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## Abstracts\*

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### • Oral Presentations •

1631

#### **Andrographolide alters metabolism and mitochondrial function in prostate cancer**

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Prostate cancer (PCa) is the second most common diagnosed cancer and the fifth cause of cancer mortality in men worldwide. In the United States, PCa is the most common diagnosed cancer and the third cause of cancer mortality in men. PCa is often treated using radiation, chemotherapy or radical prostatectomy. However, the combination of natural products with the standard of care treatment is an emerging area of cancer therapeutics. Previous studies from our laboratory showed that Andrographolide inhibits prostate cancer progression through a DNA damage response mechanism. In this study, we investigated the role of Andrographolide in metabolic and mitochondrial function. Tumor development was performed by using an orthotopic xenograft model in which the prostates of SCID mice were injected with 22RV1 cells, and mice were treated three times per week with Andrographolide 10 or 25 mg/kg. Tumor tissue was collected to evaluate the effect of Andrographolide in tumor gene expression. Microarray analysis identified carbohydrate metabolism, connective tissue development and function, and cell cycle as a major molecular and cellular function altered in tumors treated with Andrographolide. Here, we found that SAS-6 Centriolar Assembly Protein (SASS6), F-Box And Leucine Rich Repeat Protein 4 (FBXL4), Myeloid Derived Growth Factor (MYDGF), TTK Protein Kinase (TTK), Mitochondrial Ribosomal Protein S33 (MRPS33) and Zinc Finger Protein 766 (ZNF766) were significantly altered when treated with Andrographolide. Androgen-independent (PC3) and androgen-dependent (22RV1) cell lines were treated with Andrographolide (25 $\mu$ M). With the Seahorse MitoStress assay, PCa cells treated with Andrographolide showed a metabolic profile with diminished mitochondrial respiration. These data suggest that Andrographolide disrupts mitochondrial function and metabolic capability in PCa. This work was funded by Institutional funds from the University of Puerto Rico Comprehensive Cancer Center and the School of Pharmacy; NIH-NCI grant U54CA096297; and MARC grant 5T34GM007821-38.

1448

#### **Aprendizaje en Servicio en Educación en Salud ante el Huracán María**

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Trasfondo y objetivos: El Huracán María ofreció la oportunidad de responder mediante aprendizaje en servicio a la emergencia en Puerto Rico. El estudiantado de Maestría en Educación en Salud Pública participó de experiencias de campo para demostrar destrezas de análisis situacional, facilitación de grupos y desarrollo de intervenciones post-emergencias. Se atendieron asuntos de salud críticos y subsanó la limitación de recursos e infraestructura de servicios para proteger la salud, prevenir enfermedades y mitigar daños. Método: Se trabajó con los cursos de Participación Social y Apoderamiento Comunitario, Uso de la Creatividad en la Promoción de la Salud y El/La Profesional como

Facilitador(a) de Grupo. Se realizaron actividades de aprendizaje en servicio y educación a la comunidad responsivas a las realidades, características y necesidades de personas y grupos comunitarios. Resultados: Se desarrolló un Proyecto fotográfico de PhotoVOICE: Realidades de Estudiantes de Salud Pública a 6 meses del Huracán María y se redactó el libro digital Poemas y Cuentos con Prisa. Se realizaron entrevistas, un recorrido y una cartografía comunitaria de la comunidad Socucho en Morovis. Se desarrolló material e intervenciones educativas variadas de acuerdo a las necesidades apremiantes en las comunidades. Aproximadamente 685 personas de diferentes edades fueron atendidas en escuelas, organizaciones comunitarias y públicas, condominios y plazas. Los temas abordados incluyeron la higiene personal, manejo del agua, estrés, alimentos y generadores eléctricos, seguridad ambiental, conjuntivitis, dengue, leptospirosis, pediculosis, diabetes y gastroenteritis, entre otros. Conclusión: La Educación en Salud es una herramienta fundamental en el manejo de primera línea en situaciones de emergencia. Estas experiencias implicaron adaptación y flexibilidad curricular para responder adecuadamente a diversos retos y desarrollar destrezas en el manejo de emergencias. Las actividades promovieron la reflexión post Huracán entre estudiantes, facultad y comunidad y divulgación de recomendaciones y alternativas para afrontar situaciones presentes y futuras. Reconocimientos: Ninguno.

1418

### **Análisis Estadístico Computacional y Territorial del Sistema de Salud de Puerto Rico**

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Política Pública Analizada: Se analiza la política pública relacionada con considerar el Sistema de Salud de Puerto Rico como un conjunto de regiones territoriales con costos de salud independientes o como un conjunto de regiones territoriales con costos de salud dependientes donde dominan los costos de una de las regiones. Disciplina o Teoría: El modelo de Sistemas Adaptativos Complejos propuesto por John Holland en 1992 es aplicado en un análisis estadístico computacional y territorial del Sistema de Salud de Puerto Rico. Cuando los sistemas de salud se conceptualizan como sistemas adaptativos complejos es necesario utilizar el análisis estadístico computacional para conocer el comportamiento del sistema de forma tal que pueda ser mejorado. Fuentes de Información: Datos de costos del 2013 de todos los hospitales de Puerto Rico del American Hospital Directory (AHA). Método: Se desarrolla metodología estadística de simulación y clasificación para determinar dependencia o independencia de las regiones del Sistema de Salud de Puerto Rico en términos de costos “inpatient”. Hallazgos: El Sistema de Salud de Puerto Rico es altamente dependiente de la región territorial de San Juan en términos de los costos “inpatient”. Implicaciones: Con impactar los costos “inpatient” de la región territorial de San Juan se impactarán los costos “inpatient” del resto del Sistema de Salud de Puerto Rico. Se facilita grandemente el mejoramiento del Sistema de Salud si nos concentramos solamente en una región territorial. Se valida el concepto de una única región a nivel isla para correr el Sistema de Salud. Reconocimientos: Ninguno.

1370

### **The role of stigma in healthcare and well-being of HIV-positive young gay, bisexual, and other men who have sex with men in Puerto Rico.**

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Background & Objectives: Young gay, bisexual, and other men who have sex with men (YGBMSM) have been disproportionately affected by HIV. From 2011 to 2015, HIV diagnoses among youth remained stable, but increased 19% among Hispanic/Latino YGBMSM in the United States and 6 dependent areas, including Puerto Rico (PR). By De-

cember 2018, GBMSM accounted for 29% of all HIV diagnoses in PR. HIV stigma can compromise the health and well-being of persons with HIV. The goal of this study was to describe potential effects of stigma in the healthcare and well-being of HIV-positive YGBMSM in PR. Methods: We conducted a qualitative study using focus groups with a sample of 20 HIV-positive YGBMSM in PR (mean age 25.5), with an average of 2.6 years diagnosed with HIV. Group discussions were recorded and transcribed for content analysis. We identified experiences of perceived, internalized and enacted HIV stigma, and their potential implications for health. Results: Participants discussed multiple dimensions of HIV-stigma. Enacted stigma, in the form of rejection from family, friends, current/potential partners, and employers/coworkers, were common among participants. Internalized stigma was evident in remarks about self-blame and shame based on HIV status. Perceived stigma was manifested as hesitance in HIV testing prior to diagnosis and delayed treatment initiation, due to fear of involuntary disclosure of status when seeking services at HIV clinics. Participants expressed concerns regarding breach of confidentiality of HIV status and fear of discrimination, as barriers for access to treatment. Conclusion: Stigma is a central determinant of health inequity that affects vulnerable populations, such as HIV-positive YGBMSM. Findings suggest that HIV stigma may challenge HIV-positive YGBMSM's access to health-conducive resources. Interventions that address HIV stigma are needed to foster positive health outcomes among HIV-positive YGBMSM in PR. Acknowledgements: Supported by the CDC Minority AIDS Research Initiative (MARI), Award Number U01PS003310. UPR-RCM IRB Protocol #B0620116

1144

### The Effect of Engaging in Stewardship Activities in the Use of Antibiotics in the Neonatal Intensive Care Unit (NICU)

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Background & Objectives: The University Pediatric Hospital (UPH) implemented stewardship strategies including designating a pharmacist and an infectious diseases colleague for weekly antibiotics use review for infants with prolonged stays in the NICU and limiting the use of some antibiotics. The NICU implemented other strategies with the goal to develop a culture of antibiotics stewardship including the promotion of infection control strategies and discussing sensitivity reports in Quality meetings. In June 2017 the NICU implemented a protocol for early antibiotics use and started measuring monthly antibiotics days. The objective is to compare antibiotics use before and after the implementation of the protocol and monthly antibiotics days review. Methods: Medical records of infants admitted to UPH-NICU from Jan 2017 to Oct 2018 were reviewed. T-test and chi-square were used to compare the months before implementation (January 2017-June 2017) and after (July 2017-October 2018). IRB approved. Results: During the study period, 730 patients were discharged from the NICU. There was no difference in birth weight or gestational age in the two periods. After the implementation, there was a reduction in mean days of antibiotics treatment upon admission [9 days vs 7 days  $p=0.0065$ ] and a reduction in total days of antibiotics for the total admission length [69% vs 61%,  $p=0.0029$ ]. Conclusions: The NICU antibiotics stewardship efforts reduced the days of early antibiotics use by 22% and total days of antibiotics during admission by 12%. The stewardship program was effective in promoting better clinical practices to reduce the impact of antibiotics misuse in vulnerable neonates.

1621

### Barriers Accessing Renal Transplant among Children with End Stage Renal Disease in Puerto Rico: A Qualitative Approach

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Background: Only 36% children on chronic dialysis, from 1993-2013, received a renal transplant in PR. Factors contributing to poor access to pediatric renal transplant are unclear. Objective: Explore determinants of health that may impact the decision of receiving a renal transplant among children with End Stage Renal Disease (ESRD) in PR. Methods: In-depth, semi-structured interviews conducted on a sample of patients' caretakers and health-care providers from the only pediatric dialysis unit in PR during 2017. Interviews were audiotaped, professionally transcribed, and analyzed between two independent researchers. Emergent themes were identified, discussed, and organized into major themes. Results: 15 caregivers, mostly females, taking care of children 2-19yrs, living in areas 0.5-3hrs away from dialysis unit and dedicated full-time to caring the patient with ESRD participated of interviews. Additionally, 5 healthcare providers were interviewed. Saturation was achieved. Main Codes: "Quality of Life": Dialysis led to major changes in lifestyle, becoming part of their daily routine and leading to losing personal interests and relationships. Family/school/health care providers support were reported as essential to deal with dialysis. However, lack of family support and transportation, and financial instability were common. "Perceptions about Renal Transplant": There was a clear understanding of the need of a renal transplant to improve health status and quality of life. Perceived barriers to renal transplant included economic burden, health insurance, and expected challenges to be faced with pre-post-transplant care. Conclusions: In this qualitative study, caregivers reported suboptimal quality of life while on dialysis and expected that their kids receive a kidney transplant, but recognized related challenges. Future interventions are needed to address their perceived barriers toward transplant to ensure adequate access to this therapy. Acknowledgements: Supported by National Institute on Minority Health and Health Disparities and the NIAID of the NIH under Award Number U54MD007587 and Grant Number D34HP24463 U.S. Department of Health-Human Services Health Resources and Services Administration Bureau of Health Workforce UPR-SOM.

1382

### **El nivel de pensamiento crítico en los estudiantes de enfermería en un curso del Programa Subgraduado con la utilización de dos estrategias educativas**

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Antecedentes y Objetivos: Las destrezas de pensamiento crítico se han marcado como características fundamentales en los estudiantes de enfermería. Sin embargo, el desarrollo de pensamiento crítico ha sido un reto debido a los cambios en las destrezas de adquisición de conocimiento de las actuales generaciones. Nuestra pregunta de investigación fue; ¿cuál es el nivel de pensamiento crítico en los estudiantes de enfermería en un curso del Programa Subgraduado con la utilización de dos estrategias educativas? Objetivos: 1. Medir el nivel de pensamiento crítico antes y después de la implementación de mapas de conceptos y simulación con pacientes estandarizados. 2. Identificar las destrezas de pensamiento crítico mejoradas, después del uso de mapas de conceptos y simulación con pacientes estandarizados. 3. Relacionar el nivel de pensamiento crítico de acuerdo a la estrategia educativa implementada. Metodología: El diseño de la investigación fue de tipo cuasi-experimental con una muestra de 74 participantes divididos en tres secciones: Grupo control (C), Grupo intervención A (simulación) y Grupo intervención B (mapas conceptuales y simulación). Se midieron los efectos antes y después de las estrategias educativas utilizando el instrumento de Medición del Nivel de Pensamiento Crítico en Estudiantes de Enfermería en un Caso Clínico de Depresión Posparto. Resultados: Los resultados reflejaron significancia estadística en la diferencia del nivel de pensamiento crítico entre los grupos A y C ( $p < 0.05$ ), y entre los grupos B y C ( $p < 0.05$ ), específicamente para las destrezas de conceptualizar y analizar. Conclusión: Los resultados de esta investigación sugieren que la utilización de la simulación con paciente estandarizado aumenta el nivel de pensamiento crítico en estudiantes subgraduados de enfermería, específicamente en las destrezas de conceptualizar y analizar. Agradecimientos: Reconocemos a las profesoras Astrid Seguí y Beatriz Díaz; a la actriz Jashira González y la estadística Aixa De Jesús. Aprobado por IRB # A2230218.

1468

### **Barreras y experiencias del paciente adulto con cáncer para el manejo del dolor: Estudio mixto convergente**

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**Antecedentes/Objetivo:** El manejo inadecuado del dolor representa un problema fundamental en pacientes con cáncer. Las barreras del paciente son una de las razones principales para lograr un tratamiento óptimo del dolor, afectando su calidad de vida. El objetivo de este estudio fue examinar las barreras y experiencias del paciente adulto con cáncer en el manejo del dolor para describir elementos que motiven el origen de la barrera. **Método:** Mixto paralelo convergente. Se aplicó el Barriers Questionnaire II, versión de Puerto Rico (PR-BQII) a 72 participantes. Este mide ocho barreras subdivididas en cuatro categorías: (1) efectos dañinos, (2) efectos fisiológicos, (3) comunicación y (4) fatalismo. Paralelamente, se realizaron entrevistas a profundidad para examinar las experiencias y el origen de esas barreras en una submuestra de 10 participantes. **Hallazgos:** Con la triangulación e integración de los hallazgos cuantitativos y cualitativos, se amplió el conocimiento sobre el origen de cuatro de las ocho barreras. Además, se reafirmó el origen de tres de ellas y se identificó discordancia en una de las barreras contenidas en cada categoría. Un hallazgo central fue que el miedo a la adicción no origina la barrera para no tomar medicamentos, sino el deseo de los participantes de mantenerse útiles y cumplir con las expectativas sociales. **Conclusiones:** Los participantes se enfrentan a la necesidad de buscar maneras de controlar su dolor y modificar su circunstancia. Los proveedores de salud y la familia deben adecuar sus modos de tratar el dolor y la información relacionada al cuidado particular que requiere el paciente. Éstos siempre recurrirán a medicamentos para atenuar su dolor y sintomatología, criterio que guiará cualquier otra acción en su relación con los proveedores de la salud o sus cuidadores. **Reconocimientos:** A los participantes por compartir sus experiencias, a las instituciones y personal que apoyaron esta investigación.

1548

### **Sugammadex for neuromuscular blockade reversal**

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**Clinical Question:** In adult surgical patients under general anesthesia and muscle relaxation with Rocuronium (P), how does the use of Sugammadex (I), compared with Neostigmine (C), affect muscle relaxation recovery time and residual paralysis (O), prior to extubation (T)? **Scope:** Residual paralysis is a relatively frequent occurrence and is associated with detrimental postoperative pulmonary complications. Currently, there is no standard protocol to reduce the incidence of residual paralysis after the reversal of muscle relaxation with Rocuronium. **Literature Review:** Evidence about the use of Sugammadex to reverse Rocuronium induced muscle relaxation concluded that the use of Sugammadex was effective in "different types of surgeries to reverse muscle relaxation, leaving no evidence of residual paralysis. **Project implementation:** During the induction phase, prior to Rocuronium administration, a supra-maximal stimulation value was obtained with a peripheral nerve stimulator. Sugammadex doses were 2mg/kg for moderate block and 4mg/kg for deep block. At the end of surgery and before extubation, a train-of-four value was measured to determine the level of block. Muscle relaxation recovery time was measured using a peripheral nerve stimulator. **Results:** 90% of patients achieved full neuromuscular function in 1 minute and 10% in 2 minutes. None of the participants experienced residual paralysis during the recovery period or associated complications. **Practice Implication:** Sugammadex is the only FDA approved agent that reverses deep neuromuscular blockade. The consequences of residual paralysis can be serious, including a range of critical respiratory events and an increased use of health care resources. The use of Sugammadex decreases operating room time and presents fewer side effects, making it more cost effective and beneficial for patients. **Acknowledgements:** Special thanks to all of the ASEM operating room staff and anesthesiologists: Alberto Ortiz, MDA, Evelyn Carrero, MDA and Myrna Morales, MDA.

1220

**Experiencias de Personas Viviendo con VIH en el paso del Huracán María por Puerto Rico:  
Adherencia, Accesibilidad a Servicios de Salud y Seguridad Alimentaria.**

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UPR Medical Science Campus, School of Nursing

Antecedentes: El huracán María fue uno de los desastres más catastróficos en la historia de Puerto Rico. La destrucción de los sistemas del país afectó a todos sus habitantes y aumentó la vulnerabilidad de las personas que viven con VIH (PVVIH). El propósito de este estudio fue explorar las experiencias de PVVIH en las áreas de adherencia, acceso a servicios de salud y seguridad alimentaria; antes, durante y después del huracán. Métodos: Diseño fenomenológico-descriptivo con 15 participantes (6 mujeres y 9 hombres) reclutados de 3 clínicas en el norte y este de Puerto Rico. Las entrevistas y el análisis de contenido se realizaron utilizando un método de análisis temático que involucra la codificación línea por línea, la categorización y la extracción de temas. Resultados: De los 15 participantes del estudio, 11 mantuvieron adherencia a medicamentos después del huracán. Los 4 participantes que no mantuvieron adherencia fueron mujeres. En cuanto a los servicios de salud, 9 de los participantes se vieron afectados y esta accesibilidad era más limitada para los que viven fuera del área metropolitana. Solamente 2 de los participantes mantuvieron seguridad alimentaria adecuada. Los demás participantes pasaron de realizar 3 comidas y meriendas diarias a comer solamente 1 o 2 veces al día alimentos no nutritivos. Conclusión: Aunque los participantes del estudio confrontaron barreras y dificultades y la mayoría de las mujeres no pudieron mantener adherencia, el compromiso generalizado con su bienestar permitió que la mayoría mantuvieran su tratamiento; incluso si la seguridad alimentaria y el acceso a servicios de salud fuera grandemente afectado. Los resultados pueden aportar al desarrollo de planes de contingencia o protocolos para preparar y proteger a esta población de futuros eventos de desastre. Reconocimiento: Este estudio no fue financiado por ninguna entidad. Las autoras no presentan conflicto de interés.

1462

**Comparación de los niveles de satisfacción entre familiares de un ICU con presencia familiar de 24 horas y un ICU sin presencia familiar de 24 horas**

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Antecedentes y objetivo: La presencia de la familia en las unidades de cuidado intensivo (ICU) es fundamental para mejorar los resultados de los pacientes. Algunos ICUs adultos han extendido los horarios de visita y/o permitido el acceso 24 horas al día de un familiar. Sin embargo, existen otros ICUs con un horario de visitas restrictivos y/o sin presencia de familiar 24 horas. El objetivo fue comparar la satisfacción del familiar entre un ICU con presencia de familiar 24 horas (ICU abierto) y un ICU que no permite presencia de familiar las 24 horas (ICU cerrado). Métodos: Se llevó a cabo un estudio de corte transversal analítico. Se obtuvieron datos demográficos y el periodo de horas de visitas que frecuentaban los familiares. Se utilizó el cuestionario "Satisfacción Familiar con el Cuidado en la Unidad de Cuidados Intensivos" (FSICU-24) que mide: (1) satisfacción con el cuidado y (2) satisfacción con la toma de decisiones. El mismo se aplicó en un hospital del área metropolitana de Puerto Rico a 60 familiares de pacientes, 30 participantes en el ICU abierto y 30 en el ICU cerrado. Para comparar los resultados, se utilizó la prueba U de Mann-Whitney. Resultados: Se analizaron datos de 59 participantes. La mediana de edad fue 49 años (RIC: 39-62) y el 70% de los participantes fueron mujeres. Se encontró que los familiares de pacientes en ICU abierto obtuvieron una puntuación mayor tanto en la subescala Satisfacción con el cuidado (85.8 [71.6-91.8] vs. 79.5 [69.4-91.2],  $p=0.394$ ) como en la subescala Satisfacción con la toma de decisiones (91.7 [72.5-100] vs 82.5 [59.4-98.1],  $p=0.085$ ); sin embargo, estas diferencias no fueron significativas. Conclusiones: En el ICU abierto la satisfacción de familiares fue mayor, aunque no resultó estadísticamente significativo. Una posible limitación fue el tamaño de muestra, afectando el poder del estudio para alcanzar significancia.

1732

### **Análisis de los Argumentos de Oposición a la Ley de Inclusión de Familiares en las Unidades de Cuidado Intensivo de Puerto Rico.**

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Política pública analizada: Se analiza la creación de la “Ley de Inclusión de Personas Significativas en las Unidades de Cuidado Intensivo de Adultos, Pediátricos y Neonatales, en las Instituciones de Salud de Puerto Rico”, propuesto por el Proyecto de la Cámara 1156 (PC-1156). Disciplina o teoría: La Teoría del Cuidado Humano de Jean Watson establece que los sistemas de salud actuales ponen en riesgo el cuidado humanizado del paciente. Para este análisis se utilizaron como base los principios de esta teoría aplicados al cuidado del paciente de intensivo y las tesis reactivo-reaccionarias de Albert O. Hirschman descritas en la Retórica de la Reacción. Fuentes de información: Ponencias presentadas en las Vistas Públicas del PC-1156, particularmente los puntos de oposición del Departamento de Salud y la Asociación de Hospitales de Puerto Rico. Método: Análisis de contenido de los puntos de oposición de las ponencias utilizando las tesis de perversidad y riesgo según Hirschman. Hallazgos: Algunos de los puntos de oposición no se sustentan en elementos trascendentales (carencia de facilidades sanitarias para el familiar). Otros, denotan un efecto de perversidad cuando aluden que la familia podría interrumpir el cuidado cuando, por el contrario, la ley persigue que la familia sea parte integral del cuidado. La tesis de riesgo es argumentada desde la perspectiva de la violación de los derechos a la privacidad del paciente, ya ganados, con la inclusión del familiar. Implicaciones: La aprobación e implementación de esta Ley promoverá un cuidado humanizado caracterizado por el respeto, compasión, apertura, empatía y sensibilidad ante las necesidades del paciente de cuidado crítico y su familia para el logro de resultados óptimos. Reconocimientos: A todos los que de alguna manera apoyaron y creen en este proyecto de Ley.

1364

### **Uso de las artes en la promoción de la salud en Puerto Rico**

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Introducción: En Puerto Rico las artes han sido un elemento importante en los esfuerzos de prevención y promoción de la salud. Han sido utilizadas en educación en salud, abogacía, preservación cultural, autogestión y sustentabilidad económica individual y comunitaria y psicoterapia. Además, como voces de ideas, preocupaciones, resistencia y de aspectos poco reconocidos o valorados. Objetivo: Explorar las experiencias de artistas y personas en organizaciones comunitarias, públicas y privadas con relación al uso de las artes en esfuerzos de promoción de la salud. Método: Se realizaron 15 entrevistas semiestructuradas. Estas fueron grabadas y transcritas para un análisis de contenido de temas relacionados con la promoción de la salud. Resultados: Promoción de la salud fue identificado como un proceso, medio, actitud que contribuye a la armonía, bienestar y calidad de vida desde una perspectiva física, emocional, social y espiritual de las personas y las comunidades. Entre sus metas se planteó la inclusión, accesos a servicios, prevención y tratamiento, organización, acción y sustentabilidad comunitaria y de las familias. Las artes fueron señaladas como herramientas para el aprendizaje, redes de apoyo, socialización, organización y apoderamiento individual y colectivo, como profesión y calidad de vida. Se señaló la importancia y la necesidad del desarrollo de políticas públicas para facilitar el acceso a las artes. Aunque se reconoce la importancia de la evaluación en sus proyectos y actividades esta se realiza de manera no estructurada e informal. Conclusiones: Las artes y la clase artística son fundamentales en los esfuerzos de promoción de la salud, prevención y salud pública. Se requieren

políticas públicas que permitan su integración formal y estructurada en diversos escenarios a través de actividades en las diferentes etapas de vida. Estas entrevistas permitieron el reconocimiento de su aportación como agentes de cambio y salubristas para lograr la salud individual y colectiva en Puerto Rico.

1556

### Percepción de Riesgo a la Salud y Actitudes hacia las Modalidades de Disposición de Residuos Sólidos

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**Trasfondo y Objetivos:** Las principales modalidades para la disposición de residuos sólidos son los vertederos, la incineración y el reciclaje. La actitud de los residentes hacia estas modalidades está mediada por la percepción de los residentes del riesgo a la salud de cada modalidad. Este estudio transversal descriptivo investigó las percepciones de riesgo y la actitud hacia las modalidades de relleno sanitario, incineración y reciclaje. **Método:** Para llevar a cabo el estudio, se identificó a la comunidad académica y laboral de la Universidad de Puerto Rico en Arecibo (UPRA). Arecibo es un municipio que ha sido el propuesto para la construcción de un incinerador para la disposición de los residuos sólidos. Se encuestó a una muestra de 535 participantes con un cuestionario validado de 53 preguntas. **Resultados:** De la escala Likert de 5 puntos que se usó para medir la percepción de riesgo a la salud, se presentan aquí los porcentos de la muestra que estuvieron (Totalmente de Acuerdo) y (Totalmente en desacuerdo) con que cada modalidad es perjudicial para la salud: Relleno Sanitario (50%) y (4%); Incineración (64%) y (4%); Reciclaje (4%) y (84%). Como indicador de las actitudes hacia las modalidades de disposición se utilizó una escala categórica de cinco puntos sobre la cantidad que los residentes están dispuestos a pagar mensualmente por el recogido y la disposición de la basura para cada modalidad de disposición. Los siguientes porcentos de los encuestados están dispuestos a pagar mensualmente una cantidad en algún punto dentro de los siguientes ámbitos: Relleno Sanitario (92% entre \$0 y \$5); Incineración (79% pagaría \$0); Reciclaje (81% entre \$0 y \$10). **Conclusión:** El reciclaje es la modalidad con la percepción más baja de riesgo a la salud y la opción más aceptada en cuanto a disposición de los encuestados a pagar por ella.

1045

### Impact of Hurricane María upon Older Adults in Puerto Rico: An Assessment of Hurricane Stressors and Depression and Anxiety Symptoms in the Aftermath

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**Background & Objectives:** Hurricane María caused catastrophic damage to Puerto Rico's infrastructure and health care system. Current data on the mental health status of older adults is scarce. The aims of this study were: to estimate the prevalence of depression and anxiety symptoms and examine its associations with hurricane stressors. **Methods:** A household survey using a probability sample of 168 non-institutionalized individuals aged  $\geq 60$  residing near the Puerto Rico Medical Center was conducted in June 2018, nine months after the hurricane. The survey assessed hurricane stressors and screened for depressive and anxiety symptoms using the Patient Health Questionnaire-9 and Anxiety Sensitivity Index, respectively. Prevalence was estimated using marginal standardization following logistic regression. Multivariable logistic regression models assessed the associations of hurricane stressors with

depression and anxiety symptoms controlling for age, number of comorbidities, history of diagnosed depression and anxiety, family support, and living alone. Results: Weighted prevalence of depression (25.6%) and anxiety (13.1%) symptoms was elevated. Only the perception that life was threatened was significantly associated with increased odds of both symptoms of depression (OR=3.31) and anxiety (OR=2.78). Stressors significantly associated with depression symptoms also included: property damage (OR=3.24), shortage of hygiene products (OR=2.39) and medications (OR=7.12), affected family relations (OR=2.67), and difficulties accessing medical care (OR=4.65). Conclusion: The high prevalence of depression and anxiety symptoms and the strong associations with hurricane stressors suggest the need to strengthen mental health services in these and other communities with limited access to comprehensive, quality health care services to reduce the long-term consequences following a natural disaster. Acknowledgements: This work was performed by students of the Department of Biostatistics and Epidemiology as the final requirement to obtain their MPH degrees under the mentorship of Dr. Cynthia Pérez, Dr. Israel Almodóvar, and Dr. Karen Martínez.

1199

### **Implementation Science Framework to identify Facilitators & Barriers for an eHealth HIV Prevention Program for Spanish-Speaking Adolescent Men who Have Sex with Men in Puerto Rico**

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Background & Objective: According to the Puerto Rico Department of Health, in 2018, the 13 to 24 age group accounts for 10% (N=5,129) of all HIV/AIDS cases in Puerto Rico (PR). Among the 13 to 18 years old group, 17% of the HIV cases were reported among men who has sex with men (MSM). The use of health services and information delivered or enhanced through the Internet or related technologies –known as eHealth- is an important strategy to reduce HIV disparities and to engage with some populations such as Spanish-speaking adolescent-MSM (AMSM). Despite the new opportunities that eHealth provides, little is known about the implementation of HIV prevention interventions for Spanish-speaking Latino AMSM. The SMART Program (Sexual Minority Adolescent Risk Taking) is an eHealth intervention focused on HIV Prevention among AMSM. Method: A qualitative exploratory study was conducted in PR using the RE-AIM & Consolidated Framework for Implementation Research models. To identify implementation science strategies for a program targeted to Spanish-speaking Latino AMSM. A total of 10 in-depth interviews were conducted among stakeholders in Community Based Organizations serving adolescents in PR. Audio from interviews were transcribed and organized using NVivo (v.12). Results: During the analysis the following implementation science strategies focus on implementation process in the context of PR were identified: 1) facilitators for implementation & 2) barriers for implementation. Results evidence stakeholders' acceptability & support as a facilitators for the implementation. The most mentioned challenge for an eHealth intervention focused on HIV prevention among Spanish-speaking Latino AMSM in PR was parent's permission. Conclusion: The integration of CBO's recommendations and support, not only informed tailored implementation strategies to be successful in the context of PR, also can foster and strengthen the implementation process of SMART program in PR. Acknowledgement: This study was supported by NIMHD grant: SU01MD011281-03S1.

1517

### **¿Contra la misión de la Universidad? Proporcionalidad de clase y género en el estudiantado de la Escuela de Medicina Dental**

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Política pública analizada: La Universidad de Puerto Rico (UPR) propone en su misión: “Desarrollar a plenitud la riqueza intelectual ... especialmente [de] los menos favorecidos en recursos económicos”. Su Escuela de Medicina Dental (EMD) reconoce su compromiso con la inclusión y diversidad de sus estudiantes. Su alta competitividad en el proceso de admisión puede obstaculizar el ingreso de algunos grupos socialmente marginados. ¿Existen grupos sociales que son sistemáticamente excluidos para la admisión a la EMD? ¿Cumple la EMD con la misión de la UPR? Disciplina o Teoría: Las teorías de la pedagogía crítica señalan que las instituciones de educación superior mantienen y fomentan la desigualdad social. Estas teorías desenmascaran el mito del mérito, pues la clase social de origen influye en los logros educativos. Fuentes de información: Información de los alumnos admitidos a EMD durante el período 2015-2016 (exento de revisión IRB, categoría 4; #protocolo: 0360118). Datos del Censo de PR 2010 y del Departamento de Educación. Métodos: Comparamos la proporción de grupos sociales (divididos por la categoría de género y clase social) en Puerto Rico y en la EMD. La procedencia del tipo de escuela superior fue el indicador de clase social. Hallazgos: El censo del 2010 registró una tasa poblacional de 67.1 mujeres y 73.1 hombres entre las edades de 20-24 años, mientras en la EMD un 80% del estudiantado para el año 2014-2015 fueron mujeres. Mientras el 76% de los alumnos de PR pertenece a la clase obrera, la EMD admite en una desproporción dramática a estudiantes de clase media y media alta (78% del estudiantado). Implicaciones: La EMD debe iniciar una reflexión sobre cómo sus prácticas de admisión no son consistentes con su misión como parte de la Universidad de Puerto Rico. Reconocimientos: ninguno.

1718

### **Zika Virus Effects on the Auditory System; The Puerto Rican Experience**

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Purpose: ZIKA Virus altered the pediatric health panorama in Puerto Rico. From January 1, 2016 up to July 2018 the PR Department of Health reported 40,460 cases of ZIKA. approximately 3. 923 were pregnant women with laboratory evidence of ZIKA virus infection. Statistics also reported that some of the neonates borne to the infected females have smaller head circumference even when they were not categorized clinically as microcephalic. ZIKA attacks "neural progenitor cells" which are present in the fetal brain prior to brain specialization. Babies exposed to ZIKA in utero are also at risk of birth defects including sensorineural hearing loss (Rasmussen et al. 2016; Oduyeba, 2016). Research is still in beginning stages and scientists can only theorize as the cause of hearing loss in infants. Evidence points to brain calcifications, insufficient neurons or eight nerve damage. AAA warns that infants who contracted the virus through infected mothers might have absent or poorly functional hearing at birth or that hearing loss could have a later onset. Clinical Approach: The PR Department of Health implemented a protocol following CDC guidelines that comprise periodic re-evaluations during the first three years of age. The infants w assessed in other sensory as well as cognitive areas. Case Findings: The PR protocol and auditory findings in Puerto Rican infants borne to ZIKA infected mothers will be described. Hypothesis: We theorize that there is a need to follow not only the ones that were diagnosed with hearing loss but also babies without hearing loss to assess auditory development and rule-out auditory processing deficit.

1649

### **Translational research and health disparity distant learning experience: Long-Term Scientific Collaborations among minority institutions.**

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Background & Purpose: There is a need for rigorous scientific approaches for minority health and health disparities for all types of studies. Working toward increasing minority participation in research to address social inequality, access to quality health care, and improving health disparity capacity among scientists, the “Health Disparities: A Translational Research Approach” online course was created following a multidisciplinary and interdisciplinary team science

approach. Methods: An online survey, using Survey Monkey platform, was conducted to assess participants' experience, course impact, satisfaction and recommendations for continued improvement for future course cohorts. Differences between cohort, gender, and ethnicity groups were analysed by performing bivariate tests. Results: Since 2012, this educational opportunity impacted 6 cohorts of participants, for a total of 65 investigators from RTRN institutions (38.5% from National and 61.5% local institutions). High response rate was achieved with follow up emails (94%). Participants were highly satisfied with the content, online format, learning resources, evaluation strategies, and technical support of this opportunity. Participants agreed the course teaching helped the understanding of the application of translational research in health disparities (69.2%) and that teaching approaches helped improve research capacity building (76.9%). Conclusion: Results have been guiding the action plans to enhance and support investigators capacity in health disparities. Participants showed to be aware of the importance to include health disparities in their research projects and health settings. This educational opportunity has been critical to development the next generation of scientists affiliated to RTRN institutions. Support: The project described was supported by Awards Numbers 8U54MD 007587, R25MD007607 and S21MD001830 from the National Institute on Minority Health and Health Disparities and the National Institute of Allergy and Infectious Diseases. The content is solely the responsibility of the authors. Special thanks to Zulmarie De Pedro-Serbia, BA and Mariela Lugo-Pico, MS; from the University of Puerto Rico, Medical Sciences Campus (PRCTRC). Conflict of Interest: Authors have no conflict of interest in this research.

1490

### **Validation of the ALLESS Scale and the Fisher Check List for the Identification of pediatric patients at risk of Auditory Processing Disorders**

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**Background & Objectives:** An "Auditory Processing Disorder" (APD) is a type of learning disability (LD) that is difficult to diagnose since individuals with the deficit have normal peripheral hearing with no other serious detectable health condition. It has been associated with a neural involvement of the auditory pathways that precludes adequate analysis and/or comprehension of the acoustic signal. This project focuses on the development and validation of a bilingual protocol to identify pediatric patients at risk of auditory processing disorders through parental report. **Objective:** This study sought to validate the ALLESS, a bilingual scale created by the author to establish the risk of a child to have APD comparing it to a gold standard, The Fisher Auditory Check List on a sample of parents of Puerto Rican children with LD. **Methods:** The sample consisted of 25 subjects. Parents responses in each instrument were compared and correlated. Also test re-test reliability coefficients were obtained on a sub-sample of the subjects. Parental ratings on Auditory Memory, Auditory Attention, Auditory Learning and Aural Communication were compared as well on both instruments. **Conclusions:** Our results suggest that parental reports from both instruments correlate well enough to ensure the early identification of children at risk of auditory processing deficits using the proposed protocol. **Acknowledgements:** The author wants to acknowledge the support of the UPR-RCM Medical School Clinic for lending their facilities to conduct this research project.

1392

### **Entendiendo las estrategias usadas para manejar las limitaciones funcionales: Estudio de método mixto**

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**Trasfondo y Objetivos:** Existe una mayor prevalencia en la presencia de discapacidades en las actividades diarias entre las mujeres mayores que viven en Puerto Rico en comparación con las mujeres que viven en E.U. Se desconoce cuáles son las estrategias utilizadas por las mujeres mayores hispanas para manejar éstas discapacidades. **Objetivos:** Describir las estrategias de auto-manejo relacionadas a la persona, a la ocupación y al ambiente para lidiar con las discapacidades

en las actividades diarias de las mujeres mayores. Métodos: Se reclutó una muestra de 12 mujeres mayores con limitaciones funcionales. Se utilizó un diseño de método mixto concurrente guiado por el Modelo de Persona Ambiente y Ejecución Ocupacional. Se evaluó el nivel de discapacidades en las actividades diarias a través del cuestionario de PROMIS-Capacidad de Funcionamiento Físico. Se describió las estrategias de auto-manejo utilizadas para lidiar con las discapacidades reportadas utilizando una entrevista semi-estructurada individual. Resultados: La puntuación T promedio fue de 35.96 en el formulario PROMIS. Las participantes reportaron utilizar predominantemente estrategias de auto-manejo relacionadas con la ocupación, seguidas por estrategias relacionadas al ambiente para lidiar con las dificultades en las actividades diarias. Estas estrategias fueron moderadas por factores de la persona, tal como la persistencia y la espiritualidad. Conclusión: Las mujeres mayores hispanas reportan niveles altos de discapacidad en las actividades de la vida diaria y utilizan las estrategias relacionadas a la persona, a la ocupación y al ambiente para lidiar con éstas discapacidades. Estudios futuros deben explorar las diferencias en género en el uso de las estrategias de auto-manejo de las discapacidades en las actividades diarias. Estas estrategias pueden ser utilizadas en estudios futuros para el diseño de intervenciones dirigidas a reducir el deterioro en las capacidades funcionales de las mujeres mayores. Reconocimiento: Este estudio fue apoyado por la Escuela de Profesiones de la Salud.

1715

### **Nivel de Conocimiento de los Empleados sobre la Regla de Seguridad de la Ley HIPAA**

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Antecedentes & Objetivos: El proyecto de investigación se realizó con el propósito de identificar el conocimiento sobre la Regla de Seguridad de la Health Insurance Portability and Accountability Act (HIPAA) que tienen los empleados con acceso a la información de salud protegida electrónicamente (ePHI, por sus siglas en inglés). Las tres preguntas de investigación se dividen en el perfil sociodemográfico, nivel de conocimiento y la relación entre ambas. Métodos: La muestra de 133 cuestionarios de dos hospitales del área metropolitana de Puerto Rico, entre las edades de 21 a 65 años. Se utilizó un cuestionario con 26 preguntas para la recopilación de datos, las primeras cinco preguntas constituían el perfil sociodemográfico. En la segunda parte del cuestionario, se realizaron siete preguntas para cada salvaguarda de la Regla de Seguridad (física, administrativa y técnica). Resultados: Más de la mitad de los encuestados fueron del género femenino con 6 años o más de experiencia laboral. El nivel de conocimiento de los empleados sobre las salvaguardas, se identificó que 42.86% de los encuestados poseían conocimiento adecuado, 42.86% poseían conocimiento bajo y 14.28% poseían conocimiento amplio sobre las salvaguardas de la Regla de Seguridad de la Ley HIPAA. Se realizaron las Pruebas de Chi y Fisher considerando  $\alpha = 0.10$  ( $p < 0.10$ ) y como resultado existe una asociación estadísticamente significativa entre el nivel de conocimiento medido por ocho preguntas relacionadas con las salvaguardas de la Regla de Seguridad y las variables del perfil sociodemográfico: género, experiencia laboral, preparación académica y área laboral. Conclusión: Se demostró que los empleados necesitan fortalecer sus conocimientos sobre la Regla de Seguridad de la Ley HIPAA para prevenir y minimizar errores que comprometan la seguridad de la ePHI. Reconocimientos: Este estudio cuenta con la aprobación de IRB su número de protocolo es B0280118.

1581

### **Academic trainees' role in supporting and advancing the conduct of clinical research studies**

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**Background & Objectives:** Clinical research studies are highly regulated to ensure subjects' safety while keeping the integrity of the data that support their findings. While having experienced research personnel is of paramount importance, the support of academic trainees (college or professional) is an additional asset to ensure the successful conduct of clinical research studies. The objective of this poster is to present our experience having a clinical research training program for academic trainees and their roles in supporting the conduct of clinical research studies. **Methods:** The Office of Clinical Research at our institution provides training opportunities for college and professional trainees. After credentialing, clinical research certification, and sponsor approval (when applicable), they are allowed to perform related tasks based on their available time and academic or professional level. **Results:** In the last 2.5 years, 20 trainees (55% men) have had clinical research training opportunities: 40% college undergraduates, 20% medical students, and 20% medical intern physicians, among others. Their tasks include (with examples): administrative support (binder preparation and English-Spanish document translations), regulatory compliance (verify expiration dates of documents), assistance in study coordination tasks (or even full coordinator role), subject recruitment (maintain an information bulletin board), among many others. **Conclusions:** While their main motivations may be volunteer service, job experience, or professional growth, academic trainees represent a skilled and enthusiastic staff that complements an experienced clinical research team. At the same time, future clinical professionals are fostered with an appreciation of the clinical research enterprise or a career interest in it. **Acknowledgements:** To Ms. Coraly Lozada (Volunteers Office) and Dr. Irma Y. Estrada (Office of Clinical Research) for institutional support.

1408

### **Racial Disparities in Patients Undergoing Transcatheter Aortic Valve Replacement: Insights from the Healthcare Cost and Utilization Project's National Inpatient Sample**

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**Background & Objectives:** Transcatheter aortic valve replacement (TAVR) has recently become a suitable alternative for severe aortic stenosis patients at a prohibitive risk to undergo surgical valve replacement. However, paucity of data exists with regards if any racial disparities occur in terms of either TAVR use or clinical outcomes. **Methods:** The National Inpatient Sample database was queried for Caucasian, African American (AA) and Hispanic patients  $\geq 18$  years of age who underwent TAVR from 2012 to 2014 in the US. Data was weighted to obtain national estimates. Among the 36,270 individuals included in the study; TAVR utilization, in-hospital outcomes and health-care resource use were compared based on the race. **Results:** The number of TAVR performed per million population increased in all study groups over the three years [38.8 to 103.8 (Caucasians); 9.1 to 26.4 (AA) and 9.4 to 18.2 (Hispanics)]. However, just for older Hispanic patients ( $\geq 75$  years), the annual percentage change in TAVR utilization (34.6%) was not significant ( $P > .05$ ). The overall in-hospital mortality was 4.2% for the entire cohort. After adjusting for demographic characteristics, race showed no association with in-hospital mortality even though, compared to Caucasians, Hispanics tended to die more (HR=1.28; 95%CI, 0.72-2.26;  $P = .04$ ). Though no significant difference were found between AA and Caucasians in any secondary outcome, being Hispanic was associated with higher incidence of acute myocardial infarction (aOR=2.02; 95%CI, 1.06-3.85;  $P = .03$ ), stroke/transient ischemic attack (aOR=1.81; 95%CI, 1.04-3.14;  $P = .04$ ), acute kidney injury (aOR=1.65; 95%CI, 1.23-2.21;  $P < .01$ ), sepsis (aOR=2.34; 95%CI, 1.30-4.22;  $P < .01$ ), prolonged length

of stay (aOR=1.18; 95%CI, 1.08-1.29; P<.01) and higher hospital costs (aOR=1.27; 95%CI, 1.18-1.36; P<.01). Conclusions: There are significant racial disparities in patients undergoing TAVR in the US. Though in-hospital mortality was not associated with race, Hispanic patients had less TAVR utilization, higher in-hospital complications, prolonged length of stay and increased hospital costs. Further studies are warranted to delineate underlying pathophysiological causes and treatment strategies to reduce these racial disparities in TAVR patients. Acknowledgements: This study was funded by the National Institute of Health (NIH) Award Numbers U54MD007587, R25MD007607, U54MD007600, S21MD001830 and TL1TR001434-3.

1155

### Bilateral Posterior-Stabilized Total Knee Arthroplasty in a Patient with Osteopetrosis

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Purpose: Osteopetrosis is a rare hereditary sclerosing bone dysplasia characterized by dense, friable bone, abnormal bone remodeling, bone infiltration of the medullary cavity, and generalized osteosclerosis as a consequence of dysfunctional bone resorption by defective osteoclasts. Currently, there is no consensus on the surgical management of osteoarthritis for patients with osteopetrosis. Case description: We report the case of a 64-year-old Hispanic male patient with osteopetrosis presented a history of bilateral knee pain, left greater than right knee pain with progressive activity limitation for several years without previous history of fractures. Upon physical examination there was extensive crepitus, diminished range of motion and excruciating pain. X-rays of both knees demonstrated severe osteoarthritis within the femorotibial and patellofemoral compartments; there was also evidence of extensive sclerosis within the femur, tibia and fibula. The patient was scheduled for staged bilateral Total Knee Arthroplasty (TKA), during surgery there was overheating, a medial condyle fracture and increased surgical time which increases risk of infection. At 12-months follow up radiographies showed proper position of the implants and no signs of loosening. The patient could walk and perform quotidian activities with minimal pain. Conclusion: Our case report shows that total joint arthroplasty is a viable option to treat knee osteoarthritis in patients with osteopetrosis, highlighting the technical difficulties and complications associated with TKA in these patients. In order to achieve successful outcomes meticulous preparation, appropriate instruments and knowledge are necessary. Since there is no literature on the use of custom implants during TKA in patients with osteopetrosis, it might be beneficial to explore if there is any reduction in intraoperative complications or a better patient outcome by using custom implants in TKAs on patients with osteopetrosis. Acknowledgements: The authors declare they have no conflict of interest.

1172

### Longevity of Zika Convalescence Improve Cell-Mediated Immunity After Dengue Infection in Rhesus Macaques

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The role of previous Zika (ZIKV) immunity in future Dengue (DENV) infections is poorly understood, which is relevant to anticipate the dynamics of forthcoming DENV epidemics after the recent ZIKV outbreak. Available evidence relies upon pathogenesis/antibody studies, but there is no clue whether the cell-mediated immunity (CMI) is modulated by DENV infection in presence of short-or-longer (related to immune-memory maturation) ZIKV convalescent periods. Although we assessed DENV pathogenesis and the elicited antibody response in our study, we also included to characterize the CMI taking into account the synergistic effect between the antibody/cell-mediated responses. Our hypothesis is that the CMI will be higher in magnitude and functionality in presence of ZIKV convalescence during a DENV infection, and an improved CMI will correlate with protection. To test this, we infected three groups of rhesus macaques with DENV: ZIKVPF-10mo (mid-convalescence; N=4) and ZIKVPR-2mo (early-convalescence; N=6) groups were exposed to ZIKV 10 and 2 months, respectively, before DENV infection, and the Naïve (N=4) group without ZIKV immunity. PBMCs were collected longitudinally after DENV infection to quantify CMI magnitude and functionality by immunophenotyping and intracellular effector-cytokines staining, respectively, using flow cytometry. Our results show that the mid-convalescence to ZIKV contribute more to improve the CMI after DENV infection in comparison to other groups. The improvement is characterized by: (i) more activated effector memory T cells; (ii) increased T cell functional response by effector-cytokines production; (iii) and correlation with a robust antibody response. In spite of this, a clear protective role against DENV by previous ZIKV immunity cannot be confirmed by the lack of significant reduction of DENV pathogenesis. Collectively, our findings provide evidence of a non-detrimental effect of ZIKV immunity in a DENV infection; what supports the implementation of ZIKV vaccines that could also improve immunity against future DENV epidemics. This work was supported by:NIHODP40OD012217,2U42OD021458-15,R25GM061838.

1568

### MicroRNA-18a as a Therapeutic Target in Cisplatin-Resistant Ovarian Cancer

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**Background and Objectives:** Ovarian Cancer is the deadliest gynecological malignancy among women in the United States. Despite initial response to standard treatment of platinum-based drugs and taxane compounds, most patients exhibit platinum resistance and eventually succumb to the disease. Strategies to overcome platinum resistance have not yielded positive outcomes yet. MicroRNAs have recently emerged as potential therapeutic targets for ovarian cancer treatment. In an expression array we found miR-18a (the 5p strand), to be significantly decreased in cisplatin-resistant ovarian cancer cells compared with cisplatin-sensitive cells. Moreover, using a miR-18a oligonucleotide mimic (miR-18a-OMM) we observed a reduction of cell growth in around 70%. Therefore, we hypothesize that upregulation of miR-18a with miR-18a-OMM will have a therapeutic effect on cisplatin-resistant ovarian cancer. **Methods:** To prove this hypothesis, we conducted in vivo therapeutic studies in which miR-18a-liposomal formulations were injected intraperitoneally into tumor-bearing mice (seven injections in 4 weeks). In addition, to identify miR-18a target genes we used computer tools, quantitative PCR (qPCR), and western blot analysis. **Results:** Our in vivo studies showed that there was a significant decrease in tumor weight of miR-18a-OMM-treated mice compared to control mice. In our bioinformatic analysis we obtained 19 potential miR-18a-regulated genes. Following a transient transfection of cisplatin-resistant ovarian cancer cells with miR-18a-OMM we isolated RNA and performed qPCR and identified seven mRNA as potential miR-18a targets. Western blot analysis confirmed that the protein levels of the Matrix metalloproteinase 3 (MMP3) were reduced upon miR-18a upregulation. **Conclusions:** Taken together, these results demonstrate the efficacy of miR-18a-OMM as therapy for cisplatin-resistant ovarian cancer and suggest that MMP3 is a direct target of miR-18a. Future experiments will elucidate the role of MMP3 in the cisplatin resistance of ovarian cancer cells. **Acknowledgements:** This work was supported by the UPR Comprehensive Cancer Center, NIGMS-RISE (R25-GM061838) and RCMI (U54MD007600).

1395

### **In-vitro characterization of the molecular mechanisms of the novel Rac inhibitors in metastatic breast cancer**

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**Background and Objectives:** Breast cancer is the most common form of cancer in women and there are no effective therapies when it reaches metastasis. The Rho family GTPase Rac is an ideal target for anti-metastatic cancer therapy, because Rac is overexpressed in cancer cells, and is the molecular switch that can promote cancer cell migration, invasion and survival. Previously, we reported the design and development of EHop-016, a small molecule, which inhibits Rac activity of metastatic cancer cells with an IC<sub>50</sub> of 1 μM, and significantly reduces tumor growth, metastasis, and angiogenesis in a mouse model of metastatic breast cancer. Novel EHop-016 derivatives were developed to improve the efficacy of EHop-016 in breast cancer. The objective of this study is to further investigate the molecular mechanisms of EHop-016 and its derivatives in breast cancer cells. **Methods:** Herein, we have tested EHop-016 and its derivatives for their effects on breast cancer cell viability, and Rac activation; by using MTT assays, pulldown assays to quantify GTP bound active Rac, and western blot analysis. **Results:** Preliminary data suggest that EHop-016 is able to up-regulate the expression of let-7 miRNA's associated with tumor suppression. Indirectly studying the c-Myc oncogene which suppression is associated with the let-7 expression. Moreover, the EHop-016 derivatives (HV-107 and HV-118) are more potent than the parent compound at inhibition of Rac activation. **Conclusion:** Taken together, our findings suggest these Rac inhibitors have great potential as an anticancer compound in metastatic therapies, and should be further characterized. **Acknowledgements:** This study was supported by awards from the Susan Komen for the Cure, NIH/NIMHHD U54MD008149, and the Puerto Rico Science and Technology Trust to SD; Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health under grant (NIH/NIGMS P20GM103475-13) Sub-Award to LCP.

1010

### **Orthopedic Surgeon Communication Skills: Perception of Empathy and Patient Satisfaction through the use of Anatomic Models**

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**Introduction:** Patient satisfaction is an increasingly emphasized measure of patient centered care and important component of reimbursement programs. Orthopedic surgeons are regarded as low empathy surgeons. Our goals were to understand the role of anatomic models during the orthopedic appointment and how their use can affect patient satisfaction and perceived empathy. **Methods:** New patients at an outpatient clinic were asked to participate in a post-encounter questionnaire to assess empathy perception (n=304). Clinic days were randomly assigned to use anatomic models during the encounter to assist with clinical information transmission. The instrument provided contained CARE questionnaire (person centered process that was developed to measure empathy in the context of therapeutic relationship during a one on one consultation between a clinician and a patient). **Results:** A total of 304 participants were included in the study. Analyses of the socio-demographic characteristics did not reveal any significant difference between control and experimental group. CARE scores for non-anatomical group (46.0 ± 9.0) and anatomical group (48.0 ± 7.7) were no different statistically (P=0.482). Encounter time was significantly increased with the use of anatomic models (p<0.005). **Discussion:** The use of anatomical models during initial orthopedic encounter did not improve perceived empathy and

satisfaction scores in our study. Longer encounter time in the orthopedic appointment does not mean higher empathy perception. Conclusion: Orthopedic surgeons have the duty to find new strategies to improve communication with the patient. Better communication has been associated with better patient satisfaction. Further investigation should be considered to employ other strategies to provide better care for our patients.

1108

### 2018 Updated Geographic Distribution of Hermansky-Pudlak Syndrome in Puerto Rico

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Background: Hermansky-Pudlak Syndrome (HPS) is a genetic disorder characterized by albinism, blindness, bleeding, colitis, and Pulmonary Fibrosis (PF) in subtypes: HPS-1, HPS-2, and HPS-4. The prevalence of HPS-1 in Puerto Rico (PR) accounts for 50% of all cases worldwide. It is estimated that 1 in 1800 Puerto Ricans are affected with HPS-1. Updated data of the actual location of HPS patients is needed to ensure adequate access and delivery of health care. Objective: This study intends to update the geographic distribution of HPS patients in PR. Methods: A retrospective study from 2015-2018 was completed. A total of 340 HPS patients were included. Twenty patients were removed from the sample due to lack of confirmed HPS diagnosis (n=320). Patient geographic location using zip codes was verified by direct communication including: home visits, phone calls, emails and postal letters. Results: HPS subtypes were as follows: HPS-1: 68% (219/320) and HPS-3: 32% (n=101/320). Pediatric patients were found to be 51% (84/166) in HPS-1 and 40% (39/98) in HPS-3 group. Most HPS-1 patients are located on northwest region: Moca, Arecibo, and Aguadilla. HPS-3 patients are more commonly located on the central region: Naranjito, Barranquitas, and Oro-covis. HPS-1 presence was noted in 47% (36/78) municipalities. A total of 8% (25/320) were relocated from PR to the United States. HPS-1 patients who received a lung transplant were 1% (2/219). Updated information revealed deceased HPS-1 patients to be 1% (3/219). Conclusion: High frequency of HPS has been described over the past 20 years in PR. Northwest and central regions account for most of HPS-1 and HPS-3 patients, respectively. The presence of a HPS founder mutation in PR and/or limited patient mobility may support these observations. Despite PR dramatic demographic changes, HPS continues to be a considerable health problem. Updated census is essential for health needs assessment, adequate planning and resources allocation. Conflict of interest: Authors declare no conflicts of interest regarding the publication of this article. IRB Approval: Protocol number: B1730118. Author's Contributions: All authors were involved in the development on this case report.

1441

### Antibiotic Overuse in Pediatric Patients Admitted to a Hospital due to an Acute Asthma Exacerbation

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Background and objectives: Antibiotic prescription in pediatric patients with asthma is common in outpatient clinics and Emergency Rooms. Inappropriate antibiotics prescription can lead to the development of drug-resistant infections, which is a well-known public health issue. Our goal is to evaluate the prevalence of antibiotic use in children admitted to a hospital due to an asthma exacerbation. Methods: In this retrospective cross-sectional study, 4-21-year-old Hispanic patients with an official diagnosis of acute asthma exacerbation were recruited in a pediatric community hospital from June 2016 to July 2017. Patients admitted to ward and Pediatric Intensive Care Unit (PICU) were evaluated. Data, such as demographics, temperature, blood test results and antibiotic use, was evaluated. To determine if patients had a viral or bacterial infection, bacterial culture and serologic tests were examined, as well as tests for viruses such as influenza. Data was expressed as median  $\pm$  SD and percentages. Mann Whitney test was used to compare length of stay (LOS)

in PICU and Ward in patients with and without antibiotic treatment. Results: A total of 329 patients were studied, which 81.5% were prescribed with antibiotic during their hospital admission. Of these patients, 69.8% did not present a bacterial infection. Of patients that received antibiotics, 23.1% were at PICU and 76.9% received treatment in Ward. Patients with antibiotic use spent significantly more time in PICU or ward than those that did not receive antibiotics (p-value<0.0001). Additionally, 64.9% of patients prescribed with antibiotics were treated two or more antibiotics. Conclusion: We reported that most asthmatic patients that were hospitalized were prescribed with antibiotics, particularly those admitted to ward. It is necessary to remind caregivers to follow the national guidelines of antibiotic prescription. Moreover, to avoid further antibiotic resistance in patients, physicians should discontinue antibiotic treatment if there is no clear evidence of bacterial infection.

1551

### **Pediatric Long-Term Outcome with Decompressive Craniectomy After Severe Traumatic Brain Injury**

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Background: Severe traumatic brain injury (sTBI) is the leading cause of disability in the pediatric population. Various medical techniques have been used to control brain swelling. However, there is not clear benefits of decompressive craniectomy (DC) in that population. This study was designed to determine the profile of pediatric sTBI patients in Puerto Rico and compare DC vs no DC after six months post-trauma. Methods: In this case-control observational study, we evaluated patients (4 months - 21 years old) admitted to pediatric intensive care unit (PICU) for sTBI during June 2016 to October 2018. The following clinical variables collected represent the first 24-hours of management: intracranial pressure, cerebral perfusion, mean arterial pressure, and pressure oxygen level. DC time and length of stay were collected from medical charts. Outcome was measured with Glasgow Outcome Scale-Extended Pediatric version (GOES-P) via phone interview up to 2 years after trauma. The data was expressed as percentages and medians  $\pm$  SD, interquartile range (IQR) as appropriate. A two-sample t-test was used to evaluate differences between percentages. A Mann-Whitney test was used to evaluate continuous variables. Results: Of 37 patients with sTBI, 20 patients met inclusion criteria were 15 patients had a DC; whereas 5 had no DC. The median for the Glasgow Coma Scale (GCS) on admission of the control group was 6, while the DC group was 4. No differences in the overall physiologic variables were observed, DC group required more frequent use of inotropes (87% vs 40%). 59% of all patients had a severe disability (P-GOES  $\geq$  5) after 6 months of trauma. Conclusions: The results showed a possible benefit of DC in reducing mortality. However, no significant difference was found for the DC procedure to improve disability in pediatric sTBI. There was no difference in disability outcome on the timing of the DC.

1576

### **Knockout of RNA Binding Protein Multiple Splicing (RBPMS) Gene with the CRISPR/Cas9 System in Ovarian Cancer Cells**

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Background & Objectives: RNA Binding Proteins With Multiple Splicing (RBPMS) is a group of proteins that bind and processes RNA molecules. The precise role of RBPMS in ovarian cancer cells is currently unknown. Our laboratory found that RBPMS is decreased in ovarian cancer tumors compared with normal ovaries. In addition, the levels of RBPMS correlated with the sensitivity of ovarian cancer cells to cisplatin treatment. Cisplatin is the first line of therapy for ovarian cancer treatment. Here, we use Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) as a gene-editing tool to understand the role of RBPMS in ovarian cancer. Methods: Bioinformatics tool was used to de-

sign two single guide RNAs (sgRNAs) that were cloned into the Cas9-expressing plasmid pX459 V2.0 (EV). Sanger sequencing confirmed the correct CRISPR cloning. CRISPR-constructs were used to knockout RBPMS gene in ovarian cancer cells, OVCAR-3. The clones obtained were screened via western blot to assess RBPMS protein levels. OVCAR-3, OVCAR-3CIS (resistant counterpart) and OVCAR-3-sgRNA1 clone 1.4 and OVCAR-3-EV clone 1.3 were chosen for in vitro assessment of cell proliferation and viability at different cisplatin concentrations. Results: Western blot analysis showed a decrease of RBPMS protein levels in all OVCAR-3-sgRNA1 clones. Cell viability assay showed a 10-fold increase in the IC<sub>50</sub> by OVCAR-3CIS when compared to OVCAR-3. Cell viability demonstrated a decreased cisplatin sensitivity of OVCAR-3-sgRNA1 clone 1.4 when compared to OVCAR-3-EV clone 1.3. Colony formation assay demonstrated an increase in cell proliferation in OVCAR-3-sgRNA1 clone 1.4 when compared to OVCAR-3-EV clone 1.3. Conclusion: Our data suggest that CRISPR/Cas9 is an effective method to knockout genes associated with cisplatin resistance. Cell viability and cell proliferation experiments suggest that RBPMS may have a role in promoting cisplatin resistance and cancer cell proliferation in ovarian cancer. Acknowledgements: Work supported by the UPR-Comprehensive Cancer Center, and NIGMS-RISE R25-GM061838.

1273

### **Pediatric Stroke: Not always silent, but frequently elusive: A case report.**

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**Purpose:** Though pediatric stroke is considered to be a rare event, it carries an important morbidity and mortality burden. Congenital heart disease (CHD) is among the most important risk factors for pediatric stroke. The decrease in the perioperative mortality in this population has been accompanied with a growing concern of the perioperative morbidity. Studies have shown that in infants with CHD, strokes are almost always clinically silent. However, pediatric stroke is likely more common than we may realize since it is frequently undiagnosed or misdiagnosed due to a variety of factors including a low level of suspicion and subtle symptoms that mimic other diseases. **Case Description:** An 18-month-old female with history of Trisomy 21, Acute Myeloblastic Leukemia and Epilepsy, underwent open heart surgery for repair of complex congenital heart disease. Bidirectional Glenn shunt procedure was performed without complications and patient had an unremarkable post-operative course. On post-op day 7, patient was being prepared for discharge when she presented with prolonged focal seizure episode. Subsequently she was noticed with absent sucking and consistent refusal of oral feedings. Persistent anorexia prompted transfer to our institution for subspecialist evaluation. Initial Child Neurology evaluation showed no focal deficits except for absent sucking. Evaluation by speech pathologist showed no response to tactile stimulation of oral cavity. Follow up Child Neurology examination later that same week revealed left-sided facial asymmetry, left-sided hypotonia and diminished left-sided extremity spontaneous movements. Brain MRI was remarkable for ischemic infarct in the right middle cerebral artery territory. Due to lack of improvement in sucking, patient required surgical intervention for gastrostomy placement. **Conclusion:** Early recognition of stroke requires a high degree of suspicion in children with significant risk factors despite nonspecific symptoms ensuring provision of optimal medical care to prevent recurrence and improve long term outcome. **Acknowledgements:** Nothing to report.

1101

### **Measles, Malnutrition, and Mortality: Puerto Rico, 1917-1918.**

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**Background & Objectives:** Recent measles outbreaks in the United States and Europe have brought home the threat of the disease. We studied the 1917-1918 epidemic in Puerto Rico to better understand the social and place-specific risk factors and severity of such crises. **Methods:** We reviewed medical and government reports, newspapers and private contemporary documents to analyze reported measles cases and deaths and determine characteristics of the outbreak.

We contrasted sources of information to determine consensus or divergence on the appreciation of urgency to respond, the causes of the disease, and methods of relief. Results: The epidemic developed over two years, covered the Island, and caused more than 9,000 registered cases (with much underreporting) with nearly 2,000 deaths. The first six months, 59% of fatalities were children under 2 years of age. Officials recognized poor nutrition and shelter as important determinants of epidemic severity. Responses came from different social sectors before the central government moved to help. In San Juan, Catholic and Protestant churches, and philanthropic women from both Spanish and English-language communities joined to provide free milk to needy children and create a temporary Infants' Hospital. Despite food scarcity and wartime obstacles, central and municipal governments established hospitals and milk stations in other places. Conclusions: The measles outbreak of 1917-1918 was complicated by economic and political conditions concurrent with viral transmission. Studies that examine the impact of reemerging diseases in a time and place-specific context, analyze disease severity together with the socioeconomic conditions of patients and health care systems. They open avenues into the history of pediatrics, the use of epidemiologic methods, the utility of historical statistics, nutritional history, and the history of disaster response; and show the need for health care systems to prepare to confront measles epidemics. Acknowledgements: Prof. Carmen Santos; staff, Conrado Asenjo Library, UPR-MSU.

• Poster Presentations •

1008

**Burnout and self-perceived stress among workers of essential services  
after the impact of hurricanes Irma and Maria**

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Background: Major disasters are traumatic events that may result in a wide range of mental and physical health consequences. Previous research has indicated that the severity of disaster damage has a negative influence on the health and that the risk factors associated with stress differ depending on the degree of damage that workers experienced. Objective: To examine the levels of burnout and self-perceived stress among workers from the Puerto Rico Electric Power Authority, who experienced major disasters: hurricanes Irma and Maria. Methods: A cross-sectional study with a non-probabilistic convenience sample of one-hundred sixty-three (n=163) eligible participants from the Electric Power Authority was conducted using a structured survey. We examined the relationships between burnout, with individual characteristics, years of employment service, health conditions and coping strategies, before and after the hurricanes. Burnout was assessed with Gil-Montes Spanish Scale and self-perceived stress was evaluated by a question asking: How would you describe your stress level at work before/after Hurricanes Irma and Maria? in a likert scale format from nothing stressful to extremely stressful. Results: Before the hurricanes, 16.6% of the workers reported a high level of burnout syndrome, while after the hurricanes it increased to one fifth (20.9%). Self-perceived stress before hurricane was reported by more than one-fourth (23.4%) of the sample as extremely stressful, while after hurricanes extremely self-perceived stress augmented to 55.0%. Factors such as years of employment service, counseling, self-perceived stress showed significant statistical associations ( $p < 0.05$ ) with burnout. Conclusion: Electric power workers are in charge of an essential resource for the whole society. A public health priority should be given to this population in order to prevent workers' burnout and other health effects due to the long time in the response, recovery and reconstruction processes after these major disaster events. Funding: This project was part of the culminating experience of the students of the Master in Public Health – General Evening Program. IRB: This project was approved by RCM IRB, protocol number B1000118, May 4, 2018.

1018

### Neurocysticercosis simulating viral meningitis in a 5-year-old

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**Introduction:** Neurocysticercosis is the most common parasitic cause of seizures in developing countries in adolescents and young adults. Patients infected with taenia solium commonly present symptoms such as: convulsions, intracranial hypertension, hydrocephalus, and encephalitis. **Case presentation:** A 5 years-old male patient presents with recurrent generalized tonic-clonic seizures, headache, nausea and abdominal pain for the past 15 days. Initially, he was treated with diazepam and IV fluids. Upon further progression of the disease and the development of fever he was admitted to the infectious disease unit. Lumbar puncture was negative for bacterial infection. Management consisted of IV fluid and acetaminophen. Patient was dismissed in stable condition, after 4 days, with a phenobarbital prescription. During follow-up consultation, the mother reports persistence of seizures. A skull x-ray is significant for sutures separation. CT scan is significant for multiple cysticercus in different stages. Western blot results are positive for cysticercus in patient's serum. Treatment with albendazole (15 mg/kg/day) was started and symptoms subsided satisfactorily. **Conclusion:** To our knowledge, this is the first pediatric case reported on neurocysticercosis in the Dominican Republic. Our findings suggest that good evolution can be attained by diagnosing and treating the infection accurately after clinical onset. Patient consent was obtained.

1020

### Identification of alopecia areata autoantigens in C3H/HeJ mice using whole-skin homogenates

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Alopecia areata (AA) is a non-scarring cell mediated autoimmune inflammatory disease of the hair follicle (HF). In most AA patients, histopathological examination reveals dystrophic anagen stage hair follicles that are surrounded by a peri- and intra-follicular inflammatory cell infiltrates, consisting primarily of CD4 and CD8 T cells. We hypothesize that the hair follicle immune privilege is lost and normally sequestered antigens are exposed to CD8 T cells, which preferentially target anagen HFs, leading to their destruction. Here, we present an unbiased screening approach to assess whether anagen HFs are being specifically targeted, and to identify the autoantigen epitopes in C3H/HeJ mice. We isolated skin-draining lymph node cells (LNCs) and extracted protein homogenate from anagen and telogen skin of AA-affected and AA-unaffected C3H/HeJ mice. LNCs were cultured with protein homogenates and assessed for T cell activation via IFN $\gamma$  ELISpot assays. We found that anagen skin protein homogenates induced a higher frequency of T cell activation in both AA-affected and AA-unaffected mice, showing that T cells are more activated by anagen HFs than telogen HFs, consistent with preferential expression of AA autoantigens in the anagen phase of the hair cycle. To further narrow down candidate antigen targets, protein homogenates were separated by column chromatography into individual fractions of proteins. Using this approach, we found that one out of four anagen fractions, which contains molecules with larger molecular weight, preferentially induced an immune response. We are currently performing a bias screening approach and testing AA associated proteins against melanogenesis related antigens and keratinocyte derived antigens. Characterizing the protein content and autoantigen epitopes will facilitate the identification of specific antigens and aid in the rational development of new therapies for AA.

1028

### Depression severity and pharmacological profile in patients with depression with and without comorbid pain in Medical Science Campus Outpatient Clinic

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**Background and significance:** Pain is reported more often in depressive disorders, and it is also a risk indicator for psychiatric disorder onset. Also, patients with depression are more likely to receive opioids although there is little evidence to support their use. This study aims to identify if there is a correlation between severity of pain and severity of depressive symptoms in our population, while also examining their pharmacological profile. We hypothesized that patients with depression and pain will have worse depressive symptoms than patients with depression alone and they'll be treated with opioids regularly. **Methods:** 215 patients with depressive symptoms were obtained between June 1, 2014 to January 31, 2016 using the International Classification of Diseases 9 and 10. The Experimental Group were patients with depressive symptoms and pain at initial evaluation. The Control Group were patients receiving treatment in the same clinics with depressive symptoms, but without pain. Initial severity of depression, measured with the Patient Health Questionnaire (PHQ-9), and severity of pain (reported by patient) was collected at initial evaluation. Statistical analysis of data was performed using STATA software v. 14.0. **Results:** A marginally significant correlation between depression and pain severity was found in the experimental group. More severe pain was seen in Bipolar Disorder and Substance Use Disorder. Cancer was significantly correlated with higher scores of PHQ-9 compared to other chronic diseases. Most patients with chronic pain were being pharmacologically treated, but only 12.8% were on opioids. **Conclusion:** Patients with comorbid chronic pain show higher depression severity and should be treated promptly if diagnosed, especially for patient with cancer and higher pain severity. **Acknowledgements:** This study was supported by UPR School of Medicine Endowed Health Services Research Center, Grants 5S21MD000242 and 5S21MD000138, from National Center for Minority Health and Health Disparities, National Institutes of Health.

1033

### Rate of Burnout syndrome among Resident Physicians in Puerto Rico

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**Introduction:** Residency is a significant milestone for the developing physician. Complying with increased workload, responsibilities and academic obligations may increase the risk for developing physician burnout. Burnout syndrome is a maladaptive response to occupational stress characterized by fatigue and emotional detachment. It has been associated with negative outcomes, including decreased job performance and overall effectiveness, and increased self-report of suboptimal patient care. Our study aims to obtain a demographic profile of residents in UPR Medical Sciences Campus (UPR-RCM) training programs, determine the rate of burnout among them and examine any significant differences in MBI scores. **Methods:** Quantitative cross-sectional study with correlational design with target sample of residents in the training programs with largest volume of trainees: Internal Medicine, Pediatrics, Obstetrics and Gynecology (OB-GYN), Surgery, Psychiatry, Family Medicine and Emergency Medicine. Participants were medical physicians enrolled in a Residency Program at UPR-RCM for the academic year of 2017-2018. Data was collected from residents via self-report questionnaires; a demographic sheet and the Maslach Burnout Inventory (MBI). Descriptive statistics were used to describe a demographic profile of each residency program. Pearson's chi-square was used to determine any significant differences in the rate of burnout between residency programs. **Results:** For the burnout subscale of the MBI, lower scores were independently associated with working at UPR Hospital in Carolina ( $p < 0.001$ ) while OB-GYN was independently associated with higher scores. Older residents had lower depersonalization scores than their younger counterparts ( $p = 0.005$ ), as well as Family Medicine trainees compared to other programs, while OB-GYN and Pediatrics had highest scores. **Conclusion:** Our study independently associates age with depersonalization and main work site with burnout. Statistically significant differences in MBI subscale scores were found between specialties. Further assessment

of these differences may help programs develop specific strategies for addressing resident burnout. Acknowledgements: IRB Protocol A9670118. This study was supported by the UPR School of Medicine Endowed Health Services Research Center, Grants 5S21MD000242 and 5S21MD000138, from the National Center for Minority Health and Health Disparities, National Institutes of Health (NCMHD-NIH). Its contents are sole the responsibility of the authors and do not necessarily represent the official views of NCMHDNIH.

1038

### **Assessment of the Human Papillomavirus (HPV) and Oropharyngeal Cancer (OPC) topic in the dental curriculum of the University of Puerto Rico School of Dental Medicine.**

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**Background & Objectives:** According to the Puerto Rico Department of Health, HPV-related OPC is the five most common cancer and the six with more mortality among Puerto Rican men. It is estimated that approximately over 300 men and 100 women are diagnosed with this type of cancer each year (Puerto Rico Department of Health, 2008). This is why the significance of detecting it in time but more importantly educate the new generation of dentists to make good cancer assessment and cancer prevention to reduce the OPC-related to HPV burden in PR. Thus, our aim in this study is to evaluate the UPR- SDM DMD curriculum on this topic to search for strategies that help dental students gain a broader understanding of this type of cancer that affects their prospective patient population. **Method:** A survey was designed and administered to the students of the UPR-SDM to assess the knowledge a prevention practices about OPC during the fall semester. **Results:** DS-IV has more knowledge about HPV and its prevention versus lower classes. DS-I and DS-II have more knowledge about the implications of HPV in oral health, though not that much in how to assess the patient. **Conclusions:** The curriculum of the UPR-SDM prepares the future dentist to be aware and assess correctly the patient for OPC. However, it is important to reinforce the topic providing e-learning modules and CE courses. **Acknowledgements:** None.

1049

### **Role of Pre-Pregnancy Weight as a Factor for Maternal and Neonatal Morbidity in a Hispanic Population Giving Birth in Puerto Rico**

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**Background & Objectives:** Prevalence of self-reported obesity in Puerto Rico in 2017 is 32.9%. Obesity results in maternal and neonatal complications, including gestational diabetes, preeclampsia, preterm birth, cesarean delivery, macrosomia, impaired growth, among others. With this study, we will establish an association between maternal body mass index and obstetric complications in a Hispanic population giving birth in Puerto Rico. **Methods:** A retrospective review of all the medical records of pregnant women giving birth in the San Juan City Hospital from December 1, 2016 to January 30, 2018 (N=1,704). Women were identified from the hospital record sheet. Maternal complications were classified using ICD-9 codification and neonatal complications were classified as: macrosomia, birth injuries, respiratory distress, hypoglycemia and polycythemia. Logistic regression models were performed to assess the association between maternal pre-pregnancy BMI and maternal and neonatal outcomes; models were adjusted by age. **Results:** A significant increase in chronic hypertension (p<0.001) and pregnancy-induced hypertension (p<0.01) was observed in the obese category. There was also an increased odd of having chronic hypertension (OR=6.59; 95% CI: 2.44-17.80), severe pre-eclampsia (OR=2.56 [95% CI, 1.07-6.12]), pregnancy-induced hypertension (OR=3.24; 95% CI: 1.49-7.07) and intrauterine fetal demise (OR=3.62; 95% CI: 1.03-12.70) in obese when compared to normal weight. Macrosomia

( $p=0.002$ ) and hypoglycemia ( $p=0.035$ ) were significantly higher in newborns from obese mothers. The odds of neonatal macrosomia were 42% higher when moving to a higher BMI category (OR=1.42; 95% CI: 1.08-1.86), while the odds of polycythemia were 68% lower (OR=0.32; 95% CI: 0.12-0.86). Conclusions: A relationship between pre-pregnancy BMI and maternal and newborn complications was established. The study had its limitations, as pre-pregnancy weight was mostly self-reported and could have led to recall bias. Future studies should be performed to ensure proper follow up of these patients and to develop adequate prevention in our population. Acknowledgments: Award Number U54MD007587.

1051

### Adherence to Hard stop policy 2016-2018 in a Puerto Rican Population

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**Background & Objectives:** The Hard Stop Policy was introduced to limit elective early term inductions and cesarean sections due to adverse maternal and neonatal outcomes. However, a recent 2014 study in Puerto Rico showed that there were still some non-medical reasons in deciding to perform a cesarean section. The aim of this study is to assess the use of the Hard Stop Policy in our institution. **Methods:** Descriptive secondary analysis of an IRB approved retrospective review of medical records from women giving birth by cesarean section in the San Juan City Hospital from December 1, 2016 to January 30, 2018 (N=569). Women were identified from the record sheet and gestational age at delivery, reasons for cesarean section before 39 weeks gestational age (WGA) and ICD-9 diagnoses were analyzed. **Results:** About 38% of Cesarean sections were before 39 WGA; 7.4% of cases reported, did not have a reason for the procedure. Of those with indications before 39 WGA, the most common were repeat in labor (41.8%), non-reassuring fetal heart rate (15.4%) and malpresentation (11.4%). Overall, 5.5% of cesarean sections before 39 WGA were not medically indicated; 7 cases of repeat elective and 4 cases of failed induction without a medical indication. Among those with a failed induction before 39 WGA, approximately 26.7% (4/15) were not medically indicated. **Conclusions:** The study was able to assess the adherence of the Hard Stop Policy in our institution. Few cesarean sections were due to non-medical reasons before 39 WGA. Limitations include possible errors when coding, potentially affecting the results. This study, as the first to report institutional numbers, shows how proper education and implementation of a policy can positively affect an entire population. Future assessment of newborn outcomes should be performed. **Acknowledgements:** Award Number U54MD007587.

1059

### Partos dobles en Puerto Rico y características sociodemográficas de las madres: 2006 – 2014

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**Trasfondo:** Pasados estudios sobre fecundidad en Puerto Rico han demostrado que la proporción de gemelos se encuentra alrededor del 2% de los partos. La probabilidad de alumbrar mellizos está influenciada por varios factores, entre éstos la edad de la madre, la educación y el número de hijos previos. Por lo general los alumbramientos dobles son de alto riesgo, requiriendo mayor cuidado prenatal. En Puerto Rico, el aumento en los niveles de escolaridad ha llevado a la postergación del embarazo y por ende en a la disminución de la fecundidad. Con el descenso de nacimientos, se esperaría que el número de partos múltiples disminuya, aunque su proporción se mantenga estable. **Objetivo:** Este estudio descriptivo busca elucidar las tendencias en los partos dobles en Puerto Rico y las características sociodemográficas asociadas a sus madres. **Método:** Los datos fueron extraídos de los archivos de los certificados de nacimiento de 2006-2014 provistos por el Departamento de Salud de Puerto Rico. **Resultados:** Se analizaron 6,517 partos dobles. Se encontró que la proporción de éstos aumentan según la edad de la madre. El grupo de edad con la proporción más alta fue el de 35 a 39 años.

Más de la mitad de los nacimientos dobles provienen de madres con un nivel de escolaridad mayor de escuela superior. La proporción de éstos con 9 visitas o más (75.4%) es menor que la de los sencillos (83.6%). Conclusión: El número de visitas prenatales de las gestantes de nacimientos dobles al equipo médico puede estar relacionado con la duración del embarazo, muchas veces más corta que la de maternidades sencillas.

1061

**Assessment of Family Needs and Quality of Life in Children (0-17 years)  
with Developmental and/or Cognitive Disabilities**

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**Background and Objectives:** One of the major challenges for families is to successfully identify, coordinate and access services to meet their social, health and educational children's needs. The main objective of this project was to identify the social, health and quality of life needs of families of children (0-17 years) with disabilities. Determine if there is a statistically significant relationship between the needs and type of condition of children. **Methods:** This is a non-experimental cross sectional design. Participants consisted of 32 parents or legal guardian of children with intellectual or developmental disabilities (0 to 17 years old) who were receiving services from our community partner (SER of PR). The rights of all participants were safeguarded. Data collection was by availability, anonymous, through self-administered questionnaire with socio-demographic, health care needs (Bailey & Simeonsson, 1988) and quality of life questions. Descriptive statistics were used to identify needs, to describe QoL and Chi-square analysis at 95% confidence level was done to compare needs by type of intellectual or developmental disability. To conduct this study, IRB approval was granted by University of Puerto Rico, Medical Science Campus. **Results:** About 32 respondents completed the questionnaire. About 87.5% of the respondents needs more information about what their child may need in the future and on how to carry out recreational activities. Over 50% of parents indicated more opportunities to meet and talk with parents with a similar condition of their child. Additionally, bivariate results indicate that there is a significant relationship ( $p$  value < 0.05) between the condition of the child and some needs report by parents. **Conclusions:** The results identify more needs for information, supports and financial assistance that represent major challenges and affects the quality of life of children with disabilities and parents.

1063

**Características sociodemográficas de los abuelos y abuelas responsables de nietos  
o nietas menores de 18 años en Puerto Rico 2017**

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**Trasfondo:** En el 2017, 81,474 abuelos o abuelas vivía con nietos o nietas menores de 18 años de los cuales 28,309 (34.7%) se identifican como responsables de la manutención de los mismos o las mismas. De los abuelos y abuelas que viven con sus nietos o nietas 10.2% viven sin ninguno de los progenitores de los o las menores presentes en el hogar. A pesar de que disminuyó el número de abuelos o abuelas responsables de nietos y nietas, aumentó la proporción de los y las que son responsables y viven solos o solas con los pequeños o las pequeñas, entre 2012 (27.3%) y 2017 (29.2%). **Objetivo:** de este trabajo es describir las características sociodemográficas de los abuelos cuidadores o abuelas cuidadoras de nietos o nietas menores de 18 años en Puerto Rico. **Método:** Esta investigación es de tipo descriptivo. Se utilizó

el archivo de la Encuesta de la Comunidad de Puerto Rico (PUMS) del 2012-2017. Hallazgos: Del total de los abuelos o abuelas responsables de nietos o nietas el 55.6% reportó ingresos por debajo del nivel de pobreza y el 39.2% se encontraba participando de la fuerza laboral. La mayoría son mujeres con un 66.2%. Conclusiones: La literatura sugiere que el ingreso, el sexo, la edad y el estatus conyugal son características que pueden influenciar la calidad de vida de los abuelos o las abuelas y a su vez de los o las descendientes a su cargo. Estos hallazgos exponen la necesidad de establecer políticas públicas y servicios dirigidos a informar y brindar apoyo a los abuelos encargados o las abuelas encargadas que fungen como cuidadores o cuidadoras responsables de estos críos o crías.

1071

### **Cardiologist's knowledge of the physiotherapist and the challenges of referring patients with peripheral arterial disease in Puerto Rico**

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**Background and Objectives:** This research aimed to explore the knowledge of cardiologists in relation to the physiotherapist (PT) management of patients with peripheral arterial disease (PAD); study the levels of physicians adherence to guidelines of clinical management and treatment of patients with PAD; determine the challenges cardiologists face when referring patients with PAD to PT; and identify potential strategies to promote it. **Methods:** An exploratory cross-sectional, non-experimental design was conducted for this study. A questionnaire was constructed, validated to address the proposed objectives and administered to 25 physicians specialized in cardiology (68%), interventional cardiology (14%) or vascular surgery (18%). The gathered data were analyzed descriptively. **Results:** This study reflected a 70% of physician's knowledge in the general role of PT and the prevention and management of patients with PAD. The study also reveals that 62% of physicians only refer up to 10% of their patients with PAD to the physiotherapist. Among the main barriers to referring these patients was the low coverage by health insurance providers and the high cost of rehabilitation services. **Conclusion:** Educating cardiologists on the scope of physical therapy can lead to recognition of its effectiveness. The barriers encountered may predispose the patient to future complications. Although there is a lack of knowledge on the role of the physiotherapist, there is a physician's willingness to be educated in order to use all available tools for the patient's well-being. **Acknowledgments:** Special thanks to Dr. Damian Grovas who provided guidance with relevant information for the creation of the research problem and his participation as a judge for the questionnaire's validation process. To Dr. Ana Mulero and Dra. Cynthia Cruz who also collaborated as judges for the questionnaire's validation process. Approved by IRB: B14701

1085

### **Características sociodemográficas de las personas divorciadas en Puerto Rico: 2012-2016**

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**Trasfondo y objetivos:** El divorcio es un fenómeno social que está asociado con los cambios sociales y económicos y legales que experimenta un país. En los pasados años, el número de divorcios al igual que los matrimonios, en Puerto Rico muestran un descenso. Este evento tiene diversas consecuencias tanto para el individuo como para la sociedad. El mismo afecta la dinámica demográfica del país y puede alterar aspectos psicológicos en el individuo y sus características socioeconómicas. El objetivo de la investigación fue analizar las características sociodemográficas de la población residente en Puerto Rico que se divorció durante el periodo de 2012-2016. **Métodos:** La fuente de información fue Puerto Rico Community Survey, 2012-2016. El estudio fue transversal descriptivo. **Resultados:** Durante el 2012 al 2016 había en promedio 18,978 divorciados(as). La mediana fue de 48 años. El 59% había completado un grado mayor de escuela

superior, 65% participaba en la fuerza laboral y 97 % estaba empleado. Hay más mujeres divorciadas que hombres (56% vs 44 %). Las mujeres divorciadas en comparación con los hombres tienen menor mediana de edad (43 vs 48), mayor porcentaje graduadas de escuela superior (65 vs 59), y menor por ciento en fuerza laboral (63% vs 68%). Conclusión: La población divorciada es relativamente joven, educada y forma parte de la fuerza laboral. Las mujeres divorciadas son más jóvenes y educadas que su contraparte masculina. El análisis de la población divorciada es importante en el análisis de la dinámica demográfica de PR. Este posibilita la creación de políticas públicas dirigidas a las necesidades que los hace vulnerables a divorciarse. La mayor parte de los nacimientos en la isla ocurren en población casada. Ante el descenso marcado de la fecundidad en el país, esto adquiere gran pertinencia. Además, los divorciados(as) tienen menor expectativa de vida, en particular los hombres.

1090

### Perfil demográfico, social y económico de la mujer en Puerto Rico: 2013-2017

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Introducción. A través de la historia, y por las exigencias de la sociedad, crecimiento económico y social, la mujer ha luchado por superarse en todos los campos. Variables como educación, empleo, composición del hogar y composición demográfica son fundamentales para participar de manera igualitaria en los procesos económicos. Objetivo: El propósito de este estudio es analizar las características demográficas, sociales y económicas de las mujeres en Puerto Rico en el periodo de 2013- 2017, y establecer comparaciones con periodos anteriores. Método: El diseño de este estudio es uno descriptivo. Se utilizaron los archivos de la Encuesta de la Comunidad de Puerto Rico (P.U.M.S) para los periodos de 2008-2012 y 2013-2017, archivos del Registro Demográfico del Departamento de Salud de Puerto Rico; la base de datos de la Comisión Estatal de Elecciones para los comicios de 2008, 2012 y 2016; entre otras. Resultados: En 2017 la población femenina excede la población masculina por 160, 969 personas, un 52.2% de la población total del cual un 46.6% está bajo el nivel de pobreza. Un 19.6% son mujeres de 65 años o más, 3.1 puntos porcentuales más que los hombres. Un 23% de los hogares de familia son liderados por mujeres sin cónyuge presente, 16 puntos porcentuales más que los hogares liderados por hombres sin cónyuge presente. Conclusión: Las proyecciones de población para Puerto Rico parecen indicar que las mujeres continuarán siendo más que los hombres en los próximos años. Por lo tanto, el estudio de las características demográficas, sociales y económicas de las mujeres permiten visibilizar la contribución de las mujeres en el desarrollo económico y social del país.

1093

### Teen Drivers' Cellphone Use While Driving: Results from a Representative Sample of Students in Puerto Rico

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Background & Objectives: Making cellphone calls and texting can distract a driver and increase their risk of accidents. Little is known about distracted phone use practices among Hispanic teens. The aim of this study was to estimate the prevalence of cellphone use while driving among adolescents in Puerto Rico by gender, age, and school system, and its association with other risky behaviors in this population. Methods: The sample 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. Only data from students age 16 or older was evaluated (n=1,641). 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. Results: Approximately 32% of the students reported cellphone use while driving in the last year, most of which had both texted and dialed a phone call. Prevalence was higher among

males (41%) and older students (44%). Students aged 17-18 were two times more likely to text (OR=1.95; 95%CI=1.89-2.00) and three times more likely to make a call (OR=3.14; 95%CI=3.05-3.23) while driving than those aged 16. Males were two times more likely to text (OR=2.34; 95%CI=2.27-2.41) and to make a call (OR=2.07; 95%CI=2.10-2.13) than females. Teens who used cellphones while driving were also more likely to engage in other risky behaviors such as substance use (cigarette, alcohol, illicit drugs) and sexual activity. Conclusion: Education programs geared towards adolescents that emphasize the dangers of distracted driving should be targeted to these high risk groups. Acknowledgements: Research supported by the Puerto Rico Mental Health Services and Drug Addiction Administration (ASSMCA, by its acronym in Spanish). Approved by IRB.

1096

### Association between Oppositional Defiant Disorder (ODD) and Suicidal Attempts in a Representative Sample of Puerto Rican Adolescents.

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**Background & Objectives:** Oppositional defiant disorder (ODD) is a mental health condition that has been associated to suicide among children and teenagers. ODD is characterized by a recurring pattern of negative, hostile, defiant, and disobedient behavior towards authority figures, without being physically aggressive or actually violating the rights of others. Our objective was to explore how strongly is ODD associated with suicidal attempts among adolescents in Puerto Rico. **Methods:** 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. Multiple logistic regression models were fitted to estimate the odds ratios; interaction with sex was assessed. **Results:** Approximately 22% of the students had a positive screening (Disc Predictive Scale) for ODD and 10% had attempted suicide. Prevalence of ODD was similar in males and females, and most of the teens with ODD (61%) were not screened as depressed, the main risk factor for suicidal attempts. Prevalence of suicide attempts was significantly higher among students with ODD (20.5% vs 7.2%). After adjusting for school level and other mental health disorders (ADHD, conduct disorder, depression, and substance use), ODD was significantly associated with suicidal attempts only in females: Females with ODD had 45% higher odds of suicide attempts (OR=1.45; 95%CI=1.06-1.99) than those without ODD. **Conclusion:** Many suicide prevention efforts target teen with depression. However, it is important to routinely screen adolescents with ODD for suicidal behavior since most of them are not identified as depressed, thus might not be targeted for prevention activities. Suicide prevention efforts should also target this high risk group, particularly females. **Acknowledgements:** Research supported by the Puerto Rico Mental Health Services and Drug Addiction Administration (ASSMCA, by its acronym in Spanish). IRB approved.

1099

### Interplay between the gut microbiota, pro-inflammatory genotypes, and colorectal adenomas in Hispanics

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**Background & Objectives:** Although colorectal cancer (CRC) is a potentially preventable, it is still one of the leading causes of cancer-related mortality in Puerto Rico and the US. However, CRC prevention strategies, other than routine screening, remain a challenge. Interplay between host genetics, environmental factors, gut microbiota and inflammation are accepted as major contributors to the colorectal carcinogenic process. There is limited information regarding how host genetics may modulate the inflammatory response and affect the gut microbial composition. The aim of this study

was to examine the association of between having pro-inflammatory genotypes, the presence of bacterial toxin genes in stool and colorectal adenomas. Methods: Using a case-control study design, we evaluated 60 individuals with colorectal adenomas and 60 healthy individuals (controls) recruited through the Puerto Rico Familial Colorectal Cancer Registry. Sybr Green bacterial gene detection assays, and TaqMan SNP Genotyping and Gene Expression Assays were performed according to the manufacturer's recommendations. Results: Preliminary data Individuals with pro-inflammatory genotypes may have increased colonic inflammation and that individuals with gut bacterial toxin genes in stool are more likely to have colorectal adenomas. Conclusion: An evaluation of the association between having pro-inflammatory genotypes, the presence of bacterial toxin genes in stool and colorectal adenomas using a larger sample size is warranted and currently underway. Future research examining the pro-inflammatory SNPs and gut bacterial toxins could provide information about host genetic susceptibility to develop CRC and could serve as the foundation for the development of SNP and/or gut-bacterial toxin-based risk stratification strategies. Acknowledgements: This project was supported by NCI Award Numbers CA096297/CA096300, K22CA226395 and CA198963, and NIMHD and NIAID Award Number U54MD007587. Protocol was approved by the University of Puerto Rico Medical Sciences Campus IRB (#A2210207).

1103

### Low Immunocompromised Specific Vaccination Rates among Childhood Cancer Survivors in a Tertiary Hospital in Puerto Rico

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Background: Suboptimal vaccination rates have been reported in childhood cancer survivors, increasing their risks for infections in immunocompromised hosts. Studies evaluating vaccination rates in minority groups are scarce. Objective: Describe the immunization rate among childhood cancer survivors who attend a tertiary hospital Pediatric Oncology Clinic from 2001-2016. Methods: Retrospective chart review of childhood cancer survivors(0-21yrs) on remission(off cancer therapy for > 6mo) who attended a tertiary teaching hospital Pediatric Oncology outpatient clinic from 2001-2016. Data analyzed using median/interquartile ranges and frequencies/percentages. Results: 66pts were evaluated, female: 59%, age at immunization status assessment: 15yrs(11.5-18.7yrs), age at cancer diagnosis: 5yr(2.7-8.1yrs) and age at the end of cancer treatment: 6yrs(IQR 4.6-10 yrs). Most common etiologies: 28% acute lymphocytic leukemia, 17% brain tumors, 12% Wilms, 86%pts received chemotherapy. Patients receiving full-vaccine series in the recommended schedule: Hep B 96%, DTaP 79%, HiB 100%, IPV 99%, meningococcus 93%, HPV 31%, PCV13 12%, MMR 96%, and Varicella 92%. Immunocompromised specific vaccines: 44% received influenza at some point after therapy, but none on an annual basis, meningococcus B 6% and PPSV23 5%. Of those who received chemotherapy: HPV 37%, influenza – none received it on an annual basis, meningococcus B 2%, PCV13 14%, PPSV23 4%. Conclusions: Most childhood cancer survivors in this cohort received full-series of regularly scheduled immunizations. However, low immunizations rates were identified for HPV, Meningococcus B, PCV13 & PPSV23 in children who received chemotherapy, placing these immunocompromised children at risk for these infections. Interventions are required to improve immunocompromised specific vaccination rates among these patients.

1109

### A Rare Presentation of a Patient with Guillain-Barré Syndrome

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Objective: We present a patient who exemplifies a rare presentation of a complication to autonomic dysfunction. Background: Guillain-Barré Syndrome (GBS) is a group of immune-mediated polyneuropathies with a heterogeneous presentation. Around two-thirds of patients presents with autonomic dysfunction or autonomic neuropathy. However,

there is still no agreement if GB patients should be screened regularly for autonomic dysfunction presentation. Design/ Methods:NA. Results: We present a 46-year-old Puerto Rican female with no previous history of systemic illness that developed bilateral parieto-occipital infarcts after a delay in diagnosis and management of Acute Inflammatory Demyelinating Polyradiculoneuropathy (AIDP). The patient's presenting symptoms were progressive paraparesis and dysesthesia after an episode of diarrhea and vomiting. Three days later, she developed a respiratory compromise which required hospitalization and mechanical ventilation. During the hospitalization course, the patient developed dysautonomia followed by visual changes. Brain MRI demonstrated abnormal signal intensities in the parieto-occipital areas bilaterally. Initially, a diagnosis of Posterior Reversible Encephalopathy Syndrome (PRES) was established but bilateral parieto-occipital encephalomalacia and gliosis were present on repeat brain imaging studies most consistent with cerebrovascular accident (CVA). Conclusion: We depict an unusual and serious complication of GBS to raise awareness of the importance of screening for autonomic dysfunction and adequate management. This is an important issue, as the mortality rate from presumed autonomic neuropathy abnormalities now exceeds that of respiratory failure.

1115

### **Return to Work Strategies Used by Puerto Rican Physiotherapists after a Work-Related Musculoskeletal Disorder: A Qualitative Analysis**

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Introduction: Physiotherapists frequently suffer from work-related musculoskeletal disorders (WMSDs). This type of injury can affect the muscles, nerves, tendons, joints, cartilages and discs of the spine. It is caused by the environment or work performance and as a result, it is aggravated or extended. Currently, there is a lack of research that address the strategies that physiotherapists implement when re-inserting themselves into work after a WMSD. Our study was aimed at identifying these strategies. Methodology: This study has a qualitative design with a constructivist approach. The participants are three physiotherapists registered on the Physical Therapy Review Board of Puerto Rico, with more than ten years of clinical experience and who returned to their work after suffering a musculoskeletal injury related to it. Semi-structured interviews were carried out, which were transcribed and then analyzed following the conventional content analysis process. Results: The development of strategies by the physiotherapists was based on analysis from a patient-therapist position. Physiotherapists use their professional knowledge to guide their decisions and believed that physical condition was essential for injury prevention. Discussion: Physiotherapists have an expectation of treatment based on their own area of expertise and use their knowledge to base their judgment as patients. It is recommended to continue exploring this topic to understand the physiotherapist's judgment about his own musculoskeletal injury. In addition, an element that continues to arise and needs further investigation is the effectiveness of implementing a physical conditioning plan with ergonomic adaptations at work for this population. Acknowledgements: The authors would like to thank Mr. Edwin R. Rosado Guzmán, for his transcription services, Dr. Efraín Flores Rivera and Margarita M. González Pérez, for their unconditional support during the process. This research project was not financed with external funds.

1123

### **Short-Term Effect of Weather on Pediatric Asthma Hospital Admissions in the Metropolitan Area of San Juan, Puerto Rico: A Bidirectional Case-Crossover Study**

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Objective: The aim of this study was to evaluate the association between short-term exposure to meteorological variation and pediatric asthma hospital admissions in the Metropolitan area of San Juan, Puerto Rico. Methods: We used daily claims of hospital admissions (< 21-years-old) with asthma as primary diagnosis living in San Juan Metropolitan

area and daily meteorological variables during 2013-2014. A symmetric bidirectional Case-Crossover design was used to estimate the odds ratio and 95% IC for asthma hospitalizations while adjusting for wind and day-of-week. IRB-A8740116-RCM. Results: An increase of 1oC in minimum temperature showed a significant increase from 13% to 21% in hospitalizations for females between the ages of 5-9 years. The average daily relative humidity change has the highest association in the study, almost a doubled increase in hospitalization among females between the ages of 15-20 years: ORLag2: 1.91 IC 95% [1.07-3.40]. No positive statistical association was found with the precipitation variable or with men. Conclusion: Our results showed an association between weather and pediatric asthma hospital admissions. A modifying effect was observed between sex and age.

1135

### **Recursos y estrategias de adaptación a la vida diaria en adultos de 80 años o más, residentes en una comunidad metropolitana de San Juan, Puerto Rico**

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Trasfondo: La población de 80 años o más es la de mayor crecimiento en Puerto Rico. Este grupo presenta deterioro en casi todos los aspectos de la vida, especialmente, en la capacidad para la vida autónoma, mantener la salud y la interacción social. Aún ante esta situación, la persona puede mantener un sentido de bienestar y satisfacción de vida con adaptaciones positivas. Objetivo: Examinar recursos personales y estrategias de adaptación a la vida diaria en un grupo de adultos de 80 años o más residente de una comunidad metropolitana. Métodos: Participaron 20 personas de 80 años o más, de clase media baja, que vivían solos, en una comunidad metropolitana. Se reclutaron en iglesias, centros de servicios y casa por casa. Se entrevistaron con preguntas semiestructuradas sobre: estrategias sociales, cognitivas, psicológicas, personales, recursos disponibles para la adaptación y manejo de retos cotidianos. Las entrevistas fueron grabadas, transcritas y codificadas para un análisis cualitativo de temáticas emergentes. Resultados: La independencia y autonomía, mantener la salud, interacción social y las experiencias vividas fueron elementos claves en la definición de una buena vejez. La salud se asoció a poder moverse sin ayuda, mantener sus condiciones controladas, haber tenido una vida ordenada y activa. Utilizaron estrategias compensatorias de ajuste, sustitución y modificación de tareas para lidiar con las actividades de la vida diaria y tener una buena vejez. El apoyo social de los hijos, una actitud realista sobre lo que se puede hacer y adaptarse a lo que no, y la religiosidad fueron recursos importantes para lidiar con el dolor, falta de energía y la mala salud. Conclusiones: La independencia, interacción social y control de salud define la calidad de vida en la edad extrema. La persona mayor desarrolla estrategias y utiliza recursos de adaptación compensatorias para mantener su bienestar y satisfacción con la vida.

1136

### **Navigating the HIV Continuum of Care among Hispanic Immigrants in Puerto Rico**

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Background & Objectives: This study identifies and characterize differences along the HIV/AIDS care continuum experiences between Hispanic immigrants of varying migratory status (authorized and non-authorized) and gender (male and female). Specially differences on: HIV/AIDS diagnosis and link to care, retention/engagement in HIV/AIDS care, access to prescribed HIV/AIDS antiretroviral therapy, and achieved viral suppression. Method: An exploratory and descriptive national cohort study of Dominicans immigrants diagnosed with HIV/AIDS in Puerto Rico (PR) and receiving care during the period of 2010 to 2016 was conducted. Data was obtained from the Puerto Rico HIV/AIDS Surveillance System, matched with Ryan White Program, Part B database of patients in care and validated with case management component. Data analysis consisted of a descriptive analysis of socio demographics characteristics and an evaluation of

significant associations between variables (gender/migratory status) with a Chi-square test ( $p < 0.05$ ). Results: Among 77 Dominican immigrants diagnosed with HIV/AIDS during the period of 2010 to 2016, 62% were linked to care, 71% of those were retained in care, 97% of those were on ART, of whom 88% achieved suppression of VL ( $< 200$  cp/ml). For non-authorized immigrants diagnosed, only 53% were linked to treatment and 27% achieved viral suppression. Statistical significances differences suggest that non-authorized Dominican immigrants show lower success linking to care ( $p=0.04$ ), retaining in care ( $p=0.02$ ), in ART ( $p=0.00$ ) and achieving viral suppression ( $p=0.01$ ). Non authorized Dominican are identified and enter to the continuum of care in early stages of the HIV diagnosis. No statistical significance differences were observed in relation to gender and navigating each phase of the continuum of care. Conclusions: Despite federal government efforts to link Hispanic immigrants to their HIV/AIDS care, patients still show lower success navigating the HIV continuum of care in Puerto Rico, specially for non-authorized Dominican immigrants. Acknowledgements: Hispanic Clinical and Translational Research Education and Career Development Award (R25MD007607); Social Sciences Research Center, University of Puerto Rico; Dr. Nelson Varas, Dr. Mark Padilla & Dr. Patria Rojas, Florida International University; Dr. Norma Delgado and Sandra Miranda de León, Department of Health of Puerto Rico.

1138

### Respiratory Screening Questionnaire in Children with Hermansky-Pudlak Syndrome

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Background: Hermansky-Pudlak Syndrome (HPS) is a genetic disorder characterized by oculocutaneous albinism, blindness, bleeding diathesis, granulomatous colitis, and progressive lethal pulmonary fibrosis (PF) in subtypes: HPS-1, HPS-2, and HPS-4. There are no guidelines of how we should screen for respiratory symptoms in HPS children. Considering the high prevalence of HPS-1 in Puerto Rico and the elevated incidence of pediatric respiratory disorders on the island, screening tools for respiratory disorders specific for this population are needed. Objective: To review and describe the respiratory symptoms in children with HPS-1 using a screening respiratory questionnaire. Methods: A retrospective chart review of 21 pediatric patients genetically diagnosed of HPS was conducted. Patient with HPS-3 ( $n=6$ ) and unconfirmed HPS subtype ( $n=5$ ) were excluded. A total of ( $n=10$ ) patients with confirmed HPS-1 diagnosis by molecular genetics were included. A brief and modified 19-questions Spanish version of the St. George's Respiratory Questionnaire (SGRQ) was used. Question were answered by caretakers and classified as obstructive, restrictive, or sleep-related. Results: Mean age between HPS-1 patients was 10 years. A 100% (10/10) successfully completed the screening questionnaire. A total of 80% (8/10) had at least one respiratory symptom reported. Classification of respiratory symptoms were: obstructive-related 30% (3/10), restrictive related 40% (4/10), and sleep-related 80% (8/10). Most common symptoms reported were: Loud snoring 60% (6/10), Nighttime body movement 60% (6/10), and recurrent pulmonary infections 30% (3/10). Conclusion: Respiratory symptoms are common in pediatric patients with HPS-1. Screening of respiratory symptoms is important as part of the pediatric pulmonary management in this population. Studies to evaluate the role of early recognition and management of HPS-1 respiratory disorders on the development of HPS-Pulmonary Fibrosis later in life are needed. Authors declare no conflicts of interest regarding the publication of this article. IRB Approval: Protocol number: B1730118

1148

### Hook of Hamate Nonunion in a Pediatric Baseball Player

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Purpose: Hook of hamate fractures are an infrequent carpal lesion commonly associated with people that perform sports such as golf, baseball or racquet sports. Typically, this type of fracture is managed with conservative treatment. However, the resulting presentation is in many cases a symptomatic carpal nonunion that requires surgical intervention. Excision of the nonunion fragment in patients with chronic nonunion has been presented in literature as an effective intervention in adults-athletes. Despite the available literature, research about the management of hook of hamate fractures in the pediatric population is still limited. Case Description: We report the case of a right-handed 12-year-old boy that presented pain upon range of motion and strength test of his left wrist. He suffered an injury 5 weeks prior to first evaluation while playing baseball specifically after hitting the ball with the bat, that was managed with immobilization and physical therapy as part of a conservative approach. However, the patient persists with symptoms of pain and discomfort. Clinical Findings: Palpation of the left hand/wrist elicited tenderness in the ulnar aspect at the location of the hook of hamate. Assessment of hand sensation was unremarkable. Left wrist presents a Range of Motion (ROM) of 60° flexion, 60° extension, 30° radial deviation and 20° ulnar deviation, which is consistent with a full ROM. Radiologic evaluation is consistent with a Milch Type 1 hook of hamate fracture that did not responded to conservative management. Surgical Management: Chronic nonunion was determined preoperatively through radiographic imaging and a Carpectomy using the Guyon Space approach was performed. Conclusion: No reported case of hook of hamate nonunion fracture and management of a pediatric patient is available in literature. We present the natural progression of the fracture and intervention with adequate recuperation.

1152

### The Effect of New Guidelines in the use of Antibiotics at Birth for Preterm and Term Infants admitted to the Neonatal Intensive Care Unit (NICU)

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Background: Suspicion of sepsis commonly leads to antibiotics use shortly after birth. Sepsis increases the risk of death especially on preterm infants. The use antibiotics can alter the microbiome and help build antimicrobial resistance. The implementation of guidelines, that reduce antibiotics use, limits exposure and possible long term effects. In June 2017 the University Pediatric Hospital (UPH) NICU implemented a protocol for antibiotics use during the first week of life. Objective: Compare antibiotics use in term and preterm infants before and after the protocol implementation. Methods: UPH-NICU newborns medical records were reviewed. Antibiotics use for pre-implementation period (January 2017-June 2017) and (July 2017-October 2018) were compared using Statistix 8.0. IRB approved. Results: There were 730 newborns admissions with no difference in birth weights and gestational ages among periods. There was no difference in antibiotics use at birth, use for >72 hrs or mean days of antibiotics for term infants. There was a decrease in antibiotics use at birth (98% vs 77%, p=0.0025), use for >72hrs (87% vs 77%, p=0.0310) and mean antibiotics days (10 vs 8, p=0.0112) in preterm infants. Conclusions: Implementing a protocol for antibiotics use successfully reduced early antibiotics exposure in preterm infants. The lack of impact in term infants may be due to previous clearer guidelines for antibiotics use in asymptomatic term infants. The decrease in antibiotics use in preterm infants shows physicians' confidence in withholding antibiotics when backed-up by an established protocol. The establishment of antibiotics guidelines decreases unnecessary antibiotics exposure in newborns.

1153

### Aggressive Myoepithelial Carcinoma in the Cervical Mass: A 17-year-old female case study

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**Purpose:** Myoepithelial carcinoma is an uncommon tumor of the salivary glands that makes up less than 2% of malignant neoplasms. The tumor shows a wide morphological and cytological diversity. The present case study aims to describe the morphological and cytological behavior in a young patient with this malignancy, recognize the anatomical sites where metastasis was present, and analyze the ancillary testing helpful for the final diagnosis. **Case Description:** A case study is reported of a Myoepithelial carcinoma diagnosed in a 17-year-old patient with an infected cystic mass in the neck. Nine months later, metastasis was found in retroperitoneum, cervical lymph node and pleura. **Clinical Approach:** An excisional biopsy was performed on the infected cystic mass measuring 4.5x2x2.7cm. 9 months later, a retroperitoneal core biopsy was performed measuring 2.5x0.1cm, also the laboratory received a biopsy from the left nodule of the neck measured 1.5x1.0x0.5cm, and 1,200 ml of pleural fluid was removed. **Clinical Finding:** The primary pathological diagnosis was poorly differentiated malignant neoplasm. The sample was sent for secondary revision to the National Institutes of Health and the histological and immunohistochemical results were consistent with a Myoepithelial Carcinoma. The diagnosis was confirmed with the immunohistochemical tests performed 9 months after the initial diagnosis with metastases of Myoepithelial carcinoma. The most important immunohistochemical tests were positive for S100 and negative for INI-1 and p63. **Conclusion:** A diagnosis of Myoepithelial carcinoma is unusual, even more in a patient at an early age. The average age of occurrence is between 50 and 60 years<sup>6</sup>. A limitation of the case study is the lack of information about procedures and/or treatments performed on the patient once diagnosed with this type of malignancy and prognosis. **Acknowledgements:** The information of this case report was provided by Hato Rey Pathology Associate, INC.

1158

### **Bioavailability and distribution of the metastatic cancer inhibitor MBQ-167 in mice**

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**Background & Objectives:** Metastasis is the leading cause of death among cancer patients due to the lack of effective therapies. The Rho GTPases Rac and Cdc42 are potential targets against metastatic disease, since they regulate cancer cell migration, invasion, and proliferation. Our group developed the small molecule MBQ-167, which is the most potent Rac and Cdc42 inhibitor to date, inhibiting mammary tumor growth and metastasis in immunocompromised mice by 90% (Humphries-Bickley, et al., 2017). However, further studies are needed to determine the bioavailability and tissue distribution of MBQ-167 in rodents, which is essential to continue validating this drug for FDA approval. The objective of this study was to determine the tissue distribution and bioavailability of MBQ-167 in a single dose input scheme (10 mg/kg BW) following intraperitoneal (IP) and oral gavage (PO) administration. **Methods:** We first developed and validated a bioanalytical method using supercritical fluid chromatography (SFC) coupled with electrospray ionization tandem mass spectrometry (MS/MS) for the detection of MBQ-167 in tissues and plasma. Next, MBQ-167 was administered to BALB/c mice (5 mice/group) and blood and tissues (livers, kidneys, spleens, lungs, and heart) were collected at 0.17, 0.5, 1, 3, 6, 9, and 12 hours following IP or PO administration. Samples were analyzed using SFC-MS/MS. **Results:** MBQ-167 was mostly distributed to the kidneys and liver after 30 minutes of IP administration. The elimination half-life ( $t_{1/2}$ ) was 2.2 and 2.5 hours for the IP and PO, respectively. The relative bioavailability of MBQ-167 after oral gavage administration was 29%. **Conclusion:** This study presents the first analysis of the tissue distribution and bioavailability of the Rac/Cdc42 inhibitor MBQ-167 in mice and it supports the continued development of this drug as a potential anti-cancer therapeutic. **Acknowledgements:** This research was supported by MBRS-RISE grant G12MD007600 (to MdM).

1159

### Creation of Open-celled 3D printed Casts and Splints

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**Background & Objectives:** The mission of the BioMed Innovation Center at the UPR MSC is to adapt and apply 3D printing technologies to medical practice. These efforts are particularly addressed to orthopedics, cardiology, general surgery, neurology, and dentistry. Our objective was to create ridged open-cell splints and casts that have improved characteristics with respect to the wear ability, support and comfort for the orthopedic patient. **Methods:** Custom splints and casts require a full-scale model of the injured area, e.g., arm or leg. Such 3D models were obtained using a 3D full-color scanner (EVA<sup>®</sup> scanner from Artec 3D<sup>®</sup>) using Artec Studio 12<sup>®</sup> software that is exported as a STL mesh file. This mesh surface was imported into Rhino 6<sup>®</sup> software where it was converted into a NURB poly-surface, which in turn is offset several millimeters to provide a comfortable fit of the cast or splint. The offset surface was then imported into Grasshopper<sup>®</sup> software that was programmed to generate the STL file of the cast or splint with the desired characteristics. Finally, the STL file of the cast or splint was loaded into the software of the 3D printer and converted into a g.code instrument control file. The physical cast or splint was then printed in filament or resin 3D printer using PLA and ABS materials, respectively. **Results:** Casts and splints were produced using both filament and resin 3D printers. These units comfortably fit the patient and were lighter weight, water-proof, and provided access to areas that may itch. **Conclusions:** Creation of 3D printed open-celled casts and splints appear to be a significant enhancement to the classic plaster structures. These advances have the potential to improve the care experience and outcome of orthopedic patients. **Acknowledgments:** NIMHD-RCMI Grant U54-MD007600, Deanship School of Medicine, UPR Medical Sciences Campus.

1161

### Diagnostic accuracy of blood-based biomarker msept-9 for colorectal cancer detection in Puerto Rican Hispanics

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**Background & Objectives:** Colorectal cancer (CRC) is the first and second leading cause of cancer death among men and women in Puerto Rico and United States, respectively. The lack of sensitivity and specificity of current CRC screening methods limits their application for early detection. Methylated Septin9 (mSEPT9) has been suggested as a reliable biomarker in colorectal cancer (CRC) detection. This study aims to determine the diagnostic accuracy of mSEPT9 in plasma samples from Puerto Rican Hispanics colorectal cancer cases for the detection of CRC. **Methods:** Using a retrospective case-control study design we evaluated plasma samples (n=248) including 122 cases and 126 age-gender matched controls using the Epi procolon (Polymedco) test to determine the levels of the mSEPT9. To evaluate the performance characteristics of the method, diagnostic accuracy and comparisons according to CRC stage we calculated sensitivity, specificity and an assessment through the area under the ROC curve (AUC). **Results:** The levels of mSEPT9 differed significantly (p<0.001) between the cases and control group. CRC cases were 2.9 [95% CI: 1.7-4.9] times more likely to have positive serum mSEPT9 results when compared to controls. The sensitivity and specificity of mSEPT9 for CRC was 60.0% [95% CI:48.4-70.8%] and 60.3% [95% CI:46.6-73%] respectively, with an AUC of 0.63 [95% CI:0.52-0.69]. Diagnostic accuracy of mSEPT9 for early stage (stage I/II) was 69.8% [95% CI:57-80.8%] sensitivity and 59% [95% CI:49.7-67.8%] versus 73% sensitivity [95% CI:55.9-86.2%] and 59% specificity [95% CI:49.7-67.8%] for ad-

vance stage. Conclusions: Significant differences were found between the levels of mSEPT9 among CRC cases and controls. Blood mSEPT9 had a moderate diagnostic accuracy for detection of CRC overall, and across the stage continuum. This is the first study evaluating mSEPT9 in a Puerto Rican Hispanic Population. Acknowledgements: This research was supported by grants HCTRECD R25MD00760, CCRHD-RCMI U54MD007600, NCRR R25GM061838, NCI U54CA096297, and NCI R21CA198963.

1164

### **Knowledge and attitudes regarding pain of baccalaureate nursing students**

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Background and objectives: The most recent survey of the National Institute of Health 2012 (NHIS), reported that 25.3 million American adults suffer from significant chronic pain (Nahin, 2015). Knowledge and attitudes towards pain and its treatment have been inadequate in nursing students and professionals as well according to several research studies. The purpose of this study was to examine fourth-year-baccalaureate nursing students' knowledge and attitudes regarding pain. Methodology: Using a quantitative descriptive design, 52 final year bachelor of science in nursing students were recruited through convenience sampling from a university out of the metropolitan area of San Juan, to complete a questionnaire on demographic and professional data and the Knowledge and Attitudes Survey Regarding Pain (KASRP). A KASRP score of 80% or higher is considered a passing score, that indicates both adequate knowledge and attitudes regarding pain. Results: The mean KASRP score was 52.8%. There were no significant differences among the demographic variables. However, students who had voluntarily worked in a hospital had a lower score in the survey than those who had not voluntarily worked in a hospital. Although the differences were not significant when evaluating the 37 items of the survey, they were marginally significant when the survey was evaluated, based on its total 39 responses. Conclusions: The results of this study have indicated that there are deficits in nursing students' knowledge and attitudes concerning pain. Strengths were related to pain assessment and treatment. Knowledge deficits were seen in opioid dose administration. A follow up study to assess knowledge and attitudes once the students have been in practice to determine if learning has taken place should be investigated. Also the evaluation of the nursing curriculum regarding pain evaluation and its management can be considered.

1166

### **The Impact of Hurricane Maria on the Perceived needs of Puerto Ricans 65 years and older using the HESPER Scale**

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Objectives: Disaster-related stressors have a significant influence on mental and functional capacity of the geriatric population. Hence, to measure the possible problems faced by individuals  $\geq 65$ y after Hurricane Maria, the Humanitarian Emergency Settings Perceived Needs (HESPER) Scale was used for the first time in Puerto Rico. Therefore, the study aims to better understand this population's perceived needs and stressors. The data collected could provide guidelines to consider in case of a future disaster and the possible impacts it may bring to the studied population. Design: A cross-sectional study was conducted to participants  $\geq 65$  years with a sample size of  $N=934$ , residing in Bayamón, Puerto Rico. Perceived needs were measured using the HESPER Scale. Participants were selected from the catchment area of the ongoing longitudinal ADI 10/66 study cohort, a population-based research into dementia. Results: The studied population demonstrated common perceived needs through all age groups, with health and distress predominating as recurring necessities. Approximately half (44.3%) of participants reported living with a

serious health issue while, about a third (31.2%) perceived themselves experiencing a seriously distressed state. Although health and distress persisted as the two most frequent perceived needs in every age group, disparities emerged between the third most frequent need, being income, transportation and separation from family members in an ascending age group order. Conclusion: Data showed there are specific perceived needs to consider immediately/preferentially following a natural disaster. It also grants evidence for the implementation of new public policy to consider caregiving as a priority for the elderly, as this demographic represents 19.8% of Puerto Rico's population. As health disparities and distress were identified as the most frequently perceived needs, it is suggested, that efforts be made in order to improve interventions attending this population's needs following a future natural disaster. Acknowledgements: Puerto Rico Legislature; European Union.

1174

### **New Pathogenic RSPH4A Variant in a Child with Primary Ciliary Dyskinesia**

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Purpose: Genetic mutations in 42 human genes, including RSPH4A can lead to Primary Ciliary Dyskinesia (PCD). Mutations in RSPH4A gene alter the configuration of the ciliary ultrastructure. As a result PCD is manifested as: Neonatal Respiratory Distress (NRD), chronic oto-sino-pulmonary diseases, male infertility, and others. We describe a child with "classic PCD" symptoms, and two pathogenic heterozygous RSPH4A genetic PCD variants. Case Description: A 12-year-old Puerto Rican male with past medical history of NRD despite term gestation, daily wet-cough and recurrent oto-sino-pulmonary infections. On physical examination patient showed bilateral crackles at right middle lobe (RML) and left lower lobe (LLL), bilateral nasal polyps and mild clubbing. Chest X-ray showed patchy opacities suggesting chronic atelectasis. Chest CT scan showed cylindrical and varicose bilateral bronchiectasis on RML and LLL. Spirometry showed a pseudorestrictive pattern. Sweat test was intermediate however, CFTR genetics showed no mutations. Serum immunoglobulin levels were normal and FeNO was decreased [ $<5$ ppm]. Bronchoscopy showed abundant thick and greenish secretions. Bronchoalveolar lavage resulted positive for *Pseudomonas Aeruginosa*. Nasal ciliary biopsy showed abnormal microtubules number, distribution and configuration [7+2, 9+0]. Initially extended PCD genetic panel revealed one pathogenic variant at the RSPH4A gene [c.921+3\_921+6delAAGT (Intronic)]. Additional two likely pathogenic variants were noted: RSPH4A [c.1103T>G (p.Val368Gly)] and DNAH8 [c.9839A>T (p.Gln3280Leu)]. Familial genetic studies showed that RSPH4A [c.1103T>G (p.Val368Gly)] variant was maternally inherited. No paternal RSPH4A or DNAH8 variants were detected. As a results of the family analysis, genetic reclassification was made for RSPH4A [c.1103T>G (p.Val368Gly)] PCD genetic variant as pathogenic. Conclusion: Additional studies are needed to fully understand the interaction of multiple heterozygous variants in the clinical phenotype of patients with PCD. Analysis of familial studies plays an important role in the classification of genetic PCD variants with uncertain significance. Conflict of interest: Authors declare no conflicts of interest regarding the publication of this article. Informed Consent: A formal written informed consent was obtained from a legal caretaker. Author's Contributions: All authors were involved in the development on this case report.

1179

### **Correlation between Health and Perceived Needs among Puerto Rican Elderly after Hurricane María**

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Objectives: Elders living with health care necessities are a vulnerable population. After a natural disaster such as a hurricane, health-related difficulties may be exacerbated and may require the development of strategies to improve

interventions. The Humanitarian Emergency Settings Perceived Needs (HESPER) Scale was used as a survey tool to assess the correlation between health as an expressed need and other perceived needs. This enables to understand which needs may be impacting directly or indirectly, the overall health of a hurricane-affected population. Methods: A cross-sectional study was conducted, targeting Puerto Ricans 65 years or older, residing in Bayamón, Puerto Rico (N=934). Participants were recruited from catchment area of the ongoing longitudinal study, ADI 10/66. The perceived needs of participants were measured with the HESPER scale. Results: Participants that perceived themselves lacking adequate medical attention were nine times (OR: 9.12) as likely to report suffering a serious health issue. Likewise, participants that reported serious needs concerning transportation and hygiene were about six times (OR: 6.76/OR: 6.44 respectively) as likely to perceive themselves as having a health issue. Interestingly, a smaller correlation (OR: 3.55) was observed between distress and health, both of which were the most commonly reported needs perceived by the interviewed population. Conclusion: The three strongly correlated needs with health indicate factors that may impact the health of an individual. As transportation deficiency and lack of resources was exacerbated by the disaster, the perceived health may have been impacted by limited mobility and unavailability of health care. Adequate hygiene played a crucial role in overall health. Lack of services may also result in deficient hygiene and subsequently in health decline. The study also contemplates the influence of factors not measured by the HESPER scale, such as the presence of health issues prior to the disaster. Acknowledgements: Puerto Rico Legislature; European Union.

1182

### Frequency of Perceived Needs within a Puerto Rico elderly demographic at six months and a year after Hurricane Maria

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Objective: In September 2017 a category four hurricane caused widespread destruction in Puerto Rico. In order to rapidly assess the perceived needs of the elderly after Hurricane María, the Humanitarian Emergency Settings Perceived Needs (HESPER) Scale was administered. Subsequently, the results were compared at six months and a year after the hurricane to explore the change in perceived needs. This information can help improve relief interventions after a hurricane as it considers time and its relationship to change or persistence in perceived needs. Methods: The HESPER survey was conducted with a sample of 934 adults 65 years or older in the town of Bayamón, Puerto Rico between March and October 2018. The sample was chosen from a catchment area with sociodemographic representation of this age group in Puerto Rico. The results collected after six months and after a year were compared. Results: Participants interviewed during March considered health problems (52.38%) and distress (44.44%) as the most frequently perceived needs. Those interviewed during September also considered health (46.36%), and distress (23.18%) as their most serious perceived needs. However, adequate help had the largest change when compared 6.35% at six months and 20.45% at one year. Conclusion: In March, one out of two elderly expressed health problems as a perceived need with a small decrease in September, suggesting chronic health problems that may have been exacerbated. The decrease of 21.26% participants experiencing psychological distress shows an improvement, but still with a need for intervention directed towards mental health. A 14.1% increase was observed in a perceived lack of adequate help with one out of 17 participants at six months, but one out of five at one year; underlining the need for better assessment of help needed by a hurricane affected population and its adequate distribution. Acknowledgements: Puerto Rico Legislature; European Union.

1191

### Declining Living Kidney Donation Rates among Children Who Received Renal Transplants in Puerto Rico: 1977-2013 Cohort

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**Background:** Living donation (LD) offers superior outcomes compared deceased donor (DD) transplantation for patients with ESRD. In US, an increment in LD rate was observed until 2001 and 2004, when LD rates began to decrease in peds and adult KTx, respectively. Knowledge about LD trends among children who have received renal transplants (KTx) in PR is limited. **Objective:** We describe LD trends among pediatric KTx performed in PR from 1977-2013. **Methods:** Retrospective chart review of all children (0-18yrs) receiving KTx in PR from 1977-2013. Median (range) frequencies (percentages) were calculated. **Results:** From 1977-2013, 146 children, female: 39%, Hispanic (Caribbean): 100%, age: 14yrs (2-18yrs) were transplanted. 60% received LD and 40% DD. 75% LD were parents, 13% LD siblings and 1% LD unrelated. 16% DD were from US. Total number of transplants remained stable from 1980-2000 (1977-79: 5 KTx, 1980's: 40 KTx, 1990's: 40 KTx, 2000's: 45 KTx, 2010-13: 16 KTx). LD rate decreased over time (77-79: 100%, 80's: 85%, 90's: 75%, 00's: 31%, 10-13: 12%). 6% pts received 2nd KTx at 21yrs or younger, with 67% and 33% LD on 1st and 2nd KTx, respectively. Of these pts, female: 44%, age at first KTx: 12yrs (5, 18yrs), and age at 2nd KTx: 17yrs (13-21yrs). **Conclusions:** Living donation in pediatric renal transplants in PR has substantially declined over the last 4 decades. Possible explanations include single parenting, medical unsuitability, shifting practice patterns (i.e. establishment of solid organ procurement organizations), and marketing strategies, among others. Additional studies are needed to better understand the causes of such decline and to develop strategies to increase LD among our children with ESRD. **Acknowledgement:** Research reported in this publication was supported by Grant Number D34HP24463 U.S. Department of Health and Human Services Health Resources and Services Administration Bureau of Health Workforce University of Puerto Rico School of Medicine.

1192

### Not your typical constipation: A rare presentation of adult onset sporadic Burkitt's Lymphoma

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**Purpose:** Burkitt's lymphoma (BL) is a mature B-cell non-Hodgkin lymphoma (NHL) with an aggressive clinical course and represents a subtype of high-grade mature B-cell NHL characterized by a rapid proliferative rate and generally aggressive clinical course. In sporadic BL, the abdomen is the most common site of disease involvement, with a nonspecific clinical presentation. **Case description:** We present the case of a 25-year-old Puerto Rican female who presented to our emergency department due to worsening constipation, decreased appetite, fatigue and abdominal distention. Patient stated she had visited 4 emergency departments in approximately 4 months due to constipation, where she was managed with stool softeners and was reassured. Abdominal and pelvic CT scan with intravenous contrast showed multiple irregular lobulated large soft tissue masses with areas of internal necrosis which were diffusely involving the distal duodenum, jejunum and proximal ileum, with associated confluent nodal mesenteric masses likely related to adenopathy. No intestinal obstruction was present. Patient underwent endoscopy where biopsy was taken from jejunal lesion. Immunohistochemistry suggested high grade B-cell lymphoma indicative of Burkitt's lymphoma. The patient received chemotherapy, after which developed tumor lysis syndrome requiring hemodialysis. Hospitalization course included

intubation due to acute respiratory distress syndrome in the setting of pneumonia secondary to chemotherapy induced neutropenia. Patient died less than two months after initial evaluation for constipation and diagnosis of Burkitt's lymphoma. Conclusion: Symptoms of abdominal NHL are nonspecific and, at times, misleading. Given the high replication rate of BL and high remission rate with treatment, missing the early signs and diagnosis delay can be fatal for a patient with an otherwise favorable outcome.

1201

### **Perceived Needs of Elderly Puerto Ricans at Risk of Dementia after Hurricane María**

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**Background:** Puerto Rico was struck by category 4 Hurricane María in September 2017. This event drastically altered daily life for a prolonged period. Daily stressors are linked to the development of dementia and deterioration of mental health in the geriatric population. Through the use of the Humanitarian Emergency Settings Perceived Needs (HESPER) scale, this study aims to evaluate if a correlation exists in the perceived needs and the development or progression of dementia in elderly patients ( $65 \geq y/o$ ) after the event of a hurricane. **Methods:** The perceived needs of participants were measured administering the HESPER scale to community elders  $\geq 65$  years ( $n=934$ ) in Bayamón, Puerto Rico. The study population was selected from an ongoing longitudinal study designed to assess dementia prevalence, incidence and risk factors, called ADI 10/66. Previously, 233/2000 participants with diagnosed dementia {11.7%} were identified in the catchment area. HESPER Scale was performed on available participants. **Results:** The most frequently expressed needs were health problems (44.3%) followed by distress (31.2%). In addition, data showed that individuals perceiving a serious health problem were approximately 4 times (OR: 3.55) as likely to experience distress. 221 participants identified with dementia died, relocated outside the catchment area or unable to answer, meaning only 12 {5.2%} of selected participants completed HESPER interview. **Conclusion:** Previous studies have shown that unresolved hurricane-related stressors produced exacerbations in serious mental illness, post-traumatic stress disorders and suicidality in other countries. Subsequently, data collected from Puerto Rico showed health problems and psychological distress as frequent perceived needs. Since health problems and distress have an association with increased risk for dementia and cognitive decline, it is important to adequately approach these needs. Our data sustained that following a hurricane, support to the elderly is needed to safeguard their health from further deterioration. **Acknowledgements:** Puerto Rico Legislature; European Union.

1206

### **The Transcription Factor Gooseberry, a pax3/pax7 homolog, interacts with Wingless to control neuronal function**

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**Background and Objectives:** The transcription factor gooseberry (Gsb) and the signaling molecule wingless (Wg) are critical for nervous system development. At early developmental stages, Gsb controls neuroblast differentiation by antagonizing Wg signaling. We recently discovered that Gsb is important, within late motoneurons, for synaptic growth, plasticity and stability. Interestingly, Wg also controls neuromuscular junction growth and plasticity but presents opposite phenotypes. We therefore hypothesize that Gsb and Wg maintain antagonistic interactions defining neuronal functions. **Methods:** We manipulated Gsb and Wg expression and analyzed synaptic growth, plasticity and stability. **Results:** Gsb loss of function increases synaptic growth and plasticity. These phenotypes can be rescued in a Wg mutant background, suggesting that Gsb antagonizes Wg to control synaptic growth and plasticity. Gsb loss of function also

affects synapse stability, provoking synaptic retractions. This phenomenon is amplified if Wg expression is reduced, suggesting that Gsb controls synaptic stability independently of Wg, and raising the possibility that Wg has a neuroprotective role at the synapse. In addition, Gsb overexpression reduces synaptic growth and impairs synaptic plasticity, while Wg overexpression leads to overgrown and overplastic synapses. When Gsb and Wg are overexpressed simultaneously, the phenotypes are identical to the Gsb over expressors suggesting that Gsb renders the synapse resistant to Wg. In contrast, when we overexpress Gsb and activate the Wg pathway by expressing a dominant negative form of the kinase shaggy (Sgg), we found that both growth and plasticity phenotypes are restored to control levels. This finding strongly suggests that Gsb inhibits the Wg signaling pathway upstream of Sgg and downstream of Wg. Conclusions: We conclude that Gsb and Wg, two molecules essential to nervous system development, interact to control mature neuronal function. Acknowledgements: Work supported by NIH: NIGMS 2P20GM103642 (COBRE).

1209

### Early Age Drug Injection Initiation as a Risk Factor for HIV/HCV Coinfection Among Drug Users in Rural Communities in Puerto Rico

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Background: The transmission of HCV is associated with HIV due to shared transmission routes. It's been demonstrated that coinfection has implications on disease severity and mortality. HIV has a detrimental impact on the natural disease outcome and immune response of HCV infection. Objective: This study aimed to estimate the prevalence of HIV/HCV coinfection and its association with drug injection initiation at an early age among drug users residing in the rural communities of Puerto Rico. Methods: With the utilization of a response driven sampling method, 315 intravenous drug users were recruited. Sociodemographic information, drug use patterns, age of drug injection initiation, and risk behaviors were obtained through structured interviews. HIV and HCV status were determined by the results of the INSTI Rapid HIV and OraQuick Rapid HCV tests. Frequency distributions were used to describe the study sample. Bivariate analyses and multinomial logistic regression were used to assess covariates of HIV/HCV. This study was approved by the IRB. Results: Approximately 91% of study participants were males. Participants' mean age was 41.7 years old and the majority had not completed high school (47.6%). More than three quarters (78.4 %) tested positive for HCV during the rapid test, while 6.0 % tested positive for HIV. The prevalence of HIV/HCV coinfection was 6.0%. The mean age of drug injection initiation was 21.9 years. After controlling for sociodemographic characteristics, HIV/HCV coinfection was strongly associated with drug injection initiation at an early age. The odds of IDUs who initiated drug injection before 18 years old was over 3 times the odds of IDUs who commenced drug injection after 18 years old (OR = 3.8 95%; CI=1.3, 11.3). Conclusions: Strengthening policies and effective harm reduction interventions that prevent early drug injection initiation may reduce HIV/HCV coinfection among drug users in rural communities in Puerto Rico.

1211

### Natural disasters and criminality: a space-time analysis of the effects of Hurricane Maria on crime patterns in Puerto Rico

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Background and objectives: On September 20, 2017, Hurricane María, a category 4 storm, plowed through Puerto Rico, just two weeks after Hurricane Irma. This study with space-time analysis sought to assess the impact of both hurricanes on the geographical and temporal distribution of crime (murder, rape, robbery, assault, burglary, theft and car theft) in

Puerto Rico. Methods: To this purpose, the Integrated Nested Laplace Approximation (INLA) method in R using the R-INLA package was utilized. The primary data source were the monthly crime reports from the Puerto Rico Police Department. Results: Preliminary results indicate an overall decrease in crime rates over the 33 months studied on both the parametric and non-parametric models tested. Regarding the space-time interaction, four models were proposed, from which the model with structured spatial effects and unstructured temporal effects (type III interaction) was selected as the one with the best fit. From this model we could detect an increase in crime rates during the month of September 2017, during which the natural disasters took place, though during the next two months crime seemed to decline to pre-disaster levels. A displacement of crime was also observed, particularly an increase in crime rates in the southeast region during the month of November 2017. While an increase was detected in some counties, overall no specific pattern was distinguishable. Conclusion: It is a popular belief that looting, and violence follow a natural disaster though this research does not entirely support this idea. The data suggests increased post-disaster levels of social cohesion (which has been previously reported on other studies), but the differences in crime rates among the counties could also be attributed to other variables. Perception of crime is as important to public health as crime itself so studying crime patterns after a disaster could be beneficial to the public.

1213

### **Anesthetic considerations for non-cardiac surgery in a case of Levo-Transposition of Great Arteries with implantable cardioverter defibrillator: A Case Report**

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Purpose: The most common complications of patients with Levo-Transposition of the Great Arteries include arrhythmias (AV block and reentry tachycardia), heart failure, and sudden cardiac death. Therefore, a significant number of patients with L-TGA require Implantable Cardioverter Defibrillator implantation in the long term as primary or secondary prevention. This case report will make emphasis on the anesthetic management for non-cardiac surgery of a patient with Levo-Transposition of Great Arteries with an ICD. Case Description: A 46-year-old male with past medical history of Levo-Transpositions of the Great Vessels, Hypertension, and Arrhythmias status post pacemaker and defibrillator presents to the Emergency Department with acute right lower abdominal discomfort during last 24 hours. His physical exam was consistent with RLQ tenderness upon deep palpation, positive Mac-Burney point, and 3/6 lower left sternal border holosystolic murmur. Abdominal CT showed acute uncomplicated appendicitis. Echocardiography demonstrated L-TGA with systemic right ventricle, moderate tricuspid regurgitation, and mild aortic insufficiency. Anesthesia was induced using Fentanyl and Etomidate. Transcutaneous defibrillation pads were in place and left radial arterial arrow catheter was used for intraoperative monitoring. Pneumoperitoneum was limited at 15 cm H<sub>2</sub>O. Patient underwent uncomplicated laparoscopic appendectomy and experienced an uneventful post-operative course with complete resolution of his discomfort and return to all normal activities 3 days after surgery. Conclusion: The advancements in modern medicine together with the use of antiarrhythmic devices as a gold standard for cardiac tachyarrhythmias have increased the population of non-cardiac surgery candidates with an ICD. This encompasses a challenge for the perioperative management for the operating room personnel. Future research projects should scrutiny the standardization of protocols for the management of this population of patients. Acknowledgement: None. No conflicts of interest were declared.

1218

### **Case Series: Congenital Zika Virus Infection associated with Epileptic Spasms**

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Purpose: Congenital Zika Virus (ZIKV) infection is unique to fetuses and infants infected with Zika virus before birth. This infection can result in a wide spectrum of structural and functional abnormalities; including, microcephaly, neuronal migrational disorders, hearing and vision abnormalities. The neuronal migration disorders usually lead to multiple neurological deficits, seizures and neurodevelopmental delay. However the complications of seizures and associated epileptic syndromes are poorly described in the literature. In this case series we will describe 4 patients with congenital ZIKV who developed intractable epileptic spasms (ES). Case Description: We describe a total of 4 patients with Congenital ZIKV and confirmed ZIKV exposure in utero who developed atypical epileptic spasms. Medical records were reviewed (n=4) and compatible with Congenital ZIKV exposure prenatally. All patients were evaluated at birth with Brain Magnetic Resonance Imaging (MRI) and electroencephalogram (EEG). All cases had normal EEG at birth with a variety of CNS dysgenesis including lissencephaly (75%), corpus callosum dysgenesis (100%), abnormal myelination patterns (75%), and dysgenesis of brainstem (100%). Between 4 and 8 months of age, patients presented with flexor asymmetric spasms (50%) and extensor asymmetric spasms. At onset of epileptic spasms, an electroencephalogram was repeated and 100% were abnormal due to presence of epileptiform discharges. All patients were treated with high dose methylprednisolone (20 mg/kg/day) with variable response. Fifty percent of patients required use of Vigabatrin due to refractory epileptic spasms and the other 50% remained with focal seizures requiring other anti-seizure medications. All patients persisted with intractable epilepsy and showed severe neurodevelopmental delay. Conclusion: Congenital ZIKV infection is highly associated with multiple neurological manifestations including central nervous system dysgenesis. We report a series of patients with associated intractable atypical ES unresponsive to treatment. There is limited data regarding pharmacologic response and long term neurological outcome in this patients, for which more studies are needed.

1219

### **Experiencia de la longevidad y el significado de la vida en la vejez extrema en un grupo de adultos de 90 años o más residente en comunidad: 2019**

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Trasfondo: El incremento de la población de adultos de 90 años o más en Puerto Rico, representa retos complejos para nuestra sociedad, familia y sistemas de servicios. Mantener el sentido de significado y propósito de vida está directamente relacionado con la salud y el bienestar en la edad extrema. Objetivo: Examinar la experiencia de longevidad y el significado de vida en un grupo de adultos de 90 años o más, residente en comunidad. Métodos: Se entrevistaron 40 participantes, de 90 años o más, de ambos sexos, residentes en comunidad y con capacidad mental. Se utilizaron preguntas semi-estructuradas para identificar percepciones de su experiencia de longevidad (años vividos) y el significado de vida (actividades, motivaciones y propósitos). Se reclutaron en los Member's Club MMM o por referido. Las entrevistas fueron grabadas y transcritas para su análisis temático inductivo de los datos textuales, utilizando la teoría de Ricoeur. Resultados: En general, los participantes expresaron sentirse completos ya que han hecho todo lo que tenían que hacer en la vida. Actualmente aspiran a poder seguir su rutina, al bienestar de su familia, mantener su función, tener compañía y morir tranquilos. El aspecto familiar y espiritual es lo más importante. Hay menor preocupación por las cosas materiales, "por lo externo"; mayor empatía con los demás, "ver las cosas desde las razones del otro para poder comprender" y conciliación con los aciertos y desaciertos de la vida. Esos elementos dan estabilidad mental y psicológica. Conclusiones: En la edad extrema, hay un sentido de plenitud existencial en el cual, los proyectos y metas de vida se sienten cumplidas, lo que confirma las teorías de Erickson y Tornstam. El significado de vida radica en lo espiritual y en las relaciones sociales que son esenciales para preservar el bienestar y la integridad aún ante serias limitaciones de salud.

1229

### Vitamin D activity in milk of rhesus monkeys: effects of offspring gender, length of lactation and parity

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Milk is the first and continued source of vitamin D in humans. Extensive studies have been carried out as to the level of dietary vitamin D to be provided to mothers so that adequate amounts of vitamin D will be obtained in nursing infants. Less information is available on vitamin D in milk of non-human primates. Consequently, we have determined vitamin D levels obtained in milk samples from 21 rhesus macaque monkeys. The major determinants for vitamin D are dietary amounts and exposure to sunlight. These factors have not been measured. In this presentation we looked at secondary factors which affect levels as dependent on length of lactation, gender of the lactating infant and parity. Lactating dams were sampled by hand-stripping. Vitamin D activity (VDA) was assessed in foremilk by measuring the sum of Vit D2, Vit D3, 25(OH)D2 and 5x25(OH)D3 using LC-MS/MS techniques. Vit D2 and 25(OH)D2 were below detectible limit of <0.5 ng/g. Results were (mean  $\pm$  SD ng/g): all animals = 26.2 $\pm$ 10.1 (males [n=8] =26.3 $\pm$ 7.0 vs. females [n=13]=26.1 $\pm$ 11.8; p>0.05) The length of lactation  $\leq$ 4 mos(n=11)=27.4 $\pm$ 12.7 vs.  $\geq$ 4 mos(n=10)=24.9 $\pm$ 6.5; p>0.05. In addition, parity 1-3 births(n=8)=24.1 $\pm$ 6.5, 4-7 births(n=8)=26.9  $\pm$  6.9, and 8-10 births(n=5)=28.3 $\pm$ 18.3; p>0.05. Conclusions are: gender of offspring has little effect on VDA in milk, however length of nursing slightly reduces VDA while parity shows a progressive increase VDA. It would be helpful if Vitamin D levels in blood of the dams were available to correlate to VDA in their milk. Acknowledgements: Puerto Rico Primate Center, National Institute on Minority Health and Health Disparities # 2U54MD007587.

1233

### Evaluation of Gynecological Conditions and Obstetrical Outcome in a Female Population of Inflammatory Bowel Disease Patients in Puerto Rico

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Background: A relationship has been established between the inflammatory bowel diseases (IBD), Crohn's disease (CD) and ulcerative colitis (UC), with the development of different gynecological conditions and obstetrical outcomes. The study aim was to (1) estimate the prevalence of common gynecological conditions in Hispanic Patients living in Puerto Rico and (2) determine whether IBD is associated with increased risk of gynecological conditions. It was hypothesized that gynecologic conditions and obstetrical outcomes in Puerto Rican women with IBD would be similar to other studied populations. Methods: Female patients with IBD (ages 21-55) attending the clinics of the UPR Center for IBD were given questionnaires that evaluated descriptive information about demographics, life-style, medical history, and reproductive health. Data was entered and analyzed using descriptive statistics for continuous variables and frequency distributions for categorical variables. Results: Of 143 recruited patients, 108 (75.52%) patients had a diagnosis of CD, while 31 (21.68%) had UC. More than a half (67.13%) of IBD patients reported a menstrual cycle of 25-30 days. 109 (76.22%) described their period as regular. Preterm was reported by 22 (15.38%) and 32 (22.38%) spontaneous abortions. Cervical screening was reported by 124 (86.71%) of which 29 (20.28%) patients reported abnormal results. Surgery related to IBD was observed in 91 (63.64%) of patients. Conclusion: In this population menstrual irregularities are not significant and do not seem to be influenced by pres-

ence of IBD. An increased risk of adverse pregnancy outcomes was observed as demonstrated in other populations. Although previous studies have suggested worsening trends in cervical cytology associated to medications, this is not seen in our sample. The prevalence of gynecological conditions and obstetric outcomes in Hispanic women with IBD varies from that observed in other populations. Acknowledgment: Award Number Grants 5S21MD000242 and 5S21MD000138, from NCMHD-NIH.

1236

### **Sexual Dysfunction in a Female Hispanic Population with Inflammatory Bowel Disease living in Puerto Rico**

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Background: Inflammatory Bowel Disease (IBD), like Crohn's Disease (CD) and Ulcerative colitis (UC), is a chronic illness in expansion which impairs quality of life (QoL), including sexual health. Females with IBD tend to suffer from sexual dysfunction (SD), due to disease activity, medications, body image, etc. A pilot study in our center of 100 Puerto Rican women with IBD using the Female Sexual Function Index (FSFI), showed impaired sexual function with a mean score of 21.9. This study aims to examine this issue in a larger group as part of a comprehensive prospective study on women with IBD. Methods: As a cross-sectional study, Hispanic females (ages 21-55) attending the UPR Center for IBD self-administered the FSFI and Discussion about Sexuality in Medical Appointment (DSMA). The FSFI considers six variables that determine the sexual function score: desire, arousal, lubrication, orgasm, satisfaction and pain. The DSMA was developed by Perez et al for a pilot study on sexuality in women with IBD and addresses the communication about sexuality in patient-physician relationships. Univariate analysis was performed. Results: Out of 136 participants, mean age was 35 (range 21-55), mean time since diagnosis was 10 years, and 78% had CD. Of all subjects, 71% had a partner and 18% had a stoma. SD (score<26.55) was reported by 77% women with a mean score of 19.75 (range 1.2-30.4), regardless of age and time since diagnosis. Only 43% patients discussed about sexuality with their physician, likely a gynecologist (57%). Conclusion: In a cohort of Hispanic females with IBD in PR, the prevalence of SD is high and poorly discussed with physicians. In agreement with similar studies, IBD patients have a large occurrence for SD. It is imperative to address sexuality as part of comprehensive care for these patients. Acknowledgment: Supported by NCMHD-NIH Grants 5S21MD000242 and 5S21MD000138.

1241

### **Ten Year Experience Of Pediatric Renal Transplants In Puerto Rico: 2003-2013**

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Background: Pediatric kidney transplants(KTx) have been performed in PR since 1970's. Studies presenting outcomes of pediatric KTx in PR are limited. Objective: We describe the population of children who received a KTx in PR from 2003-2013 and outcomes post-KTx. Methods: Retrospective chart review of all children(0-21yrs) who received a KTx in PR from 1993-2013. Means/standard deviations(SD), frequencies/percentages were calculated and compared to national rates. Results: From 2003-2013, 71 children, female: 31%, Hispanic(Caribbean): 100%, age: 15yrs(4yrs) were transplanted. Common causes of ESRD were congenital anomalies(35%) and steroid-resistant nephrotic syndrome(17%). Blood type: 87% A or O, while only 5% B. 90% were not sensitized (0%PRA) at the time of KTx, 83%pts

received organs from 4-6 HLA mismatch donors. 7% were pre-emptive KTx and 20% from living-related donors. Four pts received a second KTx at 21yrs or younger age. Mean cold ischemia time: 18hrs(7hrs). Immunosuppression: 83%pts received thymoglobulin induction and >94% received calcineurin inhibitor, antimetabolite and prednisone for maintenance. No deaths within 3yrs post-KTx. 7% graft loss at 1yr post-KTx, 20% at 3yrs post-KTx and 25% at 5yrs post-KTx. Conclusions: Children who received a KTx in PR from 2003-2013 had similar 3yr pt survival(100% vs 98%) and 5yr graft survival rates(75% vs. 78%) to US pediatric KTx recipients. However, low number of preemptive(6.5% vs. 22%) and living donor KTx(20% vs. 45%) were performed compared to US pediatric KTx recipients. Interventions to increase pre-emptive KTx and living donation rates in PR are needed. Support: Research reported in this publication was supported by Grant Number D34HP24463 U.S. Department of Health and Human Services Health Resources and Services Administration Bureau of Health Workforce University of Puerto Rico School of Medicine.

1242

### Defectos congénitos y nacimientos en Puerto Rico previo a la epidemia del Zika

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Trasfondo: El Departamento de Salud de Puerto Rico ha identificado los defectos de nacimiento como la primera causa de mortalidad infantil en la Isla. Para el año 2015, la epidemia del virus del Zika y su asociación a la microcefalia trajo a la luz la necesidad e importancia de actualizar y abundar en la información disponible sobre los defectos de nacimiento en la Isla. No tan solo desde la perspectiva clínica a la cual mayormente se asocia, sino desde un enfoque sociodemográfico que provea información accesible y de fácil entendimiento a la comunidad. Objetivo: Describir la presencia de anomalías congénitas en los nacimientos registrados en Puerto Rico y las características de salud materna para el periodo 2006 a 2014. Métodos: Estudio de diseño transversal-descriptivo. Se utilizaron las bases de datos de nacimiento del Registro Demográfico de Puerto Rico para el periodo 2006 a 2014. Un total de doce anomalías fueron recopiladas en este periodo, las cuales fueron analizadas de forma individual y por categorías de acuerdo con características de salud materna. Resultados: Se identificó una población de 1,516 “nacidos vivos” con defectos congénitos. Las madres que tuvieron diabetes asociada al embarazo presentaron mayores casos de defectos cromosómicos/genéticos (20), músculo-esqueléticos (15) y orofaciales (8). Aquellas que tuvieron preeclampsia presentaron mayores casos de defectos cromosómicos/genéticos (33), músculo-esqueléticos (25) y urogenitales (18). Embarazos con clamidia presentaron mayores casos de defectos cromosómicos/ genéticos (13), músculo-esqueléticos (13) y orofaciales (8). Conclusiones: Ciertas condiciones de salud materna se observaron con mayor frecuencia en defectos cromosómicos/genéticos y defectos músculo-esqueléticos. Conocer el estado de los nacimientos con defectos congénitos y la salud materna es fundamental para el desarrollo de políticas públicas dirigidas a atender las necesidades de esta población, al igual que a mejorar o actualizar los instrumentos designados a la recolección de datos relacionados al tema.

1243

### Five-Year Experience using Rituximab Therapy in Children with Difficult-To-Treat Steroid-Dependent and Steroid-Resistant Nephrotic Syndrome

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Background: Rituximab has been proposed as a third-line agent to treat patients with difficult-to-treat steroid-dependent(SDNS) and steroid-resistant nephrotic syndrome(SRNS). Studies evaluating the efficacy of Rituximab therapy in Hispanic children with difficult-to-treat SDNS or SRNS are very limited. Objective: We describe the efficacy of Rituximab in a cohort of Hispanic children with difficult-to-treat SDNS or SRNS. Methods: Retrospective chart review of all children(0-21yrs) with difficult-to-treat SDNS(definition-recurrent relapses on antime-

tabolite and/or calcineurin inhibitor) and difficult-to-treat SRNS (definition-resistant to steroid and calcineurin-inhibitors) at the University of Puerto Rico, Pediatric Nephrology Clinic treated with Rituximab. Median (range), mean (standard deviation) and frequencies/percentages were calculated. Results: From 2012-2017, 11 children with difficult-to-treat SDNS or SRNS were treated with Rituximab, female: 27% (n=3), age at NS diagnosis: 2yrs (2-6yrs), age at initial Rituximab administration: 12yrs (5-20yrs), 72% (n=8) had partial or complete remission after Rituximab therapy and 50% of them (n=4) were started on mycophenolate mofetil (MMF) post-Rituximab therapy. 45% (n=5) of these pts had SDNS, 100% responded to Rituximab [80% (n=4) full-remission, 2pts on MMF post-Rituximab; 20% (n=1) partial-remission, no MMF after Rituximab], 60% (n=3) had a relapse, 1pt on MMF post-Rituximab (mean-time-to-relapse [full-remission]: 21mo, mean-time-to-relapse [partial-remission]: 6mo). From those with SRNS (n=6), 50% (n=3) responded to Rituximab [66% (n=2) full-remission, 33% (n=1) partial-remission], 66% (n=2) relapsed, 1pt on MMF post-Rituximab (mean-time-to-relapse [full-remission]: 7mo; mean-time-to-relapse [partial-remission]: unknown). 2pts developed skin abscess and cellulitis after Rituximab therapy, no other significant infections observed. Conclusions: All Hispanic children with difficult-to-treat SDNS and 50% of those with difficult-to-treat SRNS in this cohort responded to Rituximab without significant infectious complications. Rituximab is an alternative therapy for difficult-to-treat SDNS and SRNS. Acknowledgment: Research reported in this publication was supported by Grant Number D34HP24463 U.S. Department of Health and Human Services Health Resources and Services Administration Bureau of Health Workforce University of Puerto Rico School of Medicine.

1247

### **An Extremely Rare Case of Birk-Barel Syndrome with Central Apneas**

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**Purpose:** A mutation in the KCNK9 gene on chromosome 8q24.3 leads to Birk-Barel syndrome. Congenital hypotonia, palatal abnormalities, intellectual disability, severe feeding difficulties, and dysmorphic facial features characterize this extremely rare genetic disorder. Birk-Barel syndrome demonstrates dominant inheritance with paternal imprinting. To date, 19 patients have been molecularly diagnosed and reported in the literature. We describe the 20th child with Birk-Barel syndrome worldwide, the first one published with Puerto Rican ethnicity and our experience after introduction of non-invasive ventilation (NIV) as a treatment for central-apneas. **Case Description:** A 16-month-old female born premature at 36-weeks presented to our institution with cough and difficulty breathing since one day prior to admission. Past medical history included: failure to thrive, congenital talipes equinovarus, global developmental delay and gastro-esophageal-reflux disease. Patient had a gastrostomy for long-term feeding, due to hypotonia, dysphagia and poor oral coordination. Patient with acute respiratory failure with hypoxemia and was admitted to the pediatric intensive care unit. Physical examination was relevant for generalized hypotonia, cleft palate, strabismus, pectus excavatum, weak cry and bilateral clubfoot. Imaging showed perihilar pneumonic infiltrates, severe dextroscoliosis and mild adenoidal hypertrophy. Polysomnography showed 4 obstructive-apneas, 3 mixed-apneas and 214 central-apneas with an apnea-hypopnea index of 35.9 events per hour. Video electroencephalography monitoring and basic metabolic workup were found normal. NIV with bi-level positive pressure was started while asleep. Improvement in her motor, social and level of alertness progressively improved after 15 days on NIV. Whole-exome resulted in a heterozygous mutation in the KCNK9 gene on chromosome 8q24.3 consistent with Birk-Barel syndrome. **Conclusion:** High index of suspicion for extremely rare genetic disorders like Birk-Barel syndrome in patients with dysmorphic features and central apneas. Consult with a pediatric pulmonologist to consider NIV should be part of the multidisciplinary care management of patients with

suspected or confirmed KCNK9 mutation. Conflict of interest: Authors declare no conflicts of interest regarding the publication of this article. Informed Consent: A formal written informed consent was obtained from a legal caretaker for publication and use of this article and pictures presented. Author's Contributions: All authors were involved in the development on this case report.

1249

### **Acthar and Tacrolimus Combination: Effective Therapeutic Regimen for a Hispanic Child with Difficult to Treat Steroid Resistant Nephrotic Syndrome**

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**Purpose:** Children with steroid-resistant nephrotic syndrome (SRNS) refractory to immunosuppressive agents have poor renal outcomes. Evidence of effective therapies to manage such challenging patients is limited. We present a case of a Hispanic child with refractory SRNS who responded to ACTHAR/tacrolimus combination. **Case:** 7yrs Hispanic boy with nephrotic syndrome diagnosed at 3yrs. He presented with edema, hypoalbuminemia, nephrotic-range proteinuria, edema and hyperlipidemia; normal renal function; no hypertension, active sediments in urine or glycosuria. He was initiated on high-dose prednisolone. Three months later, he persisted nephrotic. A renal biopsy revealed minimal change disease. He was started on cyclosporine (CsA); remission in 1mo. One-year later, he had a relapse in the setting of influenza. In the following 6mo, he had pneumonia, acute gastroenteritis and multiple upper respiratory tract infections. He continued relapsed, requiring additional admissions for aggressive diuresis due to generalized edema. Over the next 6mo, he continued to be relapsed (on CsA); thus, CsA discontinued and Rituximab (4 doses) started as a third-line agent. After 4mo, continued relapsed (urine-protein-to-creatinine ratio: 12mg/mg, albumin 1.3mg/dL), despite 0% CD19/CD20. At that time, ACTHAR was initiated. 3mo after initiating ACTHAR, partial-remission was observed (urine-protein-to-creatinine ratio-6mg/mg), but he persisted hypoalbuminemic (albumin-1.5mg/dL). At that time, started on tacrolimus. 5mo after initiating ACTHAR, albumin-3mg/dL, urine-protein-to-creatinine-1.7mg/mg. 7mo later, he had full-remission and continues on remission for 8mo now on ACTHAR/tacrolimus. **Conclusion:** An excellent response was achieved with ACTHAR/tacrolimus combination treating this Hispanic child's refractory SRNS. Prospective studies are needed to evaluate the long-term efficacy and safety of this combination. **Acknowledgement:** None.

1252

### **HIV-associated reactive arthritis complicated with bilateral infection**

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**Purpose:** HIV-associated reactive arthritis is a condition that tends to present as an oligoarthritis usually with enthesitis and mucocutaneous involvement. There is predominant affection of the lower extremities. It is commonly a self-limited condition, however, certain cases may become chronic. These patients have an elevated predisposition to develop complications like septic arthritis. **Case description:** This is the case of a 41 years old male patient with history of untreated HIV and an 8 years-evolving bilateral knee arthralgia with inflammatory features which started to exacerbate 1 month prior to his hospitalization for which patient decided to seek medical aid. Symptoms were associated with erythema and hyperthermia in both knees. Patient reported that his arthralgia hadn't been diagnosed and treated efficiently. Four years after the initiation of the arthralgia patient reported the appearance of plaque-like lesions in his legs and genital region. Patient denied history of intravenous drugs, homosexual or multiple sexual encounters. During his hospitalization patient underwent bilateral knees arthrocentesis which reported the presence of septic arthritis. A skin biopsy was performed which reported psoriasiform dermatitis. Patient underwent joint drainage and was started on parenteral antibiotics therapy and HAART. In a time period of 4 weeks his condition improved. Patient was scheduled for follow up in the Dermatology and Infectious Disease clinic. **Conclusion:** This case exposes an unusual case of HIV-associated reac-

tive arthritis complicated with bilateral infection. This patient had the history of a constant insult toward his knee joints due to his chronic arthritis. It was exacerbated by his untreated HIV and superinfected skin lesions which facilitated the entrance of bacterias into the synovial space. We consider that this case emphasizes the relevance of an efficient primary care evaluation and proper patient education which could have diagnosed this patient's condition and prevented the development of clinical complications.

1263

### Exploring the Impact of Hurricane Maria on Parents and Health Care Personnel of a Neonatal Intensive Care Unit in Puerto Rico

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**Background & Objectives:** On September 20th, 2017 Puerto Rico received the impact of catastrophic category 4 Hurricane Maria. The unpreparedness of the island severely affected basic services and healthcare. The aim of his study is to explore the experiences of parents and healthcare providers of our NICU during Hurricane Maria to help improve the preparation in the event of another natural disaster. **Methods:** We retrospectively analyzed the experiences of parents and healthcare providers of our NICU during Hurricane Maria through a cross-sectional study. Questionnaires were given to parents to assess social needs and symptoms of acute stress post Hurricane and to healthcare workers to document what they endured. **Results:** Thirty-four parents answered the survey (66% females; 34% males). Parents' biggest fears were NICU windows would break (94%) and baby's supporting machines not working (88%). Median days until parents were able to visit were 4 days (1-9 days). Parents reported problems sleeping (30%), lack of concentration (24%), feeling tense (21%), and feeling helpless (26%). Eighty health care providers completed the survey (81% females; 19% males). About 40% stayed in the hospital during the storm and 9% lost their homes. **Conclusions:** Hurricane Maria exposed our weaknesses and lack of preparedness in the event of a major disaster. Preparedness plans should be elaborated with anticipation. Disaster preparedness plans for our NICU should include how to support parents and health care providers before, during and after the storm. Approved by IRB. **Acknowledgements:** none.

1266

### Small Cell Carcinoma of the Ovary - Hypercalcemic Type: A Case Report

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**Purpose:** Small cell carcinoma of the ovary, hypercalcemic type (SCCOHT) is a rare disease. Is the most common undifferentiated form of ovarian cancer in women below age 40, however there are only a few well documented cases on teenagers. Hypercalcemia is found in the majority of cases. We describe the clinical presentation, treatment modality, and outcome of a 12-year-old female with small carcinoma of the ovary. **Case presentation:** 12-year-old girl with decreased appetite, weakness, constipation, abdominal pain, and vomiting for three weeks. She presented to the Emergency Room due to abdominal distention. Physical examination was remarkable for a hard, non-mobile, palpable mass at right pelvic area. An abdominal-pelvic MRI revealed a large right adnexal solid complex mass with central necrosis and hypervascularity. Laboratory workup showed elevated calcium (16.7). She was started on intravenous fluid hydration and loops diuretics, later requiring calcitonin IV twice. Additional workup showed elevated CA 125. Patient was taken to OR for mass resection. Biopsy revealed a small round cell tumor of the ovary, hypercalcemic type stage IA. She completed 4 cycles of chemotherapy regimen with Paclitaxel, Ifosfamide, and Cisplatin. After completion a PET scan was negative and normal levels of Ca125 were achieved. SMARCA4 gene pathogenic variant was identified. **Conclusions:** Ovarian tumors represent 80% of pediatric genital tumors and the risk of malignancy increases with decreasing

age. The clinical scenario and epidemiology of SCCOHT includes age between 24-28 years, hypercalcemia, and a stage higher than I in most cases. The histological diagnosis is difficult because of similitude with other ovarian tumors, which could delay diagnosis. It is a highly aggressive monogenic cancer with poor prognosis, driven by SMARCA4 mutations. Early diagnosis is imperative.

1268

### **When medicine and law collide: The evolution of arguments supporting new standards of care for intersex patients**

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**Health Policy:** On September 2018, California became the first US State legislature that calls the medical profession to delay cosmetic non-consensual surgical interventions performed to intersex infants until they can voluntarily participate in their own treatment plans. **Theoretical framework:** From a gender theory perspective, we studied the evolution of arguments that were used to challenge current standards of care. **Sources:** Policy sources included the original and the revised Consensus Statement of Chicago (2006, 2016) and the Senate Concurrent Resolution No. 110, 'Relative to sex characteristics' of the California Legislative Council Bureau (2018). **Research methods:** Conceptual mapping of key terms from Resolution 110 were tracked back to official reports from US and international intersex advocacy groups, peer-reviewed publications in medical journals, and published statements from professional US medical associations. **Findings:** The Lesbian, Gay, Bisexual, and Transgender Health and Wellness Group, American Academy of Pediatrics (2014), The American Medical Association, Board of Trustees (2016), The American College of Obstetricians and Gynecologists, Committee on Adolescent Health Care (2017) and three former Surgeons-General of the United States (2017) recommend to postpone or to avoid genital surgeries. The terms 'sex', 'gender', 'psychological', 'physiological', 'human rights', and 'harm' were found in Resolution 110 and in previous reports and publications but the terms 'cosmetic', 'genitoplasty', 'urological function', and 'disorders of sex development' were not found in Resolution 110. **Implications for public policy:** Emerging expert opinions call for deferral or prohibition of intersex surgeries when functional capacity is not the medical issue at stake. It is concluded that, in the near future, the clinical management of intersexuality in the US will no longer reflect a gap between medical guidelines for treatment and one's choice to embody genital atypia. **Acknowledgments:** There are no conflicts of interests in the execution and reporting of this study.

1270

### **Zika Virus: Knowledge, Attitudes and Prevention strategies amongst parents of inpatients at Pediatric Ward of UPR Carolina**

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**Background & Objectives:** The Puerto Rican community has suffered numerous outbreaks secondary to mosquito bound viruses, including flavivirus and Toga virus. The Zika Virus, although sharing disease vector, acutely raised concern in the general population when an association was established between prenatal infection and subsequent neurologic sequelae. This has prompted the establishment of medical and public health protocols geared towards the prevention, education and further understanding this new public health challenge. In order to assess the need to provide patients with more information, it was imperative that we establish a knowledge baseline to serve as comparison to future education endeavors. **Objective:** This study sought to assess the knowledge base regarding Zika Virus infection, as well as possible prevention strategies. **Methods:** A cross-sectional study was performed using an anonymous self-administered adapted survey instrument given to the parents of patients admitted at the Pediatric Ward at Hospital UPR Dr. Federico Trilla at Carolina since August 2018. Preliminary data is available from 60 parents who have completed the

survey. Descriptive and univariate analysis were performed for all study variables. Results: 83% of subjects were females with a mean age of 30 years old ( $\pm 10$ ). A majority (85%) had public health insurance. In regard to knowledge-base, 98% of subjects agreed that the most common mechanism of transmission of Zika virus is through mosquito bite and maternal-fetal transmission. Also, 30% of subjects stated that if their children had Zika virus their head would stop growing. When asked about prevention strategies, 78% agreed in the use of mosquito nets; the same amount did not consider abstinence an effective strategy. Conclusion: Further educational endeavors must be taken to appropriately inform our population so they are better equipped to take the appropriate actions at the time of seeking health care as well as taking part in primary prevention.

1294

### Case Report: Multifocal Micronodular Pneumocyte Hyperplasia, a Rare Pulmonary Manifestation of Tuberous Sclerosis

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**Purpose:** Multifocal micronodular pneumocyte hyperplasia (MMPH) is described in medical literature as a rare pulmonary manifestation in patients with tuberous sclerosis. As the name implies, it is characterized as proliferation of type II pneumocytes throughout the lung parenchyma. This is a benign pulmonary hamartous manifestation, which usually does not require further treatment, and must be differentiated from treatment requiring pulmonary manifestations such as lymphangiomyomatosis (LAM). **Case Description:** We report the case of a 27-year-old female patient with history of tuberous sclerosis presenting with multiple episodes of spontaneous renal hemorrhage from bilateral renal angiomyolipoma (Wunderlich syndrome), with previous embolization of right sided lesion. Patient was incidentally found with well-defined non-calcified pulmonary nodules on Abdominopelvic CT scan, among other findings related to the condition. **Conclusion:** Tuberous sclerosis is a genetic disease which has manifestations that span multiple organ systems, each ranging in severity. Therefore, it is important for radiologists to recognize and distinguish the characteristic imaging features of these manifestations. Knowledge of a rare manifestation, such as MMPH, is important for accurate diagnosis, which represents timely and adequate management, and ultimately improving patient care. **Acknowledgements:** No conflict of interests.

1300

### Functional Profile and Cognitive Status in a sample of HIV-seropositive (HIV+) Puerto Rican Women

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**Background and Objectives:** Few studies address limitations in Daily Life Functioning (DLF) especially in women living with HIV. A high prevalence of HIV- associated neurocognitive disorders (HAND) remain despite advances in antiretroviral treatment. Cognitive difficulties have a high correlation with increased dependence in daily life activities. The objective of this study is to describe the functional profile and cognitive status in a sample of HIV+ Puerto Rican women. **Methods:** This study is a secondary data analysis from data collected from the HIV+ women cohort at the University of Puerto Rico. The cognitive performance was assessed using HAND criteria, stratifying 43 HIV+ women of the sample into cognitively normal (CN) and neurocognitive impaired (NCI). To characterize DLF we used a six-question questionnaire that measured activities of daily living. **Results:** The major findings in this study indicate that 84%, (CI 65.78-94.7) of our sample (n=43) had a lower performance in DLF. Also, HIV+ cognitively impaired women had worse performance in DLF (77.8%, CI 57.74-91.38) compared with HIV+ women with normal cognition (30.8%, CI 9.092-61.43). We found a significant association between performance in DLF and cognitive status ( $p < 0.05$ ). **Conclusions:**

This preliminary study provides initial data for DLF in women living with HIV in Puerto Rico in association with their cognitive status. These findings serve as a base to better address challenges in activities of daily living especially in HIV+ populations. Acknowledgements: GRANT SUPPORT: Partially supported by: R25MH080661, 1R01NS099036-03, R21MH095524, P031S100037, U54RR026139, G12MD007600, 2U54MD007587.

1301

### Effect of a Rac1 inhibitor, Ehop-016, on survival of multiple cancer cell lines.

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**Background & Objectives:** During 2006-2010 pancreatic, gastric and breast cancer were among the top ten cancers with the highest mortality in Puerto Rico. Pancreatic and stomach cancer have low 5-year survival rates of 8% and 31% respectively, while breast cancer is the most diagnosed cancer among women. The small Rho GTPase Rac1 which regulates cell motility, survival, proliferation and thus, cell invasion and metastasis is overexpressed in aggressive pancreatic and gastric adenocarcinomas, and in invasive breast carcinoma. In collaboration with the pharmacy school, our laboratory characterized the small molecule Ehop-016, that inhibits the activation of Rac1 by interfering on the interaction with the guanine nucleotide exchange factor (GEF) VAV-2. Also, Ehop-016 inhibits survival, migration/invasion, tumor growth and metastasis on HER2 positive human breast cancer cell line. The HYPOTHESIS is that Ehop-016 is an effective inhibitor of cancer cells that overexpress the oncogene VAV-2. The goal was to determine the efficacy of Ehop-016 on aggressive and invasive cancer cell lines viability. **Methods:** MTT assays for cell viability were performed using a pancreatic MIA-PaCa-2, a gastric NCI-N87, and two metastatic, triple negative breast cancer (TNBC), 4T1 (murine) and MDA-MB-468 cell lines; following treatment with vehicle or Ehop-016 at 4 or 8uM for 48 or 96h. **Results:** Cell viability was significantly reduced in both TNBC cell lines with ~95% reduction at the highest concentration of Ehop-016. Viability was reduced by 60% in MIA-PaCa-2 cells after 48h of treatment Ehop-016 and by 80% at 96h. Meanwhile, for gastric cancer cells, only 8uM concentration of Ehop-016 significantly reduced viability at 96h. **Conclusions:** Inhibiting the interaction between Rac1 GEF, VAV-2, is a viable strategy to reduce viability in invasive cancer. **Acknowledgements:** Study supported by NIH/NIGMS P20 GM103475 award to JRC; NIH/NIGMS SC3GM084824 and U54CA096297 awards to SD.

1303

### Tasas de mortalidad infantil por zonas geográficas en Puerto Rico: 2016

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**Introducción y Objetivos:** La tasa de mortalidad infantil (TMI) se utiliza como un indicador de salud de un país. Para Puerto Rico, en 2016, la TMI fue de 7.64. El propósito de este estudio es determinar si existe una diferencia estadísticamente entre la TMI del área de costas y la TMI del área montañosa. **Metodologías:** Para calcular las TMI de estas áreas para el 2016, se utilizaron los nacimientos y las muertes infantiles de ese año, obtenidos de Registro Demográfico. Se calcularon las estimaciones de los errores estándar relativos, usando las tasas y los datos antes mencionados, y los intervalos de confianza a un 95 %. Por otro lado, se consideraron exclusivamente los municipios que rodean a todo Puerto Rico en su costa para constituir dicha categoría; el restante se catalogó como municipios no costeros. Cabe señalar que, para la división costera, los intervalos se construyeron siguiendo una distribución normal, mientras que para la división no costera se utilizó una distribución Poisson por tener un número de eventos menor de 100. **Resultados:** La TMI para el área costera en 2016 fue de 8.13 y para el área no costera fue de 6.97. Un 18 % por de los municipios tuvo una TMI de 0.00, de los cuales el 64 % pertenece a la región no costera. Los intervalos de confianza construidos resultaron así: zona costera (6.74; 9.52) y zona no costera (5.55; 8.63). **Conclusiones:** Las TMI se superponen; por lo tanto, no presentaron

diferencias estadísticamente significativas. Se concluye que, Para Puerto Rico, en el 2016, dichas tasas no presentan desigualdad entre los municipios costeros y no costeros. Este hallazgo descarta distinciones por áreas geográficas con respecto a la TMI. Reconocimientos: Ninguno.

1308

### Design and synthesis of 3,6-dibromocarbazole and 5-bromoindole derivatives and their cytotoxic and anti-migration effects on MDA-MB-231 and MCF-7 cancer cells

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**Background & Objectives:** The compound wiskostatin, a 3,6-dibromocarbazole derivative, has been identified as a N-WASP protein inhibitor. N-WASP protein is involved in invadopodia formation in metastatic carcinoma cells. Unfortunately, in a recent study it was found that wiskostatin inhibited other cellular functions that are not believed to be N-WASP dependent. We hypothesize that compounds that contain in their structure a hydrophobic aromatic group with an elongated aliphatic polar segment will potentiate the ability of the molecule to interact with N-WASP. The aim is to synthesize compounds derived from 3,6-dibromocarbazole and 5-bromoindole to evaluate their cytotoxic and anti-migration activity in vitro on MDA-MB-231 and MCF-7 cell lines. **Methods:** All compounds were synthesized reacting 3,6-dibromocarbazole or 5-bromoindole derivatives with ethyl 4-bromobutyrate via substitution reaction followed by hydrolysis. The carboxylic acid product was reacted with representative amines to obtain carbazole or indole amide derivatives. All compounds were analyzed for their cytotoxic activity in MDA-MB-231 and MCF-7 cell lines using Sulphorhodamine B, and for anti-migration activity in MDA-MB-231 cell lines using wound-healing assay. **Results:** Among the twenty-three compounds synthesized as derivatives of dibromocarbazole or indole, nine compounds showed growth inhibition with GI50 in the range of 4.7 to 23  $\mu\text{M}$ . One compound demonstrates anti-migration activity with 19% inhibition of wound closure at 10  $\mu\text{M}$  in MDA-MB-231 cancer cells. **Conclusion:** From our results, we can conclude that dibromocarbazole derivatives can be used for the development of possible new antitumor therapeutic agents. **Acknowledgements:** The project was supported by NIGMS NIH 1SC2GM116712-01A1.

1309

### Descriptive Profile of Puerto Rican Childhood Asthma who participated in the Epigenetics Variations and Childhood Asthma in Puerto Ricans (EVA-PR)

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**Background & Objectives:** Puerto Rican children have the highest prevalence, morbidity and mortality from asthma of all ethnic groups in the United States. According to the Behavioral Risk Factor Surveillance System (BRFSS) in

2014-2015, approximately 1 in 7 children living in PR had current asthma. Overweight and obese children have increased risk of developing asthma compared to children of normal weight status. The aim is to share a descriptive profile of demographic characteristics and disease prevalence information in Puerto Rican children with asthma recruited at the Behavioral Science Research Institute (BSRI) of the University of Puerto Rico (UPR-MSC); and to describe the distribution of childhood asthma stratified by socio-demographic characteristics and anthropometric measures to create a profile of asthmatic children in Puerto Rico. Methods: A secondary data analysis was carried by reviewing data from a community sample study of children (9-17 years old; n=380) with asthma (n=196) and without asthma (n=184). Data on respiratory health were collected through self-reported data from questionnaires, pulmonary function testing, and anthropometric measures. Results: Among the subjects in EVA-PR, the majority were males (n=211, 55.5%), of whom 118 (60.2%) had asthma. Reported household income of <\$15,000 (n=218, 57.5%) and \$15,000 or higher (n=161, 42.5%) was not associated with asthma [OR=1.10, 95% CI=0.73-1.66]. Parental asthma was associated with higher prevalence of asthma (P<0.01). Anthropometric measures such as obesity (n=146, 38.4%); BMI percentile 67.9 ± 28.8) and waist circumference (cm 79.8 ± 17.9) were more frequent in subjects with asthma. Overweight/obesity was significantly associated with higher odds of asthma when compared with children of normal weight [OR=1.85, 95% CI=1.21-2.82, P=0.01]. Conclusion: This study provides us with epidemiological and descriptive information of asthma among Puerto Rican Children that will allow to improve the prevention, diagnosis and treatment of the disease. Acknowledgements: Original study approved by IRB #0160713. Research reported in this publication was supported by: National Heart, Lung, and Blood Institute (NHLBI) grants HL079966, HL117191, and MD011764 (PI: Celedón JC), National Institute on Minority Health and Health Disparities (NIMHD) NIH- RFA MD 11 003 Comprehensive Centers of Excellence, NIMHD and the National Institute of Allergy and Infectious Diseases (NIAID) grant U54MD00758

1314

### Características sociodemográficas de abuelos que son cuidadores principales de sus nietos: Un desafío para Puerto Rico

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Introducción y objetivos. La población de abuelos que viven con sus nietos y son sus cuidadores principales ha ido en aumento, tanto en Puerto Rico como en los Estados Unidos. Las características de abuelos que están a cargo de sus nietos menores de 18 años, son pieza fundamental para entender diferentes retos (i.e., económicos, de salud y comunitarios) que estos enfrentan. El objetivo del estudio fue analizar las características sociodemográficas de la población de abuelos que tienen bajo su cargo a nietos menores de 18 años. Metodología: El estudio fue uno descriptivo. La fuente de datos utilizada fue la Encuesta de la Comunidad de Puerto Rico, 2013-2017. Resultados: En Puerto Rico hay 97,195 (49%) abuelos cuyos nietos menores de 18 años viven con ellos. De estos 41,698 (42.9%) son además abuelos responsables por sus nietos (ARN) y cuyos padres no están presentes en un 25% de estos hogares. En cerca de la mitad de los casos, los nietos llevan 5 o más años viviendo con sus abuelos. Cerca de un 46% de ARN tenía 60 o más años, 30% tenía alguna discapacidad, siendo 63% mujeres. El 66% de los ARN no trabaja y 56% estaba bajo el nivel de pobreza. Culebra, Añasco y Morovis son los municipios con mayor proporción de ARN. Conclusión: Puerto Rico se distingue por contar con una alta proporción de abuelos que viven con, y son responsables, de sus nietos. En los ARN hay una prevalencia alta de adultos mayores con características que los hacen vulnerables y que, en combinación con la responsabilidad por sus nietos, puede contribuir a deteriorar su estado de salud y bienestar general. Es vital la labor del Estado, y de otras entidades sociales, en promover políticas públicas dirigidas a enfrentar la desigualdad que trastoca a los ARN y al país en general.

1317

### **Behavior Skills Training for Practical Nurses in the Feeding Process of Premature Infants in the Neonatal Intensive Care Unit (NICU).**

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**Background & Objective:** The feeding infant process is complex and requires integration, maturation and coordination of multiple bodily functions to achieve neurophysiological organization. Neonatal nurses, specifically the practical nurses, are in charge of the infants' feeding process and parents guidance about it. The complexity in that area, the minimum nurse training and lack of interprofessional approaches increase the need for educational projects. The Behavioral Skills Training (BST) is focused on four steps to teach new skills: a)instructions b)modeling c) rehearsal, and d)feedback to achieve performance- and competency-based strategies. The objective of the study was to evaluate the use of BST in improving the performance of practical nurses during the feeding process of premature babies in the NICU. **Methods:** The study included practical nurses that labored in the University Pediatric Hospital NICU during 2017-2018. The participants completed a pretest and began the educational program. The participant completed the post-test and participated in two practices with premature infants in NICU under the supervision of the Speech Language Pathologist. The statistical analysis was performed using Statistix 8.0 software. IRB approved. **Results:** The study included 30 practical nurses, 29 female (97%) and 1 male (3.3%). The median nurses age was 46.5 (range 24-62) and the median years working in NICU was 6 (range 1.5-38). There was significant improvement in knowledge after participation in the educational program (57% correct answers in pre-test vs 81% in post-test;  $p < 0.01$ ). Also, there was evident improvement in performance during the second practice (67% completed tasks in the first practice vs 79% in the second;  $p = 0.0188$ ). **Conclusions:** The BST approach was successful in improving knowledge and performance in practical nurses during the complex process of feeding premature babies in NICU. However, the generalization of the complex skills competency during the feeding process in the NICU requires more than two practices.

1321

### **Knowledge, attitudes and practices about the use, management and storage of water after a natural disaster in Puerto Rico**

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**Background & Objectives:** Access to safe water is one of the main concerns in the recovery phase of natural disasters such as hurricanes. Focused educational interventions to support household water treatment and safe storage (HWTS) practices have been reported as an effective way to prevent post-disaster, water-related health issues. Our objectives were to: 1) develop a culturally sensitive survey to assess the knowledge, attitudes, and practices (KAP) towards HWTS after natural disasters in Puerto Rico, and 2) conduct a pilot test in a convenience sample of the population visiting a community hospital in PR. **Methods:** A 43-item KAP survey was developed using guidelines provided by the WHO and UNICEF. The survey collected information on sources of water, water treatment, and storage. For our pilot a sample of 50 participants were selected. Descriptive analyses were done. Fisher exact tests were used to determine statistically significant differences between individuals by sex, age groups, and urban vs. rural areas. **Results:** Most participants were women (76%) with median age of 52. On average, water services were interrupted for 51 days (SD +/- 41). Individuals largely relied on bottled water for drinking (96%) and cooking (92%). 86% were aware of the danger of consuming unsafe water; 53.5% of them lives in urban areas. However, all unaware persons (14%) reported living in rural areas ( $p < 0.05$ ). When prompted about instructions to use boiling and chlorine techniques (76% and 80% respectively) were not familiarized with CDC guidelines. Compliance with water storage recommendations was high (92%). **Conclusions:**

Our preliminary findings suggest that, even though there is a general perception about the importance of using clean water, there is lack of knowledge on how to apply household water treatment and a dependence on bottled water. Acknowledgements: Supported by the UPR School of Medicine Endowed Health Services Research Center.

1324

### Biochemical analysis of novel protein interactors of the stress sensor Mtl1p of *Saccharomyces cerevisiae*

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Background and objectives: Systemic fungal infections are a leading cause of mortality in clinical settings, especially in immunocompromised patients. The yeast *Saccharomyces cerevisiae* is a useful model in the search for novel antifungals, as stress-response mechanisms in fungi are highly conserved. The objective of our study is identifying interactors of the stress sensor Mtl1p in *S. cerevisiae*, and to assess their relative importance in the stress response caused by exposure to H<sub>2</sub>O<sub>2</sub> and by low glucose levels. Methods: We used Membrane Yeast Two-Hybrid (MYTH) assays to identify protein interactors of Mtl1p. We also studied deletion mutants corresponding to MTL1 and the identified interactors under H<sub>2</sub>O<sub>2</sub> and low glucose-induced stress using growth assays in liquid medium. Finally, we assessed the phosphorylation status of the Cell Wall Integrity (CWI) Pathway MAPK, Slt2p, in these cells with Western blots. Results: Nine full-length and one truncated cDNAs encoding Mtl1p interactors were identified under normal culture conditions. Deletion of MTL1 or RAS2 caused a severe slow growth defect and a significant reduction in phosphorylation levels of Slt2p when the strains were exposed to 0.5 mM H<sub>2</sub>O<sub>2</sub> for 2 hours. In comparison, the treated wild type strain did not experience this phenotype. Furthermore, after 8 hours of incubation at an extremely low glucose concentration of 0.05% w/v a moderate slow growth defect was observed in both mutant strains and the wild type compared to control cultures grown with 2% w/v glucose, and this correlated with a reduction in phosphorylation levels of Slt2p compared to the control cultures. Conclusions: Expression of MTL1 and RAS2 is required for eliciting a stress response to the oxidative agent H<sub>2</sub>O<sub>2</sub>. Extremely low glucose levels produce similar phenotypes that are independent of MTL1 and RAS2. Acknowledgements – This research is supported in part by grants NIMHD-G12MD007600, NIGMS-RISE-R25GM061838. S.G.C. is supported by NIGMS-INBRE-SP20GM103475-17.

1333

### Kounis Syndrome: A More Commonly Encountered Cause of Acute Coronary Syndrome

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Purpose: Kounis syndrome (KS) has been defined as cardiovascular symptoms that occur secondary to allergic or hypersensitivity insults. It was thought to be a rare condition but is now being more commonly identified as the cause of acute coronary events in patients without previous history of coronary artery disease. Most identified KS cases have been provoked by medications on elderly male patients. The purpose of this case report is to describe an unusual case of KS, triggered by a food allergen in a young female patient. Case Description: Case of a 23-year-old female with previous history of bronchial asthma and Arnold Chiari type 2, status-post ventricular-pleural shunt placement, who developed dyspnea, chest discomfort, and palpitations after consuming milk, a well-known allergen for the patient. On physical examination, blood pressure was 110/64 mmHg, pulse 96 bpm, respiratory rate 18 breaths per minute, temperature 96.7 F. There was no evidence of urticaria or facial swelling. Cardiac evaluation showed normal S1 and S2 without murmurs or rubs. Lungs were clear to auscultation. Electrocardiogram (ECG) showed normal sinus rhythm with early repolarization ST-segment changes. Cardiac troponin I was elevated (1.34 ng/mL). Subsequent ECG demonstrated changes consistent with anterior wall myocardial infarction (MI). Patient received normal saline and was treated with intravenous corticosteroids and diphenhydramine. Conclusion: It is important for physicians to have a high index of suspicion

of this syndrome in patients with MI symptoms without previous history of coronary artery disease. In this manner, an appropriate management, considering both cardiac and allergic components of KS, can be given without further delay and progression of symptoms. Acknowledgements: No conflict of interest from any of the authors.

1337

**Paradigma de las facilidades de salud post Huracán María en Puerto Rico:  
Representación espacial de la capacidad de respuesta a emergencia.**

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**Introducción y objetivo:** Tras el suceso de un evento atmosférico extremo, uno de los aspectos de mayor importancia en el manejo de emergencias es la capacidad de respuesta de los servicios de salud esenciales, como lo son los hospitales. El objetivo principal de esta investigación fue estudiar la capacidad de respuesta de las facilidades de salud en Puerto Rico a partir de su diferenciación espacial, a un año del paso del huracán María. **Métodos:** Este estudio descriptivo utilizó datos secundarios del trabajo realizado por el Departamento de Salud de Estados Unidos junto con el Departamento de Salud de Puerto Rico sobre la capacidad de respuesta de los centros de salud del archipiélago en estado de emergencia. La base de datos contenía los resultados de un cuestionario entregado a hospitales, Centros de Diagnóstico y Tratamiento (CDT) y centros de salud 330, entre otros (n=174). Los resultados fueron conglomerados por región de salud, utilizando la distribución del seguro de salud del gobierno de Puerto Rico. Se realizó una caracterización espacial con los resultados más relevantes utilizando el programado Mapinfo 12.0. **Resultados:** Los resultados develaron falta de preparación por parte de los centros de salud en aspectos fundamentales; tales como: la transportación de pacientes a los centros de cuidado, la capacidad de comunicación, la capacidad de camas para el exceso de pacientes, el acceso a combustible para generadores de electricidad y la falta de conocimiento administrativo de los planes de emergencia de cada centro. **Conclusión:** Para mejorar la respuesta ante estados de emergencia, los hospitales, CDT y centros de salud 330 necesitan mejorar su plan de emergencia ante eventos atmosféricos. La ubicación geográfica de los centros de servicios de salud en Puerto Rico es un aspecto importante a considerar ante la realización de los planes de emergencia del país.

1341

**Racial/ethnic differences in help-seeking behavior and treatment reception  
among urinary incontinent women**

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**Background & Objectives:** Urinary incontinence (UI) is a serious public health problem affecting almost half of elderly women in the United States. Elderly women may be susceptible to UI due to conditions that are unique to them and because they often normalize their condition. Less than half of incontinent women seek professional help and less than a third receive treatment. Within these groups of women, racial and ethnic differences exist. The purpose of this study was to establish the proportion of women who sought help and received treatment for UI and examine racial and ethnic differences in help-seeking behavior and treatment reception. **Methods:** Data for this study was extracted from the Medicare Health Outcomes Survey, Cohort 16. A total of 33,380 incontinent women enrolled in Medicare Managed Care (MMC) were included for analysis. Multivariate logistic regression was used to assess the association between race/ethnicity with help-seeking behavior and treatment reception. **Results:** Findings show a higher proportion of Puerto Rican women living on the Island (PR-PR) identified their UI as a big problem (42.1%).

Approximately two-thirds of women who indicated that their UI was a problem, did not receive treatment. Rates were lower for PR-PR (70.2%) and NHB women (72%). PR-PR (OR= .741, 95% CI: .602-.912) and NHB (OR= .730, 95% CI: .669-.798) women were less likely to receive treatment for UI. Conclusions: Our study suggests that incontinent women, beneficiaries of MMC, particularly PR-PR, are less likely to receive treatment for UI. Efforts should target implementing strategies to appraise and raise awareness of UI among healthcare providers and women to achieve appropriate clinical management. Acknowledgements: None.

1351

### Development and Validation of an Adherence to Treatment Scale

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**Background & Objectives:** Although pharmacotherapy is essential for the successful management of Severe Mental Illness (SMI) patients, nonadherence to treatment medication is a serious concern. It implies a longer duration of psychiatric disorder, and the untreated disease worsens the general health of the patient, in addition to carries substantial economic burden as well. Lack of medication adherence is a common, potent, but modifiable risk factor for poor outcomes. The aim of this research is to develop and validate a scale to measure nonadherence behaviors in a culturally sensitive way. **Methods:** We created 147 items pool associated to the concept of adherence, based on a previous qualitative study that explores reasons for nonadherence among Puerto Rican patients. Nine experts reviewed items meaning, content, clarity and relevance. A content validity ratio (CVR = .78) was calculated. Forty (40) items remained. This scale version was administered to 160 patients ranging from 21 to 60 years old, recruited from a clinic of a private academic institution of psychology in the San Juan area and an outpatient governmental health agency in Puerto Rico. Participants had Bipolar Disorder, Major Depressive Disorder or Schizoaffective Disorder. **Results:** Internal consistency was examined obtaining a Cronbach's alpha of 0.812, considered a very good index. The scale was reduced to 25 items after the factor analysis procedure in order to compact it and be more flexible and short for future administrations. Cronbach's alpha of this 25 items scale version was 0.858. **Conclusion:** This adherence scale is a self-administered instrument with very good psychometric properties that yield important information about nonadherence behaviors. The scale can help health professionals and researchers to assess patients' behavior adherence or nonadherence to medication. **Acknowledgments:** This research was supported by the National Institute on Minority Health and Health Disparities of the National Institutes of Health Award No. R25MD007607.

1352

### Movimientos migratorios internos en Puerto Rico: volumen y características sociodemográficas de la población que se muda a otro municipio

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**Trasfondo/Objetivos:** La migración interna en Puerto Rico hace referencia al cambio de residencia de las personas que cruzan límites legales municipales. En la isla existe una gran cantidad de estos flujos migratorios. Estos tienen efectos tanto en los municipios emisores como receptores. Los mismos pueden alterar en los municipios que los reciben su dinámica demográfica, economía y demanda de servicios de salud, entre otros. El objetivo del estudio fue analizar los flujos y características sociodemográficas de la población migrante interna en Puerto Rico para el periodo del 2013-2017. **Metodología:** La fuente de datos fue la Encuesta de la Comunidad de Puerto Rico, 2013-2017. El análisis realizado fue uno transversal descriptivo. **Hallazgos:** Unas 217,085 personas cambiaron de residencia, de estos el 62.4% son

migrantes internos. San Juan, Bayamón, Carolina, Caguas y Guaynabo fueron los municipios que recibieron mayor de volumen de migrantes internos. Los municipios con mayores tasas de migración (con relación al número de habitantes) fueron Gurabo (5.0%), Luquillo (4.7%), Mayagüez (4.1%), Guaynabo (4.0%) y Canóvanas (4.0%). El 52% de los migrantes internos son hombres, su mediana de edad es 29 y un 52% nunca se ha casado. Más de la mitad (55%) tiene alguna educación universitaria, y su mediana de ingreso es \$13,133. Conclusión: La población migrante interna en PR se traslada a zonas donde se existe un mayor desarrollo social y económico. Existen diferencias entre los migrantes y los no migrantes en la isla. La población que se muda a otro municipio se distingue por ser más joven, más educada y tener mayor ingreso. Los movimientos no planificados en un país tienden a alterar la proyección de servicios de salud, además de alterar la calidad de vida de los lugares de destino, al colocar presión sobre aspectos vitales para satisfacer las necesidades básicas y apremiantes de la población.

1357

### **Conocimiento y Conductas Asociadas al Virus del Papiloma Humano en Adultos entre 21 a 50 Años del Area Central de Puerto Rico.**

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**Antecedentes y Objetivos:** El Virus del Papiloma Humano es una infección de transmisión sexual que afecta a la población en general. Diversas conductas de riesgo aumentan la vulnerabilidad de contraerlo. Se estima que Puerto Rico presenta una incidencia de cánceres relacionados al VPH de 16.5 por 100,000 habitantes mujeres y 9.3 por 100,000 habitantes hombres. El propósito de esta investigación fue evaluar el nivel de conocimiento y conductas de riesgo asociadas al VPH que posee la población femenina y masculina, entre las edades de 21 a 50 años del área central de Puerto Rico. Los objetivos fueron determinar el nivel de conocimiento sobre el VPH, identificar conductas de riesgo que aumentan la vulnerabilidad de contraer VPH y evaluar la asociación entre el nivel de conocimiento, conductas de riesgo y demografía de los participantes. **Método:** El diseño del estudio fue descriptivo correlacional, con una muestra seleccionada por método no probabilístico por conveniencia de 90 adultos. Para el análisis se utilizaron frecuencias y proporciones. Así mismo, se llevó a cabo la exploración de una posible asociación entre las variables conocimiento y conductas con las sociodemográficas, utilizando la prueba de Ji-Cuadrada de Independencia de Pearson. **Resultados:** Los resultados mostraron que el 68.4% no posee conocimiento respecto al virus. De igual forma, se encontró que a menor edad mayor conocimiento, pero mayores conductas de riesgo ( $p < 0.05$ ). **Conclusión:** Los participantes encuestados mostraron desconocimiento del virus al igual que la práctica de algunas conductas de riesgo, lo que los puede predisponer a contraer el VPH. Protocolo IRB: B163021

1358

### **Limb-Girdle Type-2C Muscular Dystrophy. Considerations in Anesthesia for Neuromuscular Diseases: A Case Report**

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Limb-girdle muscular dystrophies (LGMDs) are a group of genetic muscle diseases of variable inheritance patterns characterized by progressive loss of muscle bulk and symmetrical weakening. Amid the different types of this condition, Limb-girdle muscular dystrophy type-2C (LGMD-2C) is described as an autosomal recessive disease caused by mutations in the  $\gamma$ -sarcoglycan protein. Due to the increased risk for respiratory failure, sensitivity to neuromuscular blockers, concern for malignant hyperthermia, and cardiovascular compromise it is important to understand the adequate anesthetic management for this population. We report the case of a 22-year-old female patient with diagnosed LGMD-2C who presented with an intrauterine pregnancy at 37 4/7 weeks of gestation for a planned C-section and sterilization. Evaluation and physical examination were found significant for decreased ambulation capacity, abnormal gait, and recent history of falls. No respiratory distress, dysphagia, or visible spine deformities were noted. Echocardiogram was remarkable for left ventricular systolic dysfunction with an ejection fraction of 45-50%. In view of high

risk for general anesthesia, neuraxial anesthesia was decided. Through midline approach at L3-L4, spinal anesthesia was administered and maintained for duration of 1 hour and 45 minutes by injecting 7.5mg of bupivacaine 0.75% with 25mcg of fentanyl. This condition is rare and often undiagnosed at the moment of surgical interventions. Therefore, it is essential for anesthesiologists to be attentive and familiar with the adequate perioperative management of patients diagnosed with muscular dystrophy or suspected of it. Correct and meticulous preparation, adequate pharmacological options, necessary equipment, as well as understanding of the pathophysiological changes in this population may decrease unwarranted morbidity and mortality in patients with neuromuscular disease undergoing surgical interventions. Acknowledgements: None. The authors have no conflicts of interest.

1360

### **Neonatal Intensive Care Unit Reduction of Unplanned Extubations Quality Improvement (QI) Project at the Pediatric University Hospital of Puerto Rico**

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**Background & Objectives:** The neonatal intensive care unit (NICU) manages newborns and infants that require mechanical ventilation by way of an endotracheal tube (ETT). Unplanned extubations (UE) are the premature removal of the ETT and is a serious and common airway accident. Upon review of data gathered by respiratory therapy during 2017 at the Pediatric University Hospital NICU, an extubation rate (ER) of 1.32 extubations per 100 intubation days seemed to be an underestimate of the actual ER. Our aim is improving UE data collection and reducing UE by 10% in 6 months in the NICU. **Methods:** We used Plan, Do, Study, and ACT (PDSA) QI cycle methodology. Interventions included implementing a new intubation data sheet, reviewing staff knowledge and awareness, testing a safety checklist for prevention of UE, and providing educational sessions. **Results:** Recollected data revealed an ER 3.1/100 as the new baseline. Most common causes of UE were: loose tape, while bathing, during ETT securement, during IV intravenous catheterization, and self-extubations. Staff knowledge and awareness of UE survey revealed only 42% believe UE is a problem in the NICU, and only 55% believed that UE negatively affects the patient. The ER in August was the lowest at 2.47 but a consistent decrease in the ER was not observed. The incorporation of the safety checklist during physician rounds was unsuccessful with poor completion compliance. The educational sessions were well received by nurse and respiratory therapists' staff. **Conclusion:** The goal of reducing UE by 10% was not attained in the scheduled timeframe, but important steps have been taken to implement new strategies to minimize UE in the future. This QI identifies the importance of interpersonal education and appropriate protocol for data documentation to achieve the expected goal for better patient care, practice and outcomes. Acknowledgements: No conflicts of interest to disclose.

1389

### **Foros de Promoción de la Salud: Experiencia formativa para el desarrollo de competencias de liderato y abogacía en salud en los estudiantes graduados**

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El Foro de Promoción de la Salud es una actividad instruccional que se desarrolla en los cursos de Fundamentos en Promoción de la Salud de la Escuela de Salud Pública. Consiste en exponer a los estudiantes graduados a una experiencia de estudio y análisis de asuntos o temas de amplia pertinencia social en el campo de la Promoción de la Salud y la Salud Pública. Los estudiantes desarrollan competencias de liderato y abogacía en salud. Otras competencias desarrolladas son: trabajo de coordinación intersectorial, vinculación y desarrollo de alianzas comunitarias, comunicación en salud, desarrollo de declaraciones y pronunciamientos públicos en defensa de asuntos de salud, entre otras. En este trabajo se

presenta una evaluación cualitativa de la utilización de la actividad instruccional de los Foros de Promoción de Salud desarrollados durante los años académicos 2014 a 2018. La metodología consistió en la revisión documental. Se revisaron los portafolios de treinta y siete Foros realizados durante los años de 2014 hasta 2017. También se revisaron las evaluaciones de la experiencia de los Foros realizadas por los estudiantes. Los resultados obtenidos reflejan la efectividad de los Foros en el desarrollo de las competencias de liderazgo y de abogacía en salud de los estudiantes graduados. Se confirma el impacto de los temas de los Foros en la comunidad académica y en el ambiente externo. Se valida la efectividad de esta iniciativa académica-curricular en el marco de los estudios graduados.

1394

### **Association between Secondary Hyperparathyroidism and Anemia in Hemodialysis Patients at the University District Hospital**

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**Background & Objectives:** Anemia is a common complication in patients with chronic kidney disease (CKD). Anemia associated to CKD is generally treated with either intravenous iron or erythropoietin stimulating agents (ESAs). A problem regarding hyporesponsiveness to ESAs has become rather prevalent in this population. In order to assess if a patient is having an adequate response to ESA, studies commonly use the ESA resistance index (ERI). Secondary hyperparathyroidism (SHPT) is another frequent complication in patients with CKD, especially in those with end stage renal disease (ESRD) and is associated with several laboratory abnormalities, such as increased parathyroid hormone (PTH). PTH is regarded as a uremic toxin that inhibits EPO synthesis, shortens RBC survival, and causes myelofibrosis. The objectives of this investigation are to identify the prevalence of anemia in patients hemodialyzed at University Hospital renal unit, to establish an association between PTH levels and anemia, and to establish an association between PTH levels and resistance to ESAs. **Methods:** We performed a retrospective chart review of 45 patients who receive hemodialysis at the University Hospital hemodialysis unit between January 2016 until January 2018. We charted patient's laboratories in six-month intervals up to 24 months as well as the dosing of ESA. **Results:** At twelve months of hemodialysis, a significant increase (p value 0.0023) in hemoglobin could be found when we compared between the control and twelve months of treatment. A correlation test was performed to measure the association between the PTH and ERI variables with the twelve-month data and it was found that there is a significant strong positive relationship (p value <0.0001). **Conclusions:** At twelve months of hemodialysis, patients had an overall increase in hemoglobin levels. Patients with low PTH level, and therefore adequate management of their SHPT, have less erythropoietin resistance, therefore responding better to ESAs.

1127

### **Absorbable Fixation Devices for Pediatric Craniomaxillofacial Trauma— A Systematic Review of the Literature**

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**Purpose:** The purpose of this study was to investigate surgical outcomes with the use of resorbable plating systems for the repair of craniomaxillofacial (CMF) trauma in the pediatric population. **Methods:** A systematic review of the literature was performed. A descriptive analysis, operative technical data, outcomes or post-operative complication with the use of absorbable plating systems for CMF trauma were included. **Results:** The systematic literature review identified a total of 1264 abstracts of which only 19 fulfilled the inclusion criteria. From these nineteen studies, 312 clinical cases with 443 facial fractures that were treated with absorbable fixation systems were extracted for analysis. The review

identified only level III-IV (n = 17) and level V (n = 2) studies. Minor and major complications were rare, occurring in 5.45% (n = 17) and 3.21% (n = 10) of cases, respectively. The most common complications were surgical site infections (n = 4) and plate extrusion (n = 4). Conclusion: This report is, to our knowledge, one of the first comprehensive reports on the use of absorbable plating systems for CMF trauma. Our analysis suggests that the use of absorbable fixation devices for pediatric CMF trauma is relatively safe with a low-risk profile. Outcome studies with longer follow-up periods specifically investigating facial growth, re-operation rates, standardized surgical outcome metrics, and cost are necessary to effectively compare these fixation devices to titanium alternatives for CMF trauma.

1400

### **Estrategias de auto-manejo usadas por las mujeres mayores hispanas para lidiar con las dificultades en las actividades de la vida diaria**

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Trasfondo y Objetivos: A pesar de la alta prevalencia de discapacidades funcionales entre las mujeres mayores que viven en PR, existe poco conocimiento sobre las estrategias que utilizan para lidiar con las dificultades en las actividades diarias. Objetivos: Identificar las discapacidades en las actividades de cuidado propio, actividades instrumentales del diario vivir (AIDV) y la movilidad funcional de las mujeres mayores y las estrategias relacionadas a la persona, a la ocupación y al ambiente para manejar estas discapacidades. Métodos: Participaron 12 mujeres mayores con limitaciones funcionales. Utilizamos un diseño de método mixto concurrente transformativo guiado por el Modelo de Persona Ambiente y Ejecución Ocupacional. Primero, los participantes completaron el formulario de PROMIS-Capacidad de Funcionamiento Físico para determinar las discapacidades funcionales en las actividades diarias. Luego, completaron una entrevista semi-estructurada para explorar las estrategias de auto-manejo utilizadas para lidiar con las discapacidades reportadas. Resultados: El promedio de las puntuaciones crudas del PROMIS fueron: M=3.84 en cuidado propio; M = 2.92 en AIDV; y M = 3.94 en movilidad funcional. Las estrategias utilizadas con mayor frecuencia para las actividades de cuidado propio fueron alterar la ejecución de las tareas y el uso de la asistencia tecnológica; para las AIDV fueron alterar la ejecución de tareas y el apoyo social; y para la movilidad funcional fueron cambiar el ritmo de la actividad y alterar la ejecución de tareas. Conclusión: Las mujeres mayores hispanas reportan niveles altos de discapacidad en las actividades de la vida diaria y utilizan las estrategias de auto-manejo relacionadas a la persona para moderar el uso de las estrategias ocupacionales y del ambiente. Estudios futuros deben explorar las diferencias en género en el uso de las estrategias de auto-manejo de las discapacidades en las actividades diarias. Reconocimiento: Este estudio fue apoyado por la Escuela de Profesiones de la Salud.

1401

### **Purulent Pericarditis by Group A Streptococcus in a Pediatric Patient**

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Purpose: Purulent pericarditis is a localized infection characterized by pus in the pericardium. Prior to the widespread use of antibiotics it was a frequent complication of pneumococcal pneumonia. Today it is relatively uncommon, however remains a life threatening condition. Group A Streptococcus (GAS) is a rare cause of purulent pericarditis, with only eleven pediatric cases reported to date. Case Presentation: We present a previously healthy 8 year old female who arrived to the emergency department with a 1 day history of fever, vomiting, diarrhea, and shortness of breath. Further questioning revealed a 3 week history of progressive chest pain. Initial evaluation was consistent with a patient with fluid refractory septic shock requiring transfer to PICU and initiation of vasopressors. Chest x-ray was remarkable for a prominent cardiac silhouette. An echocardiogram demonstrated a moderate size pericardial effusion with tamponade physiology. A pericardiocentesis drained 190ml of purulent fluid and hemodynamic status gradually improved. The pa-

tient was initially started on broad spectrum antibiotics with linezolid and ceftriaxone. Then, therapy was optimized to penicillin G after fluid culture identified GAS as the culprit. Conclusions: Purulent pericarditis is an unusual diagnosis in the developed world. Due to its rarity, purulent pericarditis can be easily overlooked especially if an infectious etiology, trauma, surgery, or diseases in adjacent structures are absent. It is important to keep a high index of suspicion for pericarditis and pericardial effusions since tamponade can be lethal. If left untreated, the mortality rate is up to 100%.

1402

### **Anal cancer risk factors in women with gynecologic neoplasia in Puerto Rico**

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**Background and Objectives:** The incidence rates of anal cancer are increasing in men and women, although in the general population, women are at increased risk of this malignancy. Risk factors for anal cancer include HPV and HIV infection, current smoking, anal sex, and lowered immunity. Increased risk of anal cancer and of its precursor lesion, anal intraepithelial neoplasia, has also been established among women with lower genital tract neoplasia (LGTN). LGTN includes cervical, vaginal, and vulvar high-grade squamous intraepithelial lesions or cancer. Given rising trends, this study describes anal cancer risk factors in a clinic-based sample of women with gynecologic neoplasia in Puerto Rico. **Methods:** Ongoing cross-sectional study (May 2018- January 2019) among women receiving services at the colposcopy and gynecology oncology clinics of the University of Puerto Rico. Participants completed an interviewer-administered questionnaire. Medical chart review for LGTN diagnosis was performed by the research staff. From 399 consecutive women invited, 264 have consented to participate (response rate=66.7%). **Results:** Mean age was 57.6 years (SD=3.61). The prevalence of anal cancer risk factors includes: 8.0% current smokers, 31.4% have ever had anal sex and 20.8% have had ≥5 sexual partners. In addition, 3.1% of study participants reported having HIV, 1.9% has had an organ transplant and 34.5% had LGTN, from which 78.9% have cervical, 13.3% vaginal, and 7.0% vulvar neoplasia. The prevalence of self-reported autoimmune conditions was 4.3% for Lupus and 2.1% for Chron's disease. **Conclusion:** Although experts do not recommend routine anal cancer screening tests for the general female population, they do recommend screening for women with LGTN, HIV, organ transplants, Lupus and Chron's disease. More education and awareness of anal cancer is necessary among high-risk patients and physicians, to promote better preventive methods, achieve early detection and improve disease outcomes. **Acknowledgements:** This study was approved by the IRB (A1810118).

1405

### **Association between intake of carotenoids and female breast cancer in the Metropolitan Area of San Juan, Puerto Rico: A case-control study**

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**Background & Objectives:** The results of previous studies of the association between dietary carotenoid intake and breast cancer have been inconclusive. The aim of this study was to evaluate the association between carotenoid intake

and breast cancer risk in women 30-79 years old living in the Metropolitan Area of San Juan, Puerto Rico. Methods: Data for a total of 307 breast cancer cases and 342 controls from a population-based case-control study (Atabey), conducted between 2008-2014, were analyzed. Dietary intake information was collected by face-to-face interviews using a calibrated semi-quantitative FFQ with 164 food items including Puerto Rican foods and recipes. The ORs and 95% CI were assessed by unconditional logistic regression after adjusting for potential confounders. Analyses were stratified by menopausal status. Results: In premenopausal women, the risk of breast cancer was decreased with lutein/zeaxanthin consumption, comparing the highest with the lowest tertile, adjusted OR 0.39 (95% CI: 0.16, 0.90). Adjusted ORs (95% CI) for the intake of other carotenoids were as follows: 0.76 (0.36, 1.60) for  $\beta$ -carotene; 0.64 (0.30, 1.39) for  $\beta$ -carotene; 0.58 (0.27, 1.27) for  $\beta$ -cryptoxanthin; 1.01 (0.41, 2.49) for lycopene. Among postmenopausal women, the adjusted ORs (95% CI) were as follows: 1.29 (0.78, 2.13) for  $\beta$ -carotene; 1.36 (0.82, 2.24) for  $\beta$ -carotene; 1.14 (0.68, 1.91) for  $\beta$ -cryptoxanthin; 1.11 (0.66, 1.86) for lutein/zeaxanthin; 1.34 (0.81, 2.23) for lycopene. Conclusions: This analysis underscores the potential for lutein/zeaxanthin consumption in breast cancer prevention. It also provides evidence on the importance of considering menopausal status in breast cancer research.

1406

### Machine Learning Prediction Models for In-Hospital Mortality After Transcatheter Aortic Valve Replacement in the United States

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**Background & Objectives:** Risk prediction tools for in-hospital complications in patients undergoing Transcatheter Aortic Valve Replacement (TAVR) are scarce. Existing models have been designed using a statistical approach. We sought to develop and compare an array of Machine Learning (ML) methods to predict in-hospital mortality after TAVR in the United States (US). **Methods:** Patient data was obtained from the National Inpatient Sample (NIS) database from 2012-2015. The data was randomly divided into a derivation cohort (n=7,624) and a validation cohort (n= 3667). Logistic Regression (LR), Artificial Neural Network (ANN), Naïve Bayes (NB) and Random Forest (RF) ML algorithms were compared to predict in-hospital mortality. **Results:** A total of 10,891 TAVRs were analyzed in our study. The overall in-hospital mortality was 3.6%. Overall, prediction models' performance measured by Area Under the Curve (AUC) were good (> 0.80). The best model was obtained by LR, AUC=0.92 (95% CI, 0.89-0.95). Most obtained models plateaued after introducing 10 variables. Acute kidney injury was the main predictor of in-hospital mortality ranked with the highest mean importance in all the models. The NIS TAVR score showed the best discrimination among all available in-hospital mortality, 30-day mortality and 1-year mortality TAVR prediction scores. **Conclusion:** Machine learning methods can generate good models to predict in-hospital mortality. The NIS TAVR score should be considered for prognosis and shared decision making in TAVR patients. **Acknowledgements:** This study was funded by the National Institute of Health (NIH) Award Numbers U54MD007587, R25MD007607, U54MD007600, S21MD001830 and TL1TR001434-3.

1410

### Quantitative Proteomics Analyses of Neuronal Cells Exposed to HIV-1 Infected MDM Supernatants with High Cathepsin B Secretion

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**Background & Objectives:** Human immunodeficiency virus 1 infection can induce HIV-associated neurocognitive disorders (HAND). Monocyte-derived macrophages (MDM) act as one of the HIV viral reservoirs that cross the blood-brain barrier to the Central Nervous System facilitating viral spread and neuronal damage through the secretion of viral proteins that induce neuronal damage. One of these secreted factors is Cathepsin B (CATB), a lysosomal protease that plays an important role in neurodegeneration and apoptosis. However, its secretion is variable among donors. This study was designed to determine the mechanisms of CATB induced neuronal apoptosis following HIV-1 infection and secretion by MDM. Our hypothesis is that MDM supernatants with higher levels of CATB activate different pathways in neurons that increase apoptosis. **Methods:** MDM isolated from healthy human donors were inoculated with HIV-1 ADA and cultured for 13 days. HTB-11 neuronal cells were exposed to serum-free supernatants from HIV-infected MDMs to measure apoptosis by TUNEL assay. Quantitative proteomics analysis of neuronal lysates was realized by Tandem Mass Tag (TMT) labeling followed by a bioinformatics analysis for determining abundance differences among proteins using Limma-R correlation software. **Results:** We found that 50% of MDM donors showed increased CATB (n=6). TMT analyses of neuronal lysates exposed to supernatants containing high levels of CATB revealed 198 deregulated proteins and 239 proteins when treated with CATB antibody by fold change (logFC=2). Lamin A was validated by Western Blot as a protein that was deregulated by increased CATB and related to nuclear lamina disruption. **Conclusions:** Preliminary results indicate that an increased CATB secretion from HIV-1 infected MDM induces greater neuronal apoptosis (p<0.05) by inducing (Lamin A) disruption. Antibodies against CATB inhibit the disruption of Lamin A and may be considered as a target for future studies to prevent HAND. **Acknowledgements:** This research was sponsored by SC1GM113691 and NIMH US4MD007600.

1416

### Pilot Project Assessing Three Methodologies to Address Marine Litter and Marine Debris Concerns in Coastal Areas of Puerto Rico

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**Background:** Marine litter represents a public health problem in our society. Large or sharp fragments of waste could cause injuries, it threatens marine ecosystems, and affects the aesthetic quality of our beaches. The European Commission defines it as litter which consists of items that have been deliberately discarded, unintentionally lost, or transported by winds and rivers, into the sea and on beaches. Among the marine litter, there is the accumulation of microplastics, defined by the National Oceanic and Atmospheric Administration (NOAA) as particles ranging from 1 nanometer to 5 millimeters. **Objective:** Pilot project implementing and analyzing three methodologies that quantify marine litter by different categories, each method with a useful end towards beach environmental safety and health. **Methods:** The pilot project was conducted in Boca Herrera, Loíza, Puerto Rico. The study site was selected considering the highest concentration of waste along the beach. A perpendicular transect of 100 meters (m), parallel to the shoreline, was delimited for the application of the three following methodologies: Tourist Beach Environmental Quality Index (TBEQI), Ocean

Conservancy (OC), and The Scuba Dogs Society Microplastics. Within this perimeter the marine litter was collected, categorized and quantified. For the microplastics procedure we established three quadrants at 0m, 25m, and 50m from the intertidal zone. Through a sieve process, we filtered the sand to extract potential microplastic particles. Results: A total of 238 marine litter units were collected, with plastics as the predominant category. Twenty-two microplastics were detected. The valorization grade obtained for the beach was C, for acceptable. Conclusions: Both the TBEQI and OC methods provided descriptive information of marine litter found in the beach. Nonetheless, the TBEQI also permits the appliance of a valorization grade to address the environmental quality of the beach. The microplastics method must be reevaluated in order to improve the time management.

1423

### Casos de Leptosporosis Posterior al Huracán María

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**Trasfondo y Objetivos:** La Leptospirosis es una enfermedad zoonótica, causada por una bacteria (espiroqueta) afectando al humano mayormente en países tropicales y sub-tropicales. Existe consenso argumentando que factores climáticos como lluvias e inundaciones, inciden en epidemias o brotes. Nuestro objetivo es validar este argumento. **Método:** La investigación está asociado a Protocolo IRB: A9880118 y se llevó a cabo en Hospital UPR Dr. Federico Trilla entre septiembre 2017 a julio 2018. Incluyó 145 casos sospechosos que llegaron a sala de emergencia y los médicos ordenaron prueba de leptospirosis. La incidencia de casos del 2013 al 2016 es 42 casos (32 a 51) anuales. Se realizó revisión de los expedientes clínicos, data demográfica, clínica y laboratorios. Las pruebas de serología IgM fueron realizadas en el hospital utilizando la prueba GenBioImmunoDot (técnica de inmunoensayo). Para el análisis de características y laboratorios se utilizó análisis multivariado. **Resultados:** La edad promedio fue de 40.6 años (3-102) y 94 fueron hombres, 66% de los pacientes reportaron fiebre, 54% dolor abdominal, 47% molestia en las coyunturas, 23% tenía trombocitopenia, 11% creatinina elevada, 20% aspartato aminotransferasa (AST) elevada y 13% alanina aminotransferasa (ALT) elevada. La investigación demostró que 104 casos (72%) ocurrieron entre los meses de octubre a diciembre 2017. Del total de la población investigada se obtuvieron 20 casos (14%) con resultado positivo a la prueba serológica IgM. Un total de 14 casos (70% del total de casos IgM positivos) ocurrieron entre octubre a diciembre 2017. Las pruebas confirmatorias de reacción en cadena de polimerasa y prueba de aglutinación microscópica se procesan en CDC Atlanta. Del total de 19 pruebas confirmatorias recibidas, 2 (10.5%) obtuvieron prueba de aglutinación microscópica positiva. **Conclusión:** Los resultados obtenidos demostraron que 72% de los casos ocurrió posterior a las lluvias e inundaciones ocasionadas por el paso del huracán María. **Reconocimientos:** Ninguno

1430

### La confianza materna y el dolor percibido durante el proceso de trabajo de parto

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**Antecedentes:** Algunos estudios sugieren que la confianza materna contribuye a un mejor manejo del dolor durante el proceso de parto. Con el fin de determinar si esta situación existe en Puerto Rico se realiza una investigación con el siguiente objetivo: evaluar la confianza materna y medir la percepción de dolor que experimenta una muestra de mujeres durante el trabajo de parto para determinar la asociación que existe entre la confianza materna y la percepción de dolor. **Metodología:** Diseño correlacional descriptivo no experimental, para determinar la relación, entre la confianza materna y la percepción del dolor. La muestra fue por disponibilidad y constó de 31 embarazadas que se atendieron en dos instituciones de Puerto Rico. El estudio se realizó mediante dos o tres contactos con las participantes, primero durante el embarazo cuando se le aplicó el cuestionario "Confianza materna". El segundo y tercer contacto fue vía llamada telefónica.

ca, para aplicar el segundo instrumento, escala de dolor y uso de medicamento. Resultados: El promedio de confianza se observa mayor en las mujeres que tomaron clases de parto (19%) y aquellas que están conviviendo (39%), aunque no es estadísticamente significativo. Entre las participantes se destaca la baja confianza en poder ignorar el dolor. Por otro lado, la correlación significativa ( $p=0.006$ ) entre el dolor más leve y el dolor más fuerte nos dice que aquellas cuyo dolor leve fue más bajo también experimentaron dolores fuertes más bajos. Conclusión: Mayor confianza en las embarazadas que tomaron clases de parto y aquellas que están conviviendo. Las mujeres que tomaron clases de parto presentaron mayor tolerancia al dolor en la pregunta de dolor más leve y aquellas participantes que reportaron dolor leve más bajo también experimentaron dolores fuertes más bajos. Finalmente, no existe una asociación entre el dolor percibido y la confianza materna reportada por las embarazadas.

1433

### Coronary Artery Abnormalities in Kawasaki Disease - A Case Report

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**Purpose:** Kawasaki disease (KD) is an acute vasculitis of medium-sized arteries. KD is most commonly reported in children younger than five years, with higher incidence among Asians. It is a diagnosis based on the clinical criteria. We present a rare case of KD where patient developed coronary artery abnormalities. **Case Description:** 10 year-old girl who presented with poor oral intake, high-grade fever, abdominal pain and lower extremity pain of two days of evolution. She was evaluated and laboratories showed elevated creatinine, bilirubin, inflammatory markers, and leukocytosis. Initially admitted to an inpatient unit with the differential diagnosis of Leptospirosis. Leptospira titers were ordered and she was started on Ceftriaxone. She continued with high-grade fevers that partially responded to acetaminophen therapy with chills during the first two days of admission. On admission day three, she developed perineal desquamation and maculopapular pruritic rash over her torso, back and all four extremities. She subsequently developed conjunctiva injection and a beefy red tongue. This new findings associated to the high grade fevers for over 5 days raised concern for different etiologies and a diagnosis of Kawasaki Disease was coined. The patient was started on high dose aspirin and Intravenous Immunoglobulin as per the hospital's protocol. A Cardiology evaluation with echocardiography was remarkable for carotid aneurysms and dilatation. **Conclusion:** As pediatricians, we always should have KD as a differential diagnosis of persistent fevers. To reduce the prevalence of coronary abnormalities associated with KD treatment should be administered, ideally, within the first 10 days of illness. Coronary artery lesions develop in less than 5% of children treated with intravenous immunoglobulin, and up to 25 % of untreated children.

1444

### Novel method of synthesis of 1,5-disubstituted 1,2,3-triazoles as inhibitors of metastatic breast cancer

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**Background & Objectives:** In recent years, a variety of drugs have become available for the successful treatment of breast cancer. Nevertheless, once the tumor metastasizes to secondary tissues, the clinical outcomes are severely affected. Rho GTPases such as Rac and Cdc42 are key signaling proteins involved in lamellipodia and filopodia formation leading to cellular migration. Recently we developed MBQ-167 as a dual inhibitor of both Rac and Cdc42 and it was shown halt migration and metastasis in an in vivo model of tumor growth in mice. In order to further optimize biological activity and physicochemical parameters that improve bioavailability of MBQ-167, we developed a novel synthetic method that allows the replacement of its carbazole group with a variety of different aromatic amines. Our novel method is metal-free, and does not use potentially explosive azides, as in current synthesis methods. **Methods:** In our new synthesis protocol we start with a tosylhydrazone that is brominated with phenyltrimethyl tribromide. Subsequent reaction with an aromatic amine provides the cyclized 1,5-disubstituted 1,2,3-triazoles. **Results:** The conditions for the above reaction

was optimized by using the tosylhydrazide of phenylacetaldehyde and toluidine as the starting materials in different solvents. Isolated yields of the desired product were 68% in tetrahydrofuran, 43% in dichloromethane and 60% in acetonitrile. The scope of the reaction will be presented via the reaction with different aromatic amines in varying yields. Conclusion: A novel metal-free and azide free method for the synthesis of 1,5-disubstituted triazoles has been developed. These compounds will be available for determination of biological activity as inhibitors of Rac and/or Cdc42. Acknowledgements: This research was supported by NIH/NIGMS SC3GM116713 (to C.P. Vlaar)

1457

### Immunization Status of Infants Admitted to the Neonatal Intensive Care Unit and Factors Associated to Delay in Administration

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**Background and Objectives:** Infants born prematurely are at increased risk of developing severe complications from vaccine-preventable diseases. The American Academy of Pediatrics recommends that all medically stable preterm infants should be vaccinated as scheduled. However, providing timely immunizations for infants admitted at the Neonatal Intensive Care Unit (NICU) is a major challenge. The objectives of this project are to identify the immunization rate for infants 60 days or older admitted to the University Pediatric Hospital NICU, to evaluate factors associated with low immunization rates, and to identify potential barriers to immunization. **Methods:** Audits were performed from September 2017 to November 2018. Medical records were reviewed to extract data on infant characteristics, complications, and immunization status. Relationships between these factors and immunization delay were evaluated using t-test and chi-square (Statistix 8.0). **Results:** In seven audits, 128 records reviewed, 88% of infants had a delayed immunization status and 73% had received none of the recommended immunizations for age. Delays in immunization were more frequent in younger infants, and those requiring any respiratory support, mechanical ventilation, antibiotics, and inotropics ( $p < 0.05$ ). Most cited reasons for immunization delay were: critical illness, sepsis, lack of awareness of immunization status, and unavailable parental consent. **Conclusions:** Significant under immunization was seen in this population. Older and healthier infants were more likely to be immunized. Efforts must be focused on improving immunization rates in the NICU to give infants the protection they need prior to discharge. Healthcare personnel will be interviewed to analyze the current immunization process and identify potential areas for improvement. **Acknowledgements:** None

1461

### Incidence of Sexual Violence Among Hispanic Female Attending Gynecology Clinics at San Juan City Hospital

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**Introduction:** As of today, according to the Center for Disease Control and prevention (CDC), sexual violence (SV) is a major public health problem that needs to be addressed urgently. Worldwide, 1 in 3 women have experienced either physical or SV in their lifetime, representing a 35% of the total women's population. In the United States, 1 in 4 have experienced SV and, from the population of Hispanic women, 58% of them have reported SV. In Puerto Rico, we don't have reported data that can concise a percentage of SV. **Methods:** This was a secondary data analysis of a self-administered questionnaire given to 300 women in PR. The data was obtained from a study named "Knowledge, attitudes and practices of contraceptive use and the Zika virus among Hispanic women living in Puerto Rico". The study variables taken into consideration were history of SV and sexual orientation. **Results:** Of the 300 women, 292 answered the SV question. Of those, 29 of 32 reported their age at the time of first SV incident. Of these women, 16 (55.2%) were

under eighteen years old. Moreover, 31 of the 32 abused women answered the sexual orientation question. Of those, 26 (83.9%) were heterosexual and 5 (16.1%) were bisexual. Conclusions/Implications: In this study, 11% of the total women population disclose an SV event at least once in their lifetime. The vast majority of these, were abused when they were eighteen years old or under. Heterosexual women were the most likely to have experienced SV. There was a 16% of the abused women that were bisexual. This data is significant enough to draw attention of this social reality in order to take active measures, such as screenings or educative platforms, to minimize its occurrence.

1463

### **Prevalence of Stigma and Relationship with EDSS in Caribbean Hispanic Patients with Multiple Sclerosis as Measured by Raw Scores**

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**Background and Objectives:** Multiple Sclerosis is a chronic and progressive condition that is associated with a variable clinical presentation. Previous studies have shown that patients who have a chronic illness are subject to stigmatization, which in turn may lead to discrimination, worse quality of life and poor medication adherence. We hypothesize that stigma will correlate with EDSS in our population of Caribbean Hispanic Multiple Sclerosis patients and that raw scores may better represent our patients, when compared with T-scores. **Methods:** Case - control study with a sample of 60 participants (40 patients with MS and 20 controls). Patients with confirmed diagnosis of MS using the McDonald's Criteria 2010 were recruited at the Multiple Sclerosis Clinic of the Neurology Section. All participants were evaluated for demographic data, as well as, MS diagnosis and severity using the EDSS. Neuro-QOL (NIH Tool box) questionnaires regarding stigma, social roles and depression were administered. **Results:** Stigma and Depression scores were significantly higher in MS patients compared with controls. Stigma was found to be related to age, age at diagnosis and time elapsed to diagnosis ( $p < 0.001$ ). Significant correlations were observed between higher levels of stigma and depression, as well as, worse social roles with disease severity ( $p < 0.001$ ). Correlation between perceived stigma and the ability to perform social roles was also observed ( $p < 0.001$ ). However, higher levels of stigma did not significantly correlate with increased levels of depression. Raw scores significantly correlate with T-scores of stigma, depression and social roles Neuro-QOL questionnaires. **Conclusions:** Caribbean patients with Multiple Sclerosis reported higher levels of stigma, which correlated with disease severity and resulted in a negative impact in quality of life. The raw scores correlated with T-scores for all Neuro-QOL measures used. **Acknowledgements:** This research was approved by IRB (Protocol # 1330215).

1465

### **Hypothermia after Birth in Infants admitted to the Neonatal Intensive Care Unit (NICU) and its Association to Low Birth Weight and Delivery Room Interventions**

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**Introduction:** Hypothermia in neonates is described as a temperature of  $36.5^{\circ}\text{C}$  and in premature babies has been linked to increase mortality, comorbidities and prolonged NICU hospitalizations. The University Pediatric Hospital NICU is separated from the labor room located at the University District Hospital (UDH). Severely ill neonates are transported within 10 minute walking distance from each unit. Plastic wrap is used for covering premature infants. **Objective:** To quantify hypothermia admission rates for babies transported from UDH and identifying risk factors for moderate to severe hypothermia ( $< 36^{\circ}\text{C}$ ). Secondary objective was to stratify results for babies  $< 32$  weeks. **Methods:** Data from the Vermont Oxford Network from 2006-2017 was analyzed using Statistix 8.0. **Results:** A total of 5,882 newborns were admitted to NICU during this period. The prevalence of hypothermia was 43% (mild 43%, moderate 42%, severe 1%) being higher in infants born at 23-30 weeks. Risk factors for moderate to severe hypothermia were lower gestational

age (GA) (Mean: 33 weeks), lower birth weight (BW) (Mean: 1900 grams), C-Section, lower APGAR scores and requiring resuscitation at delivery ( $p < 0.01$ ). The  $< 32$  weeks sub-group showed similar risk factors (GA Mean 28 weeks; BW 1166 grams;  $p < 0.05$ ). A 42% decrease in hypothermia was seen after neonatologists were appointed to the UDH delivery room in 2012 (54% vs 31%;  $p < 0.01$ ). Conclusions: Being a tertiary center with high risk pregnancies, these results will help identify interventions to continue reducing hypothermia admission rates. These may include staff education, equipment changes, and the use of thermal mattresses among others.

1475

### Mitochondria generated reactive oxygen species and APE-1 are associated with mitochondrial dysfunction in an in vitro model of Huntington's disease

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Department of Pharmacology and Toxicology, University of Puerto Rico-Medical Sciences Campus, San Juan, P.R. Background: Huntington's disease (HD) is an incurable, autosomal dominant, neurodegenerative disorder characterized by involuntary movements, motor disturbances, cognitive decline, and personality changes. Mitochondrial ROS (mtROS) are significantly increased in mutant huntingtin (mHTT)-expressing cells compared to wild type (WT) cells and the levels of oxidative damage to the mitochondrial DNA (mtDNA) and mitochondrial dysfunction are increased in postmortem HD brains. The Base Excision Repair (BER) mechanism is the main pathway responsible for the repair of mtDNA, and the apurinic/apyrimidinic endonuclease-1 (APE1), the main endonuclease in BER, may regulate mitochondrial energetics in HD. However, the mechanism by which APE1 impacts mitochondrial function in HD is unknown. We hypothesize that mHtt affects mitochondrial function by impacting APE1 repair function. Methods: To test our hypothesis we employed wild type (WT) Q7 and mutant huntingtin (mHTT) expressing (Q111) mouse striatal cell lines and measured AP endonuclease activity using a fluorometric assay. The abundance of mtDNA molecules was measured using quantitative PCR and mitochondrial bioenergetics was assessed using an Extracellular Flux Analyzer. Results: Q111 cells exhibit a statistically significant 33% increase in AP endonuclease activity compared to WT/Q7 cells, but no differences were observed in whole cell protein extracts. Treatment with XJB-5-131, a mitochondria specific antioxidant, significantly decreased mitochondrial AP endonuclease activity to levels similar to WT cells. Treatment with DMNQ, a generator of mtROS, decreased mtDNA abundance in a dose dependent manner only in mHTT-expressing cells. Basal respiration and reserve capacity were significantly lower in mHTT-expressing cells compared to WT cells after DMNQ treatment. Conclusion: Our data suggest that endogenous mtROS via APE1 repair activity lead to mitochondrial dysfunction in HD cells and points to a role for APE1 in HD neurodegeneration. Acknowledgments: This work was supported by NIH grants SC1NS095380 (SAP), R25 GM061838 and U54 MD 007600.

1496

### Polymorphism in CYP1B1 increases CRC risk in Puerto Rican individuals that consume processed meats

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Background and Objectives: Colorectal cancer (CRC) is the 1st cause of cancer-related deaths in Puerto Rico (PR). CRC is a heterogeneous disease with lifestyle and environmental factors shown to modify the risk to develop this disease. High intake of red and processed meats was determined to be a risk factor for increased risk of CRC. Genetic variations in genes involved in the metabolism of meat carcinogens have been found to be associated with CRC risk and to vary across racial/ethnic populations. The objective of this project was to determine the association of functional genetic variants in meat-carcinogen metabolism genes with CRC risk in the PR population. Methods: First, we analyzed the allelic frequencies of SNPs in key meat carcinogen metabolism genes (CYP1A1, CYP1B1, NAT2 and CYP2E1), that were previously reported to have an association with development of colorectal adenomas or CRC were evalu-

ated in the 1000 Genomes Populations. The 1000 Genomes populations included: AFR (African Populations), EUR (European Populations), CLM (Colombians from Medellin, Colombia), MXL (Mexican Ancestry from Los Angeles USA), PEL (Peruvians from Lima Peru) and PUR (Puerto Ricans from Puerto Rico). Then, we genotyped using TaqMan technology 5 functional SNPs localized at key meat carcinogen detoxifying genes, CYP1A1, CYP1B1, NAT1, NAT2 and CYP2E1 in Puerto Ricans (205 CRC cases and 218 controls). Results: Our preliminary results showed that the allelic frequencies of the SNPs differ between PUR and the other 1000 Genomes populations, suggesting that these SNPs might have a distinct effect on the association of red/processed meat intake and CRC risk on Puerto Ricans. Furthermore, genotyping analysis showed that individuals with the AA genotype at the rs1800440 SNP (CYP1B1) that consume processed meat 2-4 times per week were at increased risk of CRC ( $p=0.008$ ). Conclusion: These preliminary data support a role for genetic variants in genes that play key roles in the mechanisms of meat carcinogenesis as possible modifiers of the carcinogenic effects of meat. Acknowledgements: None.

1498

### Traducción y adaptación cultural al español del método para la evaluación de la confusión en la unidad de cuidado intensivo para preescolares (psCAM-ICU)

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Antecedentes/Objetivo: El Método para la Evaluación de la Confusión en la Unidad de Cuidado Intensivo para Preescolares (psCAM-ICU, por sus siglas en inglés) es un instrumento diseñado para evaluar la presencia de delirium en niños críticamente enfermos, en escenarios de habla inglesa. La sensibilidad y especificidad del instrumento, 75% y 91%, respectivamente, demuestran que es una herramienta válida para valorar la ocurrencia de delirium en las unidades de cuidado intensivo pediátrico (UCIP). La falta de instrumentos en español para identificar el delirium en niños menores de 5 años representa un gran desafío. El propósito de este manuscrito es describir el proceso de traducción y adaptación cultural al español del psCAM-ICU original versión inglés, siguiendo los Principles of Good Practice (PGP) for the Translation and Cultural Adaptation Process for Patient-Reported Outcomes Measures. Método: El proceso de traducción y adaptación cultural al español del psCAM-ICU fue desarrollado según los 10 pasos que sugieren los PGP, incluyendo: preparación, traducción hacia español, reconciliación, retrotraducción al inglés, revisión de retrotraducción, armonización, evaluación cognitiva del instrumento, revisión de la evaluación cognitiva, correcciones y reporte final. Resultados: El psCAM-ICU fue exitosamente adaptado en los aspectos culturales y lingüísticos. Conclusión: Los proveedores de cuidado de habla hispana que laboran en las UCIP ahora tienen acceso a una versión en español del psCAM-ICU para facilitar la detección temprana del delirium en infantes y niños en edad preescolar de las UCIP. Agradecimiento: Agradecemos al personal de enfermería de la Unidad de Intensivo del Hospital Universitario Pediátrico de Puerto Rico. Reconocemos la colaboración de la Prof. Gladys Vélez y la Dra. Elizabeth Román como traductoras.

1510

### Prevalence of Bifid Uvula among Puerto Rican Children with Orofacial Clefts

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Purpose: Determine the prevalence of bifid uvula (BU) and other uvular conditions among Puerto Rican children with oral clefts, as compared to that of healthy controls. Methods: Data was obtained from an ongoing case-control study between September 2011 and December 2018. Participants from different municipalities in Puerto Rico were included.

Children (N=117) with and without non-syndromic orofacial cleft (CL/P) diagnosis were examined by dental professionals. Intraoral examination included an oral evaluation with the aid of a tongue depressor. Uvula was evaluated and classified as: (a) normal uvula, (b) Complete bifid uvula, (c) Incomplete bifid uvula, and (d) Missing uvula, according to the “Extending the Phenotype of Non-Syndromic Orofacial Clefing” classification from the University of Pittsburgh Orofacial Clefts Study. Results: Participants, equally distributed by gender, were evaluated among cases (n=72) and controls (n=45) and classified as normal (64%), missing (7%) and unknown or could not be evaluated due to age, limited aperture of the mouth or evaluation refusal (11%). Uvula was most centrally located (83%), while in some subjects (9%) was deviated towards the right. BU was found in 20 cases and was classified as incomplete (60%), likely seen as a notch/groove, and complete (45%), while no controls showed BU. Among males (n=58) and females (n=59), BU had a higher frequency in females (55%), showing no differences by sex ( $p=0.68$ ). BU was also identified in cases with cleft lip with palate (37%), and isolated cleft palate (33%). On cases with fissure on hard (24%), and hard and soft (76%) palates, BU was observed. Examiners documented scars on the uvula (5%) due to palate surgery or reconstructions. Conclusions: Results showed a higher bifid uvula (BU) prevalence in Puerto Ricans than what is currently reported in literature. Research is needed to describe BU prevalence due to the lack of studies in Puerto Rico.

1511

### Reproductive Maternal History and the Risk for Oral Clefts in Puerto Ricans

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Background/Objective: Oral clefts (CL/P) are described as common birth defect characterized by an opening that compromises facial structures. Identification of maternal factors associated to CL/P risk is described as a prevention step. Study objective is to identify factors in the maternal reproductive history that modulate the risk for developing CL/P. Methods: A case-control study (N=420) collected maternal data from a pregnancy history questionnaire. Mothers with children with/without non-syndromic CL/P provided information related to reproductive history. Chi-square statistical tests and frequencies were calculated for each variable. Odds ratios (ORs) analysis with confidence intervals (CI) at 95% were performed to estimate risk, using STATA (version 14) as the statistical program for analysis. Results: Sample was mostly composed of married (35.3%) mothers with a high school degree (34.9%), annual income of less than \$10,000 (43%), and children (55%) with cleft lip with cleft palate (CLP) as the most frequent CL/P type observed. Analysis of reproductive maternal history showed significant differences among cases (n=216) and controls (n=205) for income ( $p=0.02$ ), born with other anomalies ( $p=0.01$ ), breastfeeding ( $p<0.01$ ), breastfeeding frequency ( $p<0.01$ ), and previous abortions ( $p=0.04$ ). Other differences were found by cleft type and other anomalies ( $p=0.04$ ), and breastfeeding ( $p<0.01$ ). No differences were found for regularity of menstrual periods, treatments/medications received to get pregnant, term birth and anomalies in siblings ( $p>0.05$ ). Results also showed that other anomalies (OR=2.92, 95%CI [1.26,6.74]) increase the risk for CL/P, especially for cleft lip (OR=3.93, 95%CI [1.27,12.21]). Previous abortions (OR=0.62, 95%CI [0.40,0.98]) and breastfeeding (OR=0.19, 95%CI [0.11,0.33]) were identified as protective factors for cases. Conclusions: Findings showed abortions and the practice of breastfeeding as CL/P protective factors, while being born with other anomalies was identified as protective. More studies about the effect of abortion and other factors in the reproductive history are needed to understand the CL/P etiology.

1513

### Beverages Consumption in Pregnancy and the Risk for Oral Clefts in Puerto Ricans

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**Background/Objective:** Oral clefts (CL/P) are prevalent birth defects with a multifactorial etiology. Maternal diet plays a role in the risk of having a child with CL/P. Puerto Rican's diet has a high intake of coffee, tea, non-alcoholic drinks, and other beverages. The objective is to identify an association between the consumption of beverages before/during pregnancy, including water, and CL/P risk. **Methods:** Mothers with children with/without non-syndromic CL/P provided information related to beverage consumption from a pregnancy history questionnaire conducted in a case-control study (N=420). Chi-square tests and frequencies were calculated for each variable. Crude and adjusted odds ratios (ORs) analysis with confidence intervals (CI) at 95% were performed to estimate risk. STATA (version 14) was the statistical program used for analyses. **Results:** Coffee (59.5%), caffeinated-drinks (89.4%) and juices (92%) were frequently consumed before pregnancy; while water from Aqueducts and Sewers Authority (PRASA, 56.1%), caffeinated-drinks (74.7%) and juices (90.2%) were consumed during pregnancy. Among case (n=215) and control (n=205) mothers, differences were found before pregnancy for PRASA water (p=0.001) and caffeinated-drinks (p=0.01), and during pregnancy for herbal tea (p=0.02) and alcohol (p=0.03). Caffeinated-drinks (OR=2.45, 95%CI [1.21,5.17]) before pregnancy, and PRASA water (OR=1.96, 95%CI [1.30,2.95]) and alcohol (OR=2.54, 95%CI [1.04,6.82]) during pregnancy were identified as risk factors. PRASA water increases risk for cleft lip (CL, OR=2.20, 95%CI [1.05,4.77]) and cleft lip with palate (CLP, OR=1.99, 95%CI [1.21,3.29]). Caffeinated-drinks before (OR=2.69, 95%CI [1.11,7.50]) and during pregnancy (OR=2.28, 95%CI [1.23,4.35]), and alcohol (OR=3.06, 95%CI [1.13,8.78]) during pregnancy increase the risk for CLP. Herbal tea during pregnancy (OR=0.38, 95%CI [0.15,0.93]) was identified as protective. **Conclusions:** Findings showed the consumption of PRASA water, alcohol, sugary drinks, and caffeine to be risk factors for CL/P, while herbal tea protected during pregnancy. Studies need to evaluate maternal diet in Puerto Rican women to identify factors that modulate risk. **External Funding:** Supported by the NIH under Award Numbers: R00DE024571, S21MD001830, and U54MD007587, and partially supported by Caribbean Oral Health Initiative (COHI).

1522

### **Intrathecal Fentanyl with Bupivacaine: Enhances Post-Operative analgesia**

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**Clinical Question:** In adult patients receiving spinal anesthesia (P), how does adding intrathecal Fentanyl to Bupivacaine (I) compared with bupivacaine only (C), affect pain intensity (O) two hours post operatively (T)? **Scope:** Post-operative pain is a common complaint from patients who undergo surgery. There is no standard protocol for the management of acute pain after surgical procedures using spinal anesthesia. Literature suggests that adding opioids to local anesthetic during intrathecal anesthesia can help safely and effectively treat post-operative pain. **Literature Review:** Main outcomes found on studies demonstrate that fentanyl added to the local anesthetic bupivacaine, used in patients receiving spinal anesthesia, and reduces post-operative pain intensity without prolonging motor block. **Project implementation:** Adult patients at UPR Dr. Federico Trilla Hospital in Carolina that underwent surgery requiring spinal anesthesia (Bupivacaine) were included. The intervention consisted of the administration of a total dose of 25 mcg of intrathecal opioid (fentanyl) for pain management prolonging analgesia in the postoperative phase. Pain was assessed upon arrival to PACU and 2 hours post-operatively using the Numeric Pain Rating Scale. **Results:** A total of 40 patients, 17 females (42.5%) and 23 males (57.5%) participated. Median age was 58 (44.5-70). Most patients classified as ASA II (70%). Distribution of surgical specialties included general (17.5%), urological (37.5%), orthopedic (30%) and gynecological (15%). Two hours post-operatively, majority of patients (72.5%) referred no pain, while 11 patients (27.5%) referred moderate to severe pain (NRS classification, 4-10) that required medication. **Practice Implications:** The application of this technique benefited pain management prolonging analgesia in the postoperative phase in most patients. **Acknowledgements:** We thank operating room staff, CRNAs, PACU nurses, Dr. María Castellvi, Dr. Peter Portilla, Dr. Elfren A. Colón and Mrs. Nilsa Banrey at UPR Hospital in Carolina Dr. Federico Trilla, for their cooperation and support during project implementation.

1523

### Differential Expression of Cannabinoid Receptor I in Prostate Cancer PNI Positive Samples Compared to PNI Negative Samples

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**Background and Objective:** Prostate cancer (PC) is a malignant disease with the highest incidence and mortality in Puerto Rican males. Currently, statistics indicate that at the time of diagnosis, 5% of the cases present with metastatic lesions, more commonly to the bone. The primary risk factor for bone metastasis is perineural invasion (PNI), a mechanism used by cancer cells to spread from the prostate gland to the bone by means of nearby nerves. Despite extensive knowledge of the potential anti-cancer role of the endocannabinoids in PC, to our knowledge, nothing is known with respect to their impact in PNI. Given the reported correlation of cannabinoid receptor 1 (CB1R) overexpression with aggressive stages of PC, we hypothesize that CB1R overexpression strongly contributes to PNI. Preliminary data from our laboratory show that characteristic with PNI features, human formalin fixed paraffin-embedded (FFPE) PC samples display CB1R expression difference between large prostate glands compared with small malignant glands. **Methods:** Using immunohistochemistry (IHC) technique, we labeled FFPE-PC samples of PNI positive versus PNI negative patients. Our results demonstrate a significant difference of CB1R intensity expression in PNI positive samples compared with PNI negative samples ( $p < 0.0001$ ). **Conclusion:** Taken together, our results suggest that an upregulation of CB1R is related with the invasion of PC cells through nerves. Ongoing studies will use a PNI co-culture to elucidate a specific role of CB1R in promoting PNI. The proposed study will contribute to defining the role of CB1R in PC-PNI and to the development of new therapeutic targets to prevent PC dissemination to the bone. **Acknowledgements:** This research was supported, in part, by the National Institutes of Health - National Institute on Drug Abuse 1R01 DA037924, the National Institute on Minority Health and Health Disparities RCMI Grant 8G12MD007600. J.F.O. was supported by the Comprehensive Cancer Center Seed Funds.

1526

### Cannabinoid Receptors as Modulators of Cancer Cellular Behaviors in Invasive Y79 Retinoblastoma Cells

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**Background and objective:** Retinoblastoma (RB) is the most common intraocular tumor in children with less than 5 years of age. Current therapeutic approaches effectively manage and control RB when restricted to intraocular compartments, however, after chemo-resistant RB cells spread through the optic nerve, survival rate for patients is less than 8%. Our objective is to define ways in which we can interfere with the process of RB cell migration in order to prevent brain metastasis associated with RB. Cannabinoid receptors and their ligands have been at the forefront of cancer research for their anti-cancer roles which extend to decreasing tumor growth by controlling cell proliferation, induction of cell cycle arrest, and decrease of cell migration and invasion. Preliminary data from our lab using Western blot assays demonstrate that in contrast to the upregulation of CB2Rs, CB1Rs are downregulated in RB human tumors when compared to fetal retina (control;  $p < 0.001$  and  $p < 0.01$ , respectively). We hypothesize that RB cellular behavior can be modulated by targeting CBRs. **Results:** Wound healing assays using invasive RB Y79 cells show a significant delay in migration ( $p < 0.05$ ) upon the activation of CBRs with CP55,940 and 2-AG, when compared to the untreated cells. Results from the cell cycle assay show that after 48-96 hours post-treatment with CP55,940 and 2-AG the Y79 cells are committed to G0/G1 phases. However, 24 hours' post-treatment with CP55,940 applied for 8 hours, display a significant increase in the proliferation rate in the Y79 cells ( $p < 0.01$ ). **Conclusion:** Our results suggest a potential role of CBRs in tumor growth. Studies are underway to define if CB1R, CB2R or both receptors are vital for RB progression. Successful outcomes of

this study will contribute to identify novel targets that prevent the invasion of RB cells to the CNS, and hence increase these patient population survival rate. Acknowledgement: This research was supported, in part, by the National Institutes of Health - National Institute on Drug Abuse 1R01 DA037924, the National Institute on Minority Health and the Health Disparities RCMI Grant 8G12MD007600, and by MBRS-RISE R25GM061838 (CMVR). J.F.O. was supported by the Comprehensive Cancer Center Seed Funds.

1527

### **Assessment of the Sagittal Abdominal Diameter as an Indicator of Prediabetes and Insulin Resistance in Overweight and Obese Adults.**

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**Background & Objectives:** Few studies have evaluated the relative utility of sagittal abdominal diameter (SAD) as a risk marker of prediabetes and insulin resistance. This analysis compared the utility of SAD with other anthropometric measures (body mass index, BMI; waist circumference, WC; and waist-to-hip ratio, WHR) to identify the presence of prediabetes and insulin resistance in overweight and obese adults. **Methods:** A total of 627 adults, aged 40-65 years, free of diabetes were selected from the San Juan Overweight Longitudinal Study (SOALS). Prediabetes was defined according to the American Diabetes Association cutoffs, whereas insulin resistance was defined as the upper quartile of the Homeostasis Model Assessment of Insulin Resistance (HOMA-IR) distribution. Separate multivariable logistic regression models were used to evaluate the associations of the anthropometric measures with prediabetes and HOMA-IR as the binary outcomes adjusted for age, gender, smoking status, and physical activity. **Results:** The upper tertile of SAD (>15.35 cm), compared to the lowest (<12.26 cm), had higher association with prediabetes (OR: 2.31, 95% CI: 1.53-3.48) compared to WC (OR: 1.83, 95% CI: 1.22-2.75), BMI (OR: 1.90, 95% CI: 1.27-2.86), and WHR (OR: 1.41, 95% CI: 0.91-2.19). Similarly, the upper tertile of SAD had higher association with HOMA-IR (OR: 7.47, 95% CI: 4.24-13.2) compared to WC (OR: 7.06, 95% CI: 4.01-12.4), BMI (OR: 5.13, 95% CI: 3.00-8.76), and WHR (OR: 4.11, 95% CI: 2.42-6.96). Although the middle tertile of SAD was associated with both prediabetes and HOMA-IR, the strengths of the associations were slightly higher for WC. **Conclusion:** These findings suggest that SAD may be a good alternative to WC in identifying prediabetes and insulin resistance in overweight and obese adults. **Acknowledgments:** This research was supported by the National Institute of Dental and Craniofacial Research Grant R01DE020111 and the National Institute on Minority Health and Health Disparities Grant U54MD007587.

1531

### **Conocimiento de Pacientes para Reiniciar Actividad Sexual luego de Eventos Cardiovasculares como: Infarto al Miocardio y Revascularización Cardíaca**

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**Trasfondo y Objetivos:** Un paciente que ha tenido un IM o un CABG) puede enfrentar problemas con su actividad sexual, debido a una pobre orientación sobre el reinicio de la actividad. Los objetivos de la investigación fueron: describir el conocimiento del paciente sobre el reinicio de la actividad sexual y explorar las diferencias en el conocimiento de acuerdo a las características demográficas y de salud. **Método:** Diseño descriptivo transversal y una muestra de 40 participantes, reclutados en el Centro Cardiovascular de PR y del Caribe. Se aplicó un instrumento demográfico y la Prueba de Conocimiento de Sexo Después de un Infarto al Miocardio -Versión General Cardíaca. **Resultados:** El 57.5% de la muestra eran varones, 55.0% casados, 60.0% tiene una educación mayor de escuela superior y 97.5% indicó no haber recibido orientación sobre el reinicio de la actividad sexual. El 47.5% expresó miedo a reiniciar la actividad sexual.

Algunas razones incluyen: dolor luego de la cirugía, manejo de la excitación, no tener las fuerzas necesarias, entre otras. La media en el conocimiento general fue 62.2 (DE=5.21) de un total de 75. Algunas preguntas, relacionadas a síntomas físicos, uso de medicamentos, frecuencia de las relaciones sexuales, tipo de relación sexual y juego sexual previo fueron contestadas de forma incorrecta y en la categoría de desconozco por gran parte de los participantes. No se identificaron diferencias estadísticas entre el nivel de conocimiento y las variables sociodemográficas y de salud. Conclusión: La orientación al paciente sobre el reinicio de la actividad sexual es indispensable para que pueda satisfacer sus necesidades holísticas y prevenir complicaciones cardíacas. Es relevante que se concientice a los profesionales de la salud, incluyendo a enfermería sobre la importancia de estimar el conocimiento de los pacientes y educarlos en el área de la sexualidad.

1535

### **El aprendizaje combinado como agente de cambio en el diseño e implementación de un curso**

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Introducción: La educación para el siglo 21 requiere que las instituciones de educación superior maximicen las plataformas y ambientes virtuales para facilitar el acceso a la educación de acuerdo al nuevo perfil de estudiantes. Combinar el aprendizaje presencial y en línea blended learning para proveer experiencias de aprendizaje atractivas y significativas (Yagcioglu, 2017) sirve como transición en el este nuevo paradigma curricular. Objetivos: Determinar la percepción de un grupo de estudiantes graduados en relación al diseño e implementación de un curso híbrido utilizando los 6 estándares de Quality Matters para educación a distancia. Método: Mediante un diseño cuantitativo pre-experimental 208 estudiantes graduados diurnos y vespertinos participaron de una encuesta digital con una escala Likert de 4 niveles. Se utilizó SPSS para el análisis de los datos. Resultados: La tasa de respuesta fue de un 73%. Los estándares de materiales instruccionales y estrategias de avalúo obtuvieron la puntuación promedio más alta con 3.6, seguido de organización/estructura y tecnología con 3.4. Las actividades y resultados de aprendizaje alcanzaron una puntuación promedio de 3.3. Al examinar las puntuaciones por grupos, se observó que el grupo vespertino obtuvo puntuaciones superiores al diurno siendo el promedio máximo de 3.7 y 2.9 respectivamente. Conclusión: El uso del blended learning armoniza las propiedades y posibilidades del ambiente presencial y virtual para ir más allá de las capacidades de cada uno por separado (Saritepeci & Cakır, 2015). Empero a la brecha en la percepción de los grupos en relación a los estándares evaluados, los estudiantes tienen una percepción favorable hacia el diseño y ofrecimiento del curso híbrido. Considerar en detalle las características del estudiantado debe ser parte de los elementos estructurales en la implementación de este tipo de curso.

1537

### **Hurricane Maria impact in a level IV Neonatal Intensive Care Unit (NICU) in Puerto Rico**

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Background: Disasters are especially threatening to the lives of high risk neonates and pregnant women. During a disaster, the provision of highly skilled and specialized care can be compromised. Objective: To analyze the impact of Hurricane Maria in the prenatal evaluation and NICU admissions. Methods: A cross-sectional study comparing data from August to November of 2016 and 2017. We included all pregnant women receiving services in the Fetal Evaluation Unit and all hospitalized patients in University Pediatric Hospital NICU. Data obtained from medical record review and Vermont Oxford Network Database. IRB approved. Results: Analysis of prenatal data showed a 16% decrease in pregnant women receiving care. Interestingly, there was an 8% increase in fetal anomalies detected. There were 171 and

163 NICU admissions during 2016 and 2017, respectively. Mean gestational age 34 weeks (24- 40). Mean birth weight 2282gr (460-5420). Maternal age, gestational age, birth weight and admissions to NICU were similar among periods. There were variations in length of stay (LOS) during the pre and post Hurricane months, which did not reach statistical significance. Conclusion: The reduction of prenatal evaluations strongly suggest limited access to services in the aftermath of the emergency. Concurrent epidemics such as Zika virus may disproportionately affect the population of pregnant women, increasing birth defects. Variations in LOS could be due to discharges and transfers of patients in need of surgical procedures not available or to step down units due to NICU structural damage. This suggests appropriateness use of hospital services, planning, coordination and effectiveness in protocols established in our institution. Our future plan is to measure the overall effect of hurricanes on NICU population and consider some of the mechanisms that account for these effects, with the purpose of establishing system-wide protocols for disaster preparedness in NICU. Acknowledgement: EHSRC grant.

1539

### Characterization of Patients Receiving End-of-Life Care at Palliative Care Unit in Puerto Rico Trauma Hospital

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**Background & Objectives:** Palliative care (PC) is a medical subspecialty that aims to alleviate the pain and suffering of patients with life-limiting illness. It helps redefine goals of care toward comfort when disease-directed therapy fails. Puerto Rico Trauma Hospital (PRTH) has established the first local public inpatient palliative care program with a specialized unit for end-of-life called Palliative Care Unit (PCU). It is unknown which trauma patients ultimately receive this specialized care. We hypothesize that trauma patients receive palliative care after having a prolonged and complicated hospital stay. Our study aims to define the trauma patients that receive end-of-life care in the PCU. **Methods:** A retrospective chart review was performed for patients transferred to the PCU during a one-year period. Patient's demographics, mechanism of trauma, initial Injury Severity Score (ISS), Glasgow Coma Scale (GCS), diagnosis, outcome, hospital length of stay and interventions were obtained from the Trauma Registry and chart reviews. Descriptive statistics were calculated with STATA v14.0 using the median, interquartile range, frequencies, and percentages. **Results:** Fifty-one patients received palliative care consultation and 23 were transferred to the PCU based on goals of care. Most patients were male with median age 69 compared to the median age for all patients at PRTH of 42. Motor vehicle accidents, pedestrian accidents and high falls were the most common mechanisms of injury. The median initial ISS and GCS was 13 and 15, respectively. The time from admission to PCU transfer was 2.3 months. Most patients developed septic shock and multiorgan failure with 100% mortality. Interventions performed included code status discussion, support with decision-making and withdrawal of life-sustaining measures. **Conclusions:** Most patients were older, had prolonged hospital stay and complications after suffering a traumatic injury. This profile can be used to develop criteria for earlier PC consultation in a trauma population.

1542

### Administering Dexamethasone as an Adjunct to Local Anesthetics in Supraclavicular Nerve Blocks

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**Clinical Question:** In orthopedic surgical adult patients undergoing a supraclavicular nerve block (P), how does adding dexamethasone to the local anesthetic (I), compared with not using dexamethasone (C), affect the duration of analgesia (O) within twenty-four hours postoperatively (T)? **Scope:** Many patients experience intense postoperative pain after an upper extremity orthopedic surgery. Unfavorable physiologic changes involving multiple organ systems can contribute to the morbidity and mortality in patients with poor pain control. Pain management could be improved by combining it with new strategies. **Literature Review:** Most of the studies reflected the prolongation of post-surgical analgesia in pa-

tients who received supraclavicular block for orthopedic surgical procedures of the upper extremities, for more than 20 hours with the use of perineural dexamethasone 4 milligrams. Project Implementation: Twenty milliliters of local anesthetic, along with 4 milligrams of dexamethasone, was injected in the perineural area using the supraclavicular block approach in 20 patients scheduled for upper extremity surgeries. Pain onset was assessed at PACU arrival, two hours after arrival and 24 hours from time of local anesthetic administration. Results: The median time for the first administration of the analgesic agent and the onset of pain was 13 hours. Pain was noted at a minimum of 9.4 hours and maximum 18 hours. The duration of analgesia was significantly longer with the use of dexamethasone added to the peripheral nerve block local anesthetic. Practice Implication: The implementation of this project can decrease analgesic need in PACU, impacting length of stay of patients in the PACU or hospital, decrease healthcare costs and have a positive impact on the patient's experience. Acknowledgements: We acknowledge the anesthesia team, faculty and the residents of the Department of Anesthesiology- University of Puerto Rico, Medical Sciences Campus for their support.

1546

### Implementation of a Standardized Hand-off Checklist to Improve Caregiver Communication

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Clinical Question: In PACU and ICU(P), how does the use of standardized hand-off report from nurse anesthetist to PACU and ICU Nurse (I) compared to a non-standardized hand-off report (C), affect patient safety, nurses' communication and satisfaction (O) within the first 24hrs of postoperative care (T)? Scope: Postoperative handovers are a critical phase of the surgical patient's perioperative care. Hand-offs conducted without standardized protocols are prone to information loss and could be a danger to patient safety. Literature Review: Evidence established that implementing a consistent hand-off checklist could improve the quality of data being transferred and minimize risks with misinterpreted information that can potentially jeopardize safety. Project Implementation: A checklist for the hand-off procedure was developed and approved by the administrative anesthesia staff. Thirty hand-offs were evaluated using the checklist. Post-surgical hand-offs were observed from nurse anesthetist to PACU nurse or ICU nurse. Results: Our findings were similar to those of the reviewed evidence. The PACU/ICU nurses informed that the hand-off report is an excellent tool that helps them receive, collect, pass on information, and have an effective communication with the nurse anesthetist. Two nurse anesthetists stated that during some complicated cases, the use of the hand-off report became difficult due to the lack of time, and another nurse anesthetist stated that the hand-off sheet can be repetitive and takes too much time to complete. Practice Implication: The implementation of a standardized hand-off facilitates communication between nursing and anesthesia staff helped caregivers understand and prioritize patient's treatment and safety and anticipate future care plans. All professionals who participate in the hand-off process should be consulted to develop a user-friendly tool that promotes patient safety. Acknowledgements: We would like to thank all the nurse anesthetists, PACU and ICU nurses who were receptive and cooperative during the implementation of the project.

1549

### Self-reported sleep duration and cardiometabolic risk factors in obese and overweight adults

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Background & Objectives: Evidence suggests that inadequate sleep duration is associated with cardiometabolic risk factors and cardiovascular disease. This study assessed whether short or long sleep duration is associated with cardiometabolic risk factors among overweight and obese individuals. Methods: This is a secondary data analysis of 1,338 adults aged 40-65 years who participated in the San Juan Overweight Adults Longitudinal Study. Self-reported sleep duration was classified as short ( $\leq 6$  hours), recommended (7-8 hours), and long ( $\geq 9$  hours). Blood pressure, high-density lipoprotein cholesterol [HDL-C], triglycerides, fasting and 2-hour plasma glucose, HbA1c,

and high-sensitive C reactive protein were processed using standard commercial assays. Low-density lipoprotein cholesterol (LDL-C) was determined using the Friedewald equation, and the Homeostasis Model Assessment of Insulin Resistance (HOMA-IR) was calculated as [fasting glucose (mg/dl) x fasting insulin (mg/dl)]/405. Separate multivariable logistic regression models were used to assess the association between sleep duration and cardiometabolic risk factors in overweight and obese adults. Results: Less than half (44.6%) reported sleeping <7 hours, 47.5% reported sleeping 7-8 hours, and 7.9% reported sleeping ≥9 hours. Among overweight individuals, both short sleep duration (OR: 1.70, 95% CI: 1.05-2.75) and long sleep duration (OR: 3.07, 95% CI: 1.36-6.94) were significantly associated with hypertension. Long sleep duration was significantly associated with hypertriglyceridemia among overweight adults (OR: 2.43, 95% CI: 1.18-5.02), while this association was of borderline significance among obese adults (OR: 1.55, 95% CI: 0.93-2.59). Sleep duration was not associated with other cardiometabolic risk factors. Conclusions: In this group of high-risk adults, inadequate sleep duration was associated with hypertension and hypertriglyceridemia, especially among overweight individuals. These findings must be confirmed in studies using objective measures of sleep. Acknowledgments: This research was supported by the National Institute of Dental and Craniofacial Research Grant R01DE020111 and the National Institute on Minority Health and Health Disparities Grant U54MD007587.

1550

### Risk Factors for Gingival Bleeding in Adult Puerto Ricans

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**Background & Objectives:** Gingival bleeding is a common problem. The purpose of this study was to assess risk factors for gingival bleeding in a group of adults, residing in the San Juan. **Methods:** In this community setting, representative cross-sectional study, healthy adult (18 years+) participants with ≥4 permanent teeth completed a medical history/socio-demographic/behavioral questionnaire and received soft/hard tissue examinations by a trained/calibrated dental examiner. Gingival assessments and visible plaque were scored, and the presence/absence of dental calculus was determined (lingual; antero-inferior dentition). Descriptive statistics were employed to estimate the mean interproximal gingival index, gingival bleeding index, overall gingivitis prevalence, and severity, mean/interproximal visible plaque index, and calculus index, with 95% confidence intervals. Multivariate logistic regression was used to evaluate the associations between age (5 categories), sex, education, employment status, compliance with recommended oral hygiene habits, frequency of dental visits, and having bleeding on probing (BOP) at >40% sites (as the outcome) at 0.05 significance level, while adjusting for calculus index, diabetes, hypertension, and smoking. All analyses were weighted according to the selection probability, using SAS software v. 9.3. **Results:** All 629 participants (55% women) had gingivitis. Moderate gingivitis was detected in 81.4% of the participants, mild in 16.3%, and severe in 2.3%. The odds of BOP>40% were similar across sex categories; however, calculus index (OR=45.21; 95% CI: 27.08; 75.49), lower education (OR none/basic vs.university=3.13; 95% CI: 1.99; 4.92), and being ≥50 years (OR ≥50-year-old vs. 18-19=3.60; 95% CI: 1.33; 9.73), and employment status (OR employed: yes/no=0.66, 95% CI: 0.54; 0.81) were strongly associated with gingival bleeding. **Conclusions:** Having an employment was a protecting factor for gingival bleeding. Having lower education, being older than 50 years, and higher calculus index were strongly associated to a higher risk of gingival bleeding. **Acknowledgements:** This research was supported by the Caribbean Oral Health Initiative

1560

### Clinical Determinants of Clopidogrel Response in Puerto Rican Hispanics with Cardiovascular Diseases

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**Background and Objectives:** High on-treatment platelet reactivity (HTPR) to clopidogrel increases the risk for ischemic events in adults with coronary artery disease. Platelet reactivity varies with ethnicity and is also influenced by clinical variables; however, such information is scarce in Hispanic patients from Puerto Rico. Therefore, we aimed at characterizing major clinical determinants of on-treatment platelet reactivity in a cohort of 322 Caribbean Hispanic patients with cardiovascular disease. **Methods:** We performed a cohort study of 322 Caribbean Hispanic patients on 75 mg/day maintenance dose of clopidogrel. Platelet function was measured ex vivo using the VerifyNow® P2Y12 assay and HTPR was defined as P2Y12 reaction units (PRU)  $\geq 230$ . Individual clinical and demographic data were collected from medical records and at the informed consent interview. Descriptive statistics of relevant metrics and clinical covariates were determined. Appropriate relationships between PRU values and patient characteristics were assessed. **Results:** In a representative sample of Caribbean Hispanic patients from Puerto Rican with cardiovascular diseases (mean age: 67.9 years-old, range: 27-92; 53% females; 63% with Coronary Artery Disease, Cardiac Stenting or Myocardial Infarction), we determined frequency distribution of major determinants of PRU values and clopidogrel response. The mean PRU was  $189 \pm 67$  (range 2-328), and 96 (31%) patients had HTPR. PRU values among females were significantly higher than in males (i.e.,  $202 \pm 59$ , range: 33-328, vs.  $180 \pm 70$ , range: 7-310;  $p=0.0029$ ). However, no significant differences in PRU levels were found between groups stratified by age or clopidogrel indication. **Conclusion:** Our results suggested that approximately one third of cardiovascular patients on clopidogrel in our study cohort are non-responders. Our findings are expected to help identifying Hispanic patients at high risk of adverse events to clopidogrel. **Acknowledgements:** This research was supported by a Research Minority Institutions (RCMI) award # 2U54 MD007600-31, NIMHD, NIH. IRB approval: Protocol No. A4070417.

1567

### Scientometric Analysis of the Puerto Rico Clinical and Translational Research Consortium (PRCTRC) Research Publications, 2010-2017

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**Background & Objectives:** The scientometric analysis provides a structured process to understand the dynamics of the sciences. The objective of this study was to evaluate the impact of the research and the scientific collaborations as shown in research publication supported by the PRCTRC. **Methods:** Manuscripts published from 2010 to 2017 were retrieved from the Science Citation Index database. Our search criteria included journal manuscripts: 1) with the PRCTRC grant number and 2) with a PMCID number. Scientometric indicators including h-index (HI), average citation (AC), collaboration coefficient (CC), collaboration index (CI) and degree of collaboration (DC) were calculated using the Web of Science Platform and Stata software for statistical inquiry. JointPoint was used to calculate the annual percent change (APC). **Results:** A total of 284 publications were identified from 2010-2017, with an average of 35.5 publications per year, and a total of 2,473 citing articles without self-citations. During this period a significant growth (APC=22.2%,  $p<0.05$ ) of scientific production was observed. The overall HI was 29, and the AC per item was 10.28. Regarding collaboration, the overall CC was 0.85, the CI was 5.80, and the DC was 99.6%. **Conclusions:** This study demonstrated that the PRCTRC scientific production increased statistically significantly. Application of the scientometric indicators

allows the PRCTRC assess the research productivity and collaboration to design and implement interventions according to program experience and needs. Acknowledgements: This analysis was supported by the National Institute on Minority Health and Health Disparities of the National Institutes of Health under Award Number 2U54MD007587.

1569

### Epidemiology of Marihuana Use Among Secondary School Students in a Representative Sample in Puerto Rico

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**Background & Objectives:** Marijuana is currently the most common illicit drug used by teenagers in US and Puerto Rico; its use has been proven to be detrimental to teenagers, having serious effects in their social and cognitive behaviors. The purpose of this study was to estimate the prevalence of recent marihuana use and to explore its risk factors among adolescent students in Puerto Rico. **Methods:** Consulta Juvenil is a monitoring program that aims to study the prevalence of substance use and violent behavior alongside the risk factors associated with those practices. The cross-sectional survey was conducted during the 2010-12 academic years. The study utilizes a self-administered questionnaire. **Results:** The representative sample (n=10,134) included 7,028 (52.4%) females and 6,389 (47.6%) males between seventh and twelve grade. The majority of the sample was recruited from the public-school system of Puerto Rico (70.3%). The prevalence of marihuana use was 12.4%. Multiple logistics regression analyses revealed that in males who reported more days of absenteeism, were poor academic achievers and those who reported higher levels of delinquency were more likely to report marihuana use during the last year. The strongest predictor of marihuana use was the practice of binge drinking among adolescents (AOR=4.86 CI: 2.83-8.34). In addition, adolescents who reported low perceived risk of using marijuana were significantly more likely to use marijuana than those who reported a high perceived risk (AOR = 2.3, 95%CI = 1.7, 3.2). **Conclusions:** Consistent with previous studies, perceiving marihuana use as a risky behavior and participating in religious activities works as a protective factor against the intention to use it. Incorporation of this message into the prevention of drug use prevention campaigns for non-users and early-stage users may enhance their effectiveness. **Acknowledgements:** This research was supported by ASSMCA and approved by IRB, Protocol Number: A8530111.

1583

### Common Symptoms in Intensive Care Unit Trauma Patients

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**Background & Objectives:** Intensive Care Units (ICU) patients experience a wide range of symptoms, which can produce some discomfort and negative consequences during hospitalization. The aim of the study was to evaluate the occurrence, assess intensity and distress of pain, anxiety, sleep deprivation and thirst in Trauma ICU patients. **Methods:** We evaluated 20 adult patients from the Trauma ICU using a correlational design between August and December 2018. Patients had to be at ICU for 24 hours or more in the ICU and had a Richmond Agitation Sedation Scale score from -1 and 1+. We measured symptoms with a 0 to 10 numeric rating scale. **Results:** Ninety percent were male with a median age of 47.5 (IQR: 27). Pain, anxiety, thirst, and sleep deprivation were present in 100%, 80%, 85%, and 55%, respectively. For all symptoms, there were large positive correlations between ratings of intensity and distress. There was a negative correlation between age and distress due to pain (rs=-.34, p=.04). In addition, age was related to both the intensity and distress due to thirst (rs=-.35, p=.05). Furthermore, patients

with higher mortality risk reported lower levels of pain intensity ( $p=.03$ ) and distress ( $p=.0001$ ). A stay with more than 6 days in ICU was associated with lower levels of pain ( $p=.02$ ) and distress ( $p=.04$ ). Conclusion: Evaluating all these symptoms should provide a full understanding of what the patient's discomfort is, thus allowing for their proper management. If all the health care professionals succeed alleviating and reducing all of these factors, patients' outcomes can improve. Acknowledgements: A special thank you to all the administrative and nursing staff of the TICU of the Trauma Hospital of PR and for Dr. Rafael Ramirez for his valuable contribution in the data analysis.

1584

### **New onset seizure leading to diagnosis of primary central nervous system malignant melanoma in a 17 year-old male**

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Purpose: Educate about rare causes of brain masses in the pediatric population. Case description: 17 year-old male with past medical history of prematurity of 26 weeks, hypotonia, unspecified metabolic disorder, esophagitis, scoliosis, bronchial asthma, and absence seizures since 4 years-old on lamictal until 14 years of age, who presented with new onset tonic-clonic seizures. Physical examination remarkable for lower back 1 centimeter (cm) regularly pigmented plaque and few macular pigmented lesions on trunk and extremities and no neurologic deficit. Brain imaging remarkable for an extra-axial mass along the upper convexity of the right parafalcine region of the right frontal lobe demonstrating T1 hyperintensity and contrast enhancement with susceptibility artifact, representing calcifications and/or hemorrhagic products, measuring approximately 2.6 cm anteroposterior by 1.9 cm transverse by 3.0 cm craniocaudal. Cytotoxic analysis of cerebrospinal fluid negative for malignant cells. Patient underwent right medial frontal craniotomy with gross mass resection. Biopsy showed malignant melanoma with positive S-100, HMB45, and Melan A markers and K167 positive in up to 10 percent (%) of neoplastic cells. Further imaging showed no evidence of metastatic disease to the spine or spinal cord. Ophthalmology evaluation negative for retinal lesions. Biopsy from lower back lesion consistent for congenital melanocytic nevus. Evaluation completed with whole body bone scintigraphy and positron emission tomography-computed tomography, both negative. Patient was diagnosed with primary central nervous system (CNS) malignant melanoma. Conclusion: Pediatric melanoma accounts for 1 – 4% of all melanoma cases and 1 – 3% of all pediatric malignancies with brain metastases causing significant morbidity and mortality and a poorer prognosis. Primary CNS malignant melanoma is even rarer with only 20 pediatric cases reported in literature. Current standard therapeutic modalities include primary resection followed by radiotherapy. Acknowledgements: None

1585

### **The Effect of Hurricane Maria on the General and Mental Health Status in Puerto Ricans with Rheumatic Diseases**

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Background and Objectives: Hurricane Maria made landfall on Puerto Rico on September 20, 2017. After the hurricane, patients with chronic diseases struggled to receive medical care and mortality rates increased. Thus, we evaluated the impact of Hurricane Maria on the general and mental health status in Puerto Ricans with rheumatic diseases. Methods: A cross-sectional study was performed in adults > 21 years, who attended the Rheumatology

clinics of the University of Puerto Rico from April to June 2018. A self-administered questionnaire was provided to assess demographic data, health and mental status, and access to healthcare services. Data were examined using descriptive and logistic regression analyses. Results: A total of 249 patients were studied. The mean age was  $48 \pm 13$  years, 85.0% were woman. Regarding physical and mental health, 49.4% felt that their rheumatologic condition got worse, 75.5% took medications as prescribed, 72.0% had sadness, 63.0% had anxiety, and 18.6% requested urgent psychiatric evaluation. Concerning access to healthcare services, 86.1% had access to pharmacy services, 61.8% to their primary care physicians and 68.0% to their rheumatologists. When adjusted for sex, patients  $\geq 50$  years were more likely to report worsening of their general health (OR 1.90, 95% CI 1.15-3.22) and more sadness (OR 1.84, 95% CI 1.03-3.27) after Hurricane Maria. Multivariate analysis adjusted for age and sex, showed that patients with fibromyalgia experienced worsening of their condition (OR 3.63, 95% CI 1.81-7.24), and had more sadness (OR 4.08, 95% CI 1.53-10.89) and anxiety (OR 7.23, 95% CI 2.73-19.16). Conclusions: Patients with rheumatic diseases suffered a negative impact on their physical and mental health after Hurricane Maria. Although, the majority of patients had access to healthcare services, patients  $\geq 50$  years and those with fibromyalgia syndrome had worsening of their health. Acknowledgments: Supported by the National Institute of Health and Health Disparities grant number U54MD007587.

1588

### Caffeine Consumption during Pregnancy and Sleep Duration Changes in Puerto Rican Women from the Northern Karst Region

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Background: Studies have shown that high caffeine consumption shortens sleep duration in pregnant women. Shorter sleep duration has been associated with higher risk of diabetes incidence. Exact caffeine consumption measurement causing this outcome has not reached a consensus on a global scale. We aimed to investigate if moderate to high consumption of caffeine ( $\geq 250$ mg) affects sleep duration, using data from the Puerto Rico Testsite for Exploring Contamination Threats (PROTECT) cohort. Methods: Study included 978 pregnant women aged 18 to 40 years that resided in the northern karst region of Puerto Rico. Inclusion criterion included: absence of diseases associated with sleep pattern changes, before and during the pregnancy; and no controlled substances consumption. Caffeine consumption and sleep duration frequencies were determined from a questionnaire given during participants' second trimesters. Caffeine intake was estimated from a conversion cited in various references: 107 mg caffeine per coffee cup, 28 mg per teacup, and 37.85 mg per carbonated drink. Caffeine levels and sleep duration change were dichotomized as: low and moderate to high consumption; yes and no, respectively. Preliminary statistical analyses were performed to assess the relationship among the variables. Results: Our cohort: was predominantly between 23 and 27 years old (31%), married (59%), Hispanic-Puerto Rican (98%); received a post-secondary education (69%), and living on less than \$20,000 annual income (42.8%). More than half of those with moderate to high consumption (57%) had a drastic change in their sleep patterns. Moderate to high caffeine consumption was significantly associated with sleep duration change ( $p < 0.05$ ), when compared with low consumption of caffeine. Conclusion: Professionals should advise pregnant women to consume caffeine in low volumes for lower risks in sleep duration change. Acknowledgements: This research was supported by Award Numbers P42ES01719 and U54 MD007600 from the National Institute on Minority Health and Health Disparities.

1589

### Effects of Losartan on Metabolic Parameters and Mitochondrial Function in Peripheral Leukocytes from Prediabetic Rhesus Monkeys (*Macaca mulatta*)

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**Background & Objectives:** Prediabetes, a condition with glycemic parameters above normal levels but below the diabetes threshold, is a risk factor for the development of type 2 diabetes (T2D). Angiotensin II (Ang II) can induce insulin resistance (IR) and T2D by increasing mitochondrial dysfunction and altering insulin sensitivity, suggesting that the renin-angiotensin system (RAS) may play a role in the onset of prediabetes. Whether inhibition of RAS with losartan, an Ang II type 1 (AT1) receptor blocker, prevents mitochondrial dysfunction in prediabetic rhesus monkeys has not been explored. We hypothesize that losartan will improve metabolic health and mitochondrial function in peripheral blood mononuclear cells (PBMCs) of prediabetic monkeys. Our objective is to characterize a cohort of prediabetic rhesus monkeys to study the effects of losartan on metabolic parameters associated with prediabetes and mitochondrial function. **Methods:** We identified male prediabetic middle-age monkeys (8-19 years of age) by measuring plasma levels of FG and insulin. Prediabetic and middle-age healthy monkeys were treated with losartan (30mg/day) and the plasma levels of FG and insulin were measured at 0 (baseline), 3, 6, and 12 months using standard protocols. To assess mitochondrial function we measured the oxygen consumption rate (OCR) of PBMCs from healthy and prediabetic monkeys using Seahorse XF24 analyzer. **Results:** Prediabetic monkeys showed a significantly higher FG and compensatory hyperinsulinemia when compared to healthy monkeys. Losartan treatment significantly decreased insulin levels in prediabetic rhesus and glucose levels in healthy monkeys after 12 months of treatment. In addition, the oxygen consumption reserve capacity significantly increased in PBMCs (but not the basal or maximal respiration) from prediabetic monkeys when compared to healthy monkeys. **Conclusions:** These findings suggest that losartan improves both pathological and normal metabolic states. Additionally, prediabetes appears to affect mitochondrial function. **Acknowledgements:** Supported by grants P40RR003640, R25-GM061838, U54-MD007600.

1593

### Profile and Clinical course of Abnormal Uterine Bleeding in Hispanic Adolescents Admitted to a Community Hospital

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**Background:** Abnormal Uterine Bleeding (AUB) is described as episodes of heavy bleeding that are of sufficient quantity to require immediate intervention to prevent further blood loss. AUB is common in adolescents and can be present by a series of causes such as hormonal disturbances, infections, hematologic disturbances, neoplasm, urologic sources, inflammation, and trauma. This study was designed to investigate the prevalence and profile of patients with AUB admitted to a community hospital. **Methods:** This retrospective observational study evaluated all patients admitted due to AUB from 10-21 years old to a community hospital in San Juan, Puerto Rico, from June 2015 to June 2018. Demographics, medical history, laboratory, and clinical data was collected from medical record. Data was expressed as medians  $\pm$  SD and percentages as appropriate. **Results:** A total of 29 patients with AUB met the inclusion criteria, a 11.1% of them required an admission to Pediatric Intensive Care Unit due to anemia or hypovolemic shock. 55% of patients were admitted as Anemia. 7% of patients have Leukemia and a genetic disorder. 14% of patients was admitted due to influenza and respiratory diseases. 66% of patients had menstrual cycle irregularity due to abdominal pain and 14% had obesity. 24% of patients were treated with transfusions of packed red blood cells. The highest number of admissions occurred from January 2017 through September 2017. **Conclusions:** Hormonal management is considered the first line of medical

therapy for patients with AUB without suspected bleeding disorders. Treatment options include conjugated estrogens, oral progestins, iron products to elevated iron levels of hemoglobin, and combined oral contraceptive. We found that bleeding stopped in 75% of women who took combined oral contraceptive and 86% of women who took conjugated estrogens. For all patients, the contraindications to these therapies need to be considered before administration.

1595

### Outdoor aeroallergens as risk factors for triggering children's asthma in a low income community in Puerto Rico

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Background and objective: Puerto Rico has the highest lifetime prevalence of asthma in all US and territories. Asthma disproportionately affects Puerto Rican children, especially those living in poverty. The island as well has significant seasonal peaks of outdoor aeroallergens like spores and pollen, established asthma triggers. This study aimed to evaluate the association between levels of outdoor aeroallergens and indicators of asthma severity in a low-income community in Puerto Rico. Methods: A pilot study was conducted with a convenience sample of 33 children ages 5 to 18, living in Loiza, PR. Participants were classified into asthmatics and non-asthmatic, based on clinical assessment, and pulmonary functional test. Health indicators were collected initially and daily during a high spore season (8-weeks: Oct–Dec). Indicators included frequency of respiratory symptoms, medication use, and healthcare utilization. Simultaneously, potential environmental exposures (indoor and outdoor) were measured. Preliminary descriptive analysis is presented. Results: Most participants were males (55%) with median age of 9 years (range: 6 to 12 years). Based on medical history 17 children were asthmatic and 16 were non-asthmatic. However, after clinical evaluations 9 (56%) non-asthmatics were reclassified, for a total of 25 asthmatics and 8 non-asthmatics. Most cases had “mild persistent” (44%) or “moderate persistent” (32%) asthma. Parents of asthmatic children reported respiratory symptoms triggered by indoor (50.0%) and outdoor (73.9%) allergens. Asthma-related events in the previous month included school absence (75.6%), ER visits (29.4%), and use of rescue medication (35.3%). During the follow-up period asthmatics reported more visits to the ER (16%) than non-asthmatics (0%). Conclusions: The high level of exposure to environmental triggers, and unexpected amount of undiagnosed asthma highlights the need to further study the role of potential triggers in underserved populations. Acknowledgements: Supported by grants 5S21MD000242, 5S21MD000138, (EHSRC) and 2U54MD007587 (PRCTRC) of the NCMHH, National Institutes of Health. IRB approval number: A3490416

1599

### Maintaining Neuronal Function: The Role of the Transcription Factor Gooseberry in Synaptic Growth, Plasticity and Stability

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During nervous system development, transcription factors promote neuron differentiation, migration and connectivity. Once fully developed, neurons need to function throughout their lifetime while responding to changes in activity. We hypothesize that transcription factors play an important role in mature neurons. We focus on Gooseberry (Gsb), transcription factor homologous to pax3/7, which controls neuroblasts development during embryogenesis. It was previously shown that Gsb is present in mature motoneurons (MNs) and regulates the maintenance of homeostatic compensation at the neuromuscular junction (NMJ). We investigate the role of Gsb in growing and fully developed MNs. To understand Gsb's function, we manipulated its expression at various stages of MNs development and asked

whether the growth, plasticity and stability of the NMJ were affected. We altered Gsb expression at early (embryonic), late (larval stage 2), 24 or 2 hours before dissection (larval stage 3). A decrease in Gsb expression promotes synaptic growth early, late and 24 hours before dissection. While, an increase in Gsb represses synaptic growth at all stages, even 2 hours before dissection. This data suggest that Gsb is not just an early developmental regulator, but it also regulates synaptic growth at distinct stages of MNs development. We also studied how Gsb expression affect activity-dependent synaptic plasticity at the NMJ by quantifying the appearance of de novo synaptic structures after repeated stimulation. We found that early or late Gsb overexpression reduces synaptic plasticity, while a decrease promotes it. To study the role of Gsb in synaptic stability, we quantified the synaptic retractions frequency. We found that a decrease in Gsb promotes an increase in synaptic retraction at the NMJ. These results suggest that Gsb maintains synaptic integrity at early and late stages of MNs development. In conclusion, we found that Gsb regulates synaptic growth, stability and plasticity at the growing and mature NMJ. Funding: NIH-NIGMS 2P20GM103642 (COBRE), 2R25GM061838-18 (RISE) and 5R25GM061151-17 (RISE).

1602

### **Atrial Septal Defect with right ventricle external compression due to right anterior diaphragmatic hernia mimics a congenital cyanotic cardiac disease**

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Diaphragmatic hernias without previous trauma are a rare occurrence, the most common type occurring in the posterolateral portion of the diaphragm. The subject of this case suffered from an atrial septal defect (ASD) and a right diaphragmatic hernia, which is considered even more uncommon due to the extra support provided by the liver. ASDs usually present as a non-cyanotic lesion, but the right sided hernia causes the liver to protrude, compressing the right ventricle resulting in a bilateral shunt. This is a case of a 1 day old cyanotic hispanic neonate admitted to NICU on her second day of birth. The patient presented with respiratory distress, decreased peripheral circulation, suspected pneumonia, and polydactyly. Due to prior perinatal findings suggestive of a ventricular septal defect (VSD) and large foramen ovale the patient was referred to a pediatric cardiologist. Multiple echocardiograms suggested mild tricuspid and aortic regurgitation, mild to moderately large left ventricle, and marked diastolic turbulence at the mid atrial septum suggestive of a secundum ASD v/s stretching patent foramen ovale (PFO). Chest x-ray revealed an elevation of the right hemidiaphragm. To rule out a tracheoesophageal fistula, due to cyanotic episodes during feeding, a barium swallow was performed revealing no hiatal hernia and presence of gastroesophageal reflux. Patient was transferred with a high flow nasal cannula for an interventional cardiology evaluation and a sonographic liver duplex. Initial findings suggested a diaphragmatic eventration, but was later confirmed to be a right diaphragmatic hernia. After stabilization, patient was scheduled for surgical repair of the hernia. This case highlights the possibility of an ASD becoming a cyanotic lesion, due to external constriction of the enlarged liver over the right ventricle, rendering it unable to handle right atrial flow. This results in the uncommon occurrence of a bidirectional shunt, causing a cyanotic event.

1604

### **Rare Case Of Pulmonary Alveolar Proteinosis In Pediatric Patient**

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Purpose: Pulmonary Alveolar Proteinosis is an uncommon disorder in children. Peak incidence in patients is in their third and fourth decade. Is a form of diffuse lung disease, characterized by deposition of lipoprotein material in the alveoli due to altered surfactant production and/or its removal. Initial symptoms are nonspecific, therefore there is significant delay in the diagnosis. Symptoms progress to an insidious course of difficulty breathing to severe respiratory

failure. Age presentation is an important factor, guiding clinical interventions and course. Will discuss a rare case of an 11-year-old old male with sudden onset of respiratory failure finally diagnosed with pulmonary alveolar proteinosis. Case Description: Case of an 11-year-old male with no significant past medical history; presenting to our ED with dyspnea and hypoxemia of sudden onset. Family history were unremarkable for heritable or autoimmune conditions and no risk factors or exposures were identified for an infectious etiology. A physical exam disclosed an anxious child with difficulty breathing, tachypnea, tachycardia, and hypoxemia (80-85%) that improved with BiPAP. Auscultation of lung fields was positive for coarse crackles and diffuse wheezing. Initial chest X-ray demonstrated diffuse patchy opacities bilaterally. Chest CT-Scan evidenced extensive ground-glass opacities throughout the lung parenchyma, interlobular septal thickening and associated lung consolidations. Laboratories to evaluate for possible infectious etiologies were negative. A BAL and a wedge lung biopsy resulted in the identification of prominent alveolar filling with positive PAS granular material, as well as negative special stains for fungi and acid-fast microorganisms; confirming the diagnosis of Alveolar Proteinosis. Patient underwent initial Whole Lung Lavage with evidenced amelioration of opacities in pre vs. post chest x-rays images and symptoms improvement. Conclusion: To date Pulmonary Alveolar Proteinosis continues to be a rare diagnosis in pediatric population. Missed or delayed diagnosis can be detrimental in a patient's clinical outcome.

1608

### **Interrogating the projections of rostral prelimbic cortex that drive active avoidance.**

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Background & objectives: Individuals who suffer from post-traumatic stress disorder (PTSD) exhibit persistent avoidance trauma. Although avoidance can be useful for adaptively responding to a threat, excessive avoidance can be detrimental. Methods: To understand the neural circuits of avoidance, we developed a rodent model of active avoidance. In it, rats learn to avoid a tone-signaled shock by stepping onto a platform. Previous studies showed that activity in rostral prelimbic cortex (rPL), basolateral amygdala (BLA), and ventral striatum (VS) is necessary for avoidance. Another study that looked at firing patterns in PL reported inhibitory tone responses in rPL correlated with avoidability and excitatory responses correlated during platform entry. Using optogenetics, we manipulated rPL targets to BLA and VS as well as BLA targets to VS to determine their function in platform avoidance. Results: Photo-excitation of rPL-VS projections delayed avoidance (ChR2: 26% time on platform (n=7), eYFP-control: 87% (n=9), p<0.0001), whereas photo-excitation of rPL-BLA projections accelerated avoidance (ChR2: 2.7s to avoid (n=9), eYFP-control: 7.3s to avoid, p<0.01). Given previous studies showing BLA inputs to VS are necessary for shuttle avoidance, we found that photo-silencing BLA-VS projections also impaired platform avoidance (Arch: 35% time on platform (n=8), eYFP-control 75% (n=12), p<0.05). Conclusions: These findings suggest that different targets of rPL have opposing effects on active avoidance and are consistent with recent cFos findings that avoidance retrieval activates PL-BLA but not PL-VS projections. Moreover, coordination of rPL and BLA inputs to VS might be responsible for optimal expression of avoidance. Future studies will determine whether photo-silencing rPL-BLA or rPL-VS projections impair or promote platform-mediated avoidance, respectively. Together, these findings suggest that distinct rPL projections exert bidirectional control over avoidance behavior. Acknowledgements: This work was supported by NIH grants R37-MH058883 and P50-MH086400 to GJQ; F32-MH105185 to MMD; 5R25-GM097635 to JIG; 5R25-GM061151 to FDG and JMS.

1609

### A Secondary Data Analysis of the Quality of a Unique Diet Quality Index Score for infants in Puerto Rico and Hawaii

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**Background & Objectives:** The current DRI (Dietary Reference Intakes) are suitable for ages over 2 years. There is a gap in the nutritional assessment process of younger infants to achieve healthy growth. The objectives of this analysis are 1) to assess the utility of a unique infant Diet Quality Index Score (DQIS) in predicting excessive weight gain within a 4-month period among infants in Puerto Rico and Hawaii. **Methods:** A secondary data analysis was conducted for infants 0-2 months at visit 1 and 4-6 months at visit 2 in Puerto Rico and Hawaii. The DQIS (ranges 0-55) was categorized into 4 groups. Excessive weight gain was defined using BMI age adjusted z-score at  $\geq 90$ th percentile. Logistic regression models were fit separately to examine the associations between weight status at visit 2 and the categorized DQIS, maternal age and education level. **Results:** Logistic regression models revealed that the DQIS at visit 1 is not a predictive measure for excessive weight at visit 2, but the DQIS at visit 2 showed significant association with the BMI z-score at visit 2; those with a “good” diet were more likely to have excessive weight gain compared to those with an “excellent” diet (Odds Ratio 2.59; 95% Confidence Interval: 1.16, 5.79). **Conclusions:** Our results show a strong correlation between this unique infant DQIS and excessive weight gain when infants are 4-6 months, but no utility at 0 to 2 months for the prediction of excessive weight gain at 4 to 6 months. Further studies are needed to reassess and verify so that this DQIS can become available in clinics to help accurately assess infants’ eating patterns. **Acknowledgements:** This research is supported University of Hawaii at Manoa Undergraduate Research Opportunity scholarship, partially supported by the National Institutes of Health (NIH) under grants U54MD007584, U54MD007601 and U54MD008149. Approved by IRB Protocol Number: A4540315

1610

### Knowledge and Levels of Anxiety in Performing a Lumbar Puncture by Pediatric Residents Before and After a Simulated Workshop

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**Background & Objectives:** Pediatric residents must become proficient with performing a Lumbar Puncture (LP) during training. Knowledge and anxiety can influence the ability of performance. A simulated infant LP allows assessment of procedural performance. The State-Trait Anxiety Inventory (STAI) can be used to measure the state of anxiety. We hypothesized that after performing a simulated LP workshop the knowledge of the resident should increase, and the levels of anxiety should decrease. The study aims to describe the knowledge and level of anxiety Pediatric residents’ experiment when performing a LP and the effect that a simulated workshop may have over these variables. **Methods:** Descriptive, monocentric, cross-sectional study. The sample consisted of 25 pediatric residents at San Juan City Hospital Program including all levels of training. Study consisted in 3 parts: I: Questionnaire pre-workshop that includes: level of training, Prior LP experience, procedure Knowledge and STAI questionnaire. STAI Question to be considered by resident: “How do you feel when performing a LP”. II: Theory and workshop in LP procedure. III: Post-workshop questionnaire includes procedure knowledge and STAI questionnaire. **Results:** Most of the residents 18/25 (72%) had perform less than 5 infant LP. A pre-workshop procedure knowledge test was given, with 0 as lowest score and 10 as highest score, with a mean score of  $6.32 \pm 1.75$  while after the procedure workshop the knowledge mean score was  $9.56 \pm 0.65$ , ( $p < 0.001$ ). Anxiety level when performing a LP was assessed with STAI questionnaire. Prior to workshop the mean score was  $44.6 \pm 11.4$  and post workshop the anxiety mean score decreased to  $34.36 \pm 9.39$ , ( $p < 0.001$ ). **Conclusions:** Our results suggest that, in this sample of pediatric residents, a LP simulated workshop helps increase the residents’ knowledge and decrease the level of anxiety associated with the procedure.

1611

**“Aula-Calle”: experiencia transdisciplinaria para la formación universitaria solidaria en valores y prácticas de justicia social y equidad en salud**

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Uno de los mayores desafíos de la salud pública es la desigualdad social. Los profesionales de salud pueden contribuir si tienen una formación reflexiva, afectiva, práctica y transformadora sobre las desigualdades sociales. Sin embargo, la educación de nuestros profesionales prioriza los enfoques biomédicos, técnicos y fragmentados. Necesitamos generar propuestas curriculares que brinden oportunidades de aprendizaje donde los estudiantes se descubran como co-protagonistas de la justicia social. Objetivos: Comprender el significado de las experiencias de universitarios voluntarios que acuden a las calles a ofrecer servicios a personas sin hogar en Puerto Rico. En particular: los valores y prácticas relacionados con la equidad en salud y la justicia social; los aprendizajes transdisciplinarios vinculados a la justicia social y la equidad en salud que emergen de la interacción callejera; lineamientos teórico-prácticos para sistematizar un currículo transdisciplinario para la justicia social y equidad en salud. Esta Investigación Acción Participativa Crítica utilizó el método de triangulación para organizar las fuentes de información: observaciones participativas en actividades de servicios, reflexiones grabadas en audio y análisis de documentos oficiales del grupo. Seis categorías y 16 sub-categorías de análisis generaron siete resultados, entre ellos: los encuentros callejeros sostenidos brindan experiencias sensoriales dramáticas (escuchar, ver, oler, tocar) que ayudan a comprender las raíces de las desigualdades y las formas de combatirlas; la calle como escenario de desigualdad se rescata como espacio para una solidaridad amorosa, reinventada y disidente enmarcada en la esperanza de la justicia, la paz y la igualdad; la calle es rescatada como el aula para hacer posible sueños de justicia social que los universitarios no encuentran en la academia; no se requiere permiso para ejercer la justicia y la democracia. El estudio permitió proponer cinco lineamientos teórico-prácticos para crear un currículo disidente para la justicia social aplicable a diversos programas académicos y no académicos. Aprobado por IRB-CIPSHI #1415-281

1625

**Decreasing Rates of Peritonitis Among Children undergoing Peritoneal Dialysis in Puerto Rico**

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Background: Peritonitis is a life-threatening complication in patients undergoing peritoneal dialysis (PD). Expected National pediatric peritonitis rate is 0.5 episodes/year. Studies evaluating peritonitis rates disparities among different racial groups are scarce. Objective: Compare peritonitis rate among Hispanic children with end stage renal disease (ESRD) in Puerto Rico (PR) from 2006-2016 and 2017-2018 after implementation of new catheter care protocol in 2016. Methods: Retrospective chart review of patients undergoing PD in PR from 2006-2018. Patients with incomplete data were excluded. Peritonitis defined as peritoneal WBC >100cells/mm<sup>3</sup> and polymorphonuclear cells >50% and peritoneal fluid culture. Demographic (age, sex), clinical and outcome (peritonitis rate, change of modality and death) variables recorded. High peritonitis rate defined as > 0.5 episodes/yr. Associations were assessed using Fisher exact test. Results: 53 patients underwent PD, 32 were included. Age at initiation 9yrs (6 days-20yrs), 50% males. Time on dialysis 865 patient-months. 57 peritonitis episodes documented, for a peritonitis rate of 0.82 episodes/year in first cohort and 0.34 episodes/year for recent cohort. Most common organism was S.aureus, 56% had culture-negative. Younger age at insertion was significantly associated to modality change (p0.047 and 0.044). Two patients died not associated with peritonitis. Conclusions: Peritonitis rates were

higher than national rates in the earlier cohort (0.82 episodes/yr vs. 0.32 episodes/yr). Younger age was associated to higher modality changes. Younger children in dialysis have higher risks of morbidity. Decreasing infection rate may be associated with implementation of catheter care protocol, shorter dialysis vintage and restarting of local transplant program. Close monitoring of infection rates and trends result in better outcomes for patients on dialysis. Approved by IRB b0420414

1627

### A Single-Center Clinical Presentation and Surgical Outcomes of Primary Hyperparathyroidism

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**Background:** This study is aimed to review the general clinical presentation of hyperparathyroidism that led to surgical intervention and whether parathyroidectomy had positive outcomes. There is little information on the demographics of hyperparathyroidism cases in Puerto Rico, making this study relevant to identifying a pattern of diagnosis and appropriate treatment. **Methods:** Retrospective study of a prospective database from the University of Puerto Rico School of Medicine Endocrine Surgery Clinics from 2011 to 2018. Included all patients from all ages with primary hyperparathyroidism who underwent surgical management. Analyzed comorbidities, pre-operative laboratories, radiologic studies, bone densitometry, indications for surgery, pathology reports and postoperative complications. **Results:** Study population consisted of 176 patients who met inclusion criteria. The sample was composed of mostly female patients 81.25% (143/176) with an average age of 59.59. Comorbidities included hypertension 58.52% (103/176), hypothyroidism 24% (43/176), DM type II 21% (38/176), hypercalcemia 64.77% (114/176), nephrolithiasis 30% (53/176) and osteoporosis 31% (55/176). Most common final pathology was parathyroid adenoma 90% (119/133). Sestamibi scans and ultrasounds correlate with a 87.5% (112/128) and 83% (69/83) respectively with final pathology. Post-op complications occurred in 13% (23/176) of cases: hoarseness 0.06% (11/176), hypocalcemia 0.045% (8/176) and one case of dyspnea, CHF and MI respectively. Reoperation was indicated in 0.08% (14/176) of cases. **Conclusion:** Most cases of isolated hypercalcemia found in patients, especially females, should be screened for high PTH. In the cases of high PTH, primary hyperparathyroidism due to adenoma is the most likely cause and parathyroidectomy is an adequate and safe treatment with low risk and low reoperation rate. Scans and ultrasounds used prior to surgery are helpful identification of the location. Results not different from studies performed at other institutions. **Acknowledgments:** University of Puerto Rico School of Medicine, Department of Surgery

1634

### The Development of Instructional Materials and Workshops by Peers to Improve Satisfaction Among Residents During the NICU Rotation

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**Background & Objectives:** The Neonatal Intensive Care Unit is a very dynamic and fast-paced environment. The high census and very stressful situations, may limit the opportunities for in-person orientation to the tasks and skills residents must master during the rotation. This may influence their satisfaction with their rotation and the mastering of skills. The aim is to increase by 10% the resident's satisfaction during the NICU rotation by June 2019 and improve the perception of faculty about the resident's performance after the implementation of the workshops and materials. **Methods:** Quality Improvement methodology of PDSA (Plan, Do, Study and Act) cycle was used. Pediatric residents completed surveys about satisfaction and a needs assessment to develop introductory workshops. Satisfaction will be evaluated every three months to compare results after interventions. **Results:** Only 6% were satisfied prior workshops. Around 71% did not feel prepared on the first day, but 93% think it would be helpful a peer-to-peer workshop. Only 23% of neonatologists

and fellows felt residents are somewhat prepared on their first day. After the first 3 months, 100% were satisfied with their rotation and 100% consider the workshop was very helpful, but interestingly they still feel unprepared on their first day. Conclusion: We believe that offering preparatory material by peers will facilitate the learning process and interest in the rotation in a more confident way. If we improve the satisfaction of the residents, they will feel more engaged and empowered, resulting in better performance and skills during their rotation and their career. This should in turn help improve faculty perceptions of resident preparedness and execution in the NICU. Approved by IRB. Acknowledgement: Special thanks to the pediatric chief residents and program director for their support.

1638

### **Aspergillus species Masquerading as MRSA Endocarditis**

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Introduction: Blood cultures are essential in the management of Infective Endocarditis (IE) as they can provide the causal pathogen, as well as its susceptibilities. However, they are not always reliable which complicates the diagnosis and further delays effective treatment. Case Presentation: A 44 year-old male inmate with medical history of nasopharyngeal squamous cell carcinoma, hepatitis C, and IVDA presented to the emergency department with fever, chills, general malaise, and weight loss since 2 weeks prior to evaluation. Vital signs were notable for fever, tachycardia, and hypotension. Physical exam noted a cachectic, diaphoretic man without cardiac murmurs. Laboratories showed leukocytosis, thrombocytopenia, and elevated inflammatory markers. Blood cultures showed growth of methicillin resistant *Staphylococcus Aureus* (MRSA). Chest CT revealed multiple scattered cavitory pulmonary lesions suggestive of septic emboli. Transthoracic Echocardiogram showed a 2.5 x1.0 cm echodensity on his anterior tricuspid leaflet concerning for infective endocarditis. Despite optimal culture-directed antibiotic therapy, fever and MRSA bacteremia persisted. Given embolic complications and non-resolving bacteremia, the patient underwent tricuspid mosaic porcine valve replacement. Patient remained with febrile episodes for which IV antibiotic coverage was broadened. Pathology of cardiac valve revealed *Aspergillus* species growth. Patient received Liposomal Amphotericin B, which was changed to Voriconazole, with successful resolution of symptoms and definite clinical improvement. Discussion: Fungal endocarditis (FE), which comprises 1-10% of all cases, remains one of the rarest and most difficult forms of IE to diagnose (1). Late identification of causal pathogens for initiation of efficient treatment contributes to high mortality rates. Diagnosis is a challenge due to its similarities to bacterial endocarditis and less than 5% sensitivity of blood cultures. Treatment approach comprises a combination of parenteral antifungal agents and valvular surgery (2). This case illustrates the importance of having a high clinical suspicion for the diagnosis of FE to swiftly identify surgical candidates and initiate appropriate treatment, potentially reducing mortality from FE.

1639

### **Incidental Thyroid Carcinoma in Benign Thyroid Disease: Single-Center Analysis**

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Background and objectives: In the United States, frequency of incidental thyroid carcinoma (ITC) has been reported to range from 5% to 16.7% in surgically treated benign thyroid diseases. In India, frequency has been reported as high as 35%. Data regarding frequency of ITC within the Puerto Rican population has not been reported previously. This study aims to describe the occurrence of ITC in operatively treated benign thyroid disease at our institution which serves this population. Methods: We conducted a retrospective analysis of all patients who underwent thyroidectomy at a single academic institution between 2013 and 2018. Of these, 254 patients met inclusion criteria of preoperative diagnosis of

non-toxic MNG (nMNG), or non-toxic nodule (nNod) whose fine needle aspiration (FNA) report showed a Bethesda System diagnostic category  $\leq 2$ . Of these, 33.07% (84/254) patients had a nMNG and 66.93% (170/254) had a nNod. None of the patients presented with past medical history of thyroid carcinoma, FNA Bethesda Category  $\geq 3$ , history of neck radiation, thyroiditis, or toxic thyroid nodules. Results: Overall, 18.89% (48/254) ITCs were observed. Among nMNG patients and nNod patients, ITC was found in 21.43% (18/84) and 17.65% (30/170), respectively. Papillary Thyroid Carcinoma (PTC) was observed in 75% (36/48) patients, making it the most frequently observed malignancy, followed by Follicular Thyroid Carcinoma (FTC) in 20.83% (10/48), and Marginal Zone Lymphoma of Thyroid Gland (MALT) in 4.17% (2/48). Conclusions: Overall incidence in surgically treated benign thyroid disease was 18.82% with a rate of 21.17% and 17.44% among nMNG and nNod patients, respectively. PTC was the significantly more frequently observed pathology within the studied population which agrees with current reports in the literature. The Puerto Rican population has a higher incidence of ITC compared to the US. This discrepancy merits further evaluation.

1644

**Magnetic Resonance Imaging (MRI) without sedation in infants and children:  
Age appropriate techniques for research purposes**

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**Background & Objectives:** Brain imaging has become an important tool for exploring the neurobiological underpinnings of many psychological disorders. Sedation practices are commonly used in clinical settings as the standard to successfully obtain brain images from infants and small children. In research settings, it is difficult to justify the use of sedatives to study normal population samples. However, a number of techniques have been used with infants and small children without the use of sedatives. We describe our methodology and results using a combination of various techniques that avoid sedation. **Methods:** Infants (2 weeks – 4 months) and children (6 – 10 years) underwent an MRI scan as part of a larger research study. Infants were prepared using various techniques including feed and sleep monitoring, swaddling, hearing protection placement, and a vacuum-bag immobilizer. Children received a mock MRI experience including familiarization with magnet sounds. **Results:** A total of 25 infants with a median age of 10 weeks (minimum: 2 weeks, maximum: 16 weeks) underwent an MRI scan using our combination of non-sedative techniques. 96% (24/25) of our T1 weighted images, 84% (21/25) T2 weighted images, 80% (20/25) resting MRI images, and 68% (17/25) diffusion tensor images (DTI) were found to be usable for research purposes. A total of 30 children with a median age of 8 years were also scanned during this time. Out of these, 93% (28/30) T1 weighted images, 87% (26/30) resting MRI images, and 76% (23/30) diffusion tensor images (DTI) were found to be usable for research purposes. **Conclusion:** Using a combination of various methods, we were able to successfully scan the majority of our participants without the need for sedation. We support the standardization and use of this approach in imaging research with infants and children. **Acknowledgements:** This research was supported by NIH Grant 1 UG3 OD0223328.

1645

**Potassium Voltage-Gated Channel Mutation, A Rare Cause Of Intractable Neonatal  
Seizures Reported In Puerto Rico: A Case Report**

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**Introduction:** Mutations in potassium voltage-gated channel subfamily Q member 2 (KCNQ2) have been associated to benign familial neonatal seizures. A pathologic variant of this mutation has been recently associated with infantile epileptic encephalopathy, intractable seizures and consequently poor neurological outcome. **Case description:** Case of a term

patient born to non-consanguineous parents without complications. Patient developed seizures at first day of life that required multiple antiepileptic medications without improvement. Multiple interventions were attempted including, ketogenic diet, steroids and vitamin supplementations after therapy failure. Neuroimaging initially yielded normal results, followed by progressive severe volume loss of white matter distribution and restricted diffusion of basal ganglia, internal capsules, hypothalamus and brainstem reported suggesting ongoing neurologic damage. Electroencephalogram reported severe encephalopathy. Exhaustive metabolic work up was only relevant for carnitine deficiency. Due to ongoing seizures and multiple therapies failure, epilepsy panel was requested and revealed a pathogenic variant of KCNQ2. Conclusion: Mutations related to KCNQ2 has been associated with benign familial neonatal seizures, which have spontaneous regression and no long term developmental complications. Recently, some reports have suggested a pathologic spectrum associated to this mutation. In this case the patient had severe developmental delay, intractable seizures and progressive neurodegenerative disease associated to poor prognosis. To our knowledge this is the first case reported in Puerto Rico of this variant. In a newborn with seizures, it becomes important to screen for genetic conditions as a differential diagnosis, as it may be associated to poor clinical outcome. Acknowledgment: No finding or conflict of interest to disclose.

1648

**Assessment of *Aedes aegypti* collected using the Biogents Sentinel-2 (BGS-2) and Centers for Disease Control and Prevention Miniature UV Light (CDC-UV) traps**

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**Background & Objectives:** The adaptations of *Aedes aegypti* and the interactions with humans have resulted in important implications for the public health in Puerto Rico. According to the Department of Health and the Centers for Disease Control and Prevention (CDC), in recent years the Island faced Dengue, Chikungunya and Zika epidemics. Despite the economic burden that these epidemics represent to the public health system, the control organizations still lack the critical infrastructure for vector control. The aims of the proposed study are to (1) perform a field evaluation of the effectiveness of the Biogents Sentinel-2 (BGS-2) and Centers for Disease Control and Prevention Miniature UV Light (CDC-UV) traps for capturing *Ae. aegypti*, and (2) perform a genetic variability study in *Ae. aegypti* for three representative Holdridge life zones (HLZ) of the Island. **Methods:** Representative cities were selected across the Island: San Juan, Carolina, and Toa Alta as the sub-tropical moist forest, Río Grande as the sub-tropical wet forest, and Ponce as the sub-tropical dry forest. Mosquitoes were collected in peri-domestic areas inside and outside houses using the 2x2 Latin square experimental design to reduce any position-specific effect. **Results:** Preliminary results showed that 245 mosquitoes were collected using the BGS-2 traps, while 156 mosquitoes were collected with the CDC traps. In the sub-tropical wet forest and the sub-tropical moist forest, 337 and 64 mosquitoes were collected, respectively. Among the mosquitoes collected were *Aedes* spp., *Culex* spp. and *Anopheles* spp. **Conclusion:** The BGS-2 trap seems to be a better tool for monitoring *Ae. aegypti* mosquito's population. Additional experiments are underway to assess the genetic variability of *Ae. aegypti* by means of analyses of SNPs in nine different genes. **Acknowledgements:** This study was partially supported by the NIMHHD grant U54MD007600 and partially supported by the Agustín Stahl Grants-in-Aid of Research Program.

1653

**Temperature-dependent changes of rhythmic motor patterns in the spinal locomotor circuit of neonatal mice.**

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Background and objectives: Perception of the environment and other stimuli are facilitated by an array of sensory-receptors. Thermal receptors, such as the transient receptor potential (TRP) receptors, have been implicated in the modulation of locomotion-patterns. Previous studies have focused on the proprioceptive effects as well as analgesic effects of these receptors at both cerebral and spinal levels but with focus on the dorsal (sensory-related) horn. Our study aims to elucidate the molecular mechanisms underlying effects that temperature changes have on locomotor-behavior. Methods: Neonatal mouse spinal-cord preparations were used to evaluate parameters such as amplitude, duration, and cycle period of rhythmic firing produced by motoneurons in response to increases in temperature (20, 23, 26, 29) °C. Results: It was found that the locomotor rhythm was disrupted (or decreased) at high temperatures (29 °C), however, some motor adaptation was observed when applying temperature protocols based on incremental changes of temperature as compared to an abrupt increase to 29 °C from the control temperature (20 °C). Conclusions: Our results suggest that the central-pattern-generator (CPG) network for locomotion of the neonatal mouse is inhibited by the activation of thermal sensory receptors such as TRPs at high temperatures. These changes can be decreased if the neural-network is allowed to accommodate to increasing changes in temperature suggesting an adaptive response mediated by a yet unknown cellular-mechanism. Future experiments include pharmacological approaches to identify specific TRPV receptors involved in this modulatory response to temperature. Acknowledgements: This research was supported by the COBRE Center for Neuroplasticity (NIH NIGMS 1P20GM103642), RCMI program (NIMHD 8G12-MD007600) and RISE Program (R25GM061151-13).

1659

### **Asymptomatic Abdominal Mass in Infant Patient and Their Misleading Differential Diagnosis**

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Purpose: Pediatric abdominal masses are, by their nature, challenging due to the vast existence of differential diagnosis and therapeutic measures. While diagnostic tools and imaging studies can be helpful in narrowing down the differential diagnosis, they can also be misleading. Our emphasis is that the best diagnostic modality is hepatic cell biopsy with histological examination along with a thorough history and physical exam. Case Description: 1-year-old male born term without complications and no systemic illness was in his usual state of health until he presented fever. On physical examination, a palpable abdominal irregular mass was found without associated symptoms of abdominal pain, vomiting, diarrhea, changes in bowel movements, general malaise, weight loss, dyspnea or changes in appetite. No previous hospitalization nor surgeries. Abdominal-pelvic CT showed a large hepatic mass with multiple vascular components and possible arteriovenous-malformation, suggestive of giant hepatic hemangioma versus heman-gioendothelioma. Laboratory workup were fundamentally normal except for findings suggestive of hypothyroidism (TSH:0.847mIU/L, FreeT4: 1.47ng/dL). Imaging and laboratory studies indicated that this mass represented a large complex vascular lesion and thus underwent embolization in order to prevent surgical complications. This lesion was successfully removed by the surgical team with no complications. While the mass had a vascular appearance, the final pathology report did not correlate with imaging, laboratory or even intraoperative findings. The lesion was a Hepatic Cystic Mesenchymal Hamartoma, without any significant vascular component. This is surely an interesting case, in which workup failed in the diagnosis of this rare entity. Conclusion: Our patient had a Hepatic Mesenchymal Hamartoma which is the second most common benign hepatic tumor. They do not have pathognomonic clinical, laboratory or imaging finding. They can also mimic other hepatic masses. Our case exemplifies that Mesenchymal Hamartoma should remain in the differential diagnosis when dealing with hepatic masses.

1664

### Health Related Quality of Life in Pediatric Patients with Sickle Cell Disease

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**Background and Objectives:** Sickle cell disease (SCD), the commonest chronic inherited blood disease, affects approximately 100,000 people in the USA. Incidence is 1 in 545 Afro-Americans and 1 in 1,400 Hispanics. Puerto Rico neonatal screening of 1,157,556 babies (1991-2011), revealed an incidence of 1 in 4,500. SCD patients present acute and chronic complications as infections, severe anemia, vaso-occlusive crisis and multi-organ dysfunction. Serious and potentially life-threatening complications influence their quality of life. Our objective is to determine Health Related Quality of Life (HRQOL) in a sample of SCD patients and their parents; asses which component is affected most and evaluate if there are differences between both perspectives. **Methods:** Sixty-eight subjects (34 parents, 34 patients) participated during 2018-2019. Subject selection was done in a cross sectional, non-randomized, convenience sample. Different SCD (homozygous-SS and the less severe, heterozygous-SC), 5-21 years old were included. Exclusion criteria were perceived active pain or pain crisis, or unwillingness to participate. After informed consent obtained, they were individually administered the age-specific Peds QL<sup>®</sup> Sickle-Cell Module. **Results:** Males (56%) and females (44%) had similar age-group, and disease severity. The SS patients (82%) and SC (18%) had different Hydroxyurea utilization (100%, 17%). Females reported higher scores than males on pain impact on daily activities, pain management and control; worries regarding SCD, and pain-related communication. Females also reported higher scores than their parents (94% mothers). Children from 5-7 and 8-12 age-groups scored much higher than their parents in similar variables. For the rest of the variables, patients and parents had similar scores irrespective of their gender, age-group, genotype, or treatment. **Conclusions:** Of concern is the discrepancy between perceived pain in females and younger age groups when compared with their parents. Are them more sensitive to pain? Do parents underestimate their pain? The potential to develop parental educational interventions is identified.

1670

### Clinical Presentation, Course, And Outcomes Of Abusive Versus Unintentional Head Trauma In Puerto Rican Patients

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**Introduction and Objectives:** Abusive head trauma (AHT) is the most common cause of traumatic death in children ≤ 12 months. Despite long-term consequences, little is known regarding AHT in Puerto Rican children. Studies comparing abusive versus non-intentional head trauma are yet to be conducted in this population. We aim to describe the clinical presentation and course of Puerto Rican AHT patients admitted to its major pediatric intensive care unit (PICU) as compared to accidental head injury from falls. **Methods:** Seven-year retrospective chart review using frequency and proportion statistics to describe demographics, findings, and course in patients 0-3 years-old admitted to PICU with suspected AHT versus accidental head injury from falls. **Results:** After multidisciplinary evaluation, 25% of patients were diagnosed with AHT, mostly males younger than 12 months. Subdural hematomas were most commonly identified, while only 1 AHT patient presented an epidural hematoma. Simple linear fractures and epidural hematomas were mostly identified in accidental head injuries. A higher proportion of AHT patients developed cerebral edema. Nearly all AHT patients required complex medical interventions. 70% of accidental injuries had PICU length-of-stays shorter than 48 hours, while 70% of AHT patients exceeded 48-hours stays. While 0.06% of patients with accidental injuries died, AHT saw 1.2% of patient fatalities. **Conclusions:** Percentages of AHT cases were comparable with the medical literature, as were the clinical findings for both accidental

and abusive injury. AHT patients had longer lengths-of-stay with more complex medical interventions, increasing the socio-economic burden. Detailed documentation of clinical presentation, intervention, course, and outcomes should be emphasized for future research of AHT. Acknowledgments: None. No financial disclosures. Approved by IRB: Protocol 0730217

1671

### **Obstructive Hydrocephalus and Chemical Meningitis Secondary to a Ruptured Spinal Epidermoid Cyst: A Case Report and Review of Literature**

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Purpose: Epidermoid/dermoid tumors of the spinal cord are rare, consisting of approximately 0.5% and 1% of all spinal cord tumors<sup>1</sup>. These tumors are benign; however, they may compress important structures in the spinal cord or spinal nerves and may eventually even rupture, resulting in keratin droplet dissemination in the CSF subarachnoid spaces, ventricles and along central canal of cervical spinal cord causing myelopathy changes. Case description: 53-years-old female with no past medical history whom presented with a two-week history of headaches located in the occipital region with associated neck pain. A brain MRI demonstrated multiple fat droplets scattered throughout the subarachnoid and intraventricular spaces of both supra and infratentorial compartments causing severe edema of the corpus callosum and trapping of the right lateral ventricle. At the time, however, no discrete lesions were identified in the cranial vault. Further imaging revealed a large epidermoid cyst at the level of the conus medullaris with associated compression of all neural structures. Subsequently the patient underwent endoscopic fenestration and ventriculostomy of the right lateral ventricle as well as a posterior lumbar decompression and mass resection. An external ventricular drain was left post-operatively. The intraoperative course was marked by easily distinguished borders between the lesion and the spinal cord. Pathology report was consistent with a keratin material consistent with epidermoid inclusion cyst. Successful recovery with improvement in symptoms was quickly observed. Conclusion: We present this rare entity and describe the diagnostic and surgical techniques utilized. Further discussion, review, management and furthermore is entertained in our discussion. Acknowledgements: Authors deny conflict of interests or funding sources.

1674

### **Association of Diet Quality, Nutrition Knowledge, and Physical Activity with Weight Status among Police Officers in San Juan, Puerto Rico, by Selected Socio-Demographic Characteristics, 2018**

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Background & Objectives: Obesity, a chronic condition in which a person's weight is above the healthy range, is associated with illnesses like cancer, heart conditions, diabetes, Alzheimer's, and cerebrovascular disease. In Puerto Rico, the overweight and obesity prevalence is of 66% in adults. Police Officers are not exempt from overweight and obesity and there is no data about the weight status of law enforcement officers in the country. The objective is to determine the prevalence of overweight and obesity in police officers from the San Juan Metropolitan Area Police Departments and its association with socio-demographic characteristics, nutrition knowledge, physical activity, and diet quality. Methods: The study followed the Social Cognitive Theory framework and an analytical cross-sectional design. A total of 100 police officers aged 21 and over, from four precincts of San Juan, Puerto Rico, completed anthropometric measurements,

a 24-hour food recall and questionnaire. Descriptive and inferential statistics were used to analyze sociodemographic data and the association between weight status and study variables. Results: Approximately 74% of the police officers were obese. The majority (84%) of the participants had a poor diet quality. The number of years working as a police officer was significantly associated to weight status. The percentage of highly active officers was greater in the normal/overweight group (57.7%) compared to the obese group (44.4%). However, 61.5% of the normal/overweight group had adequate nutrition knowledge compared to 70.3% in the obese group. Conclusions: This pilot study serves as the first step for future research that addresses the weight status of police officers in Puerto Rico. The results obtained here give a better understanding of the underlying causes of obesity in police officers in the island.

1681

### **Anogenital Findings Of Child Sexual Abuse In Puerto Rican Children: Revisited**

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**Introduction and Objectives:** High child-abuse victimization rates have been reported in PR compared to the rest of USA. Child sexual abuse (CSA) comprises the third most common form of abuse. Documentation regarding anogenital findings is poor, and health-care professionals must recognize most common findings and their medico-legal implications. A previous small study in Puerto Rican children describes clinical findings of child sexual abuse in this population. We revisit the issue updating the literature for this population. **Methods:** Five-year records review of Puerto Rican children 0-17 years-old evaluated for CSA. Data comprising anogenital findings and demographic factors were collected for descriptive statistics. **Results:** Results show a mean age of 8.2 years, with 41.5% of patients in the 6-12 school-age range. 34.1% reported a friend/known person as the perpetrator, with 45% of complaints regarding genital contact without penetration. The most common findings for genital trauma were residual trauma to external genitalia. 83% of patients denied physical symptoms prior to evaluation, but 40% reported history of emotional symptoms. In approximately 64% of children with emotional symptoms, allegations were confirmed. On physical findings, 83% and 67% of cases had an unremarkable general physical and genital exam, respectively. Interestingly, 14% of cases had positive findings suggesting perianal trauma. **Conclusions:** Higher prevalence of findings suggestive of anogenital trauma in this population is remains apparent. Small sample size is an important factor. Nonetheless, a normal anogenital exam was the most common finding. Emotional symptoms should be closely evaluated when documenting the history of suspected sexual abuse. The child's disclosure remains the most important element of evaluation. **Acknowledgments:** None. No financial disclosures. Approved by IRB: Protocol 0730117

1687

### **Acquiring Clinical Skills with Standardized Patients: Mixed Methods Approach Study**

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UPR standardized patient SP activities begin during freshman year with medical history interviews and vital signs acquiring skills. The aims of this study are re to assess: the perceptions of first-year dental students toward the SP activities and how second-year students feel prepared to engage in a clinical encounter. A validated anonymous questionnaire was administered to evaluate the perception of freshman students before and after completion of SP activities. The questionnaire included a binary (1/0) and ordinal scale (0-5) questions, organized according to attitudes' components (cognitive, affective, behavioral), and general perception. Individual question responses, summary of components, and general perception scores were compared before and after using chi-square (Fisher's) test for categorical variables and Mann-Whitney test for summary component scores. One focus group discussion was conducted with eight sophomore

dental students; questions were constructed according to freshmen identified needs. Thirty-nine (97.5%) students participated, 79.5% were females. After the SP activity, 77% participants reported having an experience collecting medical history (vs. 21% before, Fisher's  $p < 0.0001$ ); significant increase was also observed for the overall cognitive component (Fisher's  $p < 0.001$ ). More students reported understanding the concepts of the medical history interview after the training (Fisher's  $p < 0.001$ ); overall the score for students' general perception about their own knowledge and skills also increased (mean  $\pm$ SD:  $7.74 \pm 1.21$  before vs.  $8.62 \pm 1.27$  after; median: 8 vs. 9; Mann-Whitney  $p < 0.001$ ). There were no statistically significant changes for the individual questions and summary scores for affective and behavioral components. The focus groups' data support the need to: increase the number of experiences, diversify clinical procedures and patients' behaviors as well as to include non-SP. Significant improvements were observed in overall cognitive component and general perception. Focus group reiterates the need to continue and enhance SP encounters.

1692

### Potassium Levels Imbalance After Albuterol Continuous Therapy in a Community Hospital in Puerto Rico

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**Background & Objectives:** Several studies have shown an association between high doses of continuous albuterol therapy and a decrease on potassium (K) levels. Patients' response to medications varies depending on their age and race, among others. This study evaluates the effect of continuous albuterol in K levels in a sample of pediatric patients admitted to a Pediatric Intensive Care Unit (PICU) in a community hospital. **Methods:** In this retrospective study, we evaluated patients from 0-21 years old requiring continuous albuterol therapy at a PICU in a children's hospital in Puerto Rico. Only patients that had a minimum of two K levels measured during PICU stay were included in the study. Patients were categorized as normal, hyperkalemia or hypokalemia. Descriptive data was expressed as medians  $\pm$  SD and percentages, as appropriate. A Chi-Square was used to evaluate potassium imbalance between younger and older than 2 years old. **Results:** A total of 128 patients were evaluated. The median age of patients  $< 2$  years was  $11 \pm 7.1$  months, whereas median of  $> 2$  years old was  $59 \pm 7.1$  months. The most common admission diagnosis were RSV (40%) and Asthma (27%). Most of the patients 2 years old and younger kept normal levels of potassium after albuterol treatment. Of the study sample, only 11% had hypokalemia. Patients older than 2 years old had higher prevalence of hyperkalemia (48%) than younger patients ( $p < 0.0001$ ). **Conclusions:** In contrast to what is reported in the literature, most of the patients kept normal levels of potassium after albuterol treatment. We observed that potassium imbalance was age dependent, where patients older than 2 years old developed hyperkalemia. Further studies are granted to determine if this phenomenon is related to genetics difference in the response to albuterol treatment in Puerto Rican children. **Acknowledgements:** None

1703

### Alta oleada de emigrantes desde Puerto Rico hacia los Estados Unidos en el 2017: sus características sociodemográficas

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**Trasfondo/Objetivos:** Puerto Rico ha experimentado una gran pérdida poblacional en los últimos años. La dinámica demográfica de la Isla ha sido alterada dramáticamente por el descenso de los nacimientos y el aumento de emigrantes. El aumento del número de emigrantes trastoca tanto la sociedad puertorriqueña como el lugar de destino de los migrantes

puertorriqueños. El objetivo del estudio fue analizar el flujo emigratorio de puertorriqueños hacia los Estados Unidos y sus características sociodemográficas. Metodología: La fuente de datos utilizada fue la Encuesta de la Comunidad de Puerto Rico, 2017. El análisis realizado fue uno de tipo transversal descriptivo. Se enfoca en la población que reside en los EE.UU. que hace un año vivía en PR y tenía 20+ años. Hallazgos: En el año 2017 emigraron hacia los Estados Unidos desde Puerto Rico 65,808 (nacidas en PR). El 48,158 (73.2%) eran mayores de 20 años. Más de la mitad estaba entre las edades de 20-44. El 55% eran mujeres. Un 63% alcanzó un grado de escuela superior o menor y cerca de una cuarta parte (28%) tenía bachillerato o más. El 42% eran casados y el 37% solteros. Poco más del 50% estaba en la fuerza laboral y de estos solo un 6.2% estaba desempleado. La mediana de ingreso fue de \$9,500. Conclusión: Puerto Rico ha perdido una cantidad considerable de población que emigró a los EE.UU. Se caracterizaron por ser relativamente jóvenes, tener un alto porcentaje de personas con bajo nivel de educación, un porcentaje considerable de personas clasificadas como altamente educadas, una alta participación laboral y la gran mayoría estaban empleadas. La emigración de esta población podría perpetuar la actual recesión económica, y acelera el envejecimiento poblacional en PR. Este fenómeno apela al desarrollo de políticas públicas dirigidas a retener al capital humano y talento del país.

1706

### TNF-alpha Mediates Phosphorylated P38 MAP Kinase and AKT1 Secretion in Astrocyte-Derived Exosomes

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**Background & Objectives:** It is well-known that higher levels of Tumor Necrosis Factor-alpha (TNF- $\alpha$ ) in the brain are associated with the pathogenesis of several neurodegenerative diseases, such as Alzheimer's disease. However, the mechanisms responsible for these effects remain to be clarified. We hypothesized that TNF- $\alpha$  induces the release of two major signaling proteins in exosomes-derived from astrocytes, p38 MAPK and AKT1, and that its effects could be antagonized by R7050, a TNF- $\alpha$  receptor blocker. **Methods:** Human astrocytoma cells (U-87 MG; 5x10<sup>5</sup> cells) were cultured in presence of TNF- $\alpha$  or TNF- $\alpha$  plus R7050 for 24h. The levels of phosphorylated AKT1 and p38 MAPK were measured in cells and released exosomes by flow cytometry using anti-AKT1phosphoS473-PerCP/Cy5.5 and anti-p38phosphoT180-FITC. **Results:** A significant decrease ( $p < 0.05$ ) was observed in the levels of phosphorylated p38 MAPK and AKT1 in cells exposed to TNF- $\alpha$ . The levels of phosphorylated p38 MAPK increased significantly in cells exposed to TNF- $\alpha$  plus R7050. In contrast, exosomes released from astrocytes treated with TNF- $\alpha$  showed a high levels of phosphorylated p38 MAPK. Lower levels of p38 MAPK were observed in astrocyte-derived exosomes when cells were exposed to TNF- $\alpha$  plus R7050. **Conclusions:** Our findings support that TNF- $\alpha$  mediates the secretion of phosphorylated p38 MAPK and AKT1 in astrocyte-derived exosomes. Further studies will be needed to clarify the role of these phosphorylated protein kinases released in exosomes from astrocytes in neurodegenerative diseases. **Acknowledgements:** This research was supported by R01NS099036, R21MH095524, U54MD007587, U54NS043011, S11NS046278, U54MD007600, and 2R25GM061838-18.

1707

### The Importance of the Assessment of the Patient's Pharmacotherapy during the Medical Cannabis Treatment

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**Background/Objectives:** Medical cannabis has a clinical potential in the management of symptoms for some chronic disease. However, most of the cannabinoids are metabolized by the hepatics CYP450 isoenzymes, as the

majority of the traditional medications. The primary objective of this study is to describe the prevalence of identified potential drug-drug interactions among patients receiving medical cannabis treatment with or without medical assessment. The secondary objectives are: describe the prevalence of potential drug-drug interactions among patients receiving medical cannabis treatment using the standardized pharmacist assessment tool, and to evaluate if medical assessments are being conducted. Methods: This cross-sectional study will be conducted with a sample of patients that are currently treated with medical cannabis as a recommendation from a certified physician. During the Medical Cannabis Forums organized by the UPR School of Pharmacy, a questionnaire would be administered to all the participants to obtain information about the medical assessment and follow-up process during the medical cannabis treatment. In addition, a patient's pharmacotherapy evaluation sheet will be used by a group of pharmacists, professors at the School of Pharmacy-UPR, to identify possible drug-drug interactions with cannabis. Chi-square statistical test and logistic regression will be used to measure if there is a statistically significant association between medical assessment and potential drug-drug interactions. Preliminary/Final Results: Up to this date, there have been three forums and a total of 11 participants have been recruited to participate in this study. The majority of this participants has had a possible drug-drug interaction. Conclusions/Implications: The study has had some limitations in the recruitment process. Participants must be certified as a Medical Cannabis Patient by the Puerto Rico's Health Department, but the people attending these forums are prospective patients who are considering requesting the certification. Acknowledgments: The authors declare no relevant conflicts of interest or financial relationships.

1712

### Distribution and Expression of the FMRFa-gated Sodium Channel in the CNS of *Biomphalaria glabrata*, the intermediate host of *S. mansoni* Under Parasitic Infection

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Background: Schistosomiasis is a disease of major concern for health and socioeconomics globally. This neglected tropical disease represents a health burden for diverse societies including Africa, Asia, and South America. It is estimated that more than 240 million of people required preventive treatment in 2016, and thousands are at risk of death annually. *Schistosoma mansoni* is the trematode species that causes the most widespread form of intestinal schistosomiasis; Its life cycle requires two host organisms: snails from the genus *Biomphalaria* -as its intermediary host- and humans or mammals -as its definitive host-. Snails undergo great physiological and behavioral changes upon parasitic infection, but the neural contribution to these changes is poorly understood. The FMRFamide neuropeptide regulate physiological processes in the snail, such like: respiration, reproduction and feeding, and these vital processes are known to be affected by parasitosis. Hypothesis: We hypothesized that this peptide system participates in the behavioral and physiological modifications that occur in the snail following the parasitic infection. FMRFamide has two types of receptors, a G-coupled receptor and a peptide gated sodium channel (FaNaC) that is unique to this phyla and the sole sodium channel gated by a peptide. Methods: We performed immunohistochemistry and western blot experiments in snail CNS samples to determine the FaNaC receptor distribution and expression. Results: We found a change in the neuronal distribution and expression of this receptor in infected snails. Conclusion: Our overarching goal is to better understand the neural circuits involved in the physiological changes observed in *B. glabrata* during parasitic infection as an effective and selective mean to control *B. glabrata* proliferation.

1728

### Ulnar Aneurysm as Presentation of Polyarteritis Nodosa in an Adolescent Male

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Rationale: Polyarteritis Nodosa (PAN) is a necrotizing vasculitis that affects small and medium-sized vessels. While PAN accounts for 3% of the total vasculitis seen in the pediatric population, this disease remains rare and can be a difficult diagnosis for a primary pediatrician. Furthermore, out of the many complications of PAN, the formation of aneurysms is one of the most concerning and life-threatening. It is important to identify and review this potentially lethal disorder. Case Description: We present a case of a 17 year-old male with history of hypertension on medication and vascular anomalies who arrived to our ED with a chief complaint of: swelling, erythema and pain located in the left lower forearm. The symptoms began 2 weeks prior and were associated to increase in size and progressive pain over the 4 days before ED visit. Further questioning revealed trauma to the area approximately one week prior to the initiation of the symptoms. Vital signs upon arrival to ED were significant for hypertension (BP: 160s/100s). On physical exam, a pulsatile mass was felt on the left lower forearm. Angiography confirmed an ulnar aneurysm. Due to history, lab results and symptoms presented by patient, PAN and vasculitis were suspected, reason why Cytoxan and steroids were initiated. The patient underwent resection and graft placement from the proximal right saphenous vein. Pathology report confirmed PAN. Conclusion: PAN is a challenging diagnosis because it can initially present in various ways. One of the most life-threatening is the formation of aneurysms in rare locations in the pediatric population. Therefore it is important to include this rare diagnosis as a differential when faced with a new aneurysm formation. Acknowledgement: None

1733

### Experiencias transformadoras en Educación en Salud: Inmersión en la Educación Popular en Salud

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Trasfondo: La participación ciudadana de los grupos más vulnerables es vital para avanzar la equidad en salud. La educación popular en salud (EPS), basada en principios de Paulo Freire, es uno de los acercamientos para fomentar participación y apoderamiento comunitario entre estos grupos. Es necesario que las/los educadores en salud pública adquiramos los conocimientos y destrezas prácticas para aplicar la EPS en las iniciativas para la participación comunitaria. El curso Proyecto Especial de Educación Popular en Salud de la EGSP-RCM me brindó este espacio. Objetivos: Comprender la aplicación de la EPS en la práctica de educación en salud pública; Aplicar los principios y prácticas de la EPS en el contexto de la formación de promotoras de salud comunitarias (PSC); Reflexionar sobre mi rol profesional creando espacios democráticos y utilizando la EPS para promover apoderamiento comunitario en poblaciones oprimidas. Métodos: Por 8 semanas estuve inmersa en el escenario de formación de PSC de la organización Taller Salud de Loíza, contribuyendo con procesos de reflexión y evaluación de módulos de la experiencia vivencial. Simultáneamente completé lecturas sobre los elementos teóricos de la EPS y los principios teórico-prácticos de Taller Salud. Resultados: Logré colaborar en la creación de una estructura inicial para la sistematización, documentación y evaluación de las experiencias y materiales de Taller Salud con principios de la EPS. El enfoque comunitario de mi formación como educadora en salud adquiere una filosofía transformadora a través de la EPS, una base sólida desde donde gestar la acción social y

salubrista hacia una sociedad justa. Conclusión: Las experiencias y reflexiones de este curso constituyen eje fundamental en los objetivos de la Promoción de la Salud y la Educación en Salud enfocados en la acción comunitaria para la salud, la participación social y apoderamiento en los asuntos de salud desde las bases populares.

1737

### Perceptions and Stigma Towards Mental Illness among Latino Medical Students

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**Background & Objectives:** Mental illnesses are common, disabling and debilitating conditions that impact negatively on a person's quality of life. People with mental illness frequently encounter stigma, prejudice and discrimination not only by the public, but also by health care providers. Studies show that lack of accurate information about mental illness, lack of contact and/or familiarity with individuals with mental illness might be some of the most important reasons of these negative attitudes. This study assessed perceptions, negative attitudes & stigma among latino medical students towards mental illness, and if there any association with medical student's interest in residency specialty. **Method:** This descriptive prospective study determined the degree of stigma toward mental illness based on The Mental Illness Clinicians' Attitude Scale (MICA v2) and socio-demographic information with a section on residency specialty interest. Eligibility to participate consisted of third year medical students, 21 years or older, enrolled in clinical clerkships in the academic year 2018-2019 at the University of Puerto Rico, Medical Science Campus. Medical students who agreed to participate were instructed to complete the clinical questionnaire and to deposit it in a box to preserve anonymity. **Results:** Participation consisted of 87 medical students. Overall, 46 (52.8%) were female, 83 (95%) single, 70 (81.4%) had a bachelor's degree and 51 (58.6%) were within 21-24 years of age. The predominant interest in residency specialty were 15 (38.8%) as undecided and 14 (36.4%) in internal medicine. Analysis of variances of age, gender, and residency specialty interest found no major statistical significance. **Conclusion:** In this study no major statistical differences were found in the degree of stigma in latino medical students enrolled in clinical clerkship. A future study could compare variances in levels of stigma following medical student's participation in psychiatric clerkship. **Acknowledgments:** Approved by UPR-RCM IRB Protocol B1750118. Supported by the UPR-SOM EHSRC, Grants 5S21MD000242 and 5S21MD000138 from NCMHD-NIH. Contents don't necessarily represent the official views of NCMHD-NIH.

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## Abstracts that reported IRB protocol number

SID	Title	SID	Title
1008	Burnout and self-perceived stress among workers of essential services after the impact of hurricanes Irma and Maria	1135	Recursos y estrategias de adaptación a la vida diaria en adultos de 80 años o más, residentes en una comunidad metropolitana de San Juan, Puerto Rico
1010	Orthopaedic Surgeon Communication Skills: Perception of Empathy and Patient Satisfaction Through the Use of Anatomic Models	1136	Migratory Status, Gender and HIV Continuum of Care among Hispanic Immigrants in Puerto Rico.
1020	Identification of alopecia areata autoantigens in C3H/HeJ mice using whole-skin homogenates	1138	Respiratory Screening Questionnaire in Children with Hermansky-Pudlak Syndrome.
1028	Depression Severity and Pharmacological Profile in Patients with Depression with and without Comorbid Pain in Medical Science Campus Outpatient Clinic	1144	The effect of engaging in stewardship activities in the use of antibiotics in the neonatal intensive care unit (NICU)
1033	Rate of Burnout syndrome among Resident Physicians in Puerto Rico	1152	The Effect of New Guidelines in the Use of Antibiotics at Birth for Preterm and Term Infants Admitted to the Neonatal Intensive Care Unit (NICU)
1038	Assessment of HPV/OPC topic in the dental curriculum of UPR-SDM	1158	Bioavailability and distribution of the metastatic cancer inhibitor MBQ-167 in mice
1045	Impact of Hurricane María upon Older Adults in Puerto Rico: An Assessment of Hurricane Stressors and Depression and Anxiety Symptoms in the Aftermath	1161	Diagnostic accuracy of blood-based biomarker msept-9 for colorectal cancer detection in Puerto Rican Hispanics
1049	Role of Pre-Pregnancy Weight as a Factor for Maternal and Neonatal Morbidity in a Hispanic Population Giving Birth in Puerto Rico	1164	Knowledge and attitudes regarding pain of baccalaureate nursing students
1051	Adherence to Hard stop policy 2016-2018 in a Puerto Rican Population	1166	The Impact of Hurricane Maria on the Perceived needs of Puerto Ricans 65 years and older using the HESPER Scale.
1061	Assessment of Family Needs and Quality of Life in Children (0-17 years) with Developmental and/or Cognitive Disabilities	1172	Longevity of Zika Convalescence Improve Cell-Mediated Immunity After Dengue Infection in Rhesus Macaques
1071	Cardiologist's knowledge of the physiotherapist and the challenges of referring patients with peripheral arterial disease in Puerto Rico	1174	New Pathogenic RSPH4A Variant in a Child with Primary Ciliary Dyskinesia
1093	Teen Drivers' Cellphone Use While Driving: Results from a Representative Sample of Students in Puerto Rico	1179	Correlation between Health and Perceived Needs among Puerto Rican Elderly after Hurricane María
1096	Association between Oppositional Defiant Disorder (ODD) and Suicidal Attempts in a Representative Sample of Puerto Rican Adolescents	1182	Frequency of Perceived Needs within a Puerto Rico elderly demographic at six months and a year after Hurricane Maria.
1103	Low Immunocompromised specific Vaccination rates among Childhood Cancer Survivors in a Tertiary Hospital in Puerto Rico.	1191	Declining Living Kidney Donation Rates Among Children Who Received Renal Transplants In Puerto Rico: 1977-2013 Cohort
1108	2018 Updated Geographic Distribution of Hermansky-Pudlak Syndrome in Puerto Rico	1199	Implementation Science Framework in an eHealth HIV Prevention Program for Spanish-Speaking Adolescent Men who Have Sex with Men in Puerto Rico
1115	Return to Work Strategies Used by Puerto Rican Physiotherapists after a Work-Related Musculoskeletal Disorder: A Qualitative Analysis.	1201	Perceived Needs of Elderly Puerto Ricans at Risk of Dementia after Hurricane María
1123	Detonantes meteorológicos en las hospitalizaciones por asma pediátrica en la Zona Metropolitana de San Juan, Puerto Rico: Análisis de casos cruzados.	1209	Early Age Drug Injection Initiation as a Risk Factor for HIV/HCV Coinfection Among Drug Users in Rural Communities in Puerto Rico
		1219	Experiencia de la longevidad y el significado de la vida en la vejez extrema en un grupo de adultos de 90 años o más residente en comunidad: 2019

SID	Title	SID	Title
1220	Experiencias de personas con VIH en del huracán María por Puerto Rico: Adherencia, Accesibilidad a Servicios de Salud y Seguridad Alimentaria	1394	Association between Secondary Hyperparathyroidism and Anemia in Hemodialysis Patients at the University Hospital
1229	Vitamin D activity in milk of rhesus monkeys: effects of offspring gender, length of lactation and parity	1400	Estrategias de Auto-Manejo Usadas por las Mujeres Mayores Hispanas para Lidar con las Dificultades en las Actividades de la Vida Diaria
1233	Evaluation of Gynecological Conditions and Obstetrical Outcome in a Female Population of Inflammatory Bowel Disease Patients in Puerto Rico	1402	Anal cancer risk factors in women with gynecologic neoplasia in Puerto Rico
1236	Sexual Dysfunction in a Female Hispanic Population with Inflammatory Bowel Disease living in Puerto Rico	1405	Association between intake of carotenoids and female breast cancer in the Metropolitan Area of San Juan, Puerto Rico: A case-control study
1241	Ten Year Experience Of Pediatric Renal Transplants In Puerto Rico: 2003-2013	1406	Machine Learning Prediction Models for In-Hospital Mortality After Transcatheter Aortic Valve Replacement in the United States
1243	Five-Year Experience Using Rituximab Therapy In Children With Difficult-To-Treat Steroid-Dependent And Steroid-Resistant Nephrotic Syndrome	1408	Racial Disparities in Patients Undergoing Transcatheter Aortic Valve Replacement in the United States
1263	Exploring the Impact of Hurricane Maria on Parents and Health Care Personnel of a Neonatal Intensive Care Unit in Puerto Rico	1410	Quantitative Proteomics Analyses of Neuronal Cells Exposed to HIV-1 Infected MDM Supernatants with High Cathepsin B Secretion
1270	Zika Virus: Knowledge, Attitudes and Prevention strategies amongst parents of inpatients at Pediatric Ward of UPR Carolina	1423	Casos de Leptospirosis posterior al Huracán María
1300	Functional Profile and Cognitive Status in a sample of HIV-seropositive (HIV+) Puerto Rican Women	1430	La confianza materna y el dolor percibido durante el proceso de trabajo de parto
1309	Descriptive Profile of Puerto Rican Childhood Asthma who participated in the Epigenetics Variations and Childhood Asthma in Puerto Ricans (EVA-PR)	1441	Antibiotic Overuse in Pediatric Patients Admitted to a Hospital due to an Acute Asthma Exacerbation
1317	Behavior Skills Training for Practical Nurses in the Feeding Process of Premature Infants in the Neonatal Intensive Care Unit (NICU)	1457	Immunization Status of Infants Admitted to the Neonatal Intensive Care Unit and Factors Associated to Delay in Administration
1321	Knowledge, attitudes and practices about the use, management and storage of water after a natural disaster in Puerto Rico.	1461	Incidence of Sexual Violence Among Hispanic Female Attending Gynecology Clinics at San Juan City Hospital
1341	Racial/ethnic differences in help-seeking behavior and treatment reception among urinary incontinent women	1462	Comparación de los niveles de satisfacción entre familiares de un ICU con presencia familiar de 24 horas y un ICU sin presencia familiar de 24 horas
1351	Development and Validation of an Adherence to Treatment Scale	1463	Prevalence of Stigma and Relationship with EDSS in Caribbean Hispanic Patients with Multiple Sclerosis as Measured by Raw Scores.
1357	Conocimiento y Conductas Asociadas al Virus del Papiloma Humano en Adultos entre 21 a 50 Años del Area Central de Puerto Rico.	1468	Barreras y experiencias del paciente adulto con cáncer para el manejo del dolor: Estudio mixto convergente
1364	Uso de las artes en la promoción de la salud en Puerto Rico	1490	Validation of the ALLESS Scale and the Fisher Check List for the Identification of pediatric patients at risk of Auditory Processing Disorders
1370	The role of Stigma in Healthcare and Well-being of HIV-positive Young Gay, Bisexual, and other Men who have Sex with Men in Puerto Rico.	1496	Polymorphism in CYP1B1 increases CRC risk in Puerto Rican individuals that consume processed meats
1382	El Nivel de Pensamiento Crítico en los Estudiantes de Enfermería en un Curso del Programa Subgraduado con la Utilización de Dos Estrategias Educativas	1498	Traducción y adaptación cultural al español del método para evaluación de la confusión en la unidad de cuidado intensivo para preescolares (psCAM-ICU)
1392	Entendiendo las estrategias usadas para manejar las limitaciones funcionales: Estudio de método mixto	1510	Prevalence of Bifid Uvula among Puerto Rican Children with Orofacial Clefts

SID	Title	SID	Title
1511	Reproductive Maternal History and the Risk for Oral Clefts in Puerto Ricans	1588	Caffeine Consumption during Pregnancy and Sleep Duration Changes in Puerto Rican Women from the Northern Karst Region
1513	Beverages Consumption in Pregnancy and the Risk for Oral Clefts in Puerto Ricans	1589	Effects of Losartan on Metabolic Parameters and Mitochondrial Function in Peripheral Leukocytes from Prediabetic Rhesus Monkeys ( <i>Macaca mulatta</i> )
1517	¿Contra la misión de la Universidad? Proporcionalidad de clase y género en el estudiantado de la Escuela de Medicina Dental	1593	Profile and Clinical course of Abnormal Uterine Bleeding in Hispanic Adolescents Admitted to a Community Hospital
1522	Intrathecal Fentanyl with Bupivacaine: Enhances Post-Operative analgesia	1595	Outdoor aeroallergens as risk factors for triggering children's asthma in a low income community in Puerto Rico.
1523	Differential Expression of Cannabinoid Receptor I in Prostate Cancer PNI Positive Samples Compared to PNI Negative Samples	1602	Atrial Septal Defect with external right ventricle compression due to right anterior diaphragmatic hernia mimics congenital cyanotic cardiac disease
1526	Cannabinoid Receptors as Modulators of Cancer Cellular Behaviors in Invasive Y79 Retinoblastoma Cells	1608	Interrogating the Projections of Rostral Prelimbic Cortex That Drive Active Avoidance.
1527	Assessment of the Sagittal Abdominal Diameter as an Indicator of Prediabetes and Insulin Resistance in Overweight and Obese Adults	1609	A Secondary Data Analysis of the Quality of a Unique Diet Quality Index Score for infants in Puerto Rico and Hawaii.
1531	Conocimiento de Pacientes para Reiniciar Actividad Sexual luego de Eventos Cardiovasculares como: Infarto al Miocardio y Revascularización Cardíaca	1610	"Knowledge and Levels of Anxiety in Performing a Lumbar Puncture by Pediatric Residents Before and After a Simulated Workshop"
1537	Hurricane Maria impact in a level IV Neonatal Intensive Care Unit (NICU) in Puerto Rico	1611	"Aula-Calle": experiencia transdisciplinaria para la formación universitaria solidaria en valores y prácticas de justicia social y equidad en salud
1539	Characterization of Patients Receiving End-of-Life Care at Palliative Care Unit in Puerto Rico Trauma Hospital	1621	Barriers Accessing Renal Transplant among Children with End Stage Renal Disease in Puerto Rico: A Qualitative Approach
1542	Administering Dexamethasone as an Adjunct to Local Anesthetics in Supraclavicular Nerve Blocks	1625	Decreasing Rates of Peritonitis Among Children undergoing Peritoneal Dialysis in Puerto Rico
1546	Implementation of a Standardized Hand-off Checklist to Improve Caregiver Communication	1627	A Single-Center Clinical Presentation and Surgical Outcomes of Primary Hyperparathyroidism
1548	Sugammadex for neuromuscular blockade reversal	1631	Andrographolide alters Metabolism and Mitochondrial Function in Prostate Cancer
1549	Self-reported sleep duration and cardiometabolic risk factors in obese and overweight adults.	1634	The Development of Instructional Materials and Workshops by Peers to Improve Satisfaction Among Residents During the NICU Rotation
1550	Risk Factors for Gingival Bleeding in Adult Puerto Ricans	1639	Incidental Thyroid Carcinoma in Benign Thyroid Disease: Single-Center Analysis
1551	Pediatric Long-Term Outcome with Decompressive Craniectomy After Severe Traumatic Brain Injury	1644	Magnetic Resonance Imaging (MRI) without Sedation in Infants and Children: Age-appropriate Techniques for Research Purposes
1556	Percepción de Riesgo a la Salud y Actitudes hacia las Modalidades de Disposición de Residuos Sólidos	1653	Temperature-dependent changes of rhythmic motor patterns in the spinal locomotor circuit of neonatal mice
1560	Clinical Determinants of Clopidogrel Response in Puerto Rican Hispanics with Cardiovascular Diseases	1664	Health Related Quality of Life in Pediatric Patients with Sickle Cell Disease
1568	MicroRNA-18a as a Therapeutic Target in Cisplatin-Resistant Ovarian Cancer	1674	Association of Diet Quality, Nutrition Knowledge, and Physical Activity with Weight Status among Police Officers in San Juan, Puerto Rico
1569	Epidemiology of Marijuana Use Among Secondary School Students in a Representative Sample in Puerto Rico		
1583	Common Symptoms in Intensive Care Unit Trauma Patients		
1585	The Effect of Hurricane Maria in the General and Mental Health Status in Puerto Ricans with Rheumatic Diseases		

SID	Title	SID	Title
1681	Anogenital Findings of Child Sexual Abuse in Puerto Rican Children: Revisited	1712	Expression of the FMRamide-gated Sodium Channel in the CNS of <i>Biomphalaria glabrata</i> , the intermediate host of <i>S. Mansoni</i> , Under Parasitic Infection
1692	Potassium Levels Imbalance After Albuterol Continuous Therapy in a Community Hospital in Puerto Rico	1715	Nivel de Conocimiento de los Empleados sobre la Regla de Seguridad de la Ley HIPAA
1707	The Importance of the Assessment of the Patient's Pharmacotherapy during the Medical Cannabis Treatment	1737	Perceptions and Stigma Towards Mental Illness among Latino Medical Students