-1:15 p.m.

STRESSFUL TRIGGER IN VITRO MAY INDUCE DIFFERENTIAL NUP PROTEIN EXPRESSION IN PBMCS FROM THE GWI PATIENTS COMPARED TO THE HEALTHY CONTROLS

Yugandhar Vudhya Gowrisankar, PhD, Research Associate/Instructor, College of Osteopathic Medicine
Paula Waziry, PhD, Assistant Professor, College of Osteopathic Medicine

Objective. This study was conducted to determine if stress induces differential nucleoporins (Nups) protein expression in human peripheral blood mononucleotide cells (PBMC) isolated and cultured from Gulf War Illness (GWI) patients compared to the healthy controls (HC). **Background.** GWI is a debilitating chronic disorder that has occurred among veterans returning from the 1991 Persian GW. A combination of environmental factors and genetic predisposition of the individual are the prerequisites to allow the disease progression. Preliminary data indicated that metabolic pathways in GWI differ significantly from the healthy control (HC) group. Most of these pathways are related to the differences in the expression levels of nucleoporins (Nups), that are a part of the nuclear pore complexes (NPCs) trafficking in the transportation of nucleocytoplasmic exchange in PBMCs. **Methods.** For this study, the PBMCs were isolated and cultured from the GWI patients and matched HC and a measurable trigger in vitro (Dexamethasone) was used as stress model. These cells were disrupted and whole protein lysate was isolated. Western blot technique was used to measure Nup protein expression in these cells using the commercially available primary antibodies specific for Nups. **Results.** Difference in the expression of Nups in response to stress challenge in GWI patients and HC were observed. **Conclusion.** Stress induces significant change in the expression of Nups proteins in GWI compared to the Healthy controls. **Grants.** This study was funded by DoD FY14 GWIRP New Investigator Award, GW140077.

Atrium – Poster 84 12:15-1:15 p.m.

AN UNUSUAL DUO: CARDIAC ANOMALIES IN A PATIENT WITH NIEMANN PICK TYPE A

Chelsea Wells, OMS-IV, College of Osteopathic Medicine
Patricia Camino, OMS-III, College of Osteopathic Medicine
Ashley Van Putten, OMS-II, College of Osteopathic Medicine

Introduction. Niemann-Pick disease is a rare autosomal recessive metabolic disorder caused by deficiency in the enzyme acid spingomyelinase, which leads to accumulation of sphingomyelin in lysosomes. The overall prevalence of acid sphingomyelinase deficiency (types A and B combined) is estimated to be 1:250,000. Patients often present within the first few months of life with hepatosplenomegaly, feeding difficulties, and loss of early motor skills. Storage of sphingomyelin in pulmonary macrophages leads to interstitial lung disease, frequent respiratory infections, as seen in our patient, and often to respiratory failure. Loss of neurologic function is rapid and progressive. **Case presentation.** An 18 month old male presented to the pediatric cardiology clinic for significant hepatomegaly concerning for a cardiac cause vs storage disease. The patient's past medical history consisted of recurrent sinusitis, rhinitis, and ear infections, restless sleep, and balance problems. Past surgical history included adenoidectomy for adenoid hypertrophy at 15 months of age. At the time of the surgery, the anesthesiologist noted the patient to have an enlarged liver and referred follow up. Labs ordered by the PCP included BUN 15, K 5.7, CO2 14, AST 190, ALT 114, and total bilirubin 0.4. The patient's symptoms at time of presentation at the cardiology office included fussiness, restless sleep, enlarged liver x 3 months, and severe itching for 2 months. The patient's parents relayed that he was developmentally delayed, was not walking independently, had balance issues, and had limited vocabulary. Upon exam, he was noted to have firm liver 10 cm below the right costal margin, spleen passed the umbilicus, and a click at the upper left sternal border upon cardiac auscultation. An echocardiogram was ordered and revealed bicuspid aortic valve with mild aortic root dilation without aortic stenosis. Following his visit with cardiology, he was seen at the pediatric genetics department. A lysosomal enzyme panel revealed low acid sphinomyelinase indicating Niemann-Pick disease type A. This finding was confirmed with DNA analysis testing of SMPD1 enzyme deficiency. **Deviation From the Expected.** Death typically occurs by two to three years of age. Bicuspid aortic valve is a relatively common abnormality. Most children with congenital valvar aortic stenosis (AS), even to moderate degrees, are relatively asymptomatic. Patients with bicommissural valves and no stenosis still require long-term follow-up, because progressive stenosis develops in approximately 75 percent of adults. Thickening and focal calcification of the bicommissural valve can be detected pathologically and on echocardiography as early as the second decade of life. Yearly echocardiography, MRI, or CT is recommended for patients with bicuspid aortic valves and dilation of the aortic root or ascending aorta. **Discussion.** This patient had an unusual presentation of Niemann Pick disease type A along with bicuspid aortic valve and aortic root dilation. While Niemann Pick disease type A is a condition fatal in childhood, there is no current recommendation on management of aortic valve disease in these types of patients. **Conclusion.** This case presents a novel finding of bicuspid aortic valve with aortic root dilation in Niemann Pick disease not previously reported. It is important to consider the management of such patients presenting with both a condition causing significantly decreased life expectancy as well as a condition that needs to be routinely followed into and throughout adulthood. **Grants.** N/A

Atrium – Poster 85 12:15-1:15 p.m.

OXYTOCIN RECEPTOR IS INVOLVED IN NEURONAL GROWTH

Martina Zatkova, Ph.D. student, Comenius University
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Zuzana Lestanova, Ph.D. student, Comenius University
Zuzana Bacova, Ph.D., Assistant Professor, Slovak Medical University
Ana Maria Castejon, Ph.D., Associate Professor, College of Pharmacy
Jan Bakos, Ph.D., Assistant Professor, Comenius University in Bratislava

Objective. The aims of the present study were two fold 1) to determine the effect of oxytocin and oxytocin antagonists atosiban and L-371,257 on neuronal proliferation and 2) to measure the effect of oxytocin on neurite outgrowth. **Background.** Oxytocin is a neuropeptide abundantly produced in the brain. We have repeatedly demonstrated that oxytocin affects growth and development of the neuronal cells, however the role of oxytocin receptors remains less clear. **Methods.** Experiment I. Proliferation of human SH-SY5Y and U-87MG cells was evaluated in response to incubation with oxytocin, atosiban and L-371,257 after 24-96 h. Experiment II. Neurite outgrowth was measured in response to incubation with oxytocin, L-371,257 and their combination in primary cortico-hippocampal neurons isolated from newborn mouse. All-trans retinoic acid (ATRA) was used as a positive control. **Results.** Oxytocin increased cell number in both cell types while L-371,257 decreased cell growth compared to control. Neurite length of primary neurons increased in response to both ATRA and oxytocin; however L-371,257 co-treatment significantly antagonized oxytocin's effect with no effect on cell growh in ATRA treated cells. **Conclusion.** The results indicate that oxytocin receptors play a role in neuronal proliferation and differentiation. Moreover, oxytocin receptors are involved in neurite outgrowth at least in certain types of neuronal cells. **Grants.** This study has been supported by grants APVV-0253-10 and 2/0119/15.

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Castejon, Ana M.	Development of a Blood-Based Molecular Signature for Autism	14	Podium	Melnick	10:45 AM - 11:15 AM
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Cuevas-Trisan, Ramon L.	A Comparison of the Effectiveness of Acupuncture in Veterans With Chronic Low Back Pain and Receiving Opioids for Pain Management Compared to Veterans With Chronic Low Back Pain and Not Receiving Opioids for Pain Management: A Prospective Cohort Study	49	Poster	Atrium	12:15 PM - 1:15 PM
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Fernandez, M. Isabel	Sunburn Risk and Florida Residents: A Cross-Sectional Study Examining Demographic, Dermatological and Attitudinal Factors.	25	Podium	Steele	10:45 AM - 11:15 AM
Fernandez-Fernandez, Alicia	Changing Perspective: Assessment of physical therapy student interpersonal skills using Google Glass vs. iPad video recording	29	Podium	Terry	10:45 AM - 11:15 AM
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Fore, Jennifer	Literature Based Evidence of the Clinical Relevance of Pharmacogenetic Testing for Simvastatin	61	Poster	Atrium	12:15 PM - 1:15 PM
Francis, Joseph	The Adaptability and Utility of the Bilobed Transposition Flap	55	Poster	Atrium	12:15 PM - 1:15 PM

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Garcia, Franco	Single Nucleotide Polymorphisms in Chronic Fatigue Syndrome: Possible Genetic Factors Influencing Pathophysiology	13	Podium	Melnick	9:45 AM - 10:15 AM
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Gholami, Fatemeh	The Effect of Abutment Reconnection and Disconnection on Peri-implant Marginal bone: A Systematic Review and Meta-Analysis.	21	Podium	Resnick	9:45 AM - 10:15 AM
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Grammenos, Alexandra	Age-Related Changes in Male Forearm Skin-to-Fat Tissue Dielectric Constant at 300 MHz	57	Poster	Atrium	12:15 PM - 1:15 PM
Grammenos, Alexandra	Young Adult Gender Differences in Forearm Skin-to-Fat Tissue Dielectric Constant (TDC) Values Measured at 300 MHz	60	Poster	Atrium	12:15 PM - 1:15 PM
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Hardigan, Patrick,	An Analysis of Response Rate and Economic Costs Between Mail and Web-based Surveys Among Practicing Dentists: A Randomized Trial	23	Podium	Resnick	2:45 PM - 3:15 PM
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Henson-Evertz, Kelly	Facilitating Tobacco Dependence Treatment through Nursing Education: An Evidence-based Practice Educational Intervention	3	Podium	Finkelstein	9:45 AM - 10:15 AM
Henson-Evertz, Kelly	Children's Exposure to Secondhand Smoke, Parental Nicotine Dependence and Motivation to Quit Smoking	22	Podium	Resnick	10:45 AM - 11:15 AM
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Kleier, Jo Ann	The Health Belief Model and Cervical Cancer Screening Among African-American Women Living in South Florida	32	Podium	UPP	10:15 AM - 10:45 AM
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Kleier, Jo Ann	Children's Exposure to Secondhand Smoke, Parental Nicotine Dependence and Motivation to Quit Smoking	22	Podium	Resnick	10:45 AM - 11:15 AM
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Kleier, Jo Ann	Sun Exposure and Protection Practices of Caregivers for Young Children Living in South Florida	25	Podium	Steele	1:45 PM - 2:15 PM
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Lall, Bhagmatie	A Review on the Clinical Features and Treatment of Methamphetamine Induced Psychosis	51	Poster	Atrium	12:15 PM - 1:15 PM
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Latimer, Jean	Nucleotide Excision Repair is Elevated in Commercially Available Late Stage Breast Cancer Cell Lines as Compared to Early Stage Explants	14	Podium	Melnick	1:45 PM - 2:15 PM

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Lauer, Adrienne	It's Better With a Team: A PT/OT Interprofessional Learning Experience Using Simulation	28	Podium	Terry	9:45 AM - 10:15 AM
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Law, Cristina Llerena	Training "binocular cortical neurons" in adults with amblyopia	52	Poster	Atrium	12:15 PM - 1:15 PM
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Lopez, Lidice B.	Tissue Dielectric Constant as an Index of Skin Water in Women with and without Breast Cancer: Upper Limb Assessment via a Compact Device	59	Poster	Atrium	12:15 PM - 1:15 PM
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Lymperopoulos, Anastasios	AngII-Mediated Regulation of ?arrestins Expression in Spontaneously hypertensive rat (SHR) and Wistar Rat Astrocytes	64	Poster	Atrium	12:15 PM - 1:15 PM
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Mammino, Jason	The Adaptability and Utility of the Bilobed Transposition Flap	55	Poster	Atrium	12:15 PM - 1:15 PM
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Mastropietro, David	Gel-Forming Excipients to Slow Alcohol Absorption into Systemic Circulation	56	Poster	Atrium	12:15 PM - 1:15 PM
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Mayrovitz, Harvey	Age-Related Differences in Tissue Dielectric Constant Values of Female Forearm Skin Measured Noninvasively at 300 MHz	58	Poster	Atrium	12:15 PM - 1:15 PM
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Mayrovitz, Harvey	Face and Neck Skin Firmness and Water Content Assessed in Young Women	46	Poster	Atrium	12:15 PM - 1:15 PM
Mayrovitz, Harvey	Localized Forearm Skin Water Changes Associated with Heat Induced Hyperemia	72	Poster	Atrium	12:15 PM - 1:15 PM
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Mendelsohn, Deborah	Blood Flow in the Central Retinal Artery during a Randomized Controlled Trial of Electro-Stimulation Therapies for Retinitis Pigmentosa	5	Podium	Hull	10:15 AM - 10:45 AM

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Negussie, Shmuel	AngII-Mediated Regulation of ?arrestins Expression in Spontaneously hypertensive rat (SHR) and Wistar Rat Astrocytes	64	Poster	Atrium	12:15 PM - 1:15 PM
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Rigaud, Eglintine	The Health Belief Model and Cervical Cancer Screening Among African-American Women Living in South Florida	32	Podium	UPP	10:15 AM - 10:45 AM
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Rone-Adams, Shari	Entry-level Evidence-based Practice in and out of Academia--Students' Perceptions Following Full Time Clinical Experiences	31	Podium	Terry	2:45 PM - 3:15 PM
Rone-Adams, Shari	Evidence-based Practice in and out of Academia--Students' Knowledge, Attitudes, and Beliefs vs. What is Experienced in the Clinic	30	Podium	Terry	2:15 PM - 2:45 PM
Rone-Adams, Shari	Attitudes and knowledge with participation in an interprofessional education experience between nursing and physical therapy students	34	Podium	UPP	2:45 PM - 3:15 PM
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Roseman, Janet	The Sidney Project in Spirituality and Medicine and Compassionate CareTM: Transforming Medical Education	26	Podium	Steele	2:15 PM - 2:45 PM
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Sadaf, Aroba	Hemochromatosis: An Incidental Finding of a Compound Heterozygote C282Y/H63D Genotype	70	Poster	Atrium	12:15 PM - 1:15 PM
Saha, Debjit	Fermentable Carbohydrates and Enteral Nutrition Intolerance: A Retrospective Study in Critically Ill Patients	63	Poster	Atrium	12:15 PM - 1:15 PM
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Samlut, Hector	Do you hear that? Shhh! Reducing alarm fatigue to improve patient safety.	76	Poster	Atrium	12:15 PM - 1:15 PM
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Sanchez, Jesus	Development and Pilot Testing an Instrument that Measures the Attitudes of Patients toward Pharmacists' Care Services via Social Media	38	Poster	Atrium	12:15 PM - 1:15 PM
Sanchez, Jesus	Development of a measure of patients' perception of cultural sensitivity of their health care providers	44	Poster	Atrium	12:15 PM - 1:15 PM
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Scarpinato, Erin	A Review on the Clinical Features and Treatment of Methamphetamine Induced Psychosis	51	Poster	Atrium	12:15 PM - 1:15 PM

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Schreiber, Melanie	The Safety and Efficacy of Medical Marijuana in the US	53	Poster	Atrium	12:15 PM - 1:15 PM
Schrier, Matthew	Neuregulin-1 promotes redox-dependent neuronal cobalamin metabolism by stimulating cysteine-dependent glutathione synthesis	41	Poster	Atrium	12:15 PM - 1:15 PM
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Senatorov, Vladimir	Higher Body Mass Index Is Associated With Worse Clinical Outcomes of Hylan G-G 20 Injections in the Shoulder and Hip Joints of Patients With Osteoarthritis	71	Poster	Atrium	12:15 PM - 1:15 PM
Shaw, Donald	Comparison of Arterial Blood Pressures Obtained Following Four Different Rest Intervals	39	Poster	Atrium	12:15 PM - 1:15 PM
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Singh, Anita	Localized Forearm Skin Water Changes Associated with Heat Induced Hyperemia	72	Poster	Atrium	12:15 PM - 1:15 PM
Singh, Anita	Age-Related Differences in Tissue Dielectric Constant Values of Female Forearm Skin Measured Noninvasively at 300 MHz	58	Poster	Atrium	12:15 PM - 1:15 PM
Singh-Franco, Devada	A Community-Based, Inter-Professional Diabetes Self-Management Education Project	20	Podium	Morris	2:45 PM - 3:15 PM
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Smith, Kim	It's Better With a Team: A PT/OT Interprofessional Learning Experience Using Simulation	28	Podium	Terry	9:45 AM - 10:15 AM
Smith, Kim	Changing Perspective: Assessment of physical therapy student interpersonal skills using Google Glass vs. iPad video recording	29	Podium	Terry	10:45 AM - 11:15 AM
Smith, Kim	Does LSVT BIG improve balance confidence and perceived difficulty with walking in patients with Parkinson Disease?	28	Podium	Terry	10:15 AM - 10:45 AM
Smith, Michael	The Effectiveness of Osteopathic Manipulative Treatment for Mechanical Low Back Pain	73	Poster	Atrium	12:15 PM - 1:15 PM

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Snyder, Samuel	Hemochromatosis: An Incidental Finding of a Compound Heterozygote C282Y/H63D Genotype	70	Poster	Atrium	12:15 PM - 1:15 PM
Son, Esther	Importance of Initiating Treatment for Presumptive Diagnosis of Acquired Thrombotic Thrombocytopenic Purpura	64	Poster	Atrium	12:15 PM - 1:15 PM
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Spaw, Jordan	Oxidative Stress in Lymphoblastoid Cell Lines from Autistic Children	14	Podium	Melnick	1:15 PM - 1:45 PM
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Speth, Robert	Application of 3D Printing in Bench Pharmaceutical Science Research	39	Poster	Atrium	12:15 PM - 1:15 PM
Speth, Robert	Characterization of 125-I-Angiotensin (1-7) Binding to Mouse Forebrain and Liver and Rat Liver	40	Poster	Atrium	12:15 PM - 1:15 PM
Sprague, Peter	The Effectiveness of Using Glenohumeral Joint Total Rotational Range of Motion Measurements to Guide Injury Prevention Interventions	29	Podium	Terry	11:15 AM - 11:45 AM
Sprague, Peter	The Relationship Between Functional Movement Screen Scores and Body Composition in NCAA Division II Athletes	30	Podium	Terry	11:45 AM - 12:15 PM

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Stern, Debra	FunFitness Screening--A Collaborative, Interuniversity Integrated Clinical Experience (ICE) and Service Learning Opportunity to Build Professionalism and Clinical Skills in Physical Therapy Students Between Universities	73	Poster	Atrium	12:15 PM - 1:15 PM
Stern, Debra	Changing Perspective: Assessment of physical therapy student interpersonal skills using Google Glass vs. iPad video recording	29	Podium	Terry	10:45 AM - 11:15 AM
Stern, Debra	Are we there yet? Are Students Prepared For the Leap to Employment?	65	Poster	Atrium	12:15 PM - 1:15 PM
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Suciu, Gabriel	Effect of Treatment Outcome on the Survival of Elderly Women with Ovarian Cancer: Florida Cancer Registry (2004-2009)	26	Podium	Steele	2:45 PM - 3:15 PM
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Trivedi, Malav	Neonatal effects of marijuana following maternal illicit drug use: a literature review	47	Poster	Atrium	12:15 PM - 1:15 PM
Trivedi, Malav	Neuregulin-1 promotes redox-dependent neuronal cobalamin metabolism by stimulating cysteine-dependent glutathione synthesis	41	Poster	Atrium	12:15 PM - 1:15 PM
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Vayalil, Jeslyn	Why do Retinitis Pigmentosa Patients Lose their Blue Color Vision First?	77	Poster	Atrium	12:15 PM - 1:15 PM
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Vaz, Gabrielle	A Review on the Clinical Features and Treatment of Methamphetamine Induced Psychosis	51	Poster	Atrium	12:15 PM - 1:15 PM

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Volosko, Irina	Skin Water in Persons with Diabetes Mellitus (DM) Assessed by Tissue Dielectric Constant (TDC) Measured at 300 MHz	70	Poster	Atrium	12:15 PM - 1:15 PM
Vudhya Gowrisankar, Yugandhar	Stressful Trigger In Vitro may Induce Differential Nup Protein Expression in PBMCs from the GWI Patients Compared to the Healthy Controls	77	Poster	Atrium	12:15 PM - 1:15 PM
Vuong, David	Importance of Initiating Treatment for Presumptive Diagnosis of Acquired Thrombotic Thrombocytopenic Purpura	64	Poster	Atrium	12:15 PM - 1:15 PM
Warren, Sandra	Changes in Chronic Health Conditions of Students in Schools of Palm Beach County, Florida 2008-2013	71	Poster	Atrium	12:15 PM - 1:15 PM
Warren, Sandra	Emergence of Autochthonous Chikungunya in Palm Beach County, Florida	40	Poster	Atrium	12:15 PM - 1:15 PM
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Weingrad, Daniel N.	Tissue Dielectric Constant as an Index of Skin Water in Women with and without Breast Cancer: Upper Limb Assessment via a Compact Device	59	Poster	Atrium	12:15 PM - 1:15 PM
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Wiewora, R.	Changes in Chronic Health Conditions of Students in Schools of Palm Beach County, Florida 2008-2013	71	Poster	Atrium	12:15 PM - 1:15 PM

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Woods, Albert	Improved Visual Function in a Randomized Controlled Trial of Electro-Stimulation Therapies for Retinitis Pigmentosa	4	Podium	Finkelstein	10:45 AM - 11:15 AM
Yasmin, Qureshi	The Effectiveness of Osteopathic Manipulative Treatment for Mechanical Low Back Pain	73	Poster	Atrium	12:15 PM - 1:15 PM
Zarrin, Arash	Age-Related Differences in Tissue Dielectric Constant Values of Female Forearm Skin Measured Noninvasively at 300 MHz	58	Poster	Atrium	12:15 PM - 1:15 PM
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Zatkova, Martina	The Neuroprotective Effect of Oxytocin Against Apoptosis and Oxidative Stress	35	Poster	Atrium	12:15 PM - 1:15 PM
Zhang, Bin	Increased "noise" in V2 neurons of amblyopic monkeys	10	Podium	Jonas	1:15 PM - 1:45 PM
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Zubkousky, Stacy	Specialty Contact Lens Fitting the Irregular Cornea	6	Podium	Hull	11:45 AM - 12:15 PM

Nu Sigma Upsilon (NSU) Chapter of the Alpha Eta Society

The purpose of the Alpha Eta Society is to promote and recognize the significant scholarship, leadership, and contributions of the Allied Health professions.

The NSU Chapter of the Alpha Eta Society would like to acknowledge the outstanding achievement of all the professionals involved in the organization of HPD Research Day 2016.

We would especially like to recognize the Alpha Eta Members who are presenting at this event:

Morey Kolber, PT, PhD, OCS, Cert. MDT, CSCS

Adrienne Lauer, Ed.D., OTR/L

Leah Nof, PhD, PT

Kyrus Patch, DHSc, MSPAS, PA-C

John Rafalko, Ed.D, PA-C

** Induction Ceremony August 2015*

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