

# 35<sup>th</sup> Annual Research Education and Forum

## Ethics Revisited: A Critical Look at Health Encounters

### ABSTRACT SUPPLEMENT

March 25-26, 2015



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## • Oral Presentations •

**O-001 Use of Sport Supplements among Young Puerto Rican Athletes**

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The use of nutritional supplements is in increasing trend and recent research indicates younger athletes are experimenting with these substances for performance and appearance with a use prevalence of 13-76%. Supplement use among adult athletes has been well documented how-ever there are a limited number of studies investigating supplement use by adolescent athlete. Purpose: To assess the prevalence and perception of legal ergogenic substance use, during the past 12 months, among 7th -to-12th grade athletes in a sports specialized school in Puerto Rico. Methods: Students from a sports specialized school in Salinas, Puerto Rico from ages 12 to 19 and their parents were informed about this research study. Consent and assent forms were signed by all participant. A validated questionnaire was given out to all study participants and analyzed using statistical software. Results: Study population was composed by 121 young athletes (n), 45% female, between ages 12 to 19. Use of ergogenic substances was prevalent in 98.3% of population (sports drinks (94.2%), vitamins (53.7%) and protein (54.5%) ). An increase in athletic performance was the principal reason (62%) to use ergogenic substances and their trainers and coaches were the most cited source of information for its use. Most participants reported they would like to learn more about nutritional supplements and their uses. Conclusion: In conclusion our study shows that the use of ergogenic substance is popular among the population studied. More studies are needed to evaluate how this practice can influence the use of illegal substance in the future.

**O-002 The *Eya2* Gene is Important for Hair Cell Regeneration in the Zebrafish Lateral Line**

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Background: We are interested in the molecular genetics of sensory tissue regeneration, which is happening in hair cells (HC), mechanoreceptors that are central to hearing in vertebrates and are found in sensory tissue of the inner ear. Contrary to mammals, fish and birds are able to regenerate HC. Fish have a primitive inner ear comparable to the mammalian ear, but additionally they have a superficial sensory structure called the lateral line (LL) which is composed of sensory patches called neuromasts (N). It was shown previously that HC actively regenerate from surrounding supporting cells (SC). Some of our prior work indicated a possible role for *eya2* gene in this process. The *eya* gene family is crucial in the development of sensory tissues, and *eya2*

is abundantly expressed in SC into adulthood. Methods: We investigated its role in regeneration by analyzing a revertible *eya2* mutant transgenic line. To bypass the haplo-insufficiency of the *eya2* gene during the first days of development we injected morpholinos (MO) which temporally reverted the mutation. The sexual mature *eya2*<sup>+/-</sup> were outcrossed to wild type animals and their offspring tested for HC regeneration which we triggered with waterborne copper which is killing selectively HC. Results: We found that *eya2* mutants were significantly delayed in the regeneration of their HC. Conclusions: The *eya2* gene is implicated in the process of HC regeneration. Acknowledgements: This research as supported by RCMi grant #G12 MD007600 / NIDCD-ROO grant #4R00DC009443/ Puerto Rican Science Trust.

**O-003 The Relationship between Skeletal Antero-Posterior Pattern and Transverse Facial Proportions: Training and Calibration Exercise**

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Background and Objective: The soft tissue paradigm shift has influenced the current diagnosis and treatment modalities in orthodontics. The question is whether a facial assessment in frontal view allows any conclusions with respect to the existing lateral skeletofacial morphology. The purpose of this calibration and training exercise was to assess reliability of skeletal antero-posterior discrepancy measures obtained from lateral cephalometric radiographs (CEPHs) and facial anthropometric measurement determination in a group of students and residents and assess validity of the measurements taken. Methods: 10 random CEPHs were selected from clinic records at the UPR School of Dental Medicine. Each CEPH was digitally traced using Dolphin Imaging Software 10.1 to determine the ANB cephalometric measurement and the skeletal classification was determined. Faces from 10 volunteer residents and students were used for the calibration of the landmark identification and measurement determination (9 linear measurements). Intra and inter-examiner reliability was performed by one examiner (LL) and a reference examiner (GP) using Pearson's and Spearman correlation coefficients (for continuous measures) and Cohen's kappa statistic (for categorical measures). Results: Inter and intra-examiner reliability measures were excellent for both angular measures (correlation coefficients of 0.99 and 0.98 respectively, all p-values<0.0001) and categorical measures (kappa of 1.00) related to the CEPH analysis. For the facial measurements inter and intra-examiner reliability measures were also excellent (correlation coefficients ranging from 0.85 to 0.99 and 0.88 to 0.99 respectively, all p-

values < 0.001). Conclusion: Excellent inter and intra-examiner reliability was achieved among examiners thus providing validity to the study.

#### O-004 ICDAS Training and Calibration: A Pilot Project

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Background: The International Caries Detection and Assessment System (ICDAS) is the gold standard diagnostic criteria for the assessment of caries experience and its management. Objective: Train and calibrate two examiners in ICDAS and determine the feasibility of this pilot project for a future RCT. Methods: 18-25 year-olds residing in Dominican Republic (n=111) were consented and screened by the reference examiner (RE); 74 individuals were selected: 26 for training and 48 for calibration. Training consisted of: ICDAS eLearning, a lecture, clinical image assessments, and scoring of coronal surfaces of posterior extracted teeth (ICDAS 0-6). Visual examinations were conducted using optimal clinical facility/equipment. Subjects received a dental prophylaxis prior to the examination. The clinical training consisted of selected quadrants examination. Trainees were allowed score discussions with the RE. Live data was entered using i-pads equipped with ICDAS Application. Calibration was done on 48 patients following the same protocol, except that score discussions were prohibited. Weighted Kappa coefficient was used to assess inter- and intra-examiner reproducibility. Approximately, 20% of the calibration participants were re-examined to determine intra-examiner reproducibility. Results: Inter-examiner reliability was 0.80-0.82. Intra-examiner reproducibility ranged from 0.81-0.87 for trainees and 0.97 for the RE. After this pilot project, minor changes were proposed to optimize the future RCT: participants' age group 15-21 and oral hygiene routine preservation. Conclusions: Novice trainees achieved substantial agreement (inter-and intra) using ICDAS. This demonstration exercise aided to determine the future RCT feasibility (compliance, data entry, cost-effectiveness, etc), identify weaknesses, and improve the overall study design. Acknowledgements: This work was partially supported by the National Institute on Minority Health And Health Disparities of the NIH (R25MD007607) and Colgate Palmolive.

#### O-005 Role of Glutathione in Reducing Lysosomal Disruption in HIV-macrophages

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Background & Objectives. HIV-associated neurocognitive disorders (HAND) remain prevalent with HAART. In neurodegenerative diseases, including HAND, oxidative stress is an

important hallmark. HIV infection promotes oxidative stress and the secretion of the lysosomal protease cathepsin B, inducing neurotoxicity. Therefore we hypothesize that reduction of oxidative stress by treatment of macrophages with glutathione (GSH) will reduce secretion of cathepsin B. Methods. HIV-1 infected monocyte-derived macrophages (MDM), were treated with GSH at one day post-infection (dpi), and secretion of pro-cathepsin B, cystatins B and C, and cathepsin B activity were measured from cell supernatants at 11 dpi. Disruption of lysosomes was assessed using LysoPainter dye. Cathepsin B/cystatin B interaction were determined at 12dpi by proximity ligation assay. Results. We found that the secretion of cathepsin B and cystatin B were not different after GSH treatment as well as cathepsin B activity, however lysosomal disruption and cathepsin B/ cystatin B interaction were restored.. Interestingly when Efavirenz, a non-nucleoside reverse transcriptase inhibitor was added to MDM, the levels HIV infection and cystatins B and C decreased to baseline values, suggesting that these proteins are affected by HIV replication. Conclusions. GSH treatment of MDM restores cathepsin B /cystatin B interactions and improve integrity of lysosomes. Replenishing GSH levels in HIV infected patients, together with antiviral therapy, can reduce macrophage oxidative stress. Acknowledgement. This research was supported in part by grants from the NIH grants R01MH083516 (to LMM), SNRP U54NS4301 (to LMM), RISE R25GM061838 (KC), NIMH G12-MD007600 (Translational Proteomics Center). We acknowledge the UPR-MSC Chancellor, and the Associate Deanship of Biomedical Sciences for the funding provided.

#### O-006 Addressing Ecologic Fallacy in the Health Administration Services Planning and Health Promotion Plans: The Case of Villa Alegre

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Health Services Administration plans and forecast are constantly worked based on statistical analysis provided by health authorities' data. However, commonly, data could lead to unnecessary or undesirable provision of services to communities. NeoMed Center, a 330 health center, working with community needs by the administration of federal and state funds assigned to fight underage drinking at Gurabo base in state databases. The aim of these data is to gather the case report of Villa Alegre Community classified as "High Risk" for adolescent alcohol consumption community based on national and district data, but re-classified as "Low Risk" after field epidemiology assessment. Also, this presentation counts on how health administration resources provided by 330 health centers were re-assigned to work other communities within Gurabo facing underage drinking. A cross-sectional study design was used to measure risk factors for alcohol consumption as well as resiliency among community adolescents. Results showed that adolescents' alcohol consumption was barely occurring in the community as self-reported. However,

risk factors such as low SES, violence events, alcohol availability among others were high as reported elsewhere by governmental authorities. In conclusion, the results shows that health services planning needs direct measurement of the phenomena prior to resources allocation.

#### **O-007 Diverging Destinies: Puerto Rican Population in the Island and the United States**

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**Background and Objectives:** The 2010 Decennial Census evidenced that more Puerto Ricans were living in the United States than in the island. At the same time it was the first time in history where the island experienced a population decline. This paper has the objective of studying population trends for Puerto Ricans in both settings and projecting future population structures for the 2020 period. **Methods:** Data for this study come from the 1990, 2000 and 2010 Decennial Censuses as well as from multiple sources of population projections of Puerto Rico. The projections for 2020 presented were generated using the Hamilton-Perry Method for Population Projections and Forecasting. **Results:** Based in the population projections for both instances we can expect the population of Puerto Rico to decrease by 4% and the population of Puerto Ricans in the U.S. to increase by 35%. This 35% includes migration from the island and births to Puerto Rican parents. The dependency ratio for both instances is similar, but the disaggregated ratios present a higher percentage of aged dependency in Puerto Rico than in the US. The population of Puerto Rico is expected to age rapidly compared to the population of Puerto Ricans in the US that is aging in a slower pace. **Conclusions:** The population of Puerto Ricans in the island and the US present diverging trends in terms of their growth, aging, and population structure. These issues of population aging and dependency structures should be addressed through a comprehensive population and economic policy. Not addressing the issues in a timely manner could be disastrous to the economic environment and situation of the island. As our political situation enables us certain liberties when compared to the states of the union, the government of Puerto Rico should consider drafting and approving a population policy to address the pressing population situations of the island.

#### **O-008 Ciudadanos de Segunda Clase: el Vivir entre los Sexos y el Derecho en Puerto Rico**

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**Trasfondo y objetivos:** La intersexualidad humana principalmente se refiere a características anatómicas de los genitales atípicas al nacer. Las condiciones congénitas del tracto urogenital ocupan la cuarta posición entre todas las condiciones que monitorea el Departamento de Salud de P.R. Aunque la hiperplasia

adrenal congénita (HAC) puede producir atipia genital, estándares medico-legales actuales dictaminan que neonatos HAC con kariotipo 46, XX tienen que ser asignados al sexo de hembra sin tomar en cuenta su fenotipo genital. La política pública mediante ley obliga a los médicos asignar un sexo al nacer. En el presente trabajo se analizó dicha política pública, el estado de derecho que aborda el tema y su jurisprudencia. Este análisis está enmarcado en la disciplina del Derecho y la Ciencia Médica. **Método:** Esta investigación (1) identificó y evaluó los argumentos biomédicos utilizados en las decisiones judiciales e (2) identificó y evaluó el historial legislativo y casos ante el Tribunal Supremo de P.R. **Resultados:** Encontramos que la ley y la jurisprudencia en P.R. no permiten que personas luego de ser asignadas a un sexo puedan modificar sus documentos oficiales ante el Estado. **Conclusión:** La política pública y el estado de derecho actual en la isla no protege a personas intersexuales en Puerto Rico quienes, a lo largo de su desarrollo psicosexual, pueden verse atrapad\*s en un sexo que entienden no le correspondía. Proponemos legislación que examine el estado de derecho actual en estos casos a la luz del derecho a la identidad de género vigente en otros países iberoamericanos.

#### **O-009 Propuesta de Reglamentación para Centros de Cuidado de Larga Duración que sirven a Personas con la Enfermedad de Alzheimer en Puerto Rico**

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**Política Pública Analizada.** A pesar de que las personas con la Enfermedad de Alzheimer (PEA) tienen necesidades muy particulares, en Puerto Rico no existe legislación o reglamentación para los Centros de Cuidado de Larga Duración (CCLD) que sirven a esta población. El objetivo de esta investigación es analizar reglamentaciones aplicables CCLD que sirven a personas con EA en Estados Unidos. **Disciplina Académica.** Este estudio es una Investigación de Leyes de Salud Pública (Public Health Law Research). **Fuentes de Información.** Se utilizó el documento "State Residential Care and Assisted Living Policy: 2004" (SRCALP) para evaluar las políticas existentes en los Estados Unidos. Se contactó el Departamento de Salud de cada estado para actualizar la información. Se evaluaron las legislaciones existentes en Puerto Rico que cobijan a las PEA. **Método.** En este estudio-mapa (Mapping Study) se identificaron aquellos estados que tienen regulaciones de licenciamiento y se evaluaron las categorías de la tabla de requisitos para facilidades que sirven a residentes con demencia del SRCALP para delimitar las áreas a evaluar. **Hallazgos.** Se encontró que 41 estados tienen algún tipo de política para CCLD para pacientes con EA. Las regulaciones más frecuentes se dirigen hacia el adiestramiento del personal (31/41), a solicitarles un "Disclosure Form" (25/41) y a regulaciones sobre el ambiente físico, el diseño y seguridad de la facilidad (19/41).

Implicaciones. Se recomienda la creación de legislación que regule los CCLD que sirvan a personas con EA-OD, para atender sus necesidades particulares. Esta legislación debe estar dirigida principalmente a las áreas que aún no han sido cubiertas por las leyes existentes.

**O-010 Barriers for Using Assistive Technology by Community-Living Hispanic Older Adults with Functional Limitations**

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The presence of chronic conditions in old age may result in challenges to maintain independence in daily life activities. Assistive technologies (AT) are tools that enhance the independence, safety, and quality of life of older people with functional limitations. However, studies conducted with older adults from other countries reveal barriers for successful using AT. The aim of this study was to identify barriers experienced by Hispanic community-living older adults with functional limitations for using AT. Sixty Hispanic older adults (70 years and older) with functional limitations participated in this study. A mixed method design was used. The quantitative phase consisted of the administration of the AT needs assessment questionnaire and the qualitative phase consisted of individual interviews. Data analysis included descriptive statistics and thematic content analysis. A complex interaction between personal, contextual, and activity-based factors contributed to the experience of barriers for using AT. Lack of AT awareness and knowledge, limited coverage of AT by health care plans, and perceived complexity and high cost of AT were the predominant barriers experienced by the participants. This study revealed significant gaps in knowledge related to the availability and benefits of using AT to support aging in place and healthy aging. It is imperative that older people as well as health care professionals have up-to-date knowledge and information about the availability and use of AT. If older people continue to not having information regarding AT, their pursuit to remain living independently may be curtailed.

**O-011 CUIDATE & CUIDALOS: Two Evidence-Based Programs for Teen Pregnancy Prevention in Puerto Rico**

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**Background & Objectives:** The Puerto Rico Personal Responsibility Education Program (PR-PREP) educates adolescents, their families and communities on abstinence, contraception and adulthood preparation topics with the ultimate goal of preventing unintended teen pregnancies and sexually transmitted infections (STIs), including HIV/AIDS. During the PREP first implementation year (2014), activities were conducted at school and com-

munity (public housings) settings. **Methods:** As result of a needs assessment, five municipalities in highest need of teen pregnancy prevention services at the Southeast region of Puerto Rico were selected. The target population was 12 to 14 year old youth and their parents/caregivers. The evidence-based programs (EBPs) delivered were: ¡Cuidate! (asyouth intervention) and ¡Cuidalos! (asparentalintervention). **Results:** A grand total of 468 youth aged 12 – 14 and 145 parents/caregivers initiated ¡Cuidate! and ¡Cuidalos! sessions, respectively. Both EBPs were conducted during school hours (AM/PM). Ninety three percent of the youth indicated that the discussions or activities helped them to learn program lessons; whereas 93% of the parents/caregivers stated have learned about new topics and tools to support the communication with their child. The overall retention rate was of 89% and 90% for the youth and parental interventions, respectively. **Conclusion:** Both EBPs were well received by participants at implementation sites. Educational information provided may serve as a useful complement of the material discussed in the health class and to enhance parent-child communication. **Acknowledgements:** The PR-PREP is funded by the Administration on Children, Youth and Families (HHS-2010-ACF-ACYF-PREP-0125). We thank Dr. Antonia Villarruel, the EBPs' developer. Approved by the UPR-MSU IRB on September 12, 2013 (Protocol Number: A4760113).

**O-012 Prevención de Alcohol en Menores: Implementación de una PBE en Familias Vegabajeñas**

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**Contexto:** La influencia familiar y de pares son factores determinantes para el consumo de alcohol en menores. El 53% de los jóvenes en el municipio de Vega Baja han consumido alcohol alguna vez en su vida; el 69% indicó haber bebido en racha (5 tragos o más); 49% reportó uso de alcohol en la familia; y el 56% consumo de alcohol por parte de sus amigos (EJ, 2012). Con el fin de reducir el consumo de alcohol en menores, el programa Barrio Vivo de Iniciativa Comunitaria adaptó culturalmente e implementó una práctica basada en evidencia (PBE) dirigida a jóvenes y sus familiares. **Objetivo:** Presentar los resultados de la implementación piloto de la PBE Creating Lasting Family Connections. **Metodología:** Se reclutaron de manera voluntaria participantes de 15 a 17 años y padres o adultos significativos de la comunidad Alto de Cuba en Vega Baja. Se realizaron 16 sesiones del currículo a un grupo de jóvenes y 17 sesiones a un grupo de adultos. Se evaluó la fidelidad de los procesos de implementación y contenido de las sesiones a través de observación, entrevista, encuesta y grupo focal. **Resultados:** Se impactaron 23 jóvenes y 16 padres o adultos significativos. Porcentaje de satisfacción de los participantes: 98.5%. Fidelidad de la implementación: 100%. Reducción del consumo de alcohol en los jóvenes: 8.8%. Disminución de beber en racha: 13%. Aumento en percepción de supervisión familiar: 41.4%. **Conclusión:** El éxito de dicha im-

plementación justifica los esfuerzos para replicar a mayor escala el programa. Agradecimiento: CIES-RCM y ASSMCA.

**O-013 Evaluación de una Intervención Piloto para la Prevención del Uso de Alcohol entre Adolescentes de una Comunidad en el Centro de la Isla**

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La evaluación de Intervenciones Breves (IB) de promoción para la salud recopila evidencia sobre su efectividad, identifica maneras de mejorar la práctica, e identifica resultados inesperados. Sin embargo, continúa la falta de documentación sobre IB que conduzcan a reducciones significativas en uso de alcohol en jóvenes. El objetivo fue explorar la viabilidad y aceptabilidad de IB llevado a jóvenes en entornos comunitarios. Además, conocer si se implementó la intervención según fue diseñada, examinar si los objetivos establecidos se lograron y proveer recomendaciones para así introducir acciones correctivas en el diseño y la implantación del proyecto. La evaluación fue de proceso utilizó un enfoque mixto (análisis cuantitativos y cualitativos) y para los análisis cuantitativos se utilizó SPSS® versión 21. En total hubo 22 participantes de la intervención piloto y cuatro evaluadores observacionales. La evaluación de implementación cumplió satisfactoriamente con 85.7%. El 87.5% dijo que el desempeño de los facilitadores fue excelente. El 81.3% de los participantes se mostraron satisfechos con el tema de intervención y los materiales utilizados. Hubo varias recomendaciones dirigida a los facilitadores para tener mayor afinidad con los participantes y elevar el nivel cognoscitivo de la información. En general la actividad mantuvo la cronología de eventos estipulada en el plan de intervención y evaluación. En cuanto al proceso de la evaluación, la evaluación fue satisfactoria y se cumplieron los indicadores establecidos con mínima sugerencias para modificar. No hubo puntuación por debajo de 80%.

**O-014 An Interdisciplinary Intervention for Developing Social Skills in Twice Exceptional Children**

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Twice exceptional children exhibit strengths along with weakness, thus they are frequently misunderstood or unidentified resulting in being underserved. These challenges often interfere with their ability to adequately interact with others and develop adequate social skills. Objectives: 1) discuss a model of interdisciplinary intervention for the development of social skills in twice exceptional students and their families, and highlight its complexity. 2) explain curricular activities to develop social skills, and formal and informal methods to assess them. Dependent variable: level of development of social skills of each child measured through

two strategies: a) pre/post tests, and b) ratings of achievement during intervention sessions. Independent variable: twelve-week interdisciplinary intervention. Method: A multiple single-case research, based on a pre-experimental AB design. Four different quantitative pre and post measures were used. Information was also gathered during the intervention to document the children's achievement of specific social skill objectives. The twelve week intervention with parents and children included both individual and group sessions with the children four days a week after school. Results: The differences in pretest-posttest scores and the achievement ratings registered reveal improvements related to the identified difficulties in social skills. The results indicate that participants improved their social skills through the interdisciplinary intervention. Conclusions: The results provide support for the usefulness of an interdisciplinary intervention with 2e children to strengthen the development of their social skills that were established as target. The interventions were effective for the development of social skills, and therefore were helpful for the 2e participants. Funding Sources: This study was financed by a seed research award of the FILIUS Institute, of the University of Puerto Rico, Central Administration

**O-015 Community Mobilization Efforts for HIV Prevention: A New Approach to for Young College Bound Adults in Universities, Puerto Rico, 2014**

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Background & Objectives: Individuals aged 13-24 saw the largest percent increase in new HIV diagnoses from 14% in 2011 to 19% in 2012. For years prevention interventions targeted the 35-44 year old population identified as highest risk for infection. Community mobilization (CM) has proved to be a successful strategy for disease prevention. The Puerto Rico Department of Health's HIV/STD Prevention Program developed new Community Mobilization strategies among college bound individuals. Methods: CDC's CM model for syphilis was adapted for HIV. Key stakeholders (universities or colleges and their campuses, CBOs, private enterprise, etc.) were identified, engaged and trained as to key project's goals. An assessment tool was designed to measure participant's acceptability of this new model for HIV awareness. Excel 2007 was used for data analysis. Results: On October 14-16, 2014, islandwide activities targeting college communities were held with 40% (22/55) participation of university and college campuses in PR. Preliminary reports indicate an outreach impact of ≥ 3000 individuals out of an estimated a 38,000 college student population. HIV testing was offered in 15 of 22 participating institutions; a total of 650 HIV rapid tests were performed; counseling and referral services were available on site. Among 135 assessment tools evaluated to date, 87% reported increased knowledge on HIV and 93% reported they would recommend similar activities to peers. Conclusion: At 40% participation, universities and colleges seem to embrace their role as HIV preven-

tion stakeholders. Target population high participation rates and positive HIV knowledge change suggest a CM model for this population is an acceptable and effective tool for HIV awareness and prevention. Acknowledgements: This work was possible by CDC grant PS12-1201: Comprehensive Human Immunodeficiency Virus (HIV) Prevention Programs for Health Departments

#### O-016 Assessment of two HCV Knowledge Questionnaires for Promoting Health among Puerto Rican Islanders Injecting Drug Users

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Health education programs are based in the quality of the tools used for promoting the wellbeing of the communities. Currently, there are few tools that help promoting the health of IDU's from contagion with HCV. The aim of this study was to compare an existing HCV scale with an original scale for HCV knowledge among participants of a syringe exchange program in terms of reliability and other psychometric properties. A cross sectional study was performed using STATA 12.0 for comparing the scales using the same population in a two wave survey design. A total of 104 participants in the first wave and 103 participants in the second wave were recruited in the study. Results show that socio-demographic characteristics of participants did not differ ( $p > .05$ ) in terms of age, sex, years injecting, injection per/day among others. Although, content validity by a panel of experts was performed to assure the new scale was appropriate KR-20 test showed that the internal consistency among both scale were low ( $< .30$ ). Also, psychometric properties of the scale showed low eigenvalue for both scales. Based in these results, there is a need to develop a more reliable instrument capable to assess the knowledge among the most vulnerable population for HCV contagion in Puerto Rico. IRB Protocol Approval # A8190414

#### O-017 Identification and Expression Analysis of Two *Xenopus laevis* Homologs of the Novel F-Box Containing Protein, FBXO30

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Tumorhead (TH) is a maternal factor that regulates cell proliferation during early embryogenesis in *Xenopus laevis*. To understand how TH functions at the molecular level, we have been studying its relationship with the novel F-Box containing protein FBXO30, found in a two-hybrid screen for TH binding proteins. Using RT-PCR, we identified two FBXO30 homolog genes in *X. laevis*, named FBXO30-A and FBXO30-B. The FBXO30-A and FBXO30-B proteins share 64% and 63% identity with their Homo sapiens homolog, respectively. Sequence analysis and alignment of several vertebrate FBXO30 proteins show that they contain very conserved F-Box domains at their C-terminus, while the internal part of the proteins diverge extensively. We found through RT-PCR that FBXO30-A and FBXO30-B are maternal factors as their messages are present in the unfertilized egg. Their mRNAs persist during the cleavage stages but decrease dramatically once gastrulation starts. The FBXO30-A and FBXO30-B messages are present at low levels during organogenesis, showing a slight peak of expression during the mid-tailbud stages. *In situ* hybridization studies show that the maternal FBXO30-A mRNA is localized to the animal pole, and that the later expression of FBXO30-A occurs in the developing somites. Using antibodies raised against a synthetic FBXO30-A peptide, we have preliminarily localized the FBXO30-A protein to the nuclei of ectodermal cells at the gastrula (st. 12) stage. Our studies show the presence of two homologs of FBXO30 in *X. laevis*, which could be key regulators of early development, working with TH to regulate cell proliferation. Supported by: NIH-MARC Program (Grant 2T34GM008156-21)

#### O-018 Activation of Group II Metabotropic Glutamate Receptors Exerts an Anxiolytic-like Effect in Ovariectomized Female Rats

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Background & Objectives: Anxiety disorders affect 40 million adults in the USA. Generalized anxiety disorder (GAD), one type of anxiety disorders, affects females twice more than males. This predisposition might be due to differences in metabolite concentration such as estradiol. Estrogen receptors (ERs) at the plasma membrane activate metabotropic glutamate receptors (mGluRs). mGluRs have been linked to anxiety modulation. 1S,2S,5R,6S)-2-Aminobicyclo[3.1.0]hexane-2,6-dicarboxylic acid (LY354740), a group II mGluRs agonist, produces anxiolytic effects in male rodents. However, whether LY354740 produces the same effect in female rats, and whether estradiol might modulate anxiety through mGluRs interaction is still unknown. We hypothesized that the anxiolytic effect of LY354740 will be higher in ovariectomized female rats containing estradiol implants (OVX-EB) than animals containing empty implants (OVX). Methods: We evaluated GAD using the elevated plus-maze (EPM). We also evaluated risk assessment behaviors (RABs) within the EPM. RABs include flat back approach (FBA), stretch attend postures (SAP)



and head dipping. We administered LY354740 (10 mg/kg) intraperitoneal 30 minutes prior to the EPM. Results: Preliminary data shows that LY354740 significantly decreased closed arms entries in OVX-EB but not OVX female rats ( $p = 0.039$ ). LY354740 significantly reduced FBA in OVX-EB and OVX female rats ( $p = 0.001$ ) and SAP in OVX female rats only ( $p = 0.006$ ). Conclusion: Our results suggest that in GAD, the anxiolytic-like effect of LY354740 is selective to OVX-EB female rats, suggesting an interaction between mGluRs and ERs. On the other hand, the anxiolytic-like effect of LY354740 in RABs seems to be independent upon estradiol treatment, suggesting that the effect is due to group II mGluRs activation. Further experiments need to be done to evaluate these results. Acknowledgements: This study was partially supported by Undergraduate Research Mentoring Program (URM) – 40231.043.000.xxxx.430.401430070001.00 (534025); RCMC Program UPR-MS (G12RR03051); RCMC Translational Proteomics Center (G12MD007600); Deanship of Biomedical Sciences and the Department of Anatomy & Neurobiology of the UPR School of Medicine.

#### O-019 Cathepsin B and Serum Amyloid P Component Contribute to HIV-induced Neuronal Apoptosis

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**Background & Objectives:** Cathepsin B, a lysosomal protease, is actively secreted by HIV-infected macrophages and has been associated to neuronal apoptosis in vitro. We hypothesized that cathepsin B interacts with other macrophage-secreted proteins to trigger neuronal apoptosis. **Methods:** To elucidate the mechanism of neurotoxicity, we immunoprecipitated cathepsin B from uninfected and HIV-infected macrophage supernatants and identified interacting proteins by LC-MS/MS. Proteins with differences in spectral count were validated by western blot. Their contribution to neuronal apoptosis was then assessed by exposing uninfected and HIV-infected macrophage supernatants pretreated with antibodies against cathepsin B and selected proteins to SK-N-SH neuroblastoma cell line cultures, using TUNEL labeling. The expression of the proteins in deep frontal white matter from HIV-positive patients was observed by immunohistochemistry. **Results:** Serum amyloid p component (SAPC) co-immunoprecipitated with cathepsin B from HIV-infected supernatants. Matrix metalloprotease-9 (MMP-9) co-immunoprecipitated with cathepsin B from uninfected supernatants. Antibodies against cathepsin B and SAPC decreased HIV-induced neuronal apoptosis by 10%. Pre-treatment of macrophage supernatants with antibodies MMP-9 did not have any effect on neurons. Cathepsin B and SAPC expression are increased in the brain of patients with HIV-subsyndromic disorder and with

HIV-associated dementia compared to controls. Both proteins co-localized with amyloid beta peptides in tissues from HIV-positive neuro-impaired patients and Alzheimer's disease patients. **Conclusions:** Cathepsin B and SAPC are secreted by HIV-infected macrophages and contribute to neuronal apoptosis in vitro. The expression of both proteins is increased in the brain of patients with HAND and Alzheimer's disease, pointing to a role in neurodegenerative diseases. **Acknowledgements:** We thank Dianne Langford, Ph.D. for aiding us with the immunohistochemistry protocol. This work was supported in part by grants from the National Institutes of Health R01MH083516 (to LMM), SNRP U54NS4301 (to LMM), RISE R25GM061838 (YC), NIMH G12-MD007600 (Translational Proteomics Center). We acknowledge the UPR Medical Sciences Campus Chancellor, and the Associate Deanship of Biomedical Sciences provided additional funding to complete this study. This work was made possible from NIH funding through the NIMH and NINDS Institutes by the following grants: Manhattan HIV Brain Bank: U01MH083501, R24MH59724; Texas NeuroAIDS Research Center U01MH083507, R24 NS45491; National Neurological AIDS Bank 5U01MH083500, NS 38841 California NeuroAIDS Tissue Network U01MH083506, R24MH59745 Statistics and Data Coordinating Center U01MH083545, N01MH32002. Its contents are solely the responsibility of the authors and do not necessarily represent the official view of the NNTC or NIH.

#### O-020 CCL4 and IL-15 Affect Prostate Cancer Development

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**Background & Objectives:** Prostate Cancer (PCa) is the second-leading cause of cancer-related deaths in the United States. Inflammation, is associated with PCa development and progression. Chemokines such as CCL4 and IL-15 are differentially expressed in prostate cancer patients with recurrent disease (CCL4) or recurrence-free survival (IL-15). We studied the role of these chemokines in PCa using in-vitro and in-vivo models. **Methods:** PC3 (androgen-independent) and 22RV1 (androgen-dependent) cell lines were treated with CCL4 (0.001ng/mL and 0.1ng/mL) or IL-15 (0.0013ng/mL and 0.1ng/mL) and subjected to motility assays. The role of CCL4 and IL-15 in tumor growth was evaluated using an orthotopic xenograft model. The chemokines were administered bi-weekly with intraperitoneal injections during 4 weeks. Tumor volume was determined with caliper measurements. Tissue was collected, fixed, and processed for gross-examination, immunohistochemical, and gene expression analysis. **Results:** In-vitro studies indicated that PC3 and 22RV1 cells treated with CCL4 had significantly increased motility while IL-15 treatment caused a decrease ( $p < 0.05$ ). In-vivo, CCL4 and IL-15 increased tumor volume. Immunohistochemical analysis showed that CCL4 increased expression of desmin,

phospho-histone 3 (pH3) and CD31. On the other hand IL-15 increased expression of desmin but, decreased phospho-histone 3 (pH3) and CD31. Gene expression analysis showed that CCL4 and IL-15 altered several genes involved in PCa progression and the PI3K pathway confirmed by quantitative Real-Time PCR. Conclusions: Our results indicate that CCL4 may promote tumor growth and metastasis in-vivo by increasing proliferation and altering migration, while IL-15 promotes tumor growth while decreasing metastatic-potential. Acknowledgments: This work was supported by the Comprehensive Cancer Center, the Graduate Program School of Pharmacy, NIH K01 CA140711, and MBRS-RISE R25GM061838.

#### **O-021 Intraperitoneal Delivery of Liposome-Encapsulated c-MYC-siRNA Reduces Tumor Burden in a Mouse Model of Cisplatin-Resistant Ovarian Cancer**

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Given the pivotal role of the c-MYC transcription factor in cancer, its therapeutic targeting in chemoresistance is evident. Unfortunately, c-MYC lacks surface domains suitable for small molecule inhibitors; therefore, it has remained an “undruggable” target. Nevertheless, small-interfering RNAs (siRNAs) have been shown to specifically downregulate “undruggable” target gene products, providing a promising therapeutic modality for cancer patients. Here, we examined the biological and therapeutic effects of targeting c-MYC by siRNAs in cisplatin-resistant cells and in pre-clinical models of ovarian cancer. Statistical analysis of patient’s data extracted from “The Cancer Genome Atlas” (TCGA) portal showed that the progression free survival (PFS) was decreased in ovarian cancer patients with high c-MYC mRNA levels. Furthermore, analysis of a panel of ovarian cancer cell lines showed that c-MYC protein levels were higher in cisplatin-resistant cells when compared to their cisplatin-sensitive counterparts. Significant inhibition of cell growth and proliferation was observed upon siRNA-mediated c-MYC depletion. In addition, single weekly doses of c-MYC-siRNA incorporated into 1,2-dioleoyl-sn-glycero-3-phosphocholine (DOPC) polyethylene glycol-2000 (PEG-2000)-based nanoliposomes resulted in a reduction of tumor burden compared with a non-coding control siRNA. These findings identify c-MYC as a potential therapeutic target for ovarian cancers expressing high levels of this oncoprotein. Thus, results from this project will impact approximately 50-70% of ovarian cancer patients who become mainly resistant to cisplatin treatment. This project was supported in part by the NIH/NCI 1K22CA166226-01A1 and institutional seed funds

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#### **O-022 Mybpc1 and mybpc3 Mutations in Zebrafish as a Model for Human Hypertrophic Cardiomyopathy**

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Myosin binding protein C (MYBPC) is found in the basic contractile unit of all muscles. It is necessary for thick filament stability, proper muscle contraction and development. However its function is still not fully understood. In humans, MYBPC 1 and 2 are found in fast and slow skeletal fibers respectively and MYBPC3 in cardiac fibers. Mutations in mybpc3 have been linked to a genetic disease known as hypertrophic cardiomyopathy (HCM). Carriers are at higher risk of heart failure and sudden cardiac death (SCD) and it is a leading cause of death in young athletes. To understand how such mutations can cause HCM/SCD, we decided to investigate the effects of mutations in mybpc homologs in zebrafish. Previous data indicated that unlike in humans, mybpc1 and 3 were both expressed in the embryonic heart. First, we confirmed the expression pattern of both mybpc 1 and 3 by whole mount in situ hybridization (WISH) in 2 and 5 day post fertilization (dpf) larvae. Next, we identified mybpc1+/- carriers and characterized their heart phenotype by monitoring heart morphology and measuring heartbeat in homozygotes. We found significant alterations in the formation and contraction of mybpc1-/- hearts. In parallel, we generated with the CRISPR-Cas technology a mybpc3 mutant line in which we will perform heart phenotypical analyses. We will generate double mutants to assess the respective contribution to heart development of each mybpc ortholog. A better understanding of their respective role during development will help elucidate causes of HCM/SCD and develop putative treatments in humans.

#### **O-023 Impacto del Programa PRAABRE en la Investigación biomédica de Puerto Rico**

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La industria bio-farmacéutica es una de las más que contribuye a la economía de Puerto Rico (Villamil, 2013). Esta industria representa el 26.5% del PIB y el 57.4% de la producción manufacturera de la Isla (PIA, 2012). El PRAABRE tiene como meta el fomentar la colaboración y mejorar la infraestructura científica y la competitividad en investigación biomédica en la Isla. Objetivos: Evaluar el impacto de PRAABRE en la investigación biomédica mediante el desarrollo de proyectos de investigación, capacitación y mentoría de investigadores, estudiantes subgraduado-graduados y post-doctorales en las catorce instituciones académicas de la red. Métodos: Se diseñó un perfil institucional que recogió información de infraestructura, productividad y colaboraciones,

en combinación con entrevistas, observaciones y revisión de documentos. Resultados: En comparación con el año 2009, durante el 2014 las instituciones de la red de PRAABRE incrementaron en la infraestructura de investigación en 7,900 pies cuadrados en promedio por año, se realizaron 106 nuevas colaboraciones de investigación, desarrollaron 29 nuevos cursos en Ciencias, reclutaron 15,924 estudiantes en ciencias, sometieron 573 solicitudes de subvenciones y 240 fueron otorgadas. En subvenciones otorgadas a las instituciones de la red se estima que \$108,318,234 ingresaron a la economía del país. Es evidente que el programa ha realizado importantes aportaciones y ha influenciado al sector científico y económico del país por lo que se recomienda: extender la red de instituciones académicas del programa y continuar promoviendo las colaboraciones de investigación.

#### **O-024 Socioeconomic Factors Associated with History of Incarceration Among HIV+ Males who have Sex with Males in Puerto Rico**

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**Background.** Male who have sex with males (MSM) and populations with a history of incarceration are at increased risk for HIV, more likely not to be engaged in HIV care, and to have immunity impairment. Most of the research with these groups has focused on behavioral risks and limited attention has been placed on the socioeconomic (SE) factors that might be associated with these vulnerabilities. Analysis focused on the SE factors associated with history of incarceration in a sample of HIV+ MSM in Puerto Rico (PR). **Methods.** We analyzed data from an ongoing health promotion study being conducted in PR. The study, circumscribed to MSM, encompasses the participation in a survey interview that includes domains such as SE characteristics and history of incarceration. **Results.** The mean age of the participants (n=138) was 38.4 years. Approximately 60% had some college education or more, and almost half were unemployed. A history of incarceration was documented in 30% of the sample. Bivariate analyses based on history of incarceration showed significant differences in age (p<0.001), education (p<0.001), employment (p<0.001), income (p=0.003), sexual orientation (p<0.001), and history of sex work (p<0.001). Marginal significance was found in levels of viral load (p<0.07). **Conclusions.** Among HIV+ MSM in PR, SE factors such as lower levels of education, unemployment, low income, and history of sex work are strongly associated with history of incarceration. These findings suggest considering the interconnection of incarceration and the social determinants that may increase vulnerability and health disparities in this population. **Acknowledgement.** Our gratitude to the participants of the study, our community collaborators, and the undergraduate and graduate research assistants who supported data collection. The project described was supported by the U.S. Centers for Disease Control and Prevention (Award Num. U01PS003310) and the

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#### **O-025 Socioeconomic Characteristics and Health Services Utilization in a Sample of Adult Female Intravenous Drug Users in Puerto Rico**

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**Background & Objectives.** Adult female intravenous drug users (IDU) are affected by social determinants and health disparities leading to poor health outcomes. There is insufficient research concerning female IDU, their living conditions, and critical factors such as sex work, imprisonment and utilization of health services. Analysis objective was to develop a socioeconomic and health services utilization profile of female IDU living in PR. **Methods.** Data were collected in drug rehabilitation treatment centers using a structured interview including domains on socioeconomic factors, sex work, and health services utilization. Eligible participants were adult females (≥18yrs) with history of IDU in the last year. **Results.** About 70% of participants were residents of the San Juan Metropolitan Area and had a history of sex work. More than three-quarters of the sample reported being unemployed and a monthly income of \$1,000 or less. Over half of them reported not using preventive care, OBGYN, dental or mental health services during the last year. Close to 70% received STI and HIV screening during the last 6 months and 80% had a negative HIV-status. When stratifying by history of sex work, statistically significant differences were observed for history of confinement (p=0.019), mental health services utilization (p=0.044) and area of residence (p=0.076). **Conclusion.** Adult female IDU who had a history of sex work, have a higher incidence of incarceration and are less likely to use mental health services. Further research regarding the social, economic and risk factors of these women is needed to develop policies and programs to improve their health and quality of life. **Acknowledgements.** Our gratitude to the women who participated in this study and the organizations that provided support for data collection. This research project was supported by grants from the IU School of Public Health-Bloomington and the office of the Vice President of International Affairs at Indiana University.

#### **O-026 Spectrum of Disease in Chikungunya Virus-Infected Individuals Identified during Household-based Cluster Investigations - June-August, 2014**

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**Background & Objectives.** The first locally-acquired chikungunya case in Puerto Rico had illness onset in May 2014, and >20,000 cases were reported soon after. To determine the extent of unreported chikungunya cases and describe the health care-seeking behaviors of individuals with chikungunya, household-based cluster investigations were conducted. Methods Households within a 50 meter radius of laboratory-positive cases' residence were invited to participate in the investigation. Participants completed a questionnaire about household characteristics, demographics and recent illnesses, and provided a serum specimen that was tested by RT-PCR and IgMELISA to detect current or recent infection, respectively, with chikungunya virus (CHIKV) or dengue virus (DENV). Results During June 20–August 19, 21 cluster investigations were conducted. Of 250 participants, 70 (28%) had evidence of current (n = 12) or recent (n = 58) CHIKV infection, and 13 (5%) had evidence of recent DENV infection. Of all participants with evidence of CHIKV infection, 59 (84%) reported an acute illness in the past three months, the most common symptoms of which were joint pain (94%) and fever (93%). Median duration of illness was 6 days (range: 2–21). Of 25 symptomatically-infected participants that sought medical care, 5 (20%) were diagnosed as chikungunya, 3 (12%) were hospitalized, and 2 (8%) were reported to Salud. Conclusion These findings demonstrate that despite high rates of symptomatic infection and seeking medical care, few chikungunya patients were correctly diagnosed and reported. Due to these findings, media campaigns were initiated to improve public and clinical awareness of chikungunya.

#### O-027 Sexual Health Profile of a Community Sample of HIV Positive Bisexual Men in Puerto Rico

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**Introduction.** Self-identified bisexual men are understudied in the health field and several health disparities have been documented. HIV research with bisexual men has been very limited and frequently studied based on their sexual practices (having sex with men) rather than by their sexual self-identification. To start filling this gap, the purpose of this presentation is to describe the sexual health characteristics of a community sample of HIV+ bisexual men in Puerto Rico (PR). Methods. Data was collected from an ongoing health promotion research being conducted in collaboration with community clinics providing HIV services in PR. Participants responded to structured interviews which included domains about sociodemographic characteristics

and sexual health indicators (preventive practices, STI, among others). Findings. Most participants (N=27) were older than 33 years, born in PR, living in the San Juan Metropolitan Area, unemployed, and had a regular sex partner. More than half have used drugs in the last 90 days and most have skipped HIV medication in the last month. Testicular self-exam (<30yrs) and prostate exam (≥40yrs) were rarely documented in the sample. Consistent condom use in recent sexual encounters was reported by less than a third of the sample and over 81% have been diagnosed with at least one STI during their lifetime. Conclusions. Findings evidence that this sample has engaged in risky practices such as drug use, intermittent use of HIV medication, and condomless sex. Future research and targeted health promotion interventions are needed to better understand their healthcare needs and improve their wellbeing. Acknowledgement. Our gratitude to the participants of the study, our community collaborators, and the undergraduate and graduate research assistants who supported data collection. The project described was supported by the U.S. Centers for Disease Control and Prevention (Award Num. U01PS003310) and the NIH-National Institute on Minority Health and Health Disparities (Award Num. U54MD007587). The content is solely the responsibility of the authors and do not necessarily represent the official views of the sponsors. Sponsors had no part in the analysis and did not take part in the writing of or decision to publish this presentation.

#### O-028 Clinical and Epidemiologic Profile of Patients Hospitalized with Heart Failure in Puerto Rico, 2007-2011

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**Background/Objective:** There are very limited data describing the epidemiology of congestive heart failure (CHF) in minority populations. The aim of this study is to describe the population hospitalized for CHF in the island of Puerto Rico. Methods: This secondary analysis was based on data from the PR Cardiovascular Surveillance Study. Trained medical personnel obtained information from the medical records of all patients admitted with a diagnosis of Heart Failure (ICD9: 428) at fifteen hospitals in Puerto Rico, during years 2007, 2009 and 2011. Continuous data was summarized as means and standard deviations. Categorical data was summarized with frequencies and percentages. For all tests a p value <0.05 was considered statistically significant. Results: The mean age of the 3,314 patients hospitalized with CHF was 70.4 years; 53% were male. 18% were subscribed to the Government Health Insurance Plan. Principal comorbidities included hypertension (88%), DM-II (59.7%) and hyperlipidemia (28%). Recurrent disease occurred in 65.7%. The main admission symptoms were dyspnea (92.8%), fatigue (60.3%)

and orthopnea (35.8%). Echocardiography was performed in 50.1%, of which 30.4% had an EF<30%. Beta-blockers were prescribed in 67% in-hospital and in 57.3% at time of discharge; ACE-I's also prescribed in 61% and 44.6%, respectively. Inpatient mortality was significantly higher in women than men (6.7% vs. 4.9% respectively,  $p<0.05$ ). Conclusion: A descriptive profile of the population in Puerto Rico admitted with CHF helps us to better understand factors associated with increased morbidity and mortality and provides preliminary data for the development of future studies tailored to the specific needs of this community. Acknowledgements: Research reported in this publication was supported by the National Institute on Minority Health and Health Disparities of the National Institute of Health under Award Numbers 5S21MD000242, 5S21MD000138, 2U54MD007587 and G12MD007600 and the University of Puerto Rico School of Medicine. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. Protocol Number: A5620111. Approval Date: 04/18/2011

#### O-029 The Expression of Gait Deficiencies in Patients with Controlled Type II Diabetes Mellitus

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Diabetics with peripheral neuropathy are more likely to report balance disturbances and injuries during walking than diabetics without this neuropathy. Deficiencies contributing to these problems are revealed much more clearly when patients walk and stand on a variety of surfaces (flat floor, stairs, ramps). Purpose: To expose controlled (A1C < 7%) diabetics (cDM) in the early stages of the disease to challenging postural and gait conditions in order to identify compensatory strategies. Methods: Fifteen healthy adults and fourteen age-matched and weight-matched cDM performed four walk trials under three different surface conditions: (1) flat surface, (2) flat surface with ramp ascent and descent, and (3) flat surface with stair ascent and descent. A three-dimensional video motion analysis system (120 HZ) was used to assess temporospatial gait parameters (step length, stride length, walk velocity, and cadence) and lower limb joint (hip, knee and ankle) kinematics. Multivariate analyses of covariance (MANCOVA) with post-hoc analyses, when appropriate, were used to determine between-group differences for all variables (kinematics, spatial and temporal parameters), using plantar flexion muscle force as a covariant. Results: Compared to the healthy subjects, mean hip joint angles in the cDM were significantly

greater during flat-surface walking, and when ascending stairs ( $P<0.05$ ). Moreover, cDM mean cadence was significantly ( $P<0.01$ ) lower during stair descent. Conclusion: The increased mean hip joint angles and lower cadence observed under some of three gait conditions tested demonstrate that changes in kinematic and spatiotemporal parameters attributable to DM can be detected prior to the appearance of peripheral neuropathy.

#### O-030 Effects of Lung Carcinogens on PPARgamma Activity in A549 Cell Line

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Background & Objectives: PPARgamma is a transcription factor that associates with retinoic acid receptor to enhance transcription of genes regulating pathways of adipogenesis, macrophage programming, growth, and inflammation. PPARgamma agonists are effective at preventing lung cancer in mice and cause regression of human pre-neoplastic lung lesions. However, the mechanisms by which PPARgamma prevents lung cancer progression are not completely understood. Methods: Herein, we examined the effects of endogenous and exogenous PPAR agonists on expression of PPARgamma-regulated genes (E-cadherin and Ptg2) in human lung cancer A549 cells. We treated cells with the endogenous PPARgamma agonist 15-Deoxy- $\Delta$ 12,14-prostaglandin J2 and exogenous agonists pioglitazone and iloprost. We also tested acrolein and 4-hydroxynonenol (4-HNE). These molecules are chemically related to 15-Deoxy- $\Delta$ 12,14-prostaglandin J2, and 4-HNE has been shown to enhance PPARgamma activity. Results: We found that pioglitazone, iloprost, and 15-Deoxy- $\Delta$ 12,14-prostaglandin J2 increased expression of E-cadherin at 24 and 48 hours of exposure. HPGD expression was increased at 24 h with pioglitazone, iloprost, 15-Deoxy- $\Delta$ 12,14-prostaglandin J2, and 4-HNE, but returned to baseline by 48 h. NF $\kappa$ B protein is down-regulated in the presence of PPARgamma, but its gene expression increased with pioglitazone, iloprost, 15-Deoxy- $\Delta$ 12,14-prostaglandin J2, and acrolein exposure at 24 h, indicating that decreased protein leads to increased transcription. The peak of agonist-induced expression effects occurs by 24 h. Conclusion: Increases in expression of the pioglitazone off-target regulated gene HPGD with agonists other than pioglitazone indicates that regulation of these genes is more complicated than was previously thought. Acknowledgements: This research was funded by NIH Grant #R25GM096955.

#### O-031 Parasite Variability and Load in an Outdoor Colony of Rhesus Monkeys (*Macaca mulatta*)

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Background & Objectives: Nonhuman primates living in naturalistic environments such as outdoor gravel corrals are excellent

models to study the relationship between intestinal parasites and social status. This research investigates how stressful environments could influence parasite diversity, prevalence and density and their relationship to primate health. Methods: Two hundred (200) fecal samples were collected from different enclosures in an outdoor colony of rhesus macaques and were analyzed by a concentration technique for intestinal parasite diversity, prevalence (i.e. the proportion of individuals in a population that are infected) and density (i.e. the number of individuals of a particular parasite per sampling unit). Results: Animals in tile floor corrals have lower parasite diversity, prevalence and density but typically develop chronic enteritis that may be caused by other factors such as altered microbiota. Monkeys in gravel floor corrals developed significantly less chronic enteritis but have higher parasite species diversity, prevalence and density. Environmental factors such as floor substrate (gravel versus tile) influence the intestinal parasite diversity, prevalence and density in laboratory rhesus macaques. Conclusions: One possibility is that animals in tile or concrete floor do not usually engage in species typical behaviors, creating a more stressful environment and increasing morbidity due to severe diarrhea. This rhesus macaque colony is unique in its structure and could be used to study chronic enteritis and inflammatory bowel disease and how this relates to psychosocial stress. Further research utilizing rhesus macaques could additionally correlate these findings to human realm of health, disease, and socioeconomic status.

**O-032 Fever and Severe Thrombocytopenia Masquerading Sepsis in an HIV Positive Patient: Hemophagocytic Syndrome**

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We present the case of a 32 years old male patient with medical history of HIV, who presented to the hospital due to generalize malaise, shortness of breath, chest tightness and productive cough of one week duration. Patient was an inmate from a local prison and never received antiretroviral therapy. He was admitted with the diagnosis of pneumonia to receive Intravenous antibiotics. HAART therapy was initiated. He developed thrombocytopenia and workup, including folate, vitamin B-12, and peripheral smear resulted within normal limits. Platelet count became severely low, with associated bleeding, needing several blood and platelet transfusions. Septic process and DIC were suspected as patient also presented fever of 101 F. The patient was started on broad spectrum antibiotic therapy. The first set of blood cultures resulted negative, sputum culture resulted positive for *Pseudomonas aeruginosa* which was already covered by empirical antibiotic therapy and coagulation parameters were within normal limits. Due to unexplained thrombocytopenia, now presenting with anemia and neutropenia, bone marrow biopsy was performed. Surprisingly the pathologic picture showed phagocytosis of basophils and red cells by macrophages. Laboratory

values showed elevated ferritin, transaminitis and hyperbilirubinemia, patient was diagnosed with Hemophagocytic Syndrome and Dexamethasone therapy was started. Hemophagocytic Syndrome is uncommon and the diagnosis is challenging. This condition has an incidence of 1.2 cases per million people. This case presents its life threatening manifestations. This is a rapidly progressive life threatening disease requiring immunosuppressive and anti-inflammatory therapy, making the prompt diagnosis the most important key for the assurance of patient survival.

**O-033 Aging with HIV: The Experience of Women Older than 50 Living with HIV in Puerto Rico**

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Background & Objectives: The population of older adults, over the age of 50, living with HIV has been increasing over the past decade. HIV in older adults pose a challenge with the synergistic effects of the physiological, psychological, and social processes associated with both aging and HIV. Methods: 23 women living with HIV were recruited. Participant ages ranged from 50 to 71 and averaged 12 years since HIV diagnosis. Qualitative in-depth semi-structured interviews were conducted eliciting information about: 1) Experience of living with HIV; 2) perception of the aging process. Data were analyzed using a grounded theory approach. Results: Data analysis revealed the following findings: 1) A changing perception of HIV as a chronic disease with minimum impact on participants' daily lives; 2) A general population stigmatizing perception of HIV that impacts participants' decisions and relationships; 3) Programs for people living with HIV have been successful in helping women lead a normal life; 4) Denial of the aging process; 5) Lack of knowledge about the connection between aging and HIV. Conclusion: The experience of the women in the study indicate that HIV interventions have been successful for people living with HIV in helping them lead full lives into old age. However the prejudices and myths that are the foundation of stigmatization is still a challenge for Public Health. More research and education about the connection between HIV and aging is needed. Acknowledgements: Funded by the Mentoring Institute for HIV and Mental Health Research of Puerto Rico. IRB Protocol A9610113

**O-034 Polyneuritis Cranialis: a Rare Manifestation of the Guillain-Barré Syndrome**

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Purpose: Guillain-Barré syndrome (GBS), an immune-mediated peripheral neuropathy characterized by acute progressive weakness and areflexia, may present with various clinical variants. Since there is no biomarker for the diagnosis, it relays in the clinical presentation for early treatment. One unusual presentation consists of polyneuritis cranialis characterized by

multiple cranial nerves palsies without spinal cord involvement. Being a rare manifestation of the GBS, its urgent recognition is imperative to install timely and appropriate treatments. Case description: 24 year-old healthy male who suddenly developed double vision and voice changes after a febrile illness. Was diagnosed with a CNS infection and started on broad-spectrum antibiotics and acyclovir. Despite treatment, symptoms progressed to facial weakness and difficulty swallowing, requiring transfer to our hospital. Neurological examination showed bilateral ptosis, ophthalmoplegia, facial diplegia, and palatal palsy. Also presented general deep tendon areflexia. Mental status and muscular strength were normal. Clinical approach: A brain MRI was normal. A lumbar puncture revealed elevated CSF proteins without pleocytosis. Anti-GM1 was negative. Clinical findings: The main diagnostic considerations included a variant of GBS versus acute myasthenia gravis. Since areflexia was present, an acute polyneuropathy was favored. Treatment with intravenous immunoglobulins resulted in dramatic clinical improvement. Electrodiagnostic study was remarkable for a demyelinating polyneuropathy. Hypothesis: GBS may present with atypical clinical manifestations. Once recognized, installing the appropriate treatment may result in full recovery of neurologic manifestations. In the absence of a biomarker for GBS, early suspicion and evaluation is warranted to avoid the high morbidity and mortality of the disease.

#### O-035 Having Hypospadias Diminishes the Level of Parental Satisfaction with Surgical Repair of their Own Children

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**Background and Objective:** Hypospadias is a congenital condition in males where the urethral meatus is located anywhere along the urethral groove instead of the tip of the glans penis. It is unknown whether having hypospadias affects parental satisfaction when evaluating hypospadias repair of their own children. **Methods:** One hundred and eleven (111) patients diagnosed with hypospadias were recruited from three pediatric urology clinics. The sample of this study consisted of forty-two patients (n=42) who had undergone surgery at the time of recruitment. Questionnaires were administered to identify clinical diagnoses of the father and by using a Likert scale, surgical satisfaction with hypospadias repair was evaluated by parents and urologists. Paired t-tests were employed with significance attained at  $p < 0.05$ . **Results:** We found that from 42 children who underwent surgical repair, 12 fathers had hypospadias while 30 did not have the condition. Fathers who have the condition were less satisfied with surgical outcomes (Likert value  $2.41 + 0.25$ ) than fathers who did not show the condition (Likert value  $3.03 + 0.16$ ;  $p < 0.02$ ).

As expected, the level of physician satisfaction with surgery was similar for children born to hypospadiac fathers (Likert value  $3.58 + 0.25$ ) versus those with a parent without the condition (Likert value  $3.55 + 0.12$ ;  $p < 0.97$ ). **Conclusion:** While hypospadiac fathers show low to moderate level of satisfaction with surgical repair of their children, doctor's satisfaction is moderate to high. Thus, fathers who present the condition are more demanding with surgery results than those who do not present hypospadias.

#### O-036 Giant Abdominal Mass in a Female Newborn: Ovarian or Hepatic Etiology?

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**Purpose:** Congenital biliary duct dilatation is rare. We report a novel giant type I choledochal cyst in an asymptomatic neonate. **Case Description:** This is a newborn female, appropriate for gestational age, born at 41 weeks of gestation, by C-section to a 22 year old primigravida. The newborn did not present complications at the delivery room. She had a prenatal diagnosis of a right ovarian cystic mass and was admitted for evaluation and management. **Clinical Approach:** Ultrasound imaging was used as a screening tool and the mass origin was identified from the cystic duct in continuity with the gallbladder. Since an accurate diagnosis was important CT-Scan and magnetic resonance cholangiopancreatogram (MRCP) were done as a method of adequate visualization confirming the diagnosis of a giant type I choledochal cyst. Choledochal cyst excision, cholecystectomy and hepaticoduodenostomy reconstruction were performed at eight days of age. The choledochal cyst measured 8 cm x 8 cm. Intraoperative pancreatogram confirmed the pathogenesis of a long common channel as caused of the biliary cyst. **Clinical Findings:** Other than a palpable mass over the right abdomen causing mass effect and displacing abdominal structures towards the left side, the newborn had no associated clinical findings. Normal hepatic and renal function were preserved before and after excision. She was sent home at 23 days of age. **Hypothesis:** This patient had ultrasonography, CT, and MRCP performed to establish the diagnosis. Future studies may focus on the best diagnostic study for a newborn with a cystic intra-abdominal mass where etiology is controversial.

#### O-037 Effect of Knowledge on Breastfeeding Practices

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**Background:** Breastfeeding and human milk are the norm for infant feeding and nutrition. The American Academy of Pediatrics recommends exclusive breastfeeding to at least 6 months of age, given the health benefits to both mother and infant. The objective of this study is to identify the effect of knowledge on breastfeeding practices. **Methods:** Prospective cohort study that recruited in-

infants from 0 to 6 months of age a primary care center from March to October 2014. Patient information was collected via survey and follow-up phone interviews. Results: A total of 104 infants were recruited with a mean age of 2.5 months; 63% female and 37% male. Breastfeeding was found in 48% of recruited infants (partial 63%, exclusive 37%) versus 52% formula fed ( $p < 0.001$ ). Breastfeeding prevalence upon follow-up of 24 mothers showed that 96% of infants remained breastfeeding ( $p < 0.001$ ). Mothers were more likely to learn about breastfeeding from a breastfeeding specialist ( $p < 0.001$ ), or a brochure ( $p = 0.002$ ). Prior lactation influenced their interest for continued breastfeeding with other pregnancies ( $p = 0.012$ ). Conclusions: Upon recruitment, 1/2 of the mothers were already providing breastfeeding, identifying that the first 3 months of age are of great importance to help protect, promote, and support breastfeeding. An evaluation of current information delivery system on breastfeeding is needed, with emphasis on the development of innovative ways to educate our community on the benefits of breast milk. Given the documented short- and long-term medical and neurodevelopmental advantages of breastfeeding, infant nutrition should be considered a public health issue and not only a lifestyle choice.

**O-038 Bipolar Disorder Patients at Risk of Cardiovascular Disease: Exploring Patterns of Non-adherence to Psychiatric Medication for Intervention Development**

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**Background & Objectives.** The prevalence of Cardiovascular Disease (CVD) risk factors in Bipolar Disorder (BD) patients is about twice as high as that in the general population and Latinos with BD may be at elevated risk. Non-adherence to psychiatric and CVD treatment worsens illness course and increases risk of CVD. The aim of this study is understand Latino patients' perspectives on the barriers to adherence in to aid in the development of a targeted intervention to promote treatment adherence in both conditions. **Methods.** The study involved four focus groups (one session, 20 patients, 23 to 60 years old) who were outpatients in Puerto Rico (ASSMCA and CMHC-Carlos Albizu University). All patients had BD, Type I or II and one or more CVD risk factors (hypertension, obesity, diabetes, high level of cholesterol, smoking, poor diet, no exercise, high level of stress). Baseline demographic measures were taken. Audio-recordings were transcribed and a content analysis was performed, with transcripts coded and analyzed using NVivo software. **Results.** Among the reasons most commonly identified for patients' lack of adherence to psychiatric treatment were: stigma to the psychiatric condition (fear to be labeled as "crazy" by their families and others), poor support from family members, (pressure to stop their medication because it is not necessary); side effects of medi-

cations; patient-related risks (denial of condition), and provider relationship factors (nolistenthe needs of patients). **Conclusion.** Results support the need for interventions that consider stigma both in patients and their families, in providers, and side effects of medications, when considering adherence enhancement therapies. **Acknowledgements.** This research was supported by the National Institute on Minority Health and Health Disparities of the National Institutes of Health Award No. R25MD007607.

**O-039 Clinical and Laboratory Findings in 60 Laboratory Positive Chikungunya Infection Cases in Puerto Rico**

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Chikungunya fever (CF) is an acute febrile viral disease, transmitted by the *Aedes* species mosquitoes, first reported in Puerto Rico in May 2014. We present the clinical and laboratory characteristics of 60 laboratory-positive, locally-acquired CF cases in Puerto Rico. As part of an acute febrile illness surveillance project at a university affiliated hospital in Puerto Rico, patients with fever or history of fever for  $< 7$  days evaluated at the emergency room were asked to participate. Consented patients had a blood sample collected which were tested by polymerase chain reaction and immunodiagnostic methods for several pathogens including chikungunya virus. Upon recruitment, medical history, signs, symptoms, and laboratory results are gathered and participants are prospectively followed. From June 9 to August 11, 2014, 60 (30%) of the 201 patients recruited with AFI were laboratory-positive for CF. The mean age was 19 years (range: 5 months to 84 years), most cases were males (31,51%), 15 (25%) were hospitalized and there were no fatalities. Presenting symptoms included headaches (49,82%), tiredness (47,78%), chills (38,63%), and anorexia (38,63%). Rash was reported in 33 (55%) patients. Gastrointestinal complaints included nausea (34,57%), abdominal pain (24,40%) and diarrhea (16,27%). Myalgias (47,78%) and arthralgias (46,77%) were commonly reported. Most arthralgias were symmetrical and located in the ankles, wrists, hips, knees, and elbows. Laboratory findings included lymphopenia (56,93%), thrombocytopenia (5,8.3%), and transaminitis (6,10%). Clinical findings were compatible with previous literature reports. Surveillance studies to further existing knowledge about the clinical and long term sequelae of CF in Puerto Rico are needed. This project was supported with Grant SU01CK000274 from Centers for Disease Control and Prevention and Grants 5S21MD000242 and 5S21MD000138, from National Center for Minority Health and Health Disparities, National Institutes of Health.

**O-040 Enhanced Surveillance for Acute Febrile Illness in Puerto Rico**



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**Background:** Dengue has been endemic in Puerto Rico since the late 1960s but information is lacking on other acute febrile illnesses (AFI) on the differential. **Methods:** An AFI surveillance site was developed at a university affiliated regional hospital in Puerto Rico. Patients with fever or history of fever for <7 days that sought care at the emergency room were asked to participate. Consented patients had a blood sample and nasopharyngeal swab collected which were tested by polymerase chain reaction and immunodiagnostic methods as appropriate for *Leptospira* spp, *Burkholderia pseudomallei*, 5 enteroviruses, influenza A, influenza B, and 10 other respiratory viruses including adenovirus, respiratory syncytial virus, metapneumovirus, parainfluenza viruses 1-3, and three coronaviruses, and 4 dengue viruses. **Results:** 565 (11%) of the 5,214 AFI patients seeking care were enrolled between July 28, 2013 and October 21, 2014; 146 (25.8%) were hospitalized, 270 (47.8%) were female, and the median age was 13.0 years (range: 0-90 years). A pathogen was detected in 208 (36.8%) cases; 64 (31%) chikungunya virus, 43 (21%) influenza B, 37 (18%) influenza A, 25 (12%) dengue virus, 16 (8%) adenovirus, and 11 (5%) parainfluenza virus 3. Dengue patients were more likely to be admitted than other enrolled patients (OR 4.8, 95% CI 2.0-11.5). **Conclusions:** The majority of AFIs were caused by Chikungunya, respiratory viruses, and DENV. **Acknowledgements:** This project was supported with Grant SU01CK000274 from Centers for Disease Control and Prevention and Grants 5S21MD000242 and 5S21MD000138 from National Center for Minority Health and Health Disparities, National Institute of Health.

**O-041 La Experiencia de los Docentes con el Uso del Portafolio como Estrategia de Assessment en el Proceso de Enseñanza y Aprendizaje de los Estudiantes de la Escuela de Farmacia del Recinto de Ciencias Médicas, Universidad de Puerto Rico**

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**Objetivo:** Auscultar la experiencia de los docentes con el uso del portafolio como estrategia de *assessment* en el proceso de enseñanza y aprendizaje de los estudiantes de la Escuela de Farmacia (EF), del RCM de la UPR. **Justificación:** Creación de un documento escrito que presente la credibilidad y consistencia del proceso, impacto, beneficios, identificación de áreas de problemas, apoyos académicos y administrativos; además de evidenciar el *assessment* como componente importante en el *accountability*. **Marco Teórico:** Se fundamentó en la Teoría de Aprendizaje

Transformador de Mezirow. **Método:** El diseño utilizado para esta investigación cualitativa fue el estudio de caso. Los participantes seleccionados fueron nueve docentes de la EF. La recopilación de datos fue por medio de una entrevista semiestructurada y la revisión de documentos. Para el análisis de los datos se utilizó el modelo de Wolcott. **Hallazgos:** Entre los hallazgos más relevantes se destacan: la necesidad de mayores responsabilidades, compromisos, capacitación y requerimiento de tiempo. Los resultados obtenidos apoyan la Teoría de Mezirow al señalar que el proceso de aprendizaje más difícil es la transformación de los hábitos de la mente. **Implicaciones:** Se concluye que el impacto de la función del portafolio en el proceso de enseñanza y aprendizaje para los docentes de la EF fue significativo, de transformación de prácticas educativas, revelador y permitió evidenciar el desarrollo de las diez competencias en los estudiantes a través de su aprendizaje. IRB Protocolo #: A8360113, Aprobado: 22 de febrero de 2013

**O-042 Collaboration that Matters: Schools of Nursing and Dental Medicine building Capacity for Research**

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**Background:** In an effort to firmly establish a research culture within the nursing discipline in Puerto Rico, a collaboration was established between the Schools of Nursing (SON) and Dental Medicine (SDM) to build research capacity within the SON and develop research to address health disparities confronted by people in Puerto Rico. This inter-professional experience in building infrastructure and research capacity, promoting inter-professional research collaborations, and promotion of research between the SON and SDM will be described. **Methods:** The journey of the first two years of partnership includes how inter-professional collaborations were built, outcomes in the area of pilot projects, faculty and students' development, and challenges encountered. **Results:** The Center for Nursing Research (CNR) was formally established in 2013 at the SON to provide direct support and mentoring to faculty and students of the SON and SDM. Outcomes are: pilot studies, poster and oral presentations, inter-professional work with other disciplines, workshops, seminars, participation in SON's courses, research links with other national universities, and career development plans for junior investigators. **Conclusion:** The collaborative initiative between the SON and SDM is considered vital and has given the opportunity for enhancing research endeavors between both schools. The joint experience has raised awareness of the importance of inter-professional collaborations that could be the basis to positively influence the next phases of this type of work within the Medical Sciences Campus. **Acknowledgements:** This project is supported by Award UPR-MFP-6251123

**O-043 Diseño Participativo de Herramientas para la Capacitación Comunitaria**

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Según el más reciente Estudio del Tercer Sector (2007), en PR existen 6,378 organizaciones sin fines de lucro (OSFL) que ofrecen servicios directos; entre los que predominan los servicios sociales, educativos y de salud. Actualmente, el 65.1% de las OSFL reflejan limitaciones económicas y destacan que entre sus principales retos se encuentra la falta de capacidad del personal. Considerando esta realidad y por su rol de facilitador del conocimiento, la academia debe colaborar con los procesos de fortalecimiento de las OSFL. El objetivo de este trabajo es presentar el proceso de diseño participativo de una serie de manuales relacionados con el desarrollo de esfuerzos en Salud Pública. Desde el peritaje de varias disciplinas, el equipo de Asesoramiento Programático de la División de Servicios Comunitarios del CIES-RCM desarrolló una serie de manuales relacionados con procesos de estudio de necesidades, planificación estratégica e implementación de estrategias basadas en evidencia. Luego del diseño se convocó a un grupo de siete OSFL, quienes a través de grupos de discusión proveyeron insumo del contenido y utilidad de los manuales. El resultado del trabajo produjo una serie de cinco manuales, que se encontrarán a partir de enero 2015 de manera gratuita en internet. Este trabajo evidencia la importancia de la colaboración entre la academia y el tercer sector para fortalecer los esfuerzos que se realizan por el bienestar de la comunidad. Se agradece la participación de las OSFL que colaboraron en la validación de los manuales. Asociación Puertorriqueña del Pulmón, Boys and Girls Club de Puerto Rico, Inc., Coalición de Coaliciones Pro Personas sin Hogar, Corporación Milagros del Amor, Fundación Puertorriqueña del Riñón, Jóvenes de Puerto Rico en Riesgo, Inc., Oficina para la Promoción y el Desarrollo Humano, Inc., Programa de Apoyo y Enlace Comunitario, Susan G. Komen for the Cure, Taller Salud, Inc.

**O-044 Lessons obtained about Infectious, Chronic Diseases and Mental Health Issues in El Salvador: Exporting Health Concepts and Measures to International Sites**

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An international health project was performed in alliance with a faith base community to assist health needs related to HIV/AIDS, diabetes, cancer, violence, alcohol use and resiliency. Interdisciplinary leaders from different fields joined efforts for working in a rural community at San Vicente, El Salvador in all topics. Standardized and validated instruments were taken for measuring work with communities showing similar results with the work performed elsewhere. Nevertheless, reflections from team members were obtained for contextualizing the measures obtained by surveys and evaluations. This presentation works the need for contextualizing the statistical and evaluation work in a framework of social, political, environmental and other frameworks which otherwise made data senseless. Analysis was performed through the gathering of team ideas and statements collected in debriefing exercises while in the health initiative and after arrival to homeland. Presentation intends to work the need for researchers to re-focus approaches within a self-evaluation of values, personal and community ethics, and the community empowerment.

**O-045 Using Simulation to Enhance First Year Medical Students Clinical Approach to Transgender Persons**

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Medical education curriculum must include learning objectives regarding the importance of meeting health care needs of medically underserved populations and developing core professional attributes to provide effective care in a multi-dimensionally diverse society. Responding to the curricular needs in health disparities, an educational activity related to the clinical approach to the Transgenders (TG) persons was introduced in the clinical skills course for first-year medical students. The objectives of this activity were: perform a comprehensive adult medical history to a TG patient; use effective communication skills displaying professionalism with sensitive patient information; and recognize personal and emotional challenges influencing the care of patient's reproductive/sexual health needs. As pre-requisites, students (n=112) completed a module about health disparities and answered a post-test. Afterwards, students were divided in 3 groups. Within each group, 3 students were chosen to perform a comprehensive medical history to a transgender patient while other students observed the interaction. A standardized patient simulated the script for the interaction. An attending physician facilitated the activity, guided students to use a non-judgmental language and discussed important aspects of a medical evaluation of a TG patient including health care access, and safe sex practices, among others. Finally, students completed a self-reflection exercise. Students emphasized that the activity was very helpful and rewarding. Most of them reported that the most important point learned was how to provide an emphatic and respectful care to the TG persons. Simulation is a valuable stra-

tegy to educate medical students about health care needs of the underserved populations.

#### **O-046 Un Café por el Alzheimer: Iniciativa Innovadora de Educación en Salud Pública**

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**Background & Objectives:** A principios del 2014 el Departamento de Salud de Puerto Rico constituyó el Comité Asesor de Alzheimer. Un grupo de miembros del Comité organizamos una actividad, o más bien un evento, dirigido a educar y crear conciencia en Puerto Rico sobre la Enfermedad de Alzheimer (EA). Quisimos lograr este objetivo proveyendo información precisa de forma masiva, y estimulando la conversación pública y cotidiana sobre un tema que con frecuencia es visto como desagradable, indeseable y hasta tabú. **Methods:** El evento, que tomó el hábito del “coffee break” como punto de encuentro para hablar de la Enfermedad de Alzheimer, se llamó “Un café por el Alzheimer” (UCxALZ) y tuvo lugar la semana del 21 al 27 de Septiembre de 2014. Las actividades educativas tuvieron el formato de conversatorio en torno a las preguntas más comunes que la gente tiene sobre la EA, con sesiones de preguntas del público y respuestas de los expertos que ofrecieron el conversatorio sobre el tema. En todas las actividades se sirvieron café y meriendas suplidas por los patrocinadores del evento. Tratamos de generar la mayor cantidad posible de interés y cobertura sobre este evento a través del uso de medios masivos de comunicación, redes sociales e involucramiento de familiares, amigos, estudiantes y empleados, así como patrocinadores corporativos, agencias gubernamentales y organizaciones no-gubernamentales. Durante la semana del evento tuvimos 10 actividades educativas en 8 municipios desde Carolina hasta Mayaguez. **Results:** Durante la semana del evento tuvimos 10 actividades educativas en 8 municipios desde Carolina hasta Mayagüez, con una asistencia total estimada en 1,000 personas. En apenas cuatro semanas reunimos 2,277 seguidores de varios países en Facebook, con un alcance máximo de 8,524 personas, y recibimos docenas de preguntas en nuestras páginas, que fueron contestadas por los miembros del grupo organizador. La recepción del público y los medios a esta iniciativa fue muy positiva, y hemos recibido docenas de peticiones para llevarla a varios municipios y recintos universitarios. **Conclusion:** UCxALZ ha demostrado que una iniciativa multisectorial, donde se unan los recursos humanos y las voluntades de organizaciones interesadas puede ser muy exitosa aunque se cuen-

te con poco o ningún presupuesto, y se puede realizar en muy poco tiempo. **Acknowledgements:** Nuestro agradecimiento a Starbucks, Departamento de Salud de Puerto Rico, Deacnato de Asuntos Académicos del Recinto de Ciencias Médicas de la Universidad de Puerto Rico (RCM-UPR), Escuela de Medicina RCM-UPR, Programa de Gerontología, Escuela Graduada de Salud Pública RCM-UPR, OPAPA, AARP, Puerto Rico TV, CATA, Café Colegial – La Cueva de Tarzán, UPR Mayaguez, Sabores Gourmet – Guánica, AEEDSA y Save Green Corp. y sobre todo, a don Jacobo Morales y doña Blanca.

### • Poster Presentations •

#### **A-001 Locomotor Analysis of Drosophila Mutants Affecting Neurotransmitter Release**

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**Introduction:** Neurotransmitter-release is regulated by several presynaptic-proteins where Syntaxin and Complexin are crucial. We look the locomotor activity of Drosophila adult animals to evaluate if altered motor behavior could be a consequence of an abnormal central nervous system or altered peripheral nervous system output. **Hypothesis:** Mutants display poorer motor performance in agreement with altered synaptic transmission. **Methods:** To discriminate between central and peripheral motor alteration we look at the locomotor behavior in animals with and without head. Climbing assays, grooming and flip over were tested in entire animals. Stepping and flip over were tested in decapitated individuals. **Results:** Complexin null and Syntaxin hypomorph mutant display similar phenotype in synaptic transmission but different behaviors. Complexin could not climb, Syntaxin has the lower climbing speed and the other genotypes have indistinguishable performance. Complexin flip over in 15min in turn, other genotypes flip over in few seconds. Decapitated animals are not able to climb but they stay on their feet readjusting the position. Surprisingly, decapitated animals are able to fly without control and flip over. Complexin and Syntaxin display the slower performance compared with the other genotypes. **Conclusion:** Locomotion is a complex behavior which includes central and peripheral control. Flight and stepping is encoded in an independent circuit in the peripheral nervous system in turn navigation requires the central nervous system. Severe synaptic transmission defects observed in Complexin impair all type of locomotion. Less severe synaptic transmission defects allow the animals to perform all types of locomotion but with lower performance.

#### A-002 Preventing Sexual Transmitted Infection among Christian Adolescents: Are Sexual Health Lectures Needed in Faith Communities?

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**Background & Objectives:** Adolescents had been identified as vulnerable populations elsewhere in research. However, conservative parties argue the need of sexual health education among general population relaying the responsibility in family and faith communities. This project intends to document the knowledge and sexual behaviors of a group of adolescents actively involved in religious activities. **Methods:** A sub-sample of cross-sectional study was analyzed identifying 85 adolescents in a previously collected database. Data Analysis was performed using STATA 12.0 for descriptive and bivariate analysis. **Results:** Results showed that participants aged 13 -24 years old and had less than high school. Approximately 10% had received sexual health education in their churches and 71% reported to have ever talk about sex with their parents, 27% reported to be sexually active with a sexual debut age of 16 years old. Almost 40% reported to had 3 or more sexual partners however 25% of participants reach and adequate knowledge for preventing sexual transmitted infections. Risk behaviors measured compare to other group of Hispanics surveyed in data base. **Conclusion:** Our sample of adolescent's knowledge and behaviors are very similar to the general population requiring similar interventions. Therefore, leadership require to be trained from a public health perspective in order to lead improve adolescents health.

#### A-003 Designing Mutant Cathepsins to Protect Against Cathepsin Cannibalism

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Human cysteine cathepsins are proteases that are involved in the degradation of various proteins. The diversity of cathepsins are remarkable, particularly for their upregulation in tissue remodeling diseases such as cancer, atherosclerosis, and osteoporosis. Cathepsins also play a vital role in extracellular matrix degradation. Recently a new phenomenon called cathepsin cannibalism have been discover by this lab, which is the idea that one cathepsin species will preferentially degrade another species over the substrate protein. There are eleven different types of human cathepsins, but we focus on cathepsins K, S, L and V because they are the body's most powerful collagenases and elastases. The objective of this project was to make mutant cathepsin K, L, S and V that are resistant to cannibalism by other cathepsins, previously studied in the lab. I was trying to create cathepsin K mutants that are resistant to cannibalism by cathepsin L, i.e. cathepsin L can-

not degrade the mutant cathepsin K. I aimed at creating mutant cathepsin K proteins that are still catalytically active towards collagen and elastin substrates, but cannot be cleaved by other cathepsins. In order to create the mutant proteins, we performed site-directed mutagenesis using overlap extension polymerase chain reaction (PCR). We designed mutagenic primers and with multiple rounds of PCR, we were able to make mutant cathepsins. At the conclusion of the project, we will assay the cathepsins' activity using multiplex cathepsin zymography. Our findings will help to enrich the knowledge of proteolytic processes and the implications of the cannibalism in tissue remodeling and destructive diseases.

#### A-004 Periodontal Disease and Salivary Cytokines in Puerto Rican Adolescents

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**Purpose:** The aim of this cross sectional study was to evaluate the prevalence of periodontal disease and its association to salivary cytokines and obesity in a group of PR adolescents. **Methods:** A convenience sample of 135 PR adolescents ages 13 to 18 years from 3 public schools was recruited. The UPR's IRB approved study. One visit dental evaluation was performed at the schools by a calibrated dentist. This evaluation included plaque index, caries, bleeding on probing, pocket depth, and recession. Height, weight were measured. Five ml of saliva samples were taken for analysis of 10 cytokines. Four periapical radiographs were taken. A behavioral risk questionnaire was administered. Statistical analysis was performed. **Results:** Participants distribution were: obese (32%), overweight (16%), healthy weight (50%) and underweight (2%); females were 62%. Periodontal disease was defined as having 2 sites with pocket depth greater than 4 mm and the same time bleeding on probing greater than 20%. Prevalence of periodontal disease for the total sample was 25.93%: obese 11.9%; 3% overweight, 11% healthy weight. No statistical significant association was found for obesity and periodontal disease ( $p > 0.05$ ). Multiple regression analysis controlling by gender and age and BMI found CRP ( $p=0.025$ ) and IL-1b ( $p= 0.07$ ) associated to presence of periodontal disease. A trend was found for adinopectin ( $p=0.10$ ) and TNF ( $p =0.12$ ). **Conclusion:** The results of this study showed one fourth of adolescents with early signs of periodontal disease. The study could not find a relation between weight and periodontal disease.

#### A-005 Interproximal Bone Loss and Salivary Cytokines in PR Adolescents

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**Purpose:** The aim of this cross sectional study was to evaluate the association between interproximal bone loss and 4 salivary cytokines related to bone loss in a group of PR adolescents. **Methods:** A convenience sample of 135 PR adolescents ages 13 to 18 years from 3 public schools was recruited. The UPR's IRB approved the study. One visit dental evaluation was performed at the schools by a calibrated dentist. This evaluation included plaque index, caries, bleeding on probing, pocket depth, and recession. Height, weight were measured. Five ml of saliva sample was taken for analysis of 10 cytokines (IL-b, MMP-8, MMP-9, OPG, TRANCE, TNF alpha, leptin, adenopectin, CRP, IL-6, Periostin). Four periapical radiographs were taken. A behavioral risk questionnaire was administered. Statistical analysis was performed. **Results:** Participants distribution were: obese (32%), overweight (16%), healthy weight (50%) and underweight (2%); females were 60%. Mean amount of bone (measured from cej to bone crest) for total sample was  $0.766 \pm 0.21$  mm.. Only 2 patients had bone loss greater than 2 mm and were obese adolescents. Multiple regression analysis controlling by age, gender and BMI showed bone loss related to OPG ( $p=0.049$ ), MMP-9 ( $p=0.048$ ), leptin ( $p=0.026$ ). Trends were found for TNF ( $p=0.066$ ), TRANCE ( $p=0.058$ ) and IL-6 ( $p=0.053$ ). Multiple regression analysis controlling for gender, age and BMI showed early signs of periodontal disease was associated to bone loss ( $p=0.046$ ). **Conclusion:** Main salivary cytokines related to bone loss in periodontal disease positive adolescents were OPG, MMP-9 and leptin.

#### A-006 Gingivitis and Salivary Cytokines in a Group of PR Adolescents

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**Purpose:** The aim of this cross sectional study was to evaluate the prevalence of gingivitis and its association to salivary cytokines and obesity in a group of PR adolescents. **Methods:** A convenience sample of 135 PR adolescents ages 13 to 18 years from 3 public schools was recruited. The UPR's IRB approved the study. One visit dental evaluation was performed at the schools by a calibrated dentist. This evaluation included plaque index, caries, bleeding on probing, pocket depth, and recession. Height, weight and waist circumference were measured. Five ml of saliva samples were taken for analysis of 10 cytokines: (IL-b, MMP-8, MMP-9, OPG, TRANCE, TNF alpha, leptin, adenopectin, CRP, IL-6, Periostin). Four periapical radiographs were taken. A behavioral risk questionnaire was administered. Statistical analysis was performed. **Results:** Participants distribution were: obese (32%), overweight (16%), healthy weight (50%) and underweight (2%); females were 60%. Gingivitis was defined as 20% or more sites with bleeding on probing. Prevalence of gingivitis for the total sample was 25.19% Gingivitis was found in 12% of obese, 2% overweight and 11.19

% of healthy weight. No statistically significant findings were found for obesity and gingivitis ( $p > 0.05$ ). Multiple regression analysis controlling for age, gender and BMI found no salivary cytokines levels were related to gingivitis except for a trend in the levels of leptin ( $p = 0.205$ ). **Conclusion:** The results of this study showed an important finding of inflammation in gums in adolescents but could not show expression in the levels of specific salivary cytokines.

#### A-007 Not your Usual Maculopapular Rash

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**Purpose:** Palmoplantar pustulosis is a chronic inflammatory condition characterized by crops of sterile pustules on the palms and soles that erupt repeatedly over time. Epidemiological data is limited because palmoplantar pustulosis appears to be uncommon in the general population. **Case description:** A 60 year old female with medical history of arterial hypertension, rheumatoid arthritis, fibromyalgia and panic attacks, presented to the Emergency Room with sudden onset of pruritic skin lesions, located on palms and soles since 3 days prior to admission. **Clinical findings:** During the physical examination, crops of discrete creamy-yellow pustules in a studded pattern on top of erythematous plaques were noted on both palms and soles. Also, perioral erythema with yellow crusts was noted, along with erythematous scaly plaques under the left breast and in the left inner thigh area, measuring approximately 5 x 3 cm and 3cm x 1.5 cm, respectively. Laboratory tests revealed leukocytosis, elevated ESR and CRP and a positive ANA. The patient's HIV, RPR and serum cryoglobulins were negative and the C3 and C4 complement levels were normal. The rest of the laboratory tests were unremarkable. **Clinical approach:** Examination findings were suggestive of the diagnosis of palmoplantar pustulosis, although several other skin disorders were included in the differential diagnosis. Patient was admitted to Internal Medicine service for further workup and supportive measures. Skin biopsy was performed. Topical clobetasol and antibiotic therapy with ceftaroline were started. Lesions progressed and became partially confluent, turned brown, peel and became crusted. Skin biopsy showed subcorneal pustules, a thin epidermis and a sparse lymphocytic infiltrate, which supported the diagnosis of palmoplantar pustulosis. After several days of therapy and improvement, patient was discharged home. **Hypothesis:** The differential diagnosis of skin lesions is broad. The diagnosis of palmoplantar pustulosis usually can be made based upon recognition of the clinical findings of a pustular eruption in palms and soles with associated erythema and hyperkeratosis. Skin biopsy is usually not necessary, but can be useful for supporting the diagnosis in patients with atypical presentation or refractory disease. This case illustrates the importance of an internist to recognize and characterize skin lesions, as well as to rule out life threatening conditions.

**A-008 Eliminating Health Disparities in Health Professions: Professional Certificate Program**

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**Objective:** To describe a faculty development program focused in the integration of Cultural Competency and Health Disparities knowledge, skills and attitudes throughout the undergraduate MD curriculum and residency programs. **Method:** A four session professional certificate program was developed to provide focused and practical instruction to medical faculty and other health related faculty in the integration of health disparities knowledge, skills and attitudes throughout the curriculum and residency programs. A hands-on approach was adopted by means of the use of standardized patients, vignettes, videos, modules, and case studies. Program facilitators were recruited from a variety of health professions allowing inter-professional approach/views to faculty development. Several facilitators were trained at NIH Fellowship Summer Programs in health disparities. Thirty four participants were selected and organized into subgroups to formulate and to pilot-test a curricular plan, addressing health disparities in medical education, during the 2013-14 and 2014-15 academic years. **Results:** Eight curricular plans were presented for basic, clinical courses and residency programs. Participants were asked to respond to a quantitative and qualitative questionnaire on the Survey Monkey platform. Over 90% of respondents expressed satisfaction with the program and the intention to implement curricular modifications to the courses in which they participate. **Conclusion:** A follow-up and support mechanism was developed to assess the implementation and impact of the curricular plans in medical student's skills, knowledge and attitudes. **Acknowledge:** Study was supported by the Hispanic Center of Excellence at University of Puerto Rico, Medical School – Health Resources and Services Administration Grant #D34HP24463.

**A-009 A Structured Program for Increasing Medical Student Commitment to Engage in Scientific Research on Hispanic Health Issues**

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**Background & Objectives:** The Hispanic population is growing rapidly in the USA, representing approximately 17% of the total population. Despite the higher prevalence of certain health conditions in this population when compared to other ethnic groups, studies addressing this disparity are scarce. A structured student research program was implemented at the University of Puerto Rico School of Medicine to increase the number of medical stu-

dents committed to engage in scientific research. **Methods:** The program consists of three sequential research courses offered between the first and fourth years of study. A research track certificate is offered to students who complete the three courses with a minimum of 480 hours of research experience. By establishing student-mentor relationships, the program provides medical students with a variety of basic and clinical research opportunities in Hispanic health-related issues. In addition, during the first course, students receive basic scientific knowledge and research fundamentals through workshops scheduled during the summer. **Results:** During the 2014 Summer, 73 first-year medical students participated in the program, 22 in USA and 51 in the Medical Sciences Campus, representing approximately 70% of the total number in first-year class. The number of research manuscripts and presentations at scientific forums has increased significantly during the last five years. **Conclusion:** The implementation of a structured research program in the medical school curriculum focused on the development of clinical researchers is a valuable strategy to increase research projects addressing Hispanics' health needs. Supported by U.S. Department of Health and Human Services Grant # D34HP24463.

**A-010 Caries Experience and Socioeconomic Status in a Group of PR Adolescents**

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**Purpose:** The aim of this cross sectional study was to evaluate the caries experience and social determinants in a group of Puerto Rican adolescents. **Methods:** A convenience sample of 186 Puerto Rican adolescents' ages 13 to 18 years from 5 PR public schools was recruited. The University of Puerto Rico's IRB approved the study. A one visit dental evaluation was performed at the schools by a calibrated dentist. This evaluation included plaque index, ICDAS caries exam, bleeding on probing, probing pocket depth, and recession. A behavioral risk questionnaire was administered. Statistical analysis was performed using STATA. **Results:** Females were 60%. Socioeconomic level was defined depending on the type and location of public school. Caries index was greater for adolescents from public school with lower SES (2.6 vs 1.05). There was no difference in filled surfaces index by SES (3.48 vs 3.12). There was a statistically significant difference in caries experience by gender; female adolescents reported higher caries indexes than males. SES status of female subjects do not influence the caries status for females. **Conclusion:** The results of this study showed an important finding of social determinants for adolescents and caries experience. Gender and SES being social determinants of caries experience.

**A-011 Low and Medium Doses of Clonidine Decrease Left Ventricular Function in Diabetic Rats by Promoting Ventricular Dilation**

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**Background & Objectives:** During the perioperative period, alpha-2 receptor agonists have been suggested to reduce cardiac risk by decreasing catecholamine-induced cardiac stress. Diabetic patients have a higher incidence of perioperative cardiovascular complications due to hemodynamic instability. The potential benefits of clonidine, an alpha-2 receptor agonist, in maintaining cardiac homeostasis in diabetics during the perioperative period are unknown. **Methods:** In this study, we evaluated with echocardiography the effects of clonidine (250, 50 and 10 µg/kg, IP) on the cardiovascular status of streptozotocin (STZ)-induced diabetic and control (CT) rats while under anesthesia. The oxidative-stress markers malondialdehyde (MDA) and 4-hydroxyalkenal (4-HAE) were also measured in cardiac and aortic homogenates. **Results:** Heart rate was reduced by clonidine in diabetic and CT rats at all doses. In contrast, high (250 µg/kg) and medium (50 µg/kg) clonidine doses did not affect stroke volume, cardiac output, or ejection fraction in either diabetic rats or CT. In diabetic rats, low (10 µg/kg) and medium (50 µg/kg) clonidine doses increased left ventricular end-systolic and diastolic volumes by 80% and 50%, respectively (n=6, P<0.05). Clonidine did not alter MDA or 4-HAE levels in cardiac and aortic homogenates from either diabetic rats or CT, suggesting that oxidative stress is not modified by acute clonidine incubation. **Conclusion:** Our results indicate that low and medium clonidine doses have a deleterious effect on ventricular function in diabetic rats, possibly because the negative cardiac inotropic and chronotropic effects outweigh the reductions in afterload that are secondary to alpha-2 receptor activation by the drug.

#### A-012 When a Headache Strikes

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A 56-year-old woman without history of headache, cardiovascular risk factors or antecedent trauma was transferred to our ED due to intractable headache. She was initially admitted in another institution due to suspected ciguatera fish poisoning, two days after consuming a red snapper fish. At that time she reported fever, headache, nausea, multiple episodes of intractable retching vomiting and diarrhea, vertigo, paresthesias, myalgias, arthralgias, weakness and psychomotor impairment. She had to return to that institution due to worsening headache, blurry vision and diplopia. Clinical examination was remarkable for severely dehydration, right side ptosis, nasolabial flattening, decreased motor strength, numbness and diffuse abdominal pain. A Brain MRI showed evidence of diffuse meningeal enhancement, bilateral subdural collections and "brain sagging". She was transferred to our institution for further management due to intractable headaches secondary to a suspected subdural empyema caused by bacterial meningitis. Intracranial hypotension was thought and amyelography was performed to evaluate for CSF leakage and a herniating calcific intervertebral disc was found at the level of

T10-T11 indenting the ventral thecal sac evidencing a connection between the extramedullary spaces. A diagnosis of intracranial hypotension was confirmed which was likely secondary to her severe dehydration and history of retching vomiting. She was treated with strategies aimed to restore CSF volume including oral and intravenous hydration, high caffeine, and salt intake. This case illustrates the importance of considering Intracranial Hypotension as a cause of headache as is of paramount importance to prevent extensive testing and to provide the appropriate treatment.

#### A-013 Development by the Hispanic Center of Excellence of Health Career Enrichment Activities to Increase Applicant Pool Competitiveness among High School Hispanic Students from Disadvantaged Backgrounds

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According to the U.S. Census Bureau, Puerto Rico Community Survey 2009, 78% of high school graduates are from public schools and only 21% are from private schools. Despite this fact, only 12% of the students attending the medical program at the University of Puerto Rico come from disadvantaged backgrounds. Contributing factors such as poor levels of standardized basic skills tests; lack of information about admission requirements, low motivation can help explain the public system deficiency in higher admission quota and overall competitiveness into the School of Medicine and other health-related academic programs. To assume the goal of providing Hispanic students with an opportunity to become socially committed health professionals, our Hispanic Center of Excellence has devised a strategic plan to conduct a series of activities; admission and financial aid orientations, health workshops, research opportunities, summer health professions camps, community service opportunities, exposure to professors and programs in the UPR-MSc, participation in awards competitions, hands on experiences, doctors and medicine students visitations (role modeling), community networking. In 2013 we initiated five "Medicine and Health Related Clubs" in public high schools throughout the island with an average of 25 students per Club. By the end of the academic year 2013-2014 we have already impacted 145 students and 100% of them have been admitted to college and 90% to science programs. For the summer of 2014 we had an increase in the participation of students in health-related summer activities: 11 students Biomedical Research Education Program, 2 students in the NIH Step-up program, 1 student in the RISE-UPR Program, 3 students doing "shadowing" programs in Hospitals and 1 scholarship for the International Scientific Festival in Italy. Through their college years we track them and mentor them to assure they are following their academic plan to reach their goals. We intend to increase the enrollment in medicine of students from disadvantaged backgrounds from 12% to 25% by 2017.

**A-014 A Hispanic Female Patient with Heartburn: A Rare Presentation of Paroxysmal Nocturnal Hemoglobinuria: A Case Report**

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**Purpose:** Paroxysmal nocturnal hemoglobinuria (PNH) is a non-malignant, acquired clonal hematopoietic stem cell disease that can present with bone marrow failure, hemolytic anemia, smooth muscle dystonias, and thrombosis. PNH can also evolve into other marrow disorders including aplastic anemia (AA), myelodysplasia, and acute myelogenous leukemia. It is a rare disease, with a worldwide prevalence estimated in the range of 1–5 cases per million regardless of ethnicity. The median age of presentation is 40 years, but the disease occurs in all age groups. **Case Description:** We present the case of a 32 year-old-woman, G2P2A0 with no past medical history of any systemic illnesses who refers approximately 2 months of progressively worsening constant heartburn with associated abdominal discomfort. Patient visited the emergency room on multiple occasions where she was treated for heartburn and gastritis with proton pump inhibitors without resolution of her symptoms. She says changing her diet and avoiding precipitating foods did not help. **Clinical Approach:** CBC showed WBC  $2.9 \times 10^3 /\mu\text{L}$ , Hgb 6.1 g/dL, hematocrit 20% and platelet count  $59 \times 10^9/\text{L}$ . LDH levels 850 U/L. Abdominopelvic CT-scan revealed a superior mesenteric vein thrombosis with complete occlusion as an incidental finding. **Clinical Findings:** A bone marrow aspirate and biopsy was done showing hypocellularity of 20%. Flow cytometry assays of peripheral blood revealed decrease expression of CD55 and CD59. It identified a population with deficient levels of expression of glycosylphosphatidylinositol (GPI) linked antigens and anchor proteins. Patient was eventually diagnosed with PNH. **Hypothesis:** PNH is a rare, clonal, hematopoietic stem-cell disorder whose manifestations are almost entirely explained by complement-mediated intravascular hemolysis. The natural history of PNH is highly variable, ranging from indolent to life-threatening. The median survival is 10 to 15 years. Thrombosis is the leading cause of death. In fact, thrombosis accounts for 40% to 67% of the mortality from the disease. Venous thrombosis in PNH can occur anywhere, with the abdominal veins (hepatic, portal, splenic, and mesenteric) and the cerebral veins being the most common sites. Patients with a large PNH cell population (60% of granulocytes) seem to be at greatest risk for thrombosis. Our patient had a PNH cell population of 80% of granulocytes. Anticoagulation is only partially effective in preventing thrombosis in PNH; thus, thrombosis is an absolute indication for initiating treatment with eculizumab, a monoclonal antibody that targets complement protein C5. Nevertheless, bone marrow transplantation (BMT)

is still the only curative therapy for PNH but is associated with significant morbidity and mortality. Treatment with eculizumab was initiated in our patient and has been well tolerated with no reported complications. PNH is an unusual hematological disease that is easy to miss but impossible to ignore. To the best of our knowledge, this will be the first case reported in the medical literature of PNH with initial presentation of heartburns. Physicians in Puerto Rico should be aware of this rare hematological entity. **Acknowledgements:** Hematology–Medical Oncology Section, VA Caribbean Healthcare System and San Juan City Hospital.

**A-015 Caffeine Stimulates Locomotor Behavior in the Mammalian Spinal Cord through an A1/D1-dependent Mechanism**

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**Background & Objectives:** Caffeine is a strong psycho-stimulant drug socially consumed worldwide and like cocaine and amphetamines it can modulate behaviors such as vigilance, attention, and locomotion. Caffeine is as a non-selective blocker of adenosine receptors, specifically the A1 and A2A subtype. Through the blockade of endogenous adenosine, caffeine disrupts the dopamine homeostasis, which is key for the onset of many psychiatric disorders and drug addiction. Most of the studies assessing the role of caffeine on the central nervous system are concentrated at observing the systemic effect of this drug, however studies concentrated on assessing the mechanism at single pattern networks are needed. By understanding how caffeine affects a single neural network, we can provide information that could help explain the behavioral effects seen in past studies and the apparent contradiction regarding the mechanism of action by which they modulates behavior. **Methods:** We began assessing the effects of caffeine to spinal locomotor network function using the neonatal mouse isolated spinal cord preparation. A locomotor rhythm was obtained by adding a combination of serotonin, N-methyl-D-Aspartate (glutamate analog) and dopamine to the recording chamber and an alternating locomotor-like rhythm was confirmed by recording motor activity using suction electrodes on lumbar ventral roots. **Results:** Addition of caffeine to the superfusate significantly decreased the step cycle period of the ongoing locomotor-like rhythm, while decreasing burst duration in most preparations in a reversible manner. Application of DPCPX mimics the effects of Caffeine. In the absence of dopamine from the drug cocktail, caffeine and DPCPX did not exert its stimulant effects. This result was replicated using a specific D1 dopamine receptor antagonist. **Conclusion:** These experiments suggest that the stimulating effect of caffeine involves the blockade of the A1 adenosine receptor which leads to less regulation of dopaminergic neurotransmission and more activation. The loss of caffeine's stimulatory effects in the presence of a PKA inhibitor and the



ability to mimic this effect with the use of a cAMP up-regulator suggest that the motor activation effects of caffeine are mediated through a PKA second messenger pathway. Acknowledgments: Thomas Cleland (Cornell University) / Alex Kwan (Yale University) Funding: MBRS RISE (R25GM061838), Craig Nielsen Foundation (124554), NSF (1026061), RCMI/UPR-MS (G12RR03051), NIH-COBRE (1P20GM103642-01A1) This work is part of JM Acevedo's thesis dissertation.

#### **A-016 Professionalism Lapses during Clinical Clerkships: An Innovative Intervention Program**

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Medicine is a profession that requires high standards of professionalism along with the mastery of knowledge and clinical skills. The Council on Medical Students Education in Pediatrics includes professional conduct in their curriculum recommendations. Significant attention has been directed toward developing strategies to prevent professional breeches. Literature is lacking educational interventions directed to improve behaviors in medical students identified with unprofessional performances. Objective: Implement an intervention program to improve professional deficiencies identified among medical students. Strategy: During 2013-14, any student during third year clinical clerkships in the University of Puerto Rico School of Medicine that demonstrated unprofessional behavior was referred to a designated professionalism committee. The intervention program included: a presentation of the program objectives; assignment of a faculty mentor; completion and discussion with the student of a Professionalism Concern Form; assigning three vignettes and a peer reviewed article to the student and discussing with mentor lessons learned and conflicting values; assessing the student through an Objective Structured Clinical Examination; debriefing process. The Professionalism Intervention Program has been implemented from 2013 –2015. Five third year medical students have participated. Any medical student that presents a professional breach is at risk of causing a negative impact to patient care and patient safety. This program aims to prevent further unprofessional behavior. The impact of this innovative program will be long term remediation of negative attitudes and behaviors that may impact patient care.

#### **A-017 Programa de Intervención Multifactorial de Terapia Ocupacional Basado en Baile para Prevenir Caídas en Viejos de 65 Años o Más**

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Trasfondo y objetivos: El riesgo a caídas en adultos mayores está constituido por factores intrínsecos y ambientales que provocan limitaciones en su desempeño ocupacional, produciendo

cambios abruptos en roles, rutinas y rituales importantes para la autovalidación del viejo y el desempeño seguro de actividades significativas. El diseño de un programa de intervención con actividades que mejoren el nivel presente de ejecución es esencial para promover en esta población la participación segura en actividades significativas. El objetivo principal de este estudio fue identificar el nivel de efectividad de un programa de intervención multifactorial con un enfoque biopsicosocial para aumentar o mantener la fuerza, el balance, y la autoeficacia relacionada a caídas en personas de 65 años o más, que habían experimentado caídas o presentaban miedo a caídas. Métodos: El diseño fue pre y post prueba de un solo grupo, con una muestra no probabilística propuesta de 25 viejos saludables (wellelderly). La variable independiente fue la intervención multifactorial: baile terapéutico con movimientos corporales libres y actividades psicoeducativas para la prevención de caídas. Las variables dependientes, balance y fuerza muscular funcional medidas con la Timed Up and Go Test, y autoeficacia medida con la FES I. Resultados: Se evidenció un incremento en balance y fuerza funcional estadísticamente significativo, (p .05), no así para la autoeficacia (p .2). Conclusión: Los resultados sugieren que programas que integran actividad física con sesiones psicoeducativas son efectivos en incrementar el balance y la fuerza funcional necesarias para prevenir caídas en adultos mayores. Reconocimientos: Programa de Ayudantías Graduadas.

#### **A-018 Metastatic Gastric Adenocarcinoma in a 14 Year Old Child: A Case Report**

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Purpose: The typical patient with gastric cancer is male and between 40 and 70 years of age. It is particularly rare in children and accounts for only 0.05% of pediatric gastrointestinal malignancies. This tumor must be distinguished from other diseases such as non-Hodgkin lymphoma, malignant carcinoid, leiomyosarcoma, and various benign tumors of the stomach. Case Description: We report the case of a metastatic gastric adenocarcinoma in a 14 year old male patient with one year history of dry cough, multiple joint pains and weight loss. Clinical Approach: A Chest Xray showed multiple nodular lesions, likely metastases. CT of the Thorax revealed innumerable bilateral soft tissue parenchymal nodules consistent with metastatic lung disease. A CT of the Abdomen/Pelvic region revealed a bulky confluent retroperitoneal and mesenteric lymphadenopathy with necrosis as well as intraluminal filling defect just proximal to the takeoff of the splenic vein, consistent with tumoral thrombus. Clinical Findings: Grossly, 1 x 0.5 x 0.3 cm core needle liver biopsy was performed and showed multiple irregular fragments of white tan soft tissue, histologically most consistent with metastatic adenocarcinoma, probably gastric primary. Diagnosis was then confirmed via endoscopy and biopsy. Hypothesis: This tumor is extremely rare in the pediatric population, and can present with diffuse metastatic disease. Early diagnosis consists of upper gastrointestinal

radiography and endoscopy with biopsy. Early consultation with Surgery, Oncology, Pathology and Gastroenterology services is pertinent regarding overall prognosis. The role of treatment is patient dependent, although long-term survival in children is rare.

**A-019 Sports Participation in Children with Cardiac Diseases**  
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**Background:** Physical activity is an important aspect of daily life. It has been proven beneficial in lowering diabetes mellitus and obesity incidence. Children with chronic diseases are less likely to be involved in sports activity and it has been traditionally limited in children with heart diseases. **Objectives:** 1. Determine sports participation in children who visit the pediatric cardiology clinics. 2. Compare the physical activities in children with pacemakers, congenital heart diseases (CHD) and no heart diseases (NCHD). **Methods:** An anonymous survey was answered by 70 parents of children, age 5-18, who visited the Cardiovascular Hospital pediatric cardiology clinics. **Results:** Children were mostly males (63%) with a mean age of 12 years (range 5-18); 14.3% (N=10) had pacemakers, 44.3% had CHD (N=31) and 41.4% NCHD (N=29). In general, 56% of children were athletic and the main reason for no participation was lack of interest (54%), followed by parents being scared (29%). Only one parent reported no participation due to physician recommendation. Sports participation by group was pacemakers (50%), CHD (48%) and NCHD (66%). Most children with pacemakers who participate in sports (80%) reported complications; fatigue and syncope being the most commonly reported. **Conclusion:** Despite having a heart condition, 50% of children participate in sports. Major reason for inactivity is lack of interest but parental concerns showed to have an impact in children sports participation. More education is needed for parents of children with heart conditions in order for them to feel confident in promoting exercise in their children.

**A-020 Tribus de Loto: Proyecto de Educación en Salud y Promoción de la Salud para embarazadas de Barrio Obrero**  
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**Antecedentes & Objetivo:** La Organización Mundial de la Salud considera el cuidado prenatal como un asunto de salud pública de prioridad (2009). El objetivo de *Tribus de Loto* era proveer educación prenatal a embarazadas que reciben servicios de ginecología y obstetricia en HealthproMed. Gran parte de la población atendida en HealthproMed son de República Dominicana. Martínez (2014) afirma que este es un asunto de salud pública que se debe abordar en la embarazada dominicana. **Método:** El proyecto utilizó estrategias de educación en salud, comunicación en salud e intersectorialidad. **Actividades:** libros del tema,

taller sobre masaje para bebés, actividad Expo-Bebé, conferencias, Protocolo para referidos de embarazadas al departamento de educación en salud en HealthproMed, colaboraciones con agencias privadas y públicas, boletín sobre los derechos de embarazadas y sus bebés y hojas informativas. **Resutados:** *Tribus de Loto* comenzó como proyecto piloto y logró posicionarse como servicio permanente en HealthproMed. En poco más de dos meses participaron 67 embarazadas. Se demostró mediante un pre y post prueba aumento en conocimiento. Se colaboró con una agencia gubernamental y con 9 agencias privadas. **Conclusiones:** El proyecto *Tribus de Loto* permitió impactar a una población de difícil reclutamiento y en necesidad de cuidado. Las participantes pudieron reflexionar acerca de su proceso de forma individual y colectiva y aumentar su conocimiento sobre el tema. Las investigadoras proyectan mantener el proyecto en HealthproMed e implementar actividades similares en República Dominicana. **Agradecimientos:** *Tribus de Loto* formó parte de la Práctica Supervisada el Programa de Maestría de Educación en Salud.

**A-021 Takotsubo (Stress Induced) Cardiomyopathy: Case Series Report**

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**Purpose:** Stress Cardiomyopathy, also referred to as Takotsubo Cardiomyopathy is a recognized clinical syndrome characterized by reversible apical ventricular dysfunction. **Cases description:** Here, we report a case-series of 6 patients with Takotsubo cardiomyopathy for a better understanding of this phenomenon. The patients were compared based on age, sex, past medical, surgical and social history, physical exam, laboratory and imaging studies. Between the years 2011 to 2013, 6 patients were evaluated in Manatí Medical Center due to chest pain. **Clinical findings:** All patients were women aged 62 to 81 years old (mean 71.7±8.7 years). Two of them (40%) acknowledged a major stressor at the time of the event. Five of the six patients (83%) had a previous history of Hypertension and 2 (33.3%) had a history of Heart Failure. The most common findings were: T wave inversion (33.3%) and ST-segment elevation (16.6%) on EKG, 5 (83.3%) patients had Troponin levels elevation and 3 (50%) had CKMB and CK increasing. The echocardiogram showed ventricular wall hypokinesis or akinesis. Interestingly, all the coronary catheterizations were normal. Five out of six patients were reached for a long term follow-up interview. The interview showed 100% patient's compliance with medications and medical follow up post event, 4 (80%) patients showed no post event impairment or hospitalization, and 3 (60%) of them showed mood changes and post-event lifestyle modifications. **Hypothesis:** An increased awareness of this entity will contribute to timely diagnoses and appropriate treatment. The study was approved by the PSMHS IRB (Protocol Number 140922-JM on 10/01/2014).

**A-022 Risk of Thyroid Cancer among Caribbean Hispanic Patients with Familial Adenomatous Polyposis**

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**Background & Aims:** Familial adenomatous polyposis (FAP) is an inherited form of colorectal cancer (CRC) characterized by the presence of hundreds of adenomatous polyps in the colon and rectum. FAP is also associated with thyroid cancer (TC), but the lifetime risk is still unknown. This study assessed the standardized incidence ratio of TC in Hispanic patients with FAP. **Methods:** The incidence rates of TC in patients with FAP were compared with the general population through direct database linkage from the Puerto Rico Central Cancer Registry (PRCCR) and the Puerto Rico Familial Colorectal Cancer Registry (PURIFICAR) between the periods of January 1, 2006 to December 31, 2013. The study population consisted of 51 Hispanic patients with FAP and 3,239 with TC from the general population. The Standardized incidence ratio (SIR) was calculated using the Indirect Method, defined as observed TC incidence among patients with FAP in PURIFICAR's cohort divided by the expected TC incidence based on the PR population rates. **Results:** In patients with FAP the Standardized Incidence Risk (SIR) (95% CI) for TC was 251.73 (51.91 – 735.65), with higher risk for females 461.18 (55.85-1665.94) than males 131.91 (3.34-734.95). **Conclusions:** Hispanic patients with FAP are at a high risk for TC compared to the general population. Our incidence rates (SIR) are higher than previous studies, suggesting that this community may be at a higher risk for thyroid malignancy than previously assumed. We encourage the implementation of clinical surveillance guidelines and regular ultrasound neck screening in patients with this syndrome. **Grant Support:** This study was supported by the following: National Institute on Minority & Health Disparities Award Number 8U54MD007587-03 and U54MD007587; National Cancer Institute Award Number 5K22CA115913-03, R21CA167220-01, 5R03CA130034-02, and U54CA096297/CA096300; Center for Collaborative Research in Health Disparities RCMI Award Number G12MD007600.

**A-023 Prevalence of Gingivitis in a Group of 35-70 years olds Residing in Puerto Rico**

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**Background and objective:** Limited studies have been made to assess the prevalence of clinical gingivitis in Puerto Rico. The aim of this study was to assess the prevalence of clinical gingivitis in a group of 35-70 years olds residing in Puerto Rico (PR). **Methods:** Across-sectional epidemiological study was conducted at UPR Medical Sciences Campus in San Juan, Puerto Rico and a private dental practice in Trujillo Alto, Puerto Rico. Subjects completed a medical history questionnaire and received a soft, hard tissue and gingivitis evaluation, by three trained examiners, using the modified Löe-Silness' Index. Descriptive statistics was employed to calculate the overall mean of gingivitis in the study group, by age and gender. **Results:** 300 subjects were enrolled in the study. 73 % were enrolled in UPR Medical Sciences Campus and 27 % in private dental practice. The overall MGI was 1.39; males reported a higher MGI (1.48) than females (1.30). Only 31% of the subjects showed bleeding; females (25%) reported less bleeding compared to males (38%). The sample showed a higher prevalence of mild (72%) clinical gingivitis based on the Löe-Silness Gingival Index criteria. **Conclusion:** The overall prevalence of gingivitis was lower than previously reported in other studies in Puerto Rico. A higher prevalence of the condition was observed in males.

**A-024 About the Effects of Electromagnetic Exposure in Puerto Rico: A Questionnaire Survey**

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The increasing number of base stations on masts and buildings in Puerto Rico has increased public awareness, now people complain of various symptoms attributed by many to exposure to electromagnetic fields. Our main objective is to evaluate population health risk perceptions based on exposure to electromagnetic fields by radio/TV and mobile base stations. Moreover, know population concern upon installation of radio/TV and mobile base station close to their home or place of work. This is a quantitative study where we designed a questionnaire of 29 questions using the program Survey Monkey<sup>®</sup>, which refers to demographic data, information about proximity to communication antennas, and a symptom checklist was allowed knowing the frequency of over 20 health related symptoms. Data analysis was performed using frequency distribution techniques, contingency tables and contrasts of hypothesis based on t statistics, chi-square analysis, and a series of logistic regression equations to evaluate if proximity to antennas were significantly related to symptoms reported. We did not observe statistical significant differences in the frequencies of the 22 most often stated symptoms related to

health risks, except for sleeping disorder, irritability, congenital disorder, endocrine gland symptoms, and skin alterations. Based on results, there is a need for a logarithmic approach where severity of the symptom's and electric field measurements are to be considered in future studies in Puerto Rico where topography is a consequence of a high number of communication antennas per square foot.

#### A-025 Unusual Cause of Bone Pain

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**Purpose:** Primary bone lymphoma (PBL) is an extremely rare tumor accounting for less than 1% of all non-Hodgkin's lymphoma. As a result of the rarity of this disease, specific diagnostic and treatment protocols are lacking. Here we present a patient with PBL of the proximal right humerus and review the related literature. **Case:** A 52-year-old man without comorbidities presented with pain along the lateral aspect of his right arm since 4 months. X-ray of the right humerus showed moth-eaten appearance. MRI revealed markedly heterogeneous enhancement within the proximal two-thirds humeral shaft. Laboratory workup only revealed slightly increased ALP. Histopathology showed large atypical cells. Immunohistochemistry showed positivity for CD20, Pax5, Bcl6 and CD10. Further workup including bone marrow aspiration and biopsy, CT scan of neck, chest, abdomen/ pelvis were normal. PET scan demonstrated increased F-18 FDG accumulation only involving right humerus. **Findings:** Final diagnosis was diffuse large B cell lymphoma of right humerus. He was treated with six cycles of R-CHOP followed by radiotherapy with complete response to the therapy. The diagnosis of primary bone lymphomas may be challenging, often misdiagnosed as rheumatic diseases. Thus, regardless of the absence of lymphadenopathy, it should be considered in the differential diagnosis of patients over the age of 30 with bone pain not relieved by rest. Although the prognosis is generally good, disease progression or relapse, especially in patients  $\geq 60$  yrs, confers a very poor prognosis. Studies on this disease should be carried out to clarify the optimal treatment in the future. **Acknowledgement:** I certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

#### A-026 Leptomeningeal Carcinomatosis as The Initial Manifestation of Metastatic Disease Diagnosed in Post-mortem Examination: A Case Series

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Leptomeningeal carcinomatosis (LMC) refers to the infiltration of malignant cells in the pia-arachnoids. It is commonly associated to solid tumors particularly carcinomas of the breast and lung. Lately, the incidence of undiagnosed LMC is increasing;

currently about 20%. The usual presentation of nonspecific neurologic symptoms makes diagnosis challenging; especially in the scenario of unknown malignancy. We report three cases with different clinical neurological presentations secondary to LMC. Cerebrospinal fluid (CSF) examinations were negative for malignant cells. Head CT-scans were non-suggestive. A 52 year old woman with history of breast cancer status post combined chemo/radiotherapy on remission who developed headaches and difficulty walking; a 2 year old boy recently diagnosed with left ear rhabdomyosarcoma status post resection on chemotherapy who suddenly developed vomiting, abdominal pain, and seizures followed by brain death; a 59 year old woman with history of chronic tobacco smoking and alcoholism just diagnosed with communicating hydrocephalus of unknown etiology that presented with rapidly deteriorating neurological status and death occurring less than a week after admission. LMC, consistent with primary, was diagnosed at autopsy by histologic examination and immunohistochemistry studies. Leptomeningeal carcinomatosis, currently increasing in incidence, is a complication that requires a high level of clinical suspicion. The presence of malignant cells in the CSF defines the diagnosis; although it has not been proven completely reliable. Studies have shown that serial CSF examinations enhance diagnostic accuracy. Postmortem examination is an invaluable tool to confirm LMC as part of the multidisciplinary approach aiming towards the improvement of clinical diagnosis.

#### A-027 Dental Caries Prevalence of 12-Year-Olds Residing in San Pedro de Macorís

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**Introduction:** Dental caries is one of the most prevalent chronic diseases in children. Although a decrease in dental caries has been reported, in countries with developing and established market economies, health disparities persist among different socioeconomic (SES) groups. Currently, no data is available on dental caries prevalence in the Dominican Republic. The aim of the study was to estimate the prevalence, distribution, and severity of dental caries in school attending 12-year-olds in San Pedro de Macorís, DR. **Methods:** Cross-sectional epidemiological study using a probabilistic sample, stratified by public/private schools and gender was employed. Ten boys and ten girls were randomly selected in each of the selected schools from a list of 12-year-olds. Two trained/calibrated examiners evaluated children from private and public schools, following the NIDCR's criteria. Prevalence (%) and Decayed-Missing-Filled Teeth index (DMFT) scores were calculated. The Significant Caries Index (SiC) was also used to identify the existing gaps of the disease by gender and SES. **Results:** 402 children were evaluated. The overall dental caries prevalence was 73.13% (DMFT=2.53). There were no statistically significant differences between genders and SES using the DMFT index. However, girls had a statistically sig-

nificant higher SiC index compared to boys. The decayed (D) component of the DMFT index accounted for the 94%, while the Missing (M) represented 3% and the Filled (F) 3%. Conclusions: The WHO goal: DMFT $\leq$ 3, was achieved. SiC index was useful to identify an oral health disparity, not identified using the DMFT index. Acknowledgments: "Partially supported by Colgate-Palmolive Technology Center, Piscataway, New Jersey and the National Institute on Minority Health and Health Disparities of the NIH R25MD007607. Study data were collected and managed using REDCap electronic data capture tools hosted at University of Puerto Rico.

#### A-028 Size-Controlled Microwave-Assisted Synthesis of Water-Dispersible Cd-based Quantum Dots for Biological Applications

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Nanomedicine is fostering significant advances in the development of platforms for early detection and treatment of diseases. Nanoparticles (NPs) like quantum dots (QDs) exhibit size-dependent optical properties for light-driven technologies, which might become important in Bio-imaging, Sensing and Photodynamic Therapy (PDT) applications. Although the synthesis of quantum dots using organometallic resources in organic solvents has been reported in the literature, advances on the direct synthesis of water-stable nanocrystals, as required for biomedical applications, are scarce. The present research addresses the synthesis of water-stable Cd-based QDs via a Microwave-Assisted synthesis approach using cadmium sulfate salt, and thioglycolic acid as Cd- and S- precursors, respectively. Selenide ions were available by reductive leaching of metallic Selenium in Sodium bisulfite solution. The size control and the tunability of the optical properties were achieved by a suitable control of the reaction temperature (in the 140°C- 190°C range) and reaction time (10 minutes - 40 minutes). X-ray diffraction analyses suggested the development of a CdSe/S face cubic centered structure with an estimated average crystallite size of 5.50 nm  $\pm$  1.17 and 3.72 nm  $\pm$  0.04 nm, for nanoparticles synthesized at 180°C after 40 minutes or 10 minutes of reaction, respectively. HRTEM images confirmed the crystalline nature and the small size of the synthesized nanocrystals. In turn, the exciton was red-shifted from 461 to 549 nm when the reaction temperature was prolonged from 140°C to 190 °C, suggesting the crystal growth. The singlet oxygen generation capability of as-synthesized QDs was also investigated.

#### A-029 Characterization of Immune Response Elicited by the Polysaccharides Extract from *Coriolusversicolor*

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**Background & Objectives:** The studies testing polysaccharides extracts from mushrooms and plants against cancer and as natural adjuvants in vaccines have increased over the past years. We hypothesize that cultured lymphocytes isolated from mouse spleens will proliferate and secrete cytokines in response to a polysaccharide extract (CVpol) from *Coriolusversicolor*, which is important for the activation of adaptive immunity. **Methods:** We validated our hypothesis, analyzing the *in vitro* and *in vivo* effects of CVpol in lymphocyte proliferation by the XTT assay, induction of cytokines by Quantikine® ELISA, and cytokine profiles by protein microarray. **Results:** An impressive 15-fold increase in lymphocyte proliferation for splenocytes stimulated with 25  $\mu$ g/mL of extract was observed versus non-stimulated control. Our ELISA analysis shows a mean of 742pg/mL IFN- $\gamma$  and only 42pg/mL of IL-4 for cultures stimulated with CVpol, versus 35pg/mL for non-stimulated cultures. Data obtained from protein microarray assay for *in vitro* and *in vivo* samples show lower levels of IL-10, IL-6, IL-4 and IL-5 compared to IFN- $\gamma$ . **Conclusion:** In order to potentiate vaccines, it is necessary the development of novel, safe, and effective adjuvants. We demonstrate that CVpol induces lymphocyte proliferation and secretion of TH1-related cytokines, which are essential components in immune responses against intracellular pathogens. Our study makes a significant contribution to the discovery of potential natural adjuvants, showing that CVpol has *in vitro* and *in vivo* immunomodulatory activity. As future approach we will characterize the adjuvant properties of our extract in a DNA vaccination study using a murine model. **Acknowledgements:** This work has been supported by NIH PRAABRE 8P20GM103475, NCRR G12RR003051, NIMHHD 8G12MD007600, MBR SRISE R25GM061838, and The Puerto Rico Science, Technology and Research Trust 2013-000022 grants.

#### A-030 Neural Correlates of Conditioned Fear Retrieval in the Paraventricular Thalamus

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Pharmacological inactivation of the dorsal midline thalamus (dMT) impaired fear retrieval when performed 24 h after fear conditioning, but not 2 h after (Padilla-Coreano et al 2012). These results suggest that one or more structures within dMT are recruited into the fear circuit after conditioning. Consistent with this, the paraventricular nucleus of the thalamus (PVT), a subregion of dMT, showed increased expression of the neural activity marker cFos 24 h after conditioning, but not 6 h after (Do Monte et al, SfN poster, 2013). cFos measurements are li-

mitted because they cannot track the same neurons at different timepoints. We therefore used single unit recording to track PVT neurons before, 2 h after, and 24 h after fear conditioning. Regarding spontaneous firing rate, more neurons showed changes 24 h after conditioning (78%), compared to 2 h after (32%; Fisher's exact  $p = 0.04$ ,  $n = 54$ ), consistent with cFos findings. Remarkably, the percentage of cells showing conditioned tone responses ( $Z > 2.58$  in the first two seconds after tone onset) was increased 24 h after (20%), when compared to 2 h after learning (6%). Interestingly, most of the neurons that were tone-responsive at 24 h were not tone-responsive at 2 h, and vice versa, suggesting that distinct PVT ensembles may be recruited over time. Thus, time-dependent changes in both spontaneous and tone-induced firing are consistent with time-dependent recruitment of PVT neurons for retrieval of conditioned fear.

#### A-031 The Septic Heart

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**Purpose:** Takotsubo cardiomyopathy is characterized by transient systolic dysfunction of the left ventricle. It mimics myocardial infarction in the absence of obstructive coronary artery disease and it is characterized by apical ballooning on left ventriculography. **Case description:** 77 year-old man with history of arterial hypertension and diabetes mellitus type II who presented to the emergency department due to hypo-activity and anorexia. He was admitted with diagnosis of urinary tract infection and was started on Intravenous (IV) antibiotic therapy with levofloxacin that was later escalated to cefepime due to hypotension episodes. During hospitalization he complained of chest pain. **Clinical findings:** Electrocardiogram (ECG) demonstrated ST segment elevations in anterolateral leads V1-V5, I, aVL, with reciprocal changes in inferior leads. Patient was taken to invasive cardiac laboratory. Coronary angiography was remarkable for no significant obstructive coronary disease and no evidence of culprit lesion. Left ventriculogram showed apical ballooning with ejection fraction 20% that did not follow a single vessel distribution. The patient was diagnosed with stress-induced cardiomyopathy due to complicated urinary tract infection with *Enterococcus faecalis*. **Hypothesis:** As per our knowledge, there are no previous reported cases of Takotsubo cardiomyopathy secondary to urinary tract infection. It's vital to recognize that this condition may be induced by any sudden stressful event.

#### A-032 Multiorgan Dysfunction Syndrome after a Jellyfish Sting in Puerto Rico

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**Purpose:** Jellyfish stings are a common cause of marine envenomations around the world. The severity depends mainly on the

type of jellyfish and the size of the sting. Most of these are mild but there are case reports of fatal cases, mainly from Australia, which are mainly caused by the "Portuguese man of war" the major box jellyfish *Chironex flickeri*. We present a case in which an adolescent female in the west coast of Puerto Rico became in contact with one of these organisms and developed multiorgan dysfunction syndrome "Irukandji Syndrome" prompting her referral to our unit. **Case Description:** This is the case of a 15 years old previously healthy female who was stung by a jellyfish rapidly developing difficulty breathing and was diagnosed with seizures and anaphylaxis at the local ER where she was taken. Upon examination in our unit she was in marked respiratory distress, complaining of chest pain, abdominal pain and confused. **Clinical Approach:** She required intensive care management due to the severity of her symptoms. **Clinical findings:** She developed acute lung injury, myocardial injury, acute kidney injury, electrolyte imbalances, metabolic acidosis, rhabdomyolysis and large skin lesions caused by the sting. Her treatment consisted of anti-epileptic medications, NIPPV, aggressive hydration, urine alkalization, and IV antibiotics. **Hypothesis:** To our knowledge there are no case reports of Irukandji Syndrome in the Caribbean. There are no specific laboratory studies to identify this type of envenomation and there is little knowledge about these toxins mechanisms; cardiotoxins, nephrotoxins and neurotoxins.

#### A-033 Cultural Competency and Knowledge of Health Disparities among Hispanic Medical Students

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**Objective:** The purpose of this study was to measure the perceived level of competency and knowledge about cultural competency (CC) and health disparities (HD) among first-year medical students at a medical school in Puerto Rico. **Methods:** A cross-sectional design was used to collect data by a self-administered questionnaire. Participants were surveyed at the beginning of their first-year using an adapted version of the Clinical Cultural Competency Questionnaire covering demographics, self-perceived knowledge, skills, attitudes, comfort level, and self-awareness. **Results:** Participants showed limited knowledge and skills in dealing with the sociocultural issues relative to CC and HD. Moderate comfort levels were found when dealing with cross-cultural encounters and positive attitudes when addressing factors contributing to HD. Having exposure to previous CC and HD trainings showed significant differences in perceived knowledge, skills, and comfort level. Training in HD was further significant on the attitudes towards factors contributing to HD. No other differences were noted by demographics (gender, high school/ college attended, or languages spoken other than English and Spanish). **Conclusion:** Data suggests the importance of addressing CC and HD in the medical school curriculum and may be valuable in the development of training interventions tailoring the educational needs of the Hispanic medical workforce. Pertinent education is necessary to enhance cultural compe-

teaceand health disparities skills and attitudes among medical students. Acknowledgments: Study was conducted thanks to the Hispanic Center of Excellence at University of Puerto Rico, Medical School – HRSA Grant #D34HP24463.

**A-034 Estradiol Administration after Spinal Cord Injury Enhances White Matter Sparring**

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Spinal cord injury (SCI) triggers a variety of events at the cellular and molecular levels, such as apoptosis, demyelination, inflammation and gliosis, generating a non-permissive environment for axonal regeneration and cell survival. Studies suggest that Estradiol (E2) promotes neuroprotection by suppressing some of these negative events but its effects are debatable. This study aims to assess the effect of E2, as a multiactive hormone after SCI. Adult female Sprague-Dawley rats received a moderate contusion at the thoracic vertebrae 10 with the NYU impactor device and then silastic tubes with 3mg estradiol were implanted. Behavioral studies (BBB and grid walking tests) were performed weekly over 35 days post-injury. Luxol fast blue studies were accomplished to assess white matter spared tissue. Although no behavioral recovery was observed, animals treated with E2 immediately after SCI had a significant increase in white matter spared tissue ( $p < 0.05$ ). To address the possibility that E2 was not able to reach the lesion epicenter fast enough to block adverse events and promote behavioral recovery, another group of injured animals were also injected with a bolus of 100  $\mu$ g E2 immediately after SCI. Behavioral results showed no significant difference in functional locomotor recovery between groups. Interestingly, the group treated with E2 by injection and silastic tubing showed significantly more white matter spare tissue. This suggests that E2 administration may have a neuroprotective role after the injury that can enhance neuronal survival and/or myelination although the effect is not sufficient to improve functional locomotor recovery. Approved by IACUC (#2450113) in October 2012 and renewed in August 30, 2013. Supported by: COBRE (P20-GM103642), MBRS-RISE (R25-GM061838) and RCMI Program (5G12MD007600).

**A-035 Severity Scoring Systems as a Predictive Instrument for Morbidity and Mortality in Children who Underwent Cardiac Surgery**

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Background: Congenital Heart Disease (CHD) is the most common congenital disorder and they are one of the leading causes of death from congenital malformations. Pediatric Risk of Mortality (PRISM III) and Risk Adjustment for Congenital Heart Surgery (RACHS-1) are clinical scoring systems used to explain severity of illness and predict performance and outcome in the Pediatric Cardiac Intensive Care Unit (PCICU). We hypothesized that PRISM III Score correlates better to severity of illness and mortality than RACHS-1 Score in children undergoing cardiac surgery. Methods: Retrospective observational study that evaluates all CHD patients (0-21 years old) who underwent cardiac surgery at the “Centro Cardiovascular de Puerto Rico y el Caribe” from November 2011 to November 2012. Patients were categorized in 3 groups according to the PRISM III Scores: (0-10), (11-20), (21-30) and according to the RACHS-1 Score (1-6). Kruskal-Wallis test and univariate logistic regression were used for statistical analysis. Results: A total of 162 patients met the inclusion criteria; 55% were male and the overall mortality was 8%. Data showed that non-survivors spent more time at the PCICU (Mean of 28 vs. 11 days). Patients with higher RACHS-1 had more time at PCICU ( $p < 0.0001$ ) and more mechanical ventilation days ( $p < 0.0001$ ). Patients with PRISM III Score higher than 20 spend more times at the PCICU ( $p < 0.02$ ). Conclusions: Data suggest that severity scoring systems can be used in cardiac ICU to allocate resources based on need for longer LOS, MV days although not necessarily mortality. Further data analysis is being made to determine predictive value of each scoring system.

**A-036 Bullying Prevention Educational Intervention to Assess Perception and Knowledge among Middle School Students**

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Background and objectives: Bullying seen as an event in which a person is exposed repeatedly to a negative action from one or more people. Although many studies focus their efforts on studying bullying at the level of a relationship between the aggressor and victim, it is important not to ignore the presence of other individuals that participate in the process: their peers. An educational strategy was established to assess middle school students' acquisition of knowledge about bullying and the risks associated to it, while looking to understand the students' previous knowledge on the matter. Methods: The hypothesis was formulated as follows: If a group of middle school students are instructed about the subject of bullying, then they will achieve a behavioral change by being able to identify the types of bullying due to having more knowledge about them. As part of the methodology, a middle school of the metropolitan area was selected and 234 students participated in this study. A series of videos were presented to these students and with the use of a pre and post test, it was explored how much the students knew about the subject before and after the intervention. A pediatrician and medical students discussed the videos with the students. Results: The results of

the tests were analyzed with a paired t-test. Four out of the eight sections of the study displayed a significant rise in the number of correct answers in the post test, which supports the hypothesis. The major limitation of this study was found to be the time of the interventions. Longer intervention times, as well as multiple sessions with each group, could provide future studies the opportunity to more appropriately transmit knowledge about the subject to the participants and to better assess the students' comprehension of the material. Acknowledgements: special thanks to the Clinical Skills Center of the UPR School of Medicine for their collaboration in the video recording.

**A-037 Network Approach to Evaluate Scientific Collaboration in a Clinical and Translational Research Program**  
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**Background:** Since 2010, the Puerto Rico Clinical and Translational Research Consortium (PRCTRC) was established to support activities to eliminate health disparities in the three major health education institutions in Puerto Rico. PRCTRC has been encouraging research collaboration among basic, clinical, and social scientists and community networks and health programs. Scientific collaborations involve interpersonal interactions, however traditional analytical approaches emphasize on examining the influence of individual attributes and behaviors. Social Network Analysis (SNA) may serve to provide insight into interpersonal-level data to analyze scientific collaborations. The objective of this study was to assess the extent to which PRCTRC fostered scientific collaborations among supported scientists. **Methods:** SNA methodology was implemented to conduct preliminary analysis of scientific collaboration patterns in PRCTRC. Scientific collaboration was defined as  $\geq 2$  researchers working together in one or more of the following: grant proposal, peer reviewed publication, or shared use of resources. During 2010-2013, data was collected including document review and key informant interviews. The sample included 389 investigators. UCINET and NetDraw were used to analyze and map the networks resulting from collaboration interactions. **Results:** Collaborating investigators increased 52.2% from 2011 to 2013. Likewise, collaboration connections increased 140.3%, from 268 in 2011 to 644 in 2013. **Conclusion:** This study documented substantial increase in PRCTRC scientific collaboration. SNA approach proved useful in characterizing collaboration interactions and in the depiction of the resulting collaboration structures. Further analyses will be directed to examining other network characteristics (e.g., density, centrality, components) of the collaboration structures. **Acknowledgement:** Supported by the NIH-NIMHHD(2U54MD007587).

**A-038 Pediatric Patient with a Solitary Brain Lesion: Is it a Tumor?**

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**Purpose:** To describe an uncommon demyelinating disease that mimics the clinical and neuroimaging presentation of a brain neoplasm. **Case description:** Case of an 11 year-old female patient without history of systemic illness, who presented with 3 weeks evolution of unbalance and right sided weakness. Symptoms began one week after routine immunizations. No history of behavioral changes, seizures, or recent infections. Neurological exam revealed rightnasolabial flattening, and right hemiparesis with positive corticospinal reflex. **Clinical Approach:** Head Computed Tomography showed a hypodense lesion at the left centrum semiovale. Brain magnetic resonance imaging (MRI), revealed a T2/FLAIR hyperintense lesion centered at the left frontal periventricular white matter, extending to the white matter of the cingulate gyrus, and left posterior body of the corpus callosum. The lesion demonstrated, peripheral discontinuous enhancement and no surrounding edema. No lesions were seen on cervical MRI. Cerebrospinal fluid analysis revealed no pleocytosis or malignant cells. **Clinical findings:** Initial diagnostic considerations included malignancy versus tumefactive demyelinating lesion, but taking into consideration patient's age and imaging findings, a demyelinating etiology was favored. Patient was treated with high dose intravenous methylprednisolone for 5 days, resulting in marked clinical improvement. **Hypothesis:** Tumefactive demyelinating lesions are an uncommon presentation of pediatric demyelinating diseases that can mimic a brain neoplasm. They present as a large solitary white matter lesion with little mass effect and incomplete ring enhancement. Recognizing key differentiating features of tumefactive demyelinating lesions and neoplasms on neuroimaging is crucial to avoid pitfalls in diagnosis and management of these patients. **Acknowledgements:** We wish to thank all participants: Dra. Jessica Gonzalez Montes, MD, Child Neurology Section and Dr. Eduardo Labat Alvarez, MD Neuroradiology Section

**A-039 Evaluating the Effectiveness of an Innovative Grantsmanship Workshop**

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Background: Sustainable research capacity building requires training individuals at multiple levels to develop a critical mass of independent researchers. In 2013, approximately 15% of research grant applications (GAs) were successfully funded (NIH, 2014). The Art of Grantsmanship (AoG) Intensive Workshop was designed to develop skills among early to mid-career researchers, to write effective and fundable GAs. During 2011-2013, three AoG workshop series were offered, supporting 20 investigators. The objective of this study was evaluate the effectiveness of the AoG in terms of GAs submission experiences. Methods: A prospective evaluation was implemented across AoG cohorts. Mixed methods were used including structured phone interviews and follow-up protocols to explore GAs submissions and their success rate. Descriptive analyzes were conducted to determine the AoG effectiveness. Results: Overall, participants reported that the AoG workshop enhanced their knowledge and skills in proposal writing and submission, funding sources, and GA types. Most participants (55.0%, n=11) successfully submitted at least one GA. Thirteen GAs were submitted, of those 46.2% was funded. Salient factors identified that hindered participants' ability to submit GAs were lack of: (1) time to write, (2) time to complete the proposal before the deadline, (3) scientific writing experience, (4) institutional support, and (5) limited number of scientific publications related to their research topic. Conclusion: This evaluation demonstrated that this innovative workshop was effective in providing the essential capacities and tools to write fundable GAs. Further, AoG educational design should be reviewed to address factors that could facilitate or limit GAs submissions. Acknowledgement: Supported by the NIH-NIMHHD (2U54MD007587 and R25MD007607).

#### A-040 Validation of a UHPLC-MS Method for the Determination of Proxazosin, Finasteride, Doxazosin and Terazosin in Dietary Supplements

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Background & Objective: Dietary supplements are sold as natural mixtures for improving patient's health. However, some manufacturers adulterated these products by adding drugs that are regulated by the FDA. The purpose of this work was to develop and validate an UHPLC/MS/MS method for the determination of hypertension drugs in dietary supplements. Methods: Method conditions consist of a gradient using 0.1% formic acid in water and 0.1% formic acid in acetonitrile at 0.23 mL/min flow, an injection volume of 1 µL, oven and autosampler temperature of 40°C and 15°C, respectively and run time of 10 minutes. The drugs selected for the validation of this method were: Terazosin, Prazosin, and Doxazosin used for the treatment of high blood pressure; and Finasteride for prostate treatment. Parameters validated were precision, linearity, limit of quantification (LOQ), limit of detection (LOD), specificity, and matrix effect. Results: The results obtained for LOD and LOQ of each drug were 2.5 ppb and 0.48 ppm, respectively, at least an order of magnitude

lower than the current literature. Linearity was evaluated in a concentration range of 2.5 ppb to 0.60 ppm with correlation coefficients in a range of 0.991 to 0.998 for samples. Average recoveries ranged from 80% to 120%, with relative standard deviations ranging from 2.0% to 9.0%. No interferences were observed from the matrices that would impact the detection of the drugs. Conclusion: The results obtained met the acceptance criteria for method validation according to the FDA. This method shows better detection and quantitation limits, reduced sample preparation time, reduced run time and provides more specificity in comparison to other methods found in the literature.

#### A-041 Código de Orden Público: Análisis de Política Municipal como Herramienta para la Prevención del Consumo de Alcohol en los Menores de Edad

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El consumo de alcohol en menores de edad en Puerto Rico es el problema principal del uso de sustancias en Puerto Rico (Santos, 2012). Encuestas con jóvenes en edad escolar indican que el 48.6% ha consumido alcohol alguna vez en su vida. En municipios urbanos esta problemática puede incrementar. La Encuesta Juvenil (2012-13), administrada a estudiantes de escuela intermedia y superior del municipio de Carolina, resaltó que la edad para que los jóvenes se inicien en el consumo de alcohol, es alrededor de los 14 años. Atendiendo esta problemática, durante los pasados tres años, como parte de un proyecto de prevención, la Coalición Comunitaria de Carolina, ha trabajado con el análisis y fortalecimiento del Código de Orden Público del Municipio de Carolina. El objetivo de esta intervención es proponer enmiendas que regulen de manera más firme el consumo de alcohol en menores, además de educar a los padres, madres y/o adultos encargados de menores de edad. Para el análisis del COP, se recopiló información cualitativa en las siguientes áreas: contenido de la política, implementación y viabilidad para fortalecimiento. Entre los principales hallazgos se identificó que el COP de Carolina no incluía todo el municipio, además no estaba alineado con la Ley Estatal, ni promovía la responsabilidad familiar. Este análisis se le presentó al municipio y las recomendaciones fueron acogidas en el nuevo COP del municipio de Carolina. La fuente de financiamiento de este esfuerzo proviene de los fondos del Puerto Rico: "Strategic Prevention Framework- State Incentive Grant" (SPF-SIG).

#### A-042 Overweight, Obesity and Use of Internet/Computer/ Video Games in Adolescents 13-17 Year Old at Centro para tu Salud Emocional – Niños y Adolescentes (CaPSE) - UPR- MSC

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Background: Obesity is a public concern. Among adolescents, it's not only considered a physical problem, but also has been linked to lower self-esteem, and higher rates of psychosocial difficulties. Time spend in sedentary activities has been considered among factors that may increase risk. Objectives: Determine prevalence

of overweight and obesity and time use of video games, computer, and internet. Evaluate if there is an association between increased internet, computer, and/or video games use (more than 2 hours/day) and being overweight or obese. Method: IRB approval was obtained. Sample consisted of adolescents 13-17 years old receiving services at CaPSE who gave assented and their parents/guardian consented to their participation. Patients with a diagnosis of mental retardation, acutely psychotic or incapable to give assent were excluded. A 35-item questionnaire including questions about computer and/or videogames use was completed. Height and weight were taken and BMI calculated. Preliminary results: 28.5% overweight/ obese (n=6); 50% females, 50% 13 years old. 1/3 reported to use the computer more than 2 hours /day. 50.0% plays videogames at least two days/week for less than 1 hour. 1/3 plays videogames daily for no more than 2 hours. Conclusion: Although these preliminary findings are based in a small clinical sample, the long-term impact of obesity in youth justifies the relevance of including questions regarding time spent using computer and/or playing videogames in our clinical interventions with this population. Acknowledgement: Thanks to the CaPSE Staff, and the General and C/A Psychiatry Residents for their collaboration. IRB Protocol # A8500114

#### A-043 Preliminary Structural Evaluation of Five Hospitals in Puerto Rico

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Background: Puerto Rico is located in an active seismic zone that can produce strong earthquakes. Buildings designed before 1987 do not comply with the more stringent requirements of modern codes, and can be in danger of suffering important damage during an earthquake. Objectives: Conduct a preliminary evaluation of the structural capacity to resist earthquakes for five healthcare facilities in Puerto Rico. Methods: Two procedures were used. The first was the application of the FEMA Rapid Visual Screening of Buildings for Potential Seismic Hazards. The structure is rated according to the type of structural system, year of construction, building height, type of soil, and presence of irregularities. A low rating indicates a more detailed evaluation is required because the building has high probability of being vulnerable. The second procedure is to determine the susceptibility of the building to be affected by resonance, by obtaining experimentally the fundamental frequency of the building and of the surrounding soil. Results: Preliminary findings shows that about half of the buildings studied require more detailed structural evaluation, as determined with the Rapid Visual Screening Method. Conclusions: A detailed study of expected seismic behavior and structural retrofitting should be implemented for the identified deficient buildings. Funding: This project was supported by the

CDC and Office of the Assistant Secretary for Preparedness and Response (ASPR) of USDHHS, administered by the PR Department of Health. It was implemented by the UPR-CPHP under contract #2014-DS0583 with the PRDOH. In UPRM it was implemented under contract #2014-001269 with UPR-RCM.

#### A-044 Energy Drinks to “Get High”: A Modality in Substance Use among Puerto Rican Adolescents, 2012-13

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Energy drinks have become increasingly popular among adolescents. Many use them to boost energy levels, and some mix them with alcohol to reduce drinking-related effects. But, do teens regard energy drinks on their own as drugs? Our objective was to explore if Puerto Rican adolescents utilized energy drinks as drugs to “get high”. The sample (n=3,982) in this island-wide school-based cross-sectional survey was selected using a multi-stage stratified cluster sampling design, and was representative of all 7th-12th grade students in PR. Data was collected using a pre-coded self-administered questionnaire. Proportions were compared using chi-square tests. Odds ratios were also computed. All analyses were performed on weighted data. Approximately 7% of the students reported ever using energy drinks to “get high” (alone or combined with alcohol/pills), 5% reported use in the last year, and 4% used in the last month. Prevalence of recent use (last month) was highest among students in tenth grade. Males and high school students were more likely to report use than females and middle school students. Students who recently used energy drinks were also more likely to binge drink and to be recent substance users (tobacco, alcohol, inhalants, non-prescription pills, marijuana, cocaine, heroin, crack, or designer drugs); 1 in 3 used the drinks combined with alcohol. It is disturbing that some students believe that energy drinks are drugs, since this could lead to increased use, a concern due to the potentially serious adverse effects of using energy drinks. Prevention efforts should target this dangerous modality. Research supported by the Puerto Rico Mental Health Services and Drug Addiction Administration (ASSMCA, by its acronym in Spanish). Approved by IRB.

#### A-045 Non-Structural Evaluation of Five Hospitals in Puerto Rico

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Background: Puerto Rico is located in an active seismic zone that can produce a strong earthquake at any time. A building can be well designed to resist earthquakes but the resulting

damage to non-structural components can affect the hospital operation. Objectives: Conduct an evaluation of the capacity of non-structural components to resist earthquakes for five health-care facilities in Puerto Rico. Methods: The project consists of a comprehensive assessment of the structural, non-structural and functional vulnerabilities of five healthcare facilities. To evaluate the non-structural vulnerabilities an inspection of all representative areas of the hospital was made, including machine rooms. Recommendations regarding better anchorage of equipment and storage bins were given. A rating based on the procedure by Pan American Health Organization was assigned to all hospitals. Results: Most of the buildings studied used good practices of anchoring important equipment. Sample recommendations are shown. Conclusions: Administrators of the hospitals studied are aware of the need to anchor and protect important equipment against strong ground motions. Funding: This project was supported by federal funds from the Center for Disease Control and Prevention (CDC) and Office of the Assistant Secretary for Preparedness and Response (ASPR) of U.S. Department of Health and Human Services (USDHHS), administered by the Puerto Rico Department of Health (PRDOH), Office of Public Health Preparedness and Response. The project was implemented by the UPR-CPHP under contract #2014-DS0583 with the PRDOH. In UPRM the project was implemented under contract #2014-001269 with the UPR-RCM.

#### **A-046 Increasing Prevalence of ADHD, Major Depression, and Conduct Disorders among Adolescent Students in Puerto Rico, 2005-2012**

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Most mental disorders begin in childhood and adolescence, thus we need to understand their magnitude and distribution in youth. The objective of this study was to evaluate trends of ADHD, major depression, and conduct disorders symptomatology among Puerto Rican adolescents. This study is a secondary analysis of island-wide school-based cross-sectional surveys conducted in 2005-07 (n=13,730), 2010-12 (n=10,134), and 2012-13 (n=3,982) ("Consulta Juvenil VII-IX"). The samples were selected using multi-stage stratified cluster sampling designs, and were representative of all 7th-12th grade students in PR. Data was collected using pre-coded self-administered questionnaires which included DISC Predictive Scales (DPS) to screen for mental health disorders during the last year. In each survey, the most common disorder was ADHD; its last year prevalence significantly increased from 13.1% to 25.0%. Major depression prevalence increased from 11.4% to 18.6%. The highest increase was found in conduct disorders: from 4.8% to 11.0%. Prevalence of depression and ADHD was consistently higher among females, while males had consistently higher prevalence of conduct disorders. All disorders were more prevalent among high school

students. The increasing prevalence trend was seen among both genders and school levels for all disorders. Early detection of mental disorders using school-based screening allows us to identify teens at high risk for mental illness, thus preventing severe cases and enhancing student success at school. Ongoing surveillance is essential in dealing with this public health problem. Understanding the differences between groups may help customize prevention programs. Research supported by the Puerto Rico Mental Health Services and Drug Addiction Administration (ASSMCA, by its acronym in Spanish). Approved by IRB.

#### **A-047 Plans for Crisis Standards of Care in Puerto Rico**

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Background: The occurrence of a public health crisis in Puerto Rico with direct impact on the delivery of medical care services may produce overwhelmed healthcare resources for a prolonged time. Crisis standards of care are defined as: "a substantial change in the usual healthcare operations and the level of care that is possible to deliver, which is made necessary by a pervasive (e.g., pandemics) or catastrophic (e.g., earthquake, hurricane) disaster. This change in the level of care delivered is justified by specific circumstances which must be formally declared by a state government, in recognition that crisis operations will be in effect for a sustained period of time. Objectives: To identify existing crisis standards of care protocols to provide acute medical care during a public health crisis in Puerto Rico. Methods: Revision of plans from several public and private hospitals in Puerto Rico was done to identify protocols for standards of care in crisis as recommended by the Institute of Medicine. Results: Preliminary findings showed that hospitals plans include strategies and documentation to mitigate emergencies but do not include protocols for crisis standards of care. Conclusion: It is essential that healthcare facilities in coordination with national, state, and local governments support and facilitate the specific legal, ethical powers and protections for healthcare providers in the necessary tasks of allocating and using scarce medical resources and implementing alternate care facility operations during a public health crisis. To increase the Island's healthcare system level of preparedness there is a need to establish crisis standards of care (CSC) plan.

Funding: This project was supported in its entirety by federal funds from the Center for Disease Control and Prevention (CDC) and Office of the Assistant Secretary for Preparedness and Response (ASPR) of U.S. Department of Health and Human Services (USDHHS), administered by the Puerto Rico Department of Health (PRDOH), Office of Public Health Preparedness and Response. The project was implemented by the UPR-CPHP under contract #2014-DS0583 with the PRDOH.

**A-048 Does Injection Site Matter? A Randomized Controlled Trial to Evaluate Different Entry Site Efficacy of Knee Intra-articular Injections**

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**Background & Objectives:** Complaints of knee pain secondary to early osteoarthritis may account for up to 30% of visits to primary care physicians. Due to the proposed inflammatory changes in early osteoarthritis, intra-articular injections of corticosteroids (IACS) have been considered as an option for disease progression modification, pain control, and improvement of function. However, some studies have suggested poor accuracy rates of IA injections depending on the entry site chosen. It is therefore the aim of this study to evaluate the efficacy of IA knee corticosteroid injection in reducing pain and improving function in patients with early osteoarthritis and whether the low accuracy rates reported with the Anterolateral joint line injection site translate to worse functional and pain outcome measures. **Methods:** The study was carried out as an open-label, randomized controlled trial designed to compare the efficacy of intra-articular knee corticosteroid injections in controlling pain and improving function in patients with early osteoarthritis changes utilizing different entry sites. **Results:** Data suggests that patients receiving IACS injections have a measurable improvement in self-reported outcomes as evidenced by standard deviation change in WOMAC and VAS scores. The majority of patients had a clinically significant improvement in VAS scores as compared to their initial measures with a notable amount of patients improving significantly as well on their WOMAC scores, irrespective of the injection site chosen. **Conclusions:** We have therefore continued the use of palpation-guided intra-articular knee injections in an effort to reduce costs as compared to other injection modalities with positive results in our osteoarthritis patients. **Acknowledgements:** Approved By Institutional IRB UPR-RCM Protocol B0110114.

**A-049 Implementación de una Campaña de Mercadeo Social a Comerciantes de Vega Baja para Prevenir el Consumo de Alcohol en Menores**

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**Contexto y objetivos:** El Mercadeo Social (MS) es una estrategia que se ha aplicado a temas ambientales, salud y sociales. Esta estrategia se ha utilizado para abordar la problemática del consumo de alcohol en menores. **Objetivo:** Implementar la estrategia de MS a comerciantes que se encuentran dentro de la jurisdicción del Código de Orden Público (COP) de Vega Baja. **Metodología:** El programa Barrio Vivo de Iniciativa Comunitaria llevó a cabo visitas de orientación a 40 comercios para la distribución de materiales educativos y de promoción durante el año 2013-2014. Se midió el conocimiento a través de una pre y post prue-

ba, se evaluó la visibilidad de materiales de la campaña MS y se identificó a través de una encuesta el fácil acceso comercial del alcohol para los menores. **Resultados:** Se realizaron 116 visitas a comercios. El conocimiento entre los comerciantes sobre a cuánto asciende la multa por vender alcohol a menores de 18 años aumentó a un 13.2%. Hubo un aumento de un 10% que mencionaron que el alcohol afecta el desarrollo del cerebro adolescente de manera diferente al del adulto. El 82.4% tenían colocados los materiales promocionales en un lugar visible de sus comercios. La percepción de riesgo a ser multados entre los comerciantes aumentó en un 27.8%. Hubo un aumento de 7.8% en los comerciantes que solicitaron tarjeta de identificación a los jóvenes que intentaron conseguir alcohol la última vez. **Conclusión:** Las campañas de MS son estrategias que fomentan cambios de conducta en la sociedad. **Agradecimientos:** Esta campaña fue apoyada por la Administración de Servicios de Salud Mental y Contra la Adicción, el Centro de Investigación y Evaluación Sociomédica y el Municipio de Vega Baja.

**A-050 Factores de Riesgo en una Muestra de Adolescentes del Municipio de Vega Baja que Participaron en la Encuesta Juvenil durante el año 2013-14**

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**Contexto y objetivos:** La adolescencia se caracteriza como un período de transición en el que ocurren cambios biológicos, psicológicos y sociales. Durante este período se pueden presentar factores de riesgo que predisponen alteraciones de personalidad y cambios de conductas en los adolescentes. **Objetivo:** Identificar los factores de riesgo en una muestra de adolescentes del municipio de Vega Baja. **Metodología:** Se seleccionaron aleatoriamente 10 grupos en cada una de 4 escuelas de Vega Baja que participaron en la Encuesta Juvenil durante el año 2013-2014. Los cuestionarios fueron desarrollados por el *Puerto Rico Epidemiological Outcome Group* y administrado por el personal del programa Barrio Vivo de ICI. **Resultados:** Se encuestaron 323 estudiantes. El 51.8% de los estudiantes perciben como fácil acceso al alcohol en su vecindario, mientras que un 39.9% indicó como fácil acceso al tabaco. El 39.1% indicó el uso de alcohol en su familia y un 52.6% el uso de alcohol en sus pares. El 64.1% indicó el consumo de alcohol antes de los 15 años, mientras que un 51.5% indicó el uso del tabaco. El 25.7% indicó que sus amigos habían vendido drogas. El 70.6% indicó su primer contacto sexual antes de cumplir los 15 años. **Conclusión:** Es indispensable desarrollar e implementar estrategias que promuevan factores de protección en adolescentes y sus familias, ya que los adolescentes necesitan tomar decisiones saludables para enfrentar las situaciones que son parte de las experiencias de vida en las que se relaciona con la familia, los amigos y el entorno social. **Agradecimientos:** Esta investigación fue apoyada por la Administración de Servicios de Salud Mental y Contra la Adicción y el Centro de Investigación y Evaluación Sociomédica.

**A-051 Risk of Thyroid Cancer among Caribbean Hispanic Patients with Familial Adenomatous Polyposis**

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**Background & Aims:** Familial adenomatous polyposis (FAP) is an inherited form of colorectal cancer (CRC) characterized by the presence of hundreds of adenomatous polyps in the colon and rectum. FAP is also associated with thyroid cancer (TC), but the lifetime risk is still unknown. This study assessed the standardized incidence ratio of TC in Hispanic patients with FAP. **Methods:** The incidence rates of TC in patients with FAP were compared with the general population through direct database linkage from the Puerto Rico Central Cancer Registry (PRCCR) and the Puerto Rico Familial Colorectal Cancer Registry (PURIFICAR) between the periods of January 1, 2006 to December 31, 2013. The study population consisted of 51 Hispanic patients with FAP and 3,239 with TC from the general population. The Standardized incidence ratio (SIR) was calculated using the Indirect Method, defined as observed TC incidence among patients with FAP in PURIFICAR's cohort divided by the expected TC incidence based on the PR population rates. **Results:** In patients with FAP the Standardized Incidence Risk (SIR) (95% CI) for TC was 251.73 (51.91 – 735.65), with higher risk for females 461.18 (55.85-1665.94) than males 131.91 (3.34-734.95). **Conclusions:** Hispanic patients with FAP are at a high risk for TC compared to the general population. Our incidence rates (SIR) are higher than previous studies, suggesting that this community may be at a higher risk for thyroid malignancy than previously assumed. We encourage the implementation of clinical surveillance guidelines and regular ultrasound neck screening in patients with this syndrome. **Grant Support:** This study was supported by the following: National Institute on Minority & Health Disparities Award Number 8U54MD007587-03 and U54MD007587; National Cancer Institute Award Number 5K22CA115913-03, R21CA167220-01, 5R03CA130034-02, and U54CA096297/CA096300; Center for Collaborative Research in Health Disparities RCMI Award Number G12MD007600.

**A-052 Occurrence of Pain, Agitation/Sedation, and Delirium in Adult Intensive Care Patients in San Juan, Puerto Rico**

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**Background & Objectives:** Pain, agitation/sedation, and delirium (PAD) have negative effects for ICU patients. Little is known about the occurrence of PAD in Puerto Rico ICUs. This study explores the occurrence of these phenomena in four ICU's at the Medical Center of PR and describes it with recommendations from current PAD guidelines. **Methods:** A prospective descriptive study was used. PAD were measured two-times a week and two-times a day for a maximum of three weeks during ICU stay. Pain intensity was measured using the 0-10 Numeric Rating Scale and for patients unable to self-report it, the Critical-Care Pain Observational Tool was used. The Richmond Agitation Sedation Scale was used to measure agitation and sedation levels and the Confusion Assessment Method for ICU patients to measure delirium. **Results:** A total of 80 patients from two medical-surgical ICU's, one cardiac-surgical ICU, and one trauma ICU were assessed. Pain was present in 50 patients, 72% of which experienced significant pain. For those patients in mechanical ventilation (n=62), 61% were not within the recommended RASS and for those who were evaluated for delirium (n=53), it was found positive in 45% of them. **Conclusion:** More than half of patients in these ICU's experienced significant pain and were not within the target level of sedation for at least one time of the assessments. Delirium was positive in almost half of the mechanical ventilated sample. Future studies are needed to implement interventions to improve patient outcomes. **Acknowledgement:** Funded by Capacity Advancement in Research Infrastructure UPR MFP-6251123.

**A-053 Infant Mortality Determinants Among Puerto Ricans: A Case-Control Study**

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**Background & Objectives:** Puerto Ricans in the United States (USA) and Puerto Rico (PR) have the highest infant mortality (IM) rates among Hispanics subgroups in the USA. This study aimed to determine the infant, maternal, and obstetric characteristics associated with IM among them. **Methods:** A case-control design (n = 1,431 pairs) from the 2007 and 2008 period linked birth-infant death files from the NCHS was used. Analyses included bivariate analyses and hierarchical logistic regression. **Results:** There were differences in the leading causes of infant death among Puerto Ricans the US and PR. Additionally, there were significant differences in the odds ratios related to congenital anomalies, fetal losses and abortions, previous preterm birth, maternal antibiotic use, and premature rupture of the membrane; these odds ratios were higher in PR. Regression analysis revealed that infant characteristics were the major predictors for IM.

The main predictor of IM in the USA was Apgar score (aOR = 30.958, 95% CI: 6.817–7140.595 in jurisdictions using the 1989 revision of the certificate of live birth and aOR = 21.691, 95% CI: 6.447–70.785 in jurisdictions using the 2003 revision). In PR, congenital anomaly (aOR = 51.170, 95% CI: 4.801–545.402) was the main predictor of IM. Conclusions: Although infant characteristics were the primary predictors of IM, the factors associated to it varied according to the jurisdictions of residence. These results are useful for the development of prevention strategies and policies towards decreasing IM. Acknowledgements: There was no conflict of interest or funding for this project.

**A-054 Efficacy of Intravenous Immunoglobulins in a Systemic Lupus Erythematosus Patient Presenting with Steven-Johnson Syndrome**

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Purpose: Systemic lupus erythematosus (SLE) is an autoimmune disease characterized by a wide spectrum of clinical and immunological abnormalities. Azathioprine and hydroxychloroquine are often used for the treatment of SLE but these drugs may induce severe skin reactions. Case description: A 38-year-old woman with SLE manifested by tiredness, polyarthritis, lymphopenia, elevated anti-dsDNA antibodies, and hypocomplementemia was initiated on azathioprine and hydroxychloroquine. After two weeks of treatment, she developed extensive erythematous raised skin patches, facial edema, and desquamation of nasal and oral mucosa. Both drugs were discontinued. Clinical approach: Skin biopsy showed band-like lymphocytic infiltrate with focal vacuolar interface changes consistent with early Steven-Johnson syndrome (SJS). Clinical findings: She was treated with high-dose intravenous immunoglobulins (IVIG, 3gm/kg) over a 5-day period. After two days of therapy, she improved as evidenced by resolution of facial edema, decreased erythema and desquamation, and no further disease progression. Hypothesis: Medications are the most common cause of SJS. This condition, which has a mortality rate of 1-5%, results from extensive apoptosis of keratinocytes leading to separation of epidermis and dermis. Cell death may be mediated by Fas and Fas ligand interactions. IVIG are known to have anti-Fas IgG properties; thus, it has been proposed that the accelerated apoptotic process occurring in SJS may be stopped. Case series and case reports have shown that IVIG therapy may be effective. In summary, we present an additional case in which high-dose IVIG was successful in accelerating the recovery period and stopping further disease progression of SJS. Acknowledgements: No disclosures.

**A-055 Long-Term Clinical Improvement after Electroconvulsive Therapy in a Patient with Fibromyalgia Syndrome**

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Purpose: Fibromyalgia is a chronic neuropathic pain syndrome characterized by hyperalgesia and allodynia. Fibromyalgia is often accompanied by depression. Studies suggest that both conditions appear to share common pathophysiologic mechanisms. Electroconvulsive therapy (ECT) is an established alternative for depression not responding to conventional treatment. Few reports suggest that ECT may reduce the severe pain associated with fibromyalgia. Case description: A 57-year-old woman was diagnosed with fibromyalgia syndrome in October 2000. She was treated with acetaminophen, nonsteroidal anti-inflammatory agents, several antidepressives (paroxetine, fluoxetine, sertraline, nefazodone, amitriptyline, escitalopram oxalate, duloxetine, and aripiprazole), tramadol, gabapentin, pregabalin, cyclobenzaprine, zolpidem, clonazepam, and trigger point injections. All these treatments were marginally effective to relieve her symptoms. Clinical approach: From September to December 2009 she received 11 courses of ECT for severe depression. Clinical findings: She experienced remarkable clinical improvement. Musculoskeletal pain and headaches resolved and other symptoms such as tiredness, insomnia, paresthesias, and cognitive impairment decreased to tolerable levels. She persisted with depression and anxiety but well controlled with duloxetine. Pregabalin and tramadol taken for pain were no longer required. Five years after ECT she has remained stable having only mild fibromyalgia symptoms. Hypothesis: Activity through the descending anti-nociceptive pathway is decreased in fibromyalgia as well as the cerebrospinal fluid concentration of serotonin, norepinephrine and dopamine which have endogenous analgesic properties. ECT may exhibit analgesic and antidepressant properties by increasing the concentration of these neurotransmitters. This case, together with other reports, suggests that ECT may be considered for intractable fibromyalgia syndrome. Acknowledgements: No disclosures.

**A-056 Desventajas en la Habilidad de Integración Visual-Motora en Niños Puertorriqueños Nacidos Prematuramente y con Bajo Peso**

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Según los datos del Centro para el Control y Prevención de Enfermedades, Puerto Rico es el país número uno en nacimientos prematuros (17.6%) y nacimientos con bajo peso (12.7%) dentro de la jurisdicción de Estados Unidos. Sin embargo, no contamos con estudios sobre el desarrollo neuropsicológico de esta población. El objetivo de este estudio era conocer el nivel de integración visual-motora de un grupo de niños puertorriqueños nacidos prematuramente y con bajo peso. Se evaluó un grupo de 20 niños nacidos prematuramente y con bajo peso y un grupo de 20 niños nacidos luego de gestación completada y peso esperado mediante la prueba Beery-Buktenica. Los participantes eran niños de 4 años, matriculados en el Programa Head Start del área Norte de la Isla, libres de dificultades neurológicas,

visuales o auditivas. Se llevó a cabo una prueba t de estudiante para grupos independientes para comparar la ejecución de ambos grupos. El análisis estadístico demostró que el grupo de niños nacidos prematuramente obtuvo una puntuación estándar (93.6) por debajo de la puntuación del grupo de niños nacidos luego de una gestación completada (104.8) y estadísticamente significativa ( $P=.0001$ ). Este estudio sugiere que los niños nacidos prematuramente y con bajo peso presentan menor habilidad de integración visual-motora, aún en ausencia de indicadores de riesgo. Esta desventaja puede representar rezago en las tareas escolares que requieren de esta habilidad, como la lectura y escritura. Es importante la evaluación y estimulación temprana en esta población, aún en ausencia de dificultades visuales, auditivas y neurológicas severas. Aprobado por IRB.

**A-057 Work, Education, and Personal Assessment of Women Graduates from the University of Puerto Rico, School of Dental Medicine from 1992-2012**

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**Purpose:** To explore and describe work, education, personal characteristics and perceptions of women dentists graduated, during 1992 to 2012, from the UPR School of Dental Medicine (UPRSDM); as well as their role in academic, clinical and research activities and their impact on curricular decision-making. **Methods:** A quantitative methodology will be employed. Data is being collected using an electronic survey administered to all ( $n=485$ ), women graduates from UPRSDM from 1992-2012. This survey includes questions regarding socio-demographic variables, academic experiences, past and current employment, leadership and mentoring roles, and perceptions related to gender. Participation will be enhanced by the use of social media platforms, such as Facebook and others. Data will be analyzed using descriptive statistics. **Results:** An analysis of preliminary data ( $n=24$ ) suggests that UPRSDM women graduates are currently working in group practices and many have chosen to pursue post-doctoral studies in general dentistry or specialties. There is also a tendency for graduates to pursue careers in academia and seek other women as mentors. Preliminary data suggest recommendations to include women's oral health in future curricular revisions. **Conclusions:** Preliminary data suggests an increased number of women graduates in recent years tend to continue post-doctoral education and settle in the USA due to suitable employment opportunities. As more women are serving as faculty members in pre-dental and post-graduate dental medicine programs, their leadership roles have proportionally increased, as well as their roles as mentors within the academic community. Once data collection and analysis is completed, final results will be presented.

**A-058 Factors in Post Discharge Care associated with Rate of Hospital Readmissions**

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Readmission in recently hospitalized patients represents one of the biggest economic burdens in our health care system today. In a recent study, it was estimated that the annual cost to the Medicare program generated by preventable readmissions exceeded 730 million dollars in just 4 states. Given this huge economic impact, the identification of factors that are related to rate of readmissions is of utmost importance. Few studies have been completed identifying these possible factors; in fact, a thorough review of published literature has failed to identify a similar study within the commonwealth of Puerto Rico. If successful in identifying these factors, ourselves and others may utilize this information to implement strategies in modifying these, reduce rates of readmission, and significantly lessen this economic burden on our health care system. Our study design was a retrospective cohort study in which 272 electronic medical records were reviewed. Criteria for selection included patients from our hospital associated family medicine clinic that were hospitalized under our service (Family Medicine) in the preceding 6 months, and an age of 65 years or older with a Cumulative Illness Rating Scale for Geriatrics score of 9 or greater. The CIRS-G is a scoring system that is used to quantify morbidity in patient 65 years of age or older. For this task we created a worksheet which tabulated a number of variables for each patient that met our inclusion criteria. These worksheets were completed by a family medicine resident using both our clinics electronic health record and our hospital's medical records. In addition we selected 7 diagnoses of interest to gauge and determine their relevance if any on the rates of readmission. Furthermore we wanted to compare our rates of readmission with that of the national average. After reviewing the 272 medical records, 88 subjects were selected that met the inclusion criteria for the study. The distribution of our subjects by age showed that the majority of patients in the study ranged between 70-79 years old. Of the seven selected conditions, hypertension had the highest prevalence followed closely by diabetes mellitus. Another goal of this study was to determine the importance if any of a prompt post discharge follow up and its relation to the rates of readmission. The majority of our patients were seen for their follow up clinic visit within the first to third week post discharge, however this factor didn't quite impact or rate of readmission as we had expected. Furthermore an elevated CIRS-G score interestingly did not greatly affect our rates of readmission. After analyzing all the data in our particular sample group the factor that had the most impact in the rates of readmission was the diagnosis at time of admission. On the top of the list by far was congestive heart failure (CHF) followed at a distance by chronic obstructive pulmonary disease (COPD). Our rate of readmission was notably less than the national average, however this is an academic teaching hospital with a low patient to physician (residents) ratio both in the inpatient as well as the outpatient setting, and we suspect this played a major role regarding this difference.

The fact that our medical center is the main cardiovascular reference hospital for most of the western coast of Puerto Rico may prevent comparing our results with that of the general hospital population. However, as far as our particular setting goes, concentrating our efforts in better managing both the inpatient and outpatient care of select conditions like CHF and COPD may help us reduce even further our rates of readmission.

#### A-059 Ultrasound Accuracy of Liver Length Measurement with Cadaveric Specimens

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**Background & Objectives:** The liver is affected in the pathophysiology of many diseases. However, there is lack of agreement about the most accurate anatomical parameters that can indicate liver disease. This study aims to determine the most precise measurement of right liver lobe (RLL) length by 2-dimensional ultrasound. **Methods:** RLL ultrasound was used to measure organ length in cadaveric specimens (n = 21), which were placed in the supine position for midclavicular line (MCL) and left oblique position for midaxillary line (MAL) measurements in anteroposterior (AP) and craniocaudal (CC) planes. Ultrasound measurements were compared with In situ measurements, which were obtained by accessing the organ through the anterior thoracoabdominal wall. Body mass index, waist circumference, sex, and age of the specimen were also registered. Statistical analyses included: one-way ANOVA followed by Tukey post hoc test, paired t-tests, regression and correlation analyses. Statistical significance was attained at p < 0.05. **Results:** The strongest positive correlation was noted between MAL CC and in situ anterior measurements of RLL length (r=0.97). Changes for in situ measurements according to BMI and waist circumference were also noted (p < 0.05). **Conclusion:** CC measurement of the RLL in MAL from the uppermost right hemi-diaphragm to the inferior tip of the right lobe through a horizontal line parallel to the anterior liver wall is the most accurate measurement of the liver by ultrasound. It may now be possible to reach consensus among experts on the normal range of RLL length values. **Acknowledgements:** None.

#### A-060 Unexpected Stroke in a Young Adult

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A 27 year-old man without history of systemic illness presented with left hemiparesis. After initial head CT scan, he was diagno-

sed with an acute ischemic stroke, and systemic thrombolytics were administered. His neurologic condition deteriorated, and a follow up CT scan showed intraventricular hemorrhage. A transthoracic echocardiography showed a large aortic valve vegetation. At this time Infectious Endocarditis (IE) was high in the differential diagnosis. However, he had no history of intravenous drug abuse/toxic habits, nor history of cardiac congenital anomalies. A transesophageal echocardiography showed a severely damaged bicuspid aortic valve. Blood cultures grew *Streptococcus mitis*, which is part of the normal oral microflora. He completed 6 weeks of antibiotic therapy. After rehabilitation, he underwent successful aortic valve replacement. Patient was discharged home without complications. IE is a condition with high morbidity and mortality for which there are many risk factors. In this case, his bicuspid aortic valve predisposed him, and an episode of tongue biting caused the bacteremia. Few data exists regarding IE in patients with bicuspid aortic valve. Timely diagnosis and prompt management of complications with early surgery may improve short-term prognosis. However, the timing of surgery must be done on a case by case basis. In patients with IE that have brain emboli with associated hemorrhage it is reasonable to delay surgery to minimize the risk of subsequent bleeding during surgery. This case illustrates the importance of considering an infectious endocarditis as an embolic source in a young patient presenting with an intracerebral hemorrhage.

#### A-061 Health Literacy in a Group of Older Adults Assisting to Seniors' Activity Centers

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**Background & Objectives:** Functional health literacy is defined as the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions using both information and services to improve. Inadequate levels of health literacy affect the health status of individuals and are associated with a range of poor health-related outcomes. The purpose of this study was determining the levels of functional health literacy in a group of elders who participate in senior's activity centers. **Methods:** A total of 100 people aged 65 years or older who assisted to senior's activity center were interviewed in person between January and April 2010. The study used a structured questionnaire with demographic information, use of health services was collected was used, the short functional literacy scale was used in the Spanish version (S-TOFHLA) and the version of the generic health scale (SF- 36 v2). **Results:** More than half



(54%) presented inadequate levels of health literacy, while 15% reported marginal health literacy and 31% with adequate levels of health literacy. One-fifth (22%) reported not to understand the instructions that the provider offered at the moment of the treatment and more than one-third (34%) reported difficulty filling the medical forms. Conclusion: Health literacy presents adult educators with an opportunity to motivate adult learning while providing adults with knowledge and skills that will enhance their lives and the well-being of their families. Acknowledgements: This study was part of a doctoral dissertation. We would like to thank the seniors activities centers for their willingness to collaborate with the information needed for this project. IRB: This project was approved by Interamerican University of Puerto Rico, Institutional Review Board, protocol number 09-010-032-2010 on February 5, 2010.

#### **A-062 Does Having an Updated Vaccination Schedule is Associated with HPV Vaccination Initiation?**

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**Background & Objectives:** Human Papillomavirus (HPV) is the most common sexually transmitted infection. Oncogenic types may be responsible for oropharyngeal, anal and penile cancer. Puerto Rican men have an increased risk of penile cancer and increased incidence rate of anal cancer. By 2012, only 6% of boys 11-18 years old had completed 3 doses of the HPV vaccine. There is no previous research in PR exploring correlates associated with vaccination schedule compliance and HPV vaccine initiation in order to understand variables that might influence the HPV vaccine uptake in boys. **Methods:** Self-administered questionnaire among 200 parents ( $\geq 21$  years) and two separate focus group sessions among parents of HPV vaccinated and unvaccinated boys (9-17 years). Convenience sampling method was used. **Results:** Parents whose sons comply with the required vaccination schedule are 2.01 times more likely to have them vaccinated with the HPV vaccine than those with sons that do not comply. Boys 9-12 years old are 75% less likely than 16-17 year boys to initiate HPV vaccination. **Conclusion:** Future efforts should focus on the promotion of HPV vaccination by health providers as part of routine vaccination visits, specially of boys ages 9-12 in order to increase vaccination initiation rates. **Acknowledgements:** This project is part of the NIH/NCI Research Supplement to Promote Diversity in Health-Related Research (Grant # 3U54CA96297-10S2). Sponsors had no part in the design, data collection, analysis, or interpretation of the findings of this study and did not take part in the writing of or decision to publish this poster.

#### **A-063 Characteristics of Children and Families Receiving Services in the Autism Center in Puerto Rico**

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**Background & Objectives:** Since 2011, the Autism Center is offering diagnostic services to children with autism from 0-5 years as well as providing training to support families and university students. The Center was developed by the Institute for Developmental Disabilities (PR-UCEDD) in collaboration with the Department of Health of Puerto Rico. This project was designed as a family-centered service model to promote family competencies and to use other resources and opportunities so that they can be included in their social contexts. The objectives of this project are: 1) to describe maternal and child care and the environmental context of children with autism receiving services in the Center. **Methods:** A child record revision of 50 children diagnosed in the Autism Center by random selection was done to analyze socio demographics and family variables. Frequency analysis was done for selected variables. **Results:** The children sample was composed of 18% females and 82% males; average age of diagnosis was 33 months. An average of 16 months was reported as the age in which mothers identified development problems in their children. Related to social context, a 90% of parents classified their houses as adequate and describe their community as insecure (4%), regular (4%), unknown (14%), secure (12%), peaceful (60%), risky (6%). Families live in rural (18%) and urban (82%) areas. **Conclusion:** Children with autism and families experience a variety of issues that could be evaluate when coordinating interventions with this population.

#### **A-064 Structure-Based Virtual Screening for the Discovery of P-Rex1 Inhibitors**

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**Background & Objective:** P-Rex1 is a RAC-guanine nucleotide exchange factor (GEF) that is required for breast cancer progression. Since the crystallographic structure of P-Rex1 has not been solved experimentally, we focus on protein homology models for virtual screening use and ligands identification. We hypothesized that a structural bioinformatics approach utilizing homology modelling and docking approaches would assist in the identification of a lead small-molecule inhibitor of P-Rex1. The objective is to model and predict the three dimensional (3D) structure of P-Rex1 using Phyre v2.0 and identify lead inhibitors. **Methods:** The full amino acid sequence of human P-Rex1 was obtained

from the NCBI as FASTA-formatted file and inserted into Phyre v2.0 server as the 'query'. The constructed profile and query secondary structure is then scanned against a library of known protein structures using a profile-profile alignment algorithm. The docking analysis to predict protein-ligand binding affinity was performed using PyRx v0.8 software. Results: The 3D homology model of P-Rex1 was obtained with a 100% confidence and 40% sequence identity. After superimposition, the P-Rex1 3D structure matches consistently with known GEFs including Asef, Vav1 and Tiam1. A data set of 20,000 ligands was docked against P-Rex1 resulting in compounds with docking scores ranging from -8.8 to -2.7 kcal/mol. Conclusion: P-Rex1 3D homology model was predicted using Phyre v2.0 and was shown to be consistent with the known experimental data. At least ten compounds were identified as potential P-Rex1 inhibitors. Acknowledgements: Supported by the 2012 AACP NIA and UPR-MSU School of Pharmacy. There is no conflict of interest working on this project.

#### **A-065 Training And Calibration Exercise Using T-Bar Gauge And Two-Tip Compass**

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The T-Bar Gauge (TBG) is a tool that facilitates clinicians identify and correct tooth width/length and gingival length inconsistencies. Failure in achieving accurate tooth size proportions during restorative treatment, affects the patient's smile, and gingival health. Therefore, TBG and Two-Tip Compass (TTC) calibration is vitally important to minimize measurements uncertainty by ensuring accuracy to the dental examiners. Objective: To train and calibrate two (2) dental examiners using the TBG and TTC to measure clinical tooth size proportions (width/length) of maxillary anterior teeth. Methods: Prior to the training and calibration exercise, 15-35 year-olds were screened to confirm the inclusion criteria. Patient must present all maxillary anterior teeth and gingival health. A total of 16 individuals were selected (8 female and 8 male). The maxillary anterior dentition encompassing the central incisors, lateral incisors, and canines (left/right) were measured in millimeters at the widest mesial-distal width and the incisal-cervical length using the TBG and TCC. All measurements were performed using dental loupes and headlights. Kappa and Weighted Kappa was calculated for the TBG measurements to determine inter/intra examiners agreement. Pearson Correlation Coefficients was calculated for the TTC measurements. Approximately, 25% of the calibration participants were re-examined to determine intra-examiner reproducibility. Results: Inter-examiner reliability (Wt Kappa) using the TBG was 0.94-1. Intra-examiner reproducibility ranged from 0.91-0.98 (Wt Kappa). Inter-examiner reliability (Pearson Correlation Coefficients) using the Two-Tip compass was 0.97. Intra-examiner reproducibility ranged from 0.98-0.99. Conclusions: Examiners achieved substantial agreement (inter/intra examiners) using

TBG and TTC to determine aesthetic and functional tooth size proportions. Acknowledgements: this research reported was supported by the National Institute on Minority Health and Health Disparities of the National Institutes of Health".

#### **A-066 Comparison of the Accuracy of Two Zimmer® Impression System at 0° Degrees Implant Angulation**

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Background & Objectives: Success in oral rehabilitation is dependent, in part, of the accurate registration of the structures that constitute the basis for prosthesis support. The impression that allows replication must be accurate and reproducible so that the resultant master cast precisely duplicates the clinical condition. General Objective: To compare the accuracy and reliability of the Zimmer® Contour Impression System with the Direct System. Methods A transparent polymethylmethacrylate master cast was built from a Columbia Dentoform. A ZIMMER® implant dummy with a 3.7mm diameter and 13 mm in length was positioned with an angulation of 0 degrees. Impressions were taken with Impregum Penta Soft Medium Body impression polyether, and a Penta 2 (3M espe) automix machine. A custom tray was used with adhesive (3M polyether adhesive) and there was a 5 minute waiting period before taking the impressions. A direct transfer impression was taken on the dummy implant, and for Zimmer Contour System Impression post Hex-Lock Contour on the dummy implant was used and then placed on it on Contour Impression Caps. Five impressions of each system were taken and were poured one hour after with stone type IV, Resin Rock (Whip Mix) following manufacturing instructions. A custom made device was used for measurement of all models. Position changes in three Cartesian coordinates were measured (x,y,z) using a three dimensional measurement machine (CMM,BH-305 Mitutoyo, Japan). Results: The measures of the master cast in each Cartesian axis were 27,673, -1,402 and 7,374 measures derived from the Direct System were 27,592, -1,498 and 7,075 and from Zimmer Contour System was 27,847, -2,060, 6,552 (x,y,z respectively). Conclusions: There is no statistical significant difference in the X, Y, Z and W axis for both impression techniques. Snap-on technique is statistical significant different in the Y axis.

#### **A-067 Adequacy in Diabetes Treatment: Going Beyond the Blood Sugar Testing**

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Adequacy of treatment among diabetic patients had been documented elsewhere to increase health services costs and cause countless effects among patients. Therefore, CDC has strength

the guidelines for diabetes care and encourages close monitoring and empowerment of patients. The aim of this study was to assess self-reported adequacy of treatment among a sample of diabetic patients living in the Arecibo Health District while attending their routine blood sugar test. A cross-sectional study was designed for surveying the patients attending to Laboratorios Toledo at Arecibo. A total of 497 confirmed diabetic patients were recruited for this study. STATA outputs shows that in a range of 14 points adequacy scale average score was 8.74 points (SD=2.29). Multivariate regression analysis shows that age of participants, income, having "reforma" or medicare, being under endocrinologist care and CES-D scores are significantly related to treatment adequacy ( $p = .05$ ). Analysis shows that after controlling for having normal blood sugar for the last 3 months there are factors that impact the adequacy of diabetic patient care. In general those older, covered by Medicare and with high depressive symptomatology had less adequate care than their counterparts.

#### **A-068 In Vitro Toxicity Studies of Super Paramagnetic Nanoparticles Used as Vehicles for Delivering siRNA's**

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**Background and Objective:** Small interfering RNA's (siRNA's) are short double-stranded nucleic acids which are being developed to target therapeutically important genes involved in cancer and other diseases. However, siRNA's are unstable within the extracellular environment, cannot cross cell membranes to accomplish their mission, and are readily secreted by the renal system. Our objective is to find non-toxic synthetic carriers to deliver siRNA cross cell membranes. **Methods:** Different polycationic superparamagnetic nanoparticles are tested in several cell lines for their toxicity and siRNA - transfection efficiency (using the firefly luciferase assay), and explore the benefits of magnetofection (placing a magnet under the cell culture flask). **Results:** These nanoparticles are efficient carriers for siRNA in vitro. Reducing the polycationic character of the nanoparticles by attaching non-polar groups on their surface reduces their toxicity while maintaining their high transfection efficiency, which is actually increased by magnetofection. **Discussion and Conclusions:** There is a fine balance between the polycationic character of a carrier to its toxicity and transfection efficiency. A systematic optimization of the nanoparticles (by changing their surface groups and concentration) is needed in order to obtain a highly efficient and non-toxic carrier. Magnetofection is a powerful tool to deliver the carrier-siRNA complex to a target cell or tissue. **Acknowledgements:** This research was supported by NIH-PRA-BRE program from the University of Puerto Rico.

#### **A-069 Validación del T-Bar y la Aplicación Clínica**

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**Introducción:** El tamaño absoluto de las piezas dentales es indispensable en la planificación del tratamiento restaurador estético, funcional, estructural y biológico. Existe relación (ancho por largo) propuesta por Chu en 2007, cuyo resultado final es la creación de un instrumento (T-bar Proportion Gauge) para realizar alargamientos de corona clínica, de forma proporcionada usando anchos mesio-distales e incisivo-cervicales en dientes anteriores maxilares. El propósito de este estudio es la validación del instrumento de mediciones de Chu y su impacto estructural. **Ho :** no hay relación entre las proporciones propuestas por Chu . **Materiales y métodos:** Estudio clínico, de corte transversal. Muestra a conveniencia, pareada (15 h y 15 m). Mediciones clínicas de anchos y largos (mm) en dientes anteriores maxilares usando sonda periodontal (PCPUNC15) y el T-bar Proportion Gauge (Chu Aesthetic Gauges, Hu-Friedy Inc, Chicago, IL) según instrucciones del fabricante. Las mediciones realizadas por un mismo operador con magnificación 2.5x. Análisis estadístico mediante un ANOVA. **Resultados:** 1. Los anchos y largos son estadísticamente significativos mayor en los hombres que en las mujeres. 2. No hay diferencia estadísticamente significativa entre los incisivos derechos con los izquierdos. 3. El 43% caen dentro del intervalo del T-bar. **Conclusiones:** Las proporciones dentales de las piezas anteriores maxilares, difieren de los intervalos dados por el T-bar Proportion Gauge. Limitaciones del estudio, instrumento de medición, en estudios posteriores se utilizara compas de dos puntas y calibrador digital.

#### **A-070 Preparación del Plan de Continuidad de Operaciones para las Facilidades de Salud de Puerto Rico, 2013-2014**

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**Trasfondo y Objetivo:** En Puerto Rico existen la condiciones para la ocurrencia de eventos de origen natural o humano que desencadenen en emergencias que demandarían que las facilidades de salud no interrumpan sus funciones y servicios. Esto hace imprescindible que estas instituciones desarrollaren planes y adiestramientos de emergencias y desastres integrados que les ofrezcan un nivel de preparación y una capacidad de respuesta adecuados para atender a la ciudadanía. El objetivo del proyecto era capacitar el personal clave de 20 facilidades de salud de Puerto Rico, agrupadas en su mayoría en corporaciones hospitalarias, en el desarrollo del Plan de Continuidad de Operaciones. **Métodos:** Se diseñó una serie de adiestramientos en cinco sesiones utilizando diversas estrategias didácticas para el desarrollo del plan. Las estrategias educativas incluyeron: conferencias, ejercicios de mesa, redacción, discusiones de grupo, consultoría telefónica y electrónica, mentoría individualizada, presentaciones de los participantes y exámenes cortos, todas empleadas en múltiples sesiones grupales e individuales. **Resultados:** Unas 24 facilidades de salud, incluyendo cinco corporaciones hospitalarias, fueron impactadas en la capacitación. La gran mayoría de las

facilidades participantes sometieron borradores finales del plan al culminar la capacitación. Sobre un 90% de los participantes manifestaron que los adiestramientos consiguieron alcanzar su objetivo y lo recomendarían a otros profesionales. Conclusiones: La estrategias didácticas y de múltiples sesiones empleadas demostraron ser efectivas en la preparación de la audiencia en el desarrollo del Plan de Continuidad de Operaciones. Reconocimientos: El proyecto fue sufragado en un cien por ciento con fondos federales administrados por la Oficina de Preparación y Coordinación de Respuesta en Salud Pública del Departamento de Salud de Puerto Rico.

#### **A-071 Comparison of Hygiene Practices Among Male and Female Athletes and its Association with Methicillin Resistant Staphylococcus Aureus Nasal Colonization and Skin Infections**

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Background and objectives: Staphylococcus aureus has been associated with skin infections among contact sports players mostly due to colonization of nares with a variant that is resistant to conventional antibiotic therapy. Several risk factors for developing methicillin-resistant Staphylococcus aureus (MRSA) have been identified as responsible for outbreaks among teams. The purpose of this study was to compare hygiene practices among male and female athletes and to correlate it with the incidence of positive nares cultures. Methods: Fifty athletes were enrolled in the study. A questionnaire was handed in to evaluate some practices associated with skin infections. Samples from nares were also collected from each athlete by means of swabs. Results: Most athletes practiced risky behavior such as sharing equipment with other teammates, body shaving, and not washing hands during games or practice. The incidence or risky behavior was higher in male than in female athletes. Of the 50 athletes enrolled, 1 male athlete (2%) was identified as having nasal colonization with MRSA. Despite identification of risk factors, such a low incidence of nasal colonization correlates with a low incidence of previous skin infections (14% in males, 8% in females). Conclusions: Results obtained could be due to having a small sample of athletes for conducting the study. Female athletes had safer hygiene practices and consequently less risk of developing MRSA colonization. A larger population should be studied to evaluate the incidence of MRSA among Puertorrican athletes and to identify those who can be treated to prevent transmission among teammates.

#### **A-072 Comparison of the Accuracy of Two MIS® Impression Technique at 0° Degrees Implant Angulation**

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Background & Objectives: A prime objective in Prosthodontics is to prevent complications that could be transferred in the final restoration of an implant. There are different variables that affect the impression, such as splinting or not of the copings, different types of impression materials and angulated implants. However, there is no evidence that evaluates the “snap-on” technique with others. Objective: The aim of this in vitro study was to compare the accuracy of the CPK® system with the direct impression technique. Methods: Using a Columbia Dentoform (Long Island, NY, USA) with missing a maxillary right premolar, a master cast was fabricated. A 3.7 x 13mm MIS Implant was inserted at 0° degrees and at gingival level. Ten impressions with medium body impression material (Impregum™ Soft Polyether3M ESPE) and a custom tray were taken from the master model, Five impressions with the CPK® system and five with the open tray technique. After an hour both groups of impressions were poured with type IV stone (ResinRock Whip Mix) following the manufacturer’s instructions. For measurements of the samples, a custom made device was fabricated. 3D Positions changes were measured in the X, Y, Z axis with a Coordinate Measure Machine (CMM, Mitutoyo BH-305, Japón) Results: The measurements of the Direct technique were 25.45, -6.01 and 10.12µm for X, Y and Z respectively. From CPK System was 25.45, -6.01, 10.12. Conclusions: The master cast showed statistically significant difference in the Z axis with the direct technique. While between groups was no statistically significant difference in any of the Cartesian axes.

#### **A-073 Conocimiento y Actitudes del Profesional de Enfermería sobre Aplicación de Medidas Estándares de Bioseguridad para el Control de Infecciones**

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Antecedentes. Las infecciones en los centros hospitalarios se han convertido en un problema importante para la seguridad del paciente y la calidad del servicio que se provee a la comunidad (OMS, 2009). Es necesario estudiar este fenómeno para asumir el establecimiento de un sistema que enfatice la bioseguridad y un ambiente seguro para el paciente. Objetivos. (1) Describir el conocimiento del profesional de enfermería, (2) Evaluar su actitud y (3) Establecer la relación del conocimiento y la actitud hacia la aplicación de las medidas estándares de bioseguridad para el control de infecciones. Metodología. Estudio de diseño descriptivo correlacional, corte transversal con una muestra de 24 profesionales de enfermería, de un hospital en la zona metropolitana. Se recogieron los datos mediante un cuestionario auto-administrable titulado: “Conocimiento y actitudes del profesional de enfermería sobre la aplicación de las medidas estándares de bioseguridad” (Román, 2013). Resultados. El 54.2 % de los participantes arrojó un promedio de conocimiento de 17.50 (DE = 3.12.) indicando un nivel regular. El 100% arrojó una puntuación de actitud de 95.21 (DE=4.76) reflejando una

actitud favorable. No hubo relación significativa ( $r=.10$ ,  $p>.05$ ) entre las dos variables. Conclusión. Estos datos sirven de base para orientar el desarrollo de programas educativos y fomentar la educación continua con temas relacionados a la bioseguridad y el control de infecciones. Se recomienda hacer estudio mediante la observación del personal de enfermería en la aplicación de las medidas de bioseguridad. Protocolo A8100114.

#### **A-074 Functional Vulnerability of Five Hospitals in Puerto Rico**

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**Background:** Hospitals are essential institutions to society they are expected to offer care and immediate attention after a disaster. The capabilities of an affected hospital can be reduced very quickly, exposing deficiencies related to the disaster mitigation efforts. Functional collapse is the main cause for the interruption of health care services in hospitals after a disaster. **Objectives:** Conduct a qualitative assessment of the functional infrastructure of five healthcare facilities in Puerto Rico. **Methods:** The project consist in a comprehensive assessment of the structural, non-structural and functional vulnerabilities of five healthcare facilities. To evaluate the functional aspect, three questionnaires were administered to the participating hospitals to know about the emergency plans, collaborative agreements, protocols of medical treatment, personnel training, availability of medicine supplies and other essential equipment in case of a disaster. In addition, we used the Hospital Safety Index developed by the Pan American Health Organization, which provides a diagnostic of hospital vulnerability, taking into account the structural, nonstructural and functional components. **Results:** Preliminary findings shows that all interviewed hospitals have an emergency plan and most of them perform drills. In all of the hospitals there is a lack of trainings for doctors and nurses on trauma. The majority of the hospitals do not have written agreements with facilities where they plan to send overload of patients in a disaster. **Conclusions:** The functional aspects are one of the most important, ensuring the continuous operation of the hospital after a disaster. It's important that the hospital's personnel should be adequately prepared for disasters. **Funding:** This project was supported in its entirety by federal funds from the Center for Disease Control and Prevention (CDC) and Office of the Assistant Secretary for Preparedness and Response (ASPR) of U.S. Department of Health and Human Services (USDHHS), administered by the Puerto Rico Department of Health (PRDOH), Office of Public

Health Preparedness and Response. The project was implemented by the UPR-CPHP under contract #2014-DS0583 with the PRDOH. IRB: This project was approved by University of Puerto Rico, Medical Sciences Campus, Institutional Review Board, protocol number A6640114 on August 13, 2014.

#### **A-075 Development of an Emergency Health Planning Model for Puerto Rico**

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**Background:** The first important steps towards reducing disaster impact are to correctly analyze the potential risk and identify measures that can prevent, mitigate or prepare for emergencies. System dynamics simulation models help policymakers understand the impact of different interventions and characterizes many public health issues. **Objectives:** Determine the types and magnitude of various resources required to absorb the impact of hurricane and pandemic to the Puerto Rico population and health care system. **Methods:** Adapt and implement a system dynamics model. The project includes simulate the movement of a population among various states of health and disability as it is affected by and recovers from a hurricane and pandemic; simulate the effects of this incidents in terms of their duration and health impacts, and the secondary effects; estimate the effects of the incidents on the capacity of those facilities and services as a result of injuries to employees, damage to buildings, and loss of critical infrastructure; and estimate the demand for care, backlogs over time of various health services as a result of excess demand and reduced capacity, and rates of excess disability and mortality that result from delays in receiving care arising from those backlogs. **Results:** The preliminary findings shows that the simulation of Puerto Rico's healthcare system will confront significant delays and backlogs in the process of providing care to the population affected by a hurricane or pandemic event. **Conclusions:** The Puerto Rico Department of Health should take into account the results of these simulations to make the necessary adjustments to their emergency plans. **Funding:** This project was supported in its entirety by federal funds from the Center for Disease Control and Prevention (CDC) and Office of the Assistant Secretary for Preparedness and Response (ASPR) of U.S. Department of Health and Human Services (USDHHS), administered by the Puerto Rico Department of Health (PRDOH), Office of Public Health Preparedness and Response. The project was implemented by the UPR-CPHP under contract #2014-DS0600 with the PRDOH. IRB: This project was approved by University of Puerto Rico, Medical Sciences Campus, Institutional Review Board, protocol number A6640214 on August 21, 2014.

**A-076 3D Printing: An Educational Tool in Biomedical Research and Health Disparities**

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**Background & Objectives:** Three-dimensional (3D) printing technology is used in many industrial fields to produce prototypes and finish products. This technology involves depositing (printing) multiple thin layers on top of each other to form three-dimensional objects from many materials, e.g., plastics, wood composites, metals and biomaterials. The objective of this project was to use 3D printing technology to develop tools that will help educate K-12 students in infectious diseases present in Puerto Rico. **Methods:** A set of five virus models were 3D printed using polylactic acid (PLA) at 220°C. In addition, a model of a viral capsid self-assembling virus was produced to demonstrate how viruses are assembled in nature. The latter required twelve pentagons affixed with neodymium magnets that formed a dodecahedron representation of a virus. **Results:** Infectious pathogens models were printed using 3D technology including dengue, influenza, hepatitis B and human papilloma viruses. The viruses selected represent infectious pathogens affecting the Puerto Rican population. The 3-D virus models are being tested in biomedical education activities sponsored by the Biomedical Research Education Program (BREP) at the RCM-UPR. **Conclusion:** Our project demonstrate the use of 3D printing as an educational tool and its applicability in stimulating the interest of K-12 students in biomedical research and the diseases that disproportionately affect Puerto Ricans. **Acknowledgments:** Supported by National Institute of Minority Health and Health Disparities, RCM Grant G12 MD 007600.

**A-077 Compaction Characterization and Physico-chemical Properties of Antiasthmatic Tablets using Co-processed Avicel HFE**

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**Background & Objectives:** Mannitol and microcrystalline cellulose (MCC) are two excipients widely used in the development of tablets as oral dosage forms. Mannitol offers a series of advantages such as low hygroscopicity, strong inertness and good compactability. Previous studies have shown that the use of co-processed mannitol and MCC can improve the flowability, compactability and dissolution rate in a direct tableting process. However, further research is needed to understand the behavior of this excipient and the effect of the compressional force on the mannitol polymorphs. **Objectives:** The purpose of this study was to investigate the effect of compressional force on the physico-chemical properties of antiasthmatic tablets prepared by using co-processed Avicel HFE. Also, to evaluate the use of Avicel HFE for direct compression compared to the physical mixture of Avicel PH-102 and mannitol. **Methods:** Fifteen batches, 50 tablets each, composed of theophyl-

line (20%, 40% and 80%), magnesium stearate (0.5%), Ac-Di-Sol (0.5%, 2% and 4%) and Avicel HFE-102 (15.5%-75.5%) were prepared for this study as well as the physical mixtures of Avicel PH-102 and mannitol without co-processing. Tablets were compressed to different target hardness. Physico-chemical properties of the tablets were determined with standard characterization procedures to ensure compliance with USP standards. **Results:** All tablet formulations exhibited uniformity of weight and rapid disintegration and over 90% of drug dissolution at 15 minutes. **Conclusion:** The data obtained shows the potential use of Avicel HFE as a direct compressed excipient and gave tablets of good performance. **Acknowledgments:** The authors acknowledge the Center for Pharmaceutical Processing Research for funding this research.

**A-078 Enhanced Capability to Identify Non-affected Newborns with Congenital Adrenal Hyperplasia by Fluoroimmunoassay in a Neonatal Screening Program**

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**Background & Objectives:** Congenital adrenal hyperplasia (CAH) is a potentially life-threatening disease. Its early detection and treatment may save the life of the affected. With this in mind the test to screen for CAH –17- $\alpha$ -OHProgesterone– was introduced in the PRNSP in 2004 by radioimmunoassay (RIA). In 2012 the later methodology was replaced by fluoroimmunoassay (FIA). We assessed to determine how this impacted the program. **Methods:** 423,502 newborns have been screened since the incorporation of the test to the program. Twenty confirmed cases were identified for a ratio of 1:21,575 live births during the period revised. During the first eight years of the program an increase number of false positive results was common. In 2012 RIA was replaced by FIA. **Results:** We found an increased specificity from years 2004 to 2013. In 2004, 94.5% of newborns without CAH and in 2013, 99.5% of newborns without CAH were correctly identified. For every year (2004 to 2013) 100% of newborns with CAH disease were correctly identified –sensitivity. We are not aware of newborns born with CAH disease missed by the PRNSP. **Conclusion:** We conclude that switching to FIA methodology to screen for CAH allowed PRNSP to enhance its capability to reduce false-positive results for this test. **Acknowledgment:** This project is supported by NCMHD-NIH Grants 5S21MD000242, 5S21MD000138, and by PRNSP and the PR Dept of Health funds. Study protocol was approved by the UPR Medical Sciences Campus IRB, June 9, 2014 to June 6, 2015 Protocol Number A8410114. **Disclosures:** The authors have nothing to disclose.

**A-080 Primary Small Cell Neuroendocrine Carcinoma of the Vagina Presenting in 36 Year-old: Case Report**

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**Purpose:** Primary small cell neuroendocrine carcinoma of the vagina is an extremely rare malignant epithelial tumor with an aggressive behavior. Little is known about this entity since very few cases have been published. Current treatment modalities are extrapolated from small cell carcinoma of the lung, which is the most common primary site. **Case Description:** We present a case of a 37 year-old G4P2A2 female with no prior history of malignancy who presented with discomfort associated to a mass in the posterior vaginal wall. **Clinical Approach:** Gynecologic evaluation and surgery revealed an 8cm friable pedunculated mass with irregular contours arising from the posterior vaginal wall. Pathologic evaluation revealed a submucosal tumor consisting of small, round cells with scant cytoplasm, fine granular nuclear chromatin, and nuclear molding. These morphologic features, along with a neuroendocrine immunophenotype are diagnostic for small cell neuroendocrine carcinoma. High-Dose Rate Brachytherapy was given to the upper vagina, with a total dose of 1,100cGy. Chemotherapy regimen consisted of Cisplatin 50mg/m on days #1, 8, 29, 36 and Etoposide 50mg/m on days #1 through 5 and #29-33. **Clinical Findings:** Whole body bone scan performed after treatment revealed findings consistent with metastatic disease to the skull and femur. The patient was admitted to the hospital with intractable pain and pancytopenia. Bone marrow biopsy revealed tumor infiltration, for which therapy with Etoposide was restarted. **Hypothesis:** Accurate diagnosis of small cell neuroendocrine carcinoma and its distinction from other carcinomas is of paramount importance, since it will determine the patient's management and prognosis.

#### **A-081 Asociación entre Síntomas de ADHD en la Niñez y la Entrada y Cumplimiento de Tratamiento para SUD en Hombres Puertorriqueños Sentenciados (2004-2005)**

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**Antecedentes y Objetivos:** La literatura reporta que el diagnóstico de trastorno de déficit de atención con hiperactividad (ADHD) en la niñez aumenta las probabilidades de desarrollar trastornos por consumo de sustancias (SUD) en la adolescencia o en la adultez. Diagnósticos duales de trastornos mentales pueden afectar las probabilidades de entrada y cumplimiento en distintas modalidades de tratamiento para SUD. Dado esto, el presente estudio exploró la asociación entre sintomatología de ADHD en la niñez y la probabilidad de ingreso y cumplimiento en todas las modalidades de tratamiento para SUD. **Metodología:** Se realizó análisis de datos secundarios utilizando una muestra de 445 hombres adultos confinados diagnosticados con SUD alguna vez

en su vida. Se realizaron X<sup>2</sup> y regresiones logísticas para evaluar asociación cruda y ajustada entre síntomas de ADHD en la niñez y entrada y cumplimiento a tratamiento para SUD. **Resultados:** Síntomas de ADHD en la niñez no resultó estar estadísticamente asociada a entrada a tratamiento para SUD, aún cuando se controló por los covariados (OR: 1.19, IC 95%: 0.73 – 1.95, p = .44). Asociación cruda entre síntomas de ADHD en la niñez y cumplimiento de tratamiento resultó estadísticamente significativo (OR = 1.78, IC 95% = 0.95 – 3.33, p = .07). Esta asociación se dispó al controlarla por los covariados (OR: 1.63, IC 95%: 0.86 – 3.11, p = .12). **Conclusión:** Los resultados apuntan a una tendencia entre síntomas de ADHD en la niñez y el completar alguna modalidad de tratamiento. Estudios posteriores son necesarios para evaluar a profundidad esta asociación.

#### **A-082 Migrating Populations and the Emerging Environmental Problems in Puerto Rico Rural Areas: How Older Adults Work It**

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In the last years there had been a higher number of people migrating inside the island as house income had lower but not housing facilities. The new migrating populations had caused natives several problems including the adaptation to new sub-cultures that alter the daily activity life. This study analyzes qualitatively the impact of environmental noise among elders and the sources of noise in a rural community in the center east part of the island. **Results:** the older adults identified the migrating population coming from bigger cities as the main source of environmental noise. However, the older adults can't correctly difference between noise and sound, although they recognize disturbs as a consequence of noise. Also, older adults could not identify how noise directly impact health but they did recognize it as a stress that needs more robust regulation. Indeed, they did not know neither where to inform a noise complain nor policies that helps them keep healthy. In conclusion, the discourse analysis presented by older adults show that there is little knowledge about noise and the impact of it in health outcomes. In the other, hand demographic analysis of how population is migrating to inner cities in the island requires more robust analysis in order to bring diversify environmental health analysis of the problem.

#### **A-083 Stroke gender disparities in Puerto Rico**

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**Background:** Many studies have shown that there are disparities between men and women, most noticeably regarding stroke management and outcomes. Women appear to be treated less aggres-

sively than men and have worse prognosis after discharge. This study analyzes the gender disparities in demographics, risk factors, presenting symptoms, hospital management and outcomes in Puerto Rico. Methods: We examined data from the PR Cardiovascular Surveillance, which is based on a systematic review of medical records in 18 hospitals during the years 2007, 2009 and 2011. Categorical and continuous variables were analyzed using descriptive statistics. In addition, Pearson's Chi-square was used to evaluate the association between gender and outcome variables. Results: A total of 5,288 patients were hospitalized with a stroke diagnosis during the study period. Most patients were women (55%) and between the ages of 65-84 years (53%). Women presented more headaches (12.7%) in comparison to men (9.9%) ( $p = 0.002$ ). The prevalence of hypertension (87.7% vs. 83.5%,  $p < 0.0001$ ) and diabetes (53.7% vs. 50.5%,  $p = 0.025$ ) were significantly higher in women than men. In-hospital death rate, although not statistically significant, was also higher in women (9.6% vs. 8.6%,  $p = 0.185$ ). Secondary prevention practices such as the use of aspirin (ASA) given at discharge (21.1% vs. 25.0% respectively, ( $p < 0.0001$ )) were lower in women than men. Conclusions: The findings suggest significant gender differences in stroke outcomes and management in Puerto Rico. Further studies are needed to identify interventions to reduce gender disparities in this population. Acknowledgments: This study was supported partially by the University of Puerto Rico Medical Sciences Campus, and the Endowed Health Services Research Center, Grants 5S21MD000242 and 5S21MD000138, National Center on Minority Health and Health Disparities, National Institutes of Health.

#### A-084 Strategies Toward the Isolation of Predicted Genotoxic Compound Colibactin

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Colibactin is the name given to the predicted product of hybrid nonribosomal peptide-polyketide synthase complex (pks island) found in some strains of *Escherichia coli*. Bacterial strains harboring the pks island show a peculiar toxicity toward mammalian cells in culture with a distinctive phenotype that includes DNA damage, cell cycle arrest and megalocytosis of the infected cells. It has been shown by our group (Gómez-Moreno et al., 2014) that the pks island can be found in the normal gut microflora and that its presence is positively correlated with colorectal cancer (CRC). Despite the obvious interest in elucidating the mode of action for the resulting colibactin compound, its structure remains unknown. The broad objective of this investigation is to develop molecular strategies towards the isolation of colibactin in pursuance of its structure and eventually, its mode of action. Several efforts have been documented that attempt to extract the compound from *E. coli* cultures that harbor the pks island, with no success. Our strategy is an attempt to disrupt the natural biosynthetic machinery in order to cause the accumulation of intermediates. We have deleted the *clbP* gene from a pks island+

strain (IHE3034). This gene encodes an enzyme that presumably catalyzes the last processing step from colibactin biosynthesis. Extracts from the  $\Delta$ ClbP-IHE3034 strain were analyzed by MALDI TOF TOF mass spectrometry and compared to wild type IHE3034 and DH10B strains. Results show that novel compound of 994 Da is produced only in the  $\Delta$ ClbP strain. To our knowledge this is the first report of the detection of a biosynthesis intermediate of colibactin.

#### A-085 Multidrug Resistant *Acinetobacter baumannii* (Ab) isolates from a Private and a Teaching Hospital

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Background & Objective: The carbapenems are the antibiotics of choice for the treatment of infectious caused by multidrug resistant (MDR) Gram-negative bacilli. In Ab, the class D carbapenem-hydrolyzing  $\beta$ -lactamases is the most common mechanism for carbapenem resistance. This pathogen is frequently identified in nosocomial outbreaks. From January to October 2014, all MDR Ab isolates from a private hospital (PH) and a teaching hospital (TH), were sent to our laboratory together with their basic epidemiological information and antimicrobial susceptibility report. The objective of this study was to characterize the  $\beta$ -lactamases genes present in these isolates. Methods: All organisms were screened using PCR family-specific  $\beta$ -lactamase primers for: KPC, IMP, VIM, NDM-1, OXA carbapenemases (OXA-24, -51, -58), and the non-carbapenemases TEM, SHV, and CTX-M genes. Results: Epidemiological data show that MDR Ab was more common in PH (30) than in TH (14), while no differences were noted in the distribution by age, sex or hospital wards. Respiratory tract isolates were more commonly seen in PH (43% vs 36%). PCR demonstrated the presence of blaOXA51 in 100% of PH and TH isolates, blaOXA-58 in 6% and 7%, blaOXA-24 in 10% and 14%, and blaTEM in 63% and 83% of the isolates from the PH and TH, respectively. However the presence of the blaKPC was only observed in PH (4/30, 13%) isolates. Conclusions: The OXA-51, followed by OXA-24 and -58 genes were the most common carbapenemases indicating their importance in MDR Ab, additionally, OXA-24 gene was identified for the first time in Ab in PR. (Funding Sources, Conflict of Interests Disclosures, etc.): This work was supported by MBRS/RISE R25GM061838-14, RCMI/NIH 8G12-MD007600 and Associate Deanship for Biomedical Sciences Graduate Program School of Medicine, MSC-UPR.

#### A-086 Relationship of FTO rs9939609 and Prostate Cancer Severity in a Sample of Puerto Rican Patients

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**Background & Objectives:** Obesity is prevalent in Puerto Rico (PR) and has been associated with a higher risk of prostate cancer (PCa) severity and mortality. In PR, PCa mortality is significantly higher (28.3/100,000 males) compared to US Hispanic population. FTO gene polymorphisms (SNPs) have been associated with both obesity and PCa. Our aim was to establish the presence of any correlations between FTO SNP rs9939609, obesity, and PCa severity in a sample of Puerto Rican men. **Methods:** DNA from 294 patients with PCa managed with radical prostatectomy was analyzed by Real-Time PCR. PCa severity was defined based on prostatectomy tumor stage and Gleason Score. Chi-square test and logistic regression models were used to assess the correlation between rs9939609, BMI, and PCa severity. **Results:** A/T and T/T were the most common forms identified (46.9% and 38.4%, respectively). Among our sample, 65.6% (193/294) of overweight/obese patients and had at least one T allele. Of these, 72.5% exhibited low severity PCa. After controlling for age and BMI, homozygous form of rs9939609 had 9% lower odds (95%CI: 0.41-2.02) of a high-severity PCa when compared to the wild type form, but this did not reach statistical significance ( $p > 0.05$ ). **Conclusions:** No correlation was identified between FTO rs9939609, obesity and PCa severity in the studied population. Further studies should be done in a bigger sample. **Acknowledgements:** Supported by RCMI grants G12MD007600 (Center for Collaborative Research in Health Disparities), 8U54MD007587-03 (PRCTRC) from the NIMHD, and Award Grant Number# CA096297/CA096300 from the NCI of the NIH. (IRB# 8860212).

#### **A-087 Deep Brain Stimulation of the Ventral Striatum For the Extinction of Morphine Place Preference**

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**Background:** Deep brain stimulation (DBS) is a neurosurgical procedure used to treat refractory neurological and psychiatric disorders. Recent studies have suggested that DBS of the ventral striatum (VS) may be a potential target for treating addictive disorders. Despite these results, DBS parameters, electrode placement, and the addiction stage have not been thoroughly addressed. In this study, we examined whether DBS of the VS could reduce the expression of morphine conditioned place preference (CPP), and enhance its extinction learning. **Methods:** For this purpose, male Sprague-Dawley rats were stereotaxically implanted with bipolar electrodes aimed at VS (-6.5 mm DV,  $\pm 2.0$  mm ML, and +1.2

mm AP). Using a two-compartment CPP box, rats were conditioned across 8 days to prefer the side paired with morphine (5 mg/kg). Subsequently, rats expressing morphine-CPP received extinction sessions, together with high-frequency 130 Hz DBS (HF-DBS), low-frequency 20 Hz (LF-DBS) or sham stimulation. **Results:** We found that HF-DBS did not reduce the expression of morphine-CPP, whereas impairment of extinction was observed. On the other hand, LF-DBS facilitated the extinction of morphine-induced place preference even after the DBS was turned off. **Conclusion:** These results suggest that LF-DBS of the VS might represent the basis for new effective interventions for addictive patients who do not benefit from current treatments. **Acknowledgements:** NIH-NCRR (2G12-RR003051; 5P20RR016470); NIMHD (8G12-MD007600), NIGMS (8P20GM103475) for JLBE, Conte Center Grant (P50 MH086400) for GJQ; MBRS-RISE-MS (R25-GM061838) for FJMR.

#### **A-088 Chikungunya at the Caribbean Primate Research Center: Lessons Learned**

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**Background and Objectives:** Chikungunya is an arbovirus that is transmitted by mosquitoes and causes debilitating disease, fever, polyarthralgia, rash and vomiting. It was first reported in Puerto Rico in May 2014, reaching epidemic proportions by July 2014. As in other work areas in Puerto Rico, the Caribbean Primate Research Center (CPRC) had its work force affected by the epidemic. The peak of sick employees was between late August and the month of September reaching approximately 25% of the entire work force. This impacted many areas of the Center from administrative tasks, maintenance and routines for animal care as well as maintenance of the landscape and physical plant. Chikungunya causes similar symptoms in rhesus macaques and there are multiple studies that use this animal as a model for the disease. However, information on natural infection with chikungunya in non-human primates (NHP) is scarce and there are papers that raise the question on the role of NHP as potential carriers of the virus. **Methods:** The CPRC had 3 suspect cases of rhesus macaques with chikungunya. Serology was used to confirm these cases as well as a sentinel group of animals from the colony were tested. **Results:** Serological results from a NHP sentinel population are in agreement with the clinical presentation or lack of chikungunya-like symptoms. **Conclusion:** The chikungunya virus not only affects humans and the role of this virus in NHP as potential reservoirs and animal model for the development of vaccines and treatments needs to be further evaluated.

#### **A-089 Women's Health Society's Human Papilloma Virus Multimedia Educational Program: Doing health education through Social Media**

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**Background & Objectives:** Social Media is an ever more present part of contemporary life. Puerto Rico's low vaccination rates against Human Papilloma Virus, which causes cervical cancer, is an urgent health issue. Women's Health Society (a nonprofit) created a multimedia educational program where social media has proven key in spreading awareness on HPV. Objectives were 1) to raise awareness on HPV, its repercussions and prevention alternatives 2) to use social media metrics to measure who we reach and how they engage with the educational content so that ever more effective educational efforts can be proposed in the future. **Methods:** Create a content network of attractive, easily understandable yet scientifically accurate multimedia web content. Actively and effectively promote relevant content to the target audience (women in Puerto Rico) through Facebook. Craft campaigns to take key content to target audience. Engage people in conversation, encourage questions and respond promptly. Constantly analyze metrics and modify strategy. **Results:** In just 4 months Women's Health Society Facebook Page has gotten 3,057 Fans. These are not "ghost fans", but people constantly engaging with the posted educational content: current average reach: 50,700 people. Furthermore, the educational work is directly impacting people's lives clearing up their doubts in times of uncertainty. **Conclusion:** Social Media can serve as an effective channel of communication to reach new publics in a targeted manner for those that are more in need or more at risk. It is important to remember that social media has its own methods required for success. **Acknowledgments:** This effort is funded in part by a non-restricted educational grant from Merck in collaboration with VOCES- Coalición para la Vacunación (Non-profit Organization), Effectively Creative Gorup, LLC and Diana Soto, New Media Consultant.

#### **A-090 Puerto Rico Health Information Network Environmental Scan Results: Laboratory Information System (LIS) Satisfaction**

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**Background/Objective:** In February of 2012, Law number 40 created the Puerto Rico Health Information Network (PRHIN) Corporation to lead the implementation of a health information system for the island's health sector, financed by the American Recovery and Reinvestment Act (ARRA) law. An environmental scan was done assessing Health Information Exchange (HIE) performance baseline information in each of the key program priority areas: laboratories and pharmacies participation and information exchange between healthcare providers. This project presents satisfaction level and perceived impact with their Laboratory Information System (LIS) of a sample of laboratories. **Methods:** Data was collected by survey (electronic, fax or mail) using a cross-sectional design. A random sample of laboratories was selected (n=89; response rate=16.5 %). Descriptive analyses

were conducted using SPSS. **Results:** Most laboratories (85%) said that they have adopted some type of Health Information Technology (HIT), either fully implemented (56%) or is underway (27%). Three in every four (>57%) said that implementing LIS had a positive impact in their practices with communication with other providers and patients, the management of lab orders and the agility of sending laboratory results. Almost seven of every ten laboratories that are using LIS are satisfied with the system. **Conclusion:** These results provide preliminary evidence of the status of the PRHIN operational plan implementation and its impact in a sample of laboratories. In this sample, the majority had implemented HIT and is satisfied with their system. **Acknowledgements:** The project described was supported by the American Recovery and Reinvestment Act of 2009 (ARRA) PRIFAS 256-0710000-081-2010-1090HT0001SUB PEOPLE-SOFT 256-0710000-081-2010-1090HT0001SUB. Approved by IRB Protocol # A3420213 approved on December 16, 2013.

#### **A-091 Propuesta de Reglamentación para Adiestramiento a Cuidadores que Sirven a Personas con la Enfermedad de Alzheimer en Puerto Rico**

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**Política Pública Analizada:** A pesar de que las personas con Enfermedad de Alzheimer (EA) tienen unas necesidades muy particulares, en Puerto Rico no existe ninguna legislación que estipule los requisitos de adiestramiento para cuidadores que trabajen con pacientes con EA. **Disciplina Académica:** Este estudio es una Investigación de Leyes de Salud Pública (Public Health Law Research). **Fuentes de Información:** Se utilizó el documento "State Residential Care and Assisted Living Policy: 2004" para identificar las reglamentaciones de adiestramientos requeridos en cada estado de los Estados Unidos para cuidadores que trabajen con pacientes con la EA. Se contactó el Departamento de Salud de cada estado para la actualización de la información. **Método:** En este estudio-mapa (Mapping Study) se analizaron los documentos de cada estado que recogen los requerimientos de adiestramiento para cuidadores que trabajen con personas con EA en Centros de Cuidado de Larga Duración (CCLD) en Estados Unidos. **Hallazgos:** Se encontró que 23 estados tienen estos requisitos de adiestramiento específico. A pesar de la variabilidad que tienen los requisitos por estados, se encontraron similitudes en los siguientes temas: introducción a la EA, manejo de comportamiento difícil, intervenciones y actividades terapéuticas, habilidades de comunicación entre el paciente y el personal, y apoyo y/o resolución de conflicto familiar. **Implicaciones:** Se recomienda la creación de legislación que regule los requisitos de adiestramiento, para asegurar que los profesionales tengan las competencias básicas para poder prestar servicios de calidad en los CCLD. Esta legislación debe estar dirigida principalmente a las áreas de adiestramiento en general en EA, intervenciones terapéuticas y habilidades en comunicación.

#### A-092 Estadísticas Incomparables: Cartografías de Natalidad y Mortalidad en Informes Oficiales de Puerto Rico, 2004-2010

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Trasfondo y objetivos: Una de las funciones esenciales de la salud pública es la determinación de necesidades, la cual requiere de recopilación, análisis y comunicación de indicadores de salud. Para ser útiles, dichos indicadores deben ser comparables. ¿Cuán comparables son las estadísticas “comparables”? ¿Cómo se comunican a la ciudadanía? Esta investigación tiene como objetivo evaluar la idoneidad de los mapas de natalidad y mortalidad en la serie de Informe Anual de Estadísticas Vitales, del Departamento de Salud de Puerto Rico, del 2004-2010. Métodos: Dichos informes publicaron mapas de tasas de natalidad (2004-2010), tasas de mortalidad general (2004-2006) y tasas de mortalidad infantil (2004-2008) por municipios, junto con las tablas de las estadísticas correspondientes. Utilizando las recomendaciones de la literatura estadística y cartográfica, dichos mapas se evaluaron siguiendo tres elementos: (1) identificación de valores extremos (“outliers”); (2) determinación de categorías de clasificación (por ejemplo, tasa de natalidad/1000 habitantes de 10.0-11.0, 11.1-12.5, 12.6-14.0 y 14.1-15.0); y (3) uso de color en los mapas. Resultados preliminares: Los informes no presentan qué criterios utilizaron para la identificación de valores extremos y para la selección de categorías y color. La selección de categorías y color en ocasiones cambia de año en año, lo cual dificulta realizar comparaciones. Conclusión. La determinación de necesidades se dificulta cuando la comunicación visual de datos en los informes del Departamento de Salud no permite realizar comparaciones anuales. No existen conflictos de intereses.

#### A-093 An Intervention for Chronic Disease Self-management in a Low-income Community in Puerto Rico: Results from the Pilot Study

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Background: Hispanic communities with high prevalence of co-morbid diseases often suffer from increased complications associated with poor self-management. This pilot study aims to develop and test the acceptability and feasibility of a culturally-tailored intervention to support chronic disease self-management in a low-income community in Puerto Rico. Methods: A culturally tailored intervention, based on community health workers (CHWs) was developed using participatory approaches to increase participants’ knowledge and skills for chronic disease

self-management. We used a convergent parallel mixed methods design. For quantitative data, descriptive analyses and non-parametric tests (Wilcoxon/Mann-Whitney U-tests and Kruskal-Wallis test) were done to compare the pre and post change scores in each group and the overall group effect. For qualitative data, content analysis of focus groups and in-depth interviews were done. Results: 45 subjects were recruited and allocated into three groups: an evidence-based intervention (EBI) supported with CHWs (n=18), EBI intervention alone (n=13) and usual care (n=14). Participants in the CHWs group showed higher positive score changes in the pre (baseline) and post (three months) test analysis when compared to those in the EBI. Positive indicators included: monitoring blood pressure at home (24% vs. 16%), having a blood pressure registry (33% vs. -50%), exercising (87% vs. 18%), increasing vegetable consumption (98% vs. -66%) and reducing the use of preserved food (29% vs. 0). Participants highly recommended the CHWs intervention. Conclusions: Pilot data suggest that culturally tailored intervention based on CHWs could potentially impact self-management behaviors among patients with chronic disease in low-income communities in Puerto Rico. Acknowledgements: This study was supported partially by the Puerto Rico Clinical and Translational Research Consortium, Grant 8U54MD 007587-03 and Endowed Health Services Research Center, Grants 5S21MD000242 and 5S21MD000138, National Center on Minority Health and Health Disparities, National Institutes of Health. IRB approval date: Sept. 6, 2012, Protocol #: A3490113.

#### A-094 La Toma de Decisiones con Personas que Padecen la Enfermedad de Alzheimer y otros Desórdenes Relacionados: Perspectiva Clínica, Legal y del Cuidador

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Trasfondo y Objetivo: El Alzheimer es una enfermedad degenerativa que se caracteriza por la incapacidad para tomar decisiones sobre las actividades diarias, el autocuidado de la salud y la administración de sus bienes, entre otros. El propósito de esta investigación fue explorar el proceso de toma de decisiones con las personas que sufren la enfermedad de Alzheimer y otros desórdenes relacionados desde la perspectiva del médico, del abogado y del cuidador. Metodología: Se entrevistaron médicos generalistas, neurólogos, geriatras, psiquiatras, médicos de familia del área metropolitana, proveedores de Triple S para el año 2009-10. Los abogados adscritos a los Centros Regionales de Servicios Legales de PR, Inc. fueron seleccionados al azar. Los cuidadores participantes de grupos de apoyo de la Asociación de Alzheimer de PR se seleccionaron por disponibilidad. Para recopilar la información, las investigadoras diseñaron un cuestionario para cada muestra. Los instrumentos para médicos y abogados eran autoadministrables y fueron enviados por correo. Los cuidadores fueron entrevistados por las investigadoras. Resultados: Los médicos ofrecían información sobre las di-

rectrices anticipadas a los pacientes y familiares periódicamente. Según los abogados, la incapacidad del cliente para entender las consecuencias de sus actos y la conducta desafortunada para dilapidar los bienes justificaban las Peticiones de Incapacidad/Tutela. El cuidador no acostumbraba a buscar el apoyo de la familia en el proceso de toma de decisiones. Conclusión: El proceso de toma de decisiones con pacientes de Alzheimer y otros desórdenes relacionados es complejo y requiere la consideración e integración de los aspectos médicos, legales y familiares. Reconocimientos: Dr. Juan A. Rosado Matos por el asesoramiento en el diseño de los instrumentos y en aspectos metodológicos a la Dra. Irma Rivera.

#### **A-095 Synthesis of Carbazole Derivatives and their Use as Antiproliferative Compounds**

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**Background & Objectives:** Many carbazole derivatives are well known for their various pharmacological activities, including antibacterial, antifungal, anti-HIV and anticancer. The cytotoxic activity of carbazole alkaloids has been related to their polycyclic, planar and aromatic structure. We recently developed EHop-016 a carbazole derivative, which has been demonstrated to reduce metastatic cancer cell viability at concentrations  $>5 \mu\text{M}$ . We hypothesized that the cytotoxic effect of EHop-016 derivatives can be related to structural modifications at the 3-position of the carbazole moiety. Our objective was to design and synthesize new 3-substituted carbazole derivatives and study their antiproliferative activity. **Methods:** A first series of compounds were synthesized by coupling primary amines with 9-ethyl-9H-carbazole-3-carboxylic acid to produce carbazole-3-carboxamide derivatives, and a second series of compounds were synthesized in two steps by reacting 3-amino-9-ethylcarbazole with 2-chloronicotinic acid followed by nucleophilic aromatic substitution with several amines. All compounds were tested for their growth inhibitory activity against SH-SY5Y and MCF-7 cancer cells using a Sulphorhodamine B assay. **Results:** Among the series of compounds synthesized, various compounds showed moderate GI50 in the range of 16.8-44.1  $\mu\text{M}$  on the MCF-7 breast cancer cells. As for SH-SY5Y cells, one compound showed GI50 of 32.4  $\mu\text{M}$ . **Conclusions:** We have demonstrated that small structural modifications of EHop-016 can affect the cytotoxic activity of these carbazole derivatives. The results showed that these derivatives could be potentially developed as anti-cancer drugs. **Acknowledgements:** Supported by RCMC Grant 8G12MD007600/G12 RR 03051 and American Association of Colleges of Pharmacy New Investigator Award.

#### **A-096 Association of Adverse Pregnancy Outcomes on Teen Patients Affected by Sexually Transmitted Infections**

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**Introduction:** Based in our population data, the teen pregnancy rate is worrisome as well as the prevalence of sexually transmitted infections (STIs) diagnosed during pregnancy. STIs appear to pose a threat to pregnancy outcomes including preterm birth, low birth weight (LBW) and preterm premature rupture of membranes (PPROM). The objective of this study is to determine the prevalence of STIs in teens and the association of this variable to adverse pregnancy outcomes, compared as well with the adult population. **Methods:** We performed a cross sectional study to assess the prevalence of STIs among pregnant patients during a 4 year period at our institution, focusing on teen population, then birth outcomes such as gestational age at delivery and birth weight were analyzed. **Results:** Teen pregnancy rate fluctuated between 16.8% and 21.7%. The rate of STIs for both adult and teen pregnancies was similar (23%). Chlamydia was the most common STI (50%) on both groups. LBW was slightly more prevalent among teens with STIs compared to adults (20% vs 17%). As well, PPRM complicated 19% of teen pregnancies with STIs, compared to 13% in adults. **Conclusion:** There is no significant correlation between the STIs and the adverse pregnancy outcomes on teen pregnancies for our population. However, this age group is associated with a high-risk sexual behavior and poor adherence to treatment. They would benefit from efforts to prevent unintended pregnancies and infectious diseases.

#### **A-097 Clinical Effectiveness of Polyphenols Present in Natural Substances in Caries Prevention**

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Polyphenols are substances with significant antioxidant activity, commonly found in plants. There has been significant interest in these substances in dentistry as potential anticaries agents. **Objective:** The aim of this study was to evaluate the scientific literature regarding the effectiveness of polyphenols present in natural substances in caries prevention. **Methods:** A systematic review was done using one electronic database (PubMed). **Keywords used included:** "humandental, prevention, and polyphenols". Additional searches were performed using the keywords "human dental" and a natural substance known to contain polyphenols, such as "cocoa bean", "tea", "hop", "cranberry", "grape seed extract", and "raisins". **Inclusion criteria were:** papers published within 10 years, whole paper in Spanish or English, clinical study using a natural substance containing polyphenols. **Results:** Database search revealed 83 eligible papers. 10 of those met the inclusion criteria; these abstracts were pre-screened and 8 papers were selected for the final review. These included 3 on cocoa bean extract, 2 on Hop extract, and 3 on tea leaf extract. **Conclusion:** There is significant clinical evidence demonstrating that polyphenols can reduce the numbers of cariogenic bacteria

in the saliva, and reduce dental plaque formation. Chewing gum containing tea extract significantly reduced caries increment in children over a two-year period compared to plain gum and no gum. Polyphenols show potential as a new caries preventive therapy. However, more research is needed in order to develop effective clinical protocols for long-term caries prevention using natural, polyphenol-containing substances.

#### **A-098 Pediatric Resident's Comfort on Medical Error Disclosure**

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**Background & Objectives:** More people die annually from medical errors while hospitalized than from motor vehicle accidents, breast cancer and AIDS. Some errors are unavoidable and doctors are faced with deciding which errors to disclose and how. There are no effective systems to guide physicians through this process and help them deal with the consequences. It is becoming important for residency programs to guide physicians-in-training in developing the communication skills needed. **Methods:** Pediatric residents answered a survey after completion of a station of the yearly Objective Standardized Clinical Exam (OSCE) dedicated to a medical error disclosure situation. The survey addressed the level of difficulty, comfort in the situation provided and if current training has been sufficient to confront the situation. **Results:** Of the 30 residents, 100% completely agreed/agreed that the medical error disclosure station difficulty level was adequate. Most residents (83%) completely agreed/agreed that their rotations had prepared them to deal with this type of situation, whereas 17% were either indecisive or in disagreement. Regarding comfort, 97% completely agreed/agreed that they felt comfortable in this type of situation. **Conclusions:** Most Pediatric residents feel comfortable when encountering a medical error disclosure situation, which is surprisingly different from previous reports. They feel that the current 'Breaking Bad News' curriculum is sufficient. Still, some residents don't feel prepared for adequately disclosing medical errors. We will develop a formal Medical Error Disclosure Curriculum for pediatric residents to evaluate comfort and performance in the disclosure of medical errors before and after its implementation.

#### **A-099 Er: YAG Laser Therapy in Patients with Peri-implantitis: A Systematic Review**

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**Background and Objectives:** Peri-implantitis is associated with implant failure due to the loss of supporting bone in the tissues adjoining an implant. Currently, no gold standard approach has

been set for the treatment of peri-implantitis. The aim of this study is to evaluate the clinical outcome of peri-implantitis using Er: YAG laser therapy. **Materials and Methods:** A systematic review was conducted using electronic databases (Pubmed and Clinical Key) with the terms "peri-implantitis treatment, laser and Er: YAG". **Inclusion criteria:** use of Er: YAG laser for peri-implantitis, clinical trials, published within 10 years. Three review authors evaluated the prospective studies. **Results:** A total of 78 articles were identified, 25 articles were pre-screened (abstract evaluation) and 7 articles were included. Six articles compare Er: YAG laser therapy with non-laser therapy (air-abrasive or CPS). The non-laser therapy revealed higher reductions in clinical parameters (PI, PD, BOP, GR and CAL). However, the Er: YAG laser therapy was most significant in reduction of BOP. **Conclusions:** Clinical outcome of implants may be improved with laser treatment as an adjunctive therapy to mechanical debridement; however, it was observed that non-laser therapy could be more effective than Er: YAG laser therapy in the treatment of peri-implantitis. Further studies evaluating clinical outcomes of peri-implantitis using Er: YAG laser therapy are recommended.

#### **A-100 Association of Chlamydia Trachomatis Serostatus with HPV Infection in Women Aged 16-64 Years Old Living in Metropolitan Area of San Juan, Puerto Rico**

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**Background and Objectives:** Human papillomavirus (HPV) and Chlamydia trachomatis (CT) are among the most common sexually transmitted infections world-wide. Recent studies suggest CT as a cofactor of persistence of HPV infection, however, these results remain inconclusive. The aim of this study is to examine the association of HPV antibodies in serum (any, high risk, low risk, and multiple) with CT antibodies among women aged 16-64 years living in the San Juan Metropolitan area of Puerto Rico. **Methods:** This is a secondary data analysis from a population based study of HPV infection in Puerto Rico. A total of 530 (93.6%) women were eligible for analysis. Enzyme linked immunosorbent assays were used to detect serum antibodies to CT and HPV (6, 11, 16 and 18). Logistic regression was used to estimate the magnitude of the association between HPV and CT. **Results:** Overall, 97 (18.30%) of women were CT seropositive and 251 (47.4%) were HPV seropositive. After adjustment for age, education, lifetime number of sexual partners and for age of sexual debut, HPV in serum was associated with CT antibodies among participants aged 35-49 years (PORadj: 3.12, 95%CI=1.28-7.64) and among participant with ≥4 sexual partners (PORadj: 1.87, 95%CI=0.91-3.82). **Conclusions:** This study suggests an association between CT and HPV seroprevalence in women aged 35-49 years and among those with ≥4 sexual part-

ners. Future studies should further evaluate these associations and investigate whether CT infection influences HPV acquisition and persistence in this population. Acknowledgements: Study was approved by the UPRMSC IRB (#A1810414).

#### **A-101 Impacto del Cambio Climático y Aumento en Temperaturas en la Calidad del Aire y el Consumo Energético en Puerto Rico**

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**Trasfondo y Objetivos:** La quema de combustibles fósiles (QBF) emitidas por plantas de energía eléctrica, es una fuente antropogénica asociada al empeoramiento del cambio climático y la calidad del aire (CA). La QBF contribuye a la producción de O<sub>3</sub>, PM<sub>10</sub> y SO<sub>2</sub>, contaminantes nocivos para la salud humana, específicamente al sistema respiratorio y cardiovascular. Puerto Rico al tener un clima sub-tropical y tropical, la demanda de consumo energético aumenta durante temporadas cálidas por la accesibilidad que tiene la población a sistemas de climatización de interiores. **Objetivos:** Demostrar cómo la CA es afectada por el aumento de consumo energético poblacional, en la zona metropolitana aledaña a la central eléctrica Palo Seco en Cataño, Puerto Rico. **Métodos:** Se realizó un análisis estacional durante el 2000-2012. Se analizó la ocurrencia y frecuencia de valores extremos para las variables de: consumo/producción de energía eléctrica mensual, temperatura diaria (TMAX-TMIN), "Air Quality Index" (AQI) y valores diarios de O<sub>3</sub>, SO<sub>2</sub>, PM<sub>10</sub>, en Cataño, P.R. **Resultados:** Se encontró que la demanda energética aumentó en temperaturas cálidas, donde el 2005 y 2010 fueron los años de mayor significancia. El AQI para PM<sub>10</sub> era moderado, mientras que SO<sub>2</sub> y O<sub>3</sub> era bueno. La mayor emisión de PM<sub>10</sub> y SO<sub>2</sub> fue en verano y primavera, mientras que O<sub>3</sub> fue en primavera e invierno. **Conclusión:** En comparación con zonas no metropolitanas, la central eléctrica contribuye al empeoramiento de la CA y pone en riesgo poblaciones vulnerables aledañas a sufrir daños a la salud.

#### **A-102 Impacto del Cambio Climático en la Incidencia de Casos de Dengue en Tasas Específicas por Edad en Salinas, Lajas y Mayagüez, Puerto Rico**

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**Introducción y Objetivos:** El dengue es una infección endémica en países tropicales, representando una amenaza para la salud pública en Puerto Rico. Estudios previos han evidenciado que las condiciones climáticas entre otras cosas, pueden perjudicar o favorecer el hábitat del vector y la transmisión del virus. Los objetivos del estudio son analizar las variables climáticas y su impacto en los casos de dengue en Salinas, Lajas y Mayagüez desde

1992 al 2012. **Métodos:** Se analizaron variables de temperatura atmosférica, precipitación, nivel medio del mar, datos censales y los casos confirmados de dengue. Se calcularon las tasas específicas por edad. Se construyeron índices de eventos climáticos extremos y se correlacionaron los eventos climáticos con la incidencia en casos de dengue. Se analizaron la ocurrencia, las tendencias y frecuencia de estos eventos. **Resultados:** Otoño es la temporada con mayores casos de dengue. Esto coincide con la segunda temporada de lluvia y cuando la temperatura atmosférica es elevada. Los jóvenes (5-19 años) son los más vulnerables. Las tasas de incidencias en Salinas y Mayagüez fueron mayor para el año epidémico 2010, mientras que para Lajas fue en el 1998. En Mayagüez los días secos aumentaron, mientras que en Lajas, los días secos disminuyeron. La precipitación, el nivel medio del mar y los valores de temperatura máxima han aumentado en las últimas décadas. **Conclusión:** Este estudio ayuda a entender los posibles impactos del clima en la transmisión del dengue para mejorar la planificación, intervenciones de políticas públicas y sistemas de vigilancia.

#### **A-103 Epidemiologic Study about Leptospirosis at Manatí Medical Center**

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**Background & Objectives:** Leptospirosis is a zoonotic disease with epidemic potential. According to the Department of Health of Puerto Rico Leptospirosis constitutes a health problem poorly documented in the island. The present work aims to study the distribution profile of Leptospirosis and to identify risk factors for infection in the population served at the Manatí Medical Center (MMC) during the period 2004-2014. **Methods:** A retrospective descriptive study was conducted from secondary information of patients evaluated in the emergency department and admitted in the study period with diagnostic codes: 100, 100.8, 100.81, 100.89 and 100.9 according to ICD9. The following data was collected: laboratory results, treatment, patient outcome, age, gender, socioeconomic and environmental factors. **Results:** Were reported 74 cases of Leptospirosis, 67% were confirmed and 15% died. The mean age was 45(±19.6) years and 91.6% were male who presented with fever, headache and myalgias. Clinical manifestations included thrombocytopenia (70.9%), gastrointestinal involvement (69.0%), acute renal insufficiency (34.5%) and jaundice (31%). The largest number of cases occurred in October (20.3%), December (16.2%) and June (14.8%). The towns with the largest number of cases were Morovis (19.4%), Arecibo (11.1%) and Barceloneta, Manatí and Vega Baja (9.7%). The majority of the exposures were work rela-

ted. Conclusions: Our study, although several limitations due to its retrospective nature, will allow us to establish effective intervention methods and understanding of community risk factors in our area of care. This study was approved by the PSMHS IRB (Protocol number 141013-LM on 10/15/2014).

#### A-104 Validation of Cancer-related Proteins in the Hypothalamic GT1-7 Cell Line after Exposure to Anabolic Steroids

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**Background & Objectives:** The abuse of anabolic-androgen steroids (AAS) is considered a worldwide health problem. Supraphysiological doses of AAS lead to a variety of neurophysiological problems, including endocrine disorders and cancer-related disease. To determine the biological substrates underlying AAS effects in the neuroendocrine system, we performed proteomic analysis of the hypothalamic GT1-7 cell line after exposure to the AAS, 17 $\alpha$ -methyltestosterone. **Methods:** 2D-DIGE and mass spectrometry followed by western blots analyses were used to identify changes in protein expression. **Results:** We found twelve proteins significantly modulated by AAS. Ontological analysis showed that these proteins were associated with cell cycle/growth, drug detoxification and metabolic processes. Among the up-regulated proteins we found glutathione S-transferase Mu-1 (GSTM1) and glyceraldehyde 3-phosphate dehydrogenase (GAPDH). On the other hand, enhancer of rudimentary homolog (ERH) and phosphatidylethanolamine binding protein-1 (PEBP1) were down-regulated. **Conclusions:** Our results highlight the adverse effects of AAS in the neuroendocrine system, specifically in cancer-related processes. **Acknowledgements:** This project was supported in part by grants from NIH: NCCR GI203051 (RCMI-UPR, MSC), NCCR (2P20RR016470), NIMHD (8G12-MD007600), NIGMS (8P20 GM103475) to JLBE and MBRS-RISE-MSF Fellowship (R25-GM061838) to FJMR.

#### A-105 Aspectos Legales de una Emergencia de Salud Pública y la Responsabilidad Médica en Puerto Rico

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**Política Pública en análisis** Se analiza el manejo de emergencias de salud pública y la responsabilidad médica del sector de la salud en el Estado Libre Asociado de Puerto Rico. **Disciplina Académica** Ámbito Legal. **Fuentes de Información.** Bases de datos legales, leyes, reglamentos, órdenes ejecutivas y administrativas, federales y locales, proyectos extranjeros y revistas jurídicas. **Métodos de Investigación.** Se analizan las fuentes de información para delinear la respuesta del Estado Libre Asociado de Puerto Rico ante una situación de emergencia de salud pública, dando énfasis a lo que se refiere a la responsabilidad médica desde el marco legal. **Hallazgos:** Como resultados preliminares se presenta en el ámbito local, la situación para el Manejo de Emergencias se ha modificado en los últimos meses. El 11 de septiembre de 2014, la OE-2014-044, derogó la OE-2009-43 y el OE-2010-20, las cuales, a su vez, derogaron a la Orden Ejecutiva 2001-26 que estableció el Plan Estatal Para el Manejo de Emergencias, (concretamente, dispuso un extenso plan de coordinación de funciones de las agencias ante el manejo de una emergencia estatal), y a la Orden Ejecutiva 2005-36 que dispuso lo relativo al Sistema Nacional de Emergencias. La OE-2014-043, del 11 de septiembre de 2014 establece la política pública de Puerto Rico en el Manejo de Emergencias y Administración de Desastres de Puerto Rico, los municipios y las entidades privadas. **Implicaciones para la Política Pública** Puerto Rico tiene un nuevo sistema de manejo de emergencias el cual hace imperativo el análisis del mismo desde la perspectiva de una emergencia de salud pública y la responsabilidad del sector médico durante la misma. **Reconocimientos:** Subvención: Este proyecto fue subvencionado en su totalidad por fondos federales del Center for Disease Control and Prevention (CDC) y Office of the Assistant Secretary for Preparedness and Response (ASPR) del U.S. Department of Health and Human Services (USDHHS), administrados por la Oficina de Preparación y Coordinación de Respuesta en Salud Pública (OPCRSP) del Departamento de Salud de Puerto Rico bajo contrato #2014-DS0583.

#### A-106 Community-associated - methicillin-resistant *Staphylococcus Aureus* from Public Beaches in Puerto Rico

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**Background and Objectives:** Community-associated-methicillin-resistant *Staphylococcus aureus* (CA-MRSA) has become a global pathogen responsible for a broad range of clinical presentations in both community and hospital settings. Transmission of MRSA can occur either from people or fomites. Previous studies in the USA have demonstrated the presence of this organism in coastal environments. We hypothesized that in the marine tropical environment of Puerto Rico (PR), the proportion of MRSA will be greater in seawater and beach sand than the percent reported in USA of 1% and 8.1% respectively. The aim of this study was to detect, characterize and determine the concentrations of CA-MRSA in recreational marine environments. **Methods:** Five pu-

blic beaches of Puerto Rico were selected and marine water and intertidal sand samples collected between November, 2012 and March, 2013. The CA-MRSA was identified and characterized by culture media, PCR, and PFGE. Descriptive and inferential statistics were used to summarize the data. Results: Of 120 samples collected from marine water and intertidal sand, the average percent detection frequency for MRSA was 3% (2/60) at a median concentration (25th and 75th percentiles) of 29 CFU/100 ml (15, 435) and 12% (7/60) at a median concentration of 115 CFU/100g dw (8, 225), respectively. Conclusions: This is first report of the presence of CA-MRSA in public beaches in Puerto Rico. Our data suggest that the concentration of CA-MRSA is higher in PR than in the USA. Public health authorities should discuss the possibility of establishing policies to decrease the potential environmental transmission of CA-MRSA. Acknowledgements: This research was supported by the Environmental Health Department, MSC, UPR; Dean of the School of Medicine, MSC, UPR and RCMI/NIH (G12-MD 007600).

#### **A-107 Assessment and Management Practices of Pain, Agitation/Sedation, and Delirium in Adult Intensive Care Patients in San Juan, Puerto Rico**

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**Background & Objectives:** Pain, agitation/sedation, and delirium (PAD) are common phenomena in ICU patients. Little is known about the assessment and management practices of PAD in Puerto Rico ICUs, which are explored in this study and described with recommendations from current PAD guidelines. **Methods:** A prospective descriptive study was used. Clinical records from 80 patients were reviewed at four ICU's at the Medical Center of PR to identify the methods for assessment and management of pain, agitation/sedation, and delirium used by nurses and doctors for each patient. **Results:** Pain, agitation, and levels of sedation are assessed predominantly by nurses. The most common tool used to measure pain is the verbal 0-10 Numeric Rating Scale (NRS). For those patients who are not able to self-report their pain, two ICU's used observation of pain behaviors and the assumption that pain is present according to pain risk factors, respectively. For agitation and sedation levels, the Richmond Agitation Sedation Scale (RASS) is used in three of the ICU's, but not in a consistent manner. Delirium is not assessed in any of the ICU's. As for the management of these phenomena, it was found that inconsistent practices were used among the hospitals. **Conclusion:** The assessment and management practices of these four ICU's are not at all consistent with the current PAD guidelines. A future study to know the barriers and facilitators for the use of the current PAD guidelines is needed. **Acknowledgement:** Funded by Capacity Advancement in Research Infrastructure UPR MFP-6251123.

#### **A-108 University of Puerto Rico Comprehensive Cancer Center Biobank: Quality Assessment of Biospecimens**

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**Background & Objectives:** Biobank is a new science that focuses on the collection, storage and distribution of high-quality biospecimens for research and clinical purposes. Our Biobank collects and store samples from patients with breast, melanoma, prostate, urinary bladder, ovarian, endometrial, and colon cancer. This study was designed to evaluate quality measurements of the collected samples. **Methods:** After IRB approval and informed consent, 216 random samples were assessed. Quality measures evaluated include: 1) presence of identification label in the sample, 2) label legibility, 3) label placement, 4) correlation of specimen location with clinical database, 5) type of sample, 6) availability of consent, and 7) if consents were signed. Data was analyzed using descriptive statistics. **Results:** A total of 7.4 % (216/2,935) samples from 2012-2013 were evaluated. All samples had their identification label in place and the information was legible. However, 1/216 samples showed the label detached from the sample. The location of all samples was correct in the clinical database. The samples include: 33 plasma, 35 snap frozen, 41 serum, 77 urine, 23 paraffin-embedded tissue, 5 blood, and 18 frozen tissue. All samples had their corresponding consents available. However, 4.5% were not signed by biobank staff. **Conclusions:** Our biobank showed high-quality information regarding samples location and identification. In addition, all samples were obtained after informed consent from the patient. Future areas of improvement include: identification of duplication of samples id and signing of informed consent by biobank staff. **Acknowledgements:** No conflict of interest was identified by any author.

#### **A-109 Effects of Hydrogen Peroxide on the B<sub>2</sub> Adrenergic Agonist Response of the Isolated Pre-contracted Rat Trachea in Low Temperature Conditions**

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**Background and objectives:** Reactive Oxygen Species (ROS) from endogenous peroxides are a well known component of inflammatory reactions such as obstructive airway disease like asthma. Exacerbation of symptoms is observed in asthmatics exposed to low ambient temperature in resting and/or exercise conditions. B<sub>2</sub> adrenergic agonists have been shown to prevent bronchoconstriction in asthmatics before cold exposure but no studies exist on the effects of B<sub>2</sub> agonists under low temperature conditions and/or high levels of ROS. Thus, we investigated how exposure to peroxide (H<sub>2</sub>O<sub>2</sub>) generated ROS induces changes in the acetylcholine (Ach) contracted rat trachea (RT) at 37°C and 18°C in the presence and absence of the well known B<sub>2</sub> agonist salbutamol (SA). **Methods:** RTs from male



Sprague Dawley rats were mounted in an isolated organ bath preparation and stimulated with Ach ( $10^{-3}$ M) at 37°C and 18°C respectively in the presence and absence of H<sub>2</sub>O<sub>2</sub> (10-3M). This procedure was repeated after a 30 min. incubation of the RT with SA (10uM). Results: The presence of H<sub>2</sub>O<sub>2</sub> reduced the Ach induced RT contraction at 37°C but not at 18°C. SA has no effect on RT contraction at 37°C in the presence of H<sub>2</sub>O<sub>2</sub>. At 18 C H<sub>2</sub>O<sub>2</sub> in the presence of SA the Ach induced contraction was significantly enhanced. Conclusion: These results indicate that low temperature causes a significant reduction in B<sub>2</sub> agonist induced airway relaxation in the presence H<sub>2</sub>O<sub>2</sub> derived ROs. Thus, there is a dampening of the effect of B<sub>2</sub> agonist in low temperature conditions and high levels of ROS. This has implications for asthmatic patients using B<sub>2</sub> agonists in cold environments or after exercise. Both conditions are known to cause bronchoconstriction in asthmatics. Acknowledgements: This research has been supported by funds provided by the Deanship of Biomedical Sciences and the Department of Physiology and Biophysics of the UPR School of Medicine.

#### A-110 Epidemiology and Outcomes of Congenital Diaphragmatic Hernia in Puerto Rico

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Background and Objectives: Congenital Diaphragmatic Hernia (CDH) is associated with a significant morbimortality and has a highly variable clinical presentation. The study's objective is to describe the demographics, clinical characteristics, and factors associated to mortality in newborns with CDH admitted to the University Pediatric Hospital (UPH) Neonatal Intensive Care Unit (NICU) over a 12-year period. Methods: Medical records of newborns with CDH admitted to the UPH-NICU from 2002 to 2013 were reviewed. Data was analyzed using Statistix 8.0. Differences among groups were analyzed using t-test and chi-square as appropriate. Results: Seventy-two neonates with CDH were admitted during the research period. The mean gestational age at birth was 37 weeks (range 29-41) with a mean birth weight of 2761 grams (range 1200-3900). Most infants were male (62%) with a male: female ratio of 1.6:1. Isolated CDH was diagnosed in 96%. Although 65% of neonates required endotracheal intubation in the delivery room, all of them required mechanical ventilation during hospitalization. High frequency ventilation was used in 29% of neonates and inhaled nitric oxide (iNO) in 17%. Pneumothorax was observed in 24%. Mortality within 12 hours of admission was 17% and overall survival was 38%. Factors associated to mortality included lower gestational age, lower birth weight, lower 1 and 5 minutes APGAR scores, delivery room intubation, longer duration of ventilation, pneumothorax, and requirement of iNO ( $p < 0.05$ ). Conclusion: CDH is rarely associated with other genetic syndrome or chromosomal abnormality but has a high mortality risk despite of advancements in the neonatal care and technologies.

#### A-111 Impact of Gender in Very Low Birth Weight Infants' Survival

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Background and Objectives: An advantage in survival for female infants has been reported suggested to be related to a more favorable hormonal milieu in female fetuses causing accelerated maturation. The purpose of this study is to determine associations between gender and survival in very low birth weight (VLBW) infants. Methods: Study subjects included VLBW infants admitted to the University Pediatric Hospital Neonatal Intensive Care Unit from 2002-2013. Data was obtained from the Vermont-Oxford Network database. Analysis was performed using Statistix 8.0. Chi-square was used to analyze differences among groups. Results: During the study period 2,087 VLBW infants were admitted. Gender distribution was females 47% and males 53%. Mean birth weight was similar. The overall survival rate was 67%. Females had a higher survival rate (69% vs 64% ( $p < 0.05$ ; OR 1.284 [1.0698-1.5425])). When analyzed by birth weight groups, females had a higher survival rate in the groups of infants 500-750 grams and 751-100 grams ( $p < 0.05$ ). Survival for females was significantly higher at 23-25 weeks and 29-32 weeks gestational age groups. There was no gender difference in the prevalence of respiratory distress syndrome (RDS) but males required surfactant administration more commonly (36% vs 31%,  $p < 0.05$ ; OR 1.2667 [1.0554-1.5203])). Conclusions: The higher survival of females is consistent with previous reports. Although prevalence of RDS was similar, males had higher requirements of surfactant suggesting more immature lungs and sex-biased disease vulnerability following premature delivery. These findings are important when approaching parents with respect to chances of survival when faced with a premature birth.

#### A-112 Health Literacy in a Group of Older Adults Assisting to Seniors' Activity Centers

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Background & Objectives: Functional health literacy is defined as the degree to which individuals have the capacity to obtain, process and understand basic health information and services

needed to make appropriate health decisions using both information and services. Inadequate levels of health literacy affect the health status of individuals and are associated with a range of poor health-related outcomes. The purpose of this study was to determine the levels of functional health literacy in a group of elders who participate in seniors' activity centers. **Methods:** A total of 100 people aged 65 years or older who attended a seniors' activity center were interviewed in person between January and April of 2010. The study used a structured questionnaire which included demographic information, use of health services, the Spanish version of the short functional literacy scale (S-TOFHLA) and the generic health scale version (SF-36 v2). **Results:** More than half (54%) presented inadequate levels of health literacy, 15% reported marginal health literacy, while 31% had adequate levels of health literacy. More than one-fifth (22%) reported that they did not understand the instructions that the provider offered at the moment of the treatment and more than one-third (34%) reported difficulty completing the medical forms. **Conclusion:** Health literacy presents adult educators with an opportunity to motivate adult learning while providing adults with knowledge and skills that will enhance their lives and the well-being of their families. **Acknowledgements:** This study was part of a doctoral dissertation. We would like to thank the seniors' activities centers for their willingness to collaborate with the information needed for this project. **IRB:** This project was approved by Interamerican University of Puerto Rico, Institutional Review Board, protocol number 09-010-032-2010 on February 5, 2010.

**A-113 Twin Reversed Arterial Perfusion Sequence: Unique Complication of Monochorionic Twin Pregnancy**

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**Purpose:** Twin Reversed Arterial Perfusion Sequence (TRAP) sequence is a complication of monochorionic twin pregnancies in which a twin with absent or nonfunctioning heart is perfused by its co-twin (pump) via placental arterial anastomosis. Occurs in 1% of monochorionic twin pregnancies. A portion of pump twin cardiac output travels through placental arterial-arterial anastomosis to the umbilical artery and then to the circulation of recipient co-twin, creating a reversed circulation. The pump twin may have signs of high output cardiac failure. Perinatal mortality for the pump twin is related to congestive heart failure and preterm birth. We present this rare complication of monochorionic twins and the importance of prenatal counseling. **Case Description:** A 29 weeks male preterm adequate for gestational age born to a 28y/o female with prenatal diagnosis of TRAP sequence. Examination showed an 855 grams critically ill patient on mechanical ventilation, with dysmorphic features and a systolic murmur 3/6. **Clinical Approach:** The patient received parenteral nutrition and broad spectrum antibiotics. Evaluation by cardiologist revealed atrial septal defect, tricuspid regurgitation, multiple echogenic foci on left ventricle papillary muscle, echogenic right ventricular muscle and pulmonary

valve, with an ejection fraction of 74%. **Clinical findings:** The patient deteriorates developing signs of high output cardiac failure that included tachycardia, narrow pulse pressure. Inotropic support required. Patient further deteriorates, advanced cardiorespiratory support as per Neonatal Resuscitation Program provided, but despite efforts patient was declared death on day #2 of life. **Hypothesis:** In twins with this rare complication, intrauterine surgery may improve prognosis.

**A-114 Dysembryoplastic Neuroepithelial Tumor in the Puerto Rico Medical Center: A Five Year Review**

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Glial tumors arise in the Central Nervous System (CNS). Dysembryoplastic neuroepithelial tumor (DNET) is a low grade glial tumor, WHO Grade I. This tumor commonly affects children and young adults. DNET is typically located in the supratentorial cortex with a predilection for the temporal lobe. In 1988, Dumas-Duport, et al described this tumor in a series of patients with intractable partial complex seizures presenting complete remission after surgical removal. Its histologic hallmark consists of dysplastic neuronal tissue embedded in a mucinous background known as a "floating neurons." This study aims to show the prevalence of DNET in the Puerto Rican Medical Center (PRMC) and educate in order to enhance diagnostic awareness. We performed a search in the PRMC database of cases diagnosed from August 2009 to August 2014. All cases with a final pathologic diagnosis of DNET were included. We identified and revised a total of eight cases with diagnoses supported by immunohistochemistry studies and a neuropathologist consult. The mean age of diagnosis was 26.5 years, affecting primarily males (62.5%). The majority of cases (87.5%) were located in the temporal lobe. The incidence was 1.3% among all primary CNS tumors diagnosed in that period (n=634). Three cases were diagnosed at unusual ages; the oldest at 65 years of age. DNET is a particular entity that requires a high level of clinical suspicion to achieve diagnosis. The absolute possibility of cure granted, even by partial surgical removal, highlights the pertinence of recognizing this entity to ensure proper patient management.

**A-115 Pregnancy with Prior Knowledge of HIV: Opportunities for Improved Outcomes**

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**Background:** Pregnancy, childbearing, and other aspects of reproductive health are issues that need to be addressed for women living with HIV. Pregnancy presents both a challenge and an opportunity to engage more fully into care and to improve adherence to HAART and care. **Methods:** We analyzed data from 47 pregnant women living with HIV newly enrolled in

care. Demographic characteristics, social needs, HAART use, HIV RNA viral load, CD4 counts and other data were obtained from the clinical charts of patients. Descriptive analyses were performed in order to portray a general profile of pregnant women living with HIV. Results: The mean age was 28.05 (SD=6.30) and the timing at first visit was 13.66 weeks. The majority (72.3%) were diagnosed with HIV previous to pregnancy. The following needs were reported: transportation, housing, medications, legal advice, health insurance, and adherence counseling. An improvement in viral suppression was noted between the initial and the last visit: from 34% to 71.1% and improvement in CD4 was also noted: from 31.9% to 45.5% with CD4 counts. Conclusions: More women are presenting for prenatal care with prior knowledge of their HIV infection which could be related to perceived improvements in care and outcomes. Nevertheless, there are multiple other needs expressed by the patients. Integration of services may alleviate some of the challenges to women's living with HIV ability to exercise their sexual and reproductive health and rights. Addressing needs and providing adherence counseling to pregnant women living with HIV seems to facilitate virologic and immunologic control.

#### **A-116 Andrographolide Modulates Cell Cycle, Cell Migration and Tumor Growth in prostate Cancer**

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**Background & Objectives:** Prostate cancer is the most frequently diagnosed non-cutaneous cancer and the second leading cause of cancer death in American men. Andrographolide, a labdane diterpenoid that is a component of the medicinal plant *Andrographis paniculata*, has been reported to have a wide range of biological activities including anticarcinogenic properties. In this study we aim to determine the role of Andrographolide in prostate cancer using in vitro and in vivo models. **Methods:** Invasion and migration process were measure by wound healing assays and boyden chamber experiments. Tumor tissue was collected for gross examination, immunohistochemical analysis and gene expression analysis. **Results:** Andrographolide significantly inhibited PC3 cell growth at a concentration of 10 $\mu$ M after 24h of treatment ( $P<0.001$ ), and inhibited LNCaP cell growth at a concentration of 15  $\mu$ M after 24h of treatment ( $P<0.001$ ). PC3 prostate cancer cells treated with Andrographolide (25 $\mu$ M) significantly reduced ( $P<0.001$ ) their migration and invasion. Andrographolide (25 $\mu$ M) significantly increased apoptosis, decreased cell population in G1 phase, and reduced count and viability of PC3 cells treated for 48h ( $P<0.001$ ). Immunofluorescence analysis showed that MMP-11 expression levels were

significantly decreased and ZO-1 expression was significantly increased in PC3 cells treated with Andrographolide (25 $\mu$ M). Tumor development was evaluated using a xenograft model in which the prostates of SCID mice were injected with 22RV1 or PC3 cells, and mice were treated bi-weekly with andrographolide (10 $\mu$ M and 25 $\mu$ M). Andrographolide significantly decreased tumor volume when compared to control. **Conclusions:** Our results suggest that the anti-migration and anti-invasion effects of andrographolide may be associated with alterations in the expression of ZO-1 and MMP-11. **Acknowledgements:** This work is funded by start-up funds from the UPR Comprehensive Cancer and funds from the graduate program of the School of Pharmacy. Approved by IACUC.

#### **A-117 Chronic Diarrhea in Captive Rhesus Macaques at the CPRC and Potential use as Translational Model for Inflammatory Bowel Disease**

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**Background & Objectives:** Chronic diarrhea in Rhesus macaques is a debilitating disorder that is frequently encountered research facilities resulting in significant morbidity and mortality. Clinical management is often difficult and frequently outcomes are negative. Our main goal is to further characterize the causes of chronic diarrhea of captive Rhesus macaques, discuss the overall effects on colony health and demonstrate that Rhesus macaques are potentially a useful model for Inflammatory Bowel Diseases (IBD). According to the Centers for Disease Control (CDC), the incidence of people with chronic gastrointestinal disorders in the US ranges from 1-1.3 million. Although controversial, the zoonotic nature of some of these debilitating human conditions has been correlated with the presence *Mycobacterium paratuberculosis* in human subjects with Crohn's Disease. **Methods:** Pooled fecal samples from SPF corrals exhibiting chronic diarrhea events, fecal samples of individual rhesus macaques and tissues samples collected at necropsy from animals exhibiting chronic diarrhea were obtained and submitted for liquid cultures for *Mycobacterium paratuberculosis*. Cases were selected based on clinical history of individual animals and/or necropsy findings; primarily focusing on cases of chronic diarrhea that are unresponsive to conventional treatments for *Shigella* spp., metazoan or protozoal parasites. **Results:** All of the 39 fecal and tissues samples obtained from suspect cases were negative for *Mycobacterium paratuberculosis*. **Conclusion:** To our knowledge this would be the first attempt to isolate *M. paratuberculosis* from samples of captive Rhesus and findings suggest this bacterium is not involved in the etiogenesis of chronic diarrhea in Rhesus at the CPRC. **Acknowledgements:** Funding Sources: Funding Sources: National Institute of Health Principal Investigator Dr. Melween Martin Approved by IACUC: October 3, 2014.

#### **A-118 Shear Bond Strength of Three Adhesive Luting Agents to Bovine Dentine**

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**Background and objectives:** There is limited evidence of the shear bond strength of newer self-adhesive resin cements compared to self-adhesive resin-modified glass ionomer cements bonded to dentin. The aim of this study is to compare the shear bond strength (Mpa) of a Resin Modified Glass Ionomer Cement (material A), Self-Adhesive Resin Cement (material B) and Total Etch Adhesive Resin Cement (material C). **Methods:** An in vitro experimental design of 9 (3 per material) bovine teeth were handled as previously described by Ayala Gamalier et al. (2004). Successfully prepared by grinding the buccal surface flat with a carbide disk on a low speed trimmer and a 600 grits carbide paper under continuous water flow. All specimens spent 24 hours in a thermostatically controlled water bath at constant temperature of 37°C. All groups' preparation followed the manufacturers' instructions. All specimens were thermocycled 100 times (5-55°C). Shear bond strength values were determined by a Chantillon Testing Machine. **Results:** Overall mean shear bond strength was 6.07±2.61 Mpa, material A had 3.96±0.88 Mpa, material B 4.91±1.06 Mpa, and material C 9.34±0.76 Mpa. One-way ANOVA showed a statistically significance difference in mean shear bond strength by material (p=0.0008). Bonferroni test was used to assess differences between specific materials, and differences were found comparing material A vs. C (p=0.001) and B vs. C. (p=0.003), but no significant difference was found between material A and B. **Conclusions:** Total Etch system presented more retentive properties. Additional studies are need with larger amount of specimens.

#### **A-119 Transitional Care: Early Post-Discharge Follow-Up and Re-hospitalization Rates in High Risk Population in Western Puerto Rico**

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**Background and Objectives:** Recently, the Centers for Medicare & Medicaid Services (CMS) began using readmission rates as a publicly reported metric with plans to lower reimbursement to hospitals with excessive risk-standardized readmission rates. High readmission rates have surpassed mortality as the standard of measure of healthcare management outcomes. Interest in transitional care interventions have grown out of the thought that they may 1) reduce readmissions among chronically ill adults, 2) provide clinically relevant stratification of readmission risk,

and 3) give information early enough during the hospitalization to trigger a transitional care intervention. The goal of this study is to compare the overall readmission rate in high-risk patients (defined as those with a CIRS score of 9 or greater) against that of the general population and establish a protocol to identify those high-risk hospitalized patients that would benefit from an early post-discharge follow up visit. **Methods:** A prospective cohort study was designed which included all patients admitted to Mayaguez Medical Center (MMC) between Oct 1, 2013 to Feb 1, 2014 under the care of Family Medicine service. Two hundred and forty-three patients identified and categorized as high risk were followed for 30 days after discharge. Rehospitalization was defined as those occurring within 30 days after hospital discharge. **Results:** The most common readmitting diagnoses were CHF and pneumonia. Patients admitted for CHF had a readmission rate of 72% by the same condition. Patients non-compliant with their follow-up visit had 3.5 times the risk of readmission. **Conclusions:** There is a strong relation between early post-discharge follow-up and no readmission.

#### **A-120 Epidemiology of Gun Shot Wounds in the Pediatric Population of Puerto Rico**

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**Background & Objectives:** Puerto Rico figures in the 19th position for homicide incidence in the world with an incidence of 25 homicides per 100,000 inhabitants. In 2005 about 94.8% of violent deaths were caused by firearms. There are no epidemiological studies evaluating the incidence of gun shot wounds in the pediatric population in P.R. There is a need to identify areas of high propensity to violence in order to establish a strategy that would enable early intervention through educational programs in our public schools. The objective of this study is to evaluate the incidence and outcomes of pediatric gun shot wounds in the major trauma center of P.R. **Methods:** This is a retrospective record review study of the pediatric patients treated by the orthopedic service for a penetrating firearm injury at the University Pediatric Hospital from the dates 2000 to 2013. A total of 77 patients were included in the study and analysis of the medical treatment and demographic variables was performed. **Results:** About 99% of our patient sample were male adolescents between ages 13-18. Wound to lower extremities were more common than upper extremity and presented with higher incidence of neuro-vascular complications resulting in permanent functional damage and even loss of the extremity. **Conclusion:** Our study suggest that adolescents have a higher risk of suffering gun shot injury because are more exposed to violent situations. Also the severity and complexity of the injuries seen in our population have a higher impact on the public health costs.

#### **A-121 Tunicamycin Inhibits Angiogenesis and Breast Tumor Progression**

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**Background and Objective:** Breast cancer is a global health problem affected 1.7 million women in 2012 and 522,000 died. The estimate for 2035 is 846,241. The disease is complex but follows the core principles of sustainability to proliferative signaling, ability to evade growth suppressors, ability to resistance cell death, ability to enable replicative immortality, angiogenesis induction, and activating invasion and metastasis. The treatment used anti-angiogenic/anti-cancer therapies. But, due to a poor performance and inefficacy, many have been called into question. Glycosylation plays a critical role in angiogenesis, and we have hypothesized that asparagine-linked protein glycosylation inhibitor would prevent angiogenesis and breast tumor progression. The objective of the study is to develop our US Patented drug tunicamycin as a next generation glycotherapy for breast cancer. **Methods:** We have used MTT assay for cell proliferation, flow cytometry for cell cycle analysis, western blotting, immunofluorescence microscopy and qRT-PCR for protein/gene expression, and nude mice for breast cancer. **Results:** Tunicamycin inhibited capillary endothelial cells and human breast cancer cells proliferation in a dose dependent manner, arresting cells in G1. Expression of Bcl-2, D-type cyclins, CDK4, p21 was upregulated with no change in Bax expression. High GRP-78/Bip expression indicated ER stress and those of ATF-6, PERK as well as caspases-3, 9, 12 supported apoptotic death induced by unfolded protein response (upr) signaling. Breast tumor progression in nude mice was reduced ~ 55% - 65% in three weeks. **Conclusion:** Anti-angiogenic and anti-tumorigenic actions make tunicamycin an excellent glycotherapy. **Acknowledgement:** Supported by grants EPS-1002410 (DKB) and NIH/NIMHD 2G12MD007583 (KB).

#### **A-122 Anion Gap as a Predictive Value of Clinical Outcome in Critically Ill Children**

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High anion gap (AG) has been found to be a predictor of all-cause mortality in adults critically ill. This finding has not been reported in critically ill children. Our aim is to assess whether high AG is associated with morbidity and mortality of critically ill children. A retrospective observational study including patients, 0 to 21 years old, admitted to the University Pediatric Hospital-Pediatric Intensive Care Unit (PICU) from November 2009-2010 (n=201) was performed. Sociodemographic data, AG on PICU admission, mechanical ventilation (MV) days (morbidity) and death (mortality) were obtained. Normal and high AG were defined as <14 and ≥14, respectively. MV days and death rate were compared among children with normal AG and high AG.

Mean (standard deviation), median (interquartile range-IQR), frequencies (percentages) were used to describe the sample. Mann-Whitney and Fisher exact tests were used for comparisons. Of the 201 patients, 58% were male, mean age was 7.5 yrs (+/- 6.1 yrs), MV days were 5 days (2-12) and the overall mortality was 9% (n=18). Patients with high AG (n= 136) were on MV for a longer period of time than those with normal AG (n=65) (7 days, IQR: 4-18 days vs. 5 days, IQR: 2-11 days; p=0.04). Patients with high AG had greater mortality than those with normal AG (15% vs. 6%; p=0.03). This study suggests that high AG may be associated with increased morbidity and mortality in critically ill children, which may become a useful predictive tool in this population. Our next step is to compare AG to validated ICU severity scores, including PRISM III.

#### **A-123 Spontaneous Intracranial Epidural Hematoma in a Patient with Juvenile Idiopathic Arthritis**

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**Purpose:** Spontaneous intracranial epidural hematomas (EDH) are a rare occurrence. The reported cases have been associated to coagulation disorders, tumors, vascular lesions, and meningeal, sinus or otic infections. To our knowledge there is no documented case of a spontaneous epidural hematoma in a patient with a history of juvenile idiopathic arthritis. **Case Description:** The authors present a case of a 15 year-old boy with a history of juvenile idiopathic arthritis that presented with a non-traumatic left frontal acute epidural hematoma. **Clinical Approach:** An emergency craniotomy and evacuation of clot was required. The hematoma recurred bilaterally 21 days later, requiring a second evacuation. **Clinical Findings:** History, examination and work-up were negative for trauma, infections, coagulation disorders, vascular lesions and tumors. A left frontal spontaneous epidural hematoma was observed in head CT. Twenty-one days following the initial evacuation, the hematoma recurred bilaterally requiring a second craniotomy and evacuation. **Hypothesis:** Juvenile idiopathic arthritis (JIA) may present with antiphospholipid syndrome or vasculitides. These however have historically shown to cause ischemic infarcts rather than spontaneous hematomas. The etiology of this rare event is something we are looking to elucidate.

#### **A-124 Pseudomonas luteola as the Cause of Liver Abscess and Lung Nodules in an Immunocompetent Pediatric Patient**

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Pseudomonas luteola is a motile aerobic gram-negative rod with a yellow-orange pigment. The normal habitat of P. luteola is unclear; however, it may be frequently found in water, soil and other damp environments. It is considered to be an opportunist

saprophytic organism, rarely found in humans. We report the case of an immune-competent 10 year-old male with past medical history of successful treatment of gastritis by *Helicobacter pylori*. He presented with right upper quadrant (RUQ) pain of 1 month of evolution. Abdominal pain was treated with ibuprofen at home with slight improvement of symptoms. He denied fever, vomiting, diarrhea, anorexia, or weight changes. Physical examination was remarkable for mild RUQ tenderness to superficial palpation. Mother reports that the patient did not wash his hands after playing soccer or before eating. He was then hospitalized for further management. Imaging studies showed bull's eye/target liver lesions with centripetal, progressive rim and nodular enhancement associated with numerous lung nodules. Laboratories revealed elevated inflammatory markers (IM), for which broad spectrum antibiotics were started. Allergy & immunology, gastroenterology, oncology, infectology, surgery, and cardiology were consulted. Despite antibiotic treatment, the patient persisted with elevated IM, and displayed lack of improvement. Liver samples obtained by laparoscopy exhibited abscess formation. Sample culture flourished *P. luteola*. To our knowledge there are only 12 cases reported in the literature with this microorganism. This is the first case of an immunocompetent pediatric patient with *P. luteola* without underlying disease.

#### A-125 Epidemiology of Pancreatic Cancer in Puerto Rico (1987-2010): Incidence, Mortality and Survival

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**Background & Objective:** Pancreatic cancer is an uncommon type of cancer worldwide. Nonetheless, even with early diagnosis, mortality rates are high. This study aims to perform an epidemiologic profile of pancreatic cancer in PR. **Methods:** Using data from the Puerto Rico Central Cancer Registry, age-standardized incidence and mortality rates of pancreatic cancer in Puerto Rico (PR) were compared with Hispanics, non-Hispanic Whites, and non-Hispanic Blacks in the United States (US). Incidence and mortality trends of pancreatic cancer were estimated, and survival analyses were also performed. **Results:** In 2005-2010, 5.8 per 100,000 persons were diagnosed with pancreatic cancer in PR and mortality rates were similar. Pancreatic cancer was more frequent in men (6.5 per 100,000 men) than women (5.2 per 100,000 women), and in persons older than 65 years (32.0 per 100,000 persons). Moreover, the median survival for the people diagnosed with pancreatic cancer in PR during 2006-2007 was 4 months and at the end of the third year after diagnosis, only 13% of the patients survived. Incidence trends of pancreatic cancer

showed an increase for men (APC=13.0%, $p<0.05$ ), but not for women (APC=-0.4, $p>0.05$ ). However, mortality trends showed a slight decrease for men (APC=-1.0%, $p<0.05$ ), but not for women (APC=1.4, $p>0.05$ ). Meanwhile, Puerto Ricans in comparison to other racial/ethnic groups living in the US, showed a lower risk for being diagnosed and of dying from pancreatic cancer. **Conclusion:** Our results highlight the need for additional research in pancreatic cancer, in order to have an impact in disease survival in PR. **Acknowledgements:** CDC grant #5U58DP003863-03

#### A-126 Psychometric Construction of a Trans-diagnostic Anxiety Index: A Pilot Study

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**Introduction:** Individuals diagnosed with anxiety disorders (AD) share common features, like high state and trait anxiety, negative affect, and neuroticism (McManus, 2010). The NIMH Research Domain criteria (R-Doc) propose that these overlapping features can be categorized as a negative valence (NV) domain. Following R-Doc, we propose to assess these characteristics with self-report measures and categorize the sample creating an anxiety index. **Methods:** 88 subjects (77% AD), 69% female, 76% with a college degree, were screened using the Structured Clinical Interview for the presence of an AD. 5 self-report scales measured the R-Doc NV factors: Beck Anxiety Inventory, State-Trait Anxiety, Negative Affect Scale (PANAS) and Neuroticism Sub-scale. Psychometric differences led to transform raw scores into re-scaled scores. Averaging led to mild (AI= $\leq .14$ ), moderate (AI=0.15-0.45), severe (AI= $\geq .46$ ) categories. One-way ANOVA assessed differences in mean scale scores between categories. Discriminant analysis and exploratory factor analysis tested the proposed anxiety index. **Results:** Subjects without diagnosis (53.3%) and with specific phobia (40%) were mainly in the mild group. Subjects diagnosed with panic, PTSD, OCD, and GAD were predominantly classified in moderate and severe groups. Severe anxiety group showed higher mean scores in all individual scales ( $p < 0.05$ ). Each individual scale was a significant factor in categorizing sample into severity groups ( $\lambda=.130$ ,  $p<.05$ ). **Discussion:** Factor and discriminant analysis confirmed the proposed model's ability in identifying severity of anxiety withstanding diagnostic category. Given high comorbidity rates in AD, this could be a helpful tool for individualized-treatment, as it portrays psychological profiles specific to anxiety severity.

#### A-127 Comparación de Dos Técnicas de Impresión de un Implante Angulado a 15 Grados

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Planteamiento del problema: En restauraciones sobre implantes la falta de pasividad puede provocar complicaciones mecánicas o biológicas, la pasividad puede verse comprometida durante la toma de impresión y la confección del modelo definitivo. Objetivo: Comparar la precisión de dos técnicas de impresión de un implante MIS angulado a 15 grados y a 0mm de profundidad. Materiales y métodos: Se fabricó un modelo maestro de polimetil metacrilato a partir de un dentoformo maxilar dentado. En la posición del central maxilar derecho se colocó un análogo de implante MIS de conexión interna (13mm de longitud x 4mm de diámetro), a una angulación de 15 grados y 0 mm de profundidad con respecto al central maxilar izquierdo. Se fabricó dos cubetas individuales (una para cada técnica de impresión: técnica de arrastre como el grupo 1 y técnica de "snap-on" como grupo 2). Se llevó a cabo la toma de impresión (n=10) con poliéter y mediante un aditamento, para estandarizar tanto la impresión como su vaciado. Se realizó el vaciado al vacío y mezclado mecánicamente con piedra dental tipo IV utilizando las proporciones recomendadas por el fabricante (100ml de agua por 20mg de piedra dental). La posición tridimensional de los implantes fue medida atornillando un pilar recto a la plataforma del implante y ubicándolo tridimensionalmente mediante una máquina de mediciones tridimensionales por coordenadas (CMM, Mitutoyo BH-305). Los datos fueron analizados estadísticamente con un t-student con un nivel de significancia de .05. Resultados: No existe diferencia estadísticamente significativa entre las técnicas de impresión utilizadas en ninguna de las coordenadas ni en la resultante, teniendo como promedio de la distorsión de la resultante del grupo 1 de 25 micras y en el grupo 2 un promedio de 65micras. Conclusiones: Dentro de las limitaciones de este estudio, la técnica de impresión "snap-on" es igual de precisa que la técnica de impresión de arrastre en un implante MIS angulado a 15 grados.

**A-128 Comparison of Dietary Patterns and Obesity Rates of Puerto Ricans Residing in Lawrence, MA and Ponce, PR**  
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Background: Place of residence may be associated with differences in dietary intake and obesity. Objective: To compare dietary patterns and obesity rates of Puerto Ricans living in Lawrence, Massachusetts (MA) and in Ponce, Puerto Rico (PR). Methods: Participants (N=42 in MA; N=29 in PR) recruited from primary care practices completed assessments that included standardized interviews (i.e., demographics, physical activity), the Block fruit/vegetable and fat screeners, and anthropometric measurements. Data analysis included T-tests and Chi-square tests. Results: Participants were men and women (MA: 52.7%; PR: 51.4%) with ages 21-84. Compared to Puerto Ricans in MA,

those in PR consumed more daily servings of fruits/vegetables (3.86 vs. 4.87, respectively; p=0.001) and dietary fiber (15.07g vs. 18.18g, respectively; p=0.003), with a greater proportion of them meeting the guideline of >5 daily servings of fruits/vegetables (11.9% vs. 42.9%, respectively; p=0.003). Intakes of total fat, saturated fat, and percent of calories from fat were similar between the two groups (p=0.500, p=0.564, p=0.504, respectively). Mean body mass index (BMI) was 32.3 in MA and 30.3 in PR (p=0.371), with rates of obesity being 57.1% in MA and 41.4% in PR (p=0.128). Conclusion: Obesity rates of Puerto Ricans are high in MA and PR, however quality of dietary intake is poorer in MA compared to PR. Interventions to improve quality of diet and reduce obesity among Puerto Ricans in the US mainland and the island are needed. Acknowledgements: Research funded by grants from NIH (R01 MH085653 and 2G12-RR003051) and Ponce School of Medicine and Health Sciences.

**A-129 Pleuropulmonary Blastoma or Congenital Emphysema: A Diagnostic Challenge in Children**

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Purpose: Pleuropulmonary blastoma (PPB) and congenital lobar emphysema (CLE) are rare diseases in children which may have pathologic resemblance. Different from CLE, PPB has an elevated risk of other tumors and requires routine screening tests to monitor for the presence of these tumors. Thus, differentiating PPB and CLE is extremely important. Case description: In this report, we present a 2 year old boy with history of an upper respiratory tract infection at 1 year of age. X ray examination found a right lower lobe (RLL) atelectasis, later identified as a cystic lesion, which was resected. Pathologic results were consistent with CLE. Patient was well until 3 days prior to our evaluation when he presented with painless left abdominal mass, identified by grandmother. Diagnostic approach: Abdominal CT showed left renal cystic lesion. A chest CT was also performed showing a small cystic lesion in RLL, which is the same area of the previous lesion. Radical left nephrectomy was performed and specimen sent for pathology analysis. Pathology reported a cystic nephroma. The previously resected RLL lesion was reviewed by pathology in view of these new clinical findings. Pathology reported that there was a multicystic lesion with delicate connecting septa with the lining of the cyst containing low cuboidal type epithelium consistent with PPB type 1R. Hypothesis: History of lung cystic lesion in association with cystic nephroma questions previous diagnosis of CLE. It is important to determine the final diagnosis as each diagnosis has different management and prognosis.

**A-130 Localization of FMRamide-like Immunoreactivity in the Nervous System of Biomphalaria glabrata, an Intermediate Host for Schistosomiasis**

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**Background & Objectives:** It is estimated that approximately 10% of people worldwide live at risk of the parasitic disease schistosomiasis, or “snail fever”. The digenetic trematode worm *Schistosoma mansoni* that causes the form of schistosomiasis found in the Western Hemisphere employs the freshwater snail *Biomphalaria glabrata* as its primary intermediate host. **Methods:** As infection of snail hosts by larval trematodes has been reported to alter the expression of genes that encode precursors of molluscan neuropeptides belonging the FMR-Famide family, this investigation examined the localization of FMR-Famide-like immunoreactivity (FMRFa-li) in the central nervous system (CNS) and peripheral nervous system (PNS) of *B. glabrata*. **Results:** Within the CNS, FMRFa-li neurons were mainly located in the cerebral ganglion (Cer. g.;  $34 \pm 7$ ), pedal ganglia (Pd. g.;  $36 \pm 10$ ), left parietal ganglion (L Pa. g.;  $18 \pm 11$ ) and visceral ganglion (V g.;  $13 \pm 3$ ). While no FMRFa-li neurons were observed in the buccal ganglion, the buccal neuropil contained branching fibers that originated from axons in the cerebral-buccal connective. In the periphery, structures associated with the male reproductive system (penis muscle and sheath) were innervated by FMRFa-li fibers. Double-labeling experiments (biocytin backfill x FMRFa-li) of the penis nerve demonstrated that the neurons projecting to male reproductive structures were located in the ventral lobe (VL) of the Cer. g. **Conclusions:** It is suggested that parasite-induced changes in this peptidergic system could contribute to modifications of feeding and reproductive behaviors reported in infected snails. **Acknowledgments:** Supported by National Institutes of Health: RCM RR-03051 & G12-MD007600, NIGMS MBRS: GM-087200; National Science Foundation DBI-0115825 and DBI-0932955, and NHRD-1137725. NIH ENDURE: 5R25NS080687-04.

#### **A-131 Optimización en el Análisis de 1-hidroxipireno en Orina por Cromatografía Líquida de Alta Resolución**

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**Objetivos y Trasfondo:** Los hidrocarburos policíclicos aromáticos (PAHs) son contaminantes ambientales que representan un riesgo a la salud humana, potencialmente capaz de producir mutaciones y cáncer. Los PAHs son generados por la combustión incompleta de la materia orgánica siendo el compuesto de pireno uno de los PAHs más frecuente en la quema de combustible. Su metabolito urinario, 1-hidroxipireno (1-HOP), se utiliza como un biomarcador de exposición a los PAHs. El objetivo de este estudio es optimizar el análisis químico de 1-HOP para poderlo medir en orina. **Métodos:** La optimización del 1-HOP se dividió en varias etapas; (i) separación por cromatografía líquida de alta

resolución (HPLC), (ii) concentración y evaporación, y (iii) la extracción. Para la parte de concentración y evaporación se compararon métodos: evaporación por nitrógeno gaseoso y la evaporación usando un rotavapor. Para cada método, se hicieron unos “spikes” por triplicados de  $25 \mu\text{g/L}$  1-HOP para determinar el porcentaje de recuperación. Las muestras fueron analizadas por HPLC. **Resultados:** El porcentaje de recuperación de 1-HOP usando el método de evaporación por nitrógeno gaseoso ( $88 \pm 10.4\%$ ) fue superior al del rotavapor ( $56.7 \pm 10.6\%$ ). **Conclusión:** El método de evaporación por nitrógeno es el más eficiente para obtener el metabolito de 1-HOP. El próximo proyecto es optimizar la extracción del 1-HOP en orina utilizando cartuchos de extracción en fase sólida. **Reconocimientos:** Este proyecto recibió apoyo económico del Departamento de Salud Ambiental del RCM-UPR para materiales de laboratorio.

#### **A-132 The Epidemiology and Risk Factors Associated with Burn Patients Cared for at University Pediatric Hospital**

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**Background & Objectives:** Every day children are treated in emergency rooms for burn-related injuries. Younger children are more likely to sustain injuries from scald burns. In older children flame burns are more likely. The purpose of this study is to determine age-specific and injury-specific burns that will help us develop targeted preventive strategies to reduce the prevalence of burns in children. **Methods:** Data was collected from surveys filled by 83 parents of burned children who visited the University Pediatric Hospital from March 2014 to October 2014. **Results:** The median age was 3 years old (range 0-17). Gender distribution was 57% males and 43% females. Participant parents were mostly mothers (81%). Most children (73%) had the PR government health insurance. A large proportion of our participants were transferred from other institutions (90%). Most burns (70%) occurred within the home and involved children’s arms (36%) and hands (30%). Hot liquids were most commonly involved (61%) and 64% of burns occurred with food or while in the kitchen. No knowledge as to how to manage burns at home was reported by 25% of parents. **Conclusions:** In this group of children, burns were mostly caused by hot liquids and food. Efforts should be directed towards educating parents as to the importance of burn prevention. Particular emphasis should be placed on keeping children out of the kitchen while cooking and testing the temperature of food or hot liquids prior to giving them to children. Parents should also be educated concerning appropriate first aid for burns. **Acknowledgements:** Lourdes Garcia, MD.

#### **A-133 The Role of the Adhesion-GPCR, EMR2, in Retinoblastoma Cell Migration**

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**Background & Objectives:** Metastatic retinoblastoma (Rb) is promoted by aberrations in the expression of cell-matrix and cell-cell adhesion proteins that induce Rb cell invasion to the optic nerve. Rb tumors are heterogeneous with respect to their cell adhesion and invasive properties, hence suggesting that Rb progression is likely due to changes in tumor cell motility. By focusing on the adhesion G-protein coupled receptor (GPCR), EMR2, we will elucidate the mechanism by which this adhesion receptor contributes to Rb cell invasion. Given that EMR2 was reported to be highly expressed at invasive stages of breast cancer and that it contributes to neutrophil migration during inflammatory responses [1,2], we hypothesize that EMR2 differentially distributes in invasive versus non-invasive Rb cells. **Objective:** Determine the role of EMR2 in promoting Rb cell migration and invasion. **Methods:** Immunocytochemistry assays will be performed to confirm that eGFP-EMR2 strategically localizes to lamellipodia regions to promote different rates of cell migration in Rb cells. By using a truncated eGFP-EMR2-NT construct, we will elucidate that the N-terminal is required for Rb cell migration. **Results:** Preliminary data show that EMR2 localizes at sites that are critical for cell migration in Human Embryonic Kidney 293 cells (control) and in neuroblastoma SH-SY5Y cells. Current work is in progress to test whether this localization pattern prevails in Rb cells. **Conclusion:** Preliminary data suggest a role for EMR2 in cell migration. Studies are underway to identify the distribution of EMR2 in Y79 and Weri Rb cells. **Acknowledgements:** Yudoswki G.A., lab members, Dr. Garrett Seale.

#### A-134 Evaluation of Static Postural Control in Children with Mild Autism Spectrum Disorder

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**Background and Objective:** Individuals diagnosed with Autism Spectrum Disorder (ASD) could have some type of impairment like motor apraxia, reduced ankle mobility, history of gross motor delay and toe-walking that makes it difficult for the children to have a proper motor control. Some researchers attribute these motor control impairments to the vestibular and visual system in this group. The objective of this research was directed to assess static postural stability in children with mild autism with a pressure mat. **Methods:** Postural stability was measured in 9 children with mild autism (8 male, 1 female, aged  $8.7 \pm 1.4$  years old). Static postural control was evaluated during eight sensory conditions that perturbed or stimulated the Visual, Proprioceptive and Vestibular systems on a pressure mat. **Results:** A paired-samples t-test was conducted to compare the eight sensory conditions. The purpose of this analysis was to characterize and isolate the system with impairments or does

that were not integrating the sensory inputs properly. Results showed a significant difference among the conditions evaluating the proprioceptive system ( $P \leq .05$  in all the conditions) and the conditions assessing the vestibular system ( $P \leq .05$  in all the tests, except eyes open on mat versus eyes open on mat head up and down  $P = .076$ ). However, according to our results the visual system is not affected in this group ( $P \geq .43$  in all tests). **Conclusion:** Static Postural control instability can be detected in children with mild autism under appropriate challenging conditions, previous to the evident appearance of vestibular and proprioceptive impairments.

#### A-135 Demographics, Risk Factors, Severity, and Short-term Outcome of Stroke in Young Patients in Puerto Rico

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**Background & Objectives:** Limited research is available regarding the epidemiology of stroke in young patients in Puerto Rico. This study aims to evaluate differences in demographic characteristics, risk factors, severity and short-term outcome of stroke between young and older patients in the island. **Methods:** This secondary analysis was based on data from the PR Cardiovascular Surveillance Study. Trained medical personnel obtained information from the medical records of patients admitted with a diagnosis of stroke at 18 hospitals in Puerto Rico, during years 2007, 2009 and 2011. The variables of interest were compared between young ( $\leq 45$  years old) and older patients ( $> 45$  years old). **Results:** Among 5,276 patients with stroke, 220 (4.2%) were  $\leq 45$  years old (range 3 to 45). Younger patients were more commonly male (55.5% vs 48.3%,  $p = 0.038$ ), single (50.2% vs 17.8%,  $p < 0.0001$ ), and beneficiaries of the government's health plan (38.6% vs 16.4%,  $p < 0.0001$ ). Younger patients were less likely than older patients to have a history of diabetes (OR=0.39, 95%CI: 0.28, 0.54), coronary heart disease (OR=0.24, 95%CI: 0.14, 0.39), hypertension (OR=0.22, 95%CI: 0.17, 0.30), and hyperlipidemia (OR=0.39, 95%CI: 0.23, 0.63). Compared to older patients, younger patients were approximately 2 times more likely to be current smokers (OR=1.94, 95%CI: 1.31, 2.80) and obese (OR=1.83, 95%CI: 1.19, 2.82). No differences in stroke severity and short-term outcome were found. **Conclusions:** This study provides preliminary evidence that can help promote tailored stroke prevention interventions for young patients in Puerto Rico. **Acknowledgements:** Research reported in this publication was supported by the National Institute on Minority Health and Health Disparities of the National Institutes of Health under Award Numbers 5S21MD000242, 5S21MD000138, 2U54MD007587 and G12MD007600 and the University of Puerto Rico School of Medicine. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. Approved by IRB. Protocol Number: A5620111. Approval Date: 04/18/2011

**A-136 Angiotensin II Receptor Blockade in Angiotensin II Preconditioned Rat Hearts Following Ischemia/Reperfusion**

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**Introduction:** Angiotensin II (AngII) has cardioprotective effects against ischemia/reperfusion injury (IR). This phenomenon, called Angiotensin II-induced preconditioning (APC), significantly improves post-ischemic ventricular recovery. However, its mechanism of action is still unclear. In this study we evaluated the role of the AngII receptors (AT1R and AT2R) in APC using losartan (AT1R blocker) and PD123319 (AT2R blocker). **Materials & Methods:** Isolated-perfused rat hearts were pre-treated (15 min) with losartan (10 $\mu$ M) and/or PD123319 (1 $\mu$ M) prior to 4 cycles (5 min each) of AngII (10nM) with or without drugs, followed by 30 min of global ischemia and 90 min of reperfusion without drugs (n=4/group). Left-ventricular developed pressure (LVDP), the first derivative of developed pressure (+dP/dt), the rate pressure product (RPP) and LDH release were monitored and infarct size was evaluated at the end of reperfusion. **Results:** Our results show that losartan significantly reduced cardiac function compared to APC during the pre-ischemic and post-ischemic periods (35%, P<0.05). PD123319 did not affect cardiac function during pre-ischemia but abolished the AT1R-dependent component when co-infused with losartan. In addition, PD123319 increased cardiac function 2-fold (P<0.05) during post-ischemia independently of the presence of losartan. These actions of AT1R/AT2R blockade were associated with reductions in infarct size (64%, P<0.05) and LDH release (72%, P<0.05) compared with controls. Compared with APC, however, both blockers reduced LDH release (45%, P<0.05), but only losartan inhibited infarct size (64%, P<0.05). **Conclusion:** These findings suggest important roles for AT1Rs and AT2Rs on cardiac function and APC after IR. **Acknowledgements:** Supported by: RCMI Program grant G12MD007600, the Univ. of Puerto Rico, and NIH grant SC1HL118669 (SJ).

**A-137 Utility of Point of Care Whole Venous Blood Testing Versus Reference Serum Laboratory Testing for the Evaluation of Glucose Levels**

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**Introduction:** Point of care (POC) testing allows for rapid and serial screening of blood glucose levels which facilitates clinical care of individuals independent of the presence of metabolic disorders. **Objective:** The purpose of this study was to assess the utility of POC testing (CONTOUR<sup>®</sup> Blood Glucose Meter) for hyperglycemia detection. **Methods:** Fasting POC testing and fasting plasma glucose levels were performed as part of the baseline examination of 1,340 participants aged 40 to 65 years enrolled in the San Juan Overweight/Obese Longitudinal Study (SOALS).

This analysis was performed as a secondary analysis within the SOALS cohort study, which includes individuals in a wide range of glucose homeostasis. Fasting plasma glucose levels were used to define glycemic status, according to the American Diabetes Association diagnostic criteria. Pearson's correlation coefficient and the Kappa statistic were used to assess the study aim. **Results:** 72% of the participants were women, with a mean age of 50.4 $\pm$ 6.7 years. Glycemic status was as follows: 71% had normoglycemia, 24% had prediabetes, and 5% had diabetes. Pearson correlation coefficient between POC and the fasting plasma glucose was excellent (r=0.90, p<0.0001). The kappa coefficient of diabetes diagnosis agreement between the two methods was 0.82 (95% CI: 0.75 - 0.89). **Conclusion:** The strength of agreement between POC testing and the standard clinical measure was found to be excellent. Therefore, immediate availability of results through POC testing may substantially improve the efficiency of the overall healthcare process associated with laboratory screening for diabetes, especially when considering its quickness and cost-efficiency. **Acknowledgements:** NIH R01DE020111 & NIH-NCRR 1U54RR026139-01A1, IRB protocol #A4840310

**A-138 Cambio Climático y Turismo: Un reto a la Salud Pública**

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**Resumen y Objetivos:** El cambio climático presenta impactos excepcionales para los recursos naturales, las actividades económicas y la salud humana. Uno de los sectores económicos que se verá más afectado será el de turismo. El cambio climático será responsable de eventos extremos así como episodios de calor causante de estrés térmico y golpes de calor. Este estudio propone analizar los conocimientos actuales sobre el Cambio Climático en Puerto Rico y su impacto en el Turismo. **Metodología:** Un análisis de vulnerabilidad y riesgo basado en OE-2013-016 encontró varios riesgos para los turistas que visitan la isla. Tomando en consideración estos resultados, se analizaron datos de la Compañía de Turismo y datos climáticos del National Climate Data Center. Con la utilización de Sistemas de Información Geográfica se identificaron las poblaciones y áreas más vulnerables y a través de cuestionarios y entrevistas semi-estructuradas. **Resultados:** La probabilidad y ocurrencia de episodios de calor extremos en la isla es muy alta. De acuerdo a la matriz de riesgo para hospederías endosadas el impacto a los turistas es considerado "Mayor". Se espera que con las alteraciones de las estaciones, las ofertas de turismo de naturaleza y deportivo se vea limitada por incomodidad de realizar actividades en el exterior. **Conclusiones:** El análisis de vulnerabilidad del turista frente a los distintos escenarios de cambio climático aportará información clave para proponer medidas de adaptación ante estos retos que afectan tanto a la salud pública en general y a la actividad turística en

específico. Agradecimientos: Este trabajo fue financiado por la Compañía de Turismo de Puerto Rico, contrato número PRTC 2015-000125. Agradecemos a la Compañía, al Departamento de Salud Ambiental, Escuela Graduada de Salud Pública, Universidad de Puerto Rico-Recinto de Ciencias Médicas por establecer los lazos de cooperación y acuerdos colaborativos entre las entidades participantes en esta investigación.

#### **A-139 Prevalence of Depression in Patients with End Stage Renal Disease on Hemodialysis at the Western Area of Puerto Rico**

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**Introduction:** Depressive symptoms and depression are major public health problems and both are between the most frequent psychological problems reported among end-stage renal disease (ESRD) patients being treated with hemodialysis. We assessed the prevalence of depressive symptoms among hemodialysis patients in the West area of Puerto Rico. **Purpose:** A systematic assessment of depression in hemodialysis patients would supply information about patient feelings of wellbeing. Existing data suggest that screening for depression may help identify patients at higher risk for death and hospitalization. **Methods:** This is a cross-sectional study with a sample of 94 hemodialysis patients selected from 3 dialysis centers in the West Area of Puerto Rico, including the Fresenius center at Aguadilla and two other Centers at Mayaguez; after providing written informed consent for patients. The Beck Depression Inventory (BDI-II) is considered to be the standard instrument for assessing symptoms of depression and screening for clinical depression. We used this scale of 21 short answer questions to assess degree of depression in studied patients. The scores will be obtained by using this score system: Total Score Levels of Depression, 0-10 = These ups and downs are considered normal, 11-16 = Mild mood disturbance, 17-20 = Borderline clinical depression, 21-30 = Moderate depression, 31-40 = Severe depression, >40 = Extreme depression. The main analysis was restricted to the prevalent cross-section of 94 patients with information on degree of depression diagnosis. Baseline data regarding years after ESRD diagnosis, socio-demographic factors, comorbidities, years in hemodialysis treatment, were collected at patient entry into the study. **Results:** Prevalence of depression in patients with ESRD/HD in the West area of Puerto Rico was present in 53% of the population at time of study. According to the chi-square criterion, there is no significant effect of gender in depressive symptomatology (Chi-squared=2.3151, p-value=0.1281). For age ranges, no significant effect was observed in depressive symptomatology (Chi-squared=1.8822, p-value=0.3902). In relation to the variable weather time in HD and prevalence of depression, significant differences were not found (Chi-squared=1.9984, p-value=0.5727). Finally, in the marital status variable, we found a statistically significant factor, and it was that married patients had more prevalence of depression than divorced ones, with

a Chi-squared=6.7122, df=1, p-value=0.0817 (significance at 10%). **Conclusion:** We recommend early implementation of psychological measures and medical treatment in ESRD patients on HD, in an effort to improve prognosis associated with depression in these particular patients and decrease morbidity and mortality, as well as hospitalizations.

#### **A-140 La Mortalidad Infantil por Tipo de Parto en Puerto Rico, 2005-2007**

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Puerto Rico tiene una tasa de mortalidad infantil más alta que los Estados Unidos. El tipo de parto ha sido asociado con diversos factores de riesgo en las muertes infantiles. El objetivo principal del estudio fue examinar la mortalidad infantil de acuerdo al tipo de parto, y ciertas características sociodemográficas de la madre y el niño. Las fuentes de datos fueron las bases de datos de nacimientos y muertes infantiles pareadas por periodo para 2005-2007 del Center for Disease Control and Prevention (CDC). La población de estudio estuvo compuesta por infantes que murieron durante el periodo 2005-2007 antes de cumplir su primer año de vida. El diseño del estudio es descriptivo. Los hallazgos indican que para el período de 2005-2007 la tasa de mortalidad infantil fue de 8.33 por cada mil nacidos vivos. Esta tasa fue más altas en los partos ocurridos por cesáreas al compararlos con los vaginales (9.3 vs 7.5). El apgar score al nacer con puntuación 0-3 fue más alto para los partos vaginales. Lo contrario se observó para el apgar con puntuación 9-10. Las mujeres con mayor nivel de educación mostraron una mayor proporción de partos por cesárea, aunque fue una diferencia pequeña. Es importante tomar en consideración el tipo de parto al estudiar la mortalidad infantil ya que este puede afectar la supervivencia del infante y aumentar los riesgos para la madre.

#### **A-141 Propiedades Psicométricas de Dos Cuestionarios para Evaluar Procesos Terapéuticos en Tratamientos Grupales con Adolescentes**

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**Trasfondo y Objetivos:** Cohesión grupal y alianza terapéutica son procesos vinculados al éxito psicoterapéutico. Como existen pocos cuestionarios validados en Puerto Rico para evaluar procesos terapéuticos grupales, examinamos la psicometría del Curative Climate Instrument (CCI) y el Cuestionario sobre la Calidad del Equipo Terapéutico (CCET). Esperábamos una consistencia interna  $\geq .80$ , una correlación significativa entre ellos e indicadores de progreso terapéutico, y evidencia de sensibilidad al cambio en ambos. **Método:** En dos ocasiones, 52 adolescentes con diabetes tipo 1 (30 féminas), participantes

de estudios sobre psicoterapia grupal, completaron el CCI y 34 llenaron también el CCET. Utilizamos el alfa de Cronbach para examinar la consistencia interna, la *t* de medidas repetidas para analizar la sensibilidad al cambio, y la correlación Pearson para determinar la validez. Resultados: La consistencia interna del CCI fue de .94 y la de sus subescalas fluctuó entre .84 (Cohesión) y .86 (Introversión); el alfa del CCET fue de .95 y el de sus subescalas estuvo entre .84 (Estilo Comunicacional) y .88 (Estilo de Trabajo). Tras el tratamiento, estos cuestionarios correlacionaron .61 ( $p \leq .001$ ). Sus puntuaciones post-tratamiento se relacionaron significativamente con las de depresión, autoeficacia para la depresión y calidad de vida relacionada a la diabetes. El CCI también correlacionó con ideación suicida y autoeficacia para la diabetes, mientras que el CCET se asoció al autocuidado. Las puntuaciones de ambos aumentaron significativamente tras el tratamiento. Conclusiones: Nuestros resultados sugieren que estos cuestionarios son medidas válidas y confiables de facetas importantes del proceso terapéutico grupal en adolescentes. Reconocimientos: Esta investigación fue subvencionada por el NIDDK (5R03DK092547-04).

#### **A-142 A Comparison of Interval Sterilization Methods Performed at the University District Hospital**

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**Objective:** To evaluate and compare three methods of interval sterilization performed at University District Hospital. **Methods:** A retrospective chart review of women undergoing interval sterilization between 2006 and 2014. **Results:** Preliminary evaluation of 84 cases of interval sterilization show that 28 cases were performed by the open abdominal route, 31 cases were performed laparoscopically and 25 cases were performed by vaginal colpotomy. 2 vaginal cases were converted to abdominal cases and 1 laparoscopic case was converted to an abdominal case. No one method proved to be superior as far as blood loss or operative time. Interestingly, the choice of surgical route depended greatly on the physician's training, preference, or on the availability of equipment that the attending required for the surgery. **Conclusion:** Of this small sample, 33% were abdominal laparotomies, 37% laparoscopies and 30% vaginal sterilizations. Of the total, 3 cases were converted to open laparotomies, 2 vaginal and one laparoscopy. Laparoscopic interval female sterilization is the most accepted method performed in the United States today. Further evaluation considering previous abdominal surgeries and body habitus may help determine if there are certain patients that benefit more from the vaginal route of sterilization. We recognize the need to continue with training in vaginal surgery. We should not abandon vaginal sterilization as it is an efficient way to introduce vaginal surgery to our residents and then proceed with more complicated vaginal procedures that will benefit our patients. **Acknowledgements:** University District Hospital, University of Puerto Rico Medical Sciences Campus

#### **A-143 Is Subacute Combined Degeneration Still Present in this Time?**

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**Purpose:** Subacute combined degeneration is a myelopathy characterized by degeneration of the lateral and posterior columns of the spinal cord secondary to vitamin B12 deficiency. It is a rare diagnosis in Western Countries, usually caused by malabsorption. The reversal of symptoms depends on early recognition. MRI findings aid in the accurate diagnosis. Early recognition could avoid irreversible neurological damage and prevent disability. **Case description:** A 55-year-old woman presented with cramping and numbness of the lower extremities, and poor balance of one month in evolution. Neurological exam revealed distal sensory loss to vibration and proprioception, lower extremities areflexia, and sensory ataxia. **Clinical Approach:** CBC and vitamin B12 levels were ordered. Neuroimaging was performed including a complete spine MRI with contrast to assess for spinal cord pathology. **Clinical findings:** Laboratories revealed macrocytosis with anisocytosis suggestive of a megaloblastic anemia and severe vitamin B12 deficiency. Spine MRI showed abnormal signal intensity involving the posterior spinal cord from thoracic to lumbar level with diagnostic consideration of vitamin B12 deficiency or post infectious/inflammatory myelitis. Vitamin B12 replacement therapy was started. **Hypothesis:** This clinical case shows a neurologic manifestation of vitamin B12 deficiency secondary to myelin degeneration. In our case, only posterior columns were affected, likely secondary to early stages. The awareness of vitamin B12 causing myelopathy is important to consider in patients with similar spinal cord symptoms. Serum vitamin B12 levels must be included as routine work-up in all patients. The use of spine MRI as diagnostic tool assists in early diagnosis and treatment with possible resolution of the disease.

#### **A-144 La Relación entre la Intención de Involucrarse en Prácticas Sexuales con Personas del Mismo Sexo y el Comportamiento Suicida en Adolescentes**

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**Trasfondo y Objetivos:** Estudios sugieren que jóvenes de minorías sexuales reportan mayores riesgos de comportamiento suicida y suicidio completado en comparación con sus contrapartes. El suicidio es la tercera causa de muerte en jóvenes entre las edades de 10 a 24 años. Este estudio pretende determinar si existe alguna asociación entre la intención de involucrarse en prácticas sexuales con personas del mismo sexo y el comporta-

miento suicida en estudiantes puertorriqueños. Métodos: Estudio transversal donde se realizó un análisis secundario de los datos recopilados en Consulta Juvenil VIII. La muestra consiste de 5,284 estudiantes entre 7mo y 12mo grado de escuelas puertorriqueñas. Los estudiantes fueron clasificados en dos grupos: a) intención de involucrarse en prácticas sexuales con personas del mismo sexo y b) personas del sexo opuesto. Se llevaron a cabo regresiones logísticas para evaluar la asociación entre la intención de involucrarse en prácticas sexuales y la ideación e intento suicida. Resultados: El 6% de la muestra reportó tener intención de involucrarse en prácticas sexuales con personas del mismo sexo. Estudiantes con intención de involucrarse en prácticas sexuales con personas del mismo sexo tuvieron menor posibilidad de reportar ideación suicida (OR=0.82; IC 95%: 0.4-1.9) e intento suicida (OR=0.60; IC 95%: 0.2-1.4) que sus contrapartes. Conclusión: Los resultados de este estudio no sugieren una relación positiva entre la intención de involucrarse en prácticas sexuales con personas del mismo sexo y el comportamiento suicida. Sin embargo, tuvieron mayores posibilidades de reportar diversos factores de riesgo asociados al comportamiento suicida. Reconocimientos: Consulta Juvenil. Aprobado por IRB UPR-RCM (#A6600114) el 11 de abril de 2014.

#### A-145 RGD Domain Modulate P2Y2 Receptor Signaling and Functional Behavior

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**Background & Objectives:** The P2Y2 nucleotide receptor (P2Y2R) has become an apparent key player in regulating many cellular responses including apoptosis, cell survival and inflammation. In response to injury, the P2Y2R is thought to have both a protective and detrimental effects in the CNS by activating glial cells that secrete cytokines, chemokines, and growth factors at the site of the injury. P2Y2Rs have an arginine-glycine-aspartate (RGD) motif in the first extracellular loop that promotes its binding to  $\alpha$ v $\beta$ 3 integrin that can directly modulate transcriptional events and cell proliferation. In this study, we investigated the effects of an RGD to RGE mutation (arginine-glycine-glutamate) in the signaling and functional behavior of the P2Y2R. **Method:** WT Human 1321N1 astrocytoma cells are P2 receptors devoid. To express human HA-P2Y2R in these cells we used the retroviral vector pLXSN as described previously by Erb et al. 1995. The Aspartic Acid (D97) codon of the RGD motif in the P2Y2R construct was substituted with Glutamic acid (E97) using Site Directed Mutagenesis and stably expressed in 1321N1 astrocytoma cells. **Results:** P2Y2-RGE mutants show decreased agonist potency in eliciting PLC-dependent calcium mobilization and ERK1/2 activation. Density fractionation of 1321N1 cells homogenate revealed co-fractionation of P2Y2Rs with cav-1 in membrane-raft fractions. **Conclusions:** Our re-

sults suggest that an RGD to RGE mutation in will exclude the P2Y2R from caveolae and it will impair its ability to translocate to this microdomain and thus impair its downstream signaling machinery. **Acknowledgements:** NAM is supported by the NIH-NIGMS-MBRS-RISE Program Grant R25GM061838 at the UPR-MS. Experiments were performed at the Molecular Sciences Research Building of the UPR.

#### A-146 Urease Activity and Dental Plaque Composition in Children

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Urease activity from bacteria in dental plaque generates alkali, which can protect oral bacteria from acidification and may have an important impact on the oral health. **Objective:** To evaluate the impact of urease on the diversity and composition of dental plaque in children and identify the main contributors to this activity. **Methods:** 82 supragingival plaque samples were collected from 44 children at baseline and one year later, as part of a longitudinal study on urease and caries in children. Urease activity was measured using a spectrophotometric assay. DNA was extracted, the V3-V5 region of the 16S rRNA gene was amplified, pyrosequenced and analyzed with Qiime. **Results:** Urease activity had a significant impact on the composition of the microbial communities of dental plaque. Beta diversity in samples with low urease (<1.7 units/mg) was significantly different from those with high urease (>3.3 units/mg) (Permanova P=0.023 baseline, P=0.049 one year). The bacterial taxa that showed a consistent positive relationship to urease levels was Haemophilus parainfluenzae. Others that varied significantly in baseline samples were Porphyromonadaceae and Prevotellaceae, and in the one year samples Gemellaceae. **Conclusions:** To our knowledge, this is the first study to demonstrate the impact of urease on the ecology of the dental plaque. Our data points to H. parainfluenzae as an important contributor to this activity. Further studies are needed to establish the role of urease-associated bacteria in development and prediction of dental caries. **Acknowledgements:** Supported by NIH Grants DE015285, G12 RR 0305, U54RR026139-01A1 DE021135 P20RR11126.

#### A-147 The Tumorhead Protein Undergoes Phosphorylation during Xenopus Development

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Tumorhead (TH) is a protein that regulates cell proliferation during early embryogenesis in *Xenopus laevis*. It is important for

blastomeres to undergo cell division during the cleavage stages, and for ectodermal cells to divide and produce enough epidermal and neural progenitors later in development. To understand whether the TH protein is regulated by covalent posttranslational modifications, we have been using several approaches, including mass spectrometry. TH immunoprecipitates (IPs) were prepared from cell extracts derived from *Xenopus* embryos, which were previously injected with mRNA encoding an epitope-tagged version of TH. Western Blotting confirmed the expression and immunoprecipitation of the exogenously expressed TH protein. The IPs were then subjected to polyacrylamide gel electrophoresis, followed by silver staining of the gel. Several protein bands present in the TH IPs, but absent in IPs from uninjected embryos, were excised and processed for mass spectrometry. Some of these protein bands were identified as TH, validating our approach. Furthermore, in these mass spectrometry analyses we found that in TH IPs from cell extracts of embryos at the neurula stage, Ser431 of TH was phosphorylated. To further characterize this posttranslational modification that TH suffers, we will determine whether it occurs during other stages of development, where in the embryo it occurs, what kinase phosphorylates TH, and the significance of this phosphorylation for TH function. These experiments will allow us to address if phosphorylation of TH is important for its role in promoting cell proliferation during *Xenopus* development. This research was sponsored by UPR-Humacao Intramural Funds for Research Program.

**A-148 Localization of BgNPY-like Immunoreactivity in the Nervous System and Periphery of *Biomphalaria glabrata*, an Intermediate Host for Schistosomiasis**

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More than 200 million people worldwide live at risk of the parasitic disease schistosomiasis, or “snail fever”. The digenetic trematode worm species *Schistosoma mansoni* that causes the most widespread form of human intestinal schistosomiasis, employs the freshwater snail *Biomphalaria glabrata* as its primary intermediate host. Previous investigations in other schistosome-snail systems, showed that neuropeptide Y (NPY) gene expression increased during snail infection. A recently submitted mRNA sequence was reported to encode a *B. glabrata* NPY prepropeptide (GenBank Accession No.: JX013957). For this investigation, affinity purified polyclonal antibodies (rabbit) were generated against the predicted NPY neuropeptide (BgNPY; amino terminus 20 amino acids) deduced from the mRNA sequence. This investigation explored the localization of *Biomphalaria glabrata* NPY (BgNPY) in the central and peripheral nervous systems of the snail. BgNPY-like immunoreactive neurons were present in most central ganglia; buccal ganglion (dorsal:  $9 \pm 2$ , ventral:  $3 \pm 1$ ) and cerebral ganglion (dorsal:  $17 \pm 2$ , ventral:  $19 \pm 7$ ). Larger BgNPY-like neurons in

the left parietal ganglion (dorsal:  $14 \pm 5$ , ventral:  $7 \pm 4$ ), and visceral ganglion (dorsal:  $23 \pm 3$ , ventral:  $12 \pm 6$ ) had prominent axons oriented toward the parietal-visceral connective. BgNPY-like fibers were located around peripheral tissue surrounding organs in the digestive and reproductive tract. These results suggest that BgNPY could be involved in behaviors such as food intake and reproduction, and are consistent with a role of this neuropeptide in the redirection of energy resources in the *Schistosoma mansoni* - *Biomphalaria* host-parasite system.

**A-149 Stress-Induced Cardiomyopathy: an Uncommon Presentation**

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An 60 year-old man came to the emergency department due to chest pain described as epigastric, oppressive, with radiation towards left arm, 8/10 intensity, associated with nausea and shortness of breath. An electrocardiogram (ECG) showed ST segment elevation in leads V1-V5 with deep T wave inversions along elevated cardiac enzymes. Left ventriculogram showed anterolateral, apical and inferoapical hypokinesia along anterobasal and inferoapical basal hyperkinesia which correlated with cardiac echocardiographic findings of apical ballooning. Further coronary angiography revealed normal coronary arteries. He was admitted to coronary care unit where upon further questioning, he also complained of intermittent abdominal pain for the last three days described as sharp with radiation towards his back, with associated nausea and vomits post meals. Abdominal examination revealed tenderness at superficial palpation on the right and left upper quadrants along tenderness of all quadrants upon deep palpation. Laboratories revealed elevated lipase and amylase, as well as marked leukocytosis. An abdominal computerized tomography (CT) scan demonstrated significant inflammatory changes around pancreas and different attenuations around tail and body suggestive of edema and necrotizing pancreatitis. Based on cardiac workup findings along acute abdominal insult, a diagnosis of Stress-Induced (Takotsubo) Cardiomyopathy due to Necrotizing Pancreatitis was assessed. Stress-induced cardiomyopathy is an increasingly reported syndrome characterized by transient systolic dysfunction of the apical and/or mid segments of the left ventricle. It mimics myocardial infarction in the absence of obstructive coronary artery disease and it is characterized by apical ballooning observed on left ventriculography. Clinical presentation is that of an acute coronary syndrome, usually preceded by a stressful emotional, medical or psychological event. The syndrome occurs predominantly in postmenopausal elderly women after an emotional or physical stressful event. Although the cause of this disorder is unknown, it is most likely related to adrenergic stimulation. Up to 88% of affected patients are women with a mean age of 58-77 years. Echocardiography usually reveals mildly to severely

decrease left ventricular function with anterior-apical akinesis or dyskinesis. Recovery of left ventricular function occurs over a period of days to weeks. Review of the literature only showed two reported cases with Stress-induced Cardiomyopathy secondary to Pancreatitis, both of which were on postmenopausal elderly women. To our knowledge this is the first case reported of Stress-Induced Cardiomyopathy secondary to Pancreatitis in men population. There should be no delay in management and invasive stratification in patients presenting with ST segment elevation. However, this case emphasizes the importance of a careful history and physical examination along the recognition of uncommon stressor that could lead to precipitants of cardiovascular complications.

#### **A-150 La Migración Interna en Puerto Rico: Los Grandes Flujos Internos Ignorados ante la Reciente Ola de Emigración**

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Trasfondo: Históricamente Puerto Rico ha tenido una población en constante movimiento geográfico. Sus habitantes se mudan en grandes cantidades fuera del país y la población que permanece también lo hace. Objetivo: analizar los flujos migratorios internos en Puerto Rico. Métodos: El análisis fue uno descriptivo. Fuente de datos: La Encuesta de la Comunidad de Puerto Rico, 2008-2012. Hallazgos: Unas 243, 562 personas cambiaron de residencia dentro de P.R. durante el período de estudio, 38% se mudó a un municipio diferente. Los municipios que recibieron el por ciento más alto de inmigrantes internos fueron: Fajardo (5.4%), Río Grande (5.1%), Las Piedras (5.1%), Luquillo (4.9%) y Hormigueros (4.3%). De estos, 4 presentaron un saldo migratorio neto interno positivo, se mudaron a estos más personas que las que salieron a otro municipio. La única excepción fue Luquillo, del cual emigraron más personas de las que entraron. Los municipios con altos por cientos de inmigrantes están localizados en la zona este, excepto Hormigueros. Los movimientos tanto de salida como de entrada de población migrante, se concentraron mayormente entre municipios aledaños, manteniendo los flujos en zonas geográficas particulares. La población emigra a zonas de mayor desarrollo económico. San Juan recibió una proporción considerable de inmigrantes procedentes de los municipios con mayor emigración. Conclusión: Las migraciones internas planificadas producen entre otros aspectos, altas densidades poblacionales en el País. Es imprescindible el análisis de los movimientos internos de población para lograr una mejor planificación de servicios dirigidos a lograr el bienestar social general.

#### **A-151 Molecular Characterization of Colorectal Tumors in Caribbean Hispanics**

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Background & Objectives: Accumulating evidence supports that colorectal cancer (CRC) is comprised of different genetic diseases affecting the same organ. CRC displays distinct characteristics depending on the molecular subtype, which may affect treatment response, prognosis and survival, among others. CRC is the leading cause of cancer death among Puerto Rican Hispanics (PRH). The aim of this pilot study was to characterize colorectal tumors at a molecular level in a cohort of PRH in order to determine the most common carcinogenesis pathways. Methods: The molecular markers evaluated were: microsatellite instability (MSI), CpG island methylation phenotype (CIMP), and mutations in oncogenes KRAS and BRAF. In addition, HPV infection status was assessed as it has been associated with CRC. Results: Forty-seven colorectal tumors (mean age at diagnosis 63 years; 32 males) were evaluated. Results showed that the tumors studied were all microsatellite stable (100%) and predominantly CIMP low (63.8%). In addition, a higher proportion of tumors had KRAS mutations (23.4%) compared to BRAF mutations (10.6%). HPV infections were detected in 66.0% of tumors. Conclusions: The preliminary results generated provide an overview of the prevalence of the molecular characteristics of CRC tumors in PRH. Furthermore, the predominant CRC subtype observed was MSI stable and CIMP low, different from other racial/ethnic populations. Future studies should be performed to have a comprehensive understanding of the molecular composition of CRC tumors in PRH in order to devise strategies for the clinical and therapeutic management of this population. Funding: National Institute on Minority Health Disparities Award Number 8U54MD 007587-03 and U54MD007587; NCI Award Number 5K22CA115913-03, R21CA167220-01, and U54CA096297; Center for Collaborative Research in Health Disparities RCMI Award Number G12MD007600. Acknowledgements: This work was partially supported by the Research and Development Service, the Gastroenterology Department and Department of Veterans Affairs, Caribbean Healthcare System San Juan, P.R. The contents of this manuscript do not represent the views of the VA Caribbean Healthcare System, the Department of Veterans Affairs or the United States Government.

#### **A-152 Engineering the FabA and FabZ Fatty Acid Dehydratase Domains from Escherichia Coli into Dimeric Artificial Constructs**

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Modulating the biosynthesis of microbially-derived fatty acids is an attractive strategy towards generating precursors for bio-diesel mixtures. *Escherichia coli* produces fatty acids using a set of stand-alone enzymes which form part of the quintessential type II fatty acid synthase. Several deep-sea bacteria are capable of producing higher fatty acid yields using a multidomain type I fatty acid synthase. Overexpression of the DH1-DH2-UMA dehydratase tetradomain from *Photobacterium profundum* has been shown to enhance 5-fold fatty acid production in *E. coli*. In an effort to mimic this protein architecture, we will create artificially linked constructs of 2 dehydratases involved in *E. coli* fatty acid biosynthesis, FabA and FabZ. While these enzymes function as homodimers in *E. coli*, the effect of covalent linkage is unknown. Using specific primers in an overlap PCR, we have generated hybrid gene constructs encoding for 4 dimers separated by a short amino acid linker: fabA/fabA, fabZ/fabZ, fabA/fabZ, fabZ/fabA. These artificial genes have been sequenced and reveal a 100% match with the theoretical constructs. Each construct has been cloned into pET200, expressed in bacterial cultures and proteins purified by NiNTA affinity chromatography and Anion Exchange Chromatography. Purified proteins will be assayed for enzymatic activity by UV spectrophotometry and fatty acid profiles will be generated by GC/MS analysis. In conclusion, we have generated artificially linked dehydratase genes and purified their soluble protein products. This is the first time these enzymes have been covalently linked and may be useful tools for enhancing the production of fatty acids in bacterial cultures.

#### A-153 Preparedness of Community Primary Care Centers for a Pediatric Emergency in Puerto Rico

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**Background & Objectives:** Emergency care for life threatening pediatric illness and trauma requires specialized resources including equipment, drugs, trained personnel, and facilities. United States data has demonstrated there is lack of preparation to manage pediatric emergencies. This study will assess the preparedness of community primary care centers (CPCC) in Puerto Rico to manage pediatric emergencies. **Methods:** The Pediatric Emergency Program visited 27 CPCC during 2012-2014 for visual assessment of the equipment and medication available as well as a survey administration. Data was retrospectively analyzed to describe preparedness for pediatric emergencies. The study was approved by the IRB. **Results:** Questionnaire showed that a large number of CPCC are privately owned, there is lack of emergency pediatric care guidelines and required pediatric certification courses are minimal. Frequency of adequate pediatric emergency medication and equipment is low. None of CPCC had all the required equipment and medication to response to

pediatric emergencies. **Conclusions:** CPCC's are not prepared to manage pediatric emergencies. Lack of PLAS training, resuscitation equipment and medications, could be the difference between life and death. The development and implementation of an island wide strategic plan to improve pediatric emergency preparedness is mandatory. **Acknowledgments:** This research was supported by Health Department of Puerto Rico and EMP UPR School of Medicine.

#### A-154 El Movimiento de Personas entre Puerto Rico y los Estados Unidos: Flujos de Origen y Destino

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La migración es una de las variables de mayor protagonismo a nivel mundial en la actualidad. Puerto Rico ha mostrado un volumen considerable de emigrantes en años recientes. El objetivo del estudio fue examinar los flujos migratorios entre Puerto Rico y los Estados Unidos. Las fuentes de datos fueron el Puerto Rico y American Community Survey, 2008-2013. La investigación fue transversal descriptiva. Durante el 2008-2012 se movieron 68,847 personas desde PR hacia los EE.UU. y procedentes de este país llegaron 27,208. Esto indica que salieron del país 41,639 personas más de las que entraron. El 40% de los que salieron residían en: San Juan, Bayamón, Ponce, Carolina y Caguas; más de la mitad salió de la capital (22%). Los municipios que perdieron más habitantes en relación al tamaño de su población fueron: Culebra (10.6), Vieques (5.3), Juyuya (4.4%), San Juan (3.9) y Patillas (3.6). Solo 8 municipios recibieron más población de la que perdieron. Las zonas de mayor desarrollo social y económico presentaron un saldo migratorio negativo. Los municipios con saldo positivo, que ganaron más población procedente de Estados Unidos de la que perdieron, mayormente están localizados en el interior de la isla. Los estados que recibieron mayor número de puertorriqueños fueron: Florida, New York, Pennsylvania, Connecticut y Texas. El volumen emigratorio de Puerto Rico es alto y contribuye al descenso de población. Este evento tiene consecuencias demográficas, sociales, económicas y de salud, de forma particular para aquellos municipios que muestran la mayor pérdida de habitantes.

#### A-155 Misdiagnosis of ALCAPA in a 16 Months-old Male with Bronchiolitis and Cardiomegaly

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Anomalous origin of the left coronary artery from the pulmonary artery (ALCAPA) is a rare congenital coronary abnormality associated with myocardial infarction, congestive heart failure and early infant mortality that may be mistaken for common



pediatric conditions such as colic, reflux or bronchiolitis. The incidence of ALCAPA is estimated at 1/300,000 live births comprising between 0.24% and 0.46% of congenital cardiac diseases. A 16-month-old male was evaluated at the emergency room of a private community hospital of the metropolitan area due to respiratory distress, cough and clear nasal discharge of one day of evolution. The chest x-ray showed cardiomegaly for which an echocardiogram was performed. The diagnosis of ALCAPA anomaly was made with an ejection fraction of 30%, left ventricle and atrial enlargement, and a dilated right coronary artery. He was treated for cardiac failure. A chest computed tomography angiogram was done confirming the diagnosis. Patient was transferred to a cardiovascular center where a surgical procedure was performed to correct the anomaly. ALCAPA is a rare congenital abnormality, unusually found in an asymptomatic patient. In this case, the clinical presentation was due to a large RCA providing a brisk collateral supply to the left coronary system. Our patient's uniqueness is his young age and the lack of cardiac symptomatology previous to this respiratory illness. This condition if left untreated after the first year of life has a mortality of 90% secondary to myocardial ischemia or infarction, and mitral valve insufficiency leading to congestive heart failure and eventually death.

**A-156 Urban River Pollutants Impact Behavior and Locomotion of Freshwater Prawn *Macrobrachium rosenbergii***  
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Urbanism and anthropogenic activities are two common variables related to increase in river ecosystem pollution. Impact studies of emerging contaminants have often focused on effects on endocrine and reproductive function of aquatic fauna, yet little is known about how contaminants associated with the process of urbanization, such as phthalates and heavy metals, may affect an animal's nervous system and the behaviors it controls. Our study looks at effects of phthalates and heavy metals found in urban river on agonistic behavior and locomotion patterns in a farm-grown freshwater prawn, *Macrobrachium rosenbergii*. We monitored agonistic behaviors and locomotion before and after injection into the animal's hemolymph sinus of 0.006 ppm dibutyl phthalate (DBP) or 0.207 ppm manganese (Mn). Behaviors were evaluated by quantifying six parameters observed during interactions amongst pairs. ViewPoint, a recording and movement tracking software, was employed to assess locomotion patterns. Results show no significant changes ( $p > 0.05$ ) in dominance or aggression levels during agonistic interactions, nor on locomotion speed and distance travelled in prawns injected with DBP or Mn. However, prawns injected with DBP or Mn explored more the center of the open field in the observation tank, when compared with animals injected with saline. This change in pattern of movement can increase the risk of becoming an easy

prey. We now plan to determine the effects these contaminants have on central nervous system protein expression. These types of studies are a means to start applying the tools of modern neuroscience to ecological problems of local and global significance. This study was supported by National Science Foundation (NSF) HRD-1137725 CREST, and National Institutes of Health (NIH) MBRS SCORE SC3GM084763. The authors have declared that no conflict of interest exists.

**A-157 Xylazine as a Drug of Abuse: Toxic Effects to Endothelial Cells in Combination with Cocaine and Heroin**

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Background: Xylazine use as a drug of abuse, in Puerto Rico and worldwide, and its combination with cocaine and/or heroin has increase in recent years. FDA approves Xylazine for animal use only. Clinical findings reported that xylazine users presented limb skin lesions, ulcerations and greater physiological deterioration than heroin users only. The aim of this study was to assess xylazine cytotoxicity on endothelial cells, as this is the first tissue affected upon administration. Methods: Human umbilical vein endothelial cells in culture were treated with xylazine, cocaine, heroin and their combinations from 10 nM to 400  $\mu$ M at 24, 48 and 72 hours exposure periods. IC50 was determined applying a fluorometric assay for viability determination. Annexin V and activation of caspases (8 and 9) assays was implemented in order to determine cell death mechanism. Results: Results indicated IC50 values at 24 hours as follow: xylazine 62  $\mu$ M, cocaine 202  $\mu$ M, heroin 278  $\mu$ M and the combination of the three drugs 55  $\mu$ M. Similar IC50s was observed at 48 and 72 hours. The Annexin V positive results and positive activation of caspases 8 and 9 strongly suggest apoptosis as the cell death mechanism. Conclusions: The study demonstrated that xylazine inhibits endothelial cell proliferation at lower concentrations than cocaine and heroin. These findings support that xylazine use increase cocaine and heroin toxicity when used in combination, and induce apoptotic cell death by. Acknowledgements: This project was supported by National Institute of General Medical Science grants (SP20GM103475), from the National Institutes of Health.

**A-158 Niveles de Conocimientos y Actitudes de los Profesionales de Enfermería en el Manejo y la Promoción del Amamantamiento en Madres con Cesárea**

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Antecedentes: La leche materna cumple con características nutricionales que protegen contra enfermedades, promueve el crecimiento y desarrollo saludable del bebé. Dada la continuidad

del cuidado y proximidad a las madres, el personal de enfermería cumple un papel importante en la iniciación, promoción y prolongación del amamantamiento; procedimiento que depende en gran parte de los conocimientos y actitudes que estos proyectan.

Objetivos: (1) Determinar los conocimientos que poseen los profesionales de enfermería sobre el amamantamiento en madres que han tenido parto por cesárea. (2) Identificar las actitudes que asumen los profesionales de enfermería en la promoción e inicio del amamantamiento en madres con cesáreas. (3) Determinar relación entre el conocimiento y la actitud de los profesionales de enfermería para apoyar a madres con cesáreas en el inicio del amamantamiento. Metodología: Para este estudio se utilizará un diseño de tipo descriptivo correlacional de corte transversal. La muestra total para implementar este estudio, es de 42 profesionales de enfermería que se encuentre laborando las áreas de sala de partos, sala de recién nacido y/o maternidad; y se aplicará en un hospital del área metropolitana de Puerto Rico. Los datos serán recolectados por medio de una hoja de datos socio-demográficos y de dos cuestionarios auto-administrables titulados: "Actitudes hacia la Lactancia Materna para Profesionales de Enfermería" de Dávila, Parrilla y Gorrín (2000) y la "Encuesta elaborada por el Comité de Lactancia Materna de la Asociación Española de Pediatría", de la Doctora Temboursy Molina (2002). Implicaciones: Los resultados de este estudio ofrecerán información actualizada a las unidades hospitalarias donde se lleve a cabo la investigación. Se recomendarán estrategias encaminadas en el fortalecimiento de conocimientos y actitudes de los profesionales de enfermería en el inicio y prolongación del amamantamiento en madres con cesáreas. Esto beneficiaría significativamente a esta población; aumentando la adquisición de información e influenciar positivamente en el estado mental de estos profesionales. A su vez serán transmitidos a todas las madres para que inicien y prolonguen el amamantamiento sin diferenciación del tipo de parto, cuando esto ocurre el neonato adquiere nutrientes e inmunidad para un buen desarrollo y crecimiento.

#### **A-159 Factores Asociados a la Calidad de Vida e Ideación Suicida en Adolescentes de Puerto Rico con Diabetes Tipo 1**

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Trasfondo y Objetivo: En adolescentes con diabetes tipo 1 (DT1), ideación suicida y calidad de vida son aspectos importantes a atender en intervenciones terapéuticas, aunque han sido poco estudiadas en Puerto Rico. Examinamos los factores asociados a la calidad de vida e ideación suicida en adolescentes con DT1. Esperábamos que la depresión fuera el factor más relacionado con éstas. Método: Participaron 40 jóvenes (22 féminas) de 12 a 17 años reclutados en un estudio de tratamiento para la depresión. Completaron el Diabetes Quality of Life-Youth, el Suicidal Ideation Questionnaire, y otras medidas sobre aspectos emocionales, cognitivos, somáticos y conductuales. Sus encargados completaron el Cuestionario de Barreras

a la Adherencia, la subescala de Quejas Somáticas del Child Behavior Checklist, entre otras. Realizamos análisis de correlación y regresión ( $p \leq .05$ ) para identificar los factores asociados a las variables dependientes. Resultados: Las variables asociadas a la ideación suicida fueron depresión, quejas somáticas, auto-cuidado, autoestima/culpa, indefensión, desesperanza y ansiedad. En una regresión múltiple las primeras dos explicaron un 49% de la varianza [ $F(3,36) = 17.85, p \leq .001$ ]. Las vinculadas a la calidad de vida fueron depresión, alteraciones cognitivas, autoestima/culpa, autoeficacia para la depresión, indefensión, ansiedad, desesperanza, autoeficacia para la diabetes, alteraciones de la actividad, apoyo familiar percibido y barreras a la adherencia. Las primeras dos y la última explicaron 52% de la varianza [ $F(3,36) = 13.08, p \leq .001$ ]. Conclusión: Nuestros hallazgos resaltan el impacto de los problemas emocionales, cognitivos, somáticos y conductuales en la calidad de la salud mental y de la vida en general en los adolescentes diabéticos. Reconocimientos: Esta investigación fue subvencionada por el NIDDK (5R03DK092547-04).

#### **A-160 A Very Rare Presentation of Autonomic Dysfunction in a Patient with Guillain-Barre Syndrome**

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Purpose: Classic Guillain Barre syndrome (GBS) is a disorder associated with and immune attack on peripheral myelin causing a flaccid progressive paralysis. Autonomic nervous system involvement is a known complication. Posterior reversible encephalopathy syndrome (PRES) is a clinico-radiologic entity of symptomatic vasogenic brain edema secondary to uncontrolled hypertension, sepsis, eclampsia or chemotherapy. Clinical presentation includes headache, seizures, altered mentation and visual loss. There are very few cases of PRES secondary to GBS prior to treatment. We present a case of PRES secondary to dysautonomia in a patient with GBS. Case description: A 43-year-old woman with no systemic illnesses presented with acute onset of numbness of feet followed by progressive bilateral lower extremity weakness and changes in visual acuity days later. Neurological exam revealed a flaccid quadraparesis and areflexia with distal sensory changes to pinprick. Clinical approach: Patient had lumbar puncture done, electrodiagnostic test, brain MRI and head CT scan. During hospitalization, patient developed severe dysautonomia and respiratory failure. Treatment with immunoglobulins for 5 days was given. Clinical findings: Lumbar puncture showed albuminocytologic dissociation. NCS/EMG showed a demyelinating polyneuropathy as in acquired inflammatory demyelinating polyneuropathy. Brain MRI showed occipitoparietal vasogenic edema, consistent with PRES. The patient recovered completely from visual acuity problems with a normal follow up head CT. Hypothesis: Posterior reversible encephalopathy syndrome can be a presentation of dysautonomia seen in patients with GBS. This is a

very rare presentation of autonomic dysfunction in GBS which warrants prompt recognition and treatment since it confers a good prognosis when treated accordingly.

#### **A-161 Wilm's Tumor of the Left Kidney in a 5-year-old Male with Right Renal Agenesis**

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**Purpose:** Wilm's tumor is a solid tumor of the kidney that arises from immature kidney cells, and is the most common type of kidney cancer in children. It is also the most common abdominal malignancy in childhood, usually diagnosed between 3-4 years of age with approximately 500 new cases per year. We present a case with an unusual presentation of a Wilm's tumor with simultaneous unilateral renal agenesis, complicating furthermore the patient's oncologic condition and treatment plan. **Case description:** Case of a 5-year-old male patient who presented with severe abdominal pain, vomiting and abdominal distention. **Clinical Approach:** Abdominal CT Scan showed a large left suprarenal mass, enlarged left kidney and incidental finding of right renal agenesis. Biopsy was positive for Wilm's tumor. There was no evidence of metastatic disease at diagnosis. After 12 weeks of chemotherapy, the patient had a partial nephrectomy. **Clinical findings:** He completed his chemotherapy regimen without complications. He is currently alive, 4 months after therapy, without evidence of disease. His post treatment course was complicated with an episode of obstructive nephropathy that will require surgical correction. **Hypothesis:** Future studies may focus in the right approach to a patient with a malignant lesion in a kidney when renal agenesis of the contralateral kidney is present.

#### **A-162 En Picada los Matrimonios en Puerto Rico y Diferentes en sus Características el Novio y la Novia**

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En la mayoría de las sociedades modernas el número de matrimonios ha mostrado un descenso considerable. Puerto Rico, muestra un descenso en la tasa de matrimonios de 15.1 en 1980 a 5.8 para el 2013. El objetivo del estudio fue describir las características sociodemográficas por género de la población que contrajo matrimonio en Puerto Rico durante el año 2013. La fuente de información fue la cinta de matrimonios del Departamento de Salud de PR. La investigación, fue descriptiva. Los hallazgos señalan que en el 2013 se celebraron 17,010 matrimonios. Un 6% correspondía a personas que residían fuera de PR. Aproximadamente la mitad se celebró en diciembre, noviembre, junio y julio. Prevaleció la ceremonia religiosa (70%). Los novios mostraron

una mediana de edad al casarse mayor que las novias (32 vs 30), un por ciento mayor de divorciados (35 vs 30), un por ciento mayor casándose con 50+ años (15 vs 10), un por ciento casándose con mujeres menores de 50 años que triplicó al de las novias en esta categoría, un por ciento más alto de matrimonios anteriores y con hijos de casamientos anteriores. El por ciento de novias que estaba estudiando triplicó al de los novios en esta categoría. La disparidad demográfica por género de los contrayentes conjuntamente con el descenso en volumen de los matrimonios presenta retos sociales y demográficos. Esto lleva a considerar la estructura familiar actual como una no tradicional que requerirá a su vez de un abordaje de estudio y entendimiento diferente.

#### **A-163 Lethargy and Poor Feeding in a 2 Days Old Baby Boy: A Rare Metabolic Disease**

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**Purpose:** Ornithine transcarbamylase (OTC) deficiency is a rare metabolic disease its prevalence in the general population is 1 in 80, 000. OTC is an X-linked urea cycle defect, which typically presents in males with hyperammonemic coma in infancy. Early diagnosis and treatment is cornerstone for prevention of neurologic damage and ensuring a good prognosis and life span for affected patients. **Case Description:** Here, we present a newborn Puerto Rican male who presented with lethargy and poor feeding on the 2nd day of life. Patient was treated for clinical sepsis without improvement for which ammonia levels were taken and found to be >1,000 mg/dl. **Clinical Approach:** He was transferred to our institution where patient was started on hyperammonemia management protocol. By that time brain MRI revealed multiple cystic lesions consistent with hyperammonemic encephalopathy. **Findings:** Diagnostic evaluation revealed decreased citrulline and arginine serum concentration and increased urine orotic acid consistent with the diagnosis of ornithine transcarbamylase deficiency (OTC). Ammonia levels stabilized several days after treatment and patient's neurologic status improved. Eventually he was discharged home and returned several weeks later with hyperammonemia secondary to upper respiratory tract infection. Patient died due to extremely elevated ammonia levels and brain edema. **Hypothesis:** This case emphasizes the importance of early suspicion of metabolic disorders in a newborn patient with lethargy. Early diagnosis and treatment of an acutely ill patient with hyperammonemia is crucial in preventing irreversible neurologic damage and death.

#### **A-164 Bioguided Fractionation and Isolation of Chemical Constituents of the Puerto Rican Plant *Simarouba tulae***

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**Background & Objectives:** Species of the genus *Simarouba* have been studied because of its antimalarial, anti-inflammatory, anti-leukemic, antifeedant and antiviral activities. A group of highly

oxygenated terpenes called quassinoids have been isolated from species of the *Simarouba* genus and are thought to be responsible for its therapeutic properties. We hypothesize that *Simarouba tulae* endemic plant is a natural source rich on quassinoids compounds and, thus, responsible of its biological activity. The objective of this study is to isolate and evaluate the biological activity against cancer cell lines of the secondary metabolites from *Simarouba tulae*. Methods: Bioguided fractionation of the crude extract was investigated using the brine shrimp lethality test. Extracts from three organic solvents were prepared and tested for their cytotoxic activity using MTT assay. Results: The *Simarouba tulae* organic extracts were cytotoxic with LC<sub>50</sub> values of <200.00 µg/ml. These extracts were further tested against three breast cancer cell lines (MCF-7, ZR-75-1 and T47D) inhibiting more than 80% of cell growth in two of them. The more active chloroform fraction was purified by column chromatography and resulted in the identification of a quassinoid derivative Simalikalactone D in 11 mg. Conclusions: Based on our results, we demonstrate the strong antiproliferative activity of *Simarouba tulae* plant extracts on cancer cell lines and that its major chemical constituents are quassinoids derivatives. Acknowledgements: Supported by the Institute of Interdisciplinary Research and the Dean of Academic Affairs of University of Puerto Rico at Cayey.

#### A-165 Risk Factors Associated with Bronchiolitis in the Puerto Rican Population

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Background: Evidence suggest that bronchiolitis early in life is a major risk factor for subsequent wheezing episodes and asthma. Literature suggests that risk factors associated with bronchiolitis and atopy overlap in its' association with asthma. However, there is limited information regarding atopy-related risk factors and its' association with bronchiolitis frequency and severity. Methods: Prospective cross-sectional study performed at 4 Emergency Departments of the Metropolitan area. Children less than 24 months of age, with bronchiolitis, and born in Puerto Rico at the time of recruitment were included. Parents were given a physician-administered survey and a bronchiolitis severity assessment was performed. Results: Total of 268 infants were recruited; 57% male, and 43% female. Atopic dermatitis was found to be more predominant in males (19%; p=0.008), and the 4-12 age group. Asthma, and allergic rhinitis were also found significant, suggestive of an association with the atopic triad. Daycare assistance and frequenting with more than 2 children is consistent with risk factors for bronchiolitis. Environmental tobacco smoke failed to show an association with bronchiolitis (23%; p=0.380). Bronchiolitis scores in males were higher across all subscores, but not significant. An increase in RR scores was seen in patients with

previous episodes (p=0.057), MH of asthma (p=0.018), and maternal asthma (p=0.045). This suggests that the patients who present these atopy-related risk factors are more prone to respiratory distress. Conclusion: This study shows that the Puerto Rican pediatric population present atopy-related risk factors, some of which may be modified in order to prevent the development of asthma later in life.

#### A-166 Effect of HIV and Cocaine in Cathepsin B, NOX4 and Sigma-1 Receptor Expression in Post-Mortem Brain Tissues

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Background and Objectives: Upon Human Immunodeficiency Virus (HIV-1) infection, monocytes can pass the blood brain barrier, transform into perivascular macrophages and secrete neurotoxic factors. This promotes brain inflammation and exacerbates HIV-associated neurocognitive disorders (HAND). One neurotoxic factor is cathepsin B, a lysosomal cysteine protease secreted by HIV infected macrophages that promote neuronal apoptosis. Interestingly, cocaine potentiates further cathepsin B secretion and neurotoxicity from HIV infected macrophages (Zenón-Meléndez et al, 2014). However, how cocaine affects both cathepsin B secretion in vitro and in some brain regions is unknown. One potential mechanism might be through activation and over expression of sigma-1 receptor ( $\sigma$ -1), an endoplasmic reticulum (ER) chaperone that directly binds to cocaine and modulates the activation of NADPH oxidase 4 (NOX4), which promotes reactive oxygen generation and lysosomal disruption. We hypothesize that sigma-1 and NOX4 expression increases concomitantly with cathepsin B expression in post-mortem brain tissues in HIV-infected individuals with cocaine abuse than their non-abusing counterparts and by HAND severity as determined by semi-quantitative immunohistochemistry. Methods: A total of 15 basal ganglia post-mortem brains slides donated by the NNTC Consortium were stained for sigma-1, cathepsin B and NOX4 expression Spots of fluorescence were quantified by the Imaris Software (CT, USA). Two Way ANOVA analyses were done using Graph Pad program. Results and Conclusions: Our results suggest that cathepsin B,  $\sigma$ -1 and NOX4 expression increase significantly (p<0.05) in post-mortem brains of HIV-infected and cocaine abusers versus uninfected normal cognition non-cocaine abusers. Acknowledgements: This work was supported by UPR-MSU institutional funds, R01MH083516.

#### A-167 Clinical Characterization and Mutation Spectrum in Caribbean Hispanic Families with Lynch Syndrome

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**Background and objectives:** Lynch Syndrome (LS) is an inherited form of colorectal cancer caused by germline mutations in the Mismatch Repair (MMR) genes. It accounts for approximately 5% of all colorectal cancers. The prevalence of LS among US Hispanics is unknown. Puerto Rican Hispanics are the second most prevalent group of Hispanics in the US and also represent Caribbean Hispanics based on similar ancestry (Indian, African and Spaniards). The objective of this study was to describe the germline mutations of LS in Caribbean Hispanics (CH) from Puerto Rico and Dominican Republic. Furthermore, the study aimed to elucidate the differences between MMR deficient and MMR proficient patients. **Methods:** Subjects were recruited through the Puerto Rico Familial Colorectal Cancer Registry and were classified according to Amsterdam and Bethesda clinical guidelines. Those individuals who meet the Amsterdam and Bethesda criteria underwent MMR gene sequencing or examination of tumors by immunohistochemistry for the MMR proteins. **Results:** Our results show that mutation spectrum of CH LS patients was composed mostly of MSH2 (66.7%) mutations, followed by MLH1 (25%). One mutation was identified in MSH6 (8.3%). A previously unidentified mutation in MLH1 gene c.2044\_2045del was found in one CH family. The percentage of individuals that met Amsterdam criteria I and II were 21.3%, whereas 78.7% of individuals met Bethesda guidelines. MMR deficient individuals were more likely to have a prominent family history of CRC and tumors located at the proximal colon. Compared to MSH2 mutation carriers, MLH1 mutation-positive individuals were more likely to have a strong family history of CRC and LS associated cancers. **Conclusions:** This study is the first to enlighten on the mutation spectrum of LS and characteristics of LS individuals in Caribbean Hispanics. **Funding:** National Institute on Minority Health Disparities Award Number 8U54MD 007587-03 and U54MD007587; NCI Award Number 5K22CA115913-03, R21CA167220-01, 5R03CA130034-02, and U54CA096297; Center for Collaborative Research in Health Disparities RCMI Award Number G12MD007600. **Acknowledgements:** This work was partially supported by the Research and Development Service, the Gastroenterology Department and Department of Veterans Affairs, Caribbean Healthcare System San Juan, P.R. The contents of this manuscript do not represent the views of the VA Caribbean Healthcare System, the Department of Veterans Affairs or the United States Government.

#### **A-168 Comparación de Transmisión de Flujo Radiante entre Lámpara LED y Halógena a través de Porcelana Feldespática a grosores de 2, 4 y 6mm**

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**Abstract:** El grado de polimerización juega un papel importante en las propiedades físicas y mecánicas de los materiales a base de resina como la absorción de agua, decoloración, resistencia al desgaste, dureza y fuerza de adhesión. Cuando la luz pasa a través de un material, parte de ésta se pierde debido a su reflexión sobre la superficie y parte es absorbida. La transmisión es el proceso por el cual el flujo radiante incidente deja una superficie o medio desde un lado distinto del lado de incidencia (por lo general el lado opuesto). Es importante conocer esto debido a que en restauraciones tipo onlays/inlays no sabemos cuánto es el flujo radiante disponible para fotopolimerizar el cemento. **Objetivo:** Comparar la transmisión de flujo radiante emitido por lámpara halógena y LED a través de porcelana feldespática a grosores de 2, 4 y 6mm. **Metodología:** Se fabricaron cinco bloques de porcelana feldespática IPS (IVOCLAR) a grosores de 2, 4 y 6mm de 1cm<sup>2</sup> de perímetro. Se utilizaron lámparas halógena Elipar™ 2500 (3M ESPE™) y LED VALO® (Ultradent Products). Las medidas fueron hechas en un tiempo de 30 segundos con un radiómetro PM320E (THORLABS®). **Resultados:** El flujo radiante transmitido a través del mismo grosor de porcelana es mayor con lámpara LED. Hay diferencia significativa entre todos los grosores a excepción de 4 y 6 mm con LED con un 95% de confianza. **Conclusiones:** Al mismo grosor de material el flujo radiante emitido por la lámpara LED es superior a la lámpara halógena.

#### **A-169 Propiedades Psicométricas del Diabetes Social Support Questionnaire-Family (DSSQ-F) en Adolescentes de Puerto Rico con Diabetes Tipo 1**

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**Trasfondo y Objetivos:** El apoyo familiar es fundamental para facilitar el autocuidado en adolescentes con Diabetes Tipo 1 (DT1). Pocos instrumentos validados en Puerto Rico evalúan el apoyo familiar dirigido a las personas con diabetes. Ninguno distingue la conducta de apoyo emitida del apoyo percibido por el paciente. Examinamos las propiedades psicométricas del Diabetes Social Support Questionnaire-Family (DSSQ-F) en una muestra de adolescentes de Puerto Rico. Esperábamos una consistencia interna  $\geq .80$  para las escalas totales y  $\geq .70$  para sus subescalas, así como correlaciones moderadas con algunos criterios de validez. **Método:** Participaron 142 jóvenes (76 féminas) de 12-18 años con DT1. Completaron el DSSQ-F y el Self-Care Inventory (SCI) durante un estudio de validación. Estimamos la consistencia interna utilizando el alfa de Cronbach y con el coeficiente de Pearson examinamos su validez concurrente. **Resultados:** Las escalas totales de Frecuencia (conducta emitida) y Sentimientos (apoyo percibido) del DSSQ-F mostraron una

confiabilidad de .93 y .98, respectivamente. El alfa de las subescalas de Frecuencia fluctuó entre .70 y .89; para las subescalas de Sentimientos estuvo entre .88 y .96. Los totales de Frecuencia y Sentimientos correlacionaron .40 y .36 respectivamente ( $p \leq .001$ ) con el autocuidado de la diabetes. En una sub-muestra de 40 participantes, las puntuaciones totales de Sentimientos se asociaron significativamente a la depresión, la autoeficacia para la depresión y la calidad de vida reportada por los adolescentes. Conclusión: Nuestros hallazgos proveen evidencia sólida apoyando la confiabilidad y la validez del DSSQ-F en nuestra población adolescente con DT1. Reconocimientos: Este estudio fue subvencionado por el NIDDK (5R03DK092547-04).

#### **A-170 Development of an Assistive Technology Needs Assessment Questionnaire for Hispanic Community-Living Older Adults with Functional Limitations**

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Identifying the assistive technology (AT) needs of older adults is a key feature of quality improvement in modern health-care service delivery. Measuring those needs is one way of assessing and monitoring the quality of health services while also improving the quality of life of this population. This study aimed to develop a tool for assessing the AT needs of community-living older adults with functional limitations. A methodological research design was used to develop the AT needs assessment questionnaire and to test its content validity with aging experts and community-living older adults. We conducted a comprehensive literature review, used the Content-Validity Ratio exercise with five experts in assistive technology and aging, and piloted the preliminary version of the instrument with ten older people 70 years and older, followed by individual interviews. This process resulted in the development of the Assistive Technology Card Assessment (ATCA), an interview-based tool used to measure the AT needs of community-dwelling older adults with functional limitations in the following domains: reading, mobility, personal hygiene, toileting, cooking, home maintenance, medication management, communication, home accessibility, and home safety. It uses a sorting methodology in which the individual sorts the cards depicting a picture of an AT according to their experience with the use of each kind of AT. The ATCA will undergo validity and reliability tests in a future study. Information about the AT needs of this population may be useful to impact policy barriers that interfere with older people getting the AT they need to age in place

#### **A-171 Nandrolone in Adolescence Increases Cocaine-induced Sensitization and Reduces CPP to Cocaine in Rats**

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**Background and objectives:** The use of anabolic androgenic steroids (AAS) is increasing, particularly among adolescents. Since neurobiological systems are undergoing developmental rearrangements, it is important to determine if exposure to AAS during adolescence affects the sensorimotor and rewarding properties of drugs of abuse. **Methods:** From days 28-38, rats received a daily injection of nandrolone decanoate (20 mg/kg/sc). Adult male (65 days) and female (42 days) rats were divided into four groups; Oil-Saline, ND-Saline, Oil-cocaine and ND-cocaine and tested for locomotor sensitization to cocaine or for conditioned place preference (CPP) to cocaine. **Sensitization:** From days 1-5 and at days 13 and 23 rats received an injection of cocaine (15 mg/kg/ip) and their locomotor response was measured at days 1, 5, 13 and 23. **CPP:** Another group of rats received an injection of cocaine every other day for 5 days and their preference for the chamber where they received the cocaine injection was measured. **Results:** Pre-exposure to nandrolone increased the locomotor response to cocaine in both sexes. In females the response on days 13 and 23 was increased, whereas in males nandrolone increased the initial locomotor response to cocaine. Nandrolone had no effect on CPP to cocaine. **Conclusions:** These data show that exposure to supra-physiological levels of androgens during adolescence modifies the brain circuitry that regulates motor and addictive behaviors, increasing the salience and rewarding properties of drugs of abuse such as cocaine. **Acknowledgements:** Financial assistance was provided by FIPR- UPR RRP, an institutional grant from UPR, RRP.

#### **A-172 Optimization of Human Erythrocyte Metabolomics: A Dual pH, Dual Polarity LC-MS Approach for Redox Metabolites**

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**Background:** Due to the complex nature of metabolites, there is no single analytical method capable of profiling the metabolome in its entirety. Metabolite characteristics, such as polarity, pKa, pH, stability, and ionizability are fundamental when determining a global analytical method for metabolomics. Redox couples Glutathione (GSH/GSSG), NAD<sup>+</sup>/NADH, and NADP<sup>+</sup>/NADPH are an example of pH sensitive metabolites, and are great indicators of intracellular erythrocyte environment. **Objective:** Develop a method capable of robust metabolite coverage while maintaining the integrity of pH sensitive metabolites. **Methods:** We developed an analytical platform using LC-MS, consisting of (1) extraction at low and high pH, and (2) column switching for chromatography and mass spectrometry. A dual pH extraction was employed using ammonium formate buffer at pH 3.2 and pH

9.2. Dual polarity, dual pH LC-MS was achieved using ZIC-SeQuant HILIC and ZIC-pHILIC columns. Samples were injected twice into each column, alternating analysis in the positive (+) or negative (-) ion mode. Acidic samples (pH 3.2) were run on HILIC (+/-) column, while the basic samples (pH 9.2) were run on the pHILIC (+/-) column. Results/Conclusions: The effects of implementing a dual pH, dual polarity LC-MS approach on metabolite recovery and profiling was demonstrated. Thereby, establishing optimized methods for extraction and analysis of the metabolites. pH-sensitive redox metabolites showed a predictive behavior given their chemical properties. Certain metabolites were sensitive to pH as well as the polarity and/or column used. Acknowledgements: University of Utah, School of Medicine; University of Puerto Rico, School of Medicine.

#### **A-173 Percepción de Carga del Cuidador Informal del Paciente con Desorden Mental**

*Andrea E. Nieves Nieves RN, MSN, Carmen L. Madera Ayala RN, DNS*

Antecedentes y Objetivos: Aunque cuidar a un familiar puede ser elegido el cuidador/a informal puede experimentar carga. Objetivos: (1) Describir perfil de cuidadores informales de pacientes con desorden mental, (2) Examinar percepción de carga objetiva y subjetiva del cuidador/a informal, (3) Determinar si existe relación entre perfil y percepción de carga del cuidador/a. Metodología: Diseño cuantitativo no experimental transversal de corte correlacional. Muestra de 17 cuidadores/as informales de personas con desorden mental participantes de servicios ambulatorios en San Juan, Puerto Rico. Se administró la Entrevista de Carga Familiar Objetiva y Subjetiva (ECFOS-II) (Vilaplana et al. 2007). Resultados: El 58% de los cuidadores son mayores de 60 años y solo uno es varón. El 76 % de cuidadores dedica más de 10 horas a cuidar y lleva más de 13 años como cuidador. La mayoría eran hermanos/as o madres/padres del paciente. El diagnóstico más común fue esquizofrenia. Presentaron mayor percepción de carga subjetiva relacionada a preocupación por futuro del paciente. Mostraron mayor percepción de carga objetiva relacionada a cambios de rutina. Hubo relación significativa entre edad del paciente y carga subjetiva de actividades diarias ( $\chi^2=-0.716$ ,  $p\leq 0.05$ ), y ésta carga con relación con paciente ( $r=10.306$ ,  $p\leq 0.05$ ). Estatus de trabajo presentó relación marginalmente significativa con carga objetiva en actividades del diario ( $\chi^2=5.038$ ,  $p=0.081$ ). Conclusiones: Se presentan datos del perfil de cuidadores de personas con desorden mental, áreas en que perciben mayor carga y aspectos del perfil que se relacionaban a percepción de carga. Información útil para dirigir ayudas específicas a sus necesidades, desarrollar programas educativos y de apoyo.

#### **A-174 Nandrolone in Adolescence Alters Ovarian and Testicular Tissue in Rats**

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Background and objectives: Anabolic Androgenic Steroids (AAS) are abused by adolescents, this tendency is 2-3 times more common in males than in females. The present study investigated the effect of nandrolone given during adolescence, and of cocaine during adulthood, on ovarian and testicular histology of rats. Methods: From days 28-38, rats received a daily injection of nandrolone decanoate (20 mg/kg/sc). When animals reached adulthood (males (65 days) and females (42 days) they were divided into four groups; Oil-Saline, ND-Saline, Oil-cocaine and ND-cocaine and tested for CPP to cocaine. A day later animals were euthanized, perfused with 4% paraformaldehyde, and the testes and ovaries removed, postfixed, cryoprotected with 30% sucrose and frozen until the day of the assay. Gonads were sectioned at 20  $\mu$ m, stained with H & E, dehydrated with a series of alcohol and coverslipped with permount. Sections were analyzed using a Zeiss microscope. Results Males: Nandrolone decreased testicular and seminiferous tubule size, as well as spermatogenesis. Surprisingly, testicular weight and seminiferous tubule size of nandrolone-treated rats that received cocaine was not significantly different than that of saline controls. Females: Nandrolone decreased ovarian weight and induced follicular atresia. Cocaine induced the development of highly vascular structures resembling cysts. In contrast the ovaries of rats treated with nandrolone and cocaine showed highly vascularized atrophied follicles. Conclusions. This data revealed that exposure to AAS and cocaine has detrimental effects on male and female gonadal tissue and fertility. Acknowledgements: Financial assistance was provided by FIPR-UPR RRP.

#### **A-175 Sub-clinical Phenotype Characteristics of Individuals with Orofacial Clefts**

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Background and Objective: Oral clefts (CL/P) are the most common birth defect that occurs when the lip or the roof of the mouth does not form properly. Individuals with CL/P have some visible characteristics called phenotypes as physical manifestation of a certain genotype. A phenotype characteristic increases clinical descriptions, reduces misclassification and helps to identify other associated risk factors. The objective of this study was to perform a systematic review of literature to identify those sub-clinical phenotypical characteristics of individuals with orofacial malformations. Method: A systematic literature review was conducted using PubMed (2008-2014). We used the following keywords: "phenotypes" and "affected" individuals with CL/P. Studies based on phenotypical characteristics in affected indivi-

duals with CL/P with all kinds of study designs were selected. A total of 95 articles were found; but only 7 complied with the criteria defined above. Results: According to our systematic literature review, some sub-clinical phenotype features identified are: microdontia, dental agenesis, supernumerary teeth, dermatoglyphic lip print whorls, microform clefts, bifid uvula, velopharyngeal insufficiency, and defects on Orbicularis Oris muscle. Conclusion: Studies concluded that the identification and characterization of sub-clinical phenotypes are important to study the etiology of CL/P and may or not be present on an unaffected relative. Results support the need to conduct studies that describe and evaluate these characteristics on the Puerto Rican population.

#### A-176 The Drunken Heart

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Alcoholic cardiomyopathy is characterized by cardiac muscle cell dysfunction secondary to what is believed to be direct acetaldehyde toxicity and cellular apoptosis. Case description: 65 y/o male patient who went to the ER complaining of shortness of breath and bilateral lower extremity edema that started 2 weeks of evolution, associated with dyspnea on exertion and palpitations. Upon evaluation patient was found tachypneic, tachycardic with elevated blood pressure. PE remarkable for bibasilar crackles and irregular rate and rhythm. EKG was remarkable for atrial fibrillation with fast ventricular response and low voltages. CXR with congestive changes and cardiomegaly. Patient was treated with diuretics, nitroglycerine infusion and NIPPV. After adequate response patient was admitted to ward. Patient referred drinking 8-10 beers daily with rum for 35 years but quit 6 weeks prior to admission. Transthoracic echocardiogram was performed which was remarkable for severely reduced EF (10-15%) and an opacity appearing intermittently at the left atrium. This finding was then confirmed by transesophageal echocardiogram and confirmed to be a big laminated right atrial thrombus. Patient was discharged on Rivaroxaban. Follow up echocardiogram revealed resolution of thrombus. Cardiac catheterism was performed and found with non-obstructive CAD for which it was determined that CHF was secondary to cardiac muscle toxicity from alcoholism. Despite quitting alcohol patient remained with severe left ventricular dysfunction and today is on full medical therapy for CHF and has a CRT-D. Early recognition of alcohol induce cardiomyopathy with prompt discontinuation of use can lead to improvement of cardiac dysfunction.

#### A-177 Systematic Literature Review: Micronutrients and Orofacial Clefts

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**Background & Objectives:** The etiology of oral clefts might be influenced by multiple factors including the maternal diet. Micronutrients are essential components for the optimal development and function of our body. They are composed of vitamins and minerals, which are consumed in small doses in our meals. The aim of this study was to perform a systematic review of literature to evaluate the association between the maternal deficiency of certain micronutrients during pregnancy and the risk of having a child with oral clefts. **Methods:** A systematic literature review was conducted using PubMed (2004-2014). We used the following keywords: "Micronutrients associated with cleft" and "Studies on micronutrients". Studies performed by the most published author/expert in this field (Dr. Ronald Munger) based on maternal nutrition and all kinds of study designs were selected. A total of 3,665 articles were found; but only 6 complied with the criteria defined above. **Results:** According to our literature review, studies indicated an association between inadequate levels of certain micronutrients in the mother during pregnancy and oral clefts. However, this association is still unclear and inconclusive for humans, especially for ethnicity. This suggests that oral clefts are not only influenced by the lack of intake of certain micronutrients but other factors like genetics and the environment. **Conclusion:** Futures studies should be conducted to analyze the diet of Puerto Ricans to identify patterns of deficiency of nutrients and focus on establishing association with oral clefts to reduce the birth prevalence of this congenital defect.

#### A-178 The Etiologic Role of Human Papillomavirus and p16INK4A Expression in Penile Cancer: A Study in Puerto Rico

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**Introduction and Objectives:** Penile cancer accounts for approximately 0.8 to 2.8 new cases per 100,000 males annually in Puerto Rico. During this period men in Puerto Rico had approximately 4-fold increase incidence of penile cancer as compared to Non-Hispanic Whites (NHW). Recent studies reveal that infection with human papillomavirus (HPV) has been linked as a risk factor for penile cancer. Studies have shown that approximately 40% to 45% of penile cancers are HPV-related, with HPV-16 being associated in 63% of the cases. Penile cancer has also been associated with low-risk HPV types, with HPV-8 been the more prevalent. Mortality rates of penile cancer are also significantly higher among Puerto Rican men. Despite the high burden of penile cancer in Puerto Rico as compared with other racial and ethnic groups, no studies have been develop to study the association of HPV genotypes



with penile cancer and limit the opportunity to understand and document the burden of HPV-related penile cancer in this population. Herein we present a correlation of HPV genotypes, with pathological status of the tumor and p16INK4a expression in penile cancer in Puerto Rico. Methods: Thirty-two paraffin embedded tissue blocks and thirty-one fresh penile cancer tumors were identified and collected from surgically treated patients with penile cancer. After histopathological review by 1 pathologist, tumors were characterized based on the histological differentiation of tumor, grade, lymph node involvement, lymphovascular infiltration, and histological subtype. Following DNA extraction, HPV genotyping was performed in all samples using the INNO-LiPA HPV Genotyping Extra Amp detection kit. Also, p16INK4A status was detected using immunohistochemistry. Results: Human Papillomavirus was detected in 28 of 63 cases (44.4%). The most prevalent HPV genotypes were HPV-16 (39 %), HPV-35 (9.8 %), HPV-6 (7.3 %), and HPV-52 (7.3 %). High risk HPV and low risk HPV was detected in 73.2 % and 17.1 % of the HPV positive samples, respectively. p16 expression was observed in 22.0 % of cases. Primary tumor staging was observed pT2 (corpora cavernosum or spongiosum - 30 %) and pT3 (urethra involvement - 30 %). A majority of penile cancer had Grade 1 (well differentiated tumors) of penile cancer. Conclusions: In summary, HPV was found in 44.4 % of the cases and the most common genotypes were HPV-16, HPV-35, HPV-6 and HPV-52. We have established the first study analyzing HPV genotypes, relationship with p16 immunohistochemistry expression, and histopathological review. Source of Funding: The National Institutes of Health Award Number R25MD007607 from the National Institute on Minority Health and Health Disparities, RCMI Funding, Seed money from University of Puerto Rico Comprehensive Cancer Center, Institutional funds from graduate program of the University of Puerto Rico School of Pharmacy

#### **A-179 Ultrastructural Changes in the Optic Nerve after Injury and Neurotrophic Factor Treatment**

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We have shown that ciliary neurotrophic factor (CNTF) and fibroblast growth factor (FGF-2) have strong facilitatory effects on axon regeneration in the adult frog optic nerve after injury. In these nerves, bundles of regenerating axons were associated with astrocytes and macrophage-like cells. The objective of the present study is to characterize the identity of these cells, and to determine the changes that occur after CNTF or FGF-2 application. We performed optic nerve crush and applied into the nerve either saline solution or neurotrophic factors. We examined the optic nerves at different timepoints: 48h, one week, and two weeks after axotomy. Electron microscopy was used to characterize the ultrastructure and localization of the ma-

crophages/microglia after injury and neurotrophic treatment. Antibodies against specific macrophage subtypes were used to label these cells in confocal images of different regions of the nerve. We found a large number of macrophage-like cells at the lesion site, and distally in close proximity to regenerating axons in CNTF and FGF-2 treated nerves. Significantly fewer cells were present proximal to the lesion. Many of these macrophage-like cells at, and distal to, the lesion were ED-1-positive in both CNTF and FGF-2 treated nerves. Both M1 (Arginase-positive) and M2 (CD-86-positive) subtypes were identified. We are currently quantifying the distribution of these cell subtypes at different timepoints and nerve regions after injury. In conclusion, the application of CNTF and FGF-2 affects the number and the distribution of macrophage subtypes after optic nerve injury and during optic nerve regeneration. Supported by NIH-GM 093869, NIH RCMI-G12RR0305. GVM is supported by MBRS-RISE (G12RR03051).

#### **A-180 Molecular Characterization and Screening of Metabolic Diseases: Ornithine Transcarbomylase Deficiency (OTC) and Citrullinemia (CIT) among Puerto Ricans**

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Newborn screening is a vital process that defines the course that a baby's life could take. Identifying metabolic diseases at early stages gives the opportunity of early treatment, making the chances of survival higher. Amongst the metabolic diseases tested with newborn screening the urea cycle diseases are one of the most essential. The Urea Cycle is responsible for metabolizing nitrogen in the form of ammonia, which can be toxic in high levels, and so affected newborns can develop coma after 4 days of life. Although the usage of tandem mass spectrometry is the most common way of performing newborn screening for a vast number of metabolic disorders by identifying elevations on chemical compounds in the dried blood spot (DBS) specimen from the newborns, some factors can induce false negatives and false positives. Therefore, several molecular methods have been incorporated to NBS, using the disorders most common mutations as models. These vary due to the ethnic background and those considered "common" mutations by other programs might not be of use to our population. Therefore the aim will be to identify common mutations amongst the population conducting characterization procedures. After characterizing a urea cycle condition patient's genome and comparing it to another baby without the diseases results confirmed that there are indeed two previously unpublished mutations found. Further investigations would confirm if these are specific to our population. (IRB Approved #A9370113)

#### **A-181 Locomotors Analysis of Drosophila Mutants affecting Neurotransmitter Release**

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**Introduction:** Neurotransmitter-release is regulated by several presynaptic-proteins where Syntaxin and Complexin are crucial. We look the locomotor activity of *Drosophila* adult animals to evaluate if altered motor behavior could be a consequence of an abnormal central nervous system or altered peripheral nervous system output. **Hypothesis:** Mutants display poorer motor performance in agreement with altered synaptic transmission. **Methods:** To discriminate between central and peripheral motor alteration we look at the locomotor behavior in animals with and without head. Climbing assays, grooming and flip over were tested in entire animals. Stepping and flip over were tested in decapitated individuals. **Results:** Complexin null and Syntaxin hypomorph mutant display similar phenotype in synaptic transmission but different behaviors. Complexin could not climb, Syntaxin has the lower climbing speed and the other genotypes have indistinguishable performance. Complexin flip over in 15min in turn, other genotypes flip over in few seconds. Decapitated animals are not able to climb but they stay on their feet readjusting the position. Surprisingly, decapitated animals are able to fly without control and flip over. Complexin and Syntaxin display the slower performance compared with the other genotypes. **Conclusion:** Locomotion is a complex behavior which includes central and peripheral control. Flight and stepping is encoded in an independent circuit in the peripheral nervous system in turn navigation requires the central nervous system. Severe synaptic transmission defects observed in Complexin impair all of type of locomotion. Less severe synaptic transmission defects allow the animals to perform all types of locomotion but with lower performance.

**A-182 Effect of pH in the Formation and Stability of Sulfmyoglobin**

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**Introduction:** Hydrogen sulfide (H<sub>2</sub>S) is a gaseous compound regarded as highly toxic; nevertheless, it was recently discovered that various enzymes in the body produce H<sub>2</sub>S (i.e. cystathionine beta-synthase). This allowed a further investigation of H<sub>2</sub>S as a possible therapeutic mechanism with roles in neuromodulation, vasodilatation, among others. Moreover, some hemeproteins (like myoglobin), in the presence of H<sub>2</sub>S and O<sub>2</sub> or H<sub>2</sub>O<sub>2</sub>, acquire a modification of the heme group as the HS radical species binds to the pyrrol B forming a sulfheme. In the case of sulfmyoglobin, the protein's ability to bind oxygen diminishes, causing sulfmyoglobinemia. However, the precise role of pH is not yet known, nor its relation to the H<sub>2</sub>S and HS- equilibrium that leads to the HS radical formation. **Objective or Hypotheses:** The project will focus on defining the role of pH for sulfmyoglobin formation and its kinetic pathways. It is expected that in a lower pH, myoglobin will be more prone to form the sulfheme derivative because the prominent species is H<sub>2</sub>S, while in higher pH values HS- prevails. **Methods:** To determine the presence of sulfmyoglobin, UV-Vis spectroscopy was employed. Samples with different pH values (5.0-8.0) were monitored at visible wavelengths. The band that determined the existence of sulfmyoglobin is at around 620nm. Afterwards, a kinetic analysis during 24 hours was used to evaluate the samples' stability. **Results/Conclusion:** For the better understanding of the reaction's mechanism, pH's effect must be studied extensively to establish parameters that can serve as a basis in the realization of future studies.

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