

KEYNOTE SPEAKER

Joshua M. Hare, M.D.

Louis Lemberg Professor of Medicine
Professor of Biomedical Engineering and Cellular and Molecular Pharmacology
Director, Interdisciplinary Stem Cell Institute
University of Miami Miller School of Medicine

Dr. Hare is the founding director of the Miller School of Medicine's Interdisciplinary Stem Cell Institute, an Institute devoted to the new field of regenerative medicine. The Institute has 40 faculty members and houses 15 independent research groups devoted to basic scientific and translational work in the field of stem cell therapy and regenerative medicine. Dr. Hare is a pioneer in the field of stem cell therapeutics for human heart disease, and conducted a first-in-man study of allogeneic bone-marrow derived mesenchymal stem cells (MSCs) to treat patients with heart damage due to myocardial infarction. Dr. Hare's work is supported by a Specialized Center for Cell Therapeutics award from the National Institutes of Health, which supports ongoing clinical trials in cardiac regenerative medicine. At the University of Miami there are now several active clinical studies of stem cell therapy for patients with heart failure and heart attack, and these trials include catheter delivery and surgical approaches to administer cellular therapy. Under Dr. Hare's leadership, ISCI has active programs in cancer biology, cardiology, neonatology, skin diseases, bone diseases, neurologic diseases, ophthalmology, and a program devoted to the ethics of stem cell therapy.

Before joining the University of Miami, Dr. Hare was Professor of Medicine and Biomedical Engineering and Director of the Cardiac Transplant and Heart Failure program at Johns Hopkins University School of Medicine. He received his medical degree from The Johns Hopkins University School of Medicine in 1988. He subsequently served an internship, residency and fellowship in Internal Medicine at The Johns Hopkins Hospital (1991) followed by a fellowship in Cardiovascular Medicine at The Brigham and Women's Hospital (1994). While at Johns Hopkins, Dr. Hare had an extensive track-record of translational research, performing studies in both experimental systems and in humans with congestive heart failure and diseases of heart muscle, with an emphasis on the biology of nitric oxide, oxidative stress, and stem cells. He has published over 175 original research articles, editorials, review articles, and book chapters and is the recipient of six grants from the National Institutes of Health. He has directed multiple clinical trials, including an international Phase II/III study of oxypurinol, a new drug for heart failure, as well as a multicenter Phase I study of MSCs for heart attack patients. At Hopkins, Dr. Hare was also an investigator in the Donald W. Reynold's Center for Translational Research and directed the Cardiovascular section of the Johns Hopkins Institute for Cell Engineering (ICE), where he spearheaded the application of new stem-cell based therapies to patients with diseases of the heart.



Dr. Hare is the Louis Lemberg Professor and Director of the Interdisciplinary Stem Cell Institute (ISCI) at the University of Miami Miller School of Medicine.

Message from the Chancellor

Today is indeed a proud day for Nova Southeastern University's Health Professions Division (NSU-HPD) because it marks the second important milestone in our evolution as a collaborative multidisciplinary and clinical research venue. In the two 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. For example, we do some of the finest statistical and clinical research that can be found in the state of Florida. However, it's not done in a laboratory; it's done using research methodology and statistical knowledge and analysis.

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: Jodie Berman, Dr. Guy Nehrenz, Dr. Clark Galin, Dr. Sergio Kuttler, Dr. Harold Laubach, Dr. Harvey Mayrovitz, Dr. Scott Gorman, Dr. Michael Giese, Dr. Gabriel Suciu, Dr. Eric Shamus, Mislady Velez, and Dr. Luigi Cubeddu.

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 one goes 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 near the \$22 million mark, while the university is approaching \$50 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. Thanks to events such as Research Day, the sky's the limit for the NSU Health Professions Division.

Sincerely,



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



Welcome to HPD Research Day

February 12, 2010

The Health Professions Research Division is excited to welcome you to Nova Southeastern University's Health Professions Division Research Day (HPD Research Day). All six academic colleges of the Health Professions Division—Allied Health and Nursing, Biomedical Science, Dental Medicine, Optometry, Osteopathic Medicine, and Pharmacy—have banded together to offer poster displays and oral presentations of their current research. In addition to the platform and poster presentations, we have invited Dr. Joshua Hare, a world-renowned cardiologist whose work with stem cells is truly revolutionary, to give a keynote address.

Adding to the festivities will be door prizes and exhibitors from across South Florida. 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 community. Congratulations on being part of this student-participated academic research event.

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



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PLATFORM PRESENTATIONS

COLLEGE OF ALLIED HEALTH AND NURSING

Body-Weight Supported Treadmill Training Combined with Supplemental Aerobic Exercises for a Child with Cerebral Palsy: A Case Report

Andrew Cochrane, PT-3,
Bini Litwin, PhD

Background. Cerebral Palsy (CP) is a non-progressive neurological disorder that commonly affects children. People with CP exhibit significantly higher energy costs and lower endurance with ambulation when compared to those without the disorder. **Purpose and Case Description.** The intent of this case report was to investigate the aerobic effects of an 18 week outpatient endurance training program using Body-Weight Supported Treadmill Training (BWSTT) in conjunction with supplemental aerobic activities on a fully cognitive, ambulatory, sedentary, 11 year-old female diagnosed with spastic diplegic cerebral palsy (CP). **Outcomes.** Measures used to determine progress include PCI, estimated VO_2 peak and VO_2 max, functional gait measures, and 6 MWT. The subject's response to treatment included: decreased PCI, increased VO_2 peak and VO_2 max, increased walking speed, increased symmetrical step length, increased maximum treadmill duration, and signs of increased parasympathetic cardiac modulation. **Discussion.** Combining BWSTT with other aerobic activities may be an effective method to increase endurance in ambulatory children with spastic CP.

Active Participation and Social Connectedness Among Adult Online Learners

Sarah Ransdell, PhD, Associate Professor

Background. There is increasing evidence that older and more active online learners show greater social connectedness and better transfer memory compared to younger learners (Gatz & Karel, 1993; Ransdell, 2010). **Methods.** In the present study, graduate health science students from 27 to 61 years of age were given a pretest, a measure of autonomy and confidence (Duttweiler, 1984), online instruction, and a posttest to assess transfer and rote memory for statistics and conflict resolution information. Four birth year cohorts were included: Millennials born in 1982+, generation X, born 1982-'71, younger boomers, 1972-'61, and older boomers, 1962-'51. **Results.** Millennial students showed poorer transfer memory and more autonomy than older students. Older boomers represented the most socially connected and were better at posttest transfer memory. Older boomers were also more active in the websites associated with the online courses. **Conclusions.** Active participation and social connectedness contributed to better learning. A model of online learning is presented that reveals the best moderators and mediators of knowledge acquisition. **Grants.** The authors would like to thank the NSU College of Allied Health and Nursing and the PFRDG award program for support of this research.

COLLEGE OF DENTAL MEDICINE

Root Canal Treatment With a Single Instrument: A Micro CT Evaluation

Sergio Kuttler, DDS, Associate Dean and Professor

Objective. This study was conducted to evaluate the performance of a new NiTi instrument during root canal treatment. **Background.** Since the advent of NiTi rotary instruments root canal therapy has become a standard. All manufacturers have claimed that their 5 or 6 instruments are the best in performing root canal therapy. **Methods.** Teeth total, comprising of recently extracted mandibular molars ($n=22$) were obtained and stored in deionized water and thymol. No previous endodontic treatment had been performed on the specimens, and the presence of large or metallic restorations, cervical defects and root fractures would exclude the tooth from the study. All tooth handling and preparation was performed using appropriate barrier techniques to prevent potential cross-infection and all the experimental procedures were carried out by one experienced operator. Removal of adherent soft tissue and calculus was performed after soaking the teeth for 10 m in 5.25% sodium hypochlorite by hand scaling. The teeth had endodontic access cavity preparations prepared without coronal preflaring, under copious water spray. To ensure canal patency a number 10 K file was used to penetrate the canals to the terminus and an interproximal radiograph was taken with the file *in situ* to confirm the presence of either a Type II or III canal system and to exclude any root segments having unusual canal anatomy. The

file was placed at the level of the apical foramen and measured; the working length was determined to be 1 mm short of this length. All teeth were cleaned and shaped using one single instrument in one canal and another NiTi in the other canal. **Results and Conclusions.** Will be presented at Research Day.

Biocompatibility Screening of Dental Materials Using Human Tooth Slice Culture

Peter E. Murray, PhD, Associate Professor

Objective. This study was conducted to develop a human tooth slice organ culture assay to measure the response of the cells of the dental pulp to commonly used dental materials. **Background.** New more clinically relevant methods to screen the biocompatibility of dental materials are needed. **Methods.** The following common types of dental materials; calcium hydroxide [CH] (Dycal, Dentsply, Milford, DE), composite resin [CR] (One Step, Bisco, Schaumburg, IL), zinc oxide eugenol [ZOE] (Kalzinol, Dentsply, Milford, DE) and resin-modified glass ionomer [RMGI] (Vitremmer, 3M ESPE, St. Paul, MN) were aseptically packed into teflon tubing and cut into 1mm pellets. The pellets were placed in contact with third-molar human tooth slices (n=40) and submerged in culture media for 2 or 7 days. After culture, the tooth tissues were processed for histological staining and the responses of the odontoblasts were analyzed histomorphometrically. The data was analyzed with analysis of variance (P value) statistics. **Results.** Some pulp necrosis and a loss of odontoblast survival was observed according to the type of dental materials tested (ANOVA, $P < 0.0001$). From the most to the least destructive to the odontoblasts was; ZOE, CH, RMGI and CR. **Conclusion.** This human tooth slice organ culture screening method has the potential to be used as a rapid, inexpensive and easily-available method for measuring the biocompatibility of dental materials. **Grants.** This study was funded by NIH/NIDCR grant DE015573.

Craniofacial

Comparison of Bond Strengths of Novel Bone Adhesives and Resorbable Plates and Screws: *In Vitro* Study

Silvia B. Casas¹, DDS, PG Fellow,
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Jeffrey Y. Thompson¹, PhD, Professor,
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Objective. To determine if novel bone adhesive systems are a viable alternative to using screws for internal fixation. **Background.** The plate-screw fixation that requires the drilling of holes may weaken the bone leading to fractures. Fixation using adhesives has several advantages, including the ease of application, faster setting times, better biomechanical properties, and biodegradability. **Methods.** Four adhesives, octyl-cyanoacrylate, n butyl-cyanoacrylate, novel methacrylate and cyano-acrylate derivative, were tested for microtensile and shear bond strengths. Human cadaveric parietal bone samples were cut into rectangular bars with the following specifications: samples of 2mm X 2mm X 20mm cut into two halves and glued together for microtensile testing, paired samples of 2mm X 2mm X 20mm overlapped with by 10 mm for shear testing, and paired samples of 6mm X 4mm X 20mm attached together by a resorbable plate (6 X 22.8mm) with either adhesives or screws for shear testing. Humid conditions were maintained during experimentation. Data was analyzed by Dunnet's multiple comparisons along with Tukey's adhoc testing. A p-value of <0.05 is considered significant. **Results.** N butyl cyanoacrylate and novel cyanoacrylate derivative (1.37 ± 0.26 MPa & 0.5 ± 0.22 MPa, $p < 0.05$) had significant strengths compared with the other adhesives. The mean strength for resorbable plate and screws was 0.47 ± 0.11 MPa. **Conclusion.** Adhesives have been developed that have equivalent or better bond strengths than screw fixation. N butyl cyanoacrylate and a novel cyanoacrylate derivative have shown great potential for use in fixation of fractured bone. **Grants.** This study was funded by Biomet Microfixation (Jacksonville, Florida).

Department of Endodontics

Comparison of Dental Stem Cell Survival and Adherence to Endodontic Sealers

Jeff Hanzon, DMD, PG-2

Objective. This study compared the survival and attachment of Dental Pulp Stem Cells (DPSCs) to five common endodontic sealers. **Background.** It is not known if endodontic sealers can be used as part of regenerative endodontic therapies because previous research has not measured if they are toxic to DPSCs. **Methods.** Forty-eight extracted human single-canal teeth were cleaned and shaped using ProTaper rotary files. Sealers were introduced into the canals with gutta percha points. The sealers selected were: AH Plus Sealer (De Trey/Dentsply, Konstanz, Germany), Apexit Sealer (Vivadent, Schaan, FL), Seal Apex Sealer, RealSeal (Sybron Endo/Kerr Romulus MI), Pulpdent Sealer (Pulpdent Corp. Watertown, MA), BC Sealer (Brassler USA, Savannah GA), in addition to a tissue bio-adhesive (BD Cell-Tak, BD Bioscience, San Jose, CA). The instrumented teeth were immediately placed in cell culture with confluent DPSCs for one week. The teeth were processed for scanning electron microscopy and micrographs were categorized using a double blind scale for DPSC survival and attachment. Data was analyzed by ANOVA statistical tests (P values) at a significance of 95%. **Results.** All the sealers had some toxicity. The survival and attachment of DPSCs varied between the different types of sealers ($P < 0.05$). The best product was bio-adhesive. **Conclusion.** The selection of a low toxicity sealer type is important for DPSC survival and attachment, which is important to successful regenerative endodontic therapy. **Grants.** This study was funded by NSU Health Professions Division.

The Effectiveness of Growth Factors to Create Dental Pulp Constructs

Cameron Howard, DMD, PG-2

Objective. This study was conducted to compare the effectiveness of six growth factors to create tissue-engineered dental pulp constructs. **Background.** Dental pulp constructs are a potential future endodontic treatment to revitalize teeth. **Methods.** Stem cells from human exfoliated deciduous teeth (SHED) were grown to confluence and seeded on 3-dimensional open-cell D,L,L-poly(lactic acid) (polymer) tissue engineering scaffolds. The growth factors were: 10 ml/ml of Collagen-1, Collagen-IV, Vitronectin, Fibronectin, Laminin and Sphingosine-1-Phosphate (S1P). All the scaffolds and growth factors were supplied by BD Biosciences, Franklin Lakes, NJ. The pulp constructs were submerged in culture media and maintained at 37 °C in a 5% CO₂ atmosphere for 7 days and 14 days. Neutral red dye (0.0016%) was added to the culture media to stain metabolically active cells. The specimens were fixed in formalin, dehydrated and processed for light microscope histology. A histological analysis of SHED survival within the samples was conducted at x200 magnification. Data was analyzed by ANOVA statistical tests (P values) at a significance of 95%. **Results.** SHED survival was from the most to least optimal in the pulp constructs coated with; Fibronectin, Collagen-IV, S1P, Collagen-1, Vitronectin, Laminin, and the absence of growth factor ($P < 0.05$). **Conclusion.** These *in vitro* results suggest that coating scaffolds with Fibronectin, Collagen-IV, and S1P are beneficial to create tissue-engineered dental pulp constructs. **Grants.** This study was funded by grants from the AAE Foundation and NSU Health Professions Division.

Osteoblast Survival Within *in Vitro* Scaffolds for Endodontic Bone Regeneration

Steve Mangan, DMD, PG-2

Objective. This study was conducted to measure and compare the survival of osteoblasts on three types of rigid scaffolds (BD Biosciences, Franklin Lakes, NJ); polymer, collagen, and calcium phosphate and four types of injectable bone augmentation scaffolds (Dentsply Tulsa Dental, Oklahoma City, OK); DBX, MTF, D-700, N-300, and a root repair material; Diaroot (Diadent Burnaby, BC, Canada). **Background.** To accomplish bone regeneration as part of regenerative endodontic therapy, osteoblasts may be delivered into bone defects using delivery scaffolds. **Methods.** A total of 80 tissue constructs were created by seeding the scaffolds with 10⁶ osteoblast cells with the aid of a sterile micro-syringe. The osteoblasts (MC3T3-E1) were supplied by ATCC, Manassas, VA. All the specimens were maintained in cell culture, at 37°C in a 5% CO₂ atmosphere for 7 and 14 days. Neutral red dye (0.0016%) was added to the culture media to stain metabolically active cells. The cell survival within the constructs was measured using histologic criteria. The data was analyzed using analysis of variance (P value) statistics. **Results.** Osteoblast survival within the scaffolds was from the most to least optimal; collagen, polymer, calcium phosphate, N-300, Diaroot, D-700, MTF, and DBX ($P < 0.05$). **Conclusion.** Rigid scaffolds are preferable to maintain the survival of osteoblasts and could be used to deliver them into bone defects to accomplish regeneration. **Grants.** This study was funded by a grant from NSU Health Professions Division.

Pediatric Dentistry

An Evaluation of the Biaxial-Flexural Strength of Flowable Composites

David Thome, DDS, PG-2,

James Rothrock, BS,

Patrick C. Hardigan, PhD, Executive Director of Health Professions Division Research,
Christina Garcia-Godoy, DDS,

Jose Larumbe, DMD, Assistant Professor

Objective. The purpose of this paper is to determine the best of five flowable composites regarding flexural strength: Filtek Supreme Flowable, Venus Flow, Gradia Flow, Heliomolar flowable, and Esthet-X Flow. **Methods.** All materials were from the same shade (A2): Filtek Supreme Flowable, Venus Flow, Gradia Flow, Heliomolar flowable, and Esthet-X Flow. Cylindrical discs with the diameter of 9mm and thickness of 1.2mm were made using a custom-made stainless steel mold. 21 specimens were prepared for each material. Specimens were immersed in distilled water for 72 hours. After 72 hours, specimens were dried and their dimensions measured using a digital caliper (Mitutoyo Corporation, Tokyo, Japan). The strength test was carried out using a universal mechanical testing system (Instron 8841, Instron Corporation, Canton, MA). In the biaxial fixture, the specimens were supported by three stainless steel ball bearings with the diameter of 1.6 mm equally spaced inside the fixture. A mylar strip was placed on top of each specimen to more uniformly distribute the load from the piston. The specimen was loaded at a crosshead speed of 0.5mm/minute until fracture. **Results.** A 1-way ANOVA was used to look for differences between samples groups, with Tukey's HSD test for the post-hoc analysis. Gradia Flow (167.35 MPa) and Filtek Supreme Flowable (163.28 MPa) are significantly stronger than Esthet-X Flow (130.43 MPa), Heliomolar Flow (120.82 MPa) and Venus Flow (103.92 MPa), $P < 0.05$. **Conclusions.** The flexural strength of some flowable composites may exceed, or at least be statistically similar to packable composites. **Grants.** Research supported by Nova Southeastern University.

Comparison of Four Commercially Available Posterior Primary Esthetic Stainless Steel Crowns

Vincent Van, DDS, PG-2
Christina Garcia-Godoy, DDS

Objective. To determine which of the veneered primary stainless steel crowns demonstrate the greatest resistance to dislodgment and to characterize the bond failure. **Background.** There is a growing demand from parents to provide more esthetic restorations. We need an alternative besides SSC. Veneer primary molar esthetic stainless steel crowns have recently appeared on the market. There are few literatures on the performances of these crowns but none compare the different brands from different companies. **Methods.** Ten of the same sized preveneered primary molar stainless steel crowns will be purchase from four different laboratories. The four laboratories will be tested are: Dental Innovators, Cheng Crowns, NuSmile Crowns, Kinder Krowns. Only full porcelain coverage primary molar stainless steel crowns will be used. A master die will be fabricated with preparation and reduction specified in text books. Ten duplicate dies will be fabricated from this master prepped die. Each veneered crown will be luted with Fuji glass ionomer cement onto one of the ten prepared cast die. The crowns will be allowed to set for twenty-four hours. The crowns will then be thermocycled at 4° C and 55° C for 500 1-minute cycles. Each die will be placed on a mechanical testing machine with a compressive load (N) applied along the long axis of the specimen at a crosshead speed of 1 mm/min until fracture. Failure loads (N) will be recorded for each specimen. Failure will be classified as complete dislodgement of the facing of the preveneered crowns. **Results.** Will be presented at Research Day. **Conclusions.** Will be presented at Research Day. **Grants.** The study was funded by NSU HPD.

Department of Prosthodontics

Volumetric Misfit in CAD/CAM and Cast Implant Frameworks: A University Laboratory Study

Riad Almasri, DDS,
Carl Drago, DDS, Adjunct Faculty,
Sharon C. Siegel, DDS, Professor and Chair Prosthodontics,
Patrick C. Hardigan, PhD, Executive Director of Health Professions Division Research

Objective. This research compared volumetric fit between implants and frameworks manufactured with two technologies; CAD/CAM and conventional casting protocols. **Materials and Methods.** A five implant "patient" model was used to generate implant level impressions and 10 master casts. Five cast gold and five CAD/CAM titanium frameworks were fabricated. The implants and the restorative platforms were scanned. A computer digitized the framework platforms to fit onto the digitized implants by "lofting", simulating right and left 1-screw tests. The misfit between the framework and implants were measured. Welch's t-tests determined differences ($p < 0.05$) between technologies. Wilcoxon Signed-Rank tests determined right and left side differences. **Results.** CAD/CAM frameworks fit better than cast frameworks ($p < 0.05$). No differences existed between right and left sides within both systems ($p > 0.05$). **Conclusions.** This technology demonstrated that CAD/CAM implant supported frameworks had better volumetric fit than cast frameworks. No differences were found between the right and left 1-screw tests. **Acknowledgments.** The author acknowledges Biomet 3i for providing the CAD/CAM frameworks and implant components for this study; DSG Americus-Southeast (Clearwater, FL) Dental Lab for providing the gold alloy and for casting the frameworks; and 3M ESPE Dental Products, St. Paul, MN for providing the impression material.

Effect of Different Techniques of Removal of Residues of Silicon fit Disclosing Agent on the Retention of Ceramo-Metal Crowns Cemented with Resin-Reinforced Glass Ionomer Luting Cement

Ada Y. Brincefield, DDS,
Rafael G. Castellon, DDS, Assistant Professor,
Antonio Godoy, DDS, Assistant Professor

Objective. This study was conducted to determine if the retention of permanently cemented crowns is affected by the use of a silicone fit disclosing agent. **Background.** Earlier research has shown that the retention of metal cast restorations may be compromised when cemented after the use of a silicone fit checker. To date, one of the cements of choice for definitive cementation of ceramo-metal crowns is resin reinforced glass ionomer, (Fuji Plus, GC America). There is little information in the dental literature comparing the effect of different cleaning methods in the removal of the fit indicator media used to assess the fit of the crown. **Methods.** For this study the retention of cast copings was measured after four different cleaning techniques were applied to remove the fit silicon disclosing agent residues. **Results and Conclusions.** Will be presented at HPD Research Day. **Grants.** This study was funded by a grant from the Health Professional Division.

The Effect of Surface Modification on the Microtensile Bond Strength of Zirconia Ceramics

Carlos Villanueva, DDS,
Jeffrey Y. Thompson, PhD, Professor,
Robert Smith, PhD, Research Associate

Objective. To determine the long-term microtensile bond strength of zirconia, which has been silica-coated using a novel technique, to dual-cured resin cement. **Background.** Earlier research has shown that one of the major clinical problems with the use of indirectly placed zirconia restorations is the difficulty in achieving adequate bonding with the underlying substrate (i.e., tooth structure, implant abutment). To date, different protocols for cementation of zirconia have been developed, but the long-term effectiveness of these methods is unknown. **Materials.** A novel molecular vapor deposition technique has been developed to deposit a silica layer on zirconia. Two porcelain and ten zirconia (ZrO_2) blocks were manufactured. The blocks were air abraded and separated into six groups: 1) porcelain – HF etched and silanized, 2) ZrO_2 – tribochemical coated and silanized, 3) ZrO_2 – treated with primer, 4) ZrO_2 – treated with novel silica layer of 3.2-nm and silanized, 5) ZrO_2 – treated with novel silica layer of 5.8-nm and silanized, and 6) ZrO_2 – treated with novel silica layer of 30.4-nm and silanized. All blocks were bonded to composite blocks using dual-cure resin cement and cut into microtensile bars. Microtensile bond strength was measured using a universal testing machine for zero, one, and three months. **Results and Conclusion.** Will be presented at the HPD Research Day. **Grants.** This study was funded by a grant from the Health Professional Division.

COLLEGE OF MEDICAL SCIENCES

Sulfur Metabolism and its Clinical Correlations

Kallidaikurichi V. Venkatachalam, PhD, Professor

Objective. My talk would cover overall sulfur metabolism and various clinical correlations of sulfur biology including cancer. **Background.** Sulfur is one of the chief elements that are required for normal biological functions. From archaea to mammals importance of sulfur has been realized. Sulfur in the form of inorganic anion (sulfate) is specifically transported from extracellular milieu into intracellular regions. Once inside the cell it is reduced into sulfide by complex sets of enzymes. The reduced sulfide is then incorporated into carbon compounds for example in the form of the amino acid, methionine. The sulfate reduction and *de novo* synthesis of methionine is absent in mammals. Thus methionine is an essential amino acid for mammals that would have to come from diet especially during development and cell divisions. Inorganic sulfate can also be converted to 3'-phosphoadenosine 5'-phosphosulfate (PAPS) using ATP by PAPS synthase in two sequential steps. PAPS is the universal sulfuryl donor. **Methods.** Enzyme assays of PAPS synthase and Methionase will be discussed. **Results.** PAPS synthase and Methionase are two key enzymes of sulfur metabolism. **Conclusion.** There are many small molecules as well as macromolecules that get sulfonated by respective sulfotransferases. Once sulfonated the physico-chemical properties of the recipient compounds is altered. Deficiency in sulfonation can lead to serious diseases like skeletal deformity. **Grants.** HPD and PFR&D of NSU.

COLLEGE OF OPTOMETRY

Visual-Perceptual Deficits in a Child Survivor of Acute Lymphoblastic Leukemia

Mary Bartuccio, OD, Assistant Professor

Background. Children with Acute Lymphoblastic Leukemia (ALL) undergo an aggressive regimen of radiation and chemotherapy to treat this deadly disease. Survivors of this aggressive treatment do experience impairment in cognitive functions. A recent literature search yielded a few articles illustrating post treatment brain function impairments of these survivors. A case of a child is presented to illustrate her visual and cognitive effect of her treatment. **Case Report.** GL is an 11-year-old WF referred to the Nova Southeastern University Pediatric Eye Clinic by a school psychologist for a visual perceptual evaluation. She presented with complaints of having trouble reading, difficulty with word recognition, having frequent letter reversals when copying assignments and difficulty recognizing words with similar beginnings and endings. She also used her finger to read and often loses her place when reading. These symptoms were present since she was in first grade and she continued to struggle in school despite academic interventions. Her medical history was remarkable for aggressive chemotherapy treatment for Acute Lymphoblastic Leukemia diagnosed at the age of 3 years. GL's initial unaided visual acuity was 20/20 in both eyes at distance and near. However, her ocular motilities were inadequate in fixation, pursuits and saccades. No ocular misalignment was noted with adequate stereopsis, vergence ranges and facility. Her accommodative function was adequate with good accommodative amplitudes and facility. Visual perceptual testing noted poor spatial awareness skills, particularly with recognition of reversals on the Jordan test and the Gardner Reversal Frequency Recognition test and performed at a 5-year-old level. On the Piaget Right-Left Awareness Test she had great difficulty with body mapping tasks. Furthermore, her performance on the Bery VMI test and Wold Copy Test was below age level, indicating poor fine motor and copying skills, with noted difficulty crossing the midline on the copying form test. Visual analysis testing revealed reduced visual memory and visual sequential memory on the TVPS test. In addition, her tracking skills were inadequate with poor results on the DEM test, including many errors. She was diagnosed with Ocular Motor Dysfunction, visual perceptual deficiencies in the areas of laterality/directionality, visual memory, visual sequential memory and visual motor integration. GL completed her 7-month VT program to address all these issues. She showed remarkable improvements in all areas of visual perception and eye tracking to the age equivalent of >12.11 years. **Conclusion.** Visual perceptual testing is warranted in all survivors of Acute Lymphoblastic Leukemia. These patients need to be carefully monitored for cognitive impairment many years after their treatment and can overcome difficulties if managed appropriately.

Brimonidine/Apraclonidine: Anterior Segment Effect

Eulogio Besada, OD, Associate Professor,
Kimberly Reed, OD, Associate Professor,
Perla Najman, OD, Assistant Professor,
Diana Shechtman, OD, Associate Professor,
Patrick C. Hardigan, PhD

Abstract. This study investigated whether brimonidine tartrate 0.2% and/or apraclonidine 0.5% could alter pupil size and intra-ocular anterior segment configuration. **Methods.** Ten healthy subjects between 20 and 40 years of age provided IRB protocol informed consent to participate. Pupil size was measured using a Colvard® pupillometer (Oasis Medical). Measurements of the peripheral iris, iris root thickness, iris/lens distance, anterior chamber depth and posterior lens-retina depth were obtained with an ultrasound biomicroscope (I3 system ABD v2 Diagnosis Ophthalmic Ultrasound, Software Version 5x, Innovative Imaging Inc). Baseline and serial measurements were obtained at three luminance levels (>6.4 cd/m², <0.82-0.4 cd/m² and <0.2-0.02 cd/m²) during a 4 hour interval following instillation of either one drop of brimonidine tartrate 0.2% or apraclonidine 0.5% in one eye and a placebo in the contra-lateral eye. The measurements for each drug were carried out on different days. A nested random effects model controlling for subject's age, race and sex was used for statistical analysis. **Results.** A maximum reduction in pupil size at 90 minutes from instillation (1.40 mm at >6.4 cd/m², 1.69 mm at <0.82-0.4 cd/m² and 1.55 mm at <0.2-0.02 cd/m²) was observed for brimonidine tartrate 0.2%. Significant miosis ($p < 0.01$) occurred at all time intervals and illumination levels. Apraclonidine did not induce a significant difference in pupil size. No significant variation in the intra-ocular anterior segment configuration zones studied was observed for either drug investigated. **Conclusion.** Brimonidine tartrate 0.2% produced a moderate miotic effect without significantly altering the analyzed intra-ocular anterior segment configuration. A predominant agonistic effect on alpha 2 receptors of the iris dilator may explain this behavior.

Relationship Between Interocular Suppression in Visual Cortical Neurons and the Degree of Strabismic Amblyopia

Hua Bi, OD, PhD, Assistant Professor

Background. Human psychophysical studies report that amblyopia is linked to robust binocular suppression during early infancy. Previously we have shown that V1 physiology of strabismic monkeys is dominated by interocular suppression (i.e., binocular responses are weaker than monocular responses) that begins with the onset of strabismus. **Objective.** This study investigated whether the prevalence of interocular suppression in V1 and V2 neurons is related to behaviorally determined degree of strabismic amblyopia in individual monkeys. **Methods.** Infant monkeys were reared with surgical strabismus (esotropia) between 3 weeks and 18 months of age. Eye alignment was monitored during early development (8-10 months). Standard operant methods were used to measure the severity of amblyopia (Amblyopia Index) in the affected and the fellow eye of each monkey. Binocular and monocular receptive field properties of V1 and V2 neurons were analyzed with standard microelectrode recording and analysis methods. **Results.** The strabismic monkeys (n = 9) were found to exhibit a wide range of amblyopia (i.e., Amblyopia Index ranged between 0.3 and 0.9). Binocular interactions in V1 and V2 were dominated by interocular suppression and the prevalence of suppressive units in individual monkeys varied with their amblyopia index values. The proportion of binocular suppressive units in V1 and V2 of each monkey was highly correlated with its amblyopia index. **Conclusions.** These results suggest that the greater the degree of amblyopia is, the higher the prevalence of binocularly suppressive neurons is in V1 and V2.

Many Eyes of Diabetes: Pilot Testing Culturally Competent Educational Materials for Underserved Populations

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 Magdalena Saint-Louis, OD 4
 Heidi Wagner, OD, M.P.H., Professor

Objective. To pilot test culturally competent educational materials targeted at an underserved Haitian patient population with diabetes. **Background.** Culturally sensitive patient care to minority populations can potentially mitigate health care disparities. **Methods.** Patient education materials were created in English, French, and Creole. Ten subjects with diabetes who were fluent in Creole were recruited from the community. Participants were asked to (1) complete a demographic survey; (2) complete an oral pre- and post-test on knowledge about diabetes and the eye; (3) review a patient education video message; (4) read a patient education message or, at the participant's request, have it read to them; and (5) answer questions about the cultural competency of the materials. A previous study of English speaking subjects served as the comparison group. Three optometric students of similar cultural background served as a focus group. **Results.** Ten female subjects with diabetes (mean age = 65 years) participated. Educational levels varied (6 ≤ 6th grade or equivalent, 3 secondary school; 1 College). Although the assessment of patient knowledge revealed misconceptions about diabetic eye disease, there were no significant differences between the study population and the comparison group (p>0.05). Three dominant themes emerged from focus group feedback: (1) literacy; (2) patient-centered care; and (3) cross-cultural training of health care personnel. **Conclusions.** Culturally competent communication must address diversity in language, education, and literacy skills. **Acknowledgements.** National Eye Institute (through Social & Health Services, Ltd.).

Food for Thought Sight

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 Stephen Chambers, OD-3
 Kelly Honsinger, OD-3
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Objective. To educate adult patrons at Whole Foods Market on the ocular benefits of proper nutrition. **Background.** Almost half of Americans believe that carrots are the best food choice for their vision. However, green leafy vegetables are actually the best choice. The American Optometric Association has chosen to promote healthy eating habits and the benefits they can have on ocular health. **Methods.** We spoke to patrons of Whole Foods Market about making healthy food choices that can aid in the prevention of various eye diseases. We provided eye-healthy recipes, shopping lists, and informational brochures. Patrons were asked to complete a survey to evaluate the effectiveness of the educational booth and the impact of the information presented. **Results.** After polling 104 patrons, awareness was raised from 31.7% to 98.1% in those who would base future purchases on ocular health. The participants found the grocery lists most useful, followed by the one-on-one discussions. **Conclusions.** The public is willing to change their food purchasing choices when provided with good information in the most impactful place. Eating the right foods now can reduce the risk and may prevent many common eye diseases in the community.

NSU Convergence Insufficiency Treatment Trial-Reading Study (CITT-RS): Design and Methods

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Background. Convergence insufficiency (CI), a common condition in school children, is often associated with symptoms such as frequent loss of place, loss of concentration, having to re-read, reading slowly, trouble remembering what was read, sleepiness, blurred vision, diplopia, headaches, and/or eyestrain. A recently completed randomized clinical trial demonstrated that treatment for convergence insufficiency resulted in significant decreases for the following behaviors: "difficulty completing assignments at school," "difficulty completing homework," and "fails to give attention to details or makes careless mistakes in schoolwork or homework." The question is whether these changes lead to an improvement in reading performance. This presentation describes the design and methodology of the Convergence Insufficiency Treatment Trial (CITT-RS), is a multi-center study designed to provide pilot data about the association between CI and reading, attention, quality of life and the effectiveness of office-based vergence accommodative therapy in improving reading performance of children with symptomatic CI. **Methods.** There are two parts to CITT-RS: CITT-RS Study A and CITT-RS Study B. The CITT-RS Study A, will be an assessment of reading, attention, and quality of life in children with symptomatic CI. CITT-RS Study B will be an intervention study to investigate the potential impact of successful treatment of CI on reading fluency. Data Analysis will be based upon data collected at all clinical sites within the CITT-RS study group from the 50 patients. A one-sample t-test will be used to compare the observed mean value of each outcome measure of children with symptomatic CI to published norms. Regression analysis and correlation coefficients will be used to evaluate the relationship between the clinical measures of convergence insufficiency and the reading measures. **Results.** Enrollment of subjects was completed in Dec 2009. Data collection of enrolled subjects in the intervention phase and at the final outcome session will be completed by June 2010. **Conclusions.** Features of this pilot study include formal definitions of conditions and outcomes, standardized diagnostic and treatment protocols, masked outcome examinations, and the CISS score outcome measure.

Conditionally Immortalized Retinal Capillary Endothelial Cells.

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Purpose. Human retinal capillary endothelial cells (hRCE) may play an important role in the early phases of bacterial endophthalmitis. A limited *in vitro* life span, and low endothelial cell yields severely restricts investigation of the properties of these cells. Therefore, we sought to increase the number of available cells by immortalization. **Methods.** Retinas from human donor eyes were dissected from the optic nerve and digested with 0.25% collagenase. Vessel fragments were captured on a 20 μ mesh and plated. Endothelial cells were selected using CD31 coated beads. Immortalization of primary hRCE and human aortic endothelial cells (HAEC) was performed using an amphotrophic replication-defective retroviral construct (pLXSN16E6/E7). Immunocytochemistry (ICC) was used to detect endothelial markers (vWF, CD31, CD62E) on primary and presumptively immortalized cells. HAEC served as positive EC controls. ELISA was also performed on the presumed immortalized cells to confirm expression of CD54, CD31 and CD62E. **Results.** Using ICC, primary hRCE (3 patients) expressed vWF and CD31. The staining intensities were similar to that seen in HAEC (1 patient). Primary hRCE and HAEC also responded to TNF-alpha stimulation as measured by CD62E expression. Treating cells with pLXSN16E6/E7 increased the time in culture of primary hRCE from a maximum 5 passages to at least 12 passages and HAEC from 10 to at least 20 passages. ICC of both hRCE and HAEC treated with pLXSN16E6/E7 showed similar EC marker profiles. ELISA on virus treated hRCE and HAEC confirmed expression of CD54, CD31 and CD62E. **Conclusion.** We have extended the life span of primary hRCE and these conditionally immortalized cells appear to maintain their phenotype for the characteristics examined. This technique will allow examination of their contribution to bacterial endophthalmitis *in vitro*. **Commercial Relationship.** M.J. Giese, None; S.A. Rayner, None; B.J. Mondino, None. **Grants.** The Card Family Research Fund, Research to Prevent Blindness Senior Scientific Investigator Award.

Global Burden of Diseases, Injuries, and Risk Factors Study (GBD)— The Vision Loss Group—Methodology and Results of Systematic Review

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on behalf of the GBD Vision Loss Expert Group

Objective. To improve the accuracy of the global burden estimate of vision loss, this presentation shall describe the GBD systematic review process, with emphasis on seeking cause-specific data on the global prevalence and incidence. **Background.** This complete systematic assessment of the data on all diseases and injuries and produces comprehensive comparable estimates of the burden of diseases, injuries and risk factors for two time periods, 1990 and 2005. **Methods.** Prior to the systematic review, vision loss experts agreed on case definitions for 7 levels of presenting vision loss (visual sequelae). All articles published between 1980 and 2008 were searched among PubMed, Embase and the WHO Library using search terms that included eye diseases, visual sequelae and epidemiological terms. All non population-based studies were excluded. Full text articles were reviewed for eligibility and a quality assessment tool applied. Data abstracted yields age and sex-specific prevalence and incidence of visual sequelae, with cause-specific breakdown where possible. **Results.** 10,871 articles represented these global regions: Europe (33%), North America (25%), Asia (20%), Africa (12%), Australasia and Oceania (5%), Latin America (3%), Caribbean (1%), Israel (1%). **Conclusions.** From the perspective of vision loss, the intent is to improve the accuracy of the global burden estimate by incorporating recent population-based studies, reducing the threshold of visual impairment to 20/40, reporting on presenting VA rather than best-corrected visual acuity, and involving estimates of near visual impairment for the first time. **Grants:** None.

Visual Health Professionals in South America: Distribution and Analysis

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Objective. This study estimates the distribution of visual health professionals (VHP) in South America, while performing a comparison between countries in the region and against statistics from Spain and the United States. An analysis of coverage and geographic distribution will reveal accessibility to vision care. **Background.** The World Health Organization has prioritized the elimination of avoidable blindness by the year 2020 and has targeted human resource development as a strategy. Most government databases in Latin America do not currently track VHP. **Methods.** Data collection consisted of 152 key informant interviews with identified experts in the public and private sector. The resulting analysis yielded an estimation of the number of professionals and their regional distribution per country by category—optometrists and opticians, ophthalmologists, and other VHP. **Results.** An estimated 53,582 visual health professionals (19,004 ophthalmologists, and 32,361 opticians, optometrists and other professionals) show an imbalanced geographic distribution that is disproportional to the distribution of the population. Regional coverage density averages 15 per 100,000. **Conclusion.** Across all VHP categories, there is lack of adequate eye care human resources. Overall, the gap between the private sector and the public sector leaves many zones without coverage, and, therefore, in a situation of social exclusion in visual health. **Grants.** Funding provided by Generalitat de Catalunya, Ajuntament de Barcelona, Agència Catalana de Cooperació al Desenvolupament.

Complications of Durezol Treatment for Anterior Uveitis

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Introduction. Durezol (Difluprednate ophthalmic emulsion 0.05%) is a difluorinated derivative of prednisolone with potent anti-inflammatory activity. This is a new medication used primarily for inflammation post-surgery. A previous study indicated that only three percent of patients using Durezol developed an increase in intraocular pressure (IOP) of greater than or equal to 10 mm Hg. **Case Presentation.** This case describes Durezol as a treatment for anterior uveitis unresponsive to prednisolone acetate 1% (Pred Forte) in a 49 year old African American man. **Deviation from the expected/Discussion.** While no IOP response was noted to prednisolone, the patient experienced a steroid response from Durezol with an IOP increase to 48 mm Hg and subsequent microcystic edema with only 2 week of use. Steroid efficacy and potential side effects of these medications are discussed. **Conclusion.** All steroids are prescribed with caution due to their potential side effects. Durezol may cause patients to be more at risk for serious side effects. Durezol's efficacy in relation to Pred Forte is currently under investigation.

COLLEGE OF OSTEOPATHIC MEDICINE

Addressing Medical Management of Obese and Overweight Pediatric Patients in
Palm Beach County Health Department (PBCHD) Clinics

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Background. PBCHD has noted an increasing trend of overweight/obesity in children. In efforts to appropriately address this challenging health problem, it will be of particular interest to explore our present approach to management of obese/overweight youth in our clinics. The Maine Youth Overweight Collaborative has developed a model to address overweight youth. It is an adaptation from successful collaborative models now routinely used in Asthma and Diabetes management. Elements include provider, parent/caretaker and practice team surveys; medical chart reviews; and training. It involves an in-depth review of BMI tracking, 5-2-1-0 assessment and messaging, along with diagnostic investigation. **Methods.** The data will be obtained from the clinics of PBCHD. Provider surveys have been conducted and explore providers' beliefs regarding perceived efficacy, practice and community resources. Parent/Caretaker surveys have been performed and explore caregivers thoughts on information received from providers regarding obesity/overweight children. A medical chart review checklist (patient nutrition/physical activity measurement, BMI measurement and classification, blood pressure, diagnosis of overweight/obesity, labs, physical advice/goal setting, associated follow-up and referral) is used to conduct a medical record review. **Results.** Analysis not done. **Conclusion.** 1.Training is needed to have a positive impact on the management of overweight and obese youth; 2.Perceptual processing by providers and parental/caretakers may negatively impact care of overweight/obese children; 3.Objective findings will facilitate understanding and compliance with necessary changes; 4.There are barriers to achieving optimal medical management. **Grants.** PBCHD supported.

Surviving a Delayed Transdiaphragmatic Hepatic Rupture Complicated by an Acute Superior Vena and Thoracic Compartment Syndrome

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Case Study Background. The following is a description of what we believe to be the first reported survivor of a delayed transdiaphragmatic hepatic rupture complicated by an acute superior vena cava and thoracic compartment syndrome. **Method.** Retrospective review of a case report at a regional trauma center. **Conclusion.** To our knowledge, the case presented is the first and only reported survivor of a delayed transdiaphragmatic hepatic rupture complicated by an acute superior vena cava and thoracic compartment syndrome. This case highlights the need for cooperative intervention of the part of the surgeons, anesthesiologists, and critical care team needed for a successful outcome in the management of an acute traumatic superior vena cava and thoracic compartment syndrome.

Human Papilloma Virus (HPV) Awareness Survey for At-Risk African American Women

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Background. Human Papilloma Virus is a sexually transmitted virus that causes cervical cancer, most anogenital cancers and a subset of head and neck cancers. Since the release of the HPV vaccine by the Food and Drug administration, it has been observed that females in the age group that the vaccine targets and parents of females in the age group that the vaccine targets are reluctant to receive the vaccine. In fact, only 20% of at-risk women have received the vaccine. **Objective.** The intent of this research is to determine the general population's knowledge of HPV and the HPV vaccine. In addition, we would like to evaluate perception of the vaccine by identifying the specific reasons why people choose not to be vaccinated or have their child vaccinated. **Methods.** Our proposed study is an anonymous survey, which contains questions specifically aimed at determining the public's knowledge and perception of HPV and the HPV vaccine. The survey will be administered, face to face, at local community centers (such as Minority Development). Participants who have agreed to complete the survey will be assisted by a facilitator (one of the study investigators) in order to ensure that the survey is completed. Logistic regression analyses will be performed to determine variables that may be associated with the intent to vaccinate and intent not to vaccinate. **Results.** Results are expected December 2009. **Discussion.** Analysis of results will be completed by March of 2010. The authors will then seek publication by June of 2010. **Grants.** This study was made possible through the Kenyon Grant administered by NSU.

Motion-Testing Palpation Using a Spring Model in 2nd Year Osteopathic Medical Students

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Objective. The purpose of this study was to justify and validate osteopathic motion-testing diagnosis of simulated vertebral segments. **Background.** Previous studies have tested intra and inter-observer reliability for spinal evaluation using anterior-posterior translational springing. Inter-observer reliability in these studies has been poor compared with intra-observer reliability when testing on human subjects. Simulated models equipped with calibrated springs have been proven to be a reliable one-dimensional stiffness stimulus for the evaluation of stiffness at a specific vertebral segment. **Methods.** Approximately 80 second year osteopathic medical students at Nova Southeastern University, College of Osteopathic medicine participated in the study. They performed testing on a wooden spring model, and the osteopathic medical students' skill at performing diagnosis was assessed. Three wooden models with a spring mechanism simulating a vertebral segment were constructed. The spring mechanism provided rebound on either side when pressure was applied, mimicking the palpatory task of motion testing via palpation of the transverse processes of the thoracic spine. Model A was constructed with equal tension and coils on both sides. Models B and C were constructed with unequal tension, with one side having more spring than the other side. The students were instructed to press, using their thumbs, on the marked spot of the wooden model as if they were attempting to diagnose a somatic dysfunction of the thoracic spine. Once they have determined what side has increased tension, if any, they were be asked to do the same on the other two models and were asked to determine the side of increased tension, if any. **Results.** The results of the student's correct diagnosis were analyzed, and it was found that 92% of all student participants were able to correctly diagnose at least two of the dysfunctional models, with 56% of the students overall diagnosing all three dysfunctional models correctly. **Conclusion.** It was found that second year medical students were able to correctly assess dysfunction using the spring model of palpation with a 92% accuracy in at least two of three simulated models. Further studies are needed with a larger population number to assess for accuracy based on handedness, and gender. **Grants.** None.

Myers Briggs Type Indicator: Applications for Teaching and Learning in the Health Professions

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Objective. The study identifies how MBTI personality indicator, can be used to determine student learning style. **Background.** The Myers Briggs Type Indicator (MBTI) concluded that predictable differences among people are caused by the differences in the use of the mind. When the mind is active you are involved in two main activities: perceiving-taking in information and judging- organizing information for use in decision-making. These two skills are also fundamental to the learning process and form the basis of health professions education. **Methods.** The COM Class of 2012 & 2013 took the online version of the MBTI during orientation. Individual student results were self reported during a meeting with classmates. The data was then aggregated per class. The results were compared to learning styles used in adult learning theory. **Results.** When type dimensions are compared to learning style, several themes emerge i.e., approaches to content, use of time management, categorizing information learned. Using themes you can identify how students approach new content and store it for retrieval. Understanding how you learn, maximizes the ability of students to develop more efficient study methods needed for success in health professions education. **Conclusions.** Using information gathered from MBTI, students can identify individual learning styles. By aggregating the data by course, the same information can use used by faculty to understand how the class best learns and how they can flex styles of teaching to meet learning needs of their students. **Grants.** None.

The Knowledge and Attitudes of Labor Interventions (KALI) Project

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Objectives. To examine the attitudes and practices towards different labor interventions among obstetrician / gynecologists ("ob/gyns") and to determine whether they correspond with current treatment guidelines. **Background.** Ob/gyns use many labor and delivery interventions at varying rates, which do not correlate with the strength of recommendations from organized professional groups. Understanding practitioners' attitudes and barriers for use of interventions shown to be effective in improving clinical outcomes and can improve practice patterns. **Methods.** A new survey tool, based on publications by ACOG and other professional organizations, was created to be completed anonymously by practicing ob/gyns in South Florida. It will evaluate knowledge of current guidelines, attitudes towards different interventions, barriers and facilitators for adoption of effective delivery interventions.

Subjects will be recruited by respondent driven sampling using NSU faculty, alumni and mentors of students participating in ob/gyn rotations as initiators of the sampling among colleagues. **Results.** The project has received IRB approval and will begin data collection in November, 2009. We anticipate including at least 100 completed surveys in the analysis for the research day presentation. We will present frequency distributions of participant responses as well as bivariate and multivariate correlates of the principal intervention outcomes, e.g. adopting pregnancy interventions supported by practice guidelines. **Conclusion.** We will use the data to inform South Florida obstetricians about disparities between their practice patterns and professional standard of care recommendations. **Grants.** None.

Are We Bringing HIV Testing to the Forefront of Routine Patient Care?

Preetam Gongidi, MHS

Objective. In 2006 the CDC revised testing guidelines in favor of having routine HIV screening in all medical settings. The guidelines include recommendations for frequency of HIV testing and "opt-out" consent. Primary care physicians, the largest majority in the osteopathic community, often have the initial encounter with an adult with HIV and sometimes the only resource for HIV management. This study was conducted to understand the behaviors and attitudes of osteopathic physicians toward HIV testing and sexual history-taking, including examining barriers to both. **Method.** A sample of 160 osteopathic physicians attending the 2009 Annual Florida Osteopathic Medical Association conference completed an anonymous, self-administered questionnaire using the paper-and-pencil survey format. Data were collected over a 4-day period in February, 2009. The study used a cross-sectional design to report socio-demographic data, attitudes and office practices pertaining to HIV and STI testing, and sexual history-taking. Data were analyzed using SPSS 16.0. **Results.** The majority (81%) of respondents agreed or strongly agreed that it is very important to obtain a separate consent form before an HIV test. Sixty-three percent recommended an annual HIV test for men who have sex with men (MSM); 85% recommended an HIV test for patients with a new STI; 59% recommended an annual STI screening for patients with a history of STIs. Nearly 80% had a positive attitude toward sexual history-taking during the initial visit. Thirty-one percent updated a patient's sexual history only when pertinent information is provided by the patient. **Conclusion.** The findings suggest that many Florida osteopathic physicians have not yet adopted CDC's recommendation regarding routine HIV testing in health care settings. Although most physicians recommend annual testing for patients in high risk groups (i.e., MSM), more efforts are needed to help physicians incorporate HIV testing as part of routine care for all patients. **Grants.** None.

Acquisition of MRSA Through Sexual Transmission and Treatment of Carrier Status: A Case Report

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Introduction. Community acquired Methicillin resistant *Staphylococcus aureus* (CA-MRSA), a major cause of cutaneous and systemic infection, is becoming increasingly prevalent. Cook et al found heterosexual transmission of CA MRSA in three households. These results are important because sexual intercourse appears to be a relatively new and significant vehicle for the transmission of CA MRSA among family members and to the rest of the community. **Case Report.** 22 year-old immunocompetent male presented asymptomatic but requested a test for MRSA since his girlfriend, whom he recently had sexual relations with, had gluteal lesions, which were previously diagnosed as MRSA. A thorough physical exam revealed no abnormalities but a nasal swab was taken and sent to the lab as a precaution. Within 5 days, the lab report came back positive for MRSA and Group B Streptococcus species. Presumably, the patient acquired MRSA through vaginal contact (i.e. oral sex), evidenced by the Group B colonization of nasal mucosa. The patient was given a prescription for Mupirocin 2% Ointment. Five days later, he was free of MRSA. **Discussion.** Awareness of the possibility of sexual transmission of MRSA is essential to containment of the organism. This case showed that MRSA can be transmitted through oral sex. Although there has not been major research work on the subject, results have shown that when MRSA is sexually transmitted, the isolates are unrecognizable strains and potentially invasive. In fact, this novel form of transmission may explain the ability of new strains to become established in the community.

Use of Latent Class Analysis to Risk Stratify Clinically Depressed Patients: An Evaluation using Clinical and Biological Markers

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Introduction. In spite of major technological advancements in health care, psychiatric evaluation and treatment of clinical depression remains largely subjective. In a previous work, the authors showed stress to be highly correlated to depression, and were able to risk stratify individuals into one of three classes. The objective of this research is to provide biological correlates and strengthen the risk stratification found in the previous with the hope of establish objective guidelines for the evaluation and treatment of major depressive disorder. **Methods.** In the Summer and Fall of 2009, students from Nova Southeastern University who utilize the Ziff Student Medical Center were asked to participate in the research study. All participants were over 18 years of age. No media was used to advertise the study and no compensation was offered for participation. Study materials included standard set of 2 psychological assessment tools (the Perceived Stress Scale (PSS) and the Beck Depression Inventory (BDI)). The PSS assesses the participant's level of perceived stress over the last month. The BDI assesses the participant's level of depression through a twenty-one item questionnaire. After participants completed the survey, a physician documented their vitals, medications, and medical symptoms experienced in the past month. **Results.** Results are due by the end of 2009. **Discussion.** Analysis of results will be completed by January of 2010. The authors will then seek publication by March of 2010. **Grants.** This study was funded by an NSU HPD grant.

Drowning and Prevention

Debra Mulligan, MD, Director, Institute for Maternal Child

Objective. The purpose of this study was to investigate the drowning prevention awareness, knowledge and preventive measures of caregivers. **Background.** Among the 67 Florida Counties, Broward, has the highest prevalence of mortality due to drowning and the highest morbidity due to near death drowning for children under the age of 4 years. **Methods.** Caregivers 18 years of age or older, whose child received services during a pediatric emergency department visit to a Broward County children's hospital were asked to complete the 7-question survey. A total of 276 surveys were collected and of those 87 were residential pool owners. **Results.** The majority of the survey participants were parents (91 %) and of those 78% were aware of what age group is most likely to drown. When asked about supervision, almost half (48%) answered "staying in visual contact at all times" and 42% answered "staying within arm's reach of the child". More than half (56%) of the participants had not received information from a healthcare provider on precautions to prevent a child from drowning. Of those with residential pools the majority utilize pool safety measures. **Conclusions.** While the majority of survey participants are aware of the ages most likely at risk for drowning, there is inconsistency as to the appropriate way by which to supervise a child. Effective public health drowning prevention campaigns must convey uniform, clear, uncluttered messages with easy action steps. A unified message for child supervision. More than half of the participants were provided with education to prevent childhood drowning by a healthcare provider, which may serve as a cue to action in the prevention of drowning. Finally, drowning prevention measures are being practiced by those parents and homeowners with residential pools. **Grants.** Funded by Institute for Maternal Child, HPD, NSU.

Childhood Brain Tumors in The Acreage: A Potential Cancer Cluster in Palm Beach County, Florida

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Objective. This study will be conducted to describe and analyze the demographics and potential environmental risk factors of 6 confirmed cases of Pediatric Malignant Brain Tumors in an area being studied for a possible Brain Cancer Cluster. **Background.** In August 2009 the Division of Environmental Health from the Florida Department of Health (FDOH) released the report of a Preliminary Cancer Cluster Investigation in the area of Palm Beach County. Standardized Incidence Ratios (SIR) were used to analyze observed cases confirmed with the Florida Cancer Data System and the expected number of cases in the area; increased rates of malignant brain tumors for children in the period 2000-2007 were found, and consequently the Palm Beach County Health Department (PBCHD) will conduct a second phase of the investigation. **Methods.** A case series design will be used. An extensive structured questionnaire addressing exposures during pregnancy and after birth of the index case to possible environmental carcinogens that have been postulated as being associated with the development of Childhood Brain Tumors (CBT) will be administered to the parents of the total 14 cases (1996-2009) during the face-to-face interviews. **Results.** Frequencies of exposures to different potential carcinogens including but not limited to chemicals like N-nitroso compounds that could be found in water, type of diet during pregnancy, maternal and child farming activities, head trauma, radium in the soil and ionizing radiation will be analyzed and reported related to time and duration. **Conclusion.** The description of the environmental exposures of each case, when compared to the others, could provide early evidence of association between one or many environmental factors in the development of CBT and generate a hypothesis that would grant the need for further research using an analytical approach. **Grants.** PBCHD supported.

Project HOPE: Survey of South Florida Residents' Knowledge and Opinions on End-of-Life Issues

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Robin J. Jacobs, PhD,
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Objective. To gain an understanding of knowledge and attitudes among the general population regarding end of life issues and hospice care among a convenience sample of South Florida residents. **Background.** Hospice is a comprehensive end of life health/support service. Depending on the setting and services provided hospice care may reduce end of life costs by 30-90%. Though use of hospice care has increased marginally in the past decade, hospice services are still underutilized and disparities in the use of hospice exist. **Methods.** Study design is cross sectional survey. A convenience sample of the population of South Florida was recruited at diverse community venues in Broward and Miami-Dade Counties, Florida and by using participant driven sampling of social networks. The study instrument includes questions on advanced care planning, end of life care, knowledge and attitudes concerning hospice and communicating with doctors and family about end of life issues. **Results.** To date 51 of 250 anticipated forms have been collected. Preliminary analysis revealed that 72% of participants did not want to be on a ventilator in the event that they were terminally ill, 90% did not want to be kept alive if they were brain dead, and 56% did not want to be kept alive if they were experiencing severe pain. Although 67% of participants said that if they were dying they would want hospice care for themselves, 35% thought that they could not afford it. Only 33% of participants correctly identified that Medicare pays for hospice and only 11% knew that most private insurance will cover hospice services. **Conclusions.** Though many people are aware that hospice exists and indicate that they would choose hospice care for themselves if they were terminally ill, the majority of people have very limited knowledge of hospice programs. **Grants.** None.

Complication with the Flu Vaccine, Injection Technique, Case Study

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Case Study Background. A 40 year old female student received a FluLava (GlaxoSmithKline) trivalent inactivated influenza vaccine. Patient states within 2 hours of vaccination, she experienced left shoulder pain and within 24 hours severely compromised range of motion. Patient states that she felt the injection was right under the acromium of the shoulder, very high compared to other injections. She felt the injection in the joint. The injection was given by a Pharmacist as their first injection provided. **Methods.** Clinical presentation and follow-up treatments:

- Patient states problems with ADLs
 - AROM flex 50°, abd 75°; PROM flex 90°, abd 120°
 - 3/5 MMT supraspinatus; 4/5 MMT IR & ER
- Physical Therapy treatment
- Steroid injection (RX) Reviewed risks:benefits & post care instructions
 - 5cc mixture 2:2:1 lidocaine:marcaine:kenalog (40mg)
- Impression/Assessment: (L) shoulder pain; (L) shoulder adhesive capsulitis

Conclusion. This presentation will cover the Vaccine Adverse Event Reporting System, Pharmacists' ability to provide injections, and treatment regimen. **Grants.** None.

Normative data for female Division II rowers on adjusted 5K score times

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¹College of Osteopathic Medicine, ²Assistant Women's Rowing Coach, ³Head Women's Rowing Coach

Objective. To collect normative data for female Division II rowers on adjusted score times based on time divided by coefficient for weight. To determine potential based on body weight composition. **Background.** Collegiate rowing comes down to seconds during competition. Power can be undermined by weight in a boat by the means of drag. There is an accepted formula for determining how to adjust 5K rowing times in relationship to body weight. There is currently no normative data on Division II rowers. **Methods.** Thirty-

one collegiate rowers completed a 5K rowing time on a trainer. Body weight and Body composition were recorded. Pre-ranking times were recorded. A formula was used to factor body weight. Post formula ranking was recorded. Body composition was examined to determine times if the rower reduced body fat to 15%. **Results.** The average 5K time was 2:12.9, the average body fat was 16.5%. Rowers are ranked from 1 to 31 based on time ratings. Once weight adjusted times are calculated many rowers moved up or down as many as 10 spots. Statistical analysis is still being performed on the data. Further detailed results will be completed by December 2009. **Conclusions.** Normative data were recorded for a Division II University. A follow-up study now needs to be completed including all Division II schools. This would provide high school students an idea of the range of competition and would allow student goals if they desire to compete in the Division II rowing category. **Grants.** None.

Young Hispanic Heterosexual Men in South Florida Need HIV Testing, Too!

Jimme Sierakowski, BS,
Preetam Gongidi, MHS,
G. Stephen Bowen, MD, MPH
Robin J. Jacobs, PhD,
M. Isabel Fernández, PhD

Objective. We examined associations between risky sex and attitudes toward HIV testing and actual testing practices among a subsample of 236 YHHM aged 18-30 years who participated in a larger study of HIV testing among Hispanic men in South Florida (N=1,054). **Background.** In 2002, the CDC reported that only 41% of the U.S. population had been tested for HIV and 25% of people with HIV were unaware of their serostatus. The CDC now recommends offering universal testing for persons aged 13-64 regardless of risk. Young Hispanic heterosexual men (YHHM) are not regularly tested for HIV, although they may be at risk for infection. Identifying risk factors associated with non-testing behaviors might help health care professionals identify barriers and facilitators to testing and increase acceptance of testing by YHHM. **Methods.** We used a cross-sectional design to report HIV testing practices, attitudes towards testing, sexual behavior, and drug use. We used time-space sampling to recruit participants from community venues in South Florida. Respondents were asked to complete an anonymous, self-administered questionnaire using pen-and-paper format. Data were analyzed using SPSS 16.0. **Results.** Only 48% of respondents had been previously tested for HIV. Of those who were tested, 42% reported it was physician-recommended. Of the men who were never tested (52%), only 13% reported they had been offered a test by a physician; 80% said they would get tested if a physician recommended it. YHHM who were tested scored higher on the Pros of HIV Testing Scale than men who were not. YHHM were more likely not to be tested than their older counterparts. **Conclusions.** YHHM in South Florida are not getting tested for HIV. Public health providers and health professionals have a unique opportunity to encourage YHHM to get tested. More efforts are needed to help providers implement CDC guidelines for universal testing. **Grants.** HIN.

Prognostic Factors for the Risky Behaviors of High School Students That Can Lead to the Leading Causes of Death Among Youths and Tomorrow's Adults

Gabriel P. Suci, PhD
Public Health Program

Objectives. Are ethnic Hispanic high school students more likely to fight, use drugs, smoke and drink alcohol, have more attempted suicide and sexual intercourse abuse, and are more underweight than other ethnic populations? **Background.** The YRBS System focuses on specific health-risk behaviors of young people, to determine the prevalence and age of initiation of health-risk behaviors, assess trends, compare national, state and local data, and monitor progress toward *Healthy People 2015* objectives and National Education Goals. CDC published in 2002 the leading causes of death among youth and adults (National YRBSS 2001 data, and 1999 mortality data) reporting the following six health risk behaviors: unintentional injuries and violence, alcohol and other drug use, sexual behaviors, tobacco use, dietary behaviors and physical activity. Compared to the National distribution, Florida leads in physical activity, sexual and dietary behaviors and slightly in unintentional injuries and violence. **Methods.** This study assesses the prognostic factors for fight, suicide attempt, sexual intercourse abuse and weight status, considered to lead to 5 leading cause of death in U.S. The weighted data of Youth Risk Behavior Survey System from the School Board of Broward County, Florida were used during a period of 13 years with new collected data every other year (1991-2003). **Results.** New prognostic factors that are significantly associated to the youth health-behaviors were found. These factors vary from one outcome to another, and sometimes a correlation of several outcomes was observed. For each outcome several prognostic models were found to be significant. Mostly, the demographic characteristics were found to be effect modifiers, and therefore several independent prognostic models were built accordingly. Odds ratios were reported as measure of associations that approximate the relative risks, based on logistic models. The prediction probability was also computed for all the models. **Conclusion.** The findings can reveal new hypotheses for community and school intervention that improve health and protect against risk factors of death in Broward County. **Grants.** Broward School Board support.

The Gender Difference in the Specialty Choice Among Osteopathic Medicine Physicians in the United States

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Jon H. Dodds, PhD, Associate Professor
Cyril Blavo, DO, MPH, Professor
Public Health Program

Objective. This study examined the gender differences in specialty choice among current Doctor of Osteopathic Medicine (DO) physicians in the US. **Background.** During the past two decades, DO physicians increased significantly and currently account for 7.5% of total physician workforce in the US. A growing proportion of them were female physicians. **Methods.** Total DO Physician data from American Medical Association were used. Discrete choice model was used to examine the patterns of specialty choice by time and/or year of graduation, and place of practice. **Results.** In 2007, 44,544 male and 17,277 female DO physicians were in practice. 35% of females and only 19% of males were younger than 35. Female residents accounted for 21.6% of female DO who were in patient care, compared with only 10.7% for males. Residents in Primary care specialties were 8 percent points higher among females than males. Among male residents, internal medicine accounted for 19%, followed by family medicine (15%), anesthesia (8.5%), pediatrics (6.3%) and emergency medicine (6%). Among female residents, family medicine accounted for 19%, followed by internal medicine (18.5%), pediatrics (14%), obstetrics /gynecology (7.5%), and psychiatrics (5%). These patterns were largely unchanged among physicians aged 35-44. **Conclusion.** Female physicians were more likely engaged in primary care specialties. This will have significant impact on future physician workforce and pattern of practice in the US. **Grants.** None.

COLLEGE OF PHARMACY

Presence of Sterol Response Element in Human Angiotensinogen Gene

Rais Ansari, PhD, Assistant Professor

Objective. The study was conducted to determine the sterol regulatory element binding protein (SREBP) regulatory element in human angiotensinogen (AGT) gene. **Background.** Excessive alcohol intake is linked to hypertension. The mechanism of alcohol-mediated hypertension is unknown. Studies in hypertensive humans and transgenic animal models have established that plasma AGT level is the indicator of blood pressure. AGT is synthesized and secreted by liver. The plasma concentration of AGT is close to *kd* value of the enzymatic reaction between renin and AGT. Therefore, a rise in plasma AGT level can lead to a parallel increase in the level of angiotensin II (Ang II). Ang II is the vasoactive peptide involved in blood pressure regulation. Therefore, studying the regulation of AGT by liver during alcohol toxicity is important to understand the molecular mechanism of alcohol induced hypertension. Alcohol intake is known to activate sterol regulatory element binding protein (SREBP) in hepatocytes. Due to activation of SREBP in ethanol toxicity, the biosynthesis and secretion of AGT from liver may be increased if sterol response element(s) (SRE) in AGT is/are present. **Methods.** To define SRE element(s) in AGT, electrophoretic mobility shift assay (EMSA) was performed with possible SRE of AGT and consensus SRE and nuclear extract from hepatocytes (HepG2) grown in delipidated serum and purified SREBP-1a from *E.coli*. **Results.** Our studies demonstrate the presence of SRE element in AGT gene. **Conclusion.** Increased biosynthesis and secretion of AGT is anticipated due to ethanol toxicity among binge and chronic alcohol abusers. **Grants.** None.

Glucose Abnormalities in Hispanics: How Long Before Type 2 Diabetes Mellitus?

Luigi X. Cubeddu, MD, PhD, Professor

Objectives. To determine the screening value of fasting plasma glucose and insulin in detecting glucose intolerance and diabetes mellitus (DM) in "healthy" Hispanics. **Background.** Glucose abnormalities precede development of diabetes mellitus. However, only fasting glucose levels are used in clinical practice, and its diagnostic value varies among ethnicities. **Methods.** Oral glucose tolerance testing was conducted in 592 Hispanics. A cross-sectional design was employed. **Results.** GA were found in 34% of subjects, defined as impaired fasting glucose (IFG) (13.3%), IGT (6.9%), combined IFG+IGT (7.8%) and type2-DM (6.5%). FPG of 5.6-6.9mmol/l diagnostic of IFG missed 47.1% of subjects with IGT, and FPG ≥ 7.0 mmol/l missed 53.9% of DM. IFG showed a sensitivity of 52.9 % and a specificity of 83% in predicting IGT. The diagnostic yield, expressed by the positive predictive value was poor (36.8%). GA were associated with abdominal obesity, hypertriglyceridemia, hyperinsulinemia, hypertension and metabolic syndrome (MS). Prevalence of MS was greater in DM=IFG+IGT>IGT=IFG> controls. Post-load hyperinsulinemia and hyperglycemia was higher in IGT than in IFG; whereas HOMA-IR was higher in IFG. Insulin secretion was reduced in DM, IFG-IGT and IGT. **Conclusion.** Diagnosis of GA must include both, fasting and 2-hour post-load glucose levels. Presence of fasting and post-load hyperglycemia-hyperinsulinemia in one individual may explain the increased risk in combined IFG-IGT and in DM. Because of its

high prevalence, silent course, and associated increased risk, full-scale screening programs and aggressive management of GA must be implemented.

Medication Use Evaluation of the Metabolic Side Effects of Paliperidone in an Inpatient Psychiatric Facility

Amy Everitt, P-4,
Jose A. Rey, PharmD, Associate Professor

Objective. The goal is to evaluate the metabolic outcomes of paliperidone use in an inpatient psychiatric setting. **Background.** Risperidone, approved in 1994, became first line treatment for schizophrenia due to its propensity to control both positive and negative symptoms. Although atypical antipsychotics produced less EPS, they yield a metabolic side effect profile. Paliperidone, the major metabolite of risperidone, is the first to use the OROS system, which allows for once-daily dosing. The antipsychotic level should remain more constant; Therefore, paliperidone should reduce side effects and increasing tolerability. **Methods.** This study is a retrospective medical chart review. Each subject's lab values, vital signs, and physical assessments are recorded during paliperidone treatment for up to one year. Glucose, lipid profile, weight, BMI, and blood pressure of each subject are utilized to quantify the metabolic effects. **Results.** The mean decrease per subject for LDL, triglyceride, and total cholesterol were 36.57 mg/dL, 42.66 mg/dL, and 29.11 mg/dL, respectively. HDL cholesterol levels were not affected. There was a reduction in mean weight of 6.77 lbs per subject. 29.5% of subjects experienced significant weight loss ($\geq 7\%$ decrease); only 9% of subjects had significant weight gain ($\geq 7\%$ increase). The mean BMI was decreased 1.22 kg/m² per subject. The mean systolic blood pressure was increased by 1.41 mm Hg per subject; the diastolic pressure was decreased by 2.20 mmHg. The mean individual increase in glucose was 7.03 mg/dL. **Conclusion.** Paliperidone significantly reduced LDL, triglycerides, total cholesterol, and weight. HDL and blood pressure were unaffected. However, glucose levels were increased.

Evaluation of Paliperidone in Improving Patient Positive Symptoms vs Negative Symptoms in an Inpatient Psychiatric Facility

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Background. The FDA approval of risperidone turned 1st line treatment for schizophrenia to the atypicals due to their propensity to control both positive and negative symptoms and having a better side effect profile. Paliperidone is the first antipsychotic that is an active metabolite. **Purpose.** The main goal of this study is to evaluate the efficacy and safety of paliperidone in an actual clinical setting while comparing the improvements specifically to schizophrenia positive or negative symptoms. This evaluation will help determine if the paliperidone treatment is equally effective in both symptom clusters. To evaluate these outcomes, the 24-item Brief Psychiatric Rating Scale (BPRS) will be utilized. **Methods.** Chart reviews of 73 psychiatric patients while on paliperidone between March 1, 2006 and April 1, 2009 were reviewed. BPRS scores prior to paliperidone treatment, at 1 month, 3 months, 6 months, and last recorded while on paliperidone were recorded. **Results.** The negative cluster of the BPRS (blunted affect, emotional withdrawal, and motor retardation) showed an average of 3.7% decrease with no statistical significance. The positive cluster (hostility, grandiosity, hallucinations, excitement, suspiciousness, and conceptual disorganization) had a 16.7% decrease in BPRS, a total decrease of 177 points from baseline to last recorded and overall showed a statistical significance in both the 1-tailed and 2-tailed Paired T-Test. **Conclusion.** Paliperidone showed a much higher efficacy in reducing the positive cluster symptoms of schizophrenia but showed little to no statistical significance in reducing the negative cluster symptoms.

Assessment of the First Annual Roadmap to a Pharmacy Residency Workshop by a Student Society of Health-Systems Pharmacy

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Carla Evans, P-4,
Julie Nguyen, P-4,
Antonia Zapantis, PharmD, Associate Professor

Purpose. Only 10-15% of pharmacy students continue postgraduate training even though the pharmacy profession is recognizing the value of residency training. Various studies have evaluated the impact of professional development programs in regards to pharmacy residencies, resulting in a significant effect on students' decisions to pursue a residency. Factors and barriers that attribute to students' decisions to pursue a residency have been identified such as, family and financial commitments, previous job obligations, and lack of interest to invest further into their education. This study investigated the importance of a student-driven professional development workshop and evaluated the workshops influence on increasing student interest and motivation in regards

to pursuing a residency. **Methods.** In November 2008, a student society of health-systems pharmacy hosted a residency workshop and residency showcase. A 21-item questionnaire was distributed at the end of the workshop and a follow-up 23-item questionnaire was given to graduating pharmacy students to further evaluate the long-term effect the workshop had towards students' decision in pursuing residency. Descriptive and inferential statistics were performed to evaluate and compare results. **Results.** 132 students participated in the workshop, where most of them were in their third professional year (35%). Of those that participated, the workshop made no statistically significant difference in their pursuit of post-graduate training opportunities. **Conclusion.** The residency workshop did not influence student's motivation to pursue a residency significantly. Based upon our analysis, future professional development programs may be modified to improve pharmacy student's point of view and motivation in pursuing postgraduate training. **Grants.** The workshop was sponsored by the National American Society of Health System Pharmacists SEED Grant for \$500 and Health Professions Division Grant for \$3,800.

Medication Information on Wikipedia is Accessible, but is it Readable?

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Objective. This study was conducted to assess the readability of Wikipedia entries for commonly used medications using the Flesch-Kincaid Grade Level (FKGL) and a novel measurement tool, the Health Information Readability Analyzer (HIREA). **Background.** Wikipedia is one of the most frequently used resources by online health information seekers. However, the readability of Wikipedia's drug information content has never been systematically evaluated. **Methods.** The 50 most commonly prescribed drugs in the USA were identified and the corresponding Wikipedia entry page for each drug was analyzed by using FKGL and HIREA. The HIREA outputs a value of -1 (very hard) to 1 (very easy) as a measure of a document's readability; whereas, the FKGL provides grade level equivalencies. **Results.** The readability analysis yielded a mean FKGL of 15.4 and HIREA of -.50 for the Wikipedia entries. The easiest to read entry by FKGL was for Dyazide (9.6), which was also the second easiest to read according to HIREA (-0.25). According to HIREA, Zestoretic (-0.17) was the least difficult to read. Dimensional analyses from HIREA indicated the difficulty of the documents as primarily that of the semantic domain (-0.84) relative to cohesion (-0.59), syntactic (-0.48), lexical (0.013), and style (0.015). **Conclusion.** The reading skills required for the 50 drug entries in Wikipedia are appreciably higher than the targeted levels for consumers as measured by both the FKGL and HIREA. **Grants/Disclosures:** This study was funded, in part, by National Institute of Health grants: R01 LM07222 and R01 DK75837.

Cost and Effectiveness Analysis of Rate versus Rhythm Control of Atrial Fibrillation in Patients with Heart Failure

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Background. Coexistence of atrial fibrillation (AF) and heart failure (HF) has been shown to produce a worse prognosis than either condition alone. Rate and rhythm control are two common treatment options in the management of AF; however, the relative cost effectiveness of these options in this population is not known. **Objective.** To compare costs and health outcomes in rate versus rhythm control of AF in HF. **Methods.** A Markov model was created to calculate all the costs and effects of rate and rhythm control strategies. The simulation cohort starting age was 65 with a diagnosis of AF and HF. Costs were measured in 2008 US dollars and clinical outcomes in quality-adjusted life-years, taking the third-party payer perspective. Economic outcomes of interest were drug acquisition, AF and HF hospitalization, and severe side effect costs. Costs and transition probabilities were obtained from the most rigorous studies available (pre-defined criteria) identified in MEDLINE and EMBASE searches and references of published manuscripts. Inpatient costs were obtained from the Healthcare Cost and Utilization Project database. A probabilistic sensitivity analysis was also conducted. **Results.** In the base-case analysis, the incremental life expectancy per patient of rhythm versus rate control as initial treatment was -0.154 quality-adjusted life years (2.827 versus 2.982), while the incremental life time cost was \$6,920 (\$29,589 versus \$22,669 per patient per year). The same results were observed in the probabilistic sensitivity analysis. **Conclusion.** Based on this cost-effectiveness analysis, rate control should be the initial treatment of AF in this population. **Grant.** Not funded.

The Renin-Angiotensin System and Cardiovascular Disease

Robert C. Speth, PhD

Cardiovascular disease continues to be the leading cause of death and morbidity in America. The most pervasive cause of cardiovascular disease is high blood pressure (hypertension) which damages blood vessels and the heart leading to heart attacks, stroke and kidney failure. A leading cause of hypertension is the renin-angiotensin system (RAS). The active peptide hormone of the system, angiotensin II constricts blood vessels increasing resistance to blood flow by acting on a class of receptors known as the AT-1 subtype. This stresses the blood-pumping ability of the heart. It also promotes atherosclerosis, cardiac fibrosis (stiffening of the heart) and retention of fluid. It also acts in the brain to cause thirst, salt appetite and increased sympathetic nervous system activity which further stresses the heart and blood vessels. Several classes of drugs which either block formation of angiotensin II or block the AT-1 receptor have been developed to counteract the RAS. They are widely used clinically with good efficacy. However, hypertension continues to be a major health problem for many, and improved strategies for combating this disorder are needed. The discovery that other angiotensin peptides, e.g., angiotensin III, angiotensin IV and angiotensin (1-7), have activity on their own, and can be formed by specific enzymes, e.g., angiotensin-converting enzyme-2 (ACE-2), as well as the discovery of new receptors and binding proteins for angiotensin peptides, e.g., the AT-4 receptor, the mas oncogene protein and a novel angiotensin II / angiotensin III binding protein offer the potential for new therapeutic approaches to counteract hypertension.

Statins Attenuate the Replication of Vesicular Stomatitis Virus and Modulate Viral Oncolysis

Paula A. Faria Waziry, PhD,
Ana M. Castejon, PhD,
Luigi X. Cubeddu, MD/PhD

Objective. To study statins as antiviral agent in viral oncolytic treatment. **Background.** Statins, or 3-hydroxy-3-methylglutaryl coenzyme A (HMG-CoA) reductase inhibitors, reduce the levels of LDL-cholesterol. Statins have other pleiotropic properties, such as anti-inflammatory, antibacterial and antiviral. Statins may affect the infectivity and proliferation of microorganisms, therefore serving as potential prophylaxis for infectious diseases. The Vesicular Stomatitis Virus (VSV) is an oncolytic virus that differentially kills cancer cells. Protecting normal cells against VSV infection is crucial for successful therapy. **Methods.** HeLa cells were cultured in vitro. Cells were treated with Simvastatin, Lovastatin, Pravastatin or Methyl- β -cyclodextrin (MBCD) for time-points ranging from 2 to 24 hrs. Infections with VSV-GFP followed. Viral proteins were analyzed by WB. Cell viability was determined by standard MTT assay. Imaging of cells was obtained with a Zeiss LSM510 confocal microscope. **Results.** Cells treated with low concentration of Simvastatin (0.125 μ M) showed significant increase in viral proteins ranging from 50% to 100% relative to control. Higher concentrations of Simvastatin (from 0.25 μ M to 2 μ M) showed a dose-dependent decrease in total viral protein. Treatment with increasing concentrations of MBCD showed increased expression of viral proteins. Viral titer profiles correlated with the attenuation observed by WBs. **Conclusion.** Our results show that statins attenuate VSV infection at the level of viral replication. These observations are independent of cholesterol content, which indicate that statins are acting on genes that affect innate immunity. Our data support the use of statins as neoadjuvant and/or as attenuator of VSV oncolytic therapy. **Grant.** NSU Health Professions Division Award 2008-09.

POSTER PRESENTATIONS

COLLEGE OF ALLIED HEALTH AND NURSING

Differences in the Perception of Leisure Satisfaction: Comparing Mothers and Fathers of Children with Disabilities

Ashley Boyce, MOT-2,
Kayleigh Fessenden, MOT-2,
Christina Lucia, MOT-2,
Jessica Marinace, MOT-2,
Jennifer Prugh, MOT-2

Objective. The purpose of this study is to identify the differences in leisure satisfaction between mothers and fathers of children with disabilities. **Background.** There is evidence that shows a decrease in leisure participation among parents of children with various disabilities. Findings from this pilot study can help identify what interventions are most effective when dealing with a mother or a

father who are caring for a child with a disability. **Methods.** This study's design is a descriptive correlational of two groups, mothers of a child with a disability and fathers of a child with a disability. The target population includes caregivers of children with a diagnosed disability. The inclusion criteria consist of being a primary caregiver who has full or partial custody of a child with a disability. Snowball technique will be used to recruit approximately 50 subjects. Leisure satisfaction will be measured using the short form of the Leisure Satisfaction Scale (called the Leisure Satisfaction Measure). This tool measures six subscales of leisure using twenty-four items. Gender is the independent variable, and leisure satisfaction is the dependent variable measured with a Likert scale. Plan for analysis includes description of the sample using descriptive statistics, frequency data and Spearman Rank Order correlation.

The Effects of Occupational Choice on the Self-Esteem of Juveniles in Detention

Ameel Patel, MOT-2,
Courtney Schotchlas, MOT-2,
Janna Stimson, MOT-2,
Abdiel Donoso, MOT-2

Objective. To determine the effect of occupational choice on the self-esteem of juveniles currently at a South Florida detention center. *Occupational choice* is defined as having the ability to make valid and realistic choices in what actions to make, activities to participate in, and which peer groups to associate with (Paulson, 1980). The occupational choice in this study will be participation in a talent show. **Background.** Literature suggests that when youth are shown positive options of extracurricular activities, and made aware of the skills they possess, they are more likely to have higher self-esteem. They are also likely to make positive peer groups, and as a result may avoid delinquent activities. According to Kaplan's Self-Derogation Theory of Delinquency, youth with little opportunity and low self-esteem tend to participate in delinquency to increase their self-esteem. **Methods.** Every youth at the detention center will be given the opportunity to participate in the Talent show. There will be four groups: (A) those who choose to plan the talent show, (B) those who choose to perform in the talent show, (C) those involved in both, and (D) those who have received consent and assent to participate, but choose not to. Participants will be given the Rosenberg Scale of Self-Esteem before the talent show activity begins and again after activity has ended. A comparison of the pre and post data will determine if there were any effects on perceived self-esteem. **Results.** This is a study in progress and will be completed by March 2010.

Camp Integrations: A Model Summer Therapy Program for Children with Developmental Disabilities

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Mary Ann Lowe², SLP D, Program Professor,
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¹College of Allied Health and Nursing, ²Fischler School of Education and Human Services, ³Center for Psychological Studies

Objective. The program was intended as (1) a community-based inclusion program to promote physical, social and emotional development for children with special needs, (2) a training program for physical and occupational therapists, speech language pathologists, special educators and psychologists (3) an experiential learning opportunity for graduate students, (4) a venue for therapeutic outcomes research for children with developmental disabilities. **Background.** Children diagnosed with developmental disabilities constitute a growing population in need of specialized services. Camp Integrations was a collaborative, interdisciplinary effort among therapists, university faculty, students, and community partners to provide therapeutic services to children with developmental disabilities, within a typical summer camp environment. The program provided therapeutic interventions through a variety of age-appropriate physical and social activities (horseback riding, swimming, team sports, music and dancing). The providers (therapists and graduate students) received extensive training, and served as camp staff and research assistants. **Methods.** Outcomes research was performed during the 2007 and 2008 summer sessions. The research design was a concurrent mixed methods approach, converging quantitative and qualitative data. Data collection methods included parent questionnaires, focus group interviews, the Pediatric Evaluation of Disability Inventory, and the Social Skills Rating Scale. **Results.** Findings indicate improvements in social, emotional, and physical skills in the children as a result of their participation in the camp program. **Conclusion.** Therapeutic intervention delivered through the Camp Integrations model, may result in improved social, emotional, and physical skills for children with developmental disabilities. **Grants.** This study was partially funded by the President's Faculty Research and Development Grant.

Resources Necessary for the Retention of Foreign Trained Nurses

Diane Whitehead, EdD, Associate Dean Nursing
Patricia Dittman, PhD, Graduate Program Director Nursing

Background. The Florida Center for Nursing workforce information from January 2006 indicates that progress is not being made in the effort to address the nursing shortage in Florida. (FCN, 2006). Although nursing programs have increased enrollment, vacancy rates for the employment of RNs remains flat and may be increasing. Many healthcare facilities recruit foreign nurses to supplement the supply of available registered nurses. Historically, this has been done in the U.S. to help relieve cyclic shortages; however, prior to this shortage has not been seen as a long term approach to solve the nursing shortage. Currently the efforts to recruit nurses from other countries have intensified. In South Florida many nurses are recruited from the Philippine Islands. Little is known about this segment of the U.S. RN workforce. Statistics range from 3.7% to over 5% of the RN workforce classified as "foreign nurses". **Objective.** This presentation will provide insight into the necessary resources need for retention of foreign trained nurses. **Methods.** This research study provided information generating an understanding of the experience of Filipino nurses working at a hospital in South Florida. Nine Filipino nurses were interviewed to historically reflect on their transition to the United States. All of these nurses have been employed for 24-29 years in the same health care facility. **Findings.** Findings included recurrent themes of cultural understanding and spirituality. **Conclusions.** Organizations that provided support for these themes had longevity and loyalty with these nurses. The designated support person to transition between the two cultures was paramount to the adjustment process.

COLLEGE OF DENTAL MEDICINE

Periodontology

Allograft Tissue Matrix With and Without Complete Coverage

Chad Orlich, DMD,
Reza Modarres, DDS,
Matt Fien, DDS,
Taeheon Kang, DDS, Assistant Professor

Objective. This study was conducted to evaluate two different surgical techniques using Allograft Tissue Matrix (ATM) to obtain root coverage. **Background.** ATM has been utilized as an alternative to autogenous soft tissue grafting to cover exposed roots on teeth. **Methods.** ATM was utilized to treat 2 consecutive patients that presented with gingival recession of the mandibular incisors. Full thickness mucoperiosteal flaps were reflected and apical releasing incisions were used to mobilize and coronally advance the flaps. ATM was prepared and adapted to the recipient site at the level of the cemento-enamel junction. In the control case the ATM was completely covered by the flap whereas in the test case the ATM was left partially exposed. Gingival recession and the amount of keratinized tissue were measured at 1, 2, 4, 8, and 30 weeks post operatively. **Results.** Gingival recession was reduced in both control and test. In the control case complete root coverage was obtained, and a 3 mm zone of keratinized tissue free of inflammation was present at 8 weeks. In the test case, the gingival defect was narrowed but not eliminated, but an increase in the amount of keratinized tissue was noted. **Conclusion.** Complete coverage of the ATM provided the graft with an adequate blood supply which facilitated healing. Partial coverage of the material did not provide an adequate blood supply and is not recommended. Due to its avascular nature, this grafting material requires complete coverage with a vascularized flap during healing.

Use of a Flowable Bioabsorbable Membrane as a Barrier for Guided Bone Regeneration

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Objective. This study was conducted to evaluate the effectiveness of a flowable bioabsorbable membrane (Atrisorb[®]) (FBM) as a barrier membrane for guided bone regeneration (GBR). **Background.** Atrisorb[®] is a resorbable membrane composed of poly(DL-lactide) dissolved in *N*-methyl-2-pyrrolidone. **Methods.** Ten patients with deficient alveolar ridge width received bone grafts using the FBM as a barrier to epithelial cell migration. The surgical procedure consisted of full thickness flaps and decortication of the defect. Bone particulate was then condensed into the defect and the FBM barrier was applied over the bone graft using an in situ method. Augmented sites were allowed to heal for 2 to 7 months, mean = 4.7 months. **Results.** Healing was uneventful with no major complications. Two sites experienced a flap dehiscence accompanied by barrier exposure during the initial healing period. Secondary healing was achieved soon after with no signs of infection. The barrier exposure rate of 20% corresponds favorably to that of other resorbable membranes. Upon reentry the FBM was still present, and retained its structural integrity with mineralized bone tissue beneath it. The in situ application in conjunction with bone grafts provided space for bone regeneration and the barrier function was able to exclude epithelial cell down growth allowing for new bone formation. **Conclusions.** The results of this study

indicate that a FBM meets the criteria required for membranes used in GBR: biocompatibility, tissue occlusion, and clinical manageability. Atrisorb® has the potential of being a viable alternative to traditional resorbable membranes for use in GBR procedures.

COLLEGE OF MEDICAL SCIENCES

Investigation of Neodymium-iron-boron Magnet Arrays for Possible Use in Magnetic Resonance Teaching Applications

Ronald E. Block, PhD,
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Background. Desktop nuclear magnetic resonance (NMR) units are useful for introducing students in a variety of disciplines to fundamental aspects of magnetic resonance. They also are useful for some research purposes. A significant portion of the cost, size and weight of desktop NMR units is the magnet. The configuration of the magnet design, including field gap size, shape, and magnetic field flux density, may place unneeded constraints upon experimenters and researchers who use iron permanent magnets or iron core electromagnets. **Objective.** The research goal was to devise lighter weight, more compact, and less expensive alternative magnet systems for desktop magnetic resonance systems. **Methods.** Arrays of low cost and versatile neodymium-iron-boron magnets both without and with iron or steel backing were studied by making Hall probe gauss meter measurements. Theoretical calculations of field flux density at individual points and computer generated field line plots were made using commercial software. **Results.** Flux densities from 0.1 to 0.6 Tesla were obtained using low cost and light weight arrays of these magnets. Some arrays gave noticeably better field homogeneity than others as determined by directional field flux density plots. **Conclusion.** Neodymium-iron-boron magnet arrays show promise for greater use in desktop magnetic resonance applications. **Grants.** Supported by NSU faculty research grant.

Facial Skin Tissue Water Assessed by Tissue Dielectric Constant: Dependence on Nerve Territory and Posture

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Objective. To quantitatively characterize facial skin tissue water (STW) within three differently innervated regions and determine the effect of posture. **Background.** Knowledge of normal facial tissue water distribution could provide baseline information impacting on several clinical conditions. **Methods.** STW was assessed from measuring the epidermal-dermal tissue dielectric constant (TDC). Its value depends on tissue water content (pure water = 78). Measurements were done by touching skin with a probe for about 10 seconds and recording TDC values. Triplicate measurements were done bilaterally on forehead, cheek and chin that are sites within the territories of ophthalmic, maxillary and mandibular nerves respectively. For comparison, measurements were also done on a standardized site on the anterior surface of both forearms. Measurements were done with subjects supine and then in seated. **Results.** Results to date (based on 10 male subjects) indicate bilateral symmetry of TDC values at each site with left vs. right values (mean±sd) for forehead, cheek and chin being respectively (42.0±2.7 vs. 43.1±2.1, 37.0±6.2 vs. 36.3±4.2 and 43.1±5.2 vs. 43.2±3.1). Forehead and chin site values decreased from the supine-to-seated position ($p<0.05$) but a statistically significance decrease for cheek sites has not been confirmed. Although side-to-side symmetry is present, combined cheek TDC values (34.5 ± 5.7) are significantly ($p<0.01$) less than values at either the forehead (42.6 ± 2.3) or chin (42.9 ± 5.1). All TDC face values were significantly greater ($p<0.01$) than those on the forearm (32.5 ± 1.8). **Conclusions.** These seminal findings can form the basis for studying pathological departures from normal in a variety of conditions.

Forearm Skin Water Assessed by Tissue Dielectric Constant

Michelle Luis, CMS-2,
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Objective. To quantitatively characterize forearm skin tissue water (STW) and its variability using tissue dielectric constant (TDC) measurements. **Background.** Previous work showed forearm TDC useful as an indicator of local STW in patients with lymphedema. However, TDC dependence on arm anatomical site is unknown. Knowledge of normal patterns of variations is needed to help interpret future clinical studies. **Methods.** Variations in STW were assessed by measuring the TDC of epidermal-dermal tissue in triplicate at nine sites on the non-dominant forearm of seated female volunteers. TDC values depend on tissue water content (pure water = 78) and on the depth of the tissue included in the measurement. Herein measurements to depths of 1.5 and 2.5 mm were made at sites 4, 8 and 12 cm distal to the antecubital crease along the midline, and one cm medial and lateral to the midline.

Measurements were done by touching skin with a probe for 10 seconds. **Results.** Results to date (based on 10 subjects) show an overall significant difference among sites ($p < 0.001$) but insignificant site-probe interactions ($p = 0.861$). TDC midline values (mean \pm sd) increased from proximal to distal sites ($p < 0.001$) being 27.2 ± 2.9 at 4 cm, 28.7 ± 3.0 at 8 cm and 29.6 ± 3.6 at 12 cm at the 1.5 mm depth. Corresponding values at the 2.5 mm depth were 25.4 ± 3.5 , 27.4 ± 4.8 and 28.8 ± 5.8 . TDC values obtained at a 1.5 mm depth were all significantly greater than at a 2.5 mm depth ($p < 0.001$). **Conclusions.** These seminal findings provide data needed for clinical comparisons and assessing departures from normal.

Genetically Slow (GSAK) and Fast (GFAK) Amygdala Kindling Rats Exhibit Differential Lethality at Intravenous Cocaine Seizure Threshold

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Objective. This study was conducted to determine if GFAK rats possessed lower intravenous cocaine seizure thresholds than GSAK rats. **Background.** Cocaine seizures originate in the amygdala. GFAK rats were bred from an F1 cross of Wistar and Long Evans rats to exhibit rapid amygdala kindling. GSAK rats were bred to exhibit slow amygdala kindling. **Methods.** Rats were implanted with chronic silastic catheters under ketamine/xylazine anesthesia (70 mg/kg; 6 mg/kg IP). Cocaine was infused at 10mg/kg/min in a volume of 1 ml/min to the onset of seizure and stopped. Incidence of lethality was noted. Cocaine seizure thresholds were determined in GFAK and GSAK rats. Subsequently, cocaine seizure thresholds were determined in Wistar, Long-Evans and Sprague-Dawley rats. **Results.** Cocaine seizure thresholds were lower in GSAK (7.1 ± 0.4 mg/kg) than GFAK (8.6 mg/kg ± 0.5 mg/kg) rats. One hundred percent of the GSAK rats died at seizure threshold compared to only 16.7 percent of the GFAK rats. Wistar, Long-Evans and Sprague-Dawley rats did not differ in intravenous cocaine seizure threshold. However, 27.3 percent of the Wistar rats died at cocaine seizure threshold. None of the Long-Evans or Sprague-Dawley rats died at cocaine seizure threshold. **Conclusion.** The unique sensitivity of the GSAK rats to the lethal effects of cocaine appears to have been inherited from its Wistar progenitors. Selective breeding for resistance to amygdala kindling concomitantly resulted in sensitivity to cocaine lethality. **Grants.** This study was supported in part by NS 28118.

Evidence for Inhibitory Control of Melanophore-Stimulating Hormone Secretion from the Neuro-intermediate Lobe of the Lizard Pituitary by Gamma-aminobutyric Acid

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Objective. To determine the involvement of gamma-aminobutyric acid (GABA) in the control of Melanophore-Stimulating Hormone (MSH) secretion from the neuro-intermediate lobe (NIL) of the lizard *Anolis carolinensis*. **Background.** Previous studies have provided strong evidence for a stimulant control of MSH secretion in this species exerted by serotonin. Evidence for the involvement of inhibitory factors in the control of MSH secretion in the lizard is weak and the studies have focused exclusively on dopamine. **Methods.** Anole NILs were placed in a perfusion chamber and the MSH content of the perfusate was measured using the *Anolis* skin bioassay. None of the drugs affected the assay. The presence of glutamic acid decarboxylase (GAD) was determined using Western Blot analysis. **Results.** GABA (100 μ M) reversibly inhibited MSH secretion stimulated by high (50 mM) $[K^+]_o$. The inhibition was due to activation of GABA_A receptors since it was blocked by the GABA_A antagonist bicuculline (100 μ M) and mimicked by the GABA_A agonist muscimol (100 μ M). Western blot analysis revealed the presence of glutamic acid decarboxylase, the enzyme necessary for the synthesis of GABA, in the NILs. **Conclusion.** The results indicate that GABA, acting through, GABA_A receptors, inhibits MSH secretion and that the tissue has the capability of synthesizing GABA. Both these results suggest that GABA exerts an inhibitory control over MSH secretion in the anole in addition to the well known stimulant control provided by serotonin. **Grants.** This study was funded by an HPD research award.

Meningitis: Controversies and Understanding Etiology of the Disease in the 19th Century

Yuri Zagvazdin, PhD, Associate Professor

Objective. This study aims to investigate the controversies and personalities that influenced advances in the studies of bacterial meningitis, and how accurately medical literature reflects these historical developments. **Background.** Bacteriological discoveries in the last quarter of the 19th century brought rapid progress in understanding various infections including meningitis. Significant challenges and confusion surrounded early reports that implicated *Salmonella* species in producing meningeal inflammation. These studies escaped historical analysis. **Methods.** As part of this study, 65 original articles and numerous other sources that discuss

etiology of bacterial meningitis in the last quarter of the 19th century were critically reviewed. In addition, more than 50 case reports and reviews of the infection published after 1960 were investigated for historical accuracy. **Results.** Not a single article since 1960 honored German physicians Neumann and Schaeffer who described the earliest known case of typhoid meningitis with solid bacteriological evidence in 1887. Instead, a remark of a prominent Austrian pathologist Ghon made in 1907 is inaccurately referenced as the first report of Salmonella meningitis. The 1887 paper of Neumann and Schaeffer prompted reassessment of then existing erroneous assumptions about typhoid bacilli such as their inability to produce pus and cause infection without Peyer's patches. It also promoted search for reliable methods in differentiation among strains of Salmonellae and Coli bacteria. **Conclusion.** Controversies sparked by early studies of typhoid meningitis stimulated efforts to improve knowledge about the pathological and bacteriological properties of Salmonellae. Acknowledgment of the pioneers in the battle against bacterial meningitis is long overdue.

COLLEGE OF OPTOMETRY

Sturge Weber Syndrome: Related Glaucoma

Lindsay Basler, OD, Optometric Resident

Introduction. This case is important to eye care professionals because it is a rare condition that many optometrists have not treated. **Case Presentation.** A 67 year old African American male presents with a history of Sturge Weber Syndrome (SWS). The patient has port-wine stains on the left side of his face and secondary glaucoma. The patient's complicated secondary glaucoma is being managed with maximum medical therapy. This case details the pathophysiology and management of glaucoma associated with SWS. **Deviation from expected.** This patient has potential bilateral glaucoma. In most cases of SWS related glaucoma is monocular on the side that has the port wine stain. However in this case bilateral peripheral iridotomies have been done as well as medical therapy in both eyes. **Discussion.** Sturge Weber Syndrome is one of the phakomatoses. Congenital hamartomatous malformations affect skin, eyes, and the central nervous system. Ocular complications include secondary glaucoma due to elevated episcleral venous pressure. **Conclusion.** SWS is a very dynamic and rare condition that has been studied in detail. However, because this condition is rare few clinicians have had clinical experience in treating these patients. With the new medical therapy developing in the last few years, we may now be able to control the intraocular pressures in these patients more effectively.

Keeping a Watchful Eye on our Diabetic Patients: An Education for Present and Future Professionals of HPD

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Objective. To increase the awareness of how an optometric evaluation should be coalesced with other fields of health care to increase early detection of diabetic retinopathy. **Background.** Vision Objective 28-5 of Healthy People 2010 is to reduce visual impairment due to diabetic retinopathy. We feel that many health professionals are themselves not educated on the role an optometrist has beyond prescribing glasses. Early diagnosis of diabetic retinopathy is the key to preventing unnecessary vision loss. **Methods.** We sought to increase awareness by creating a multi-pronged presentation (video, survey, and face-to-face) on the role of optometrists in the diagnosis and care of diabetes and presenting it in a high-traffic area of the Terry Building. A total of 80 students and faculty were educated. **Results.** The group with the best knowledge of how optometrists can help diagnose and care for diabetics was dentists. The group with the least knowledge was osteopathic medicine students. **Conclusions.** Diabetes carries with it a broad spectrum of risk factors and should be treated as a disease that crosses all disciplines of healthcare. Our results show that perhaps awareness of the extent of diabetes amongst NSU's health professions division is lacking. Optometric evaluation, although it cannot offer definitive diagnosis, should be coalesced with other fields of health care to increase early detection of diabetes.

Let InfantSEE® Start Your Baby off Right, With Healthy Sight!

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Cuc Le, OD-3
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Bijal Parikh, OD-3
Priscilla Sotomayor, OD-3

Objective. The purpose of the project was to promote and increase awareness of the InfantSEE® program, a free service offered to parents to detect ocular abnormalities in infants 6-12 months. **Background.** Early eye exams are necessary for early detection and successful treatment of developmental and pathological disorders. In 2005, The American Optometric Association launched InfantSEE®, a “public health program designed to ensure that eye and vision care become an integral part of infant wellness care to improve a child’s quality of life.” Under this program, participating optometrists will provide comprehensive eye assessments to infants up to their first year of life. **Methods.** We created an appealing poster with information about the program, important stages in visual development, steps of an InfantSEE® assessment and where they can find participating optometrists. We also handed out business cards of a participating optometrist at NSU’s eye clinic. We asked participants a few questions: (i) If they had ever heard of the InfantSEE® program, (ii) If they would tell others about the program, and (iii) If they, themselves, would ever participate in the program. **Results.** Out of 52 individuals that we spoke to, 45 (87%) did not know about InfantSEE®. However, after learning about InfantSEE®, 39 people (87%) planned to tell others about InfantSEE® and 35 people (78%) said they would participate in InfantSEE®. In total, 47 brochures were passed out.

Tan Your Skin, Not Your Eyes

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Ann Patel, OD-4
Trevor Thomas, OD-3
Jimmy Yang

Objective. The goal of this project was to evaluate the public’s use of protective goggles while using a tanning booth and to educate tanners about the harmful side effects that ultraviolet (UV) radiation can have on their eyes. **Background.** UV exposure increases the risk of certain ocular problems. UV exposure has been shown to hasten a number of serious eye diseases including but definitely not limited to: the development of cataract, pterygium, photokeratitis, age related macular degeneration, conjunctival carcinoma, and malignant melanoma. The signs, symptoms, and effects of such conditions range from dry, irritated eyes to unaesthetic growths on the eyes to decreased vision to even death. Simply wearing the proper goggles would provide ample protection to the eyes from the threats of UV radiation. **Methods.** We surveyed professional students in the Optometry, Dental, and Osteopathic Medicine programs of Nova Southeastern University. Only students who have ever used a tanning bed filled out the survey and received an informative flyer. **Results.** A total of 91 surveys were completed. The majority of respondents (63%) report using goggles every time they tan. The rest of the tanners surveyed (37%) report removing their goggles at least some of the time, with almost one sixth (16%) reporting that they never wear goggles.

A Case Report and Review of Posterior Cortical Atrophy

Jocelyn Hunerdosse, OD, Resident

Objective. This poster aims to assess the ophthalmic manifestations of PCA, neurologic findings that aid in the diagnosis of PCA, and suggested methods to improve the quality of life for patients. **Background.** A 61 year old female presented to the Lighthouse with a previous diagnosis of Benson’s Syndrome, also known as posterior cortical atrophy. She noted visual disturbances that affected all areas of her life. **Methods.** A comprehensive eye examination was performed. **Results.** Patient demonstrated an inability to read or fixate on more than one small object at a time despite normal ocular health. The patient behaves as though she is blind, although she can intermittently resolve small details. **Conclusion.** The patient was given a typoscope in order to aid with signing her name. Patient was referred to the traumatic brain injury eye clinic at Nova, awaiting follow-up at this time. NovaVision’s Vision Restoration Therapy was recommended, currently awaiting approval.

Double, Double Optic Nerve Trouble

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Introduction. Idiopathic Intracranial Hypertension (IIH) is a condition most often seen in obese, adult females. IIH is rarely seen in pediatric patients, and its presentation is distinctly different from that of adults. **Case Presentation.** A 7-year-old African American male presented to our clinic with a complaint of diplopia for the past 5 days. Examination revealed esophoria at distance and near not noted at his previous examination and edematous optic nerve heads. Further neurological evaluation showed a normal CT and MRI with an increased opening pressure on lumbar puncture. The patient was diagnosed with IIH and started on Diamox. **Deviation from Expected.** IIH is very rarely seen in pediatric patients, and its presentation is unique from that of an adult patient. While adult

patients usually present with complaints of headache and nausea, pediatric patients are more likely to be asymptomatic or to complain of diplopia, as our patient did. Although most patients with diplopia have CN VI palsy, at the time of presentation our patient did not have any abduction deficit, only an esophoric posture on cover test. This represents a slightly atypical presentation of a very uncommon condition in the pediatric population. **Conclusion.** IIH is a condition that is not normally associated with pediatric patients, and its presentation and epidemiology in this population is distinctly different from that of the adult condition. It is important as clinicians to understand the difference between the presentation of IIH in adults and children.

Central Serous Chorioretinopathy Associated with Viagra® (sildenafil citrate) Use in a Young Patient

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Background. Adverse ocular complications have been associated with the use of erectile dysfunction agents such as Viagra® (sildenafil citrate). A few reports have been published describing central serous chorioretinopathy (CSR) associated with sildenafil use. This case report will describe CSR in a young patient using sildenafil. **Case Report.** A 33-year-old male presents with a complaint of blurry vision in his right eye. He reported that the onset occurred two days after using sildenafil, however, his medical history was unremarkable. Dilated evaluation revealed a neurosensory detachment of the macula in the right eye, which was confirmed on Optical Coherence Tomography (OCT) testing. The patient was advised to discontinue the use of Viagra. **Conclusion.** Although the association between sildenafil use and CSR requires further investigation, patients presenting with CSR should be questioned about the use of Viagra.

Iris Cyst vs. Melanoma: A Case in Using Anterior Segment Optical Coherence Tomography to aid in Clinical Diagnosis

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Julie Rodman, OD, Assistant Professor

Objective. This case is an example of how newer advances in optical coherence tomography can aid in diagnosis of anterior segment disease. **Background.** Optical Coherence Tomography (OCT) uses emission and reflection of light to look at cross-sections of ocular tissue. OCT in the past has only had the capability of imaging retinal layers. Newer programs have allowed OCT to image anterior segment structures such as the cornea, iridocorneal angle, and the iris. **Methods.** A second year optometry student was sitting as a patient for gonioscopy laboratory where an abnormal elevated ridge was noted within his iris structure of the right eye. Anterior segment OCT was used to take an image of the iris lesion. **Results.** The OCT revealed a hyporeflective cystic space within the iris that is consistent with an iris cyst. **Conclusion.** Anterior segment OCT is a newer technology that can aid in clinical diagnosis and follow progression of anterior segment disease.

Cystoid Macular Edema: An Atypical Complication of Adult-Onset Foveomacular Vitelliform Dystrophy

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Joseph Pizzimenti, OD, Assistant Professor
Richard Guzak, OD, Optometric Resident

Introduction. Adult-Onset Foveomacular Vitelliform Dystrophy (AOVD) is a bilateral, macular dystrophy. AOVD presents as a subretinal, oval or round, yellowish lesion in macula that manifests between 30 and 50 years of age. It is autosomal dominant with a slowly, progressive decrease in vision. AOVD is a pattern dystrophy of retinal pigment epithelium. AOVD presents as a slight decrease in vision or metamorphopsia later in life and can progress to geographic atrophy of RPE or CNVM. AOVD is associated with several complications and we report the first case of AOVD with subsequent Cystoid Macular Edema. **Case Presentation.** A 52-year-old Caucasian male presents with intermittent blurry vision and metamorphopsia of both eyes of several years duration. His best corrected acuity was OD 20/20 - OS 20/25. Fundus examination revealed Optic nerve heads that were flat and sharp bilaterally. Round, yellowish subretinal lesion in macula bilaterally with associated irregularity and thickening in macula bilaterally. **Deviation from expected.** This is the first reported case of Cystoid Macular Edema as a complication Adult Onset Foveomacular Vitelliform Dystrophy. **Discussion.** AOVD presents with a yellowish round sub-foveal lesion made up of lipofuscin being secreted by the retina. Lipofuscin is normal metabolic byproduct of retina, phagocytized by retina. Increased metabolic activity secondary to age, genetics, environment, etc. leads to increasing levels of circulating lipofuscin. Excess lipofuscin stored at level of RPE and presents as a vitelliform lesion. The lesions eventually reabsorb into retinal space and result in atrophy of the RPE Subfoveal choroidal neovascularization. Complications include: vascularized pigment epithelial detachment, Retinal folds, Central Serous Chorioretinopathy, Macular hole/RD, and Cystoid Macular Edema. CME is described as a thickening of macula due to intraretinal edema. Perifoveal capillaries leak abnormally resulting in growth of extracellular space and fluid accumulation in tissue. This causes

disruption of inner or outer blood-retinal barrier due to subsequent incompetence of retinal microvasculature. CME is a rarely reported complication of AOVD. **Conclusion.** AOVD is usually a benign pattern dystrophy of the retina. There are rarely reported complications associated with the condition. Ancillary testing such as the OCT and ERG can be used to aid in the diagnosis of AOVD and CME. Clinicians need to be knowledgeable about these potentially visually significant findings.

COLLEGE OF OSTEOPATHIC MEDICINE

Frequencies of Negative Cultures in Clients Treated with Antibiotics for Suspected Chlamydia or Gonorrhea

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Objective. This descriptive study was designed to determine the percentages of negative cultures among all clients age 18 years and older presumptively treated with antibiotics for suspected chlamydia and/or gonorrhea infections according to the guidelines of the US Centers for Disease Control (CDC) and Prevention in the Sexually Transmitted Disease (STD) Clinic of the Palm Beach County Health Department (PBCHD). **Background.** At present it remains unclear what proportion of patients treated for chlamydial and/or gonococcal infections with antibiotics presumptive treatment in the PBCHDSTD clinic have negative cultures. By determining the extent of negative cultures in people treated by antibiotics for those diseases, we can recommend directions of further search for possible better testing and treatment strategies. **Methods.** Clinic logs were reviewed for a case series of all 1209 clients treated from November 1, 2007 to October 31, 2008. Culture results were retrieved from Department of Health's Health Management System. **Results.** Of the 1209, 556 (46%) were treated for chlamydia, 30 (2.6%) for gonorrhea, and 623 (51.5%) for both. The frequencies of negative cultures were 68% overall, 70.9% for chlamydia, 86.6% for gonorrhea, and 65.2% for both. **Conclusions.** These descriptive data indicate that implementation of the CDC guidelines by the PBCHDSTD Clinic results in treatment of a large majority of clients with negative cultures for chlamydia, gonorrhea, or both. They also suggest the possible need to develop treatment algorithms to maximize treatment of clients with positive cultures and minimize treatment of clients with negative cultures. **Grants.** PBCHD supported.

Integrating Osteopathic Manipulative Treatment into Patient Management: A Case-Based Approach to Resident Instruction and Assessment

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Objective. This study was conducted to determine if a case-based instructional model integrating osteopathic manipulative treatment (OMT) into patient management improved residents' ability to generate osteopathic diagnostic and treatment maneuvers. **Background.** Since 2004, Family and Internal Medicine residents have participated in workshops at NSU-COM that systematically reviewed OMT by body region in preparation for board exams. In 2008, the instructional program was changed to a case-based approach to prepare residents for both their board exams and future medical practice. This instructional model includes a medical case presentation, a pre-test, discussion, and table practice followed by a post-test one month later. On the tests, the residents described the specific areas of the body most likely involved with the OMT diagnosis and the specific OMT treatment techniques appropriate for this patient. **Methods.** Data for 5 pre-post tests in 2008-09 and 1 pre-post test in 2009-2010 were analyzed using SPSS. Only data for residents present for both tests for a case were analyzed. 2009-2010 data comparing residents new to the instructional model to those who participated in the previous year were also analyzed. **Results.** Mean scores on all post-tests were significantly higher (p ranging from .039 to .000) than the pre-test scores. Additionally, the 2009-2010 pre-test mean for prior participants was significantly higher ($p=.015$) than the mean for the new residents. The same is true for the 2009-2010 post-test means ($p=.001$). **Conclusions.** This case-based instructional model significantly increases residents' ability to generate osteopathic diagnostic and treatment maneuvers when presented with a medical case. **Grants.** None.

Physician Views on Physical Activity and its Impacts on their Patients' Physical Fitness Level

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Objective. This study was conducted to determine if physicians appreciate the importance of physical activity and if so encourage their patients to lead physically active lives. **Background.** Physical exercise in combination with routine medical exams is important

in maintaining a healthy living. Most Americans get regularly visits to their physicians but few however participate in physical exercises hence increasing their risk factors for cardiovascular diseases. The U.S Preventive Services Task Force has recommended that primary care physicians counsel their patients about the benefits of physical activity. **Methods.** For this study an anonymous survey was distributed to and completed by private practice physicians in selected area of Metro Atlanta and within the State of Georgia. **Results.** Pending. **Conclusion.** Our hypothesis is that physicians who appreciate the importance of physical activity are more likely to encourage their patients to incorporate physical activity into their daily lives as part of a healthy regimen. **Grants.** Not funded.

Mechanism of Shoulder Witiis with Wii Tennis—A Biomechanical & EMG Analysis

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Objective. To identify the differences in shoulder biomechanics and muscle activation patterns in recreational tennis players and non-players during forehand swing using Wii controller vs. regular racquet. **Background.** Since the launch of Nintendo's Wii Gaming Console in 2006, numerous cases related to musculoskeletal injuries known as "Witiis" have been reported in the literature or seen in clinical practice, particularly in the recreational tennis players. With a better understanding of the difference in swinging Wii controller vs. regular tennis racquet, we may be able to identify the potential mechanism of Wii-tis and develop a prevention plan for Wii users. **Methods.** Ten mid-age recreational tennis players and 10 non-players will be recruited. Upper extremity biomechanical characteristics such as shoulder and elbow joint angular velocity and torque, as well as the limb velocity and acceleration during flat forehand swing, will be captured using a Functional Assessment Biomechanics FAB System. Muscle activation patterns will be assessed using a surface EMG system. Two-way ANOVAs with post-hoc analyses will be used to compare the differences between groups and conditions. **Results.** The preliminary results indicate that the tennis player tends to maintain movement patterns when using the Wii but require more eccentric control during the follow-through phase. The non-players change the movement pattern and use more wrist instead of the shoulder to complete the task when playing Wii. **Conclusion.** Further results and analyses will be available and presented during the Research Day. **Grant.** This project is sponsored by the President's Faculty Research and Development Grant FY 2010.

Baseline Neuro-Cognitive Functioning in a University Athletic Department

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Objectives. Athletes who sustain brain injury are more likely to suffer subsequent concussions, making assessment and diagnosis crucial (Guskiewicz et al., 2003; Lovell, Collins & Bradley, 2004). **Background.** Concussions are now known as a functional injury, with disrupted cerebral metabolism post-injury (Hovda et al., 1999). Notable advances in clinical management include using neuro-cognitive screening devices at baseline, immediately following injury, and when making return-to-play (RTP) decisions (Van Kampen, Lovell, Pardini, Collins, & Fu, 2006). RTP guidelines recommend athletes resume participation only after their asymptomatic status is paired with complete cognitive recovery, often defined as equaling or surpassing baseline performance on cognitive screening instruments (Moser, 2007). Despite increased focus on concussions, no studies have reported the medical or neuropsychological data gathered during the baseline testing process. **Methods.** Demographic and neuro-cognitive data was collected from 237 student athletes (98 men, 139 women) within an NCAA Division-II athletic program as part of a clinical sport-concussion initiative. Pre-participation screening included a neuro-cognitive screening test which measured attention, memory, reaction time, and visual-motor speed as well as 22 symptoms associated with concussion. **Results.** Approximately 12% of participants reported a history of concussion, which is 2.5 times larger than the percentage reported in the NCAA injury surveillance data over a 16-year period. For those with a concussion history (28), about 18% reported more than one concussive injury. **Conclusions.** Over 20% of participants endorsed headache, fatigue, hyposomnia, or feeling more emotional at baseline. 10-20% reported trouble falling asleep, drowsiness, irritability, sadness, nervousness, hypersomnia, or difficulty with either concentration or memory. Lastly, a larger than expected proportion of athletes scored in the Borderline and Impaired ranges on the neuro-cognitive screening instrument. **Grants.** None.

Hemodynamic Consequence of Interventional Cardiac Catheterization in the Early Postoperative Period after Congenital Heart Surgery

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Objective. The purpose of this study was to evaluate the safety/efficacy of cardiac catheterization performed within thirty days of congenital heart surgery (CHS). **Background.** While still considered to be high risk procedures, interventional and diagnostic cardiac catheterization in the early postoperative period are being performed more frequently in the current era. There is no data currently available concerning the acute hemodynamic consequences of these procedures. **Methods.** We completed a retrospective review of all catheterizations performed between 2/2002 and 2/2008 that occurred within 30 days of CHS. Procedures were performed as a result of failure to progress or hemodynamic deterioration in the early postoperative period. The physiologic consequence of these procedures was determined by assessing the affects pre and post procedure on hemodynamic parameters, metabolic markers of tissue perfusion and renal function, and inotrope requirements. **Results.** During the study period, there were 1799 congenital heart surgeries (1545 cardiopulmonary bypass cases). There were 100 pts (6%) at a median age of 124 d (5 d-16yr; neonates n=38, infants n=35) and mean weight 7.73 kg (1.7-37.8 kg) who underwent catheterization on mean postoperative d 11 (0-30 d). Sixty-three cases received a total of 71 interventions. Prior to catheterization, 62% were intubated and 11% were requiring mechanical cardiopulmonary support (CPS). Complications in the interventional group included arrhythmias in 5, intimal tears with insignificant hemorrhagic loss in 2, atrial septal stent failure requiring surgical retrieval in 1, and cardiac arrest in 1 pt. Consequence of acute postoperative intervention included an increase in creatinine from 0.6 pre-cath to 0.84 immediate post-cath ($p=0.03$) and back to 0.7 at 24 hrs ($p=0.04$). Blood lactate decreased from 1.84 pre-cath to 1.27 at 24 hrs post-cath ($p=0.01$) while no significant change was seen in the diagnostic group ($p=0.7$). There was no significant change in HR, systolic or diastolic BP, sPO₂, or inotrope scores immediately or at 24 hrs post cath. There were 5 pts who required preoperative CPS with 2 being weaned off support after cath. One pt required CPS immediately post cath. Seven pts undergoing intervention died at 0-12 days post cath (mean 5d). Survival for pts not requiring cardiac catheterization postoperatively was 99%. Survival for pts undergoing diagnostic cath (81%) did not differ significantly for those who underwent intervention (90%). **Conclusions.** Cardiac catheterization was performed on 5.7% of pts undergoing CHS in our series. Acute postoperative cardiac catheter intervention was performed in 3.5%. Intervention or diagnostic catheterization was performed on those pts at highest risk for death in the postoperative period. Catheter intervention did not increase the risk for death. Those pts undergoing catheter intervention did not seem to undergo any significant negative hemodynamic or renal consequence from their catheterization but achieved mild improvement in tissue perfusion. **Grants.** Hospital support.

Treatment of Infected Teeth and Its Affect on the Glycemic Control in Patients with Type II Diabetes

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Objectives. The study investigates the effects on Hb1Ac levels in type 2 diabetics after placement of maxillary (upper) and/or mandibular (lower) full removable dentures. **Background.** Health department adult dental patients normally have many periodontal and dental problems. Patients with severe disease opt for removal of teeth in the upper and/or lower arch and then placement of full removable dentures to restore function. Periodontal disease, an infection of the soft and hard tissues supporting teeth, causes an inflammatory and immunologic response that destroys tissue and erodes bone. Dental infections primarily originate from tooth decay. Both can cause a systemic response; but the best evidence centers on periodontal disease and effects on diabetes. **Design.** This is a case-series (descriptive) study design using a routine database analysis. **Methods.** Subjects had type 2 diabetes, and placement of full dentures during 01/03/2006 to 03/19/2007. They had HbA1c tests 6 months prior and after insertion of dentures. Twenty-two patients met the selection criteria. They were from 35 to 75 years old with a mean age of 60. **Result.** Results show a positive effect on Hb1Ac values pre- and post insertion of dentures: pre-test \bar{x} of 8.73 and a post-test \bar{x} of 7.12, a 1.6 unit difference. Differences were significant for all 3 patient groups; all cases ($p\text{-value}=0.01<0.05$); those with upper and lower dentures ($p\text{-value}=0.013<0.05$), and those with either upper or lower dentures ($p\text{-value}=0.0189<0.05$). **Conclusions.** Evidence exists to form a hypothesis that removal of infected teeth may improve glycemic control for diabetics. **Grants.** PBCHD supported.

Public Views and Behavior on Breast Cancer Screening Exams

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Introduction. Several times at the Florida Osteopathic Medical Association (FOMA) health fairs we have the occasion to measure participants' parameters that represent knowledge about the medical field. In March 2009 we launched a survey to measure the beliefs and behaviors toward the breast cancer screening exams. **Objective.** The main objective was to learn about public's beliefs and practice of breast cancer screening exams. **Methods.** We focused on self-breast exams for all post-pubertal women and mammograms for women greater than 40 years of age. The family history of breast or ovarian cancer was questioned. **Results.** We analyzed 75 anonymous questionnaires administered to FOMA participants. Associations based on medical knowledge and physical exams were established. **Conclusions.** The ovarian cancer as a family history was not associated with the public's beliefs and practice of breast cancer screening exams. **Grants.** Not funded.

The Broward County Collaborative to Reduce the Use of Substances, HIV & Hepatitis (CRUSHH) Evaluation Experience: Years 1-3

Debra Mulligan, MD, Director, Institute for Maternal Child

Objective. The Broward County Collaborative to reduce the use of substances, HIV & hepatitis. **Background.** Such intervention is necessary since Florida ranks third in the nation after New York and California in terms of cumulative AIDS cases. South Florida, where Miami-Dade, Broward and Palm Beach counties are all in nation's top six for AIDS infections, is an epicenter of HIV / AIDS. Through the successful partnerships and collaborations the Broward CRUSHH program has been able to make gains in reported risky sexual activity and Hepatitis knowledge. **Methods.** This study is a four sessions intervention that was developed for the minority re-entry population in Broward County, Florida. The sessions focus on communication skills, substance abuse, HIV and Hepatitis prevention. Furthermore, the program has been able to develop a video adaptation of the VOICES/VOCES researched-based intervention to specifically target the minority re-entry population that has been instrumental in the evaluation gains that CRUSHH has seen over the last 3 years. **Results.** Describe the evaluation gains in reported sexual behavior and Hepatitis knowledge outcomes of the Broward CRUSHH program. Discuss the multifaceted reasons for the gains in reported sexual behavior and Hepatitis knowledge. Describe the development and implementation of the adaptation of Video Opportunities for Innovative Condom Education and Safer Sex (VOICES/VOCES) for the Minority Reentry Population. **Conclusion.** Share lessons learned regarding the Broward CRUSHH intervention implementation. **Grants.** Funded by Broward County.

Linking Academia and Home-Based Social Services to Assist Low-Income Seniors: A Senior Intervention and Education Program

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Background. Frail, low-income, community-dwelling seniors with multiple medical conditions face hardships related to aging in place, premature institutionalization, health management, stress and isolation. **Objective.** NSU's College of Osteopathic Medicine and the Aging and Disability Resource Center of Broward County partnered on a Senior Intervention and Education Program to provide psychosocial and health services to low income seniors. **Methods.** Program goals were to (1) teach management techniques and support options to seniors and caregivers to foster self-care and cope with physical limitations, (2) maintain seniors' independence to remain at home with security, (3) reduce premature institutionalization, and (4) prevent elder abuse, neglect, and exploitation. NSU medical students accompanied a nurse/social worker on monthly home visits assessing seniors' living environments and resources, and evaluating their functional abilities. **Results.** This program provided services to 248 seniors (64% aged 75 and older, 62% female, 72% White, 28% Black and 11% Hispanic). Program services included the free distribution of donated specialized medical equipment, consumable medical supplies (together valued at over \$33,000), food and food vouchers (valued at \$1,270), case management (1,112 hours), caregiver training (113 hours), health education (183 episodes), counseling (277 hours), home injury control (192 episodes), assistance with service applications (45 episodes), referral (142 episodes) and in-home emergency respite (280 hours). **Conclusion.** This award-winning program provided low-income seniors with needed services, while the novel medical component gave future physicians first hand knowledge of vulnerable elders outside of the customary medical arena. **Funding.** This program was supported in 2008-2009 by the Jim Moran Foundation.

Impact of Training on Administration and Interpretation of PPD Testing

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Background. Several studies have determined the importance of training on the skills shown to apply and interpret the Tuberculin test. **Objective.** To determine the impact of the Palm Beach County Health Department educational strategy, on the administration and interpretation of the Tuberculin test. **Methods.** In this descriptive study our health care providers were surveyed through an anonymous questionnaire to measure their competency on both areas. Their score was then correlated to the type of Tuberculin testing training they had. The data results were analyzed using a regression analysis. **Results.** Competency score was significantly different between Train the Trainer and the Health Department Training ($P=0.15$). Train the Trainer vs. Other was not statistically significant ($P=0.27$). Health Department Training vs. Other was not statistically significant ($P=0.18$) as well as other paired comparisons. **Conclusions.** Type of training alone does not influence competency score, it only does it after adjusting for other covariates. Most of the participants in this study have completed the Train the Trainer or the Health Department Tuberculin testing course. When measuring one type of training against the other there's significant influence over score mostly for the train the trainer course. The other variables found to influence score where year since training, department and center where the employee is working at, years working at the health department and number of tuberculin tests administered per month. This study is measuring scores obtained in a validated questionnaire which does not necessary corresponds to the skills of that particular practitioner. **Grants.** Funded by PBCCHD.

Testing if Parents are Making Healthy Nutritional Choices for Their Infants and Toddlers

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Objective. This study was conducted to determine if parents of infants and toddlers were making healthy nutritional choices and if they are aware of the unhealthy ones. **Background.** Although levels of overweight and obesity among adults in the United States have reached epidemic proportions, concerns about overweight among children have only recently garnered the attention of public health researchers. The purpose of this study is to test parent's awareness of what a nutritional healthy choice is. **Methods.** For this study an anonymous questionnaire was given out to mothers of infants and/or toddlers. The questionnaire was testing the mother's knowledge about certain nutritional terms that are used to market "healthy" choices for children such as "Organic" and "sugar free". **Results.** This study showed that mothers who chose to exclusively breastfeed and use homemade of the first introduction to solid food for their toddlers, make healthier nutritional choices then the mothers who don't breastfeed. Yet, this study also showed that many mothers thought that "organic" and "sugar free" automatically means "Healthy" which is not true. **Conclusion.** There are many choices that are marketed for infants and toddlers as healthy food yet they are usually very high in sugar, sodium, and artificial ingredients. Parents should not fall into the marketing trap and should work on educating themselves on what healthy nutrition really means. **Grants.** None.

Gonadal Vein Injury

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Background. The following is a description of what we believe to be the first reported case of gonadal vein injury. **Method.** Retrospective review of a case report of a regional trauma center. **Results.** 35 year old female who sustained a right pelvic fracture after being hit by a sport utility vehicle while riding a bicycle. On arrival to the Level 1 Trauma Center, the patient was found to be hypotensive but responded to fluid therapy. CT of the abdomen and pelvis showed fractures of the right pubic ramus, bilateral hematomas and a small rim of low density around the inferior vena cava about the level of the right kidney, though the right renal vein, artery, and kidney functions were unremarkable. An emergent Inferior Vena Cavagram was performed revealing no acute abnormalities, however, secondary to the patient's tachycardia and hypotension during the procedure, the patient was sent to the OR for exploratory laparotomy. In the operating room, after the retroperitoneum and pericaval areas were packed, the right gonadal vein was identified, and appeared to be bleeding in multiple sites due to a near-complete transection and avulsion of this vessel. The vessel was doubly ligated both proximally and distally. The patient's blood pressure and heart rate improved after controlling the

bleed. **Conclusion.** Gonadal vein injuries can occur secondary to trauma and can produce significant bleeding which can be controlled by ligation of the vessel.

Implementing a Test-and-Treat Program for Lymphatic Filiriasis (LF) in a Public Health Clinic Setting

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Objective. To develop a program to screen and treat patients from endemic areas for Lymphatic Filiriasis (LF) in a community setting. This required a partnership between the Centers for Disease Control (CDC) and the Palm Beach County Health Department. **Background.** Lymphatic filariasis (LF), the disease caused by infection with *Wuchereria bancrofti*, can lead to extreme limb, scrotal, and breast enlargement. An estimated 10,000 immigrants enter the US harboring this mosquito-borne parasite each year and based on the 2000 census, more than 4 million immigrants from LF-endemic countries reside in the U.S. Neither the test nor medication used for LF have FDA approval, making screening and treatment limited in the US. **Method.** Following a three year process to obtain all necessary IRB approval, the CDC and Riviera Beach Health Center began to educate and offer patients screening for the disease within the clinic. The NOW® rapid filariasis immunochromatographic card test is used to diagnose cases of LF. Those testing positive who do not have contraindications will be offered DEC treatment. **Results.** Between April and December of 2009, 175 clients from LF-endemic countries were screened under this research protocol. 11 patients (6%) tested positive for the parasite, and all of these individuals were treated for the disease. **Conclusion.** New immigrants from LF-endemic areas may harbor the disease, and may not have access to screening or treatment while in the US. It is possible to implement a test-and-treat program for research, however it is time consuming and has limited scope. **Grants.** PB-CHD supported.

The Determinants of the Distribution of Osteopathic Medicine Physicians in the United States

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Objective. This study examined the determinants of the geographic distributions of Doctor of Osteopathic Medicine (DO) physicians in the US. **Background.** During the past two decades, DO physicians increased significantly and currently account for 7.5% of total physician workforce in the US. Although the geographic distribution of DO has been shown in previous studies, it is unknown what factors that determine the diffusion of DO and how the pattern differs from that of allopathic Medicine physicians (MD). **Methods.** Total DO Physician data from American Medical Association and Area Resource File from Health Resource and Services Administration were used. Random mixed model adjusted for spatial correlations among counties is used to model the change of DO by county. **Results.** From 1998 to 2006, the number of DO increased 1.76 for an average county, adjusted for population change and MD change during the same period. For every 100 increase of MD, DO increased 3.66, and for every 1,000 increase of total population, DO increased 0.29, while for every 1,000 increase of elderly population (age 65+), DO decreased 0.71 in an average county. In addition, DOs were more likely to increase among areas where there were more MD, higher percent of managed care enrollees, and more physician assistants. Compared with MD, DO was also more likely to practice in metropolitan areas. **Conclusion.** Although DO were concentrated among a few states, the distribution at the county level were determined by both local physician workforce change and demographic changes. **Grants.** None.

COLLEGE OF PHARMACY

Florida Pharmacists' Attitudes Towards Implementing a State Prescription Monitoring Program

Jennifer Fass, PharmD, Clinical Assistant Professor

Objective. This study is being conducted to assess pharmacists' attitudes towards prescription monitoring programs (PMPs) and their utility in Florida. **Background.** Florida's drug abuse problem has reached new levels with six people dying each day due to prescription drug overdoses. Florida recently became the 39th state to enact legislature to implement a PMP. **Methods.** For this study, 5,000 Florida licensed pharmacists will be randomly selected through the Florida Department of Health Licensee Data Center to participate in a ten-question voluntary and anonymous self-administered survey. The survey was pre-tested by a small group of

Florida pharmacists to validate the instrument. Attitudes towards implementation of a PMP will be correlated with years of practice, primary area of practice, and prior knowledge of PMPs. The survey will be mailed to individuals with a business reply envelope provided to maintain anonymity and increase the response rate. Participants will have approximately eight weeks to complete the survey. Reminder postcards will be sent three weeks after the surveys are mailed. A mixed model will be utilized for the statistical analysis. **Grants.** This study is funded by an HPD internal research grant.

Soapbox 2.0: Blog and Microblog use by Pharmacists for Ranting and Discourse

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Kevin A. Clauson, PharmD, Associate Professor

Objective. This study was conducted to examine positive and negative aspects of pharmacist blogs and microblogs by assessing their characteristics. **Background.** A blog is a bidirectional online diary that engages readers and provides a mechanism for feedback. **Methods.** Pharmacist blogs in English with recent activity were identified. Six categories including: 1. practice-based topics (PBT), 2. identifying information (IDI), 3. positive language (PL), 4. critical language (CL), 5. professionalism (PRO), and 6. miscellaneous (MISC) comprising 32 criteria were developed to evaluate blogs. **Results.** Of 42 pharmacist blogs assessed, PBT demonstrated 69.0% discussed pharmacological therapies and 21.4% forecasted the profession's future. No blogs contained patient-identifying information. Bloggers were divided into community (42.9%) and non-community (45.2%) practitioners; 11.9% indeterminable. 71.4% of bloggers maintained anonymity. Pharmacists commonly used PL describing their profession (23.8%), other healthcare professionals (21.4%), and patients (19.0%). Highest rates of CL included: patients (54.8%), other healthcare professionals (42.9%), and pharmacies (19.0%). For PRO, 33.3% of blogs included disclaimers. Half (50.0%) of blogs contained profane language. MISC revealed 26.1% of bloggers also have a microblog (Twitter) account; 9.5% mentioned colleges of pharmacy. Community practitioner bloggers used critical and unprofessional language most frequently. **Conclusion.** Blogs and microblogs represent new mediums to interact with patients and healthcare professionals, serve as an early warning system for the pharmacy profession, and promote dialogue. Blogs have potential to portray pharmacists negatively producing long-term damage to the profession, or advance the interests of the individual practitioner and profession. **Grants.** This study was not supported by funding.

Evaluation of the Treatment and Safety of High Dose Intravenous Narcotics for Acute Pain in an Inpatient Setting

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Objective. The primary objective of this study is to evaluate adverse drug events associated with intravenous morphine and hydromorphone at doses greater than 8 mg IV Q3 hours and 2 mg IV Q3 hours. Secondary objectives include: [1] percentage of subjects on oxygen saturation monitoring, [2] percentage of subjects prescribed and/or administered naloxone, and [3] percentage of physician orders with a *PRN / as needed* indication as required by the Joint Commission Standard MM.04.01.01. **Methods.** A computer generated list of patients prescribed high doses of intravenous morphine and/or hydromorphone will be collected and evaluated for study inclusion. Adverse drug events will be defined as one or more of the following: a reported Ramsay sedation score ≥ 5 , respiratory rates less than 12 breaths per min, or oxygen saturation less than 95% at room air. Descriptive statistics will be used to summarize data and inferential statistics will be used to compare data. **Results.** At study midpoint (n=6), only one subject has displayed an adverse effect currently associated to the administration of hydromorphone 2mg intravenously; subject displayed with an oxygen saturation below normal. **Conclusion.** No trend is available for analysis this far; however study subject recruitment is still ongoing at this time.

Pharmaceutical Rheology

Rashel Nimroozi, P-3,

Hossein Omidian, PhD, Assistant Professor

Objective. The aim of this scholarly review was to investigate the importance of rheology in the pharmaceutical formulation and development of drug dosage and release designs with regard to current studies conducted in the field of pharmaceutical rheology. **Background.** Current data in pharmaceutical rheology, which is the study of fluid and deformation as it applies to pharmacy, include parental formulations, nanoemulsions, emollients, and oranogels, to name a few. The importance of rheology is crucial in the

pharmaceutical industry as it can affect drug formulation and its development, as well as improving patient adherence and decreasing associated healthcare costs. **Methods.** A comprehensive literature survey was performed and information on the studies was accessed via Web of Science. There were over 400 studies evaluated and around 150 were selected to be analyzed for the following criteria: dosage form, instruments used, purpose/objective, methods, and outcomes. Endnote was used as an aid in evaluating and summarizing the studies by storing and managing the references which were arranged in a categorical fashion. **Results.** Based on the data from about 200 studies, the importance of rheology has been noted to have a significant impact on drug release and drug dosage formulations. **Conclusion.** A literature survey was necessary to locate the field of pharmaceutical rheology and to elucidate the state of the art as it can prove beneficial for future studies creating novel and innovative dosage designs.

Incidence of Adverse Drug Reactions Related to Propofol in an Intensive Care Setting

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Objective. The purpose is to monitor mechanically ventilated patients on propofol for signs and symptoms of adverse drug effects (ADE). Secondary objectives include: comparison of the incidence of hypertriglyceridemia, evaluation of the appropriate use of propofol, and assessment of the impact of a clinical pharmacist. **Methods.** A daily report was generated profiling propofol patients during a three month period. An IRB approved data collection tool gathered patient demographic information. Rate/dose and duration of propofol was also collected. If an ADE was discovered, the physician was notified and information regarding the ADE was also collected. Acceptance of pharmacy interventions were evaluated. Data were summarized and at study completion inferential statistics will be used to compare data. **Results.** At study midpoint (n=15), there were 66% male patients averaging 50.7 years (25-75 years). Propofol therapy averaged 5.37 days with 3.17 mg/kg/min (31.7 mcg/kg/min) average dose. In 20% of the subjects, the physician ordered a triglyceride level appropriately, whereas the primary investigator ordered a triglyceride level in 47% of the patients. The average triglyceride level was 168.9mg/dl (77- 296mg/dL). Co-morbid diseases included hyperlipidemia, hypertension, coronary artery disease, and heart failure. One subject was HIV positive on a protease inhibitor. Three subjects were also receiving TPN, with one subject being administered TPN with lipids. Thirty-three subjects were receiving a HMGOA Inhibitor. **Conclusion.** No ADEs have been identified this far, however education of monitoring triglycerides has been addressed with prescribing physicians. Subject selection and data analysis is still ongoing at this time.

Guidelines for Establishing Pharmacy Services in Ambulatory Care

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Objective. To describe the process of initiating new pharmacy services in an outpatient clinic setting. **Background.** The majority of clinical faculty at Colleges of Pharmacy maintains a clinical practice site. Faculty often implements pharmacy services at clinical sites de novo. While the published literature focuses on describing pharmacists' scope of practice in a variety of clinical practice settings, it falls short of describing the process of establishing new pharmacy services. **Methods.** A networking group of University faculty ambulatory care practitioners—from different clinical settings, at different stages of their careers—meets monthly via telephone conference sessions to discuss issues related to setting up a clinical practice site. After each session, a Situation-Target-Plan Report (STP Report) is generated and shared among the participants. Guidelines will be created offering best practices for implementing pharmacy services in an ambulatory clinic setting. **Results.** Successful methods and strategies will be identified to aid the new pharmacy practitioner in establishing long-term working relationships with physicians and building a sustainable clinical practice site. **Conclusion.** A consensus of best practices offers strategy and framework for establishing new pharmacy services in outpatient clinics.

Cellulose-Based Drug Delivery Systems

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Objective. The purpose of this scholarly review was to provide an overview encompassing the new and current uses of cellulose-based polymers in the drug delivery industry based on the experimental and clinical data of over 200 articles. **Background.**

Scientists have labored to produce and publish clinically valuable resources which are often overlooked due to the amount of data available. This can be challenging for a researcher looking to devise a new method of drug delivery using established relevant data as a basis of experimentation. **Methods.** A comprehensive database search was conducted over most cellulose based products currently used in drug delivery applications. Data on material/dosage form, instruments, scientific objectives/approaches, and outcomes was compiled in order to obtain a clear understanding on the state of the art uses of cellulose in drug delivery formulation. **Results.** It was noted that dosage forms modified by cellulose ethers display a specific interaction with water and general drug release mechanisms. The effect of the drug solubility and loading on the diffusion mechanism in swellable matrices, and the desirable shape and dimension of a drug loaded in such matrices were highlighted among factors facilitating the development of new controlled drug delivery products. **Conclusion.** This comprehensive review can potentially be used by researchers in the drug delivery area to modify and to develop more effective drug products with controlled release mechanisms.

Rebound Upregulation of Inflammatory Cytokines After Statin Withdrawal

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Ana M. Castejon, PhD, Assistant Professor,
Luigi X. Cubeddu, MD/PhD, Professor

Objective. The development of atherosclerosis relies heavily on production of inflammatory cytokines, therefore we investigated whether statin treatment withdrawal leads to upregulation of cytokines. **Background.** Cardiovascular disease is the leading cause of death in the US. The HMG-CoA reductase inhibitors (statins) are indicated in the prevention of cardiovascular morbidity and mortality due to atherosclerosis. However, discontinuation of statin treatment induces a rebound dysfunction associated with cardiovascular events. The mechanism underlying these events is unknown and there are no treatment strategies available. **Methods.** Vascular Smooth Muscle Cells (VSMCs) from Sprague-Dawley rats were cultured in vitro. The VSMCs were treated with simvastatin (1uM or 3uM) for 24h with or without TNF-alpha (5 ng/ml), followed by statin withdrawal (WD). Supernatants of cultures were analyzed for cytokines. **Results.** VSMC withdrawal of simvastatin without TNF-alpha, increased the CXCL1 by 30% (+/- 2%) and 43% (+/- 2.5%) after 6h and 10h WD respectively. The levels of other pro-atherogenic cytokines examined did not differ significantly from control. WD of VSMCs treated with simvastatin (3uM) and TNF-alpha induced significant increased the protein levels of: (a) CXCL1 by 960% (+/- 300%); (b) CCL2/MCP1 by 300% (+/- 20%); and (c) RANTES by ~400% (+/- 80). **Conclusion.** Our data suggest that VSMC response to simvastatin treatment and withdrawal may be influenced by a patient's previous exposure to inflammatory factors. The data support observations that patients with existing cardiovascular dysfunction are at greater risk of adverse rebound effects due to statin withdrawal. **Grants.** NSU President's Faculty Research and Development Grant 2008-09.

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