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ABSTRACT SUPPLEMENT

Abstracts*

001

Pericyte Secretion of LPS Induced TNF-Alpha Factor in Pulmonary Arterial Hypertension

Alexander I. Acevedo Jetter[1]; Prakash Chelladurai, PhD[2]; Vinicio De Jesús Pérez, MD[2]
[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, PR; [2]Stanford University School of Medicine, Department of Pulmonary, Allergy and Critical Care Medicine, Palo Alto, CA

Background and Objectives: Pulmonary arterial hypertension (PAH) is a progressive disease involving the occlusion of pulmonary arterioles, leading to right heart failure and death. Previous studies show that patients with PAH have elevated biomarkers of inflammation in pulmonary circulation, and their pulmonary arterioles show endothelial cell dysfunction and loss of endothelial-pericyte interactions. The role of pulmonary pericytes in the development of PAH and their contribution to both inflammation and EC homeostasis is still not well understood. Lipopolysaccharide (LPS) induced TNF-alpha factor plays an important role in inflammation by acting as a transcription factor for proinflammatory cytokines and by interacting with other cellular components involved in cellular transport and organelle function. Methods: We compared LPS induced TNF-alpha factor levels between pericytes isolated from healthy and PAH donors and found a significant increase in expression and its secretion from PAH pericytes. We also used inhibitors of intracellular agents known to play a role in the synthesis of LPS-induced TNF-alpha factor to understand the mechanism responsible for pulmonary vascular remodeling in PAH patients. Results: Preliminary results show an increase in expression of LPS induced TNF-alpha factor in pericytes from PAH patients. Data from recent experiments is allowing us to identify the mechanism of action involved in the vascular remodeling seen in pulmonary arterial hypertension. Acknowledgements: My participation in this research project was funded by the NIH grant T35HL160496.

002

Three Mutations on a Gene Leading to Autosomal Recessive Cone-Rod Dystrophy: A Case Report

Roxana López-Yazdani[1]; Rosaliz Portela, MD[2]; Natalio J. Izquierdo, MD[3]
[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Medicine, San Juan, Puerto Rico; [2]Centro Oftalmológico Metropolitano, Puerto Rico; [3]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, Puerto Rico

Purpose: To report on a patient with a case of cone-rod-dystrophy with a unique triple *ABCA4* mutation profile. Case Description: This case highlights a 40-year-old-female patient with CRD presenting with three distinct heterozygous mutations in the *ABCA4* gene. A previously healthy 40-year-old female patient complained of focusing problems, missing letters and lines when reading and nyctalopia without photophobia or color vision defects. Upon fundus examination there were pale optic nerves, arteriolar attenuation, with diffuse macular pigmentary changes with

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mid-peripheral sparing. Macular optical coherence tomography showed temporal and outer retinal atrophy in both eyes. Furthermore, wide field fundus autofluorescence of the macula shows extensive areas of patchy hypo-autofluorescence in both eyes. Humphrey visual field test showed a mild central visual field depression in both eyes. A full-field electroretinogram showed subnormal scotopic b-wave amplitude in the left eye with normal latencies and normal photopic responses in both eyes. Multifocal ERG revealed central kernel response loss indicative of macular degeneration in the left eye, with ring response density ratios of 2.11 in the right eye and 1.56 in the left, consistent with cone-rod dystrophy. Genetic testing showed a complex mutation profile with patient being heterozygous to three different mutations in the *ABCA4* gene: c.4537dup (p.Gln1513Profs42); c.535T>C (p.Tyr179His); and c.919G>A (p.Gly307Ser). Conclusion: This case emphasizes the phenotypic variability and diagnostic challenges posed by *ABCA4*-related retinopathies, emphasizing the significance of genetic analysis in guiding clinical diagnosis and management. Further research is needed to better understand the pathogenicity of multiple concurrent *ABCA4* mutations and their impact on disease expression. Acknowledgements: Dr. Natalio Izquierdo is a speaker and consultant for Rhythm Corporation. No financial support was received for this research.

003

Identification of a Novel MLH1 Gene Pathogenic Variant with Stable MSI and Intact MMR Status in a Patient with Lynch Syndrome

Juan O. González Velázquez, MD[1]; Noridza Rivera Rodríguez, MD[1-3]; Hilmaris Centeno-Girona, MS[2]; Marcia Cruz-Correa, MD, PhD[1-3]
[1]University of Puerto Rico, Medical Sciences Campus, San Juan, PR;
[2]University of Puerto Rico, Comprehensive Cancer Center, San Juan, PR;
[3]Pan American Center for Oncology Trials, San Juan, PR

We report a novel pathogenic variant in the MLH1 gene, one of the mismatch repair genes (MMR), implicated in the development of Lynch Syndrome (LS), an autosomal dominant cancer syndrome associated with colorectal cancer (CRC). LS-associated tumors present with microsatellite instability (MSI), which serves as a tumor screening test and is associated with response to immunotherapies including anti-PD-L1 agents. However, our patient, despite harboring a pathogenic variant in the MLH1 gene, presented incongruent pathological findings with MSI stability and proficient MLH1 protein expression. We present the first report of this novel MLH1 pathogenic variant identified through germline testing in the index patient (proband), a Hispanic individual from Puerto Rico and the first in his family diagnosed with LS. This case highlights the importance of germline sequencing as part of the baseline evaluation in CRC patients. A 67-year-old male was diagnosed with metastatic CRC after incidental sonographic detection of hepatic lesions suggestive of metastases. Imaging revealed a 5 cm proximal sigmoid colon annular constricting lesion with associated luminal narrowing, as well as three space-occupying hepatic lesions, and mesenteric lymphadenopathy within the adjacent sigmoid mesentery. Colonoscopy with biopsy confirmed invasive adenocarcinoma with intact nuclear expression of MMR proteins (MLH1, MSH2, MSH6, PMS2). However, next-generation sequencing (NGS) on blood and tissue samples revealed a novel likely pathogenic variant c.1918C>G (p.Pro640Ala) in the MLH1 gene with MSI stability and proficient MMR protein status. Family germline testing revealed the same variant in three first-degree relatives across two generations, confirming the hereditary nature of the disease.

This case report enhances the understanding of pathogenic variances in MMR genes associated with LS while highlighting a disease process for which there is very limited information. Further research concerning treatment options under these unusual genetic and molecular circumstances is vital for guiding future at-risk patients with hereditary CRC. Acknowledgement: The authors gratefully acknowledge the family members for their assistance and cooperation throughout this study.

004

Prevalence of Chronic Conditions Among Patients with Long COVID (LC) in Puerto Rico Using the 2024 LC Definition of the NASEM

Victoria A. Blaiotta-Vázquez, MPH[1]; Omar A. Benítez-Esteva, BS[1]; Miciely C. Aponte-Reyes, BS[1]; Natalia A. Alvarado-Ramos, BS[1]; Allen A. Román-Roubert, BS[1]; Bárbara A. Ramos-Sanfiorenzo, MS[1]; Enid J. García-Rivera, MD, MPH[1,2]

[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, PR; [2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Endowed Health Services Research Center, San Juan, PR

Background: In 2024, the National Academies of Sciences, Engineering and Medicine published a new definition for Long COVID (LC), including symptoms or conditions that persist or get worse at least three months after an initial SARS-CoV-2 infection. Chronic diseases are both risk factors for and potential consequences of LC, moreover, evidence links LC with exacerbations of preexisting comorbidities. Hispanics bear a disproportionate burden of COVID-19 and LC, highlighting pandemic-related health disparities. Objectives: To estimate the prevalence of chronic conditions in a cohort of Hispanic patients in Puerto Rico with LC classified by the 2024 LC definition. Methods: We analyzed data from a prospective cohort study, of persons living in Puerto Rico with laboratory-confirmed SARS-CoV2 infection in 2022 (Approved by IRB). Sociodemographic characteristics and comorbidities were collected. Chi-square or Fisher's exact test was used to compare characteristics in patients with and without LC using the 2024 LC definition. Multivariable log-binomial regression was used to determine associations to LC. Results: Of 222 patients recruited, the mean age was 47.9 ± 15.7 years, 176 (79.3%) were women, 46 (20%) were hospitalized during the acute infection, and 165 (74%) had symptoms comparable with the new definition for LC. Patients with LC had a significantly higher prevalence of asthma (28% vs 14%, p<0.05), headaches or migraines (40% vs 10%, p<0.05), muscular pain (41% vs 26%, p<0.05), and depression (22.4% vs 8.7%), (p<0.05). After adjusting for age, sex, and disease severity, having a chronic condition was significantly associated with higher odds of Long COVID (OR=3.9; 95% CI=1.75 – 8.66); neurological disorders consistently remained a significant risk factor for long COVID after all adjustments. Conclusions: Preliminary data suggest a high prevalence of comorbidities in patients living with Long-COVID in Puerto Rico. Having a chronic condition emerged as consistent risk factor after adjustments for age, sex, and disease severity. Approved by IRB: 238569 Exp Date: 06/20/2025. Acknowledgements: This project was supported by awards OT2HL161827 from NIH-NHLB, U54GM133807 from the NIH_GMS, 5S21MD000242, 5S21MD000138 and 2U54MD007587 from NIH-NCMHD. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

005

Fungi Matter: Understanding Cervical Yeast Diversity in HPV Infection and Cervical Lesions.

Natalia Pagán-Zayas[1#], Daniela Vargas-Robles[1#], Andrea Cortés[1], and Josefina Romaguera[2], Filipa Godoy-Vitorino[1]*
[1]University of Puerto Rico, Medical Sciences Campus, Department of Microbiology and Medical Zoology, San Juan, Puerto Rico;
[2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Obstetrics and Gynecology, San Juan, Puerto Rico.
[#]First co-authors. Correspondence: Filipa.godoy@upr.edu

Background: The cervicovaginal microbiome may influence susceptibility to cervical HPV infections, yet the factors driving persistent high-risk HPV infections, which lead to High-Grade Squamous Intraepithelial Lesions (HGSIL) and cervical cancer, remain unclear. Emerging evidence suggests that vaginal bacterial composition, determined by Community Sequence Types (CSTs), and the underexplored cervical mycobiome may play critical roles in HPV persistence and disease progression. This study investigates how the cervical mycobiome varies with physiological states, HPV risk, and cervical lesion status. Methods: Cervical swabs from 71 women attending obstetrics and gynecology clinics in San Juan, Puerto Rico (IRB Streamlyne #2290033153) were analyzed. Genomic DNA was extracted for HPV typing (LiPA25), and fungal microbiota was characterized by sequencing the ITS1 region using the Illumina MiSeq platform. Bioinformatics pipelines (QIIME2 and R) were used for analyses and the Unite database for taxonomic fungal assignments. Results: Pregnant women exhibited lower beta diversity dispersion at the genus level compared to menopausal and nonpregnant women ($p < 0.010$). Jaccard beta diversity revealed that lesion-negative samples have a more heterogenous inter-individual microbial composition than HGSIL, or LGSIL groups ($p < 0.001$, controlled by age and BMI), suggesting an association between the vaginal mycobiome and cervical lesions. CST-I showed lower inter-individual heterogeneity than CST-III and CST-IV ($p < 0.001$). Candida and Aspergillus were more abundant in CST-III compared to CST-I. An unidentified fungal species group (45 ASVs) was significantly associated with high-risk HPV infections ($p = 0.022$). Conclusions: Cervical lesions and HPV risk significantly associates with the vaginal mycobiome, with Candida associated with Lactobacillus iners dominant profile. Candida and Aspergillus associate with vaginal bacterial dysbiosis. Ongoing species-level analyses may identify biomarkers for disease progression. Understanding fungal-bacterial interactions in the cervicovaginal microbiome is pivotal to elucidating cervical disease mechanisms. Acknowledgments: This project was funded by the Center for Collaborative Research in Minority Health and Health Disparities (RCMI) 2U54MD007600, NIH-NIGMS programs Alliance U54MD007587 and PR-INBRE 5P20GM103475-17.

006

Unveiling the Silent Invader: A Rare Case Report of Sphingomonas Paucimobilis Ventriculitis

Juan C. Camacho, MD[1]; Inés Esquilín, MD[2]; Sanet Torres, MD[2]
[1]San Juan City Hospital, Department of Pediatrics, San Juan, Puerto Rico; [2]University of Puerto Rico, Medical Sciences Campus, Department of Pediatrics, Pediatrics Infectious Disease, San Juan, Puerto Rico.

Purpose: A complex case of ventriculoperitoneal (VP) shunt infection highlights the challenges of managing rare, opportunistic pathogens in vulnerable neonates. Case Description: A 2-month, 7-day-old premature infant, born at 34 weeks gestational age, presented with ventriculomegaly and myelomeningocele, diagnosed prenatally. The baby underwent successful myelomeningocele repair followed by VP shunt placement for hydrocephalus. However, in the weeks following the procedure, the patient experienced recurrent apnea, bradycardia, and abdominal distension, leading to multiple externalizations and revisions of the VP shunt. The patient later developed signs of a CNS infection, with cerebrospinal fluid (CSF) analysis showing pleocytosis. Cultures eventually grew *Sphingomonas paucimobilis*, an uncommon but important nosocomial pathogen. To our knowledge this is the first reported case of an EVD-associated S. paucimobilis causing ventriculitis in a pediatric patient. Sphingomonas paucimobilis is a Gram-negative, non-fermenting, yellow-pigmented rod with a unique sphingolipid-containing cell membrane, distinguished from most other Gram-negative organisms by its lack of lipopolysaccharide (LPS). It is commonly found in environmental settings such as soil and water, but it has emerged as an opportunistic pathogen in healthcare environments, particularly in patients with compromised immune systems or implanted medical devices like shunts. S. paucimobilis has been implicated in a range of infections, including bacteremia, meningitis, and peritonitis, often linked to contaminated hospital equipment or fluids. Although it typically exhibits susceptibility to broad-spectrum antibiotics, such as carbapenems, cephalosporins, and fluoroquinolones, resistance patterns can vary, making susceptibility testing essential. Management often involves device removal (e.g., shunt removal) and targeted antibiotic therapy. In this case, the patient was treated with Meropenem and later switched to Cefepime after susceptibility results, with a successful clinical resolution after completing 14 days of antibiotics. Conclusion: This case illustrates the need for vigilance in detecting and managing uncommon nosocomial pathogens, particularly in vulnerable populations such as neonates with implanted medical devices. Acknowledgement: None

007

Prevalence of Hip Osteoarthritis in a General Population Subset in Puerto Rico

Keysha González-Ramos[1], Santiago Saldaña-Méndez[2],
Lilliana Serrano-Arroyo[1], Edgar Colón-Negrón[2], Luis M. Vilá[1]
[1]University of Puerto Rico, Medical Sciences Campus, Division of Rheumatology, San Juan, Puerto Rico;
[2]University of Puerto Rico, Medical Sciences Campus, Diagnostic Radiology Section, San Juan, Puerto Rico

Background & Objectives: Osteoarthritis (OA) is a leading global cause of chronic pain and disability, particularly affecting adults aged 60 and older, with the knees, hands, and hips being the most impacted joints. Hip OA, a major contributor to long-term disability, is projected to rise by 78.6% globally by 2050. In Puerto Rico, the Global Burden of Disease Study estimated 30,400 cases of hip OA in 2020. Thus, we sought to determine the actual

prevalence and severity of hip OA in a population sample of Puerto Rico. Methods: A cross-sectional study was conducted in a random sample evaluated at the Puerto Rico Medical Center from January to June 2024. Patients ≥21 years who had trauma and underwent anteroposterior pelvic radiographs were included. Radiographs with hip fractures or surgeries were excluded. Using a randomization tool system, 300 patients were selected for evaluation. Established radiographic criteria were used to diagnose OA. Severity of OA was graded using the Kellgren-Lawrence system. A musculoskeletal radiologist conducted all imaging assessments to ensure accuracy and consistency. Bivariate analyses were performed to compare study groups. Results: Among the 300 patients, 39.0% were found to have hip OA. Older age (69.7±16.6 years vs. 53.8±21.6 years, p<0.001) and female sex (54.7% vs. 45.3%, p<0.001) were associated with the presence of OA. No association was found for body mass index. In terms of OA severity, grade 2 was the most common (41.9%), followed by grades 1 (29.9%), 3 (16.2%), and 4 (11.1%). Conclusions: This study provides the first population-based prevalence of hip OA in Puerto Rico with 39% having this condition. Unlike prior studies, obesity was not linked to OA. These findings highlight the substantial burden of hip OA among older Puerto Rican patients and underscore the need for further research. IRB Approved: Protocol No. 2404210271A001 (Approved on 05/17/2024). Acknowledgements: No funding or conflicts of interest to disclose.

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Cervical Cancer Care Delay among Women Living with HIV in Puerto Rico

Marievelisse Soto-Salgado, DrPH, MS[1]; Verónica García-Ramírez, MS[1]; Lorena González-Sepúlveda, MS[1]; Sharee Umpierre, MD[1,2]; Carlos Torres-Cintrón, MPH[1]; Axel Gierbolini, DrPH[1]; Melisa Ramos-Sepúlveda, MPH[1]; Vivian Colón-López, PhD, MPH[1]; Maritza Cruz, MS[3]; Edna Marrero, MS[3]; Ana P. Ortiz, PhD, MPH[1,2]

[1]University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico; [2]University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico; [3]Puerto Rico Department of Health, HIV/AIDS Surveillance Program, San Juan, Puerto Rico.

Background and Objectives: Women living with HIV (WLWH) have a higher risk of cervical cancer compared to HIV- women. Studies have documented that WLWH often face disparities in access to and the quality of treatment for cervical cancer, potentially due to delayed diagnosis, and healthcare system inequities. Limited information is available about access to cervical cancer care among WLWH in Puerto Rico (PR). This study aimed to evaluate the effect of HIV status on delays in cancer diagnosis and treatment among WLWH in PR. Methods: A retrospective cohort study using merged data from the PR Central Cancer Registry, the PR HIV/AIDS Surveillance System, and medical claims was executed to study women ≥ 21 years diagnosed with cervical cancer from 2010 to 2020. Multivariate logistic regression models were used to estimate the adjusted odds ratio (aOR) for the association between HIV status and delay in cancer diagnosis (≥ 60 days) and first course of cancer treatment (≥ 60 days), adjusted by demographic and clinical covariates. Results: A total of 1,604 cervical cancer cases [29 HIV+ (1.8%) and 1,575 HIV- (98.2%)] were included in the analysis. Compared to HIV- women, WLWH were younger (51.41±15.87 vs. 46.10± 10.35, p=0.25), a higher proportion had Medicaid (55.2% vs. 93.1%, p<0.001) and were diagnosed with a squamous carcinoma tumor (74.7% vs. 89.7%, p=0.02). WLWH have higher odds of experiencing delays in cancer diagnosis (aOR: 2.24, 95%CI: 0.80-6.24, p=0.12) compared to HIV- women

when adjusted for covariates. Similarly, WLWH were have higher odds of experiencing cancer treatment delay (aOR: 2.10, 95%CI: 0.74-5.91, p=0.16) compared to HIV- women when adjusted for covariates. Conclusions: Our results document disparities in timely access to cervical cancer care among WLWH in PR. Further studies should focus on identifying factors associated with delays in cancer diagnosis and treatment in this underserved population. IRB: Study approved by the University of Puerto Rico Comprehensive Cancer Center's IRB (2022-09-84). Acknowledgements: This study was supported by the National Institute of General Medical Sciences (NIGMS, award #1P20GM1483240-01).

009

Vitamin D Levels and Severe Early Childhood Caries in Puerto Rican Children

Cheryl Paulo Malavé, DMD
University of Puerto Rico, Medical Sciences Campus, School of Dental Medicine, San Juan, Puerto Rico

Background: Early childhood caries (ECC), previously referred to as baby bottle syndrome, remains a significant public health problem. It is a global health problem, especially in disadvantaged communities in developing and industrialized countries where undernutrition is common. Hypothesis: Puerto Rican children with vitamin D deficiency/insufficiency have higher caries prevalences and dmft/dmfs indices than those with normal vitamin D levels. Objective: To assess the association between vitamin D levels and severe early childhood caries (S-ECC) in Puerto Rican children aged 1 to 5. Methods: This case-control pilot study involved 30 S-ECC cases and 31 caries-free controls from Puerto Rico. A calibrated dentist conducted dental examinations following the International Caries Detection and Assessment System criteria, summarizing caries extent in deciduous teeth using the decayed, missing, and filled teeth (dmft and decayed, missing, and filled surfaces (dmfs) indices. Vitamin D levels were measured in the participant's blood samples. Mothers completed a questionnaire regarding vitamin D intake and levels during pregnancy and their child's early years. Mann–Whitney and chi-square tests were used to compare cases and controls; logistic (for case-control status) and Poisson (for dmft/ dmfs) regression models were used to relate vitamin D categories to caries outcomes. Results: S-ECC cases were more likely to have deficient levels of vitamin D (26.67%) compared to controls (3.23%) (Fisher's exact test, P=0.03). Vitamin D deficiency was associated with increased dmfs values (incidence rate ratio [IRR]=1.37, 95% CI: 1.13–1.66), after adjusting for each child's age and sex and for maternal age and education. Children with vitamin D deficiency had higher dmft indices in the age- and sex-adjusted models, only (IRR=1.56, 95% CI: 1.18-–2.06) compared to those with adequate levels. Conclusions: In children, vitamin D deficiency is associated with increased severity of dental caries, highlighting a potential target for preventive interventions in pediatric oral health. IRB Approved: Protocol No. 2404210271A001 2212065979. Acknowledgments: This research project was made possible through a grant from Colgate-Palmolive Company. Research was also supported by the Biostatistics, Epidemiology and Research Design core of the Hispanic Alliance for Clinical Translational Research, funded the National Institute of General Medical Sciences of the National Institutes of Health under award number U54GM133807. The content is solely the responsibility of the authors and does not necessarily represent the official view of the National Institutes of Health.

010

Genetics Etiologies of Autism Spectrum Disorder in Puerto Rico.

Miriam Rivera Hernández, MD[1]; Alexa Castrodad Caraballo, MD[1];
Génesis A. Sánchez Sánchez, MD[1]; Frances Vélez Bartolomei, MD[2]
[1]San Juan City Hospital, Department of Pediatrics, San Juan, Puerto Rico;
[2]University of Puerto Rico, Medical Science Campus, San Juan, Puerto Rico

Background and Objective: Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by deficits in social interaction, communication, as well as restricted interests and stereotypical behaviors. ASD has a multifaceted etiology, with a significant genetic component that can be exacerbated by environmental factors, including prenatal exposures, and perinatal events. Genetic etiologies are identified in approximately 25-35% of patients with ASD. We aim to estimate the genetic changes, heritability and prevalence of ASD in Puerto Rico. Methods: We conducted a descriptive, retrospective, cross-sectional study analyzing medical records of Dr. Frances Vélez, conducted from July 2021 to May 2024. Approved by IRB. Results: This study suggests that in patients diagnosed with ASD in Puerto Rico etiology is more commonly non-genetic. We also found that although genetic variants were found in some of the population, they were not always associated with ASD. A variant of uncertain significance was found in 21%, therefore our percentage of ASD with genetic etiology may increase once these variants are re-classified. Among the 28% of patients with genetic etiology, single gene variants were identified, specifically in DEAF1 gene, ZMIZ1 gene and TAOK1 gene. Additionally, chromosomal variants were identified, including duplications and microdeletions such as chromosome 16p12.2 deletion, chromosome 15q11.2 deletion, chromosome 16p13.11 duplication, chromosome 2p16.3 deletion, and chromosome 12q23.1 deletion. This is the first phase of an ongoing study in which we aim to continue adding patients to the sample size, therefore increasing the power of our results. Conclusion: We conclude that 28% of the patients with autism in this specific Puerto Rican population sample had a proven genetic etiology for their symptoms. There was an additional 21% with variants of unknown significance. These may later benefit from additional testing, such as parental testing or functional studies to determine if these variants are in fact affecting the gene. IRB Protocol: R020723. Acknowledgement: none.

011

La Integración de la Simulación Virtual como Estrategia Instruccional por la Facultad de un Programa Subgraduado de Enfermería

Leonor M. Rivera Rosa
Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela de Enfermería

Esta investigación cualitativa examina los conocimientos, destrezas y percepciones de la facultad de un programa subgraduado de enfermería sobre la integración de la simulación virtual como estrategia de enseñanza clínica. Mediante un diseño de estudio de caso, se utilizaron entrevistas semiestructuradas y análisis de documentos para explorar este tema. Los propósitos específicos incluyeron: indagar sobre conocimientos y destrezas de la

facultad en el uso de la simulación virtual; auscultar la importancia que le otorgan como recurso de aprendizaje; identificar las áreas donde necesitan apoyo, y proponer alternativas curriculares para optimizar su uso en los cursos. La investigación se basó en el modelo TPACK y la teoría de simulación de Jeffries, proporcionando un marco para entender las competencias que necesita la facultad para integrar la tecnología en el currículo de manera efectiva. Los hallazgos revelan que, aunque la simulación virtual se reconoce como una herramienta clave para el aprendizaje, existen barreras significativas, como la necesidad de formación docente en competencias tecnológicas y pedagógicas, el acceso limitado a recursos tecnológicos, y la falta de integración sistemática en el currículo. Además, el estudio destacó la importancia del *prebriefing* y el *debriefing* para consolidar el aprendizaje de los estudiantes. Como resultado, se ofrecen recomendaciones prácticas para integrar la simulación virtual de manera efectiva en el currículo. Entre ellas, la promoción de una cultura de aprendizaje continuo; el diseño de un plan institucional de desarrollo profesional para capacitar a la facultad en pedagogía de simulación y uso de las tecnologías relacionadas con esta; la creación de una posición para un especialista en simulación que brinde apoyo técnico y pedagógico; la formalización de la simulación como recurso fijo en el currículo; la diversificación de plataformas de simulación para enriquecer las experiencias de aprendizaje, y la facilitación del trabajo colaborativo entre los docentes. Aprobado por el CIPSHI UPR RP, protocolo #2324-088, el 5 de marzo de 2024.

012

Risk Factors for Major Adverse Limb Events in Patients with Minor Amputations

Crystal González Font, MS[1]; Madelyn Zapata Valentín, MD[2]; Ana Rivera Rivera, MD[3]; Gabriel Pereira Torrellas, MD, FACS[4]; Jorge Martínez Trabal, MD, FACS[5]; Rafael Santini-Domínguez, MD, FACS[6]

[1]Universidad Central del Caribe, School of Medicine, Bayamón, PR;
[2]PGY-2 General Surgery Resident St. Luke's Medical Center, Ponce, PR;
[3]PGY-4 General Surgery Resident St. Luke's Medical Center, Ponce, PR;
[4]Vascular Surgeon, St. Luke's Medical Center, Ponce, Puerto Rico;
[5]Vascular Surgeon, St. Luke's Medical Center, Ponce, Puerto Rico;
[6]Vascular Surgeon, St. Luke's Medical Center, Ponce, Puerto Rico

Background & Objectives: Minor amputations of the lower extremities are frequently performed in individuals with advanced peripheral artery disease (PAD). However, a subset of these patients experience progression to major adverse limb events (MALES), which include subsequent major amputations, additional minor amputations, or further revascularization procedures. These events have a significant impact on patients' quality of life. That said, this project aims to evaluate specific risk factors that contribute to MALEs after minor amputation in a population of patients from a hospital in southern Puerto Rico. Methods: We conducted a longitudinal retrospective cohort study, where medical records of patients who underwent lower extremity minor amputations between 2022 and 2024 were reviewed. Data on demographics, comorbidities, foot characteristics, vascular status, wound healing, and the level of amputation was collected using MediTech. To assess the risk factors associated with each of the MALEs, we performed a logistic regression analysis. Results: The analysis revealed that the presence of chronic obstructive pulmonary disease (odds ratio: 5.13, p-value: 0.038), hyperlipidemia (odds ratio: 2.27, p-value: 0.0420), congestive heart failure (odds ratio: 1.96, p-value: 0.008), hypertension (odds ratio: 2.65, p-value: 0.005), and reduced functional status (odds ratio: 2.18, p-value: 0.009) were significant risk factors for major

amputations. On the other hand, impaired renal function (odds ratio: 1.49, p-value: 0.013) presented a higher risk for additional revascularization. Interestingly, hyperlipidemia resulted to be a protective factor for additional revascularizations in this project, with an odds ratio of 0.48 and a p-value of 0.039. This suggests that patients with hyperlipidemia might benefit from lipid-lowering treatments like statins, which could reduce the need for further procedures. Conclusions: Recognizing these risk factors is critical for developing preventive strategies to improve patient outcomes.

013

Evaluating Climate Risk for Puerto Rico's Elderly: A Spatial Vulnerability Analysis and Exposure

Mónica V. Sánchez-Sepúlveda[1], Pablo A. Méndez Lázaro[1], Laura T. Cabrera Rivera[1], Manuel Heredia Morales[1], Pedro I. Matos Llavona[2], K. Stephen Hughes[2]
[1]University of Puerto Rico, Medical Sciences Campus, Department of Environmental Health-Graduate School of Public Health, San Juan, Puerto Rico;
[2]Puerto Rico Landslide Hazard Mitigation Office, University of Puerto Rico Mayagüez, Department of Geology, Mayagüez, Puerto Rico

Background and Objectives: Puerto Rico's aging population grew from 10.26% in 1993 to 23.37% by 2023. This vulnerable group is disproportionately at risk from climate related hazards due to compound factors such as living alone, living below the poverty level, pre-existing health conditions, and reliance on power-dependent medical devices. The island's susceptibility to tropical storms, floods, landslides, and extreme heat exacerbates these risks. This study aims to assess how socioeconomic, environmental, and health factors contribute to climate risk for older adults and identify high-vulnerability regions to inform targeted resilience strategies. Method: Geospatial analysis was conducted using data from the U.S. Census, climate hazard records from NOAA, and health databases from HHS. Socioeconomic, health, and hazard exposure variables were integrated into ArcGIS to generate thematic layers and conduct vulnerability assessments. Analytical methods included overlay mapping and percentage comparisons to highlight disparities among Puerto Rico's municipalities. Results: Our analysis revealed that nearly half of Puerto Rico's elderly (350,000) live in areas of high climate risk, with southwestern and urban regions most affected. Over 96,000 live in municipalities where 60% of the land is highly susceptible to landslides, including three municipalities ranking in the top 10 for elderly population. These areas face compounded risks, including potential isolation from healthcare facilities. Within this vulnerable population, women face additional challenges due to higher rates of social isolation. Common risk factors across all elderly residents include poverty, reliance on power-dependent healthcare devices, and inadequate infrastructure. Conclusion: Puerto Rico's aging population faces significant risks from climate hazards and social inequities. Geospatial tools provide critical insights into high-risk areas, emphasizing the need for targeted policies addressing socioeconomic and healthcare disparities. Improving infrastructure and expanding support networks are essential for reducing vulnerability and fostering resilience among the elderly. Future efforts should prioritize gender-sensitive strategies and localized interventions to mitigate risks in the most affected communities. Acknowledgments: This work was supported through the Caribbean Climate Adaptation Network (CCAN) a NOAA Climate Adaptation Partnerships team Grant Number NA22OAR4310545.

014

Understanding Water Resources Management in Puerto Rico and the US Virgin Islands

Pablo A. Méndez Lázaro[1], Gregory Guannel[2], Giovannie Echevarría Feliciano[1], Mairinete López Santiago[1], Dianivette Rolón Cruz[1], Laura T. Cabrera Rivera[1], Manuel Heredia Morales[1], Mónica V. Sánchez Sepulveda[1], Erika I. Escabí Wojna[1]
[1]University of Puerto Rico, Medical Sciences Campus, Puerto Rico; [2]University of Virgin Islands, United States.

Background & Objectives: Water accessibility, quality, and availability are shaped by a complex interaction of social, environmental, and institutional factors. Climate change exacerbates these vulnerabilities, particularly in regions such as the Caribbean where water resources are already threatened. Given this scenario, it is crucial to understand existing water resource management systems to assess their sustainability in the face of these challenges. Methods: This study examines the main obstacles in the administration of water resources in Puerto Rico and the United States Virgin Islands (USVI), focusing on institutional differences, infrastructure deficiencies, and budgetary constraints that affect water management efficiency. Results: An analysis of key policies and regulations, such as the Puerto Rico Water Law and the Clean Water Act, as well as entities such as the Department of Natural and Environmental Resources (DRNA) and the Water and Power Authority (WAPA), revealed significant gaps in institutional coordination and compliance with water quality standards. Additionally, issues related to the lack of financial resources and limited public participation in decision-making processes are highlighted. Conclusions: The findings underscore the urgency of strengthening technical and administrative competencies, improving training programs, and promoting sustainability education, with the goal of mitigating the effects of water scarcity and advancing toward more equitable and sustainable water management in both territories. Acknowledgements: This research was supported by the Caribbean Climate Adaptation Network (CCAN), a NOAA CAP TEAM.

015

Assessing Heat Vulnerability in the Municipality of Ponce: Combining Earth Observation Data and the Social Determinants of Health (SDH)

Laura T. Cabrera-Rivera[1], Manuel Heredia-Morales[1], Mónica V. Sánchez-Sepúlveda[1], Pablo A. Méndez-Lázaro[1-2]
[1]University of Puerto Rico, Medical Sciences Campus, School of Public Health, Department of Environmental Health;
[2]Cancer Biology Division and Environmental Translational Cancer Program, UPR-Comprehensive Cancer Center

Background and Objectives: Puerto Rico's southern region faces escalating heat-related risks, exacerbated by socioeconomic vulnerabilities and unreliable power infrastructure. While heat vulnerability has been studied in the San Juan Metropolitan Area, comprehensive assessments are lacking in other regions. Urban Heat Islands significantly impact public health, particularly in densely populated urban areas. This study aims to develop a Heat Vulnerability Index (HVI) for the municipality of Ponce to address this crucial research gap in heat vulnerability

assessment and inform evidence-based public health interventions. Method: The study employs a multifaceted approach integrating land surface temperature data and high-resolution NDVI from Landsat 8 Earth observational data (2014-2023), land cover information from NOAA's Coastal Change Analysis Program (CCAP), and social determinants of health indicators from the U.S. Census Bureau's American Community Survey (2020). These components are overlaid with thermal data to create a comprehensive spatial representation of heat vulnerability across the municipality. Results: Findings demonstrate significant spatial thermal variability within Ponce, with land surface temperatures ranging from 30.8°C to 45.3°C. In the hottest census tracts (>44°C), an average of 47% of residents live alone, 26% are over 65 years old, and over 80% live below 150% of the poverty threshold. These areas also show the lowest tree canopy coverage (<0.2%), particularly in densely populated urban zones with over 10,000 people per square mile. Conclusion: The developed HVI will enable the identification of sub-basins most at risk from extreme heat, facilitating targeted interventions and resource allocation. This research advances the understanding of urban heat islands in Puerto Rico and provides policymakers and urban planners with a valuable tool for addressing climate justice and equitable adaptation planning in vulnerable communities. Acknowledgments: This work was supported through the Caribbean Climate Adaptation Network (CCAN), a NOAA Climate Adaptation Partnerships team Grant Number NA22OAR4310545.

016

Environmental Contaminant Accumulation in the Gut of *Diadema antillarum* Across Four Puerto Rican Sites: A Metabolomics Study

Karina Marín Hernández[1,2], Alejandra Vázquez Medina[1], Elif Kardas[2,3], Juliana Ruiz Barrionuevo[4], Danniela Rivera Ortiz[1,5], Briana Bello Rivera[1,2], Marcos Quiñones Otero[6], Ruber Rodríguez Barreras[7], Claudia P. Ruiz-Díaz[6], Carlos Toledo-Hernández[6], Filipa Godoy Vitorino[3], Nataliya Chorna[1]
[1]Department of Biochemistry, University of Puerto Rico, School of Medicine, San Juan, PR;
[2]Department of Biology, University of Puerto Rico, Río Piedras Campus, San Juan, PR;
[3]Department of Microbiology, University of Puerto Rico, School of Medicine, San Juan, PR;
[4]Instituto de Ecología Regional, Universidad Nacional de Tucumán, Tucumán, Argentina;
[5]Interdisciplinary Department, University of Puerto Rico, Río Piedras Campus, San Juan, PR;
[6]Sociedad Ambiente Marino, San Juan, PR;
[7]Department of Biology, University of Puerto Rico at Bayamón, Bayamón, PR

Background and Objectives: A recent outbreak severely affected populations of the sea urchin *Diadema antillarum*, a crucial benthic herbivore in Caribbean reef ecosystems, raising concerns about environmental stressors affecting its health. This study aimed to investigate gut metabolite profiles and the accumulation of environmental contaminants in *D. antillarum* collected from four beaches in Puerto Rico. Methods: We employed untargeted gas chromatography-mass spectrometry (GC/MS) metabolomics to analyze gut metabolites of *D. antillarum* collected from four sites in Puerto Rico: Cerro Gordo (n=6), Sardinera (n=9), Punta Bandera (n=7), and Culebra (n=11). Gut samples were extracted, weighed, and analyzed using GC/MS. The resulting data were processed and analyzed using the MetaboAnalyst.ca platform. Results: The GC/MS analysis of gut metabolites in *D. antillarum* identified environmental contaminants associated with the industrial production of nitrilated goods (e.g., gloves, belts, gaskets, oil seals), waxes, lubricants, corrosion inhibitors, pesticides, bleaching agents,

detergents, and industrial solvents. Heatmap cluster analysis and one-way ANOVA revealed the highest levels of pollutants, such as ethanolamine, sulfamic acid, and 2-butene-1,4-diol, in urchin guts from Culebra site, characterized by consistently high concentrations and significant FDR values, while Cerro Gordo exhibited the lowest contamination among the sites. Conclusions: Our findings reveal site-specific environmental contaminants in the gut of *D. antillarum*. Elevated contaminant levels in Culebra are likely linked to localized pollution from human activity, industrial runoff, or shipping routes, raising concerns about potential impacts on marine ecosystems and this ecologically important species. In contrast, Cerro Gordo showed minimal contamination, reflecting lower industrial influence and better water circulation or reduced local pollutant inputs. These results emphasize the need for targeted conservation and pollution mitigation strategies to protect *D. antillarum* and its habitat. Further research is essential to assess the long-term effects of these contaminants and to guide effective conservation efforts. Acknowledgments: This research was supported by the NSF-RAPID Award #2243580 and the NIH/NIGMS-PRINBRE Grant #5P20GM103475.

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Cases of Imported Malaria in Puerto Rico (1992-2020): Low Incidence in a Tourism Hotspot

Rafael A. Ortiz, Adelfa E. Serrano
University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, Puerto Rico

Background and Objectives: Malaria remains a global health challenge, with over 263 million cases and 597 000 malaria deaths worldwide in 2023. Despite its malaria-free status since 1962, Puerto Rico faces potential risks from imported cases due to high international tourism and proximity to malaria-endemic regions, as well as a local population of *Anopheles albimanus* capable of serving as the vector for pathogenic *Plasmodium* species. Puerto Rico's status as a region which only experiences imported malaria depends on understanding why the island's case numbers are low. This knowledge is essential for strengthening public health strategies in Puerto Rico, as well as other vulnerable malaria-free countries. This study evaluates trends in imported malaria cases in Puerto Rico between 1992 and 2020 and examines the factors contributing to the island's consistently low imported malaria incidence. Methods: A retrospective analysis of surveillance data from the Centers for Disease Control and Prevention (CDC) was conducted, focusing on confirmed malaria cases among travelers. Comparative data from regions with geographic or epidemiological similarities, including Hispaniola, and the mainland United States, provided contextual insights. The literature search was conducted using the CDC website for their malaria surveillance reports, Google Scholar and the University of Puerto Rico library system (ProQuest). Results: Between 1992 and 2020, Puerto Rico consistently reported a low number of imported malaria cases, with 2001 and 2015 marking the highest annual numbers at eight cases each. Specific cases were associated with travel to neighboring endemic regions like the Dominican Republic. Most cases were caused by *Plasmodium falciparum*, followed by *P. vivax*. The constant flow of people between Hispaniola and Puerto Rico suggests the true numbers may be higher than reported. Conclusions: These findings provide valuable lessons for other non-endemic regions facing similar challenges, emphasizing the need for sustained vigilance and adaptive public health strategies. Acknowledgements: This research was partially supported by NIH- NIMHHD U54 MD007600 award U54MD00760. The authors want to thank Javier LaTorre for his significant contributions at the initiation of this work.

018

Synthesis, Structure, and In-Vitro Anti-Cancer Activity of (*E*)- and (*Z*)-2-Substituted-3-Carbazole-Acrylonitrile Hybrid Derivatives

Maryangeli Calderón-Sánchez, Zulma Ramos, Eliud Hernández
University of Puerto Rico, Medical Sciences Campus, School of Pharmacy, Department of Pharmaceutical Sciences, San Juan, Puerto Rico

Background & Objectives: The antitumor properties of carbazole derivatives have been correlated to their polycyclic, planar aromatic structure and large π-conjugated backbone, which noncovalently binds with DNA base pairs' hydrophobic pockets and forms electrostatic interactions to intercalate into DNA. On the other hand, highly substituted acrylonitrile scaffolds can be obtained in both the E- and Z-isomers, thereby contributing to the biological activity of compounds with this functionality. We hypothesized that carbazole-acrylonitrile derivatives as pharmacophores hybrids would act as potent anti-cancer and anti-migration compounds in highly metastatic cancer cells. Objective: This study aims to synthesize a series of 2-substituted-3-carbazole-acrylonitrile derivatives and analyze their cytotoxic effect and potential to inhibit cancer cell migration. Methods: Carbazole-acrylonitrile derivatives were synthesized via carbon-carbon bond formation using the Knoevenagel condensation methodology between aryl acetonitriles and 9-ethyl-3-carbazolecarboxaldehyde. All compounds were characterized by IR, NMR, UV-Vis, GCMS, and X-ray crystallography. We screened all compounds to determine their cytotoxic effect against MCF-7 (ER+) and MDA-MB-231 breast cancer cells using the Sulforhodamine B assay. The anti-migratory activity was determined using the wound healing assay on the metastatic MDA-MB-231 cells. Results: A series of seventeen compounds were synthesized in good to excellent yields. The single-crystal X-ray diffraction analysis of two representative compounds demonstrates the Z configuration of the double-bond and coplanarity with the carbazole ring. Among the synthesized compounds, three showed potent antiproliferative activity with GI50 in the range of 0.19 to 0.75 μM in the MDA-MB-231 cells. Also, two compounds showed potent antiproliferative activity with GI50 values ranging from 0.09 to 3.36 μM against MCF7 cells. Two compounds demonstrated potent anti-migration with 67% and 49% inhibition of wound closure at 2 μM. Conclusions: Our results suggest that carbazole-acrylonitrile hybrids represent a valuable combination of pharmacophores leading to bioactive molecules with potent antiproliferative activity and inhibition of cancer cell migration. Acknowledgments: This research was supported by PR-INBRE P20GM103475, NIGMS NIH 1SC2GM116712, and PRSTRT grants.

019

Top-Down and Bottom-Up Metabolomics Pipeline Reveals Shared Neurogenic Metabolic Signatures Across In Vitro and In Vivo Models

Alejandra Vázquez Medina[1], Karina Marín Hernández[1,2], Danniela Rivera Ortiz[1,3], Briana Bello Rivera[1,2], Sebastián Rodríguez Soto[1,4], David Ruiz Bolívar[1,3], Francisco Vizcarrondo[1,2], Brendimar Sierra Medina[1,3], Nataliya Chorna[1]

[1]Department of Biochemistry, University of Puerto Rico, Medical Science Campus, San Juan, PR;
[2]Department of Biology, University of Puerto Rico, Río Piedras Campus, San Juan, PR;
[3]Interdisciplinary Department, University of Puerto Rico, Río Piedras Campus, San Juan, PR;
[4]Department of Chemistry, University of Puerto Rico, Río Piedras Campus, San Juan, PR.

Background and Objectives: Extensive animal studies have shown that running exercise enhances neuronal differentiation of adult neuronal progenitor cells in the hippocampus. Similarly, neurogenesis can be modeled in vitro by treating human neuroblastoma SH-SY5Y cells with retinoic acid. Given that the induction of neurogenesis is profoundly dependent on metabolic reprogramming, uncovering conserved metabolic signatures across systems can help to identify critical pathways involved in its regulation. Our study aimed to use a combined top-down and bottom-up metabolomics pipeline to decipher shared metabolic features between hippocampal tissue and a cellular neurogenic model. Methods: Metabolites were identified using gas chromatography-mass spectrometry (GC-MS) in the hippocampus from 20-week-old male C57BL/6J mice (Jackson Lab) sedentary and running mice (top-down) and SH-SY5Y cells differentiated with retinoic acid (bottom-up). Data from both models were analyzed using a statistical meta-analysis, identifying metabolites significantly elevated across the two datasets based on FDR-adjusted p-values. Pathway enrichment and mRNA-metabolite interactions were analyzed using OmicsNet, utilizing the KEGG database to uncover neurogenic pathways and their biological processes. Results: Neurogenic stimuli used in both models significantly elevated asparagine, tryptophan, tyrosine, glutamine, and succinic acid. Pathway analysis revealed enrichment in tryptophan catabolism, serotonin and melatonin biosynthesis, metabolism of nucleotides, and the TCA cycle. Notably, TCA cycle enrichment indicated a shift from glycolysis to oxidative phosphorylation, a hallmark of neurogenesis reflecting increased mitochondrial activity. Conclusions: This integrated pipeline identified conserved metabolic signatures and neurogenic pathways that bridge global tissue-level insights and cellular mechanisms, providing a versatile framework for studying other tissues and their corresponding cell models. Future directions include validating key metabolites and pathways as therapeutic targets to enhance neurogenesis or treat neurological disorders. Acknowledgements: This work was supported by the NIH/NIGMS-PRINBRE Grant P20GM103475 and the UPR-MSC Deanship for Research Pilot Project Program.

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Targeting Matrix Metalloproteinase-3 to Reverse Chemotherapy Resistance in High-Grade Serous Ovarian Cancer

Víctor G. Reyes Burgos[1,2], Marienid Flores Colón[1,2], Eliud Hernández-O'Farrill[2], Luis E. Vázquez Colón[3], Pablo E. Vivas Mejía[1,2]. [1]University of Puerto Rico, Medical Sciences Campus; [2]University of Puerto Rico, Comprehensive Cancer Center; [3]Interamerican University, Arecibo Campus.

Background & Objectives: High-Grade Serous Ovarian Cancer (HGSOC) remains the most aggressive and lethal gynecological malignancy, with most patients developing resistance to platinum-based chemotherapies. Matrix Metalloproteinase-3 (MMP3), an enzyme involved in extracellular matrix remodeling, has been implicated in this resistance. Prior work in our lab demonstrated that MMP3 is overexpressed in chemotherapy-resistant ovarian cancer cell lines, including the cisplatin-resistant cells OVCAR3CIS and A2780CP20, compared to their sensitive counterparts, OVCAR3 and A2780, respectively. Our team previously showed that knockdown of MMP3 with small interfering RNA (siRNA) reduces cell growth

and invasion in cisplatin-resistant ovarian cancer cells. Methods: We have progressed toward therapeutic applications by developing small molecule inhibitors (SMIs) to target MMP3. Bioinformatics analysis was used to identify potential MMP3 inhibitor candidates from a library of 370,000 compounds. We then performed cell viability assays on resistant cells treated with the inhibitors, followed by an evaluation of combination inhibitor-cisplatin therapy. Results: Cell viability assays revealed that four out of 30 preselected SMIs significantly reduced cell viability in cisplatin-resistant cell lines. Further evaluation of combination therapy showed promising results, as pre-treating cisplatin-resistant HGSOC cells with SMIs resensitized the cells to cisplatin treatment. Conclusions: These findings provide compelling evidence that MMP3 inhibition can restore chemotherapy sensitivity in resistant HGSOC cells, offering a promising dual-therapy approach. This research represents a significant advancement in the development of novel therapeutic strategies to overcome chemotherapy resistance and improve outcomes for HGSOC patients. Moreover, this work lays the foundation for future therapeutic strategies aimed at improving treatment efficacy, particularly for chemotherapy-resistant patients. Acknowledgements: We would like to acknowledge to the NIGMS/ NIH R16 Sure Grant #1R16GM145558-03 (PEVM), the UPR Comprehensive Cancer Center, the G-RISE # 1T32GM14840601 (VGRB) and to the "Accelerating Covid-19 Treatments and Drug Development Grant" (PR-ACTD) of the Department of Economic Development and Commerce (PEVM).

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Real-Time Analysis of Rac1 Activity: Effects of Cancer Inhibitors and Cellular Host Factors

Sebastián A. Díaz Colón[1], Jessica Colón González[2], Myrna Morales[1], Yailiz A. Vélez[1], Ariana Rodríguez[1], Cornelis V. Vlaar[3], Suranganie Dharmawardhane[2], Marvin J. Bayro[1]
[1]Department of Chemistry and Molecular Sciences Research Center, University of Puerto Rico, Río Piedras Campus, San Juan, Puerto Rico;
[2]Department of Biochemistry, University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico;
[3]School of Pharmacy, University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico.

Background & Objectives: Rac-1, a small GTPase of the Rho family, plays a pivotal role in cellular processes, such as cytoskeletal remodeling and cell motility. In breast cancer, the aberrant activation of Rac-1 contributes to enhanced cellular migration and invasion, as evidenced with invasive cell lines, where they are often overexpressed. The goal of this study was to evaluate the Real-Time nuclear magnetic resonance (NMR) spectroscopy technique as an effective method for monitoring Rac-1 GTP hydrolysis and testing the efficacy of drug inhibitors like MBQ-167. We hypothesized that real-time NMR could provide a detailed, time-resolved understanding of Rac-1 regulation under different experimental conditions and demonstrate the inhibitors impact on GTP hydrolysis in Rac-1. Methods: GTP hydrolysis of Rac-1 was studied using real-time 31P NMR spectroscopy. Experiments were performed in-vitro using Rac-1 protein incubated with three different cancer cell lysates: untreated, heregulin-stimulated, and starved lysates. The effect of MBQ-167 on GTP hydrolysis was tested across all lysate conditions and GTP-to-GDP conversion was tracked in real time. Results: Real-Time NMR technique proved to be an efficient method to monitor hydrolysis mechanism of small GTPases like Rac-1, providing insight of the GTP concentration throughout the reaction and monitoring the protein structure and stability. The addition of lysates significantly accelerated the GTP hydrolysis reaction compared to Rac-1 alone, highlighting the role of cofactors like guanine nucleotide exchange factors

(GEFs) and GTPase-activating proteins (GAPs). Heregulin-stimulated lysates further enhanced Rac-1 activation by increasing GEF activity. Starved lysates showed reduced baseline cofactor activity, allowing MBQ-167 to exert a stronger inhibitory effect, accelerating GTP hydrolysis. Conclusion: This study highlights the utility of real-time NMR for studying Rac-1 dynamics and evaluating inhibitor efficacy. Our findings indicate that deactivating Rac-1 may be an effective inhibition strategy for targeting cancer. Future directions include targeting specific GEFs and GAPs within the lysates. Acknowledgements: This research was supported by RISE grant 5R25GM061151-23.

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Short-Chain Fatty Acids and Immune Phenotypes: Implications for HIV-Related Inflammation

Jurelis Torres-Reyes[1], Juliana M. Serrano-Rodríguez[1,2], Kamila A. Andino-Del Valle[1], Stephanie M. Dorta-Estremera[1,3], Gabriel Borges-Vélez[1], Jeannette L. Salgado-Montilla[1], Josué Pérez-Santiago[1,3]
[1]University of Puerto Rico, Comprehensive Cancer Center, San Juan, PR;
[2]University of Puerto, Rico, Río Piedras Campus, San Juan, PR;
[3]University of Puerto Rico, Medical Science Campus, San Juan, PR.

Background/Objectives: Despite antiretroviral therapy, people with HIV (PWH) continue to experience chronic inflammation and immune dysfunction. Microbial metabolites, including short chain fatty acids (SCFA), such as Butyrate, Propionate and Isobutyrate, are crucial to mediate innate and adaptive immune responses under homeostatic conditions. SCFAs have been shown to enhance differentiation and boost the production of immunoglobulin antibodies in B cells. However, microbial dysbiosis can impact SCFA levels and promote immune dysfunction and the translocation of bacterial products. Here, we evaluated B cells in relation to microbial products in PWH. Methods: Blood samples, and clinical data from 24 adults (12 HIV+ and 12 HIV-) were collected. We characterized B cell subsets through flow cytometry. We used the following antibody combinations to evaluate immune tissue-like memory B cells (TLM) (CD10-CD27-CD21lo), resting memory (CD27+CD21hi), activated memory (CD10-CD27+CD21lo), and IgA-producing (CD4-CD19+CD20-CD27++IgA+): CD21-PB, CD19, CD27-, CD10-PerCPCy5.5, and IgA-FITC. Also, we measured Immature/Transitional B cells (CD10+CD27-), and naïve B cells (CD10-CD27-CD21hi). SCFA levels were measured in blood plasma using GC-MS. Statistical analyses were performed using R-statistical software (ver. 4.3). Results: PWH had higher levels CD19+ TML naïve B cells (p=0.02), significantly higher levels of CD19+ resting memory naïve B cells (p=0.02). Higher levels butyrate (r=-0.50, p=0.013), propionate (r=-0.56, p=0.004), and Isobutyrate (r=-0.50, p=0.015) were associated with lower levels of TML naïve B cells. Conclusion: We found a specific immune profile and SCFA associated with HIV infection, suggesting that the microbial products may influence B cell phenotypes in Puerto Rican PWH. TLM B cells are associated with chronic immune activation and inflammation and can contribute to immune deficiencies. IRB Approved: Protocol #: B2230120 (09/27/2024). Acknowledgments: This research was supported by the National Institute on Minorities Health and Health Disparities (RCMI Program: U54MD007600). We would also like to thank PR-CoNCRA and the Hispanic Alliance for Clinical & Translational Research (U54 GM133807) for supporting us in recruitment and specimen collection, and especially our study participants. The content is solely the authors' responsibility and does not necessarily represent the official views of the University of Puerto Rico Comprehensive Cancer Center.

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Drug Delivery Using Layered Zirconium Phosphate Nanomaterials

Jorge L. Colón, PhD
University of Puerto Rico, Río Piedras Campus, Department of Chemistry, San Juan, Puerto Rico

Background & Objectives: The θ phase of layered zirconium phosphate (ZrP) inorganic nanomaterial can be directly ion-exchanged with metal complexes and bioactive molecules for drug delivery applications. Anticancer drugs such as cisplatin (CisPt), doxorubicin (DOX), mitoxantrone (MTX), and gemcitabine (GEM), as well as the antibacterial drug polymyxin B (PoB) and the potential antimalarial agent tris(2-benzimidazolylmethyl) amine (TCMDC-124132), can be intercalated in ZrP. Methods: In separate studies these drugs were ion exchanged into ZrP to produce intercalated phases. Characterization of the intercalated phases were conducted using X-ray powder diffraction (XRPD), infrared (IR) spectroscopy, thermogravimetry analysis (TGA), scanning electron microscopy-energy dispersive spectroscopy (SEM-EDS), and 31P solid state nuclear magnetic resonance (SS-NMR) spectroscopy. Drug release experiments were performed at different pHs using buffers, simulated body fluid, and artificial lysosomal fluid. Cell viability studies were conducted in breast, prostate, and ovarian cancer cell lines. We have modified the surface of these nanocarriers using polyethylene glycol or cancer cell membrane fragments for improved biocompatibility and bioactivity and have studied dual intercalation strategies for possible combined therapy. Results: Results of the studies indicate that the unintercalated ZrP nanoparticles are not toxic. Characterization results indicated successful intercalation of all anticancer, antibacterial and antimalarial drugs into ZrP. For combined anticancer drug therapy with CisPt and DOX, the best nanocarriers were intercalated first with DOX and then with CisPt, as evidenced in the microscopy and drug release experiments. Conclusions: The use of these ZrP materials for anticancer, antibacterial, and antimalarial treatments could represent a new strategy for nanotherapeutics with enhanced activity and selectivity. Acknowledgements: This research was supported by NIH grant RISE 5R25GM061151-23, Bridge to the Doctorate Fellowship from the Puerto Rico Louis Stokes Alliance for Minority Participation (PR-LSAMP) grant HRD-1826558, the UPR NASA Space Grant Program grant NNX15AI11H, and the Chateaubriand Fellowship of the France Embassy in Washington, D.C.

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The Effects of Physically and Affectively Exaggerating Hand Gestures on L2 Mandarin Tone Production

Elizabeth Velázquez Fernández[1], Paige Ávila[2], Madeline Chernavsky[3], Bailey Cooper[4], Yukari Hirata[4], Spencer D. Kelly[4]. [1]University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico; [2]Grace Medical Home, Orlando, Florida, USA; [3]Stony Brook Dermatology Associates, Stony Brook, New York, USA; [4]Center for Language and Brain, Colgate University, Hamilton, New York, USA.

Background and Objectives: Mandarin tones are hard to learn for non-tonal language speakers because pitch indicates separate lexical meanings, with each syllable assigned one of four tones. To help learners improve, researchers have asked novices to produce hand gestures representing rising and falling pitches, with results showing modest benefits (Zheng et al., 2018). Extending this work, the present study explored whether physically

and affectively exaggerating gestures enhances Mandarin tone production in intermediate learners. There were two main predictions: (1) performing co-speech hand gestures should increase tone production accuracy compared to speech alone (replication of Zheng), and (2) the speech+gesture+emotion (SGE) condition should increase accuracy compared to the speech+gesture (SG). Methods: Participants viewed videos of the Mandarin tones produced in three conditions: speech alone (S), speech+gesture (SG), and speech+gesture+enthusiasm (SGE). In the S condition, a native speaker spoke the tone without arm movements or emotional facial expressions. In the two gesture conditions, exaggerated hand gestures followed the contour of the tones; for the SGE condition, the speaker produced enthusiastic facial expressions. For tones within each condition, participants were video recorded while imitating the model. There were two main dependent measures: (1) acoustic analysis of fundamental frequencies and (2) subjective measures collected from a post-experiment questionnaire. Results: There were no beneficial effects of gesture or emotion on Mandarin fundamental frequencies, but combination of gesture and emotion (SGE condition) significantly increased self-assessment reports of motivation, enjoyment, preference, and helpfulness. Conclusion: Although no significant impact of gesture or emotion on tone were found, our results suggest that the use of gestures and emotions by teachers increase students' interest and motivation in L2 language learning. Engagement is crucial for learning, thus finding ways to keep students interested and motivated is important. Approved by IRB: ER-F23-37. Acknowledgments: Research was supported by Colgate's Center for Language and Brain.

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Supporting Occupational Therapists in Assistive Technology Service Delivery through Digital Tools

Elsa M. Orellano-Colón, PhD[1]; Frances E. Colón-Peña, OTS[1]; Justin J. Hugger Olavarrieta, OTS[1]; Karelisse Fernández Morales, OTS[1]; Elizabeth M. Palleja Valentín, OTS[1]; Yania M. Velázquez De Jesús, OTS[1]; Abiel Roche-Lima, PhD[2]
[1]University of Puerto Rico, Medical Sciences Campus, School of Health Professions, Occupational Therapy Program; [2]University of Puerto Rico, Medical Sciences Campus, RCMI-RCC

Background & Objectives: Occupational therapists (OT) are vital in improving older adults' access to assistive technology (AT), which is essential for their participation in home and community life. However, these professionals often face challenges such as inadequate follow-up, scheduling conflicts, and a scarcity of educational materials on AT. This research investigates the effectiveness and perceived benefits of the My Assistive Technology Guide (MGAT) web application from the viewpoint of occupational therapists serving older Hispanic adults in Puerto Rico. Methods: Using a convergent parallel mixed methods approach, the study involved nine participants. Initially, OTs underwent training to familiarize themselves with the MGAT. Subsequently, they used the app for a 30-day period. Finally, participants completed the User Mobile Application Rating Scale and participated in individual interviews, with the data subjected to descriptive statistical analysis and thematic analysis. Results: The MGAT achieved strong objective quality scores (mean = 4.10; SD = 1.19) along with favorable subjective quality ratings (mean = 3.92; SD = 1.32) and perceived impact assessments (mean = 4.00; SD = 1.35), all reflecting positive evaluations on a scale where 5 represents the maximum score. Qualitative insights indicated that the participants found the MGAT to be highly acceptable and beneficial in enhancing the recommendations, education, and training of the OT

regarding AT for older adults and their families. Conclusions: The findings suggest that MGAT holds considerable promise to improve the delivery of AT services to older adults and their caregivers. Future studies should also explore the long-term impact of using MGAT on patient functional outcomes. Acknowledgments: This research was supported by HiREC-NIMHD S21MD001830 and the Alliance-NIGMS U54GM133807.

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Factors Associated with Occupational Participation and Occupational Performance in a Sample of Students of Health Professions

Arnaldo Cruz-Rivera, Génesis Burgos, Cynthia Freytes,
Yarianna Moreno, Evelyn Rodríguez, Camille Torres
University of Puerto Rico, Medical Sciences Campus, School of Health Professions, San Juan, Puerto Rico

Background and Objectives: Occupational participation and occupational performance are important factors to consider within the assessment and intervention process to achieve role competence and improve quality of life and wellness in students. The objective/goal of present research is to explore the occupational participation and occupational performance in a sample of students over 21 years old from undergraduate and graduate programs at a school specialized in health professions. Method: The Sociodemographic Data and Occupational Participation Questionnaire (Cruz, et al. 2020) was administered to a sample of 467 enrolled students in a School of Health Professions. Descriptive and exploratory statistical analysis were carried out in a cross-sectional-non-experimental design to describe the sample in terms of occupational participation and areas of occupational performance. Results: The sample is characterized as one that assumes multiple roles and co-occupations beyond the role of student such as worker, caregiver, family and church member, and volunteer in community activities, which may affect its overall academic performance and occupational balance. A limitation was found in the performance of areas such as Basic Activities of Daily Living, the number of hours and quality of sleep/rest, and the degree of social participation. Statistically significant differences ($\alpha = .05$) were found between the average of mindfulness for the variables of worker role, and for the level of self-efficacy with age range, degree of limitation in activities of daily living, and the perception of the health status. Conclusion: Areas of occupational performance at risk in the student sample include limited social participation, poor sleep/rest patterns, and limited diversity in leisure activities with primarily passive/sedentary interests. The results suggest the potential to study occupational participation in more detail with the purpose of developing preventive and intervention programs based on occupation to improve role competence, wellness, and overall quality of life. IRB Approved: Protocol #: 9160120 (Dec. 2020)

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Intervención sobre Aspectos Suprasegmentales a Pacientes con Disartria luego de un Accidente Cerebrovascular

Verónica Andrea López Figueroa
Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela de Profesiones de la Salud,
Programa de Patología del Habla-Lenguaje, San Juan, Puerto Rico.

Pregunta Clínica: En pacientes hispanohablantes puertorriqueños con habla monótono y velocidad del habla lenta secundario a disartria luego de un accidente cerebrovascular (P), ¿cómo el tratamiento con estrategias conductuales dirigidas a mejorar prosodia (I) es más efectivo en comparación al tratamiento con estrategias conductuales dirigidas a mejorar aspectos fisiológicos (C) para rehabilitar las características suprasegmentales afectadas (O)? Alcance del Proyecto: En la práctica clínica, los y las profesionales de patología del habla-lenguaje (PHL) utilizan tanto el contexto clínico como la evidencia científica para desarrollar protocolos de intervención adecuados. Sin embargo, las dificultades prosódicas secundarias a disartria luego de un accidente cerebrovascular (ACV) en pacientes puertorriqueños no han sido estudiados dejando en duda cuales son los acercamientos adecuados. Revisión de Literatura: La prosodia se ve afectada en todos los tipos de disartria, impactando la respiración, ritmo, volumen, tono e inflexiones del habla, lo que reduce la naturalidad y la participación social de los pacientes. Los y las PHL se centran en restaurar, compensar y ajustar las destrezas de los clientes mediante enfoques conductuales. Las estrategias terapéuticas abordan entonación y acentuación, mejorando medidas como velocidad del habla, capacidad entonativa, tiempo de fonación máxima y diadocoquinesia oral. Implementación: Este proyecto se realizó en la clínica de rehabilitación ambulatoria del Hospital Oncológico Dr. Isaac González Martínez, utilizando un protocolo de intervención basado en evidencia que incluye el método de acentuación y ejercicios de entonación contrastiva. Se registraron datos objetivos y perceptuales en las evaluaciones inicial y final, así como la ejecución de las tareas durante las intervenciones. Resultados: La intervención para la rehabilitación de las destrezas prosódicas aumentó la inteligibilidad, capacidad fonorespiratoria, precisión articulatoria y capacidad de producir entonación contrastiva espontáneamente. Implicaciones Clínicas: El protocolo diseñado promueve la rehabilitación de los aspectos prosódicos del habla, siendo una herramienta terapéutica útil para contextos similares.

028

Procalcitonin in Veterans with HFpEF and Concomitant Pro Inflammatory Co-morbidities Hospitalized with Acute Decompensated HF

María A. Cabrera-Echevarría[1,5]; Sergio A. Vidal-Rosa, MS[5]; Stephanie Ortiz-Troche, MD[4]; Sonia Vicenty-Rivera, MD, FACC[3]; Ingrid Bonilla-Mercado, PhD[1,2,5]
[1]University of Puerto Rico, Río Piedras Campus; [2]University of Puerto Rico, School of Medicine, Department of Pharmacology and Toxicology; [3]Veterans Affairs Miami, FL, Cardiology Department; [4]Veterans Affairs Caribbean Healthcare System, Cardiology Department, San Juan, PR; [5]Veterans Affairs Caribbean Healthcare System, Research and Development Department, San Juan, PR.

Background: Heart failure (HF) is a chronic ailment and the end point of other cardiovascular diseases with a 5-yr life expectancy upon diagnosis. The addition of co-morbidities represents a worse prognosis for HF patients and increases the chances of hospitalization. HF is classified as a reduced ejection fraction (HFrEF) and preserved ejection fraction (HFpEF). Pro BNP is a reliable biomarker for HFrEF prognosis, but not for HFpEF. Thus, there is a need to find indicators for HFpEF. Procalcitonin (PCT), a precursor of the hormone calcitonin, is undetectable in circulating blood from healthy individuals but can be produced, by pro inflammatory cytokines. We aimed to assess the levels of PCT in HF patients hospitalized with acute decompensated HF and discern if there is any difference in PCT levels between HFrEF and HFpEF. We hypothesize that PCT levels are increased in HFpEF patients being hospitalized from acute decompensated HF with concomitant pro-inflammatory diseases. Methods: This study was approved by the

VACHS Institutional Review Board (#1691045). Is a retrospective study of patients admitted to VACHS with acute decompensated HF. Co-morbidities, echocardiographic measurements, demographics, medications, and hospital stay information were collected for the fiscal years 2021 and 2022. Results: N=182 males (average age=83) were included in the study. N=55 had HrEF and N=127 HFpEF. BMI was significantly higher in HFpEF than HFrEF. As expected ProBNP was significantly higher in HFrEF group than in HFpEF. PCT was significantly higher in HFpEF vs. HFrEF (0.16 ng/mL ± 0.21 vs 0.12 ng/mL ± 0.11). Common co-morbidities were: Hypertension in both followed by diabetes and atrial fibrillation in HpEF and coronary artery disease and diabetes in HFrEF. Our data demonstrates that HFpEF patients with concomitant pro inflammatory diseases have higher PCT than those with HFrEF suggesting a possible role for PCT as a biomarker in HFpEF patients. Acknowledgment: This material is based upon work supported by the Research and Development Service, your section or department and Department of Veterans Affairs, Caribbean Healthcare System San Juan, P.R. Disclaimer: The contents of this abstract do not represent the views of the VA Caribbean Healthcare System, the Department of Veterans Affairs or the United States Government.

029

Empowering Anesthesia Care through Evidence-based Practice: Elevating Outcomes with High Flow Nasal Cannula in Obese Surgical Patients Undergoing General Anesthesia

Wendy K. Mancia, Cadeem S. Marcelino, Jessie B. Valdez,
Elfren A. Colón Rodríguez, Albert J. Albors, Milagros Figueroa
University of Puerto Rico, Medical Sciences Campus, School of Nursing

Clinical Question: In obese surgical patients undergoing general anesthesia, how does using a high-flow nasal cannula (HFNC) compared to a simple face mask affect safe apnea time, time to desaturation, frequency of SpO_2 ≤ 95%, and lowest desaturation during induction? Scope: Obesity (BMI ≥30 kg/m²) reduces functional residual capacity by up to 50%, increasing the risk of rapid desaturation during apnea, particularly during endotracheal intubation. Evidence from randomized trials suggests HFNC enhances oxygenation in obese patients by prolonging safe apnea time, delaying desaturation, and maintaining higher SpO_2 levels compared to conventional oxygen therapy. Literature Review: A systematic review of seven studies selected from 162 consistently demonstrated HFNC's superiority in prolonging safe apnea time and maintaining higher oxygenation levels during anesthesia induction. Project Implementation: After obtaining informed consent, patients were transported to the OR and connected to ASA standard monitors. A HFNC was initiated at 20 L/min for preoxygenation and increased to 70 L/min during induction. General anesthesia was administered without bag-mask ventilation. Apnea time, SpO_2 levels, and desaturation events were monitored for up to two minutes. Endotracheal intubation was performed within two minutes or earlier if necessary, and HFNC was removed post-intubation. Results: The median lowest SpO_2 during the monitored two-minute safe apnea time was 99.3%. Among the twelve patients included, 58.3% maintained a SpO_2 of 100%, 16.7% sustained 99%, 16.7% recorded 98%, and 8.3% decreased to 97%. None of the participants experienced desaturation levels below 97%. These results align with the literature about the effectiveness of HFNC. Implications for Practice: HFNC enhances perioperative safety in obese patients by providing continuous oxygenation at higher flow rates, increasing safe apnea time. This device is beneficial in difficult intubation scenarios or when bag-mask ventilation is not indicated, making it a valuable tool for high-risk cases. IRB Approved: Protocol #: 2407250298 (07/17/2024). Acknowledgments: No conflicts of interest to disclose.

030

Factors Contributing to Noncompliance with 60-minutes Door-to-Needle Time in Acute Ischemic Stroke Patients Treated with Tenecteplase in the UPR Hospital Emergency Department

Víctor Ramos De Jesús, BS, MS-IV[1]; Jael E. Camacho Matos, MD, PGY-2[2]; Juan González Sánchez, MD[2]
[1]UPR School of Medicine; [2]UPR School of Medicine, Emergency Medicine Department
Corresponding author: jael.camacho@upr.edu

Background: The American Heart Association and American Stroke Association recommend initiating intravenous thrombolysis (IVT) within 60 minutes of arrival for acute ischemic stroke (AIS) patients. A recent review at our institution highlighted noncompliance with this goal. Given the critical importance of time in AIS management, we conducted an analysis to identify barriers and areas for improvement in the stepwise stroke protocol process at our institution. Methods: We analyzed de-identified data from patients treated with IVT for AIS at the UPR Hospital Emergency Department over three years. We collected data points that included time from arrival to initial evaluation, CT imaging orders, CT completion, radiologist report, and IVT administration. Descriptive statistics, including medians and ranges, were used to present results due to non-parametric data distribution confirmed by Shapiro-Wilk testing. Results: Among twenty-eight cases reviewed, only one (3.6%) met the 60-minute door-to-needle (DTN) goal. Median times were as follows: 7:30 minutes from arrival to initial medical evaluation, 25:00 minutes from arrival to CT completion, and 11:00 minutes from CT order to CT completion. The median time from CT completion to radiologist report was 39:00 minutes, resulting in a total time of 69:29 minutes from arrival to CT report. IVT administration occurred a median of 48:59 minutes after CT was completed, leading to a median DTN time of 1:54:00. Conclusion: This study identifies key delays in achieving the 60-minute DTN goal, particularly in radiology reporting and IVT administration after finalizing CT results. However, compliance was observed with initial medical evaluations and CT completion times. Further investigation is needed to address these barriers and enhance stroke protocol efficiency. Acknowledgment: None.

031

Incidental Discovery of Asymptomatic Pulmonary Artery Stenosis during Management of STEMI with Right Atrial Thrombus: A Case Study

Eduardo S. Pérez, BS[1]; Jorge F. García, BS[2]; Christopher A. Rodríguez, BS[2]; Edwin Rodríguez, MD[3]
[1]Universidad Central del Caribe, School of Medicine, Bayamón, Puerto Rico;
[2]San Juan Bautista School of Medicine, Caguas, Puerto Rico;
[3]Cardiovascular Center of Puerto Rico and the Caribbean, San Juan, Puerto Rico

A 55-year-old male with a history of type 2 diabetes mellitus, hypertension, and two previous episodes of deep venous thromboses (DVT) (2017 and 2021) presented with a 2-day history of nausea, vomiting, weakness, and syncope. Medical history was significant for discontinued anticoagulation therapy (rivaroxaban) due to

insurance issues, and current medications included: lisinopril, atorvastatin, and metformin. In the Emergency Department, the initial examination revealed an anxious but alert patient with normal heart sounds and no respiratory distress. He experienced cardiac arrest, manifesting as atrial fibrillation progressing to ventricular fibrillation, requiring 7-8 minutes of ACLS protocol. Post-resuscitation electrocardiograms revealed anterior STEMI, complete AV block, and atrial flutter. An emergent cardiac catheterization demonstrated 90% proximal LAD and 30% distal RCA stenosis. A temporary ventricular pacemaker was placed under fluoroscopic guidance. Later, bedside 2D-echocardiogram identified a pedunculated and very mobile echodense structure, compatible with large thrombus in the Inferior Vena Cava- Right Atrial junction. Three days later, after the initial presentation, mechanical thrombectomy was performed successfully. Pulmonary arteriograms were performed and showed poor perfusion in the right upper lobe, raising concern for acute pulmonary embolism. However, further intraprocedural imaging revealed that poor flow resulted from severe pulmonary artery stenosis, of the secondary branches supplying the upper right lung, most likely due to chronic embolisms, rather than an acute event. The patient underwent successful angioplasty of the right upper lobe pulmonary artery branches with improved perfusion after the intervention. The hospital course concluded with stabilization on anticoagulation, dual antiplatelet therapy, implantation of an intravenous cardiac defibrillator with resynchronization therapy and glycemic control. This case demonstrates the use of new therapies for rare but life-threatening complications of arrhythmias and myocardial infarctions, as cardiac thrombosis and how comprehensive vascular assessment during cardiac interventions can reveal clinically silent but significant pulmonary vascular remodeling in asymptomatic post-thrombotic patients. Acknowledgements: None.

032

Right Shoulder Pain in a Female Water Polo Player: A Case of Paget-Schroetter Syndrome

Pedro E. Rodríguez-Ortiz, MD, MPH[1]; Saribel Torres-Ortiz, MD[2]; Fernando Zayas, MD[2]; William Micheo, MD[1]
[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Physical Medicine, Rehabilitation & Sports Medicine, San Juan, Puerto Rico;
[2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Family Medicine, San Juan, Puerto Rico

Paget-Schroetter Syndrome, also known as effort thrombosis, refers to axillary-subclavian vein thrombosis associated with strenuous and repetitive activity of the upper extremities. It is rare, and diagnosis is most times delayed as it occurs in young active individuals. This case presents a 33-year-old female water polo athlete, with history of focal glomerulosclerosis in remission and recent COVID-19 infection, who presents with right shoulder pain, limited range of motion, fullness sensation, and edema of entire right upper extremity for 2 weeks. Patient was practicing intensively in the upcoming weeks for a league competition when she started to develop symptoms gradually. At first, the patient thought it was a muscular strain and scheduled appointments for physical therapy. Despite this, symptoms persisted, making water polo practices difficult every day. Upon examination, there were prominent anterior shoulder superficial veins. Right shoulder tenderness to palpation, limited range of motion secondary to pain and fullness sensation, and edema of the entire right arm. The circumference of the right upper extremity was greater than the left. Sensation and strength were intact. No focal

neurologic deficits noted. A right upper extremity venous duplex was ordered, and an acute right subclavian deep venous thrombosis was found. Anticoagulation was immediately started with rapid improvement in symptoms. This report immerses in all the possible differential diagnosis and options for treatment. It details different aggressive management options, crucial to achieve rapid improvement and to avoid recurrence. It is crucial to raise awareness for effort thrombosis, different risk factors that may be taken into consideration, and its different alternatives for management including an adequate return to sport.

033

Subdural Hematoma and Traumatic Meningeal Enhancement in Patients with Acute Traumatic Brain Injury

Alejandro Arbona-Lampaya[1,2]; Nicole Peterkin[1];
Lawrence L. Latour, PhD[1];
L. Christine Turtzo, MD, PhD[1]
[1]Acute Cerebrovascular Diagnostics Unit,
National Institute of Neurological Disorders and Stroke, Bethesda, MD;
[2]University of Puerto Rico, School of Medicine, San Juan, Puerto Rico

Background: Subdural hematoma (SDH) is common in patients with acute traumatic brain injury (TBI). Traumatic meningeal enhancement (TME) of the subdural space is visible on post-contrast MRI following gadolinium administration. TME of the subdural space has been described in patients with SDH, suggesting overlapping pathophysiology. We explored the relationship between SDH and TME to determine whether TME is a marker of SDH, or whether TME is a distinct entity. Methods: This retrospective analysis included 150 consented patients with post-contrast MRI scans within 48 hours of injury from the Traumatic Head Injury Neuroimaging Classification (THINC) study. One rater reviewed Gradient Echo (GRE), pre-contrast fluid-attenuated inversion recovery (FLAIR), and post-contrast FLAIR axial brain MRI. Cohen's kappa was performed, and discordant pairs during intra-rater agreement analysis were reviewed by a second independent rater. Areas with SDH were inspected for TME, and SDH outside TME areas were noted. Study data was reviewed for interpretation accuracy, and 2x2 contingency tables analyzed results. Results: Cohen's kappa demonstrated intrareader and interreader agreement for SDH and TME was substantial (Kappa of 0.9, Kappa of 0.8). Of the 150 included patients (99 Males, 51 Females, median age 49 [30-63.8]), 107 (71.3%) had TME, 77 (51.3%) had SDH, and 76 (50.7%) had both. 98.7% of patients with SDH also had TME present ($p<0.001$). Of these, 72 (94.7%) had SDH and TME overlapping in at least one area. Inversely, only 71% of patients with TME also had SDH present ($p<0.001$). Only 15.9% of patients with TME had no evidence of brain hemorrhage, and 1 showed SDH with no TME ($p<0.001$). Conclusion: TME was seen without SDH in 31 of 107 cases, SDH and TME were seen together in 76 of 77 cases, but SDH is seldom seen without TME. They likely represent very similar pathophysiology. This discordance may reflect a spectrum of severity of injury. IRB Approved: Protocol #: 10N0122 (06/18/2024).
Acknowledgments: We would like to thank the patients and families involved in this study, the NIH TBI Team at Suburban Hospital and Medstar Washington Hospital Center, the THINC Study, supported in part by Center of Neuroscience and Regenerative Medicine (CNRM) and NINDS, and the NIH Intramural Research Program.

034

Ruptured Ovarian Cyst-Induced Hemoperitoneum Complicated by Antiphospholipid Syndrome and Antithrombin III Deficiency

Adrian A. Naoun[1], Yandy García1, Max Ramírez Vázquez[1], Raysa López Torres[2], Ernesto García[3]
[1]San Juan Bautista School of Medicine, Caguas, PR, USA;
[2]University of Medicine and Health Sciences, Basseterre, St. Kitts & Nevis;
[3]Hospital Menonita, Caguas, PR, USA

Purpose: Antiphospholipid Syndrome (APS) may coexist with other thrombophilic conditions, such as antithrombin III (AT III) deficiency, thereby elevating thrombosis risks. Case description: Herein, we present the case of a 28-year-old female, on anticoagulation therapy for APS and AT III deficiency, who presented with severe pelvic pain rated 8/10, nausea, and emesis. On admission, the patient was hypotensive, tachycardic, and exhibited pelvic tenderness and guarding. Initial laboratory evaluation revealed a hemoglobin (Hb) level of 11.5 g/dL, which progressively decreased to 6.3 g/dL, along with a prothrombin time of 67.4 seconds (s), a partial thromboplastin time of 45.8 s, and a markedly elevated INR documented at 7.08. Shortly thereafter, a transvaginal ultrasound revealed diffuse heterogeneous echogenicities in the pelvic cavity, perihepatic space, Morrison's pouch and left paracolic gutter, originating from 4.0 cm focal, heterogeneous, ill-defined right ovarian cyst. A confirmatory CT scan showed a ruptured hemorrhagic ovarian cyst with moderate abdominal and pelvic hemoperitoneum, accompanied by acute hemorrhagic foci circumambient to the cul-de-sac. Management initially focused on hemodynamic stabilization via packed red blood cell transfusions, followed by placement of a CT-guided 10 French auto-perforated drainage line (pigtail) catheter to evacuate the pelvic hematoma. Although aggressive anticoagulation reversal was indicated due to the ongoing hemorrhagic shock and elevated INR, the risk of thrombosis posed by the underlying APS and antithrombin III deficiency complicated management. Consequently, a multidisciplinary team temporarily withheld anticoagulation. Follow-up CT twelve days later confirmed hemoperitoneum resolution, permitting catheter removal. Conclusion: In conclusion, concurrent APS and AT III deficiency is exceptionally rare and presents substantial clinical challenges requiring tailored strategies to balance anticoagulation risks with hemorrhagic complications. Future research should focus on consolidating standardized, evidence-based protocols to guide the management of combined thrombophilic states and optimize clinical outcomes. Acknowledgments: No funding or conflicts of interest.

035

A Complex Case of Congenital Anomalies: Diaphragmatic Hernia, Pulmonary Hypoplasia, and Hypoplastic Left Heart Syndrome in a Newborn

Miriam Rivera Hernández, MD[1]; Vicente Jiménez Llovera, MD[1]; Amanda Díaz Méndez, MD[1]; Génesis A. Sánchez Sánchez, MD[1]; Amarilis Rivera, MD[2]
[1]San Juan City Hospital, Department of Pediatrics, San Juan, Puerto Rico;
[2]San Juan City Hospital, Department of Neonatology, San Juan, Puerto Rico

Purpose: A complex case involving multiple congenital anomalies, including left congenital diaphragmatic hernia complicated by congenital heart disease with hypoplastic left heart syndrome, not diagnosed in utero. Additionally, the patient presented with ambiguous genitalia. This case highlights the high mortality of the condition and the importance of proper prenatal evaluation in preparing against the challenges of management at birth. Case Description: Case of a baby born at 31 weeks gestation via cesarean due to non-reassuring fetal heart rate to a 20-year-old mother with adequate prenatal care, but pregnancy was complicated with PPROM. At birth, the patient was bradycardic with no spontaneous respirations, cyanotic, and hypotonic for which resuscitative measures were initiated. On further evaluation, ambiguous genitalia were noted, making it difficult to distinguish the baby's sex. Chest x-ray was remarkable for large left diaphragmatic hernia with complete herniation of bowel contents. The patient remained hemodynamically unstable and was started on inotropic support without response. Despite all medical efforts to improve ventilation and cardiovascular response, the patient passed away after two hours. Autopsy findings demonstrated hypoplastic left heart syndrome, bilateral pulmonary hypoplasia, germinal matrix hemorrhage with intraventricular hemorrhage, subarachnoid hemorrhage, marked cerebral and meningeal congestion with an immature brain and acute hypoxic changes. This constellation of findings raises the suspicion of PAGOD syndrome as a possible underlying genetic etiology. Conclusion: Congenital diaphragmatic hernia, pulmonary hypoplasia and hypoplastic left heart syndrome are critical congenital anomalies which significantly impair respiratory function, circulatory dynamics and potentially leading to severe complications if not promptly diagnosed and treated. Early detection is crucial, as it allows for timely surgical intervention, preparation for intensive care, and improved overall outcomes for affected infants. Acknowledgement: None.

036

Severe Hemolytic Anemia Reported at Birth: A Case Report

Fiorella Raffucci Velázquez, MD; Katherine Carrero Martínez, MD;
Norma Claudio, MD; Amarilis Rivera Marrero, MD;
Israel Matías, MD; Álvaro Santaella, MD
Department of Neonatology, San Juan City Hospital, San Juan, Puerto Rico

Purpose: Hemolytic anemia is a condition characterized by the destruction of red blood cells, leading to increased hemoglobin catabolism, reduced hemoglobin levels, and heightened bone marrow activity in response to regeneration. In neonates, an elevated nucleated red blood cell (nRBC) count suggests bone marrow release due to blood loss or hypoxia, which may indicate increased red blood cell production outside the bone marrow or a disruption of the blood-bone marrow barrier. This case explains an anomaly in severe hemolytic anemia at birth and describes crucial actions needed. Case description: A term, male newborn admitted to our Neonatal Intensive Care Unit (NICU) whose etiology of anemia was not immediately apparent. No obstetric complications were reported, and vital signs were within the normal ranges for gestational age upon admission. Severe anemia may present with pallor, tachypnea, tachycardia, hepatomegaly, hypovolemic shock, or the need for respiratory support. In our case, the neonate was presented with an Apgar score of 7 and 8, severe pallor, a normal heart rate, and blood pressure. Initial labs showed hemoglobin of 3.5, a very high nRBC and reticulocyte count, elevated Mean Corpuscular Volume (MCV), and low Red cell Distribution Width (RDW). We managed the

anemia with an intravenous push of isotonic saline while awaiting blood transfusion. Acute blood loss at birth, isoimmunization, and parvo B19 were quickly ruled out in the early clinical course. Hematology consulted: IgG for Parvovirus and CMV positive, IgM ToRCHES negative and normal quantified G6PD. Conclusion: Subacute hemolytic anemia can occur in newborns without identifiable risk factors or signs of hemodynamic instability, as seen in our patient. Prompt action is crucial. The absence of fetal hydrops helped rule out chronic or long-standing anemia. The severity of the anemia linked to the absence of tachycardia, tachypnea, metabolic acidosis, and hypotension, suggests a subacute rather than an acute evolution. Acknowledgements: None.

037

Social Determinants of Health Associated with Perceived Discrimination in Medical Settings among Cancer Survivors in Puerto Rico and Virginia

Stephanie Cameron-Maldonado[1], Hilmaris Centeno-Girona[1], Marievelisse Soto-Salgado[1], Claudia X. Boneu[1], Claudia Rachid Batlle[1], Juan Diego González[1], Arnethea L. Sutton[2], Katherine Tossas[2], Robert Winn[2], Marcia Cruz-Correa[1,3]
[1]University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico;
[2]Virginia Commonwealth University Massey Comprehensive Cancer Center, Virginia, United States;
[3]University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico.

Background & Objectives: Discrimination in medical settings has been associated with a lack of access to cancer care and adverse health outcomes across racial/ethnic minorities. This study examined the association between social determinants of health (SDOH) and discrimination in medical settings (DMS) among Puerto Rican and Virginia cancer survivors. Methods: A cross-sectional study among Hispanic/Latino with gastrointestinal cancer in Puerto Rico and Black women with breast or gynecological cancers in Virginia aged 21+ years (n=297) was performed. Participants completed an interviewer-administered questionnaire assessing SDOH and sociodemographic and clinical characteristics. Perceived discrimination was measured using the Discrimination in Medical Settings (DMS) Scale, assessing the frequency of seven DMS experiences. Scores were classified as "no discrimination" versus "at least one type of discrimination." Logistic regression models were used to estimate the prevalence odds ratios (POR) and 95% confidence interval (CI) for the association between DMS and SDOH, adjusting for age, sex, education, medical insurance, recruitment site, and social support. Results: Nearly half of the participants (54.9%) experienced at least one type of DMS. The proportion of participants that experienced at least one type of DMS was higher among females (59.0%), those having > 12th grade (58.6%), those with private health insurance (64.5%), and those with high social support (5.6±1.2) ($p<0.05$). No differences were found between DMS and age, marital status, employment, and cancer stage ($p>0.05$). After adjusting for covariates, participants who had public health insurance (POR=0.52, 95%CI: 0.29-0.94) and high social support (POR=0.65, 95%CI: 0.51-0.83) had significantly lower odds of experiencing at least one type of DMS than their counterparts. Conclusion: Having public health insurance and high social support was associated with lower DMS among Puerto Rican and Virginia cancer survivors. Further knowledge about the impact of DMS is needed to reduce its burden and develop tailored interventions for cancer survivors. The study was approved by the UPR-CCC IRB (protocol # 2023-08-112). Acknowledgments: This work has been supported by the AACR Grant: Social Determinants of Health, Grant Number: 23-01-SDoH.

038

Supporting Public Policy for Healthcare Transition Process from Pediatric to Adult Services for Special Health Care Needs Population

Giannina López-Pérez[1,2], Carol Salas-Pagán[1], Mariela Avilés-Font[1,2], Ilia Torres-Avillán[1]
[1]Institute on Developmental Disabilities, San Juan, Puerto Rico; [2]University of Puerto Rico, Medical Sciences Campus, Graduate School of Public Health, Puerto Rico Family to Family Center

Background and Objectives: The healthcare transition from pediatric to adult care is the purposeful movement of young adults with health conditions from a family & child-centered model to an adult-focused system. The purpose of this research was to gather information to support the development of public policy related to healthcare transition from pediatric to adult care with special health needs. It also seeks to identify barriers for its implementation. Methods: This research was a qualitative study. Content analysis was used to explore the perspectives of ten key informants (one young adult, two family caregivers, and eight key informants from agencies and organizations). In-depth interviews were conducted virtually using Zoom. The inclusion criteria were individuals with special needs or involved in a work position related to health services of the pediatric and adult population or their families that had the capacity to consent, who resided in Puerto Rico, spoke Spanish and were 21 years or older. This study was voluntary and confidential. All participants' rights, risks and benefits knowledge were safeguarded. We collected informed consent, sociodemographic and interview forms designed and validated by a team of experts. Interviews were recorded, transcribed verbatim and content analyzed. The study period was from August 13, 2023, to May 31, 2024. This study was MSC-IRB approved protocol #2305108098. Results: About 57% of participants work in state agencies. The main emergent themes included: lack of knowledge about transition process, lack of economic support for providers and families for transition services, lack of knowledge about special healthcare needs and neurodevelopmental disabilities and medical insurance coverage. Conclusions: The results reflect the need to establish a public policy that supports families and youth with complex health needs transitioning into adulthood that includes continuing education for services providers and systemic changes in medical insurance coverage, CPT codes, among others.
Acknowledgements: None.

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Intimate Partner Violence among Hispanic Women in Puerto Rico during COVID-19 Pandemic

Natalia Cárdenas-Suárez, Kvrismar González-Castillo, Josefina Romaguera
Department of Obstetrics and Gynecology, University of Puerto Rico

Introduction: The COVID-19 pandemic led to a global increase in intimate partner violence (IPV). Prior to the pandemic, violence against women in Puerto Rico (PR) was already on the rise, with a 62% increase in femicides from 2019 to 2020. As for 2023, feminicides continued on the rise. This is of concern given that one out of four women who report IPV victimization are at risk of death. With this study, we evaluated IPV among women during the COVID-19 pandemic. Methods: This cross-sectional study evaluated women aged 18 to 65 years living in PR. Participants were recruited through social media and at Gynecology clinics from March to December

2021. Data were collected with an online self-administered survey. The Patient Health Questionnaire (PHQ-9) and Woman Abuse Screening Tool (WAST) were employed to evaluate depression and IPV. Associations were assessed with Wilcoxon-Mann-Whitney rank-sum and Chi-square tests. Logistic regression models explored the relationship between depression and IPV at 95% confidence intervals (CIs). P values < 0.05 were considered significant. Results: Women (n=286) had a mean age of 38 years (±12.7). Most were heterosexual (229, 90.5%) and currently in a relationship (181, 70.2.9%). A 11.8% (n=178) screened positive for IPV. Women with higher WAST scores had increased odds of having at least mild depression (OR: 1.38; CI: 1.14 – 1.66). Findings persisted after adjusting for age, sexual orientation, and income (OR: 1.37; CI: 1.11 – 1.69). Conclusion: The prevalence of IPV among women in our sample call for action. IPV is known to intensify during hardship, thus PR's perpetuated turmoil could be playing an important role. Proactive interventions are vital for upholding women's autonomy and health. Screening for these during routine visits could help identify women at risk and pre-emptively offer them support. IRB Approved: Protocol #: 1050121 (03/02/2021)

040

Experiences of Violence Around the Time of Pregnancy: Prevalence and Associated Health Factors from the PR Pregnancy Risk Assessment Monitoring System

Enid Quintana Torres, MD, MPH[1]; Paola B. Giménez Cabranes, BS, MS[2]; Wilfredo J. Villafañe Ortiz, BS[3]
[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine,
Family Medicine Department, San Juan, Puerto Rico;
[2]Ponce Health Sciences University, Ponce Campus, School of Medicine, Ponce, Puerto Rico;
[3]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, Puerto Rico

Background and Objectives: Interpersonal violence (IPV) is associated with negative physical, mental, and reproductive health outcomes, often occurring in current or former intimate relationships. This study aims to describe the characteristics of Puerto Rican women with experiences of violence around pregnancy and explore disparities within their health outcomes, risk factors and healthcare utilization behaviors. Methods: We analyzed data from the 2017-2020 Puerto Rico Pregnancy Risk Assessment Monitoring System to calculate weighted prevalence estimates, 95% confidence intervals and odds ratio for women with experiences of violence around the time of their pregnancy. Results: Overall, 8.0% of Puerto Rican women reported experiencing violence in the 12 months before or during their pregnancy. Among all women, 4% experienced physical violence during this time, most often perpetrated by a current or former intimate partner. Emotional violence was reported by 5.2% of participants during pregnancy, and 1.2% reported being forced to have unwanted sex while pregnant. Experiences of violence were statistically significantly associated with factors such as age, marital status, health insurance at the time of delivery, symptoms of depression or anxiety three months before pregnancy, postpartum depressive symptoms, pregnancy intention, smoking three months before pregnancy, adequacy of prenatal care, and being asked by a healthcare professional about experiencing violence in the 12 months before pregnancy. Conclusions: Puerto Rican women face a significant risk of experiencing violence around the time of pregnancy, which are associated with detrimental physical and mental health outcomes and lower health care utilization. Addressing this critical public health issue requires culturally sensitive interventions, improved healthcare practices, and adequate public funding to support affected women and improve maternal health outcomes. IRB Approved: Protocol #: EMSJBIRB-3-2022 (03/28/2022). Acknowledgments: We acknowledge

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041

Abortion History and Its Impact on Depression in Mothers with Infants Admitted to the NICU

Yessica E. Areche Serrano[1], Roberto Y. Rodríguez Lozada[1], Paula Román Villamil[1], Darielie L. Rivero Colón[1], Yelenis Díaz Vicioso[1], Keimarisse Colón Díaz[2], Polaris González-Barrios[3], Lourdes García Fragoso[2], José Martínez González[4], Zayhara Reyes Bou[2], Inés García García[2]
[1]University of Puerto Rico, Río Piedras Campus, Natural Sciences Faculty, Department of Biology, Río Piedras, Puerto Rico;
[2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Pediatrics, Neonatology Section, San Juan, Puerto Rico;
[3]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Psychiatry, San Juan, Puerto Rico;
[4]Carlos Albizu University, Department of Clinical Psychology, San Juan, Puerto Rico.

Background and Objectives: Having an infant in the NICU is a stressful experience that significantly impacts maternal mental health. Mothers with a history of prenatal loss, including spontaneous or induced abortion, may face an even greater emotional burden. The uncertainty of their baby's health, combined with past trauma, can increase vulnerability to anxiety, depression, and postpartum depression (PPD) - a condition affecting approximately 1 in 7 mothers worldwide (APA, 2022). PPD disrupts mother and infant bonding and may lead to long-term adverse outcomes for both. This study aimed to evaluate the relationship between abortion history and depressive symptoms in mothers with infants admitted to the NICU. Methods: A total of 308 NICU mothers aged 15- 47 were interviewed. Participants completed the PHQ-9 (Patient Health Questionnaire), a validated tool for assessing depressive symptoms. Demographic information, including abortion history, marital status, and pregnancy planning, was collected. Statistical comparisons of PHQ-9 scores were conducted using the Mann-Whitney U test. IRB Approved: Medical Sciences Campus 2020320. Results: Mothers with a history of abortion (n=125) exhibited higher rates of mild to moderate depressive symptoms compared to those without abortion history (n=42). However, statistical analysis revealed no significant differences in PHQ-9 scores between the groups (p=0.955). Conclusions: While mothers with an abortion history showed a higher prevalence of mild to moderate depressive symptoms, the lack of statistically significant differences suggests that other factors, such as NICU stress and sociodemographic variables, may play a more prominent role in influencing maternal mental health. These findings underscore the need for further research with larger sample sizes and consideration of additional psychological factors to inform mental health interventions in NICU settings. IRB Approved: Protocol #: 2290035508R002 (04/17/2024). Acknowledgments: The Department of Pediatrics, Neonatology section at the University of Puerto Rico, Medical Sciences Campus, played a vital role in making this research.

042

Posttraumatic Stress Symptom Severity and Impairment Indicators in Minors Who Lived Traumatic Experiences with and without a History of Sexual Abuse

Valeria S. Claudio-Rivera, BS; Eduardo Cumba-Avilés, PhD; Emily-Sáez-Santiago, PhD
University of Puerto Rico, Río Piedras Campus, Institute for Psychological Research, College of Social Sciences, San Juan, Puerto Rico

Background/Objectives: Sexual abuse is among the most devastating traumatic experiences (TE) a human can endure, particularly during childhood and adolescence. Posttraumatic stress disorder (PTSD) symptoms are the most common psychopathology associated with TE, which often have a significant impact in emotional and functional well-being. We examined the severity of PTSD symptoms and impairment indicators in two groups of minors who have lived TE: those with a history of sexual abuse (G1; n = 41) and those without such a history (G2; n = 99). We expected that G1 would present worse outcomes than G2. Method: Participants were 140 minors (51.43% males) between 6–17 years (M = 11.76, SD = 3.25) evaluated for eligibility in a project (IRB-approved) aimed to treat trauma-related psychological symptoms. Minors and one parent each completed several measures. We used Chi-Square and Student t-test to compare groups in categorical and continuous sociodemographic and clinical variables ($p \leq .05$). We used Cohen's d to estimate effect sizes. Results: G1 members obtained a significantly higher PTSD symptom severity [t (136) = 2.25, p = .026, d = 0.42] and total number of TE [t (136) = 4.41, $p \leq .001$, d = 0.83]. A higher rate of G1 minors (66.67% vs. 47.96%) presented ≥2 impairment areas associated with PTSD symptoms, had a lifetime history of suicide behavior (43.90% vs. 26.26%), and met the cutoff score for probable PTSD (60.00% vs. 32.65%) compared to G2. Conclusion: As expected, minors with a history of sexual abuse showed higher symptom severity, more TE, greater impairment, and higher suicide behavior rates than their peers. These findings underscore the profound impact of sexual abuse on the psychological and functional well-being of youth and highlight the need for targeted interventions to address the unique vulnerabilities of this subgroup of minors that experienced TE. IRB Approved: Protocol #: 2122-014 (01/23/2025). Acknowledgements: This work was supported by funds from the Substance Abuse and Mental Health Services Administration (SAMHSA #1H79SM084875) through a grant awarded to the third author. The responsibility for the content of this work lies solely with its authors and does not necessarily represent the official views of SAMHSA. The authors declare no conflicts of interest.

043

Exploración de Estrategias de Autocuidado Utilizadas por Profesionales de Enfermería

Kathleen Manso Dávila, RN, BSN, MSNs; Débora N. Canales Santana, RN, BSN, MSNs
Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela de Enfermería

Trasfondo y Objetivos: El autocuidado es un componente crítico para los profesionales de enfermería, quienes enfrentan elevados niveles de estrés y un alto riesgo de burnout. Este estudio analiza las estrategias de autocuidado implementadas por enfermeros que laboran en un hospital del área metropolitana de Puerto

Rico, evaluando su impacto en el desempeño laboral y la salud integral. El objetivo de este estudio fue examinar las prácticas de autocuidado utilizadas por los profesionales de enfermería, su influencia en la calidad de vida laboral y la necesidad de programas educativos para optimizar dichas prácticas. Metodología: Se realizó un estudio cuantitativo descriptivo con la participación de 42 enfermeros, quienes completaron un cuestionario validado estructurado en secciones sobre datos sociodemográficos, conocimientos y prácticas de autocuidado. Los datos fueron analizados mediante estadísticas descriptivas utilizando el software SPSS. Resultados: El 87.8% de los participantes reportó implementar medidas de autocuidado, destacándose el ejercicio físico (21.8%) y los ejercicios de respiración (17.9%). Sin embargo, se identificaron importantes deficiencias en el acceso a servicios médicos de rutina y el manejo del estrés. El 33.3% indicó cargas laborales excesivas, el 81% refirió lesiones laborales recurrentes y el 69% manifestó automedicarse. Además, el 97.6% reconoció la necesidad de incorporar educación sobre autocuidado en los hospitales. Conclusiones: Las prácticas limitadas de autocuidado y un entorno laboral altamente demandante afectan de manera significativa la salud y el rendimiento de los enfermeros. Este estudio subraya la urgencia de implementar programas educativos que incluyan estrategias para el manejo del estrés, ergonomía y promoción de hábitos saludables. Dichos programas son esenciales no solo para mejorar el bienestar de los profesionales de enfermería, sino también para elevar la calidad del cuidado que brindan a los pacientes. Aprobado por el IRB: Núm. del protocolo #: 2404213092 (08/02/2024)

044

El Significado Atribuido por los Profesionales de Enfermería a la Experiencia de Cuidar Pacientes Moribundos y a sus Familiares

Marta N. Almenas Hernández, EdD, MSN
Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela de Enfermería

Antecedentes: Los profesionales de enfermería continúan informando sobre la falta de educación y preparación para gestionar la atención compleja asociada con la muerte (Ghaemizade et al., 2022; Jeffers, 2020). Esto constituye un problema debido a que el dolor emocional que experimentan los enfermeros es un estímulo que limita el contacto con el moribundo y con sus familiares e impacta su vida personal, laboral y la calidad de cuidado que ofrecen (Kostka et al., 2021). Propósito: Examinar la experiencia de los profesionales de enfermería que han brindado cuidado a pacientes moribundos y a sus familiares e interpretar el significado que estos profesionales le atribuyen a esta experiencia. Metodología: Se empleó un enfoque cualitativo con diseño fenomenológico interpretativo. Se realizaron entrevistas en profundidad a 10 profesionales de enfermería y los datos fueron analizados utilizando el método de fenomenología interpretativa de Smith, Flowers y Larkin (2009). Hallazgos: A través del análisis se identificaron siete temas (a) conceptualización de la muerte como proceso, (b) nociones del buen morir, (c) impacto del cuidado del moribundo, (d) factores facilitadores, (e) factores limitantes, (f) relación y comunicación con los médicos y (g) estrategias de afrontamiento, los cuales permitieron interpretar el significado del fenómeno. Conclusión: El significado de cuidar pacientes moribundos y a sus familiares es emocionalmente "difícil" para los enfermeros. Estos necesitan incrementar sus conocimientos y destrezas en el cuidado al final de la vida dando énfasis al cuidado espiritual. Aprobado por el IRB: Núm. del protocolo: UIPR 1110235-1, RCM A9850118

045

"Todavía Están al Margen de Nuestra Conciencia los Niños con Deficiencias en el Desarrollo": Las Experiencias de un Grupo de Profesionales de Enfermería de Sala de Emergencia en la Identificación y el Reporte del Maltrato y Abuso Infantil

Floridalia Vidal-Irizarry, DNS
Universidad Interamericana de Puerto Rico, Recinto Metropolitano, San Juan, Puerto Rico

Trasfondo y Objetivos: El maltrato infantil es reconocido como un problema de salud pública por la Organización Mundial de la Salud. En Puerto Rico, los informes noticiosos reflejan que este problema continúa en aumento. Este estudio se enfocó en las experiencias de profesionales de enfermería de salas de emergencias en la detección y el reporte del maltrato infantil, especialmente en niños con deficiencias en el desarrollo. Método: La investigación utilizó una metodología cualitativa con un diseño fenomenológico. La muestra incluyó a 10 enfermeros(as) de salas de emergencias en hospitales pediátricos del área metropolitana. Se realizaron entrevistas a profundidad, cuyos datos fueron analizados mediante categorías y codificaciones para identificar los hallazgos principales. Resultados: Los resultados muestran que la identificación y el reporte del maltrato infantil están limitados por barreras o inhibidores descritos en la literatura. Estas barreras incluyen factores profesionales (ej. inseguridades del personal de enfermería), del entorno (ej. falta de apoyo después de los incidentes, evasión de responsabilidades legales) y personales (ej. experiencias previas con el maltrato y abuso). Conclusión: Se concluye que las barreras más frecuentes en la toma de decisiones están relacionadas con factores profesionales y del entorno. Es necesario promover más investigaciones sobre el maltrato infantil, especialmente en niños con deficiencias en el desarrollo, y fomentar la implementación de políticas y protocolos claros en las salas de emergencias de los hospitales. Aprobado por el IRB: Núm. del protocolo: A8590118 (11/07/2018)

046

Enhancing HIV Care for Women in Puerto Rico: Addressing Barriers through Telehealth Integration

Carmen D. Zorrilla, MD[1]; Hiram Santiago, MPH[2]; Ana M. Mosquera, PhD[2];
Jessica Ibarra, MD[2]; Vicmarie Vargas, PhD[2]; Lourdes De Jesús[2]
[1]Obstetrics and Gynecology Department, University of Puerto Rico School of Medicine, San Juan, Puerto Rico;
[2]Maternal Infant Studies Center (CEMI), Obstetrics and Gynecology Department,
University of Puerto Rico School of Medicine, San Juan, Puerto Rico.

Background and Objectives: Reducing HIV-related health disparities remains a critical public health priority, particularly for women living with HIV who face unique barriers such as family responsibilities, transportation, and systemic inequities. CEMI is the largest clinic serving women with HIV in PR, supporting around 2,500 women and 500 patients annually. During the COVID-19 pandemic, CEMI implemented telehealth to address care disparities and facilitate access to care. This study explores the most effective telemedicine coordination strategies to improve care access and outcomes. Methods: To support telehealth expansion, CEMI upgraded its

infrastructure, ensuring all examination and interview rooms were equipped for virtual visits. The clinic adopted a hybrid care model, combining in-person and telehealth visits. SOPs, workflows, and a dedicated telehealth coordinator role were developed to streamline operations. Staff training, shadowing, and infrastructure redesign were prioritized. This was part of HRSA's Telehealth Strategies to Maximize HIV Care initiative, with CEMI as one of five participating sites. Results: A total of 150 patients were recruited at our site to assess their experiences with telemedicine. The mean age was 51. Among these, 83.3% were retained in care, and 86.6% achieved viral suppression. Patients expressed satisfaction with telehealth services, citing flexibility and convenience. Patient perspectives on telehealth and its benefits were evaluated using baseline and follow-up surveys, highlighting positive feedback and notable advantages from this service. Data collection at six and nine months, including chart abstraction, is ongoing to evaluate the long-term impact. Internal efforts, such as assessing staff readiness and training, supported the seamless integration of telehealth. Conclusions: Telehealth within a hybrid care model demonstrates the potential to improve patient retention, satisfaction, and clinical outcomes. High rates of care engagement and positive patient feedback underscore the value of tailored telehealth strategies. Ongoing data collection will further inform best practices, reinforcing telehealth's role in addressing disparities and ensuring equitable HIV care. IRB Approved: Protocol #: 2309145652 (03/22/24). Acknowledgments: This research was supported by HRSA U90HA46350-01-00.

047

Tejiendo Colaboraciones para la Equidad en Salud: Investigación Participativa en Puerto Rico

Edna Acosta Pérez, PhD, MSc[1]; Yari Valle-Moro, DrPH, MPH, GCG[2]; Yashira Marie Sánchez Colón, PhD, MS[3]; Mayra Roubert Rivera, DrPH, MS[3]; Christine Miranda-Díaz, PhD, MPH[4]; Valeria M. Schleier Albino, BS[1]; Carlamarie Noboa, PhD[2]; Enid García, MD[2]; Laura Vélez[2]; Marizaida Sánchez, PhD[1]

[1]Graduate School of Public Health & Hispanic Alliance Clinical and Translational Research, University of Puerto Rico, Medical Science Campus;

[2]Hispanic Alliance Clinical and Translational Research, University of Puerto Rico, Medical Science Campus;

[3]Ponce Health Sciences University & Hispanic Alliance Clinical and Translational Research, University of Puerto Rico, Medical Science Campus;

[4]Universidad Central del Caribe & Hispanic Alliance Clinical and Translational Research, University of Puerto Rico, Medical Science Campus

Trasfondo: El Community Engagement Outreach (CEO por sus siglas en inglés) de la Alianza Hispana para la Investigación Clínica y Traslacional desempeña un papel crucial en mejorar la salud en Puerto Rico al integrar las necesidades locales en la investigación clínica y traslacional. A través de asociaciones, colaboraciones y consultas continuas, el CEO facilita identificar y abordar las disparidades en salud, mediante el fortalecimiento de las comunidades con soluciones basadas en evidencias. Método: El proyecto se basa en modelos como el Community Engagement Continuum and Community-Academic Partnerships, los cuales aseguran una participación comunitaria sostenible y de impacto. El CEO utiliza un enfoque multi-método, que incluye grupos focales, encuestas, fortalecimiento de capacidades y activación comunitaria a través de asambleas y foros. También promueve Juntas Asesoras Comunitarias para guiar las prioridades de investigación y asegurar las perspectivas

comunitarias. Las colaboraciones con organizaciones y sectores locales, nacionales e internacionales refuerzan aún más la iniciativa. Además, el Modelo del Tri-ethnic Center y la Técnica Delphi profundizan la comprensión de las relaciones comunidad-academia e informar intervenciones culturalmente sensibles. Resultados: Los resultados incluyen el Fortalecimiento de Capacidades (capacitación a los actores clave en ética de investigación y colaboración), el Compromiso en Investigación (crecimiento del equipo de apoyo a la investigación, pasando de 48 a 82 miembros, e incremento de la participación de Investigadores Principales en investigaciones basadas en la comunidad) y la Participación Comunitaria (257 participantes asistieron a foros comunitarios, identificando 19 necesidades críticas de salud, 70% de estas fueron abordadas mediante intervenciones específicas). Conclusiones: A pesar de los desafíos en la difusión de los resultados, el CEO continúa compartiendo las lecciones aprendidas y desarrollando intervenciones culturalmente sensibles. A través de estos esfuerzos, el CEO ha fortalecido la infraestructura de investigación, abordado las disparidades en salud y demostrado el valor de las alianzas comunidad-academia para avanzar en la equidad en salud en PR. Reconocimiento: Hispanic Alliance for Clinical and Translational Research (1U54GM133807-01A1).

048

Co-Creación Serie Educativa ECHO Promotores de Salud Comunitaria

Bridgette N. Troche Santana, Wilma Rivera Rodríguez, Anaís López Colón, Helena Gifford, Yaritza Arroyo, Israel Román, Karla Justiniano, María Virginia Carrasquillo, Frances K. Valentín, Miriam Matos, Aracelis Cruz Cruz, Gabriela A. Algarín Zayas, Marianyoly Ortiz Ortiz, José F. Cordero. Fideicomiso de Salud Pública de Puerto Rico, un programa del Fideicomiso para Ciencias, Tecnología e Investigación de Puerto Rico.

Introducción y Objetivo: La Serie Educativa ECHO para Promotores de Salud Comunitaria (PSC) adapta el modelo ECHO, una comunidad virtual de aprendizaje basada en el principio de "todos enseñan, todos aprenden". Este enfoque combina sesiones didácticas, análisis de casos presentados por participantes y preguntas interactivas. En 2024, se implementó en Puerto Rico un ECHO co-creado con PSC como continuidad del primero, previamente realizado sin su insumo, fomentando la participación de la población en el diseño de las iniciativas. Metodología: A través de la Coalición de PSC, se formó un comité de co-creación integrado por 10 PSC y una educadora en salud. Este comité definió temáticas, recursos educativos, actividades y el diseño de sesiones. Se llevaron a cabo seis sesiones virtuales en ZOOM, abordando temas como diferencias entre PSC y líderes comunitarios, capacitaciones, comunicación inclusiva, justicia del lenguaje, referidos y desarrollo de proyectos comunitarios. Resultados: PSC del comité de co-creación reportaron altos niveles de satisfacción, destacando la comunicación efectiva, el poder decisional y el desarrollo de competencias. Comentarios destacados incluyeron: "Ha sido una experiencia enriquecedora" y "la selección de temas respondió a nuestras necesidades". Cada sesión tuvo un promedio de 72 participantes, superando la asistencia del primer ECHO. Como recomendación, se sugirió rotar los equipos de co-creación para incluir a más PSC en futuros procesos. Conclusión: Incluir a PSC en el diseño de intervenciones mejora la efectividad, aunque requiere mayor inversión de tiempo. Se analizarán los datos de pre y post pruebas junto con evaluaciones para comparar resultados con el primer ECHO. Reconocimientos: Agradecemos a las personas participantes y a Anaida Rosado, estudiante del programa de Educación en Salud del RCM, por su apoyo en la recolección de datos y durante las sesiones.

049

Empowering the Next Generation of Cancer Researchers: The Cancer Prevention and Control (CAPAC) Research Training Program in Puerto Rico

Ana P. Ortiz, PhD, MPH[1, 2]; Nadia Centeno-Alvarado, MPHE, MPH[1]; Mirza Rivera-Lugo, MS[3]; Lizbeth Medina, MS[3]; Marievelisse Soto-Salgado, DrPH, MS[1]
[1]University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico; [2]Department of Biostatistics and Epidemiology, Graduate School of Public Health, University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico; [3]Center for Evaluation and Sociomedical Research, Graduate School of Public Health, University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico.

Background and Objectives: The Cancer Prevention and Control (CAPAC) Research Training Program at the University of Puerto Rico Comprehensive Cancer Center (UPRCCC) aims to increase the diversity of master's and health professional students from pursuing doctoral degrees and/or careers in cancer prevention and control research. CAPAC offers 10- and 15-week hands-on research experiences in Puerto Rico (PR). We describe the outcomes of the first program cycle (2019-2024) and its impact on trainees' career development. Method: Annually, 25 US citizens from diverse racial/ethnic backgrounds are selected as trainees and paired with research mentors at the UPRCCC or affiliated academic institutions in PR based on research interests. Trainees engage in cancer-focused research projects and educational/professional development activities. Program evaluation includes baseline, exit, and follow-up surveys. Method: CAPAC experienced a steady increase in eligible applications during its first funding cycle (2020–2024). Overall, one hundred trainees (target goal) and three peer-to-peer mentors were recruited; 77% were female assigned at birth, 90% identified as Hispanic/Latino, 36% were from U.S. mainland institutions, 11% belonged to non-Hispanic racial/ethnic minority groups, and 19% were first-generation college students. Of these cohorts, 93% evaluated the program as very successful/successful, 63.9% of master's-level trainees (n=61) expressed confidence in applying to a Ph.D./DrPH within five years, and 76% (n=100) felt confident pursuing a career in health disparities. Trainees' outcomes include eleven peer-reviewed publications, 78 abstracts presented at scientific conferences, and 8 trainees enrolled in doctoral programs. 85.1% of trainees who completed the follow-up survey (n=45) reported continued benefits one year after program completion. Conclusion: CAPAC, PR's first and only summer cancer research program, has successfully completed its first cycle and will welcome its fifth cohort in May 2025 as part of its second funding cycle (2024-2029), continuing to advance diversity and inclusion in cancer research. IRB 2020-06-28. Acknowledgements: NCI Grant #2R25CA240120-06

050

Advancing Health Research Through Library-Led Training: The *All of Us* Researcher Workbench Initiative at the University of Puerto Rico Medical Sciences Campus

Efraín Flores Rivera, EdD[1]; Charles W. Caballero, MLS[1]; Abiel Roche Lima, PhD[2]; Joshua S. Meléndez Berríos, MIS[2]; José R. Ubieta Santiago, MIS[2]; Danilly Ramos Llera, EdD[1]; Pedro A. Del Valle López, MLS[1]; Rossana I. Barrios Llorens, MIS[1]; Teresa Meléndez Ayala, MIS[1]; Arlene Cruz Zayas, BA[1]; María Santiago Hernández, BBA[1].

[1]Conrado F. Asenjo Library, Medical Sciences Campus, University of Puerto Rico;
[2]RCMI Program, Medical Sciences Campus, University of Puerto Rico.

Background and Objectives: The *All of Us* Research Program, led by the National Institutes of Health (NIH), aims to accelerate health research by gathering diverse health data to drive discoveries. Its cloud-based datasets and analytical tools enable researchers to build cohorts, analyze data, and generate insights. In 2023, the Conrado F. Asenjo Library joined the second cohort of the *All of Us* Training Program for Academic Libraries, led by Oak Ridge Associated Universities (ORAU) and the National Library of Medicine (NLM). This initiative aimed to enhance research capacity at the Medical Sciences Campus (MSC) by empowering library professionals to train the academic community in utilizing the *All of Us* Researcher Workbench. Methods: Two librarians from the MSC completed training on platform navigation, dataset utilization, data analysis using R, Python, Jupyter Notebook, and teaching strategies. Based on this training, they developed a comprehensive plan that included creating a virtual guide, distributing promotional materials across MSC's six schools, hosting an in-person launch event, offering an online Python and Jupyter Notebook course with RCMI experts, and scheduling two follow-up workshops. Results: The initiative successfully engaged MSC's academic community. The launch event attracted thirty-five participants, 13 (37.14%) of whom completed the online course, acquiring essential analytical skills. Furthermore, twelve participants (34.29%) registered for the upcoming workshops, reflecting continued interest in advanced training. Conclusion: The library-led initiative effectively introduced the *All of Us* Researcher Workbench, highlighting the library's pivotal role in advancing health research. Participation outcomes highlight the program's success in building research capacity. Ongoing collaboration with the RCMI program will expand these efforts, fostering broader engagement with innovative research tools. Acknowledgments: This project received funding through the ORAU in support of the NIH/NLM under Agreement No. S-105105.000 Task Order 75N97022F00003 with BLH Technologies, Inc. (Prime Contract No. 75N97020A00017). The RCMI Program at the Medical Sciences Campus also supported the project.

051

The Research Education Program on Microbes, Infections, and Cancer (REPMIC): Mentoring the Next Generation of Cancer Researchers

Ana P. Ortiz[1,2], Tanialy Rivera-Santiago[1],
Lizbeth Medina[3], Marievelisse Soto-Salgado[1]
[1]University of Puerto Rico, Comprehensive Cancer Center,
Division of Cancer Control and Population Sciences, San Juan, Puerto Rico;
[2]University of Puerto Rico Medical Sciences Campus, Graduate School of Public Health,
Department of Biostatistics and Epidemiology;
[3]University of Puerto Rico Medical Sciences Campus, Graduate School of Public Health,
Center for Evaluation and Sociomedical Research.

Background: The Research Education Program on Microbes, Infections, and Cancer (REPMIC) at the University of Puerto Rico Comprehensive Cancer Center (UPRCCC) aims to foster the development of post-baccalaureate individuals (post-bacs) in cancer research, with a focus on the links between infections, microbes, and cancer.

REPMIC aims to increase diversity in the biomedical and public health research workforce by mentoring underrepresented post-bacs and supporting their academic and professional growth in this field. Methods: REPMIC recruits 10 post-bacs from Puerto Rico annually (2024-2029) for hands-on research training program, combining educational and professional development activities. Participants engage in a nine-month cancer research project with a mentor (based on research interests), attend seminars, complete surveys to evaluate their career goals, and commit to follow-up assessments to evaluate the program's impact on their career development. Results: For the initial 2024-2025 cycle, forty-seven applications were received. Of the 10 trainees selected, 60% are females, with a mean age of 22.5±1.24 years, all are Hispanic, and 50% have a bachelor's degree in Natural Sciences with a Biology concentration. Within REPMIC, 10% are working on population-based research and 90% are working on clinical/translational research. Based on the baseline survey, 50% of trainees described that they were planning to apply to graduate school or doctorate degrees and 88.9% mentioned that they have an academic interest in health disparity and cancer research. Most (90%) indicated an intention to apply for a health professional school degree because they want to have a direct impact on patient care. Discussion: REPMIC is one of only three post-bac programs available in Puerto Rico and the first to address training and mentorship gaps for underrepresented minority post-bacs in infection, microbes, and cancer research. By providing a structured, supportive environment, the program enhances participants' preparedness for advanced academic and professional pursuits. IRB Approved: Protocol #: 2409000844. Acknowledgements: The National Institute of Allergy Infectious Diseases (NIAID) Grant founded this project #1R25AI183304-01.

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Innovación y Educación a Distancia: Experiencia en el Fortalecimiento de Programas Académicos a Distancia

Luis E. Estremera De Jesús[1], Ivelisse García Meléndez[2], Ana Parrilla Rodríguez[2]

[1]Universidad de Puerto Rico, Recinto de Ciencias Médicas, Decanato de Asuntos Académicos;
[2]Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela Graduada de Salud Pública.

La educación a distancia a nivel superior inició en Sudáfrica, Estados Unidos y Canadá, expandiéndose luego a América Latina con universidades pioneras como la Universidad Nacional Abierta de Venezuela, la UNED de Costa Rica y la Unisur de Colombia. Hoy, las Tecnologías de Información y Comunicación y la Inteligencia Artificial son pilares fundamentales de la transformación educativa. El proyecto de Transformación Digital en Salud Pública se centró en ampliar la oferta académica a distancia, mediante la innovación curricular, capacitación y construcción de cursos en BBU. La metodología incluyó selección de programas académicos, capacitación docente, revisión de prontuarios y de diseño instruccional. Entre los resultados destacan la elaboración de un prontuario modelo, la revisión de 29 cursos con sus respectivos DI, y la certificación de 37 docentes en DI y BBU, totalizando 45 facultativos capacitados. Además, se creó un código de honor estudiantil, se habilitaron recursos tecnológicos de apoyo y se diseñó una plantilla para medir el cumplimiento de la estructura uniforme de cursos en BBU, alcanzando un 100% de cumplimiento. La transformación digital de los programas académicos en universidades es un proceso estratégico y urgente. Este enfoque fortalece la oferta académica, la formación docente y la infraestructura tecnológica, promoviendo una educación accesible, interactiva y de calidad, alineada con las demandas de la evolución virtual a nivel global en la educación superior.

053

Video Games and Blood Pressure: Exploring Variations Before and After Play

Pablo J. Agrait-Marrota[1]; Lorenzo A. Torres-Figueroa[1]; Angélica S. Sueiro-Colón[1]; Emmanuel J. Rivera-Cuevas[1]; Nuria I. Díaz-Fischbach[1]; Julián A. Aponte[1]; Valeria Rodríguez, BA[1]; Alanis Maldonado, BS[1]; Andrea P. Torres, BA[1,2]; Alondra G. García, BA[1]; Alejandro Villegas[1]; Ismael Castillo-Reyes, PhD[1]; Yamil O. Ortiz, PhD[1,2]
[1]University of Puerto Rico, Río Piedras Campus; [2]Centro de Investigaciones Sociales.

Background & Objective: Mental health challenges, including stress and anxiety, are increasingly prevalent among college students, often affecting their academic performance and well-being. Video games have emerged as a potential tool for emotional regulation and stress relief among students. This study examines the physiological effects of one-hour gameplay in four video game genres—action, simulation, horror, and casual—on blood pressure, a key stress and anxiety indicator. Blood pressure levels are closely tied to mental health, with lower readings suggesting reduced anxiety and stress. The primary objective of this research was to determine whether video game interventions could effectively lower stress and anxiety levels in university students. Methods: Twenty participants with moderate to severe anxiety and no prior experience with the selected games were recruited via non-probabilistic sampling methods. Participants completed socio-demographic and gaming habit questionnaires, along with the GAD-7 anxiety survey. They were randomly assigned to one of the four game genres for a one-hour session. Key variables, including anxiety, stress (measured on a 10-point scale), and blood pressure (systolic and diastolic), were assessed pre- and post-gameplay. Results: The results, analyzed using paired t-tests, revealed significant reductions in systolic blood pressure (SBP) and pulse rate (PR) following gameplay [SBP: $t(19) = 3.40$, $p = .003$; PR: $t(19) = 2.44$, $p = .025$]. Diastolic blood pressure (DBP) remained stable [DBP: $t(19) = 0.51$, $p = .618$]. Conclusions: These findings suggest that video games might have the potential to positively influence physiological markers associated with stress and anxiety, particularly through reductions in SBP and PR. This study supports the potential of video games as a tool for emotional regulation, offering measurable benefits in stress and anxiety management among college students. Further research is needed to investigate the long-term effects and how specific game mechanics influence mental health outcomes. IRB Approved: Protocol #: 2223-067 (10/09/2023) Acknowledgements: None.

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Promoting Dental Care Accessibility for the Special Needs Population in Puerto Rico through "Sonrisas Especiales"

Belmarí Méndez Santiago, DMD
University of Puerto Rico, Medical Sciences Campus, School of Dental Medicine, General Practice Residency, San Juan, Puerto Rico.

Introduction: Access to dental care for individuals with special needs in Puerto Rico is limited, with most services concentrated in the metropolitan area, leaving a significant portion of the population underserved. Objective: This

poster aims to encourage general dentists to provide dental treatment to the special needs population, addressing misconceptions and reducing apprehension among peers. Methods: The "Sonrisas Especiales" initiative is held annually in September since 2023 at the Dental Clinic of Dr. Federico Trilla Hospital. Dental care is provided to 30 patients requiring reasonable accommodations in 9 different dental chair units, each of them with 2 dentists, 2 other people that were a dental assistant or a volunteer. Results: A total of 107 dental treatments were performed, including topical fluoride applications, silver diamine fluoride (SDF) treatments, fluoride varnishes, radiographs, Kiddy partial delivery, extractions, prophylaxis, and other procedures. Conclusion: The event successfully delivered dental care to 30 special needs patients (100% of assistance), highlighting the feasibility and importance of extending such services to underserved populations. This initiative demonstrates a scalable model for improving dental care access for this community and fostering inclusivity in the profession. Acknowledgements: Hospital UPR Dr. Federico Trilla, SANUS Puerto Rico, School of Dental Medicine, Dr. Yatnee Encarnación, Facultative members and staff of Dental Clinic HUPR.

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Probiotic Intervention: Investigating the Tumor Suppressing Properties of Streptococcus salivarius K-12 in Oral Cancer

Liz Ireiza Velázquez-Rivera[1]; Anjanique Mercado-Feliciano[3]; Stephanie Dorta-Estremera, PhD[1,2]
[1]University of Puerto Rico Medical Science Campus, School of Medicine, Department of Microbiology, San Juan, Puerto Rico; [2]Comprehensive Cancer Center UPR, San Juan, Puerto Rico;
[3]University of Puerto Rico, Río Piedras Campus, San Juan, Puerto Rico

Background & Objective: Head and neck squamous carcinoma (HNSCC) occupies the seventh position among the deadliest cancers affecting males in Puerto Rico, with human papillomavirus (HPV) being a significant risk factor. The median survival rate for patients being treated with standard treatments (surgery, radiation, and chemotherapy) is two and a half years, being affected with severe side effects. This concern makes searching for new treatments crucial, and probiotics have emerged as promising candidates. The oral commensal bacteria Streptococcus salivarius has been shown to reduce inflammatory cytokines, activate natural killer (NK) cells, and induce apoptosis in cancer cells. Preliminary results in our laboratory have suggested that using the live Streptococcus salivarius K-12 strain can reduce tumor growth in mice; this project aims to investigate the component by which Streptococcus salivarius K-12 reduces tumor growth in a mouse model of HPV+ oropharyngeal subcutaneous tumors. Methods: To assess this, C57BL/6 mice with established subcutaneous tumors were divided into four treatment groups: PBS and BHI Broth as controls, Heat-inactivated (HI) Streptococcus salivarius K-12, and its supernatant as experimental groups. Each treatment was administered every four days, and tumor sizes were monitored. Results: The results indicate that cell-free supernatant S. salivarius, but not HI bacteria or the controls, reduced tumor growth, suggesting that a molecule secreted by S. salivarius impacts tumor growth. Conclusions: The secreted molecule may be a metabolite, which is currently being identified. Acknowledgments: We acknowledge Dr. Paola D. Vermeer for kindly providing us with the HPV+ mEER cell line. Seed money from the Comprehensive Cancer Center University of Puerto Rico and an Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health under grant number P20 GM103475-21. G-RISE Program T32GM148406. Approved by IACUC- A630222.

056

Preconception Contraceptive and Folic Acid Consumption and the Risk of Orofacial Clefts

Ana Pagán[1], Mairim Soto[1], Lydia López[1], María Salcedo[1], Natalio Debs[1], Azeez Butali[2], Carmen Buxó[1]
[1]University of Puerto Rico, Medical Sciences Campus, School of Dental Medicine, San Juan, Puerto Rico; [2]University of Iowa College of Dentistry, Department of Oral Pathology Radiology and Medicine, Iowa City, Iowa

Background and Objectives: Studies have shown folic acid (FA) consumption may protect against non-syndromic orofacial clefts (nsCL/P)— including cleft lip (CL), cleft palate (CP), and cleft lip and palate (CLP). However, evidence remains unclear regarding the impact of oral contraceptive (OC) use before pregnancy (BP) on this association. Methods: Consumption data on multivitamins and FA (6 months BP) and OC (3 months BP) were obtained from a questionnaire administered to mothers of an ongoing study in Puerto Rican children (0-18 years) with (cases, n=251) and without (controls, n=223) nsCL/P. Risk factors for nsCL/P were determined through Pearson's chi-square or Fisher's exact tests, along with logistic regression (R^2) to compute odds ratios (ORs) with 95% confidence intervals (95% CI) using STATA v17. Results: Mothers (n=474) had mean age of 31.7±8.1 years. Most participants were married (34.2%), had a high school education (35.0%), and an annual income below $10,000 (42.6%). Maternal education level exhibited significant difference (p=0.02). Significant associations were observed for multivitamin (p=0.01) and FA consumption (p<0.001), but no difference for OC use (p=0.95). Significant regression model (R^2=0.02, p=0.001) identified FA consumption alone as a protective factor against nsCL/P (OR=0.36, 95%CI [0.22-0.61]). Significant multivitamin and FA consumption regression model (R2=0.03, p=0.0004) indicated FA alone (OR=0.45, 95%CI [0.25-0.80], p=0.01) and combined with multivitamins (OR=0.31, 95%CI [0.15-0.63], p=0.001) reduced nsCL/P risk. By cleft type, regressions revealed significant risk reductions for CL (OR=0.42, 95%CI [0.18-0.99]) and CLP (OR=0.55, 95%CI [0.32-0.96]) with multivitamin consumption, and for CP (OR=0.39, 95%CI [0.18-0.87]) and CLP (OR=0.38, 95%CI [0.21-0.69]) with FA intake. Conclusions: Preconception consumption of FA and multivitamins significantly reduced nsCL/P risk, while OC use appeared to diminish risk reduction. IRB Approved: Protocol #: 2290032692 (06/07/2024). Acknowledgments: Supported by grants from NIH: R00DE024571, R01DE028300, R37DE008559, S21MD001830, and U54GM133807.

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Liquid Biopsies for Determining Molecular Resistance to Anti-EGFR Therapy in Patients with Metastatic Colorectal Cancer: A Case Series

*Miguel M. Girod, BS[*1]; María C. Pérez, BS[*1]; Kimil Acosta, MSc[2]; Marlys Massini, MS[2]; Roberto Barletta, MD[2,4]; Noridza Rivera Rodríguez, MD[1,2,4]; Hilmaris Centeno-Girona, MS[3]; Marcia Cruz-Correa, MD, PhD[1,2,3,4]*
[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Internal Medicine, Division of Gastroenterology, Department of Biochemistry, Division of Hematology Oncology, San Juan, Puerto Rico; [2]Pan American Center for Oncology Trials, San Juan, Puerto Rico; [3]University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico; [4]Isaac González Martínez Oncologic Hospital, San Juan, Puerto Rico. [*]Equal contribution of first authors.

Background and Objectives: Metastatic colorectal cancer (mCRC) represents a clinical challenge, particularly when patients develop resistance to anti-EGFR therapy after first-line treatments. Understanding the molecular mechanisms driving this resistance is crucial to optimize therapeutic strategies. This study aims to characterize molecular resistance patterns in Hispanic/Latino patients with mCRC and explore their relevance for guiding clinical management following first-line therapy failure. Methods: This retrospective study identified six Hispanic/Latino patients with mCRC who developed acquired resistance to FOLFOX/FOLFIRI plus cetuximab. Patients were selected through medical record review conducted at the Pan American Center for Oncology Trials. Inclusion criteria included documented progression after both first- and second-line chemotherapy regimens. Baseline molecular profiles were determined at diagnosis using next-generation sequencing (NGS) of tissue biopsies to assess tumor susceptibility to targeted therapies. Upon treatment failure, all patients underwent liquid biopsy using the Guardant platform, a commercially available test that evaluates KRAS AND EGFR genes. Data on identified genetic mutations was analyzed using Excel. Results: Five patients (83%) developed de novo KRAS mutations during treatment, with KRAS Q61H being the most detected mutation found in three patients (60%). Two patients (33%) developed EGFR mutations, with one of these patients showing EGFR amplification. EGFR status remained consistent with baseline status in three of the six patients. Conclusions: Our findings highlight that liquid biopsies are a highly effective, minimally invasive method for identifying treatment-resistant mutations in real-time, offering a faster and less invasive alternative to repeat tissue biopsies. These results provide preliminary evidence supporting using liquid biopsies for mCRC management. Future studies in larger cohorts are warranted to validate these findings. Acknowledgments: We thank the Pan American Center for Oncology Trials for their invaluable support and collaboration in this study. This study was conducted in compliance with ethical standards and was approved by the Institutional Review Board under Janssen Protocol 61186372GIC2002, IRB#10086MCruzCorrea.

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Distinct Activation of Four Cell Death Pathways in Ischemia-Reperfusion Injury in Rat Hearts Subjected to Different Times of Reperfusion

Valeria Villarín-Ayala, Josh Dávila-Matos, Jorge García-Báez, Sehwan Jang, Carlos Torres-Ramos, Sabzali Javadov
University of Puerto Rico, School of Medicine, Department of Physiology, San Juan, PR

Multiple cell death pathways are implicated in cardiovascular disease, the leading cause of death around the world; however, their roles in reperfusion injury and cardiac dysfunction at specific reperfusion times remain unclear. In this study, we evaluated apoptosis, ferroptosis, autophagy, and pyroptosis at various reperfusion time points in rat hearts, hypothesizing that reperfusion duration alters cell death activation. Isolated adult male Sprague Dawley rat hearts were perfused via the Langendorff method, approved by IACUC, with normal Krebs-Henseleit solution. After 20 minutes of equilibration, the hearts underwent 25 minutes of global ischemia followed by 5, 30, or 60 minutes of reperfusion. Mitochondria were isolated for analysis of Ca^{2+}-induced swelling and ROS production. We measured protein levels of markers for apoptosis (Caspase 3 cleavage), ferroptosis (GPX4), autophagy (p62),

and pyroptosis (GSDMD cleavage) using SDS-PAGE and western blotting. Mitochondrial Ca^{2+}-induced swelling showed a significant time-dependent increase during reperfusion, while ROS production showed a 4.7-fold and 3.6-fold increase at 30 minutes and 60 minutes of reperfusion, respectively. Western blot data showed a significant time-dependent increase in apoptosis and autophagy during reperfusion. Ferroptosis increased during ischemia and at 5 and 30 minutes of reperfusion, while pyroptosis decreased significantly at 5 minutes of reperfusion. Our findings suggest an association between cardiac and mitochondrial dysfunction, with the differential activation of cell death pathways based on reperfusion duration, indicating a time-sensitive interplay that could influence future therapeutic strategies for myocardial infarction patients undergoing reperfusion therapy. Funded by: NIH NIGMS G-RISE (T32GM148406) and (Grant R16GM145390), and NSF (Award 2006477). IACUC Approved: Protocol #: A7620122 (03/14/2024)

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Exploring Ferroptosis Resistance in Human Brain Endothelial Cells and Microglia: Insights into Cellular Interactions

Ian Olmeda[1], Liwei Lang[2], Zsolt Bagi[2]
[1]Universidad Central del Caribe School of Medicine, Bayamón, PR;
[2]Physiology Department, Augusta University, Augusta, Georgia

Background and Objectives: Aging-related white matter lesions are closely linked to cognitive decline, with vascular endothelial dysfunction contributing significantly to gliosis in the aging brain. Ferroptosis, a regulated cell death pathway driven by lipid peroxidation, is increasingly implicated in aging-related cellular damage. This study aims to investigate the susceptibility and resistance mechanisms of human brain microglia and endothelial cells (hCMEC/D3) to ferroptosis induced by erastin, under conditions replicating the human brain environment. The hypothesis posits that brain endothelial cells exhibit greater resistance to ferroptosis compared to microglia due to the differential expression of protective ferroptosis-related genes. Methods: Human microglia primary cells and hCMEC/D3 endothelial cells were cultured and treated with varying concentrations of erastin (0.5–50 μM) for 24 hours. Cell viability was assessed using the CellTiter-Glo® Luminescent Cell Viability Assay, while ferroptosis-related gene expression changes were analyzed via quantitative PCR (qPCR). The resistance and susceptibility of hCMEC/D3 cells were compared with existing data on HUVECs (human umbilical vein endothelial cells) within co-culture models. Results: HUVECs demonstrated resistance to ferroptosis and mediated protection in co-cultured microglia. Similarly, hCMEC/D3 cells exhibited higher resistance to erastin-induced ferroptosis compared to microglia, reflecting the greater resilience of brain endothelial cells. Both cell types upregulated ferroptosis-related genes in response to erastin treatment, highlighting differential gene expression profiles contributing to their resistance mechanisms. Conclusion: Human brain endothelial cells (hCMEC/D3) show a higher resistance to ferroptosis than microglia, likely attributed to the differential regulation of protective genes. These findings underscore the importance of understanding cell-type-specific vulnerabilities in the aging brain. Future directions include in vivo studies to further elucidate ferroptosis mechanisms and their potential role in the prevention and treatment of aging-related brain diseases. Acknowledgments: Special thanks to Liwei Lang, Katie Anne Fopiano, Vadym Buncha, Marta Balogh Bagine and Zsolt Bagi.

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Apurinic/Apyrimidinic Endonuclease 1 (APE1) Activity in Blood from Huntington's Disease Patients

Andrea Beauchamp Fábregas, María del Rocío Castro, Sylvette Ayala-Peña
University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Pharmacology, San Juan, Puerto Rico

Huntington's disease (HD) is a rare autosomal dominant disorder characterized by motor, behavioral, and cognitive impairments caused by a CAG repeat expansion in the huntingtin gene. While the length of this CAG repeat primarily determines the age of disease onset, additional genetic modifiers associated with DNA repair pathways also influence the onset, indicating that factors beyond the CAG mutation can modulate HD progression. One potential modulator is the apurinic/apyrimidinic endonuclease 1 (APE1), the primary endonuclease in the base excision repair (BER) pathway. We have previously shown that APE1 plays a role in repairing oxidative damage in mitochondria and nuclear DNA in the brain. However, whether APE1 repair activity is affected in the peripheral circulation is not known. We hypothesized that, as in the brain, APE1 repair activity will decrease in blood cells from HD patients. To test our hypothesis, we measured APE1 endonuclease activity in protein extracts from peripheral blood mononuclear cells (PBMCs) using a fluorescent oligonucleotide containing an oxidative lesion. Our results show no significant difference in endonuclease activity between HD patients and unaffected/controls; however, when analyzed by age, APE1 repair activity is increased 1.6 fold in 25-60 year-old patients and reduced a 38.5% in >60-year-old HD patients when compared to the age-matched controls. Interestingly, >60-year-old HD patients exhibit >95% reduction in APE1 repair activity compared to <60-year-old patients. These results suggest that APE1 endonuclease activity may vary with age and HD progression and imply a probable link between HD and BER.
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061

Impact of High-Fat Diet-Induced Obesity on Steroid Hormone Receptor Expression in the Endometrial Stroma: Implications for Endometrial Hyperplasia

Amanda G. López Espinosa[1], Ronald Chandler[2], Hilary Skalski[2], Shannon Harkins[2]
[1]University of Puerto Rico, Humacao, Puerto Rico; [2]Michigan State University

Obesity, characterized by excessive accumulation of body fat, is a major global health concern associated with numerous metabolic and hormonal imbalances. This condition significantly perturbs reproductive health by disrupting ovarian hormone levels and contributing to various pathologies, including endometrial hyperplasia. Endometrial hyperplasia, caused by an imbalance of too much estrogen and not enough progesterone, results in the uterine lining thickening without shedding. Given the widespread prevalence of obesity, with 34% of women in the U.S. estimated to be obese, it is crucial to investigate how obesity-induced ovarian defects and altered circulating hormone levels impact steroid hormone receptor expression. Prior work indicates that endometrial stroma may be particularly affected in this context. Therefore, we hypothesize that high-fat diet (HFD)-induced

obesity alters the expression of ovarian steroid hormone receptors in the endometrial stroma, potentially heightening susceptibility to endometrial hyperplasia. To test this hypothesis, we utilized slides containing uterine tissue from female mice, employing immunohistochemistry (IHC) to scrutinize steroid hormone receptor expression patterns in the endometrial stroma amidst HFD-induced obesity. By comparing IHC results from obese and non-obese mice, we observed differences in protein expression and distribution, offering detailed insights into molecular changes that may underlie increased susceptibility to endometrial pathologies in obese populations. Our study aims to unravel fundamental insights into how obesity modifies the expression and function of steroid hormone receptors in the endometrial stroma. Ultimately, these findings may guide therapeutic strategies targeting relevant hormone receptor pathways to mitigate obesity's effects on endometrial health. IACUC Protocol Number: PROTO202200067 (Date: 05/25/22). This research was supported in part by grants from the Eunice Kennedy Shriver National Institute of Child Health and Human Development of the National Institutes of Health under Award Numbers R01 HD103617 and T32HD087166, MSU AgBio Research, and Michigan State University.

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Haptic Feedback and Gait Sensing with an Inflatable Soft Haptic Sensor

Emiliano Quiñones Yumbla[1], Jahnav Rokalaboina[2], Amber Kanechika[2], Souvik Poddar[3], Tolemy M. Nibi[3], Wenlong Zhang[2]
[1]University of Puerto Rico, Carolina Campus, Department of Engineering Technologies, Carolina, Puerto Rico;
[2]Arizona State University, School of Manufacturing Systems and Networks, Mesa, Arizona, United States of America;
[3]Arizona State University, School for Engineering of Matter, Transport and Energy, Tempe, Arizona, United States of America.

Background & Objectives: Collecting gait data and providing haptic feedback are critical for ensuring safety and efficiency in robot-based rehabilitation. Despite the importance of these capabilities, devices that integrate both functions are limited. This study aims to design, develop and evaluate an inflatable soft haptic sensor (ISHASE) for mutual sensing and haptic feedback, hypothesizing that ISHASE can achieve high accuracy in both sensing and feedback tasks. Methods: The ISHASE system was designed, modeled, and characterized for integration into the insole of a shoe. Four sensors were embedded to measure ground reaction forces (GRFs) and deliver haptic feedback. The system's performance was evaluated with four participants performing walking tasks (approved by IRB). Data on GRF estimation accuracy and feedback localization were collected through experimental trials. Results: ISHASE demonstrated its capability to accurately estimate ground reaction forces, achieving a maximum and minimum accuracy of 91% and 85%, respectively. For haptic feedback, participants could identify the feedback location underfoot with an average accuracy of 92%. Additionally, a case study exemplifying ISHASE's application in a rehabilitation scenario highlighted its potential as a tool for mutual sensing and feedback. Conclusions: The ISHASE system presents a promising approach to combining sensing and feedback functionalities in rehabilitation. Future research will focus on expanding its applications to diverse rehabilitation scenarios and enhancing user adaptability and device durability. IRB Approved: Protocol #: STUDY00011110 (12/27/2019). Acknowledgments: This research was supported by the Arizona Biomedical Research Centre (Grant No. RFGA2022-010-08).

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Novel Imaging Modalities for Diagnosing Brain Arteriovenous Malformations: A Systematic Review

Joyce Campos, BS[1]; Morsal Mosallami Aghili, MD[2]; Nicholas Kordic, BS[2]; Ali-Raza Hassan-Abdi[2]; Rithika Jayaraman[2]; Heshwin Singh, BS[2]; Sima Mofakham, PhD[2]; Charles Mikell, MD[2]
[1]San Juan Bautista School of Medicine; [2]Department of Neurosurgery, Stony Brook Medicine

Introduction: Brain arteriovenous malformations (AVMs) are high-risk neurovascular lesions associated with intracranial hemorrhage, seizures, and neurological deficits, and therefore, early and correct detection is vital for effective management. Advances in diagnostic imaging have introduced safer and more precise, non-invasive methods. Methods: A systematic review of 5,754 articles in PubMed, Embase, Scopus, and Web of Science identified twenty-eight studies describing new imaging methods using magnetic resonance imaging (MRI), computed tomography (CT), hybrid imaging, and artificial intelligence (AI). Results: In MRI, arterial spin labeling (ASL) sensitivity was 98%, and susceptibility-weighted imaging (SWI) sensitivity and specificity were 85–98% for detecting venous ectasia, varices, and associated aneurysms. Time-of-flight (TOF) MRA sensitivity was 97.3–100%, and dynamic 3D MRA sensitivity and specificity were 66% and 91%, respectively. Among CT-based modalities, time-resolved CT angiography (TR-CTA) demonstrated 87.5% sensitivity, and four-dimensional CT angiography (4D-CTA) demonstrated 93% sensitivity and 98% specificity. Silent MRA (Ultrashort Echo ASL) demonstrated 79.3% accuracy in the visualization of AVM components, and vessel-selective 4D-MRA demonstrated 100% sensitivity and specificity for feeding artery detection. Random Forest models revealed an accuracy of 85.7% in identifying hemorrhagic AVMs, hybrid convolutional neural network (CNN) and recurrent neural network (RNN) models reported 76% accuracy for predicting hemorrhagic AVMs, and U-Net-based segmentation models reported 90% accuracy for labeling AVM diffuseness. Conclusion: These observations underscore the significance of advanced imaging in AVM diagnosis and treatment. New modalities provide highly sensitive, non-invasive diagnostic options with high accuracy, propelling the science of neurovascular imaging and enhancing patient care.

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GABAergic Neurons in the Ventral Pallidum Balance Approach/Avoidance Conflict

Alanis Delgado-Suárez[1], Cristina María-Ríos[1], Angelys Rivera-Hernández[2], Pamela Pérez-Vázquez[3], Vanelisse Rivera-Marzán[2], José Pérez-Torres[1], Roberto Vázquez-Alicea[2], Christian Bravo-Rivera[1]
[1]University of Puerto Rico, Medical Science Campus, School of Medicine Department of Anatomy and Neurobiology, San Juan, PR; [2]University of Puerto Rico, Río Piedras Campus, San Juan, PR; [3]University of Puerto Rico, Mayagüez Campus, Mayagüez, PR

Background and Objectives: Balancing appetitive and aversive drives is critical for decision-making, and neuropsychiatric disorders like addiction and depression often involve aberrant motivational shifts that impair these processes. The ventral pallidum (VP) plays a key role in motivation, with GABAergic neurons (VP_{GABA})

driving reward-seeking and glutamatergic neurons (VP_{Glut}) promoting punishment avoidance. However, the role of VP_{GABA} in motivational conflict remains unexplored. Methods: To address this, we employed optogenetic manipulations and calcium fiber photometry during the platform-mediated avoidance (PMA) task in transgenic mice, where mice nose-poke for sucrose rewards while avoiding a tone-signaled foot-shock by stepping onto a platform. Two conflict contingencies were tested: low conflict (LC), where rewards are available during safety periods and warning tones, and high conflict (HC), where rewards are only available during a tone co-presented with a reward-paired light-cue. Results: Optogenetic activation of VP_{GABA} induced real-time place preference and supported self-stimulation, while silencing VP_{GABA} decreased reward-seeking behavior, suggesting VP_{GABA} activation is both rewarding and necessary for reward-seeking. Fiber photometry recordings showed VP_{GABA} neurons had excitatory responses to reward delivery and exhibited increased approach-related activity. In LC, VP_{GABA} exhibited excitatory tone responses, which decreased with training. Interestingly, VP_{GABA} exhibited greater general activity in HC compared to LC, and excitatory tone responses also decreased over training days. These findings support that motivational conflict engages VP_{GABA} in well-trained mice. In a behavioral expression test, both activation and silencing of VP_{GABA} impaired avoidance in LC and increased it in HC, indicating impaired behavioral switching. Conclusions: These results suggest that discrete signaling of VP_{GABA} during the tone is important for balanced approach/avoidance responses. Understanding this neurocircuitry is essential for insights into decision-making in health and disease. IACUC Approved: Protocol #: A720222. Acknowledgments: This research was supported by NIH grants MH123495, MH058883 to CB-R and G-RISE T32GM148406 to AD-S.

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Transportation and Quality of Life in a Sample of College Students

Ayelet Del Toro Comulada[1]; Fabiana Rosado Rodríguez[1]; Yalibeth Rivera González[1]; Christian Hower Rodríguez[1]; Bexaida Díaz Pérez, PhD[1]; [1]University of Puerto Rico, Río Piedras Campus, Social Sciences Faculty, Department of Psychology, San Juan, Puerto Rico

Background and Objectives: Transportation has often been overlooked as a contributor to psychological well-being. Current research suggests that limited transportation options may increase stress and anxiety, impacting overall quality of life. This study examines the relationship between transportation access and psychological well-being among university students at the University of Puerto Rico, Río Piedras Campus. University students often face challenges in accessing affordable and reliable transportation, which could affect their academic and personal lives. Method: A cross-sectional study was conducted with thirty-one university students. Participants completed a sociodemographic questionnaire and a quality-of-life scale that measured four dimensions: motivation, academic performance, social life, and sleep patterns. Transportation access was assessed by the average daily travel time to the university. Analysis: Statistical analyses showed no significant relationship between transportation access (measured as travel time) and quality of life ($r = .20$, $n = 31$, $p = .26$). This lack of significance may be attributed to the small sample size and the limited variability in travel time (range: 30–90 minutes). Results: Furthermore, no significant relationships were found between travel time and individual quality-of-life dimensions. Conclusion: This exploratory study highlights the complexity of the relationship between transportation access and psychological well-being. While no significant associations were found, the findings suggest the need to explore other factors influencing well-being among university

students. Future research should include larger samples and broader variability in travel conditions to better understand these dynamics. Acknowledgement: This project was completed as a requirement for the course PSIC 4002 – Research Methodology in Psychology, under the supervision of Dr. Bexaida Díaz Pérez, from January to May 2024.

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Type 1 Diabetes Youth with Childhood-Onset Versus Adolescent-Onset Depression Have Different Psychosocial and Health-Related Outcomes

Mónica C. Nieves-Molina, HSDG; Eduardo Cumba-Avilés, PhD; Marleana M. Rolón-Sanfeliz, BA; Sebastián A. Quintana-Rodríguez, BA
University of Puerto Rico, Río Piedras Campus, Institute for Psychological Research, College of Social Sciences, San Juan, Puerto Rico

Background/Objectives: Depression is thought to have similar correlates, presentation, and course in children and adolescents. Early-onset depression is associated with persistent functional impairment, interpersonal problems, and a protracted course. Few studies have examined the correlations of childhood-onset (age <12) versus adolescent-onset (age ≥12) depression in youth with type 1 diabetes (T1D). We explored differences in psychosocial and health-related outcomes (PHRO) among Hispanic T1D adolescents with childhood-onset (G1, n=22) versus adolescent-onset (G2, n=43) depression. Method: Participants were 65 youths (aged 12–17) screened for a depression treatment study (IRB-approved #1112-005), 51 of whom attended a second evaluation. Adolescents and one caregiver each completed several measures. We used chi-square tests, ANOVAs, and odds ratios (OR) to examine group differences (p≤.05). Results: As expected, G1 members had an earlier T1D age of onset but similar chronological age and diabetes duration than their counterparts. In ANOVAs, G1 members had higher interpersonal problems, somatic complaints, and family conflict but lower global functioning than G2. However, G2 scored lower in family support with glucose testing. G1 participants showed higher rates and odds of uncontrolled glycemic values (OR=5.36), insulin non-compliance (OR=3.25), and need for insulin reminders (OR=7.26) in the past 3 months than G2 members. Parents of G1 adolescents reported higher rates and odds (9.06) of past-month suicidality than their counterparts. Adolescents from G1 were more likely to meet criteria for current (OR=3.73), past-year (OR=3.56), and lifetime (OR=7.20) major depression than their peers. They were also 3.72 times as likely as G2 to have a history of recurrent depressive symptoms. Effect sizes for group differences were medium. Conclusion: Our findings support the existence of important differences in PHRO among T1D youth with childhood-onset versus adolescent-onset depression. These differences suggest the need for clinical adjustments in psychosocial treatments for this population based on their depression age of onset. IRB Approved: Protocol #: 1112-005 (01/ 28/2020. Acknowledgments: The research project from which data for this study was obtained was supported by funds granted to the second author by the National Institute of Diabetes and Digestive and Kidney Diseases (under Award Number R03DK092547). Work on this study was also possible thanks to Institutional Funds for Research granted to the second author by the Deanship of Graduate Studies and Research of the University of Puerto Rico, Río Piedras Campus.

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Social Determinants of Obsessive-compulsive Symptoms and Depression among First-year Medical Students in Puerto Rico.

María del Mar Conde-Álvarez[3]; Matilde Grosso García[2];
Ricardo Calderón[2]; Alondra Soto[2];
Eliut Rivera-Segarra, PhD[1]; Alíxida Ramos-Pibernus, PhD[1];
Erik Vélez-Pérez[1]
[1]Health Equity Research Lab, Ponce Health Sciences University, Ponce PR;
[2]University of Puerto Rico in Río Piedras, San Juan PR;
[3]University of Puerto Rico Graduate School of Public Health,
Medical Sciences Campus, San Juan PR

Background: Mental health symptoms among medical students (MS) are common, with approximately one-third reporting depression or anxiety globally, particularly in their early years. Social determinants, such as the educational environment and social context, significantly influence mental health among MS. However, research on this subject is limited in Puerto Rico (PR). Methods: This cross-sectional study examined the prevalence of mental health symptoms among first-year MS (n=49) in PR and explored associations with social determinants. Data on demographics, social determinants, and mental health symptoms were collected via an online survey using the Symptom Checklist-90. Recruitment occurred in 2024 through convenience sampling, excluding out-of-state MS temporarily in PR. Descriptive statistics and gender-adjusted linear regressions were performed using SPSS v.29.0.2. The study applied the Social Determinants of Health framework from Healthy People 2030. Results: Preliminary findings revealed that 49.0% of first-year MS in PR may experience a mental health disorder. Obsessive-compulsive (O-C) and depression (DEP) symptoms were the most prevalent, with mean scores of 1.51 ± 0.94 and 1.24 ± 0.80, respectively. Female and bisexual students showed higher O-C and DEP indices. Frequent or consistent access to high-quality educational resources predicted reductions of 0.99 units in the O-C index ($p = .009$) and 0.81 units in the DEP index ($p = .017$). Similarly, access to environments supporting family visits reduced the O-C index by 0.69 units ($p = .027$). Conclusions: The study highlights the need to address social determinants affecting MS mental health in PR. Findings underscore the protective role of access to educational resources and family support. Future research should involve larger, longitudinal samples and qualitative approaches to explore the contextual relationships between social determinants and mental health across academic stages. IRB exemption: Granted by Ponce Research Institute, protocol #2401179723. Acknowledgments: We would like to thank the members of the Health Equity Research Lab at the Ponce Research Institute and the "Programa Interdisciplinario para Estudiantes de la Salud" in Puerto Rico. Their expertise and insights have significantly enriched our work. Additionally, we wish to acknowledge the support provided by Harvard Catalyst, Ponce Health Sciences University, and Fundación Intellectus, which facilitated the main author's endeavors in developing this research project. This collaborative effort underscores the importance of interdisciplinary partnerships in advancing health equity research. Funding: Fundación Intellectus (a non-profit organization in Puerto Rico).

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A Choice in Controversy: Surgical Intervention of a Pediatric Arachnoid Cyst

Priscilla M. Dávila-Pérez, BS[1]; Esteban R. Rivera-Rivera, BS[1]; Iván J. Sosa, MD[2]
[1]University of Puerto Rico, School of Medicine, San Juan, Puerto Rico;
[2]University of Puerto Rico, School of Medicine, Department of Neurosurgery, San Juan, Puerto Rico.

Introduction: Arachnoid cysts are cerebrospinal fluid collections lined by arachnoid mater that occur due to abnormal splitting of the arachnoid membrane. While considered congenital in nature the underlying etiology is poorly understood. They arise during fetal development and are present at birth, however and with continued growth, they can either enlarge or resolve. Arachnoid cysts have been reported in 2.6% of children and 90% of these remain asymptomatic and are an incidental finding of little clinical consequence. Given this, management of arachnoid cysts is often conservative with many surgeons favoring watchful waiting over surgical intervention. Case Presentation: We present the case of an 11-year-old male who presented to the emergency department after new onset seizures. Further history revealed the patient had recently developed an imbalance and had been dropping objects from his left hand. CT unveiled an arachnoid cyst of 6.2 x 3.7 cm at its largest dimension, localized to the right temporal lobe. Further workup with EEG revealed epileptic discharge activity localized to this same region. Due to the relatively large size of the cyst and EEG findings surgical intervention was pursued. The patient underwent ventriculo-peritoneal shunt placement without any major complications and was subsequently discharged home. Conclusion: The choice of whether to intervene in a patient with a large arachnoid cyst is a topic of debate. In patients with symptomatic presentations interventions may be favored. This case illustrates a unique situation which favored the intervention of a large and symptomatic arachnoid cyst with symptomatology and an epileptogenic focus localizable to the cyst site.

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Raising Awareness for Early Amyotrophic Lateral Sclerosis Detection

Frances Aponte-Caraballo, Sylvia Dávila-Nieves,
Valerie Wojna, Brenda Deliz
University of Puerto Rico, Medical Sciences Campus, School of Medicine, Neurology Section, Caribbean Hispanic Amyotrophic Lateral Sclerosis Center for Clinical Trials, San Juan, Puerto Rico

Amyotrophic Lateral Sclerosis (ALS) awareness is crucial for early detection and improved patient outcomes. The educational interventions implemented to create awareness were based on a multifaced approach combining information, dissemination through social media, educational outreach activities and engaging the community. In November 2023, a direct contact number was made available for outreach and clinical trial follow-ups. In January 2024, six spots on the Community Advisory Board (CAB) were opened to include ALS participants and caregivers. Staff and CAB volunteers were trained in ALS, enhancing community involvement. In April 2024, the Red Informativa de ALS (RIALS) volunteer group was formed to increase awareness among future professionals, consisting of students at different educational levels from high school to graduate school,

such as medical students and neurology residents, among other specialties. This group helps research recent scientific findings and makes them accessible to the general public, which are then shared through social media and printed materials. Social media events were organized to reach a broader audience, leveraging the power of online platforms to spread awareness and foster community engagement rapidly. To address ALS care access and reduce the time it takes to make the diagnosis, educational materials were developed to highlight early signs of the disease, encouraging individuals to seek medical help early, thus promoting early diagnosis. An annual symposium served as a cornerstone event, offering a comprehensive overview of the latest research, treatment options, and patient care strategies. We have experienced an increase in symposium participation and in calls to the clinic requesting appointments, looking for information about the disease and clinical trials. This results in a need to increase the amount of ALS multidisciplinary clinics during the month. These efforts demonstrate the importance of continuous, simultaneous education and community collaboration in raising ALS awareness and improving care access. Acknowledgment: This initiative was made possible through the ALS Association Capacity Building funding opportunity (23-TC-642). Thanks to RIALS and CAB members for their support and participation in these initiatives. Thanks for the support of all collaborators from the University of Puerto Rico Medical Sciences Campus: the Hispanic Alliance for Clinical & Translational Research (Alliance) supported by the National Institute of General Medical Sciences (NIGMS) of the national institutes of health under award number U54GM133807, the Advanced Clinical Trials Units (ACTU), the School of Medicine, Neurology Section and the ALS Multidisciplinary Clinic.

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Adults With Diabetes in Puerto Rico During the Pandemic: Rates of Mental Disorders and Treatment

Marleana M. Rolón-Sanfeliz, BA; Alexzandra Mojica-Román, BA; Eduardo Cumba-Avilés, PhD; Paola M. Rivera-Arroyo, BA; Sebastián A. Quintana-Rodríguez, BA
University of Puerto Rico, Río Piedras Campus, Institute for Psychological Research, College of Social Sciences, San Juan, Puerto Rico

Background/Objective: Adults with diabetes (AWD) have higher rates of mental disorders (RMD) than adults without chronic diseases (AWOCD). The pandemic may have exacerbated the mental health-related challenges of AWD, increasing their need for mental health treatment (MHT). These issues have been understudied in Puerto Rico (PR). We examined the RMD and use of MHT of AWD (G1=199) vs. AWOCD (G2=671) who completed an online survey during the outbreak (IRB-approved #1920-194). Method: Participants aged 21–78 years (M=44.00; 77.59% women) had to be PR residents for ≥3 months before enrollment, have internet access, and understand Spanish. Adults completed a Health/Treatment History Module. Using chi-square tests, we compared groups in RMD and MHT. With logistic regression, we examined the crude and adjusted odds for presenting a history of mental disorders when having diabetes (type 1 or 2). Participants' age and household size were used as covariates in adjusted analyses. Results: AWD showed significantly higher rates for major depression (10.05% vs. 3.73%), dysthymia (4.02% vs. 1.34%), minor depression (7.04% vs. 3.58%), any depressive disorder (20.60% vs. 8.64%), generalized anxiety disorder (GAD; 10.55% vs. 5.66%), panic disorder (6.53% vs. 2.83%), any phobic disorder (5.03% vs. 1.94%), any anxiety disorder (18.09% vs. 9.24%), and any mental disorder (24.12% vs. 12.67%) than

AWOCD (p ≤.05). The odds of being diagnosed with mental disorders were from 1.97 (GAD) to 3.08 (dysthymia) times higher in G1 than in G2. Adjusted odds ratios ranged from 2.56 (GAD) to 4.15 (any phobic disorder). AWD showed higher adjusted odds for having presented ≥2 mental disorders (3.33), a lifetime history of MHT (2.47), and any MHT during the outbreak (2.32). Conclusion: AWD present higher odds and RMD and comorbidity than AWOCD. They also have higher odds of lifetime/current MHT. Public policies must address the mental health needs of AWD during health emergencies. Acknowledgments: This study is based on data from a major research project ("COVID-19 and Mental Health in Adults from Puerto Rico: Social Determinants and Personal Factors"), directed by the third author. We are thankful to research assistants for their collaboration in this study. Some of them were hired thanks to funds from the Deanship of Graduate Studies and Research (DEGI for its Spanish acronym), granted to the Institute for Psychological Research. The content of this work is solely the responsibility of the authors.

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Community Health Workers Addressing Health and Social Gaps through Referrals

Sandra L. Otero Morales, Gabriela A. Algarín Zayas, Marianyoly Ortiz Ortiz, José F. Cordero
Puerto Rico Public Health Trust, Puerto Rico Science Technology and Research Trust

Introduction: Given the impact of the COVID-19 pandemic in 2020 and its associated risks, there was a critical need to implement effective education, prevention, and vaccination strategies, particularly in municipalities that are difficult to access. The Center for Disease Control and Prevention provided funding to the Puerto Rico Public Health Trust (PRPHT) to address this need through a Community Health Workers (CHWs) initiative. Method: The PRPHT created a CHW workforce to promote healthy behaviors in the communities and actively identify community health and social needs. With their knowledge and network of public agencies and non-profit entities, CHWs linked community members with the necessary services through referrals. By managing these referrals, the CHWs facilitated access to both clinical and social services. Results: Between January and December of 2024, 42 CHWs processed 1,072 referrals (314 for health services and 758 for social services) in twenty-nine municipalities of the archipelago. These referrals were mainly for primary health care and food services (food banks, SNAP and WIC). Conclusion: The work of the CHWs has been instrumental in identifying the social determinants of health. Their trusted role within the communities has contributed to the success of the initiative. It is expected that these results will highlight the importance of the PSC in Puerto Rican communities and lead to the permanent integration of this role in the Puerto Rico health system.

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Transition and Self-Efficacy of Adolescents with Irritable Bowel Disease (IBD): A Quantitative Retrospective Study

Emanuel E. Díaz-Ortiz[1], Marilyn K. Simon[2], Karen Johson[2], Marcia Hill[2]
[1]University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico;
[2]University of Phoenix, Arizona, USA

Background and Objectives: There is a need to reveal the psychological needs and barriers in the transition process of adolescent patients diagnosed with Inflammatory Bowel Disease (IBD) transitioning from pediatric to adult gastroenterology health services. IBD patients often face unique physiological needs, psychological needs, and barriers related to developing ineffective self-efficacy as they experience the transition process. The purpose of the quantitative descriptive retrospective cohort study was to determine the relationship between psychological needs and barriers to the level of self-efficacy in the transition from the point of view of adults diagnosed with IBD who went through the process of transition from pediatric gastroenterology services to adult services when they were teenagers. Method: A quantitative retrospective cohort study was used to determine the association between psychological needs and barriers to the level of self-efficacy in the transition from the point of view of adults diagnosed with IBD who went through the transition process from pediatric gastroenterology services to adult services when they were adolescents. For the study, the independent variables were psychological factors (need and barriers) affecting personality, including problem-solving, persistence, independence, control of emotions, and coping abilities that revealed continuous scales used to assign items into scores (a higher score, a higher level of need and barriers). The participants were individuals diagnosed with IBDs between the ages of 21 to 35 who experienced the transition process from pediatric gastroenterology to adult services in Puerto Rico when they were adolescents. Linear regression was performed to determine the effects of the psychological needs and barriers they experienced during their transition from pediatric to adult gastroenterology in Puerto Rico on the level of self-efficacy they experienced during their transition. Results: The findings of the study demonstrated a statistical association between psychological needs and barriers (problem-solving, persistence, independence, control of emotions, and coping abilities) and the level of self-efficacy in the transition from the point of view of adults diagnosed with IBD who went through the process of transition from pediatric gastroenterology services to adult services in Puerto Rico ($p < .001$). Conclusion: By addressing IBD, considering pediatric patients' barriers, needs, and level of self-efficacy, healthcare leaders can improve patient outcomes, optimize healthcare delivery, and allocate resources effectively to manage complex and costly diseases. Research noted that realizing a proper and healthy transition from pediatric to adult care helps the pediatric patient diagnosed with IBD in being able to develop defense mechanisms and responses within the construct of self-efficacy, resulting in more excellent responsiveness and compliance to treatment. Based on the study findings, healthcare practitioners can help facilitate a smooth transition of care for adolescents with IBD from pediatricians to internal medicine physicians by adopting a patient-centered approach. Approved by IRB: 2044763-1

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Evaluación de la Viabilidad de la Implementación de Acciones de Responsabilidad Social Corporativa entre los Hospitales en Puerto Rico

Karen Agosto Valentín, JD, MPH, DrPH, HSAM, GCG; Ruth Ríos Motta, PhD, MS;
Mario H. Rodríguez Sánchez, PhD, MSEH, MPH, MDiv; Roberto Ramírez García, PhD, MHSA
Universidad de Puerto Rico, Recinto de Ciencias Médicas, Facultad de Ciencias Biosociales y Escuela Graduada de Salud Pública, Departamento de Administración de Servicios de Salud, San Juan, Puerto Rico.

Trasfondo y Objetivo: La Responsabilidad Social Corporativa (RSC) es esencial para promover la sostenibilidad, adaptabilidad y equidad entre los sistemas y sectores de salud. Es por eso por lo cual, este estudio tiene como objetivo evaluar la información necesaria para determinar la viabilidad de la implementación de acciones de RSC

entre las entidades que prestan servicios de salud en Puerto Rico. Se busca describir tendencias e indicadores de RSC y recomendar la integración de mejores prácticas para los hospitales en PR, basadas en las acciones de los componentes del sistema de salud de EE. UU. Método: El propósito de esta investigación se alcanzó mediante una metodología de investigación cualitativa de alcance descriptivo. Se llevó a cabo una revisión de contenidos sistemática de informes de RSC, utilizando el método de Krut y Munis. Este proceso se organizó en cinco pasos, los cuales son: I) descripción de componentes del sistema de salud de EE. UU., II) análisis de contenidos en informes y estudios de *benchmark*, III) identificación de tendencias clave, IV) evaluación de implicaciones financieras y, V) recopilación de indicadores principales. Los datos del quinquenio 2016-2021 se obtuvieron de fuentes públicas y bases electrónicas y se organizaron en tablas resumen para su evaluación. Resultados: Debido a la *Affordable Care Act*, el auge de fusiones en el sector hospitalario generó mercados altamente concentrados, incentivando la adopción de informes de RSC en EE. UU. Estos informes han facilitado la reducción de costos y el mejoramiento de la salud pública. Conclusiones: La integración de prácticas de RSC adaptadas de EE. UU. es viable para los hospitales en PR. Se recomienda un enfoque holístico que incorpore el diálogo entre agencias gubernamentales y entidades privadas y la colaboración interdisciplinaria para la sostenibilidad de las acciones de RSC y su alineación con las necesidades en salud comunitarias.

074

Infection Prevention and Control at Mainland U.S. and Puerto Rican Home Health Agencies During COVID-19: A Mixed-Methods Study

Jasmin R. Martínez, BS[1,2]; Ashley M. Chastain, DrPH, MPH[1]; Uduwanage G. E. Perera, PhD, MS[1]; Robert Weech-Maldonado, PhD[3]; Patricia W. Stone, PhD, RN, FAAN, CIC[1]; Jingjing Shang, PhD, RN, FAAN, OCN[1]

[1]Columbia University School of Nursing, Center for Health Policy, New York, NY;
[2]Columbia University Mailman School of Public Health, Department of Epidemiology, New York, NY;
[3]University of Alabama at Birmingham, School of Health Professions, Department of Health Services Administration, Birmingham, AL

Background and Objectives: Infection prevention and control (IPC) is critical in home health care (HHC), yet efforts before the COVID-19 pandemic were suboptimal. IPC has been studied among U.S. mainland HHC agencies, but little is known about the situation in Puerto Rico (PR). The study goal is to understand how IPC was prioritized at U.S. and PR HHC agencies during COVID-19. Methods: A survey was distributed to 1,466 U.S. mainland and 35 PR HHC agencies, achieving response rates of 31.5% (n=462) and 34.2% (n=12), respectively. Probability weights generated nationally representative estimates, and Z-tests were used to compare U.S. and PR results. 12 interviews were conducted with staff from 4 PR agencies across geographically diverse areas of the main island. Interviews were conducted in Spanish, transcribed into English, and coded using NVivo 1.7.2 by a three-member team. Results: Staff education was the most time-consuming IPC activity for U.S. agencies (84.4%) and the second most time-consuming for PR agencies (75.0%). More U.S. agencies conducted IPC training quarterly (21.4% vs. 0.0% PR, p= 0.0714) and at new hire orientation (56.3% vs. 25.0% PR, p = 0.0314). Regarding their greatest IPC challenge, 38.3% of U.S. agencies (PR = 16.7%, p = 0.1268) responded that maintaining adequate field staffing

coverage was their primary issue, while 33.3% of PR agencies (U.S. = 2.4%, p = 0.0001) reported difficulties with managing infections due to multiple drug-resistant organisms and C. difficile. Qualitative interviews reinforced staff education and staffing coverage as essential IPC components in PR. Conclusions: Staff education is a time-consuming IPC activity for both U.S. and PR HHC agencies. U.S. agencies struggle with field staffing, while PR agencies face challenges managing serious infections. Both underscore the need for staffing solutions and IPC training support to improve patient outcomes during pandemics and other emergencies. IRB Approved: Protocol #: AAAT6837 and AAAT8555. Acknowledgments: This research was supported by grants from the National Institutes of Health (R01AG074492; R01NR016865).

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Integrando Salud Ambiental en la Guía Curricular del Sistema Público de Enseñanza Puertorriqueño: Promoviendo Estilos de Vida Saludables

Eduardo M. Llegus-Santiago[1], Gilmarie Rivera-Castellar[2], José Norat-Ramírez[1]
[1]Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela Graduada de Salud Pública, Departamento de Salud Ambiental, San Juan, Puerto Rico;
[2]Organización Reverdece y Educa tu Comunidad, Ponce, Puerto Rico

Trasfondo y Objetivos: Este proyecto examinó la viabilidad de integrar temas de salud ambiental en la guía curricular de Ciencias para estudiantes de quinto grado en el Departamento Educación de Puerto Rico. La iniciativa fomentó la enseñanza de temas clave de salud ambiental, como la contaminación agua por microplásticos, efectos a la salud ante el cambio climático, manejo sostenible de residuos y seguridad-alimentaria. Objetivo principal fue fortalecer la educación en salud ambiental desde edades tempranas, promoviendo la conciencia crítica y acción responsable entre los estudiantes. Métodos: Metodología participativa basada en revisión del mapa curricular de Ciencias de 5to grado, colaboración con Organización Reverdece y Educa tu Comunidad, y aplicación de un cuestionario piloto a maestros de Ciencias en región educativa Ponce. Esto permitió identificar las necesidades educativas y las oportunidades de integración curricular. Se diseñó un mapa curricular con lecciones incluyendo actividades interdisciplinarias, estrategias de aprendizaje práctico y recursos educativos contextualizados. Se elaboró un Proyecto de Resolución Conjunta ante la Legislatura de Puerto Rico para formalizar la incorporación de la salud ambiental en el currículo escolar. Resultados: Los resultados evidenciaron aceptación del mapa por parte de maestros y comunidad escolar, quienes subrayaron la importancia de los temas de contaminación por microplásticos, manejo de residuos y cambio climático. El diseño del mapa curricular facilitó el aprendizaje interdisciplinario, generando un aumento 30% en la participación estudiantil en clase y la concienciación sobre la protección del medio ambiente. Las alianzas estratégicas con Departamento de Educación de Puerto Rico y Departamento de Recursos Naturales y Ambientales se identificaron como esenciales para la sostenibilidad de esta propuesta educativa. Conclusiones: La inclusión de la salud ambiental en la guía curricular de Ciencias fomenta estilos de vida saludables y sostenibles en la niñez, contribuyendo formar ciudadanos conscientes y comprometidos con la protección del medioambiente y bienestar humano. Agradecimiento: Organización Reverdece y Educa tu Comunidad (OREC), y maestros y estudiantes por su valiosa colaboración en esta iniciativa educativa.

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A Unique Anatomical Variant of the Fibularis Brevis Muscle Tendon with the Presence of an Accessory Band and its Clinical Implications

Jorge C. Carrillo; Eliomar Rosa; Wilson Veras, MD
San Juan Bautista School of Medicine, Caguas, PR

Purpose: To describe and report the occurrence of an accessory fibularis muscle tendon, highlighting the importance of anatomical variants and their implications in healthcare. Case Description: Dissection of a male cadaver at the SJBSM anatomy laboratory exhibited a variation of the insertion of the FBM tendon. Just before the insertions, an accessory band leaves the tendon and runs along the lateral surface of the foot. This band is divided distally into a medial and lateral portion. The medial subdivision possessed an insertion distally at the head of the fifth metatarsal bone and did not exhibit any action on the metatarsophalangeal joint. The lateral subdivision inserts at the base of the proximal phalanx of the fifth digit, and it did exhibit movements of extension and abduction at the level of the fifth metatarsal-phalangeal joint. Conclusion: Anatomical variants are vital for accurate diagnosis, treatment, and understanding human diversity, highlighting their importance in medical education and clinical practice. Future research may be directed towards understanding the full extent of such variants on a live individual. Acknowledgments: This project received no fundings. The authors have no conflict of interest to declare.

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Prevalence of Comorbidities and Factors Associated among a Sample of Hispanic Cancer Survivors in Puerto Rico.

Alejandra Díaz-Rohena, BS[1,2]; Karina Rivera-Mejía, BS, MPH[1]; Lorena González- Sepúlveda, MS[1,3]; Yadielis Arce-Rivera[4]; Noedly Ayala- Sánchez[4]; Natalia Domínguez-Betancourt[5]; Liamarys Ortiz-Torres, BS[1]; María Vázquez- Torres, BS1; Stephanie Cameron-Maldonado, MS1; Marievelisse Soto-Salgado, MS, DrPH1.
[1]University of Puerto Rico, Comprehensive Cancer Center, San Juan, PR; [2]University of Puerto Rico, Medical Science Campus, School of Medicine, San Juan, PR; [3]University of Puerto Rico Medical Sciences Campus, Graduate School of Public Health, San Juan, PR; [4]University of Puerto Rico, Cayey Campus, Cayey, PR; [5]University of Puerto Rico, Río Piedras Campus, San Juan, PR.

Background and Objectives: The coexistence of chronic conditions among cancer survivors has been shown to affect diagnosis, management, and outcomes. There is limited information on how comorbidities could affect cancer survivors in Puerto Rico. This study aims to assess the relationship between comorbidities and social determinants of health among Hispanic cancer survivors in Puerto Rico. Methods: Data from an ongoing cross-sectional study (START-PR) were analyzed. Cancer survivors who completed an online survey from November 2023 through December 2024, aged 21+ years, residing in PR, and receiving treatment within the past year, were included in this analysis (n=571). Chi-square, Fisher's exact, or Oneway ANOVA test, as appropriate, were used to determine an association between sociodemographic, clinical, and quality of life (FACT-G scores) characteristics and the presence of self-reported comorbidities (0 or ≥1). Results: Participants were mainly women (69.1%) and

aged 50+ years (78.6%). About 77.6% of the participants reported at least one comorbidity. Participants aged 50+ years and unemployed (students, housewives, retired, and disabled) were more likely to have at least one comorbidity than those who were 21-49 years of age (82.6% vs. 59.0%, respectively; p<0.001) and employed (82.4% vs. 68.2%, respectively; p<0.001). Lower FACT-G scores were observed among those who had at least one comorbidity than among those without comorbidities (67.4±19.1 vs. 76.2 ±18.3, p<0.0001). No association was found between comorbidities and sex, educational attainment, place of residence, annual family income, and cancer stage (p>0.05). Discussion: A high proportion of cancer survivors in Puerto Rico showed at least one comorbidity. The study highlights how cancer survivors older than 50+ years and unemployed show comorbidities more frequently. Further studies should evaluate the impact of comorbidities on cancer treatment receipt and mortality. Furthermore, comprehensive care strategies are necessary to improve the quality of life of cancer survivors. IRB Approved: Protocol#: 2411004025

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Optimizing Perioperative Anesthesia Handoff: Implementing an Evidence-Based Tool for Enhanced Compliance and Patient Safety

Danisha Ayala-Ruiz, Mathew J. Marín-Pagán, Elizabeth M. Ramos-Ramos, Sherily Pereira-Morales, José L. Bonilla- García, Milagros I. Figueroa-Ramos
University of Puerto Rico, Medical Sciences Campus, School of Nursing

Clinical Question: In anesthesia providers, how does the implementation of a standardized handoff tool affect communication quality, handoff time, clinician satisfaction, and patient outcomes during the perioperative handoff process? Scope: Effective communication during perioperative care transitions is crucial for patient safety. Anesthesia providers play a vital role in ensuring continuity of care by evaluating patient status and transferring essential information, as outlined by the American Association of Nurse Anesthesiology (AANA)'s 11th practice standard. Despite this, communication breakdowns are common, particularly post-operatively, where informal practices and the lack of standardized tools lead to incomplete information transfer and potential safety risks. This project aimed to address these challenges by standardizing anesthesia handoffs using an evidence-based tool to improve compliance with professional guidelines. Literature Review: A systematic review of ten studies, ranging from evidence levels 3 to 6, demonstrated that standardized tools enhance communication, reduce errors, and improve provider satisfaction. These tools ensure greater adherence to critical information elements, supporting more efficient and reliable care transitions. Project Implementation: Anesthesia providers were oriented to the Evidence-Based Practice project and trained to use a structured handoff checklist. Observations and data collection during implementation in the PACU were analyzed, with feedback gathered through surveys to assess adherence, satisfaction, and handoff duration. Results: The structured checklist improved communication, achieving 100% adherence for patient identifiers and 90% for vital signs and anesthesia techniques, while presenting a median handoff duration of 2 minutes. Clinician satisfaction was high, with 90% agreeing with its reliability and safety benefits, though underreporting of airway status (32%) and intraoperative events (34%) highlighted areas for improvement. Implications for Practice: Standardized handoff checklists improve communication, reduce errors, and enhance patient safety. They also promote interprofessional collaboration and professional development, strengthening care transitions and clinical outcomes. Approved by IRB. Acknowledgments: No funding sources or conflicts of interest to disclose.

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Hypocomplementemic Urticarial Vasculitis: A Rare Manifestation of SLE

Shakira Bou Rolón, BS[1]; José R. González Chávez, MD, FAAD[2]
[1]San Juan Bautista School of Medicine, Caguas, PR; [2]Private Practice, San Juan, PR

Purpose: This report highlights a rare type of small-vessel vasculitis which can arise idiopathically or secondary to autoimmune disorders. We aim to raise awareness and provide guidance for diagnosing and managing this rare manifestation of lupus, which may be misdiagnosed and progress to systemic organ involvement. Case Description: A 36-year-old woman presented with a 20-day history of pruritic, warm urticarial lesions with arthralgia. Her medical history included intermittent fevers and arthralgia in 2023, with prior negative laboratory results. In 2024, similar symptoms recurred, and testing revealed positive antinuclear antibodies along with a diagnosis of systemic lupus erythematosus. Further tests showed positive anti-RNP antibodies, low complement proteins (C3 and C4), and elevated serum gamma globulins. Despite treatment with prednisone (40 mg/day), her urticarial lesions persisted, prompting a referral to dermatology. Examination revealed widespread erythematous plaques and a skin biopsy confirmed urticarial vasculitis. She was initiated on indomethacin 75 mg BID, resulting in complete lesion resolution within 48 hours. The patient was diagnosed with hypocomplementemic urticarial vasculitis, a severe form of vasculitis. For long term management, she was placed on low-dose prednisone, indomethacin, and hydroxychloroquine. Conclusion: Urticarial vasculitis (UV) is a rare small-vessel vasculitis caused by type III hypersensitivity reaction involving immune complex deposition and complement activation. Its hallmark feature is persistent urticarial lesions lasting over 24 hours, often requiring skin biopsy for confirmation. While some cases are idiopathic, UV frequently occurs alongside autoimmune conditions such as lupus. Hypocomplementemic UV is noted as the more severe form, often involving systemic organ complications, such as glomerulonephritis and pulmonary disease. This case underscores the importance of thorough evaluation and a multidisciplinary approach in patients presenting with refractory urticarial lesions and systemic symptoms to ensure timely diagnosis and optimal management. Further research is essential to better understand this complex condition and improve patient outcomes. Acknowledgements: Authors disclose no conflict of interests. No funding was received for the elaboration of this report.

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Extraño Caso de Colangiocarcinoma Intrahepático en Joven de 23 años con Metástasis en Vértebra, Pulmones, Pleura y Cerebro.

Adamaris Maldonado-Irizarry[1], Yadiris López-Rivera[1], Jessyca Santiago[2,3], María Marcos-Martínez[2,3], Aracelly Rivera[3], Astris Pérez[3], Ivanisse Ortiz Vélez[4], Ricardo Fernández[4]
[1]Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela de Profesiones de la Salud, Programa de Citotecnología, San Juan, Puerto Rico; [2]University of Puerto Rico, Recinto de Ciencias Médicas, Escuela de Medicina, Departamento de Patología y Medicina de Laboratorio, San Juan, Puerto Rico; [3]Laboratorio de Patología-ASEM, Centro Médico de Puerto Rico, San Juan, Puerto Rico; [4]Pneumología y Medicina de Cuidado Crítico, Hospital San Juan, San Juan, Puerto Rico.

Propósito: Las efusiones pleurales, afectando a más de 1.5 millones de personas anualmente, requieren de un diagnóstico certero para determinar su causa, tratamiento y pronóstico. El colangiocarcinoma, segundo carcinoma hepático primario más común, se origina en el conducto biliar y afecta principalmente a personas mayores de 50 años. Este estudio analiza hallazgos citológicos, y los correlaciona con hallazgos histológicos y pruebas auxiliares para llegar al diagnóstico final. Descripción del caso: Un hombre de 23 años acude al hospital debido a dolor de espalda baja por varias semanas tras practicar deportes playeros, dificultad respiratoria y pérdida de peso. La resonancia magnética revela una fractura de compresión en la vértebra L2, hepatomegalia, masas hepáticas, masa en adrenal derecha, nódulos en ambos pulmones y efusión pleural derecha. El análisis citológico de esta efusión muestra células malignas. Las pruebas de inmunohistoquímica, relevantes para confirmar la presencia de tumor y para determinar su origen, dan positivo para MOC-31, BerEP4, CK7, EMA y panqueratina, y negativo para tumores germinales, melanoma, mesotelioma, tiroides, riñón, pulmón y mama, confirmando que la efusión es carcinoma metastásico. La biopsia hepática es positiva para CK19, CK7, EMA, CEA, CK8/18, y MOC-31, y negativa para CK20, lo que favorece origen pancreatobiliar. Los estudios moleculares identificaron la fusión de FGFR2, común en colangiocarcinomas intrahepáticos y rara en canceres de páncreas, confirmando el diagnóstico de colangiocarcinoma intrahepático. Conclusión: Se presenta un caso peculiar de colangiocarcinoma intrahepático porque ocurre en un paciente joven (generalmente afecta a mayores de 50 años). La determinación final del diagnóstico integra el historial y el análisis de las muestras citológicas e histológicas (morfología, inmunofenotipo y características moleculares). En conclusión, este caso contribuye al conocimiento sobre el colangiocarcinoma intrahepático, ilustra la necesidad de utilizar diferentes técnicas diagnósticas y resalta la importancia de considerar diagnósticos menos comunes en pacientes jóvenes.

081

Pembrolizumab-Induced Hypertrophic Lichen Planus with Oral and Nail Manifestations: A Rare Immune-Related Adverse Event

Natalia M. Pelet del Toro, MD[1]; Claudia Dubocq Ortiz, BS[2]; Francisco Colón Fontánez, MD[1]
[1]University of Puerto Rico, Medical Sciences Campus, Department of Dermatology;
[2]University of Puerto Rico, Medical Sciences Campus, School of Medicine

Purpose: Immune checkpoint inhibitors (ICIs) upregulate T-cell mediated immune responses resulting in dramatic anticancer effects and, occasionally, loss of host immune tolerance. Cutaneous eruptions are early indicators of immune-related adverse effects (IRAEs). We present the first case, to our knowledge, of drug-induced hypertrophic lichen planus (LP) with concomitant oral and nail manifestations secondary to the programmed death-1 (PD-1) inhibitor pembrolizumab. Case description: A 77-year-old woman with stage IV carcinoma of unknown origin was started on pembrolizumab following a left axillary lymph node resection. After eight pembrolizumab cycles she developed pruritic, scaly lesions on her extremities, painful oral lesions, and nail changes. Physical examination revealed violaceous, hypertrophic scaly papules and plaques on her shins and forearms, micronychia and toenail loss, and white buccal ulcers. Skin biopsy showed pseudocarcinomatous epidermal hyperplasia with a lichenoid inflammatory infiltrate, consistent with hypertrophic LP. The temporal relation of these lesions with pembrolizumab exposure and the clinical improvement after withdrawing pembrolizumab supported the diagnosis of drug-induced LP. Significant clinical and symptomatic improvement continued with a prednisone taper and topical steroids. Conclusion: The PD-1 blockade increases peripheral

T-cell proliferation inducing various lichenoid eruptions. Pembrolizumab-induced LP typically presents as pruritic flat-topped, violaceous papules, resembling classic LP. Few isolated cases of oral, nail or hypertrophic LP have been reported following pembrolizumab. We present a novel case of pembrolizumab-induced LP presenting as the hypertrophic cutaneous variant with oral and nail involvement. As ICIs become ubiquitous in cancer therapy, awareness of unusual cutaneous IRAEs is crucial to optimize patient management and promote treatment adherence and tolerability. Acknowledgments: The authors report no conflicts of interest.

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Association between Loneliness and Suicidal Behavior in a Representative Sample of 6th-12th Grade Students, Puerto Rico, 2022-24

Linnette Rodríguez-Figueroa[1], Margarita R. Moscoso-Álvarez[2], Juan C. Reyes-Pulliza[1], Héctor M. Colón[1]
[1]Department of Biostatistics and Epidemiology, Graduate School of Public Health, University of Puerto Rico, San Juan, Puerto Rico;
[2]Department of Family Medicine, School of Medicine, Universidad Central del Caribe, Bayamón, Puerto Rico

A lack of social connection, including loneliness, has been associated with a higher risk of morbidity and mortality due to physical illnesses, such as cardiovascular disease, hypertension, diabetes, infectious diseases, and mental disorders, such as dementia, depression, anxiety, self-harm, and suicide. An association between loneliness and suicidal behavior has been documented, but there is a dearth of research on this topic using population-based samples, particularly among Hispanic teens. This study evaluated the association between loneliness and suicidal behavior (ideation and attempts) during the previous year among students in Puerto Rico. The sample (n= 7,356) in this 2022-24 cross-sectional survey was selected using a multi-stage stratified cluster sampling design and was representative of all 6th-12th grade students in PR. Data was collected using a pre-coded self-administered questionnaire. Loneliness was assessed with the Jong Gierveld scale. Multiple logistic regression models were fitted to estimate the odds ratios and their 95% confidence intervals after adjusting for potential confounders. Interaction was assessed. Analyses were performed on weighted data. Approximately 4.6% of students suffered severe loneliness, 6.7% reported suicidal ideation and 8.9% reported suicide attempts in the past year. Prevalences of suicide ideation and attempts were significantly higher among students with severe loneliness compared to those with none/moderate loneliness: ideation (30.6% vs 5.6%) and attempts (32.1% vs 7.8%). Female students with severe loneliness had 2.81 higher odds of suicidal ideation and 3.29 higher odds of suicide attempts compared to students reporting moderate or no loneliness after adjusting for age, depression, and bullying victimization ($p<0.001$). Male students with severe loneliness had 2.54 higher odds of ideation and 1.19 higher odds of attempts after adjustment ($p<0.001$). This study highlights the consequences that loneliness appears to have in our youth's mental health condition, particularly among females. More research is needed to understand and design youth prevention and intervention programs that directly deal with the precise factors associated to suicidal behavior among Hispanic teens. Furthermore, this study underscores the need to study risk and protective factors for loneliness, a topic seldom researched, and how it affects other areas of our youth's wellbeing. IRB Approval: Protocol No. 2022-24 (Approved on 02/28/2023)

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Exogenous GJA1-20k Rescues Gap Junction Formation in Cardiomyocytes with Desmoplakin Knock-Down

Jeremy J. González[1], Daisuke Shimura[2], Mario Maalouf[2], Robin M. Shaw[2]
[1]University of Puerto Rico, Medical Science Campus, San Juan, Puerto Rico; [2]Nora Eccles Harrison Cardiovascular Research and Training, University of Utah, Salt Lake City, UT, United States

Background & Objectives: Connexin 43 (Cx43) is the primary gap junction protein in the ventricle of the heart and plays an essential role in cardiac electrical impulse propagation for synchronized cardiac muscle contraction. Impaired gap junction formation results in arrhythmogenesis, which often induces other pathological diseases. Interestingly, GJA1 mRNA, which encodes Cx43, produces several N-terminus truncated isoforms by internal translation. GJA1-20k, the most abundant truncated isoform of Cx43, has been originally identified as an auxiliary trafficking subunit of Cx43 to the cell membrane. Similarly, desmoplakin (DSP), one of the proteins that make up desmosomes, is required for proper heart function by maintaining cardiac fiber organization. Given that abnormal gap junction formation and several mutations in DSP are identified in human with Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC), in this study, we hypothesized that promoting Cx43 trafficking by exogenous GJA1-20k, rescues gap junction formation even under DSP dysfunction. Methods: We knocked-down DSP in isolated neonatal mouse cardiomyocytes using small hairpin RNA (shRNA) transfection, and exogenous GJA1-20k was overexpressed via adenovirus vector. Cells were then fixed in methanol and analyzed by confocal fluorescence microscopy, which was used to quantify Cx43 localization to the cell membrane and evaluate gap junction formation under DSP knock-down. Results: Our results showed significant reduction in Cx43 localization at the cell membrane under DSP knock-down conditions, while exogenous GJA1-20k restored Cx43 localization to the membrane. Conclusions: These data suggest the therapeutic possibility of GJA1-20k for ARVC caused by DSP mutations by reconstructing gap junction formation with Cx43. Acknowledgements: This work was supported by National Institutes of Health grants (R01HL152691, R01HL138577, and R01HL159983) to Robin M. Shaw. IACUC Approved: Protocol#: 00001484 (09/16/2022)

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Social Determinants of Health Associated with Perceived Social Support among Cancer Survivors Living in Puerto Rico

Natalia Domínguez-Betancourt[1], María Vázquez-Torres[3], Stephanie Cameron-Maldonado[3-4], Lorena González-Sepúlveda[3], Karina Rivera-Mejía[3], Liamarys Ortiz-Torres[2], Noedly Ayala-Sánchez[2], Yadielis Arce-Rivera[2], Alejandra Díaz Rohena[5], Marievelisse Soto-Salgado[3].
[1]University of Puerto Rico Río Piedras Campus, San Juan, PR; [2]University of Puerto Rico, Cayey Campus, Cayey, PR; [3]University of Puerto Rico Comprehensive Cancer Center, San Juan, PR; [4]University of Puerto Rico, Medical Sciences Campus, Graduate School of Public Health, San Juan, PR; [5]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, PR.

Background and Objectives: Social support has been shown to act as a protective factor for quality of life, reducing distress and improving psychosocial adaptation among cancer survivors. The aim of this study was to evaluate the relationship between social determinants of health (SDoH) and perceived social support among cancer survivors undergoing treatment in Puerto Rico (PR). Methods: Data were sourced from START-PR, an ongoing cross-sectional study. Participants completed an online survey between November 2023 and December 2024 (n=545). Eligible participants included cancer survivors with the following criteria: aged ≥21 years, residing in PR, received active cancer treatment within the past year, and responded to all items of the Multidimensional Scale of Perceived Social Support (MSPSS). An adapted version of the MSPSS was used to measure social support overall and by subdomains: family, friends, and significant others. The relationship between overall social support (low scores [≤ median] vs. high scores [> median]) and SDoH and health-related factors was evaluated using the Chi-square test. Results: Most individuals were women (68.7%) and aged ≥ 51 years (76.0%). About 53.0% of the participants reported receiving low social support. Low social support scores were higher among those who had no partner (57.1%, 47.8%; p<0.03), held an educational level under a bachelor's degree (58.1%, 46.3%; p<0.007), had an annual income <$25,000 (59.3%, 46.7%; p<0.003), lacked transportation (68.9%, 49.2%; p<0.001), and reported physical limitations (64.9%, 50.7%; p<0.02), compared to their counterparts. No differences were found for sex, age, sexual orientation, residence area, having more than one cancer diagnosis, and cancer stage (p>0.05). Conclusion: We found a high proportion of low social support among cancer survivors in PR. Future studies should understand the impact of low social support on cancer outcomes, as well as identify interventions to optimize social support among Hispanic cancer patients. IRB Approved: Protocol #: 2411004025 (11/10/2023)

085

A Case Report of a Toddler with Chronic Renal Disease in Shock: Suspected MIS-C Presentation

Gabriela K. Gibbs-Vargas, BS[2]; Jayson Cotto-Del Valle, BS[2]; Andrés E. Fossas-De Mello, BS[2]; Keishla M. Figueroa-Colón, MD[1]; Charles Castro, MD[1]; Ricardo L. García, MD[1]
[1]University of Puerto Rico-School of Medicine, Department of Pediatrics, San Juan, PR;
[2]Universidad Central del Caribe-School of Medicine, Bayamón, PR

Introduction: Multisystem Inflammatory Syndrome in Children (MIS-C) is a rare but serious condition linked to COVID-19, primarily affecting children aged 6–12 years. It causes fever, inflammation, and multisystem organ dysfunction. Shock, cardiovascular, gastrointestinal, and hematologic symptoms are common. Case Description: A 1-year-10-month-old male with left renal agenesis, solitary right kidney, VUR grade 5, CKD on peritoneal dialysis, and g-tube presented with high fevers, irritability, vomiting, and diarrhea for 4 days. Initially treated for a viral infection, he was later transferred to PICU for sepsis management. Despite fluid resuscitation and broad-spectrum IV antibiotics, his condition worsened, requiring inotropes and mechanical ventilation. All cultures were negative. Given his recent SARS-CoV-2 infection and multiorgan failure without improvement, MIS-C was suspected. Treatment with IVIG, high-dose steroids, and aspirin for coronary ectasia led to significant improvement within 36 hours. He recovered, was transferred to the ward after one week, and discharged home. Discussion: This toddler with chronic conditions and recent SARS-CoV-2 infection developed shock, revealing MIS-C, a potentially fatal complication requiring early diagnosis and prompt treatment. Even post-pandemic, recognizing MIS-C remains crucial. Reassessing clinical progress is vital, especially in patients with multiple comorbidities, as delayed diagnosis can lead to poor outcomes. This case highlights the need for vigilance and timely intervention in complex presentations.

086

Erinacine as a Potential Immune Modulator in T-Lymphocytes for Counteracting HIV-1 Infection.

Nashalie M. Hernández Paniagua[2]; Abigail M. Rivera-Berganzo[2]; Glamaris Rosario-Sanfiorenzo[3]; Giovanni O. Alicea-Pérez[3]; Ileanmarie Santana-Costas[2]; Victoria Bermúdez-Fosse[2]; Naiara Hernández[2]; Fabiola I. Colón-Santiago[1]; Khristian R. Belavan Rosado[2]; Betsy Santos[2]; Jeshua J. Colón[2]; Amanda C. Rivera[2]; Andrea S. Rodríguez De La Rosa[2]; Elaine Ruiz[4]; Eduardo Álvarez-Rivera, PhD[1]

[1]Department of Microbiology and Immunology;
[2]Department of Science and Technology, Universidad Interamericana de Puerto Rico, San Juan;
[3]Department of Biology, Universidad de Puerto Rico, Bayamón;
[4]Department of Medical Images Technology, Universidad Central del Caribe, School of Medicine, Bayamón, Puerto Rico.

Background: Developing innovative therapies for HIV-1 is a key goal in immunology. Erinacines (ERI), a bioactive compound from Hericium erinaceus (Lion's Mane mushroom), exhibit neuroprotective, anti-inflammatory, and anticancer properties. However, their role in modulating the adaptive immune system, particularly in HIV-1, remains unexplored. This study investigates the immunological effects of ERI, on the adaptive immune responses to increase T-cell mediated response against HIV-1 infection. Our focus is on Protein Kinase R (PKR), a crucial antiviral protein involved in viral defense, including HIV-1. PKR activation inhibits viral fusion and enhances immune cell activity through cofilin1 mediated phosphorylation. Our preliminary data suggest that ERI significantly overexpresses key markers: PKR, Toll-Like Receptor 4 (TLR4), Nuclear Factor Kappa B (NFκB), Signal Transducer Activator of Transcription 1 (STAT1), while downregulating the proviral marker cofilin1 potentially disrupting HIV-1 lifecycle. We hypothesize that ERI acts as a potent enhancer in CD4+ cells, particualarly Jurkat T-helper cells with the purpose of inducing activation and targetting HIV-1 particles. Methods: Jurkat T-cells were treated with ERI (50-1,000 µg) for three days. Immunoblotting assessed PKR, TLR4, Cofilin1, STAT1, and NFκB expression. MTT assays evaluated ERI-mediated cytotoxicity. Results: Immunoblotting showed a dose-dependent overexpression of PKR, TLR4, STAT1 and NFκB while vastly decreasing Cofilin1 expresion in ERI-treated cells. PKR and TLR4 levels showed a significant increase during a short period of three days. No cytotoxicity was observed during the 3-day treatment. Conclusion: This study presents the first evidence of ERI's potent immune-boosting effects via PKR in HIV-infected Jurkat T-cells. The goal of this study is to integrate ERI as a T-cell enhancer agent against HIV-1. Acknowledgements: The project described was supported by the Universidad Central del Caribe (UCC) Pilot Project Program grant and Title V Pilot Project (Grant # PO31S200104). The PI also thanks Dr. Diana Fernandez, associate dean of research and graduate studies and the chairperson of the department of Microbiology and Immunology, associate dean of school of medicine, Zilka Ríos, for their constant support and assistance of this project.

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Glucocorticoid and Aryl Hydrocarbon Receptors Signaling in Osteoblasts: Crosstalk and Implications for Bone Health

Corally López[1], Husam Bensreti[2], Colby Gross[2], Dima Alhamad[2], Alok Tripathi[2], Shabiha Sultana[2], Christopher L. Yearwood[2], Jennifer Dorn[2], Caihong Dai[2], Wendy B. Bollag[2], Carlos M. Isales[2], Meghan E. McGee-Lawrence[2]
[1]Universidad Central del Caribe; [2]Augusta University Medical College of Georgia

Background and Objectives: Osteoporosis remains a critical public health issue, particularly in patients exposed to glucocorticoids. The glucocorticoid receptor (GR) and Aryl hydrocarbon receptor (AhR) pathways are central to bone physiology. Literature suggests that activated GR can influence AhR expression and vice versa; however, the implications of this interaction on osteoblast-lineage cells and bone health remain unclear. This study investigates the crosstalk between ligand-activated GR and AhR signaling, hypothesizing that their interaction functionally regulates bone homeostasis. Methods: Mice with loxp sites flanking exon 2 of the GR gene were crossed with Osx-Cre+ mice to generate GR-conditional knockout (GR-CKO; GRfl/fl: Osx-Cre+) mice and wild-type (GR-WT; GRfl/fl: Osx–Cre–) littermates. At 6 months, mice received intraperitoneal injections of the AhR ligand Kynurenine (KYN) 5 days/week for 8 weeks. Body composition and bone mineral density (BMD) were measured using DXA scans at baseline and 4 weeks. Osteoblast progenitor ST2 cells were treated with GR- (dexamethasone) and AhR (FICZ) ligands, followed by RT-qPCR to analyze GR and AhR target genes (Hsd11b1 and CYP1A1, respectively). Data were analyzed using t-tests or two-way ANOVA. Results: In vitro RT-qPCR showed that ligand-activated GR inhibited AhR target gene expression ($p=0.034$). KYN treatment reduced whole-body BMD in GR-WT females ($p<0.05$) but not in GR-CKO females. No significant effects on femoral BMD were observed. Female GR-CKO mice treated with KYN also showed a trend toward reduced fat mass ($p=0.09$). Conclusions: This study reveals functional crosstalk between GR and AhR pathways, with ligand-activated GR suppressing AhR signaling. The differing effects of KYN on BMD in GR-WT and GR-CKO mice highlight the complexity of GR-AhR interactions, suggesting potential therapeutic targets for bone-related disorders. Future studies will further investigate these interactions at protein and genomic levels. Acknowledgments: Research was supported by the PARIS program (T35 AG067577), NIA P01-AG036675 (Project 4), and NIA R01 R01AG067510. IACUC Approved: Protocol #: 2014-0673 (7/27/2023)

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New-Onset Seizures as the Manifestation of a Cerebral Abscess Due to Odontogenic Bacteria: A Clinical Case Report

Ian Báez-Martínez[1], Gary A. Toranzos[1], Frankie Báez-Matos[2], Bernard Christenson[3]
[1]University of Puerto Rico, Río Piedras Campus, Faculty of Natural Sciences, Department of Biology, San Juan, Puerto Rico;
[2]Auxilio Mutuo San Pablo Hospital, Neurosurgery Section, Bayamón, Puerto Rico;
[3]Auxilio Mutuo San Pablo Hospital, Department of Internal Medicine, Infectious Diseases Section, Bayamón, Puerto Rico

Purpose: The purpose of this clinical case presentation is to highlight the rare occurrence of a cerebral abscess caused by odontogenic bacteria, with seizures as the clinical manifestation, emphasizing the importance of early diagnosis and treatment. Case Description: We present a 66-year-old male patient with a brain abscess caused by two types of bacteria, namely Staphylococcus hominis and the viridans group streptococci (VGS). He presented with confusion, hypoactivity, and disorientation, leading to emergency department admission. The patient had no prior psychiatric history or head trauma and was living with his family. Examination revealed cachexia, multiple dental cavities, and purulent discharge from his upper left molar (#15). Neurologically, he was stuporous (Glasgow Coma Scale of 8) and developed seizures on arrival. Despite anticonvulsant therapy, seizures persisted, requiring mechanical ventilation. Seizures resolved after 48 hours of intensive treatment. Initial CT imaging showed a hyperdense halo with contrast enhancement, and MRI revealed an annular intra-axial lesion in the left occipital lobe, suggestive of a cerebral abscess. The patient underwent left occipital craniotomy with subtotal resection and drainage. Pathology confirmed the cerebral abscess, with cultures growing Staphylococcus hominis and VGS. Postoperatively, the patient recovered without complications and was extubated. Antibiotic therapy was adjusted based on culture sensitivities, starting with piperacillin/tazobactam and later transitioning to ceftriaxone. The patient also received dental care for extraction of the affected teeth. He did not experience any further complications. Conclusion: This case highlights the critical role of poor oral hygiene and dental caries as sources of cerebral abscess. No evidence of other entry points or invasive procedures was found. The patient's oral microbiota provided an ideal environment for bacterial growth, leading to hematogenous spread to the brain. Early diagnosis, appropriate antibiotics, and surgical drainage are essential for managing odontogenic brain infections, preventing additional neurological complications, and ensuring favorable outcomes. Acknowledgements: The authors disclose there are no conflicts of interest and did not receive outside funding.

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Evaluating a Deep Learning Model for Optic Nerve Axon Counting

Génesis Alina Otero-Rivera[1,3]; Benjamin Mitchell, MS[2]; Michael Robichaux, PhD[2]; Joel R. Palko MD[2].
[1]University of Puerto Rico, Río Piedras Campus;
[2]West Virginia University, Department of Ophthalmology and Visual Sciences, Morgantown, WV;
[3]Summer Undergraduate Vision Research Fellowship, West Virginia University, Morgantown, WV

Background and Objectives: Glaucoma, the leading cause of irreversible blindness, is characterized by optic nerve head damage and retinal ganglion cell loss. While histologic evaluation remains the gold standard for assessing optic nerve damage in animal models, it is limited by the subjectivity and labor-intensive nature of manual axon counting. This study assesses the performance of AxoNet 2.0, a deep learning-based software for automated axon counting and morphometric analysis, trained on 1,500 manually segmented optic nerve sections; and compares it to the manual axon counting method. Methods: Optic nerves from Brown Norway rats were processed and imaged using a Nikon ND2 confocal microscope at 100x magnification, providing high-resolution images suitable for quantitative analysis. Preprocessing of images was completed using

ImageJ to enhance quality and optimize them for AxoNet 2.0 analysis. Results: Manual axon counts yielded an average of 87,623 ± 9,888 axons, exceeding AxoNet 2.0's automated counts of 67,500 ± 3,579, with a mean difference of 20,123 ± 6,309 axons (~23% undercount). Conclusions: This discrepancy highlights the need for further optimization of automated methods to achieve parity with manual counting. Nevertheless, AxoNet 2.0 offers significant advantages in speed and scalability, representing a promising advancement in computational neuroimaging. Future efforts to integrate higher-resolution imaging and refine neural network training are expected to improve accuracy, advancing automated axon quantification and morphometric analysis for glaucoma research. IRB Approved: Protocol #: 2110047755 (12/19/2024). Acknowledgements: Michael Robichaux, PhD; Saravanan Kolandaivelu, PhD; Joel R. Palko, MD; Benjamin Mitchell, MS; Neil Billington, PhD; Isaac Brenneman; Ryan Schilling.

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Structural Flexibility of the HIV-1 Capsid Analyzed by NMR Spectroscopy

Raixie Meléndez[1], Jeremy J. González[1], Guivert Michele[2], Marvin J. Bayro[2]
[1]University of Puerto Rico-Medical Science Campus, School of Medicine, Department of Medicine, San Juan, PR;
[2]Department of Chemistry, Molecular Sciences Research Center, University of Puerto Rico, Río Piedras Campus, San Juan, PR

Background and Objectives: Human immunodeficiency virus type 1 (HIV-1) undergoes self-assembly driven by Gag, its structural polyprotein. In the immature state of the virus, the Capsid domain of Gag facilitates the formation of the spherical shell that buds out of host cells, while in the mature form, CA forms a conical core that encapsulates the viral RNA. The irregular morphology and continuous curvature of the capsid lattice is a distinguishing feature of HIV-1. The carboxy-terminal domain (CTD) of CA forms stable homo-dimers that link the hexameric building blocks of both the immature and mature lattice. Here, we examine the conformation of the CTD dimer interface in different morphologies of HIV-1 capsid assemblies. Our objective is to determine to what extent the variability in lattice morphologies (spherical, conical, and crystalline) are associated with flexibility in the CTD dimer interface. Methods: Recombinant protein constructs derive from HIV-1 Gag were expressed and purified. In vitro assemblies were formed using protocols that result in virus-like quaternary structures. Using solution and solid-state nuclear magnetic resonance (NMR) spectroscopy, we probed the CTD dimer conformation at an atomical level. Results: Our results revealed that the immature capsid samples were more flexible in their CTD dimerization interfaces than the mature capsid samples. These findings suggest that, while the dimerization interface maintains a well-ordered structure in both solution and crystal lattices, it adopts multiple conformations at the sidechain level in the native-like assemblies. This structural flexibility facilitates the formation of the variable curvature characteristic of the HIV-1 capsid. Conclusions: The CTD dimer interface appears to provide a significant source of curvature in HIV-1 capsid assemblies through site-specific molecular flexibility. Acknowledgements: This work was supported by the Puerto Rico Science, Technology & Research Trust grant 2020-0128.

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Readiness, Perceptions, and Barriers to Implementing Area Under the Curve-Based Vancomycin Monitoring in Puerto Rican Hospitals

Jorge A. Rodríguez[1], Rachelle Crespo[1], Wesley Kufel2, Sayel Rivera[1]
[1]University of Puerto Rico, Medical Sciences Campus, Department of Pharmacy Practice, San Juan, Puerto Rico;
[2]Binghamton University, School of Pharmacy and Pharmaceutical Sciences, Department of Pharmacy Practice, Binghamton, New York

Background and Objectives: Recent guidelines recommend transitioning from trough-based to area under the curve (AUC)-based vancomycin monitoring to improve safety and efficacy in treating infections like methicillin-resistant Staphylococcus aureus (MRSA). This study evaluates readiness, barriers, and perceptions of healthcare professionals in Puerto Rican hospitals, focusing on comparing metropolitan and non-metropolitan institutions. Methods: A cross-sectional survey was distributed to healthcare professionals across fifty-four eligible Puerto Rican hospitals. Data collected demographics, readiness, perceptions, and barriers related to AUC-based monitoring. Chi-square tests were used to compare readiness to adopt AUC-based monitoring within the next two years between metropolitan and non-metropolitan regions. Kruskal-Wallis tests analyzed differences in perceptions, barriers, and readiness between these regions. Results: Twenty-eight institutions completed the survey, achieving a response rate of 51.9%. The majority of institutions had a capacity of approximately 100–300 beds (21/28, 75%), with pharmacists primarily responsible for vancomycin therapeutic drug monitoring (18/28, 64.3%) conducted under pharmacist-driven protocols (18/28, 64.3%). Among these, 35.7% of metropolitan hospitals reported plans to adopt AUC-based monitoring within the next two years, compared to 18.2% of non-metropolitan hospitals. While 89.3% of institutions currently use trough-based monitoring, only 7.1% have implemented AUC-based methods. The most common barriers reported included lack of interprofessional cooperation (23/28, 82.1%), inaccurate documentation of sample timing (17/28, 60.7%), and insufficient training (16/28, 57.1%). Conclusions: Puerto Rican healthcare systems face significant challenges in adopting AUC-based vancomycin monitoring, particularly in non-metropolitan hospitals. Most surveyed institutions have not yet implemented AUC-based vancomycin monitoring, and most do not plan to adopt this strategy within the next two years. Addressing barriers such as training deficiencies, documentation issues, and interprofessional collaboration is critical to ensure successful implementation and improved patient outcomes. Approved by IRB. Protocol #2023-IRB-05, submitted on December 20, 2023.

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Calcium Scoring and Beta-Amyloid Detection on Rat Cardiovascular Disease Models: Transforming Coronary Artery Disease Screening in Women

Raymond Sánchez-Robles[1], Sofía Sánchez-Franceschini[2], Dennise M. Parapar-Anzalota[3], Mikhail Inyushin[4], Janaina M. Alves[3], Juan Pérez-Ocasio[5], Quiriat J. Torres-Rosario[5]

[1]School of Medicine, University of Puerto Rico - Medical Sciences Campus, PR, 00921, U.S.A;
[2]School of Medicine, Universidad Central del Caribe, Bayamón, PR, 00960, U.S.A;
[3]Dept. of Microbiology & Immunology, Universidad Central del Caribe, Bayamón, PR, 00960, U.S.A;
[4]Dept. of Physiology, Universidad Central del Caribe, Bayamón, PR, 00960, U.S.A.;
[5]Dept. of Medical Images and Technology, Universidad Central del Caribe, Bayamón, PR, 00960, U.S.A

Coronary artery disease (CAD) remains a leading cause of mortality in women, often presenting with atypical symptoms that can delay diagnosis and treatment. Traditional risk assessment tools may underestimate the risk in women, leading to missed opportunities for early intervention. The calcium score test, a non-invasive imaging technique that quantifies coronary artery calcification (CAC), has emerged as a promising tool for improving CAD screening, particularly in women who may not be identified as high-risk by conventional methods. Recent research has highlighted the role of beta-amyloid, a protein typically associated with neurodegenerative diseases like Alzheimer's, in the pathogenesis of coronary artery disease. Beta-amyloid deposits have been found in coronary arteries, contributing to atherosclerotic plaque formation and vascular inflammation, which are key factors in the development of CAD. This connection underscores the need for more comprehensive screening tools to detect subclinical atherosclerosis and associated risks, such as beta-amyloid. This study explores the potential of the calcium score test as a prospective screening tool for coronary artery disease in women. By evaluating the correlation between calcium scores, the presence of beta-amyloid in serum, and the incidence of CAD in a female cohort, we aim to determine the test's predictive value in this population. The study also considers how the calcium score test can complement existing risk assessment tools, providing a more comprehensive approach to CAD screening in women. Preliminary findings suggest that women with elevated calcium scores and beta-amyloid levels are at a significantly higher risk of developing CAD, even in the absence of traditional risk factors. The ability of the calcium score test to identify subclinical atherosclerosis and beta-amyloid presence offers an opportunity for earlier intervention, potentially reducing the incidence of adverse cardiovascular events in women. Acknowledgments: The content is the sole responsibility of the authors and does not necessarily reflect the official views of the Universidad Central del Caribe (UCC). This project was supported by the OADRGS, the Hispanic Alliance for Clinical and Translational Research (The Alliance) under Grant# U54 MD007587 from the National Institute on Minority Health and Health Disparities (NIMHD) of NIH, the Expanding Undergraduate Students Education, Opportunities, and Options in Clinical and Translational Research program supported by the US Department of Education Title V Grant Award #P031S200104, the MAC-FRED Program 2018 and Grant #SC3GM143983 from NIGMS. IRB Approved: Protocol #: 035-2024-04-00-PHA (09/24/2024)

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Riché-Cannieu Anastomosis at San Juan Bautista School of Medicine, in Caguas PR. A Cadaveric Study.

Mileny E. Cedeño Landi[1]; David X. Carmona Burgos[1]; Carmen Hernández, MD[1]; Wilson R. Veras T., MD[1]
[1]San Juan Bautista School of Medicine, Department of Anatomy, Caguas, Puerto Rico

Background and Objectives: The Riché-Cannieu anastomosis, described in 1897, connects the deep branch of the ulnar nerve and the branch of the median nerve in the thenar eminence. This anatomical variation is significant due to its ethnic-based differences, functional implications, and clinical relevance, particularly in conditions such

as carpal tunnel syndrome. Its presence can obscure nerve damage or neuropathies by compensating for motor or sensory functions, complicating electromyogram and clinical intervention. Some attribute its development to abnormal embryogenesis, while others suggest an autosomal dominant inheritance pattern. Despite extensive research, its presence has not been studied in the Puerto Rican population. This study aims to assess Riché-Cannieu anastomosis in preserved cadaveric samples from the Puerto Rican population. Methods: A layered dissection was performed on 42 preserved cadaveric hands using surgical loupes (3.5x340 magnification) to minimize damage to surrounding structures. Cadavers were classified by gender and presence or absence of anastomosis. Results: Of the 42 samples, 16 cadaveric hands (38.10%) exhibited the Riché-Cannieu anastomosis. Among these, 9 (56.25%) were female, 6 (37.50%) were male and 1 (6.25%) was of unknown gender. The total sample included 20 females, 10 males, and 8 samples with unknown biological gender. Conclusion: This study reveals a 38.10% presence of the Riché-Cannieu anastomosis in the Puerto Rican population. Given the high prevalence of neuropathy risk factors in the Puerto Rican population, understanding this variation is critical for improving diagnostic accuracy and tailoring clinical care. Future research should explore detailed anatomical presentations, including attachment points and classification as intramuscular or extramuscular. Ethical Compliance: This cadaveric study was conducted under IRB exemption at San Juan Bautista School of Medicine. Co-authorship Statement: Mileny E. Cedeño Landi and David X. Carmona Burgos contributed equally to this study as co-authors.

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An Integrative Evidence-Based Approach for Hypotension Control in Spinal Anesthesia

Adnan Rodríguez Rivera, Ángel Santana Ortiz, Wilfredo Velasco Vargas
University of Puerto Rico, Medical Sciences Campus, School of Nursing,
Doctor of Nursing Practice with Specialty in Anesthesia Program

Clinical Question: In patients receiving spinal anesthesia (P), how does the administration of ondansetron 8 mg with a crystalloid fluid bolus of 10 ml/kg intravenously (I) affect systolic blood pressure (SBP) (O) during the intraoperative period (T)? Scope: Hypotension during spinal anesthesia is a common complication caused by sympathetic blockade and activation of the Bezold-Jarisch reflex, which can lead to significant morbidity. Current practice often struggles to manage these hemodynamic changes effectively. The prophylactic use of ondansetron, a serotonin 5-HT3 receptor antagonist, has shown promise in mitigating these complications, thereby enhancing patient safety and improving perioperative outcomes. This project addresses a critical intervention for optimizing anesthesia practices and patient care. Literature Review: A comprehensive literature search using PubMed, CINAHL, and Cochrane Library focused on randomized controlled trials, meta-analyses, and systematic reviews published in the last 10 years. Keywords included "spinal anesthesia," "hypotension," "ondansetron," "blood pressure," and "prophylactic." The evidence supports ondansetron's efficacy in maintaining SBP, reducing the incidence of hypotension, and minimizing vasopressor use in both obstetric and non-obstetric populations. Project Implementation: Ondansetron 8 mg was administered intravenously, combined with a 10 ml/kg crystalloid fluid bolus, before spinal anesthesia. The systolic blood pressure was measured at baseline and every 5 minutes for 30 minutes post-anesthesia. Results: In fifty patients, mean SBP remained above 90 mmHg at all measured time points, with no instances of hypotension observed. This indicates that ondansetron prophylaxis contributed to improved hemodynamic stability. Implications for Practice: Prophylactic administration

of ondansetron reduces the risk of hypotension during spinal anesthesia, decreases the need for vasopressors, and prevents fluid overload. Integrating ondansetron into standard anesthesia protocols enhances patient safety and perioperative outcomes, supporting evidence-based practice. Acknowledgments: No sources of funding or conflicts of interest to disclose. IRB Approved (Protocol #: 2407253598)

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Políticas Públicas y Prevención de Riesgos Ocupacionales en Puerto Rico: Un Análisis Crítico de Retos y Oportunidades

Eduardo A. Matos Vidal
Centro de Estudios del Trabajo y las Relaciones Laborales (CET-RELA), Instituto de Relaciones del Trabajo, Facultad de Ciencias Sociales, Universidad de Puerto Rico, Recinto de Río Piedras

Política Pública Analizada: Se examinan las políticas públicas relacionadas con la prevención de riesgos ocupacionales en Puerto Rico, evaluando su capacidad para abordar los desafíos emergentes en los lugares de trabajo. Disciplina o Teoría: Este análisis está fundamentado en la salud ocupacional y las políticas públicas, utilizando un enfoque interdisciplinario que integra estudios laborales y marcos legislativos comparativos con estándares internacionales como las regulaciones de la Occupational Safety and Health Administration (OSHA) y la Organización Internacional del Trabajo (OIT). Fuentes de Información: Se incluyen documentos legislativos y estudios de casos de incidentes ocupacionales en Puerto Rico e internacional. Método: La investigación emplea un enfoque cualitativo, analizando documentos de políticas y estudios de casos. Hallazgos: El análisis revela deficiencias significativas en la implementación de políticas, atención limitada a riesgos psicosociales y poca consideración de los desafíos asociados con tecnologías emergentes. Los estudios de caso destacan cómo estas fallas en la implementación contribuyen directamente a incidentes laborales. Las recomendaciones incluyen estrategias que incorporan la participación de los trabajadores y promueven el uso de tecnología para fortalecer el cumplimiento normativo. Implicaciones: Es imperativo modernizar las políticas de prevención de riesgos ocupacionales en Puerto Rico. Las propuestas incluyen enfoques legislativos adaptativos, mayor cumplimiento normativo y programas educativos enfocados en la seguridad laboral. Estas acciones buscan alinear las prácticas locales con estándares internacionales y garantizar un entorno laboral más seguro y sostenible. Reconocimientos: Esta investigación fue realizada bajo los auspicios del Centro de Estudios del Trabajo y las Relaciones Laborales (CET-RELA) del Instituto de Relaciones del Trabajo, Facultad de Ciencias Sociales, Universidad de Puerto Rico, Recinto de Río Piedras.

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Causas Principales de Mortalidad entre Hombres Jóvenes en Puerto Rico entre 2015 y 2019

Alejandra Achaval, Gabriela Carrasquillo y Ana Luisa Dávila.
Programa de Demografía, Escuela Graduada de Salud Pública, Universidad de Puerto Rico, Recinto de Ciencias Médicas

Trasfondo y objetivos: Durante al menos las pasadas tres décadas, las muertes por causas externas han afectado principalmente a la población joven (entre 16 y 30 años) en Puerto Rico. De éstas, 84% son varones. Con este trabajo se pretende analizar las variables específicas de los fallecidos; destacar las tendencias de las muertes de esta población; y contextualizar los datos desde una política pública multidimensional y salubrista. Método: En este análisis retrospectivo se utilizaron los datos de mortalidad del Registro Demográfico correspondientes a los años 2015-2019. Algunas de las variables analizadas fueron las causas de muerte, los municipios de residencia y municipio en que falleció, nivel educativo, mes, día y hora de fallecimiento, entre otras. Resultados: Las defunciones de este grupo de edad representan cerca del 50% de todas las muertes violentas. Entre las principales causas de muerte -homicidio (1,524), accidentes de tráfico (376) y suicidio (130)- se encontró que los accidentes de tráfico ocurren principalmente durante el fin de semana. La mayoría de las causas identificadas tienden a ocurrir entre las 11:00 pm a 2:00 am y afecta más a los jóvenes que cuentan con diploma de escuela superior o menos. Los municipios de mayor ocurrencia son San Juan, Bayamón, Caguas, Ponce y Carolina. Conclusión: A pesar de contar con una base de datos que documenta las circunstancias que prevalecen en la mortalidad de la juventud, poco se ha hecho desde la política pública para atender las condiciones prevenibles que resultan en el fallecimiento de los jóvenes puertorriqueños. Las causas de muertes identificadas son prevenibles y deben analizarse desde un ángulo salubrista.

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Patrones de Acceso y Utilización de Servicios de Salud: Estudio Transversal en la Comunidad de La Perla, San Juan, Puerto Rico

Mariela Torres Cintrón, DrPH; Ruth Ríos Motta, PhD; Juan Negrón Ayala, PhD; Natalia Antúnez Serrano; Alejandro Carro Mendoza; Gloria Cuevas Rodríguez; Victoria Finkel Aguilar; Jessica Jaramillo Criado; Gabriel A. Laracuente Toro; Ámbar Marrero Sierra; Jeymeliz Martes Vargas; Kariely Martínez Gómez; Tatiana Martínez Merle; José Mercado Navarro; Fabiola Morales Muñiz; Raymond Robles Laguna; Juleika L. Torres O' Neill; Sofía Vega Mercado; Marisol Peña Orellana, EdD, MSc.
University of Puerto Rico, Medical Sciences Campus, Graduate School of Public Health, Department of Health Services Administration, San Juan, Puerto Rico

Trasfondo y Objetivos: Las comunidades costeras enfrentan desafíos significativos en cuanto al acceso a servicios de salud. Este estudio evaluó los patrones de acceso y utilización de servicios de salud en la comunidad de La Perla, San Juan, Puerto Rico, con el objetivo de identificar barreras y brechas en la atención sanitaria. Método: Estudio descriptivo transversal mediante una encuesta tipo censo administrada a 47 residentes mayores de 21 años en la Comunidad de La Perla, San Juan, Puerto Rico, durante el mes de junio de 2024. Se recolectó información sobre acceso a servicios de salud, cobertura de seguros y barreras percibidas para la atención médica. El número de protocolo de IRB es 2404210712. Resultados: El 79% de los residentes informó que necesitaban salir de la comunidad para recibir atención primaria, y el 77% lo hacía para servicios de emergencia. En cuanto a la cobertura de seguros, el 49% tenía planes de salud públicos, el 28% seguro privado, el 13% ambos, y el 10% no tenía seguro. Las barreras más comunes para el acceso a la salud fueron la disponibilidad limitada de servicios (38%), ansiedad relacionada con la atención médica (26%), dificultad para navegar los servicios (23%) y problemas de transporte (15%). Además, el 62% de los niños no recibían atención pediátrica y el 50% de las mujeres carecían de servicios ginecológicos. Las barreras económicas afectaron el acceso a medicamentos recetados (15%), gafas

(15%) y atención dental (13%). Solo el 30% de los residentes utilizó el centro de salud local. Conclusión: Los resultados evidencian disparidades significativas en el acceso a la salud en la comunidad de La Perla, lo que resalta la necesidad de mejorar la infraestructura sanitaria local y aumentar la disponibilidad de servicios médicos en la comunidad. Reconocimiento: Este estudio fue auspiciado por el Departamento de Salud Municipal de San Juan

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Expression of the Neuropeptide Myomodulin in the CNS of *Biomphalaria Glabrata*, an Intermediate Host for Human Schistosomiasis.

Andrea I. Franco-Martínez, Natali M. Colón-Santiago, Mark W. Miller[1,2]
[1]Institute of Neurobiology and [2]Department of Anatomy & Neurobiology,
University of Puerto Rico, Medical Sciences Campus, San Juan, PR

Schistosomiasis, also known as snail fever, is a parasitic disease caused by blood flukes of the genus *Schistosoma*. This disease is primarily found in tropical and subtropical regions, affecting millions of people, especially in areas with poor sanitation and inadequate access to clean water. The countries most affected by this disease are in sub-Saharan Africa, the Middle East, South America, and parts of Asia. One of the main species infecting humans, *Schistosoma mansoni*, requires snails of the genus *Biomphalaria* to support stages of its larval development and transformation into the cercarial form that can infect humans. This study aims to identify neuropeptide expression in the central nervous system (CNS) of *Biomphalaria glabrata*, a major intermediate host of *S. mansoni*. Increasing knowledge about host-parasite interaction could identify physiological and behavioral changes in infected snails and lead to novel strategies for vector control. In gastropods, the neuropeptide myomodulin is involved in controlling muscle contractions and can influence behaviors related to movement, such as feeding and locomotion. Myomodulin expression was examined in the nervous system and peripheral tissues of *B. glabrata*, combining whole-mount immunohistochemistry with the Hybridization Chain Reaction (HCR) in-situ hybridization technique. Experiments were performed on dissected *B. glabrata* CNS and peripheral tissues. Expression of Myomodulin was observed in the central ganglia. The localization of myomodulin-like mRNA agreed with the immunohistochemical observations, confirming expression of the *B. glabrata* myomodulin-like neuropeptide in the CNS. Knowledge of the localization of myomodulin in the *B. glabrata* will help us understand parasite-host interactions in this biomedical model. Acknowledgements: Supported by the National Institutes of Health: MD007600 (RCMI), P30GM149367 (COBRE); National Science Foundation: IOS-2217657 (OSIB), HRD-1137725 (CREST), OISE-1545803 (PIRE), and DBI-1337284. Imaging support was provided by the UPR COBRE Center for Neuroplasticity, Neuroimaging and Electrophysiology Facility (NIEF).

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Compliance with the 60-Minute Treatment Goal in Acute Ischemic Stroke Patients Treated with Tenecteplase at the Hospital UPR Emergency Department

Jael E. Camacho Matos, MD, PGY-2; Víctor Ramos De Jesús, BS, MS-IV; Juan González Sánchez, MD
Emergency Medicine Department, UPR School of Medicine.
Corresponding author: jael.camacho@upr.edu 787-346-2939

Background: Acute ischemic stroke (AIS) possesses high risk of mortality and morbidity, however, with rapid interventions chances of adverse outcomes can be greatly reduced. Current guidelines in the management of AIS recommend that eligible patients for thrombolytic therapy have a door-to-needle (DTN) time of less than 60-minutes from their time of the arrival to the hospital to time of administration of treatment. In this study we aimed to evaluate our compliance with current DTN guidelines in the management of AIS patients. Methods: We conducted a quality improvement project analyzing de-identified data from AIS patients treated with Tenecteplase at the University of Puerto Rico Hospital Emergency Department over a 3-year period. DTN times were recorded and compared against the recommended guideline of less than 60 minutes. Descriptive statistics were employed, including the Shapiro-Wilk test for normality. Results were summarized using means, medians, and ranges. Results: A total of 28 cases were identified that were treated with Tenecteplase for AIS at our Hospital UPR Emergency Department. Among 28 identified cases, only one case (3.6%) achieved the guideline-recommended DTN time of less than 60 minutes. The mean DTN time was 140 minutes, with a median of 114 minutes. The longest recorded DTN time was 274 minutes. Conclusion: This study revealed that compliance with DTN guidelines for AIS management was exceedingly low, with only one patient meeting the less than 60-minutes benchmark. The findings highlight a significant delay in treatment administration that would require a systematic review of current workflows and protocols within our emergency department to identify and address barriers contributing to these delays. Acknowledgment: None.

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Unveiling the Hidden Culprit: Undetected Perforator Vein Incompetence Responsible for a Case of Recalcitrant Leg Ulcers

Adrian A. Naoun[1,2], Carol Sánchez Santana1, Srinivas Rao[2]*
[1]Department of Medicine, San Juan Bautista University, Caguas, PR, USA;
[2]Texas Vein & Wellness Institute, Houston, TX, USA.

Purpose: Chronic Venous Insufficiency (CVI) encompasses a range of clinical presentations, from asymptomatic telangiectasis to severe complications like venous leg ulcers (VLUs). Up to 50% of patients suffer from dysfunctional lower extremity venous hemodynamics, with a notable female preponderance (25-40% females vs. 10-20% males). CVI progression may lead to VLUs in 5.1% of patients. Standard care involves localized wound care, debridement, and compression therapy. However, some ulcers become recalcitrant despite appropriate management. Case Description: We present the case of a 54-year-old male with recalcitrant VLUs secondary to CVI, persisting for four years despite compression therapy adherence. Ultrasound revealed bilateral venous incompetence and right great saphenous vein thrombosis. Initial treatments included debridement and compression wraps. Subsequent interventions comprised radiofrequency endovenous ablation, ultrasound-guided sclerotherapy, and endovenous laser ablation. VLUs persisted despite minor overall improvement of symptomatology. Hidden bilateral perforators were subsequently identified and successfully ablated, leading to complete ulcer healing and symptom resolution. Conclusion: Our case emphasizes the importance of a comprehensive approach to managing recalcitrant VLUs in CVI patients. State-of-the-art imaging, like spectral Doppler ultrasound, is crucial for vein mapping and guiding precise interventions. Successful treatment exemplifies the benefits of a patient-tailored approach, integrating all contributing factors. Clinicians should diligently evaluate for hidden perforator veins or alternative underlying causes hindering healing, improving patient outcomes and quality of life. Further

research in vascular surgery will enhance our understanding of CVI and refine management approaches for recalcitrant VLUs, ultimately improving patient care. Acknowledgements: No sources of funding were received for this case study. The authors declare no conflicts of interest related to this work.

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Análisis del *Turnover* en Hospitales Académicos de Puerto Rico: Un Estudio de Casos

Griselle Hernández Rivera, Ruth Ríos Motta, Mario H. Rodríguez Sánchez, Heriberto Marín Centeno, Mariela Torres Cintrón
Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela Graduada de Salud Pública, San Juan, Puerto Rico

Trasfondo y Objetivos: La rotación de personal (*turnover*) representa un desafío significativo en el sector hospitalario, particularmente después de la pandemia por COVID-19, afectando la calidad del servicio y los costos operacionales. Este estudio busca validar y analizar la magnitud de este fenómeno en hospitales académicos de Puerto Rico, así como evaluar el conocimiento y manejo institucional de esta problemática. Método: Estudio cualitativo de casos múltiples en tres hospitales académicos de Puerto Rico. Se realizó un muestreo de bola de nieve, iniciando con directores ejecutivos y de recursos humanos. La recolección de datos incluyó entrevistas semiestructuradas y análisis de datos secundarios cuantitativos, comparando dos períodos: julio 2018-junio 2019 y julio 2022-junio 2023. (Aprobado por IRB, Protocolo# 2310157159). Resultados: Se confirmó un incremento significativo en las tasas de *turnover* entre los períodos estudiados, aumentando de un máximo de 20% en 2018-2019 a 36% en 2022-2023. Los hallazgos revelan que, aunque el personal administrativo reconoce el impacto del *turnover* en la carga laboral y costos operacionales, no existe un monitoreo sistemático de estas tasas ni se utiliza esta información para la toma de decisiones estratégicas en la gestión del personal. Conclusión: El estudio evidencia el aumento significativo del *turnover* en hospitales académicos de Puerto Rico postpandemia, identificando además una brecha importante en el monitoreo y análisis sistemático de este fenómeno. Se recomienda implementar sistemas de seguimiento y desarrollar estrategias de retención basadas en evidencia para mejorar la calidad del servicio y la seguridad del paciente.

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Mitochondrial DNA Abundance Is Reduced in Whole Blood from Huntington's Disease Patients and People at Risk

Sebastián E. Vidal[1], María del Rocío Castro[2], Sylvette Ayala-Peña[2]
[1]University of Puerto Rico, Río Piedras Campus, Faculty of Natural Sciences, Department of Biology, Río Piedras, PR;
[2]University of Puerto Rico, Medical Sciences Campus, Department of Pharmacology and Toxicology, San Juan, PR.

Huntington's disease (HD) is an autosomal dominant disorder that causes progressive neurodegeneration in the striatum and cerebral cortex, leading to behavioral and cognitive deficits, and uncontrolled movements. HD is also characterized by peripheral symptoms due to the ubiquitous presence of mutant huntingtin in all tissues. HD is caused by a mutation consisting of an expansion of the CAG nucleotide sequence that generates a toxic protein with a polyglutamine track. We previously showed that decreased mitochondrial DNA (mtDNA) abundance in postmortem HD brains correlates with disease progression, however, whether mtDNA levels are decreased in whole blood from HD patients is not known. We hypothesized that the abundance of mtDNA molecules is lower in the blood of HD patients and people at risk when compared to unaffected controls. To test our hypothesis, we used a quantitative Polymerase Chain Reaction (QPCR) assay to amplify a small mtDNA fragment from whole blood DNA obtained from HD patients, people at risk, and unaffected individuals. Our results show that HD patients and people at risk exhibit a significant 37.2% (p=0.013) and 51.86% (p=0.0016) decrease in mtDNA abundance compared to the unaffected controls, respectively, while at risk individuals show a 23.4% reduction when compared with HD patients. Our results suggest that HD is associated with lower levels of mtDNA molecules in the blood. Restoring mtDNA levels may be a potential target for intervention in HD. Supported by NIH grant SC1NS127764. IRB Approved: Protocol #: 22900353880 (02/07/2025)

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Detection of H5N1 Virus in Pasteurized Commercial Milk and Surveillance in Response to Outbreaks in US Dairy Cattle

Elyse Stachler[1], Kyle McMahon[1], Charelisse P. Guevara-Reyes[1,2], Pardis Sabeti[1,3]
[1]Broad Institute of MIT and Harvard, Cambridge, MA; [2]UPR Río Piedras Campus, San Juan, PR; [3]Harvard University, Boston, MA

Background and Objectives: Since the 1990s, the avian influenza virus, specifically strain H5N1, has primarily affected wild birds. However, it has recently caused multistate outbreaks in US dairy cattle. This strain has spread from cows to other mammals, including sporadic transmission to humans and pets. It marks the first observed cow-to-human transmission of H5N1. The close interaction between cattle, their products, and humans increases the risk of a significant outbreak. This study aimed to detect the presence of H5N1 in pasteurized commercial milk to understand if this is a useful surveillance method. We hypothesized that the high amount of H5N1 receptors in bovine mammary glands would allow H5N1 to shed in high concentrations in milk, allowing for easy detection in milk from infected cattle. Method: Over six weeks, we surveyed pasteurized commercial milk samples collected from multiple states using both qPCR and dPCR diagnostic techniques. We used a Taqman PCR assay targeting the HA gene of the H5N1 genome to evaluate the pathogen concentration in the samples and an RNase P EvaGreen assay specific to bovines as a positive extraction process control. To control for false positives, we performed cross-validation with the results from dPCR and qPCR, utilized synthetic H5N1 RNA sequences as a positive control, and included water as a negative control. We also performed an inhibition check of milk samples on H5N1 dPCR and found that concentrated milk showed no evidence of PCR inhibition. Results: Our results revealed a non-infectious H5N1 RNA in 27% of 214 milk samples tested across 20 states. Conclusion: We concluded testing pasteurized milk is a useful diagnostic method for detecting H5N1 in cattle. Ultimately, establishing this screening method will allow us

to develop rapid and reliable data that will enable proper diagnosis and surveillance of this viral outbreak. Acknowledgments: This research was supported by the Center for Disease Control and Prevention and the NIH National Institute of Allergy and Infectious Diseases.

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Abordando el Tabaquismo: Iniciativa Liderada por Promotora de Salud Comunitaria en Puerto Rico

María L. Colón Berríos, Bridgette Troche Santana, Paola Figarella Canario, Lizeiry M. Rivera Angulo, Frances K. Valentín Vázquez, Gabriela A. Algarín Zayas, Marianyoly Ortiz-Ortiz, José Cordero
Fideicomiso de Salud Pública de Puerto Rico, un programa del Fideicomiso para Ciencias, Tecnología e Investigación de Puerto Rico.

Introducción y Objetivos: El tabaquismo es un problema de salud crónico y recurrente en Puerto Rico. Según el Departamento de Salud, el perfil típico de una persona fumadora incluye ser hombre, de 35 a 44 años, con ingresos menores a $15,000 anuales, educación secundaria, divorciado, desempleado y sin seguro médico. Mientras el perfil de las féminas de 25 a 35 años, divorciada, ama de casa con estudios universitarios o grado técnico. En Puerto Rico la prevalencia es de 9.6% lo que representa que uno de cada 10 personas reportó estar en uso de tabaco. Reconocido como la principal causa prevenible de muerte a nivel mundial, el tabaquismo ha sido una prioridad para Promotores de Salud Comunitaria (PSC) en Puerto Rico. Esta iniciativa tiene como objetivo aumentar la conciencia sobre los efectos dañinos del tabaco en fumadores activos y pasivos, informar sobre la legislación vigente y promover la Línea de Cesación del Departamento de Salud. Metodología: La estrategia, liderada por PSC, consistió en ofrecer talleres educativos en escuelas y hospitales de la región central del archipiélago. Resultados: Hasta el momento, se han llevado a cabo 34 talleres, con la participación de 688 personas, entre estudiantes, personal escolar y adultos mayores. El Hospital CIMA reportó 26 referidos derivados directamente de esta intervención. Además, se capacitó a 132 profesionales de la salud pública, principalmente PSC, para replicar este modelo en otras comunidades. Conclusión: Mediante el compromiso de PSC y su cercanía con las comunidades, se han logrado avances en la educación y prevención del tabaquismo, implementando estrategias sostenibles para mitigar sus consecuencias en la población. Reconocimientos: Se reconoce la colaboración de instituciones como el Hospital CIMA, centros de cuidado para adultos mayore y escuelas del municipio de Aibonito y Cidra, cuyos espacios han facilitado la realización de estos talleres educativos.

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Atypical Presentation of Primary Cutaneous Diffuse Large B-Cell Lymphoma, Leg Type: A Case Report

Natalia Pelet del Toro, MD[1]; Claudia Dubocq Ortiz, BS[2]; Lorreine Ramírez Santiago, MD, MLS[3]; María del Mar Rivera Rolón, MD, FCAP[3]; Diana Valentín Colón, MD, FAAD[1].
[1]Department of Dermatology, University of Puerto Rico School of Medicine; [2]University of Puerto Rico School of Medicine; [3]Department of Pathology and Laboratory Medicine, University of Puerto Rico School of Medicine.

Background: Primary cutaneous B-cell lymphoma (PCBCLs) is a rare subtype of extranodal lymphoma with skin-limited disease. Primary cutaneous diffuse large B-cell lymphoma, leg type (PCLBCL-LT), is the rarest subtype characteristically presenting as aggressive leg tumors in elderly females. We present an unusual presentation of PCLBCL-LT involving the face and neck in a middle-aged male. Case Presentation: A 46-year-old male with a 15-year history of waxing and waning facial papules and plaques presents with a presumed diagnosis of facial keloids. He was previously diagnosed with rosacea refractory to long-term oral antibiotics. Physical examination revealed multiple indurated pink papules and plaques on the left jawline and lateral neck without systemic symptoms or palpable lymphadenopathy. A punch biopsy demonstrated a dense, diffuse infiltrate of lymphoid cells involving the dermis and subcutis. Immunohistochemical staining confirmed positivity for CD20, CD79a, PAX-5, BCL-2, BCL-6, MUM-1, consistent with PCLBCL-LT. Further staging with a PET-CT and bone marrow biopsy were unremarkable. The patient received six cycles of R-CHOP with complete response and no evidence of recurrence. This study highlights the diagnostic and therapeutic challenges in atypical cases of PCLBCL-LT. Discussion: PCLBCL-LT presents as rapidly growing tumors on the legs. Approximately 15-20% of cases occur at other sites, most commonly the head and neck, as seen in our case. Tumor location on the leg is reported to confer a worse prognosis compared to non-leg lesions. This association may explain our patient's excellent response to treatment and current disease-free state. Conclusion: Our case emphasizes that PCLBCL-LT may be present as non-leg lesions affecting other patient populations. A high index of suspicion and low threshold to biopsy atypical lesions mimicking benign diagnoses is essential to avoid delays in diagnosis and treatment in the appropriate clinical scenario. Acknowledgments: The authors disclose no funding for this study.

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Bariatric Surgery in People Living With HIV: A Retrospective Chart Review

María F. Rojas[1,2], Ola Mohamed[2],
William R. Short[2], Pablo Tebas[2]
[1]San Juan Bautista School of Medicine, Caguas, Puerto Rico;
[2]University of Pennsylvania, Philadelphia,
Pennsylvania, United States of America

Background: Weight gain in people living with HIV (PWH) is associated with antiretroviral therapy (ART), particularly integrase strand transfer inhibitors (INSTIs) and tenofovir alafenamide (TAF). The rising prevalence of obesity in PWH increases risks for metabolic disorders, insulin resistance, and cardiovascular disease. Despite bariatric surgery's efficacy in managing obesity, its use in PWH remains limited due to concerns about antiretroviral absorption post-surgery. This study evaluates the impact of bariatric surgery on metabolic and virologic outcomes in PWH. Methods: We conducted a retrospective analysis of 21 PWH who underwent bariatric surgery. Data on demographic and clinical characteristics were collected. Interventions included gastric sleeve (81%, n=17) and gastric bypass (19%, n=4). Outcomes, including weight, HbA1C, lipid profiles, and virological parameters, were assessed pre-surgery and at 6- and 12-months post-surgery. Paired t-tests were used for statistical analysis. Results: Median age was 39 years; 57% (n=12) were male. Most participants were African American (81%, n=17), with a median baseline BMI of 43.9. Significant weight reduction was observed ($p<0.001$), with a mean decrease of 20.5 kg in 1 year. HbA1C improved significantly (-1.2; 95% CI

-2.2 to -0.3; p<0.0001), reflecting better glycemic control. Triglycerides decreased (-38.8 mg/dL; 95% CI -63.6 to -14; p<0.0001), and HDL levels showed an upward trend. Blood pressure reductions were not statistically significant. No virologic failures occurred, confirming preserved ART efficacy post-surgery. Conclusions: Bariatric surgery is a safe and effective intervention for obesity and metabolic conditions in PWH. It leads to significant weight loss and improvements in HbA1C and triglycerides without compromising virologic control. Further research should evaluate long-term virologic and cardiovascular outcomes in larger cohorts and explore the complementary role of GLP-1 agonists in managing obesity-related risks. IRB Protocol#: 853920 (06-Jul-2023)

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Protocolo Hospitalario para el Manejo de Pérdida en la Unidad Neonatal de Cuidado Intensivo: Apoyo a los Padres

Zilkia M. Rivera-Orraca, PhD, PMH-C[1]; Liza C. Sánchez-Plazas, MD, FAAP[2]; Marianela Rodríguez-Reynaldo, PhD, PMH-C[3]; Amalie Torres-Domínguez, MSW[1]; María E. Centeno-Ramos, MPH[1]; Nereida Santana, BSN[1]; Lourdes García-Fragoso, MD, FAAP[2]
[1]Hospital Pediátrico Universitario, San Juan, Puerto Rico;
[2]Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela de Medicina;
[3]Departamento de Salud, San Juan, Puerto Rico

Trasfondo y Objetivo: Cuando los padres experimentan la pérdida de su bebé en un intensivo neonatal (NICU) afrontan un profundo impacto psicológico, el cual podría manifestarse posteriormente como un duelo complejo/patológico y presentar síntomas de ansiedad, depresión o estrés postraumático. Los hospitales tienen que identificar las mejores prácticas en el manejo de estos casos con el fin de promover un ambiente que fomente el proceso de "duelo saludable" para las familias. La Ley 184 (2016) establece el requerimiento de protocolos hospitalarios para el manejo de pérdidas perinatales o neonatales, desde una perspectiva de trato humanizado y respeto al proceso emocional de los padres. En cumplimiento con este mandato, se presenta el protocolo desarrollado en NICU del Hospital Pediátrico. Método: El protocolo consideró los componentes del Reglamento de la Ley 184 y los recursos de la institución. Resultados: El protocolo incluyó los siguientes componentes: 1) orientación médica: ofrecer a los padres información sobre condición del paciente, 2) toma de decisiones: sobre cuidado paliativo o medidas de resucitación, 3) acompañamiento psicosocial: apoyo de trabajo social o psicología, 4) apoyo espiritual: según las prácticas religiosas de los padres y su disposición, 5) caja de memorias: huellas, artículos del bebé, información de recursos de apoyo en comunidad, entre otros, y 6) educación al personal sobre las pérdidas en NICU y sus consecuencias para la salud mental parental. Conclusiones: Mediante este tipo de protocolo estandarizado se busca promover en los escenarios hospitalarios unas prácticas entre los profesionales de salud que sean empáticas al profundo impacto de las pérdidas neonatal, su manejo adecuado y sensible con la familia para minimizar así el riesgo de un duelo patológico en los padres. El desarrollo de estrategias de este tipo (protocolo) viabiliza prácticas uniformes y brinda dirección específica para atender este tipo de situación en escenarios de cuidado crítico.

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Chemotherapy-Induced Pancytopenia and Idiopathic Immune Thrombocytopenia in a Breast Cancer Patient with HPV-Associated Squamous Cell Carcinoma: Challenges in Diagnosis and Management

Marcel Grau Rodríguez, BS[1]; Sebastián Hernández Candelario, BS[1]; Héctor Mercado, MD[1,2]
[1]Universidad Central del Caribe, School of Medicine, Bayamón, Puerto Rico;
[2]Hospital Universitario Ramón Ruiz Arnau, Bayamón, Puerto Rico.

Purpose: This case highlights the diagnostic and therapeutic challenges of managing chemotherapy-induced pancytopenia and refractory idiopathic immune thrombocytopenia (ITP) in a patient with a history of breast cancer (BC) and anal squamous cell carcinoma (SCC). It emphasizes the complexities of treating hematologic complications in the context of immune suppression, multifocal oncologic disease, and HPV-associated malignancies. Case Description: A 67-year-old female with a history of Hashimoto thyroiditis, BC with bone metastases, and anal SCC presented with rectal bleeding. Her chemotherapy regimen included Taxol, Carboplatin, and Keytruda (pembrolizumab). Rectal SCC, a malignancy strongly associated with human papillomavirus (HPV), can progress more aggressively in immunosuppressed patients. The patient's HPV status was confirmed as positive during evaluation, and she was unvaccinated. The patient was hospitalized for severe thrombocytopenia (platelet count 16,000/µL) and discharged with persistent pancytopenia. Shortly thereafter, she returned with worsening thrombocytopenia (platelet count 16,000/µL), hemoglobin of 8.5 g/dL, and moderate neutropenia (ANC 988/µL). Persistent cytopenias, despite GM-CSF therapy, suggested refractory ITP secondary to pembrolizumab. The patient's immunosuppression likely exacerbated HPV-driven oncogenesis in her rectal SCC. Management included cessation of pembrolizumab, corticosteroid therapy, and apheresis transfusions, which stabilized platelet counts within 24 hours (23,000–26,000/µL). The patient received antibiotic prophylaxis to mitigate infection risks and was closely monitored for hematologic stability. Conclusion: This case illustrates the significant challenges of managing refractory ITP in the context of chemotherapy and immune checkpoint inhibitors. The unpredictable nature of ITP, its resistance to standard therapies, and the need for rapid intervention with corticosteroids and apheresis transfusions underscore the complexity of this condition. Additionally, the coexistence of SCC driven by HPV highlights the compounded risks associated with immune suppression. This case reinforces the importance of early recognition, multidisciplinary management, and preventive measures such as HPV vaccination to address the challenges of hematologic complications and oncogenesis in immunosuppressed patients.

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Initial Experience with 5-Aminolevulinic Acid (5-ALA) Fluorescence-Guided Surgery for Glioblastoma in Puerto Rico

Odaly S. Balasquide Odeh, BS[1]; Carlos E. Calderón Valero, BS, MS[1]; Esteban Rivera, BS[1]; Gianni Morales, BS[1]; Miguel Mayol Del Valle, MD[2]
[1]University of Puerto Rico, School of Medicine; [2]The Section of Neurological Surgery of the University of Puerto Rico, School of Medicine

Introduction: Glioblastoma is a highly aggressive primary brain tumor in adults. The primary treatment goal for most patients with this condition is maximal safe removal of the tumor. However, complete resection is achieved in a minority of cases due to the challenge of distinguishing viable tumor tissue from normal brain tissue at the tumor margins. To overcome this limitation, fluorescence-guided surgery (FGS) using 5-aminolevulinic acid (5-ALA) has been introduced as part of the treatment for malignant gliomas. This novel technology enables real-time visualization of the malignant tissue, aiding the neurosurgeon in distinguishing the tumor from normal brain tissue. This study aims to present the initial one-year experience and outcomes of using 5-ALA in patients with glioblastoma in Puerto Rico. Method: We performed a retrospective review of all adult patients with glioblastoma who underwent fluorescence-guided surgery with 5-ALA between September 2022 and September 2023 at our institution. Statistical analyses were performed using GraphPad Prism version 10.4.0 (GraphPad Software, San Diego, CA). Results: Ten (10) patients with Glioblastoma underwent surgery using 5-ALA during this period. The mean age of patients was 67 years (SD=10.1) and 50% of these patients were male. Out of the 10 patients, 6 experienced tumor recurrence, as evidenced by MR imaging. The mean time to recurrence was 141.67 days (SD: 66.41). Post-surgery, 7 patients died, with a mean time to death of 181.57 days (SD: 94.48). Conclusions: This study provides preliminary insights into the use of 5-ALA fluorescence-guided surgery (FGS) for glioblastoma in Puerto Rico. Despite its potential to enhance tumor visualization and resection, tumor recurrence and mortality rates remain high, underscoring the aggressive nature of glioblastoma. Further comparative studies involving patients who did not receive 5-ALA are essential to assess whether more aggressive tumor resections facilitated by 5-ALA result in improved clinical outcomes. IRB Approved: Protocol #: 2210058273 (11/01/2023)

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Rising Myelomeningocele Incidence in Puerto Rico May be Linked to Ineffective Sexual Education and Prevention Planning

Eric Pérez Pérez, BS; Natasha L. Frontera, MD; Miguel Mayol del Valle, MD; Ashlie Maldonado-Pérez, MD; Michael Ortiz, MD; Juan Vigo, MD
University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Neurosurgery, San Juan Puerto Rico.

Background & Objectives: This study explores the relationship between the rise in myelomeningocele (MM) cases and systemic gaps in sexual education and pregnancy prevention strategies in Puerto Rico. The analysis examines correlations between MM incidence and sexually transmitted diseases (STDs), alongside a review of literature and data on Puerto Rican sexual education, to identify potential explanations for the observed trends. Methods: A retrospective descriptive study from the years 2002 to 2022 was performed regarding the incidence of MM and the number of cases of STDs in relationship with sexual education on the island. These relationships were analyzed using Pearson's product-moment correlation and Spearman's rank-order correlation. Relationships were considered statistically significant if $p < 0.05$. Results: The incidence of MM has steadily increased over the study period, with a strong, positive correlation observed between MM incidence and cases of chlamydia and gonorrhea ($r^2 = 0.79$, $p < 0.01$). Conclusion: The rising incidence of MM in Puerto Rico may be linked to deficiencies in the island's sexual education system. A review of relevant literature and local data revealed significant shortcomings, including an abstinence-focused curriculum, a lack of medically accurate and inclusive information, and poorly implemented policies. Additionally, essential topics such as contraception, pregnancy planning, and sexual orientation are

frequently excluded from the curriculum, with cultural and religious barriers perpetuating misinformation and inadequate preparation for informed decision-making. These deficiencies could help explain trends observed in this study, such as the strong correlation between rising STD rates and MM incidence. Addressing gaps in sexual education through accurate, inclusive, and culturally relevant programs may reduce MM cases and improve public health outcomes. Further research is needed to confirm these relationships and evaluate the impact of targeted interventions. Acknowledgment: The authors thank all collaborators and institutions for their support. This project received no external funding.

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A Computational Investigation on the Validity of Mean Arterial Pressure Formulas

Mía Fraile Merediz, Alanis Vu Vicente, Yurimar de Jesús Mansueta, Mathew Mojer, Patricia Arroyo Galarza, Francisco Arencibia-Albite
Universidad del Sagrado Corazón, Escuela de Salud y Ciencias, San Juan, Puerto Rico

Background and objectives: Persistent elevation in mean arterial pressure (MAP) is a critical factor associated with the risk of organ damage, systemic inflammation, and overall poor cardiovascular health. MAP serves as an essential indicator of the average pressure in systemic arteries during one cardiac cycle, and its accurate estimation is crucial for both clinical assessments and research studies. To estimate MAP, five formulas exist

$$MAP1 = 0.42 \times SBP + 0.58 \times DBP$$
$$MAP2 = DBP + \tfrac{1}{3}(SBP - DBP)$$
$$MAP3 = DBP + 0.33 \times (SBP - DBP) + 5$$
$$MAP4 = DBP + [0.33 + 0.0012 \times HR] \times (SBP - DBP)$$
$$MAP5 = \sqrt{SBP \cdot DBP}$$

Despite the widespread use of these formulas, their validity and accuracy in estimating MAP have not been thoroughly examined in biomedical literature. There is an ongoing debate among researchers and clinicians regarding which formula provides the most reliable estimate, especially under varying physiological and pathological conditions. Methods: We address this gap by systematically applying these five MAP estimation formulas to a computational model of systemic circulation. This model simulates the complex interactions within the cardiovascular system, allowing us to assess the accuracy of each formula under controlled conditions. Our analysis focuses on both normal and elevated blood pressure states to ensure relevance to a wide range of clinical scenarios. Results: The results of our investigation reveal that the MAP2 formula, which is often favored in cardiovascular research, is actually the least accurate. In contrast, the MAP5 formula demonstrates superior performance, providing the closest approximation to the true mean arterial pressure. This finding challenges the prevailing practice in MAP estimation, where many researchers and clinicians routinely rely on MAP2 as part of their data analysis toolkit. Conclusion: Our study stresses the importance of critically evaluating the tools and formulas used in cardiovascular research and highlights the need for adopting more accurate methods to improve patient outcomes and the quality of research findings. As MAP is a fundamental parameter in assessing cardiovascular health, selecting the most precise formula is essential for both clinical applications and advancing our understanding of cardiovascular dynamics. Acknowledgements: This work was funded by NSF Grant Proposal 1928543: Sagrado HSI Project Increasing Student Success in STEM.

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Localization of Caudodorsal Cell Hormone (CDCH)-like Expression in the Central Nervous System of Biomphalaria, an Intermediate Snail Host for Human Schistosomiasis

Yaniushka Fernández Roche[3], Natali M. Colón-Santiago[1], Mark W. Miller[1,2]
[1]Institute of Neurobiology; [2]Department of Anatomy & Neurobiology, University of Puerto Rico, Medical Sciences Campus, San Juan, PR; [3]University of Puerto Rico, Río Piedras Campus

The parasitic disease schistosomiasis (snail fever) affects more that 200 million people in tropical countries worldwide. The pulmonate snail *Biomphalaria* serves as a major intermediate host for *Schistosoma mansoni* the trematode that causes the most common form of human schistosomiasis. Previous observations found a dramatic reduction in the production of eggs in infected snails and suggested that the parasites redirect energy allocation toward their own transformation and multiplication. However, little is known about how parasitism may alter the reproductive behaviors of *Biomphalaria*. Bilateral clusters of caudodorsal cells (CDCs) are central neurons that primarily control female reproductive processes and behaviors in freshwater snails. CDCs control egg-laying by discharging an ovulation hormone termed caudodorsal cell hormone (CDCH). We propose that the reduction in egg-laying observed in infected snails could reflect parasite-induced decreased levels of CDCH. As little is presently known about CDCH in *Biomphalaria*, this study utilized standard histological procedures to localize the peptide in the CNS. Cells expressing CDCH were in specific ganglia of *Biomphalaria glabrata*. Most of the cells were in clusters in the right and left cerebral ganglia (R Ce g., L Ce g.). Some cells were present in the right parietal ganglion (R Par g.) and pedal ganglia (Pd g.). Prominent CDCH-like immunoreactive (CDCH-li) fibers were observed in the cerebral commissure (C-c.), a known neurosecretory region between the two cerebral hemiganglia. The localization of these CDCH-li fibers is consistent with previous observations in other pulmonate snails, indicating that this hormone is secreted into the circulation and involved in the control of reproductive behaviors. CDCH expression was also found in the peripheral nervous system, in particular organs involved in their female reproductive functions. Understanding the localization of CDCH in *Biomphalaria* will contribute to our knowledge of parasite-host interactions in this biomedical model. Acknowledgements: Supported by the National Institutes of Health: MD007600 (RCMI), P30GM149367 (COBRE); National Science Foundation: IOS-2217657 (OSIB), HRD-1137725 (CREST), OISE-1545803 (PIRE), and DBI-1337284. Imaging support was provided by the UPR COBRE Center for Neuroplasticity, Neuroimaging and Electrophysiology Facility (NIEF).

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Hexanoate Reduces the Viability of Oral Squamous Cell Carcinoma Model.

Oscar A. Loperena González[1], Ángel J. Amaral-Maisonet[1,2], Jeannette L. Salgado-Montilla[1], Gabriel Borges-Vélez1, and Josué Pérez-Santiago[1,3]
[1]University of Puerto Rico Comprehensive Cancer Center, San Juan, PR;
[2]University of Puerto Rico, Río Piedras Campus, San Juan, PR;
[3]University of Puerto Rico, Medical Sciences Campus, San Juan, PR

Background: The development of oral squamous cell carcinoma (OSCC) involves various risk factors, as it's an environment that is exposed to exogenous and endogenous factors constantly. Such factors as diet, habits, and microbiome can increase the risk of developing OSCC. Our diet and oral microbiome expose the oral cavity to bacterial-derived products, such as short chain fatty acids (SCFA). SCFAs, such as butyrate, have been extensively studied for their immunomodulatory properties, and our findings suggest that they may play a significant role in OSCC prevention. Hexanoate is a fatty acid fermentation product that occurs naturally in our microbiome. To date, no studies have evaluated the effects of hexanoate on oncogenic phenotypes. Thus, this study aimed to investigate the influence of hexanoate on an OSCC cell line (OECM-1) model, focusing on its potential to either suppress or enhance oncogenic phenotypes. Methods: We cultured OECM-1 using RPMI-1640 medium supplemented with 10% FBS. Cytotoxicity and cell viability were assessed by performing an Alamar Blue assay and treating OECM-1 cells with a serial dilution (1:2) of hexanoate starting at a concentration of 800 mM for 24, 48, and 72 hours. To determine the concentration of hexanoate at which 50% of cells exhibit metabolic inactivity (IC50), fluorescence was measured at 590 nm using a spectrophotometer, and the values were analyzed using GraphPad software (Ver.10.2.2). Results: Treatment with hexanoate at 24 hours did not significantly decrease cell viability. However, treating the cells for 48 hours and 72 hours reduced cell viability and provided an IC50 at concentrations between 50mM and 25mM. Conclusion: This study demonstrates that hexanoate decreases the viability of OECM-1 cells, providing preliminary evidence of its potential role in impacting oncogenic phenotypes in OSCC. Future research will include wound healing, cell proliferation, migration, and epithelial-mesenchymal transition assays to further explore its effects. Acknowledgement: This research was supported by NIAID grant Award # 1R25AI183304 and #P31200104 from the Federal Department of Education's Developing Hispanic-Serving Institutions Program - Title V.

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Social Isolation and its Role in Clinical Trial Awareness among Hispanic/Latino and Black Cancer Survivors in Puerto Rico and Virginia

Claudia X. Boneu[1], Hilmaris Centeno-Girona[1], Marievelisse Soto-Salgado[1], Stephanie Cameron-Maldonado[1], Claudia Rachid Batlle[1], Juan Diego González-Mayoral[1], Arnethea L. Sutton[2], Katherine Tossas[2], Robert Winn[2], Marcia Cruz-Correa[1,3]

[1]University of Puerto Rico Comprehensive Cancer Center, San Juan, PR;
[2]Virginia Commonwealth University Massey Comprehensive Cancer Center, Virginia, US;
[3]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Biochemistry and Surgery, San Juan, Puerto Rico

Background/Objectives: Social isolation has been shown to impact cancer-related outcomes. During or after treatment, cancer survivors may encounter physical, emotional, and social difficulties. This study aims to assess the role of social isolation on awareness of clinical trials (CT) among Hispanic/Latino and Black cancer survivors in Puerto Rico (PR) and Virginia. Methodology: Data was analyzed from an ongoing cross-sectional study focusing on Hispanic/Latino in PR and Black Women in Virginia over the age of 21 (n=290) who have survived gastrointestinal and breast or gynecological cancer, respectively. An interviewer-administered questionnaire was used to evaluate levels of social isolation and awareness of CT. Social isolation was measured using tertiles of the overall score to create categories of low (0-4), moderate (5-8), and high (9-20). A logistic regression model was used to estimate

the prevalence odds ratio (POR) and its 95% confidence interval (CI) for awareness of CT and social isolation, adjusting for covariates. Results: Awareness of CT was significantly higher among individuals with moderate social isolation (72.9%) compared with low social isolation (55.1%) or high social isolation (56.6%) ($p<0.05$). CT awareness was higher among females (67.7%), those with education beyond 12th grade (68%), an annual family income above $75,000 (84.8%), and those with private health insurance (73.7%) ($p<0.05$). However, CT awareness was significantly lower among participants in PR (40.6%) compared to participants in Virginia (67.7%) ($p<0.001$). Participants with moderate social isolation had 1.28 (CI 95%: 0.56, 2.92) times the possibility of being aware of CT compared to those with low social isolation. While participants reporting high social isolation showed a lower likelihood of CT awareness, this difference was not statistically significant (POR: 0.72; CI 95%: 0.30, 1.71). Conclusion: Findings suggest that respondents with moderate social isolation, private health insurance, higher income, employed, and higher education levels were more aware of CT. Acknowledgments: Research supported by an AACR grant, Social Determinants of Health, Grant Number: 23-01-SDoH. This project was approved by the UPRCCC Institutional Review Board under protocol number 2023-08-112.

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Clinical and Pathological Analysis of Mucoepidermoid Carcinoma in a Parotid Tumor: A Case Study

Vianca M. Ortiz Rivera[1]; Yadiris López-Rivera, DrPH, CT(ASCP)[1]; Jennifer Correa, CT(ASCP)[2]; Javier Rodríguez-Becerra, MD[2]
[1]Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela de Profesiones de la Salud - Programa de Citotecnología;
[2]Atlantic Pathology Manatí, Puerto Rico.

The case study focuses on a 70-year-old male patient diagnosed with mucoepidermoid carcinoma in the right parotid gland. Salivary gland tumors, while generally rare, can be malignant, with this case highlighting the importance of cytological analysis in diagnosis. The patient presented with a history of a right parotid lesion, characterized by swelling, pain, weight loss, and a past of smoking history but no family history of salivary gland cancer. Upon physical examination, a tender nodule was found in the right parotid area, accompanied by an open abscess. A neck CT scan revealed a solid enhancing mass, prompting an ultrasound-guided fine needle aspiration (FNA) for cytological evaluation. The FNA results showed a hypercellular sample of malignant cells with scant to no cytoplasm, diffuse cells with anisonucleosis, high N/C ratio, and loss of polarity in an inflammatory background. In addition, abundant neoplastic squamous-like cells with irregular nuclei and macronucleoli, indicative of malignancy. Immunohistochemical staining revealed positive expression for MUC-1 and MUC-5, while CK7 and P63 showed occasional positive expression. The study emphasizes the significance of correlating cytological findings with clinical history and auxiliary tests to achieve an accurate diagnosis. It also discusses the challenges in diagnosing salivary gland tumors due to their rarity and the need for thorough evaluation. The findings contribute to the understanding of mucoepidermoid carcinoma and underscore the role of cytopathologists in diagnosing salivary gland tumors, ultimately aiming to improve patient outcomes through timely and accurate diagnosis.

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Unveiling the Silent Sinus Syndrome: A Familial Case Series Exploring Chronic Maxillary Atelectasis and the Potential Genetic Link

Giovanny E. Pérez-Ortiz, MD[1]; Antonio Burés, MD[1];
Ana L. Melero-Pardo, MS[2]; Francisco Garratón, MD[1];
Gabriel A. Hernández-Herrera, MS[3];
Juan C. Portela-Arraiza, MD[1]
[1]University of Puerto Rico, Medical Sciences Campus,
Department of Otolaryngology, San Juan, PR;
[2]Universidad Central del Caribe, School of Medicine, Bayamón, PR;
[3]University of Puerto Rico, Medical Sciences Campus,
School of Medicine, San Juan, PR

Introduction: Chronic maxillary atelectasis (CMA) and silent sinus syndrome (SSS) are related conditions characterized by progressive maxillary sinus collapse and inward bowing of the orbital floor, often leading to spontaneous enophthalmos. While CMA typically presents with nasal symptoms, SSS is noted for its insidious onset of ocular changes without significant sinonasal complaints. Literature suggests SSS may represent an advanced stage of CMA. This case series explores familial occurrences of CMA and SSS, emphasizing the need for heightened awareness and further investigation into potential genetic factors. Case Presentation: A 48-year-old male presented with chronic nasal congestion and radiologic evidence of left maxillary CMA. His 22-year-old older son had mild sinus symptoms with CT findings of complete opacification of the right maxillary sinus. His 20-year-old younger son also had mild sinus symptoms with CT evidence of complete opacification of the left maxillary sinus. All three patients exhibited nasal septal deviations, turbinate changes, and varying degrees of sinus pathology. All patients underwent endoscopic sinus surgery, resulting in symptomatic improvement. Discussion: The pathophysiology of SSS remains debated but is thought to result from sinus hypoventilation leading to negative pressure, causing sinus collapse and ocular changes. These cases underscore the diagnostic challenge of SSS in the absence of enophthalmos, often presenting with minimal symptoms and only evident through imaging. Although not classic SSS, these cases highlight the importance of considering CMA and its stages when evaluating sinus complaints. Personalized surgical interventions tailored to each patient's specific sinus pathology were effective in symptom management. Conclusion: These cases highlight the importance of comprehensive evaluation in familial cases of CMA and SSS, particularly when ocular changes are not present. The findings call for urgent research into the genetic underpinnings of these conditions, which could revolutionize both diagnostic approaches and therapeutic strategies, ultimately improving outcomes for affected patients.

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Expanding Research Opportunities for Second-Year Medical Students: The First RCM MS2 Annual Summer Research Symposium

Estefanía Rivera Pedraza[1]; Andrea Rivera Rosario[1]; Natalia Alvarado Ramos[1]; María J. Crespo, PhD[1,2]
[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, Puerto Rico;
[2]University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico.

Background and Objectives: In the summer following their first year of study, students at the University of Puerto Rico School of Medicine often enroll in an introductory research course (MCBI 7001). This opportunity allows students to conduct research at institutions in Puerto Rico and the United States. However, they are not always able to present their work at the end of these programs. The RCM MS2 Annual Summer Research Symposium was created to fill this gap. The event was meant to provide a platform for second-year medical students to share their summer research projects, improve their presentation and communication skills, and connect with faculty and the academic community. Methods: The symposium was held on October 4, 2024, from 1:00pm to 5:00pm at the Amphitheater II of the Guillermo Arbona Building of the UPR Medical Sciences Campus. The twenty-nine participating second year medical students were provided with a standard oral presentation template. They had five minutes to present, followed by two minutes for questions. Faculty members and research mentors attended both in-person and virtually. An anonymous survey was subsequently distributed to collect qualitative and quantitative data on the participants' experiences with the event. Results: Of the 29 participants, 25 completed the survey. 92% of participants rated their confidence in presenting highly (4/5 or 5/5). 68% presented clinical research, 4% presented translational research, and 4% presented basic science research. Respondents expressed satisfaction with the opportunity, organization, and community-building aspect of the event. This is supported by the fact that 96% of respondents favor the continuation of the annual symposium in the future. Conclusion: The symposium should be held each year with plans to improve the participation of students and faculty involved. It is crucial to continue providing a platform for pre-clerkship students to conduct research and present their work.
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Characterizing Immune Responses in Cervical Cancer Progression in Hispanic Women

Aryanne C. Torres Ventura[1]; Jorge R. Galán Ortiz[2]; Diana Viridiana Flores[3]; Kamila A. Andino-del Valle[4]; María de L. Ramos-Alvarado[5]; Mía Badillo[6]; Sharee Umpierre, MD[2]; Madison O'Hara, BS[7]; Lauren Colbert, MD[7]; Josefina Romaguera, MD[2]; Jagannadha K. Sastry[7]; Stephanie M. Dorta-Estremera[1,2]
[1]University of Puerto Rico, Medical Sciences Campus, Department of Microbiology;
[2]University of Puerto Rico Comprehensive Cancer Center Clinical and Translational Research Division;
[3]Keck School of Medicine of USC, Department of Population and Public Health Sciences;
[4]San Juan Bautista Medical School; [5]Universidad Central del Caribe;
[6]University of Puerto Rico, Río Piedras Campus; [7]University of Texas MD Anderson Cancer Center.

Background & Objectives: Cervical cancer is the fourth most common cancer in females worldwide, usually attributed to persistent human papillomavirus (HPV) infections. Of Hispanic women, 40% are more likely to be diagnosed with cervical cancer, and 30% are more likely to die from it compared to non-Hispanic. It remains to be investigated which specific immune phenotypes are present in Hispanic women that may be associated with cervical disease progression. Our study aims to understand the changes in the immune system that occur during cervical disease progression in Hispanic women in the United States and Puerto Rico. Methods: Cervical cytobrushes and blood samples are collected from participants recruited from San Juan, Puerto Rico, and Houston, Texas. The samples are processed to isolate immune cells. Using flow cytometry, immune phenotyping is performed to quantify myeloid cells (macrophages and myeloid-derived suppressive cells (MDSCs)) and T-cells. Results: The analysis of the brushes determined that patients with cancer had increased infiltration of myeloid cells, such as macrophages and MDSCs, compared to healthy individuals. The blood samples showed a similar pattern where the patients with cancer had higher frequencies of myeloid cells, specifically the MDSCs. Another change during cervical disease progression is the T cell frequency in brush and blood samples, where anergic T cells expressing the receptor programmed-death-1 (PD-1) were higher in cancer patients. Conclusions: Our results show how, in cervical disease progression, an immunosuppressive environment is favored for tumor development. Also, our results may highlight the significance of PD-1 to be used as a potential biomarker for tumor progression. Acknowledgments: This project was partially supported by CAPAC (Award Grant Number# R25CA240120) from the NCI, the UPR/MDACC: Partnership for Excellence in Cancer Research (Award# U54CA096300/U54CA096297), Seed money from the Comprehensive Cancer Center University of Puerto Rico, and UPR-MSC G-Rise (Award Number# T32GM148406). IRB Approved: Protocol #: 2210058249A010 (11/25/2024 - 03/15/2025)

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A Survival Analysis by Anatomical Subsites of Patients with Cutaneous Melanoma in Puerto Rico

Taymaraliz Santos-Colón[1], Karen J. Ortiz Ortiz[2], Marta Torres Quiñones[3], Cruz M. Nazario Delgado[1]
[1]University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico;
[2]Puerto Rico Central Cancer Registry, University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico;
[3]Weill Cornell Medicine, New York, United States.

Background and Objectives: Cutaneous melanoma (CM) is the most lethal type of skin cancer. Worldwide, a total of 331,722 new cases and 58,667 deaths from CM were reported in 2020. The objective of the study was to investigate the survival of CM patients by anatomical sites in Puerto Rico. Method: The study population consisted of patients diagnosed with CM from 2004 to 2015 using data from the Puerto Rico Central Cancer Registry. The Kaplan-Meier method was employed to compare 1, 3, and 5-year survival by anatomical site. A multivariate Cox model was used to evaluate the risk of death associated with anatomical sites. Results: The study included 439 cases. This study population consisted of mostly men (55.8%), 60 years or older (54.2%). The melanomas had a Breslow Index of 1.00 mm or less (68.3%), absence of ulceration (64.5%), and diagnosis in localized stage (72.7%). The majority (n=236) of CM were in the extremities. Patients with CM on the scalp/neck showed a first-year survival probability of 80.0%, decreasing to 60.0% at 5 years. After adjusting for covariables, patients <60 years old

with scalp/neck CM had a 21% excess risk of dying (hazard ratio [HR]=1.21; 95% CI: 0.19, 7.55) when compared to those <60 years with melanoma on the face/ears. The excess risk of dying was higher for patients with melanoma on the scalp/neck aged ≥60 years (HR=1.51; 95% CI: 0.55, 4.17) compared to those aged ≥60 years with CM on the face/ears. CM in the trunk/abdomen had the highest 5-year survival probability (74.6%; 66.36-81.15). Conclusion: Patients with melanoma on the scalp/neck had a higher risk of death than those with melanoma on the face/ears. These findings impact public health recommendations for melanoma screening and underscore the need to address disparities to improve the survival of patients with CM in Puerto Rico. IRB Approved: Protocol #: 2401183581 (03/08/2024). Acknowledgments: This work is supported by a federal grant from the National Program of Cancer Registries (Grant #NU58DP007164) to the Puerto Rico Central Cancer Registry (PRCCR) at the UPR Comprehensive Cancer Center.

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Determining the Metabolic Vulnerabilities of Chromophobe Renal Cell Carcinoma

Jian Lun Xie[1], Elysia Washington[2], Abha Grover[3], Pedro Pesquera[3], Elizabeth Ellis[3], Pavlos Msaouel[4], Niki Zacharias Millward[3]
[1]U54 Partnership for Excellence in Cancer Research Program, University of Puerto Rico, Río Piedras Campus;
[2]Partnership for Careers in Cancer Science and Medicine, University of Texas MD Anderson Cancer Center;
[3]Urology Department, University of Texas MD Anderson Cancer Center;
[4]Genitourinary Medical Oncology, University of Texas MD Anderson Cancer Center.

Background: Chromophobe renal cell carcinoma is the third most common kidney cancer. However, there are currently no systemic therapies tailored to chRCC biological hallmarks. chRCC is characterized by a high density of abnormal mitochondria and resultant oxidative phosphorylation (OXPHOS) deregulation. IACS-010759 (IACS) is novel drug with potent activity against the complex 1 OXPHOS enzyme. We hypothesized IACS would demonstrate in vitro and in vivo therapeutic efficacy against chRCC. Methods: We tested the IACS compound in the chRCC cell line UOK267 and in fumarate-hydratase deficient RCC cell lines UOK262 and UOK268. Cell viability assays were performed with CellTiter Glo®. Furthermore, UOK276 tumor bearing mice were treated with 6 mg/kg of IACS drug once a day by oral gavage for 5 days on and 2 days off. Results: We observed little reduction in cell viability with IACS drug in UOK262 and UOK268 cell lines; however, we see significant reduction in cell viability in UOK276 cells. The IC50 for the IACS drug in UOK276 cells was 2.4 nM. However, when the compound was utilized in the UOK276 tumor bearing mice no tumor growth suppression was observed. Conclusion/Future Directions: We were able to observe significant reduction in cell viability in UOK276 cells with the IACS drug in cell culture but no tumor growth suppression in animal models. Additional chRCC cell lines and animal models should be tested to validate these findings. Further work will be needed to elucidate optimal strategies targeting metabolic deregulation in chRCC. Acknowledgement: Kidney Cancer Association (Chromophobe RCC Focus Award) and Dr. Linehan at the National Cancer Institute, National Institutes. IACUC Approved: Protocol #: 00001200-RN03

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Preparación para Emergencias: Estudio Transversal en la Comunidad de La Perla, San Juan, Puerto Rico

Marisol Peña Orellana, EdD; Ruth Ríos Motta, PhD; Juan Negrón Ayala, PhD; Natalia Antúnez Serrano; Alejandro Carro Mendoza; Gloria Cuevas Rodríguez; Victoria Finkel Aguilar; Jessica Jaramillo Criado; Gabriel A. Laracuente Toro; Ámbar Marrero Sierra; Jeymeliz Martes Vargas; Kariely Martínez Gómez; Tatiana Martínez Merle; José Mercado Navarro; Fabiola Morales Muñiz; Raymond Robles Laguna; Juleika L. Torres O' Neill; Sofía Vega Mercado; Mariela Torres Cintrón, DrPH
Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela Graduada de Salud Pública

Trasfondo y Objetivos: Las comunidades costeras enfrentan desafíos significativos relacionados con la infraestructura de vivienda y preparación para emergencias. Este estudio evaluó la infraestructura de vivienda y la preparación para emergencias en la comunidad de La Perla, San Juan, Puerto Rico. Método: Estudio descriptivo transversal mediante una encuesta tipo censo administrada a 47 residentes mayores de 21 años en la Comunidad de La Perla, San Juan Puerto Rico, durante el mes de junio de 2024. Se recolectó información sobre infraestructura de vivienda, acceso a servicios básicos y preparación para emergencias. El número de protocolo de IRB es 2404210712. Resultados: El 92% de las residencias de los encuestados eran estructuras de hormigón (72% viviendas unifamiliares, 17% multifamiliares). El acceso a servicios básicos mostró variaciones: agua corriente (94%), electricidad constante (62%) e internet (64%). El 51% reportó tener plan familiar de emergencia, pero solo 36% conocía el plan municipal. Los principales desafíos durante emergencias fueron: falta de electricidad (91%), agua potable (66%) y escasez de alimentos (40%). Las fuentes de información más utilizadas fueron televisión (87%), redes comunitarias (81%) y redes sociales (62%). Los huracanes (62%) y COVID-19 (68%) fueron los eventos más disruptivos. Conclusión: Los hallazgos evidencian la necesidad de fortalecer tanto la resiliencia de la infraestructura de vivienda como la preparación para emergencias en esta comunidad costera, particularmente considerando su vulnerabilidad ante desastres naturales y emergencias de salud pública. IRB Approved: Protocol #: 2404210712 (05/06/2024). Reconocimiento: Este estudio fue auspiciado por el Departamento de Salud Municipal de San Juan.

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Cardiac Strain Imaging for Early Detection of Subclinical Ventricular Dysfunction in Obese Veterans

Emmanuel Colón Rodríguez, BS[1]; Sonia Vicenty- Rivera, MD[3]; Ingrid Bonilla-Mercado, PhD[1,2]
[1]VA Caribbean Healthcare System, Research and Development Department;
[2]University of Puerto Rico, School of Medicine, Department of Pharmacology and Toxicology;
[3]VA Healthcare System Miami, Cardiology Department

Background: Obesity's prevalence in the US is high and is expected to continue to rise. From 2021-2023 the prevalence in the US was 40.3% among adults. Obesity-related factors are estimated to cause 11% of HF cases in men and 14% in women. There is a direct correlation between risk of developing HF and increasing

body mass index (BMI) with an increased risk of 5% in men and 7% in women for every unit increase in BMI. Obese patients who have subclinical left ventricular systolic or diastolic dysfunction are at higher risk for cardiovascular events and development of HF symptoms. The gold standard for assessment of subclinical cardiac dysfunction is cardiac magnetic resonance imaging, expensive and not covered by every insurance. We hypothesize the global longitudinal strain (GLS), which measures the elasticity of the heart, assessed with echocardiography, can be used as a measure for subclinical dysfunction in obese patients. Methods: This study was approved by the VA Caribbean IRB committee #00905. We conducted a retrospective record review of 2D echocardiograms from patients scheduled to outpatient echocardiography clinics performed from fiscal years 2020- 2023. Male adult Veterans 21 years and older with a BMI of 25 kg/m^2 or greater and no HF were included (N=65) (mean age 65 ± 12 years). Subclinical left ventricular dysfunction was defined as a GLS more positive than -16.5%. Results: Patients with subclinical left ventricular dysfunction (GLS -12.66 %± 1.9) N=43 had significantly (P< 0.05) higher BMI (30.9 ± 5) compared patients (N=22) with normal GLS (BMI 28.3 ± 2.6, GLS -19.2% ± 2.30, p<0.05). The mayor comorbidities found in both groups were hypertension and neuropsychiatric disorders. Preliminary results suggest that obese patients exhibit subclinical dysfunction. Conclusions: Early identification of cardiac dysfunction in obese patients, can promote early treatment in and delay progression of disease. Emphasizing the utility of non-invasive echocardiographic strain imaging, as a possible tool for early detection and treatment in high-risk population. Acknowledgment: This material is based upon work supported by the Research and Development Service, your section or department and Department of Veterans Affairs, Caribbean Healthcare System San Juan, P.R. Disclaimer: The contents of this abstract do not represent the views of the VA Caribbean Healthcare System, the Department of Veterans Affairs or the United States Government.

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Relación de la Satisfacción Laboral con la Emigración de Tecnólogos Médicos de Puerto Rico a la Florida Central en Estados Unidos

Andrea Enid Santiago Rivera[1], Keisha M. Ortiz Muñiz[1], Ruth E. Ríos Motta[2]
[1]Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela de Profesiones de la Salud, Programa de Maestría en Ciencias de Laboratorio Clínico, San Juan, Puerto Rico;
[2]Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela de Salud Pública, Departamento de Administración de Servicios de Salud, San Juan, Puerto Rico.

La necesidad de profesionales de tecnología médica en las últimas dos décadas ha quedado evidenciada por informes e investigaciones en Puerto Rico y Estados Unidos. Estos profesionales son responsables de analizar la sangre y fluidos corporales para el diagnóstico y tratamiento de los pacientes. Este estudio evaluó la relación entre la satisfacción laboral de los tecnólogos médicos de Puerto Rico con la migración de estos profesionales a la Florida Central en Estados Unidos. Siguió un diseño transversal descriptivo correlacional. La muestra incluyó dos grupos, seleccionados por procesos no probabilísticos. La recopilación de los datos fue mediante una encuesta electrónica que fue enviada a la matrícula del Colegio de Tecnólogos Médicos de Puerto Rico y difundida por las redes sociales para el grupo de Florida. Se realizaron análisis descriptivos

exploratorios e inferenciales. Los resultados documentan el perfil laboral y nivel de satisfacción de la muestra de estudio (n=588). Identificó factores que influyen en la satisfacción laboral general y en varias dimensiones. Los resultados indican que el vivir en Florida aumenta los niveles de satisfacción con la remuneración y beneficios, con la carga laboral, con la supervisión y liderato, con las oportunidades de crecimiento profesional, y con los recursos. En la muestra de Florida, los resultados confirman que las razones principales para emigrar fueron el obtener mayor remuneración monetaria y beneficios de trabajo, por mejor calidad de vida, mejores oportunidades de trabajo, y mejores oportunidades de crecimiento profesional. En la muestra de Puerto Rico, el residir en el área metropolitana disminuye el nivel de satisfacción con los recursos y el nivel de satisfacción general. Se espera que estos resultados contribuyan a concientizar sobre la importancia de la profesión de los tecnólogos médicos proveyendo información valiosa para el desarrollo de estrategias que aporten a aumentar la retención de estos profesionales en la isla. Aprobado por el IRB: # del protocolo 2306121822

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Experiencias de Familiares al Acompañar al Paciente en las Unidades de Cuidados Intensivos

Edgardo Omar Sosa-Rivera, Gabriel Romero-García,
Cyd Valerio-González, Elisabet Pérez-Rodríguez,
Milagros I. Figueroa-Ramos, Carmen Mabel Arroyo-Novoa
Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela de Enfermería.

Antecedentes y Objetivos: La hospitalización en una unidad de cuidados intensivos (UCI) genera un impacto emocional significativo en los familiares, marcado por la incertidumbre sobre la condición crítica del paciente. Este estudio analiza estas experiencias en el contexto de la Ley Núm. 106 de Puerto Rico del 2019, diseñada para garantizar la inclusión familiar en las UCIs, interrumpida temporalmente por la pandemia de COVID-19. Se exploraron las vivencias de familiares y su descripción de emociones y sentimientos durante el acompañamiento a pacientes en la UCI. Métodos: Se realizó un estudio cualitativo fenomenológico descriptivo. Se entrevistaron a seis familiares de pacientes hospitalizados en las UCIs del Centro Cardiovascular de Puerto Rico y del Caribe, utilizando entrevistas semiestructuradas. Las narrativas se analizaron mediante el método de Giorgi, identificando patrones y temas clave. Resultados: Dos temas principales emergieron: (1) Vivencias durante el acompañamiento, que incluyó unidades de análisis como participación en el cuidado, la importancia de mantenerse informado, sentimientos positivos ante el acompañamiento y la atención brindada por el personal, así como los desafíos emocionales y la angustia experimentados. (2) Experiencia de cambio en la vida diaria, que abarcó el impacto personal y laboral y adaptaciones familiares necesarias. Conclusiones: La presencia familiar en UCIs tiene beneficios emocionales para los pacientes y cuidadores, mejorando la percepción de la atención y cuidado. Se recomiendan políticas que flexibilicen las visitas para fomentar atención centrada en el paciente. Futuros estudios cuantitativos podrían ampliar estas observaciones y explorar efectos a largo plazo. IRB-RCM Núm. 2401180424. Agradecimientos: Agradecemos sinceramente a Solymar Solís, Dra. Noemy Díaz, Dra. Nancy Dávila y a la Dra. Lourdes Irene por su apoyo y orientación. También nuestro reconocimiento al personal del Centro Cardiovascular por facilitarnos las UCIs. Un agradecimiento especial a los participantes, quienes aceptaron ser entrevistados compartiendo sus experiencias.

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Translation, Adaptation, and Feasibility Test of Cognitive Stimulation Therapy (CST) in Puerto Rico: Pilot Study

María E. Bidot San Antonio, EdD[1]; Emma J. Vallés, MHSN, LDN[1]; María J. Rodríguez Torrado, MPHE[1]; Irma Rivera, EdD[3]; Alianie Santos, PsyD[4]; Elvis Santiago, MPH[5]; Rebeca Hernández[6]; Valerie Wojna, MD[2].
[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Geriatrics Research and Education Center;
[2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Neurology Program;
[3]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Evaluation Office;
[4]Ponce Health Sciences University, Psychology Program;
[5]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Surgery Department;
[6]Bayamón Central University, Health Professions and Related Programs, General Sciences
Correspondence to: María E. Bidot, EdD, Email: maria.bidot@upr.edu

Background: Cognitive Stimulation Therapy (CST) is a non-pharmacological intervention for individuals with cognitive impairment or dementia, widely used among Anglo-Saxon populations. Research has demonstrated the benefits of CST in areas such as orientation, language, opinion generation, creating semantic connections through categorization, and promoting communication and conversation, including for individuals taking anti-dementia medications. Advanced age and female gender are associated with greater cognitive benefits after CST. Objectives: To translate and culturally adapt CST into Spanish for Latino populations, specifically Puerto Ricans, and to establish the validity of CST for older adults. Method: A mixed research approach and exploratory study design were used. The study was implemented in two phases: a qualitative phase for translation and cultural validation, and a quantitative phase involving older adults in two settings: a long-term care facility and a multi-activity center. Pre- and post-test assessments included the Saint Louis University Mental Status Exam (SLUMS) and the Quality of Life-Alzheimer Disease (QoL-AD) scale. The study was approved by IRB, Protocol 2290033102, from 07/29/2024 to 07/29/2025. Results: CST translation was conducted by a certified translator. The cultural adaptation was made on fourteen sessions through focus groups. A total of 20 older adults participated in the second phase, with 95% of participants being 70 years old or older. Significant SLUMS improvement was observed after CST administration, mainly in the areas of memory and money management. These changes were more evident in participants with less than 12 years of education. Changes in QoL-AD scores were not statistically significant. Conclusions: CST has proven to be effective in improving cognition in adults in the early stages of Mild Cognitive Impairment (MCI) and dementia in our population. IRB Approved: Protocol #: 2290033102A001 (07/29/2024). Acknowledgements: RCMI grant U54 MD007600 (National Institute on Minority Health and Health Disparities), from the National Institutes of Health.

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Vertebral Artery Injury Following Cervical Disc Arthroplasty: A Narrative Review

Gonzalo Del Río Montesinos MS[1,3]; Lancelot Benn, MD[4]; Christopher P. Bellaire, MD[2,4]; Addisu Mesfin MD[2,4]
[1]Universidad Central del Caribe (UCC); [2]MedStar Georgetown University School of Medicine;
[3]Nth Dimensions; [4]MedStar Orthopedic Institute, MedStar Washington Hospital Center

Background: Cervical Disc Arthroplasty (CDA) is an effective treatment for cervical disc degeneration, enhancing patient outcomes and reducing disability. However, the vertebral artery (VA), which runs through the C2-C6 vertebrae and enters the skull at the foramen magnum, is at risk during this procedure. Although rare, VA injuries (VAI) can lead to severe complications, often associated with anatomical variations. This narrative review explores factors such as variations, the use of FDA-approved devices, the incidence of VAI, case reports, and preventive measures. Methods: Articles from June 30, 2000, to June 30, 2024, were reviewed from PubMed, Science Direct, and Web of Science. Keywords included cervical, cervical disc, vertebral artery, vertebral artery injury, disc arthroplasty, and degenerative disc. Results: Anatomical variations in the VA have a 7.6% occurrence rate in the population. The anterior approach for CDA shows a 0.4% incidence of VAI, with pre- and post-operative MRI essential for assessing VA positioning and outcomes. Surgeon experience plays a significant role: surgeons with fewer than 300 procedures have a 0.33% VAI risk, compared to 0.06% for those with more experience. Although CDA has been performed in Europe since the 1960s, FDA approval in the U.S. began in 2007. Among 11 FDA-approved devices, reports include blood loss and vascular incidents, but no documented VAI as a complication. Only two case reports were found on VAI post-CDA, highlighting limited literature. CDA's popularity has grown, evidenced by a 190% increase from 2007-2013, raising concerns about future complications. Conclusion: VAI risk in CDA necessitates careful consideration of anatomical variations, surgeon expertise, and robust preventive and treatment strategies. Increased usage underscores the need for more comprehensive research and reporting on potential complications. Acknowledgements: We would like to thank the orthopedic research team and resident program at Medstar Washington Hospital Center for their constant support.

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Retrograde Urethrogram Interpretation Among Urology Residents: Finding Ways to Improve Year by Year

Francisco Baralt-Nazario[1], Manuel Pizarro-Mondesir[2], Ramphis Morales-López[1]
[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Urology, San Juan, Puerto Rico; [2]Universidad Central del Caribe, School of Medicine, Bayamón, Puerto Rico

Introduction and Objectives: Urethral stricture significantly impacts patients' quality of life, with its incidence rising due to the increased use of minimally invasive procedures. However, interpreting retrograde urethrograms (RUG) is often inconsistent among urologists and residents, underscoring the need for improved interpretation skills. This study aims to gather data to enhance the educational process for urology residents in analyzing RUGs and promoting better clinical decision-making. Methods: An anonymous questionnaire with 26 RUGs from 2022-2023

was distributed to 11 urology residents at the University of Puerto Rico School of Medicine. The questionnaire assessed accuracy in identifying strictures, their locations, lengths, and preliminary surgical plans. Anterior urethras were analyzed using the TURNS LSE classification system. Responses were compared to the gold standard, a reconstructive urologist's surgical report. Results: The greatest variability in interpretation was observed when determining the surgical procedure. Chief residents exhibited less variability, with 53.3% correct responses, indicating stronger surgical planning skills. There was a positive correlation between residency year and correct answers, with higher-year residents demonstrating better accuracy. However, PGY-3 to PGY-5 residents showed similar interpretation results (61.8%, 62.1%, and 69.5% correct, respectively). Senior residents were more proficient in identifying stricture characteristics using the TURNS LSE system. Conclusion: This study suggests that the level of residency training does not fully correlate with RUG interpretation accuracy. The findings highlight the need for a standardized classification system to ensure consistent RUG analysis. Tailored educational strategies addressing specific weaknesses could improve residents' interpretation skills and management of urethral stricture. These strategies may also be adapted to enhance curricula in other medical disciplines.

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Utilization of Digital Pathology to Assess Fibrosis Around the Celiac Plexus in Median Arcuate Ligament Syndrome: Correlation with Clinical Outcomes

Alondra M. Torres-González[1]; Yaman Alsabbagh, MD[2]; Santh Lanka, MD[2]; Bryan J. Dangott, MD[3]; Heather Confiado, MD[3]; Sam Farres, MD[2]; Jordan P. Reynolds, MD[3]

[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan Puerto Rico; [2]Mayo Clinic Hospital, Department of Surgery, Jacksonville, Florida, United States of America; [3]Mayo Clinic Hospital, Department of Pathology, Jacksonville, Florida, United States of America

Background and Objectives: Patients with median arcuate ligament syndrome (MALS) present with postprandial or exercise-induced abdominal pain, nausea, vomiting, and subsequent food aversion and weight loss. MALS is historically thought to be caused by compression of the celiac artery by the median arcuate ligament (MAL). However, in recent studies, the MAL compression of the celiac plexus, rather than the celiac artery, could cause these symptoms. Our objective is to use digital pathology to accurately measure fibrosis around celiac ganglia in patients with MALS and correlate the findings to clinical outcomes such as abdominal pain and nausea resolution and/or improvement. Design: In this study, we measured fibrosis around the celiac plexus in patients with MALS and correlated this with improvement of nausea and/or abdominal pain in patients who underwent a celiac ganglionectomy from 2015-2024. Samples of celiac ganglion were excised, stained with hematoxylin and eosin, and scanned on a GT450 slide scanner (Leica Biosystems, Nussloch, Germany) and the presence of fibrosis around ganglionic cells was measured digitally using Sectra (Sectra AB, Linkoping, Sweden). Results: 21 patients experienced abdominal pain improvement (67.7%), 16 patients experienced nausea improvement (51.6%), and 13 of the excised specimens had ganglion cells (41.9%). Patients who experienced abdominal pain improvement had a mean fibrosis measurement of 0.205 mm (SD= 0.153), while patients that did not experience abdominal pain improvement, the mean measurement of fibrosis was 0.235 mm (SD= 0.124). On the other hand, patients that experienced nausea improvement had a mean fibrosis measurement of 0.231 (SD= 0.178), and those who did not experience nausea resolution had a mean fibrosis measurement of 0.197

mm (SD= 0.109). Conclusion: The results show that celiac ganglionectomy works to relieve abdominal pain and nausea in patients diagnosed with MALS, however, if there is more fibrosis around the ganglia, there is less resolution or improvement of these clinical outcomes.

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Standard Measure of Mitral and Tricuspid Valves: An Anatomical Study in Puerto Rican Population

Shay Blanco Olivares; Natalia Valentín Carro, MS, PhD
University of Puerto Rico, Medical Science Campus, Department of Anatomy and Neurobiology

Background and Objectives: A study by the American Heart Association reported a 2.32% increase in deaths due to heart valve disease from 1999 to 2020. Cardiovascular diseases, particularly valvular heart disease, are the leading cause of death in Puerto Rico. The rise in mortality highlights the need for new research to address the impact of these conditions. Factors like environmental changes, congenital malformations, and morphological alterations contribute to valvular heart disease. This study focuses on the morphological changes in the mitral and tricuspid valves. Several studies report such changes relative to standard measurements, but there is limited knowledge about the standard valve sizes in the Puerto Rican population. This lack of data affects diagnosis and valve replacement treatments, which are vital for reducing mortality. To address this gap in knowledge, we measured these valves in cadavers. Method: In the gross anatomy laboratory at the University of Puerto Rico, 9 cadaveric hearts (3 females, 6 males) were dissected to expose the mitral and tricuspid valves. A caliper measured the valve circumference and length with associated structures, including the cusps, papillary muscles, and tendinous cords. Results: The quantified results revealed that the mitral valve circumferences in the female specimens were 4.76cm to 11.04cm while the male specimens showed measurements of 6.14cm to 11.66 cm. For the tricuspid valve, female circumferences were 3.21cm to 7.20cm and male values were 3.33cm to 7.78cm. Conclusion: Although it is a small sample size the preliminary data suggest that mitral and tricuspid valve measurements in the Puerto Rican population are generally below those established by Gray's Anatomy textbook, except for one female mitral valve measurement exceeding 7.2cm. Future steps will involve increasing the sample size to ensure more representative data. IRB Approved: Protocol #: 2502360700 (02/28/2025)

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Psychosocial Interventions for Parents of Type 1 Diabetes Adolescents: Need, Willingness to Participate, Perceived Usefulness, and Topic Preferences

Eduardo Cumba-Avilés, PhD[1]; Marleana M. Rolón-Sanfeliz, BA[1];
María E. Negrón-Philippi, HSDG[1]; Laura S. Márquez-Calderas, HSDG[1];
Tanya P. Serrano-Negrón, BA[1]; María I. Jiménez-Chafey, PsyD[2]
[1]University of Puerto Rico, Río Piedras Campus, Institute for Psychological Research, College of Social Sciences, San Juan, Puerto Rico; [2]University of Puerto Rico, Río Piedras Campus, Department of Counseling for Student Development, Deanship of Students, San Juan, Puerto Rico

Introduction: Caregivers of type 1 diabetes (T1D) adolescents experience a significant burden associated with medical care and psychosocial sequelae in families. They require psychoeducation, emotional help, and communication skills to support their offspring's care better while encouraging youths' autonomy. There is no psychosocial intervention for parents (PIPs) tailored for Hispanic caregivers of T1D adolescents. We explored the need, willingness to participate (WTP), perceived usefulness, and content preferences for PIPs of caregivers of T1D adolescents. Method: We screened 65 caregivers (81.54% women; aged 32–58) for a youth depression treatment study (IRB-Approved #1112-005). Caretakers reported any previous participation in parental support groups (PPIPSG), WTP in PIPs, and perceived usefulness of PIPs. Additionally, they answered an open-ended question about topics they would like to discuss in PIPs. Using content-based categories, we identified the main themes of parental responses and classified caregivers based on their PPIPSG (G1=Yes; G2=No). Using Chi-square and Student t-test, we compared groups in categorical and continuous variables, respectively (p≤.05) Results: All caregivers showed interest in PIPs. Only 28.69% reported PPIPSG. Using a 1–5 scale, the mean perceived usefulness was 4.55 (SD=0.61); 60% of participants provided ratings of 5 (highest usefulness possible), and 39.92% rated 4. The topics suggested for PIPs were: T1D-adolescence-and family psychoeducation; providing emotional support for youth; enhancing youth autonomy; enhancing relations/communication; strategies/advances for improving self-care; T1D facing the law/society; caregivers' emotional support; and academic/school-related issues. G1 parents had offspring with higher suicide ideation and hypoglycemic severity, lower rates of hypoglycemia preventive behaviors, and higher rates of current depressive disorders and lifetime chronic depressive symptoms than G2. Conclusion: Our findings document the need, WTP, and perceived usefulness of PIPs among Hispanic caregivers of T1D adolescents. They also suggest that caregivers prefer PIPs encompassing the psychological, relational, and socio-structural aspects of T1D, not just the medical issues. IRB Approved: Protocol #: 1112-005 (01/28/ 2020). Acknowledgments: The research project from which data for this study was obtained was supported by funds granted to the first author by the National Institute of Diabetes and Digestive and Kidney Diseases (under Award Number R03DK092547). Work on this study was also possible thanks to Institutional Funds for Research granted to the First and sixth authors by the Deanship of Graduate Studies and Research from the University of Puerto Rico, Río Piedras Campus.

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Trust and Perception on the Impact of Artificial Intelligence on Cancer Risk Factor Identification, Prevention, and Screening in Puerto Rico

Diego A. Laboy Morales[1], Jimena de los Santos Reyes[1], Yasmarie D. Colón Sáez[2], Alfredo Cardona Lizardi[1], Andrea Goveo Lounsberry[3], Wilfredo E. De Jesús-Monge[1,4]
[1]San Juan Bautista School of Medicine; [2]University of Puerto Rico, Cayey Campus; [3]Boston University; [4]Puerto Rico Consortium for Clinical Investigation
Contact: Wilfredo E. De Jesús-Monge, MD, MSc, (787) 367-6983, wilfredo.dejesus@prcci.org, wilfredodejesusmoge@yahoo.com

Introduction: Artificial Intelligence (AI), which replicates human intelligence, is increasingly used in medicine to improve diagnostics, treatment, and patient care. This study aims to assess the population's trust and perception of AI's impact on healthcare, particularly in identifying risk factors, prevention, and screening of cancer in Puerto Rico. Methods: This is a cross-sectional study conducted using a self-administered online survey directed

to Hispanic adults (21 years of age or older) residents of Puerto Rico. Results: Preliminary results are based on a population (366 participants as of August 22, 2024) that was 67.5% female, 58% born between 1928-1980, with 81.7% holding a bachelor's degree or higher, and 48.9% earning ≤$39,999. The Caguas healthcare region was the most represented (35.5%). Participants reported having between little and some understanding of AI (40.7%) and a similar level of confidence in the use of AI to identify cancer risk factors (39.6%), preventive practices (34.7%), and screening (37.7%). Participants were somewhat comfortable (42.1%) knowing their physician uses AI. Additionally, 65.9% believed it is very necessary to know if AI is used in their healthcare, and 38% strongly disagreed that AI could replace human intelligence. The most common concern among participants was the quality and integrity of the data considered by AI (61%). Discussion: The participant profile does not fully represent Puerto Rico's adult Hispanic population. While there is comfort with AI, participants desire transparency and government regulation and do not support AI replacing human intelligence. Conclusion: Findings emphasize the need for public education and regulatory implementation regarding AI in healthcare to enhance trust and perception. IRB Approved: Protocol #: EMSJBIRB-5-2024 (07/10/2024)

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Vaginal Microbiota Dynamics in Pregnant Hispanic Women: Associations with HPV Infection and Cervical Health

Andrea N. Padilla-Bou[1], Andrea P. Cortés-Nazario[1], Ivanna Villegas-Román[2], Julianna I. Aponte-Torres[2], Daniela-Vargas-Robles[1], Josefina Romaguera-Agrait[2], Filipa Godoy-Vitorino[1]*
[1]University of Puerto Rico, Medical Sciences Campus, Department of Microbiology and Medical Zoology, San Juan, Puerto Rico;
[2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Obstetrics and Gynecology, San Juan, Puerto Rico

Background & Objectives: The vaginal microbiome plays a critical role in maintaining genital tract health, primarily through Lactobacillus-dominated epithelial communities that protect against anaerobic infections and inflammation. Despite this, research exploring the relationship between cervical microbiota and HPV in pregnant women remains limited, especially in Latin America and the Caribbean, regions with increasing cervical cancer rates. This study investigates the associations between vaginal microbial community structures, pregnancy status, HPV infections, and birth modes. Methods: Cervical swabs were collected from 136 participants (IRB Streamlyne #2290033153) at Obstetrics and Gynecology clinics in San Juan, Puerto Rico. Vaginal swabs, obtained via clinical protocols, underwent genomic DNA extraction, HPV serotyping, and sequencing of the V4 region of 16S rDNA genes, analyzed using microbiome bioinformatics pipelines. Results: Pregnant women exhibited unique microbiota profiles, with a predominance of CST III and CST IV communities, regardless of trimester. Notably, CST I showed a slight increase during the third trimester. Among pregnant participants, 62% were infected with HPV, with 49% harboring high-risk HPV types and 13.5% experiencing co-infections with low- and high-risk types. HPV-negative pregnant women accounted for 37% of the group. Analysis of birth modes in a subset of 106 participants revealed that vaginal microbiota remained dominated by CST III (~46%) regardless of delivery method. CST III, characterized by Lactobacillus iners dominance, and CST IV, marked low levels of Lactobacillus were prevalent across physiological statuses. Conclusions: These findings highlight the resilience and volatility of vaginal microbiota during pregnancy in Hispanic women at high risk of HPV and cervical disease.

This study is ongoing and underscores the need for further research to understand how pregnancy influences microbial dynamics and HPV-related health outcomes as well as how the microbiota associates with pregnancy outcomes. Acknowledgments: This project was funded by the Center for Collaborative Research in Minority Health and Health Disparities (RCMI) 2U54MD007600, NIH-NIGMS programs Alliance U54MD007587 and PR-INBRE 5P20GM103475-17.

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Fearful-BONDS in Parenting: Impact of Adverse Exposures

Polaris González-Barrios, PhD, MSc[1]; Veronique Rosado-Abreu[4]; Jahleel Torres-Pérez, BA[3]; Isel Figueroa, BS[4]; Sara Díaz-Méndez, MD[1]; Alejandra Torres Almánzar[3]; Elinette Albino, PhD, MSc[2]; Christian Bravo, PhD[1]; Efraín Ríos, PsyD[5]; Karen Martínez, MD, MSc[1]; Claudia Lugo, PhD[6]
[1]Department of Psychiatry, University of Puerto Rico, Medical Sciences Campus;
[2]School of Health Professions, University of Puerto Rico, Medical Sciences Campus;
[3]Department of Social Sciences, Psychology Department, Undergraduate, University of Puerto Rico, Río Piedras Campus;
[4]Department of Natural Sciences, Undergraduate, University of Puerto Rico, Río Piedras Campus;
[5]Department of Psychology, University of Puerto Rico, Mayagüez Campus / School of Behavioral and Brain Sciences, Ponce Health Sciences University;
[6]Department of Psychiatry, Columbia University

Purpose: Exposure to maternal and child adversity (environmental/emotional) may affect developmental processes within the dyad (mother and child). These experiences may increase stress, anxiety, and fear within the dyad. We hypothesize that mothers with history of adversity, who have been repeatedly exposed to environmental stressors perinatally (stressed during pregnancy/postpartum), will demonstrate higher levels of stress, fear, and atypical bonding patterns that affect child neurodevelopment. Methods: This cross-sectional study aims to develop a translational model of prenatal and postpartum adversity on bonding and offspring development in a pilot sample of rodent mother-pup models and human mother-infant dyads (n=30). Specific Aim 1: Test an animal-model of prenatal-adversity and how that affects stress behaviors in pups. Specific Aim 2: In a sample of 30 dyads characterized for adversity (early life and perinatal), assess if maternal fear responses relate to atypical maternal attachment and bonding, affecting child neurodevelopment. Specific Aim 3: Assess if behavioral assessments, in animal and human model, correlate with biomarkers of stress and inflammation. Statistical analysis will be performed for individual aims and a general interaction model to combine data from different aims using Stata or R software. Results: Preliminary prenatal adversity animal models reveal that pups show hyperactive and increased locomotion in Elevated stress maze and open field tests ($p<.05$). The assessment of fear, stress and neurodevelopment will provide preliminary data on the impact of maternal adversity on mother-infant bonding. Biomarkers of stress and inflammation will evidence the presence of altered physiological patterns when exposed to repeated adversity. Conclusions: Our findings aim to generate behavioral assessment paradigms to study long-term attachment security amid adversity and its impact on child neurodevelopment. This study will open doors for pinpointing causal relationships to identify risk factors for future psychopathologies and transference mechanisms (behavioral and physiological) in mother-infant dyads. IRB Approved: Protocol #:

2301070963 IRB (06/18/2024); IACUC Approved: Protocol #: A700223 IACUC (10/04/2024). Grant Support: Supported by NIMHD Award Number U54 MD007600. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

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Características que Componen la Vulnerabilidad de la Población de Veteranos en Puerto Rico en 2018-2022

Tiara de P. de la Rosa Silva[1], Ana Luisa Dávila Román[1]
[1]Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela Graduada de Salud Pública, Programa Graduado de Demografía, San Juan, Puerto Rico

Introducción y Objetivos: La población de veteranos son personas que han prestado servicio activo en una rama del ejército de los Estados Unidos por 181 días o más. Esta participación les otorga ciertos beneficios sobre el resto de la población. Se estiman cerca de 70 mil veteranos en Puerto Rico. El objetivo de la investigación es describir a la población de veteranos en Puerto Rico con un énfasis en su discapacidad. Metodología: El estudio es uno descriptivo transversal que utilizó los datos de la Encuesta de la Comunidad de Puerto Rico de 2018-2022. Se consideraron las variables sexo, discapacidad, pobreza, entre otras. Hallazgos: El 4.8% de esta población son mujeres. El 44.6% tienen algún tipo de discapacidad. Las más prevalecientes son ambulatoria (26.6%), vida independiente (21.7%) y cognoscitiva (17.8%). El 9.6% de los veteranos no hablan inglés y el 17.8% se encuentra bajo el nivel de pobreza. Conclusión: La proporción de los veteranos bajo el nivel de pobreza es cercana a la mitad del resto de la población de 18+ años (39%). Sin embargo, el porciento de veteranos con alguna discapacidad casi duplica el del resto de la población (25.7%). Poseen un limitado dominio del inglés. Las características de este grupo presentan un riesgo para que estos lleven una vida plena. Sus disparidades deben ser atendidas a través de la formulación de políticas públicas, además de la necesidad de concientizar sobre su vulnerabilidad.

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Cytokine Storm Syndrome Triggered by a Severe Dengue Virus Type 3 Infection

Fabiola Morales Tirado, MS[1]; Camilla Feliciano González, BS[2]; Gilberto Puig Ramos, MD[2,3]
[1]Universidad Central del Caribe, Bayamón, Puerto Rico; [2]University of Puerto Rico-School of Medicine, San Juan, Puerto Rico; [3]The San Jorge Hospital, Pediatric Intensive Care Unit, San Juan, Puerto Rico

Purpose: This is a rare presentation of dengue fever in an adolescent male, who developed encephalitis and progressive multi-organ dysfunction. This case highlights the diagnostic challenges when differentiating between Macrophage Activation Syndrome (MAS) and Cytokine Storm Syndrome (CSS), emphasizing the need for a comprehensive approach to manage overlapping hyper-inflammatory syndromes in critically ill pediatric patients. Case Description: A 14-year-old male was admitted to the pediatric intensive care unit (PICU) with a five-day history of fever, malaise, myalgia, shivers, and progressive weakness that impaired his ability to walk. Blood tests revealed elevated hepatic enzymes and thrombocytopenia (18,000/µL) and had dengue virus 3 infection. A refractory fever

coagulopathy, cytopenias, liver dysfunction and hyperferritinemia initially brought suspicion of MAS. Twenty-four hours after PICU admission, the patient was in severe respiratory distress, which worsened his neurological condition. He received mechanical ventilation to improve oxygenation and was started on dexamethasone as a therapeutic strategy for impression diagnosis of MAS. Patient's progression to a dengue encephalitis, elevated CRP, and an ESR within normal range confirmed a diagnosis of CSS. During disease evolution, he presented with a pleural effusion, which was treated with albumin infusion. Despite treatment, the patient did not improve and developed cardiogenic shock with severe bradycardia. Therefore, dobutamine infusion was started and steroids pulse therapy was given (1 gm) following immunoglobulins to switch off the cytokine storm. He completed three courses of pulse steroids with significant improvement; and levetiracetam was started as neuroprotective therapy during critical events. Conclusion: Even though CSS is an umbrella term that covers various syndromes, not all of them are equal. Diagnosing CSS versus MAS specifically can be challenging due to their similar pathogenesis, but differentiating between the two is very important when it comes to the treatment that will be given and the prognosis of the patient. Acknowledgements: Authors want to acknowledge the Pediatric Intensive Care Unit staff, nurses, respiratory therapists and Dr. Annette López, pediatric rheumatologist from The San Jorge Hospital for her clinical evaluation and plan for patient management as a team with the pediatric intensivists.

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Impact of Laboratory Automation and its Effects on the Medical Laboratory Workforce

Keisha M. Ortiz Muñiz[1], Andrea Enid Santiago Rivera[1], Ruth E. Ríos Motta[2]
[1]University of Puerto Rico, Medical Sciences Campus, School of Health Professions, Master's Program in Clinical Laboratory Sciences, San Juan, Puerto Rico;
[2]University of Puerto Rico, Medical Sciences Campus, School of Public Health, Department of Health Services Administration, San Juan, Puerto Rico

Laboratory Sciences is a profession which is continuously growing and changing. The development of new technological advances is imperative to provide better, precise, reliable, and faster results to patients. Laboratory Automation is one of the many scientific technological breakthroughs which alongside better patient care offers a more efficient process for Medical Technologist. This study aimed to determine the perception of Laboratory Automation and the relationship of job satisfaction of Medical Technologists in Puerto Rico and a sample of professionals who have migrated to Central Florida, United States. The research followed a cross-sectional survey design using a non-probabilistic sample. The sample included two groups, selected by non-probabilistic processes (n=588). The data collection was conducted through an electronic survey that was sent to the enrollment of the College of Medical Technologists of Puerto Rico and disseminated through social networks for the Florida group. Descriptive, exploratory and inferential analyses were performed. The study showed that there is no notable correlation between satisfaction and levels of automation. However, there is a direct link with satisfaction of levels of automation and monetary compensation among the residents in the state of Florida. Furthermore, overall job satisfaction and expectations among Florida residents were significantly higher than those from Puerto Rico. There is a need to shed light on the factors that impact satisfaction and to address the steps to overcome the challenges of recruiting additional medical laboratory scientists. Also, the necessity for increased awareness of the programs that help train such an important segment of the health care system. This study aims to support

the involvement of leadership, faculty, and students to promote visibility and continuous improvement and further research on the subject. IRB Approved (Protocol #: 2306121822A001; Date: 07/06/2023)

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Assessing the Challenges and Needs Experienced by Participants of a Support Group of Families with Children from 0 to 21 Years Old with Autism

Carol Salas Pagán, María N. Reyes Medina, Yarel M. Delgado Rosa, Cynthia I. Pérez Reyes, Ilia M Torres Avillán
University of Puerto Rico, Medical Sciences Campus, Graduate School of Public Health, Institute on Developmental Disabilities, San Juan, Puerto Rico

Background and Objectives: The consensus worldwide is that the autism spectrum disorder has been increasing. In Puerto Rico, the number of cases was substantial and studies on autism are scarce. A study estimated that the prevalence in children aged 4 to 17 with autism was 1 in 62.1. For those reasons our research objectives were: 1-Determine the needs of families with children with autism from 0 to 21 years old. 2-Identify the challenges experienced by families with children aged 0 to 21 years with autism. 3-Establish what strategies are effective in offering services to families of children with autism from 0 to 21 years of age. Methods: Our qualitative study followed thematic analysis and one focus group with guided validated questions. We recruited families based on availability; a letter of invitation was sent through Puerto Rico Family to Family Center to an autism support group. This study was anonymous, voluntary and confidential. All participants' rights, risks and benefits knowledge were safeguarded. The study started on December 15, 2023, through December 15, 2024. The participation was composed by eight female and family members of the autism support group (MSC-IRB approved 2310156639). Results: We identified as main themes: experience with the autism diagnosis, challenges with the autism diagnosis, needs experienced by the family members. In the subthemes, families expressed that the autism diagnosis was difficult to accept and lack of support from extended family members as a challenge. Also, lack of understanding from providers and the community regarding the autism condition. The families expressed the need for economic support, innovative interventions, and more centers with independent living, life skills, appropriate transition, recreational and respite services. Conclusions: This study concluded that as a society we must implement better services that help families of children with autism to cope with the challenges that autism diagnosis entails.

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Prevalence of Oral Human Papillomavirus in a Population-Based Sample of Women in Puerto Rico

María S. Segarra Juelle[1,2], Frances Vázquez[3], Jeslie Ramos-Cartagena[4], Josué Pérez[4], Cynthia Pérez[5], Ana P. Ortiz[1,3,4]
[1]Cancer Prevention and Control Research Training Program;
[2]University of Puerto Rico School of Medicine; [3]Cancer Control and Population Sciences Division;
[4]University of Puerto Rico Comprehensive Cancer Center; [5]Department of Biostatistics and Epidemiology;
[6]Graduate School of Public Health, Medical Sciences Campus, University of Puerto Rico

Background and Objectives: Persistent infection with oncogenic Human papillomavirus (HPV) types causes nearly three-quarters of oropharyngeal cancers (OPC). Despite the recognition of HPV's impact on health, there is limited population-based data about oral HPV prevalence in Puerto Rico (PR). This study describes the prevalence and risk factors of oral HPV infection among women aged 16-64 years in the San Juan Metropolitan Area of Puerto Rico. Methods: As part of a cross-sectional study conducted from 2010-2013, a population-based sample of Hispanic women aged 16–64 years living in PR completed face-to-face interviews and provided self-collected anal, cervical, and oral specimens (n=566). Oral samples were collected using oral rinses, per NHANES methodology. To detect the presence of HPV-DNA, oral specimens were analyzed using real-time. HPV types evaluated in oral samples were high-risk (HR) (16/18/31/33/35/39/45/51/52/53/56/58/59/66/68) and low-risk (LR) types (6/11). Associations between oral HPV and risk factors were assessed using logistic regression models. Results: 527 viable oral specimens were analyzed. Oral HPV positivity was 6.2%. The prevalence of oral HR-HPV was 4.7% and of LR-HPV was 2.8%. The most common HPV types among infected individuals (n=32) were HPV 11 (28%), 6 (15%), 51 (12%), 56 (12%), and 68 (12%). Women with 3-9 lifetime sexual partners were more likely to have oral HPV (OR=1.07, 95% CI= 1.02-1.13). Conclusions: Our findings show a higher-than-expected prevalence of oral HPV in the study population. The study emphasizes the need for targeted HPV vaccination and additional studies to evaluate the current prevalence and potential impacts of HPV in this population. IRB Approved: Protocol #: 2290034092 (05/18/2022). Acknowledgements: This project was supported by NCI's CAPAC (Award Grant #R25CA240120), and the NIH's National Institute of Allergy and Infectious Diseases Grant (Award Grant # 1SC2AI090922-01).

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Translation and Validation of the Spanish Early-Onset Scoliosis Self-Report Questionnaire (EOSQ-SELF)

Joseph Salem-Hernández, BS[1]; Cristian Cortés-Nieves, BS[1]; Hiroko Matsumoto, MD[2]; Pablo Marrero, MD, FAAOS[1]; Norman Ramírez-Lluch, MD, FAAOS-FAAP[3]
[1]School of Medicine, University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico;
[2]Harvard Medical School, Pediatric Orthopaedic Surgery Department, Boston, Massachusetts;
[3]Mayagüez Medical Center, Pediatric Orthopaedic Surgery Department, Mayagüez, Puerto Rico

Background: The Early-Onset Scoliosis Self-Report Questionnaire (EOSQ-SELF) is a recently developed self-assessment tool designed to measure the health-related quality of life (HRQoL) in children with early-onset scoliosis (EOS). It serves as a complementary instrument to the existing 24-item Early-Onset Scoliosis Questionnaire (EOSQ-24), which relies on proxy reporting. The EOSQ-SELF has demonstrated reliability and validity in English and Chinese populations. This study aims to translate, culturally adapt, and validate the EOSQ-SELF for a Hispanic, Spanish-speaking population to assess the health-related quality of life (HRQoL) in children with early-onset scoliosis (EOS). Methods: A cross-sectional study was conducted between August 2024 and September 2024. Participants aged 7 to 14 years with EOS were recruited from major pediatric orthopedic centers in Puerto Rico. The EOSQ-SELF was translated and culturally adapted through a rigorous process involving forward-backward translation and expert review. The adapted questionnaire was administered twice with a two-week interval. Reliability was assessed through internal consistency and test-retest reliability. Content validity was evaluated by an expert panel. Discriminative ability was analyzed using nonparametric tests and multiple linear regression. Results: A total of 30 participants provided valid responses. The mean age was 11 years, with 53.3% being female. The mean Cobb angle was 60.12°±18.30°. The Spanish version of EOSQ-SELF exhibited

excellent internal consistency (Cronbach's α = 0.937). The questionnaire effectively differentiated between varying severities and types of scoliosis. Conclusions: The Spanish version of EOSQ-SELF is a reliable and valid instrument for assessing self-reported HRQoL in Hispanic children with EOS. It is a useful tool for both clinical settings and research purposes. IRB Approved: Protocol #: 2402190839 (09/23/2024). Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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Characterization of Pancreatic Beta Cell-derived Extracellular Vesicles under Cytokine-Stressed Conditions: Implications for Diagnosing Type 1 Diabetes Mellitus

Simran Rajput[1,2], Lingfei Sun[1], Guoping Li[1], Marta García-Contreras[1], Saumya Das[1]
[1]Cardiovascular Research Center, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts, USA; [2]San Juan Bautista School of Medicine, Caguas, Puerto Rico

Type 1 Diabetes Mellitus (T1DM) is a chronic autoimmune disease characterized by the body producing autoantibodies against beta cells in the pancreatic islets of Langerhans, leading to an absolute insulin deficiency. Currently, the only clinically available biomarkers for T1DM are circulating autoantibodies against beta cells. However, these autoantibodies do not always correlate with beta-cell loss and are often associated with a more advanced stage of the autoimmune process. Consequently, they are not ideal for early disease intervention. Extracellular vesicles (EVs) are small, membrane particles that have emerged as potential sources for biomarkers. This is due to their presence in biological fluids and their cargo (lipids, metabolites, and nucleic acids), which reflects the state of their cell of origin. These unique properties make them a potential source of specific disease-stage biomarkers, including T1DM. Rather than focusing on EV global biomarkers, enrichment for beta cell-derived EVs will provide a specific and unique source of biomarkers in the early stages of the disease. To address that question, our group has previously identified a membrane protein enriched in human Islets and beta cell-derived EVs – Protein. In this study, we characterized the presence of Protein in isolated EVs derived from control (non-stressed) and cytokine stress ("T1DM conditions") EndoC-βH1 cells, a well-characterized model for human pancreatic beta cells. EVs were isolated by size exclusion chromatography and characterized by microfluidic resistive pulse sensing, and western blotting (EV markers and Protein). Our data suggests differences in EV characteristics (size/concentration and EV markers) between cytokine-stressed and control. Furthermore, Protein was shown to be expressed in EVs under cytokine stress. Our results suggest that EVs can be used to detect early inflammatory changes. Exploring the potential of EVs as non-invasive biomarkers for TD1M in a clinical setting may bring significant implications for early diagnosis and disease monitoring.

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Prevalence and Morphometric Variability of the *Psoas minor* Muscle in a Caribbean Cadaveric Population

Gabriela Torres[1], Alejandro Dueño[2], Nivia L. Pérez-Acevedo[3]
[1]Department of Biology, Río Piedras Campus; [2]Department of Biology, Mayagüez Campus; [3]Department of Anatomy and Neurobiology, School of Medicine, MSC-UPR

Background and Objectives: The *Psoas minor* muscle (PMM) is a slender, vestigial muscle situated anterior to the psoas major within the abdominopelvic region. Typically originating from the T12 and L1 vertebrae, the PMM aids in lumbar spine flexion and stabilization of the hip joint. While its presence and morphology are highly variable across populations and sexes, limited studies have examined its prevalence in Caribbean individuals. Additionally, the PMM's potential evolutionary decline, particularly in females, warrants further exploration. The objective of this project was to assess the prevalence, bilateral symmetry, and sexual dimorphism of the PMM within the Caribbean population using cadaveric specimens. Methods: Dissections were performed on 37 cadavers (22 males, 15 females) from a medical school anatomy lab. PMM presence was classified as absent, unilateral, or bilateral, and morphometric measurements (muscle belly and tendon length/width) were obtained where feasible. Data were analyzed for sex-based differences and bilateral asymmetry using statistical tests such as the Mann-Whitney U test. Results: Preliminary prevalence data indicate that the PMM is present in 68% of cadavers. Bilateral presence was observed in 54.5% of males and 26.7% of females, while unilateral presence occurred in 13.6% and 26.7%, respectively. Agenesis was equally observed in 31.8% of males and 46.7% of females. Morphometric comparisons revealed that when present, the PMM in females was generally smaller and thinner than in males, supporting the hypothesis of sexual dimorphism. Statistical analyses are ongoing to determine significant differences in morphometric measurements. Conclusions: These findings suggest a higher prevalence of the PMM in males and highlight bilateral asymmetry and size-related sexual dimorphism. Further analysis of the expanded dataset aims to provide deeper insights into the evolutionary and clinical implications of PMM variation, particularly its potential role in syndromes affecting the psoas region. Acknowledgment: There is no conflict of interest in this study. IRB Number: 2401180818

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DNA Methylation as a Potential Regulatory Mechanism of Cell Invasion and Motility in Cell-Based Models of Docetaxel-Resistant Prostate Cancer

Gabriela Castro[1]; Rodniel Avilés[2]; Solimar Esteves[2]; Shakira Abad[1]; Ralphdy Vergne[3]; Valerie Rodríguez[2]; Lenin Godoy[4]; Kosj Yamoah[5]; Jong Park[5]; Gilberto Ruiz-Deya[2]; Carmen Ortiz, PhD[4]
[1]Pontificia Universidad Católica de Puerto Rico, Ponce PR; [2]Ponce Health Sciences University, School of Medicine, Ponce, PR; [3]American University of Antigua School of Medicine, Osbourn, Antigua and Barbuda; [4]Ponce Health Sciences University, Ponce Research Institute, Ponce, PR; [5]H. Lee Moffitt Cancer Center and Research Institute, Tampa, FL

Prostate cancer (PCa) is the most common type of cancer diagnosed in men. According to the CDC, for 13 out of every 100 men will develop PCa at during their lifetime. Although PCa is considered slow-growing, progression into metastatic-castration resistant prostate cancer (mCRPC) can occur. Docetaxel is the standard first-line chemotherapy for mCRPC; however, resistance occurs in almost 50% of patients. DNA methylation has been investigated as a marker for PCa aggressiveness and therapy resistance. Therefore, this study aims to elucidate whether chemically induced DNA hypomethylation using 5-Azacytidine (5-AZA) impacts cell proliferation, invasion, and migration in docetaxel-resistant (DR) PCa cell models. To evaluate the antiproliferative effects of 5-AZA (0.5-16 µM) in parental and DR cell lines (DU145 and 22Rv1), we used the MTT assay. Protein expression changes in markers related to PCa (AR, ARv7), DR (MDR1), and DNA methylation regulation (GSTP1, DNMT1) were evaluated through Western Blot. Effects on cell invasion and migration capacity were also evaluated

using a Cell Invasion kit and the Wound Healing assay. Overall, 5-AZA reduced cell viability in a concentration-dependent manner in all cell lines, except for DU145-DR cells at 8 and 16 µM 5-AZA ($p<0.05$). DNMT1 inhibition and GSTP1 re-expression were achieved in all PCa cell models in a dose-dependent manner. 5-AZA increased the invasion capacity in parental DU145 and DU145-DR cells at 1 and 2 µM in different orders of magnitude ($p<0.0001$). In non-metastatic cells (22Rv1), 5-AZA reduced their invasion capacity in parental cells while causing an increase in 22Rv1-DR ($p<0.05$). Reduced migration capacity was achieved with 5-AZA treatment (2 µM) in DU145-DR cells when compared to parental cells. These findings suggest that alterations in DNA methylation patterns impact the biological behavior of PCa cells, particularly in DR cell lines. This highlights the crucial role of DNA methylation in PCa aggressiveness and resistance. Acknowledgements: This research was funded by U54 PHSU-MCC Partnership Grants #U54CA163071 and #U54CA163068, and Molecular and Genomics Core (NIMHD Grant MD007579). Special thanks to Dr. Carlos Casiano from Loma Linda University School of Medicine for kindly donating the parental and docetaxel-resistant cell models.

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Intergenerational Effects of Maternal Childhood Neglect on Maternal and Postpartum Bonding

Jahleel D. Torres-Pérez, BA[1,2]; Polaris González-Barrios, PhD[2,3]; Isel J. Figueroa-Marcano, BA[2,3]; Veronique I. Rosado-Abreu[2,4]; Sohye Kim, PhD[6]; Claudia Lugo-Candelas, PhD[7]; Carmen J. Buxó, DrPH, MPH, MSc[8]; Karen G. Martínez-González, MD, MSc[3]
[1]Psychology Department, University of Puerto Rico, Río Piedras Campus;
[2]Center for the Study and Treatment of Fear and Anxiety Disorders, University of Puerto Rico, Medical Sciences Campus;
[3]Department of Psychiatry, University of Puerto Rico, Medical Sciences Campus;
[4]Faculty of Natural Sciences, University of Puerto Rico, Río Piedras Campus;
[5]School of Medicine, University of Puerto Rico; [6]Eunice Kennedy Shriver Center, Department of Psychiatry, Pediatrics, and Obstetrics and Gynecology, University of Massachusetts Chan Medical School;
[7]Department of Psychiatry, Columbia University;
[8]Dental and Craniofacial Genomics Core, School of Dental Medicine, University of Puerto Rico, Medical Sciences Campus

Research shows that women exposed to childhood maltreatment (CM) often experienced disrupted parental bonding, which can affect their bonding with their own children (Muzik et al 2013; Iyengar et al., 2014, 2019; Midolo et al., 2020). However, limited research has examined how specific CM subtypes (e.g. physical/sexual abuse and physical/emotional neglect) influence mother's bonding with parental figures and postpartum mother-infant bonding. This cross-sectional exploratory study investigated the influence of CM subtypes on Latinx mothers' parental bonding relationships and their potential association with postpartum infant bonding. It was hypothesized that higher CM exposure and poor parental bonding in childhood would predict poorer postpartum mother-infant bonding. A sample of n=39 mothers completed the Childhood Trauma Questionnaire (CTQ), the Parental Bonding Instrument (PBI) and the Postpartum Bonding Questionnaire (PBQ). Analyses were conducted using SPSS Version 29. Results revealed that emotional neglect (EN) during childhood significantly

correlated with lower care scores for both parents (mother: r =-0.63; father: r=-0.49, p<0.05). Physical neglect (PN) also correlated negatively with maternal care (r=-0.68; p<0.05), while both emotional abuse (EA) and physical abuse (PA) negatively correlated with maternal care scores (EA: r=-0.40; PA: r=-0.46, p<0.05). Furthermore, exploratory analyses found that CM and mothers' parental bonding significantly predicted postpartum mother-infant bonding, with moderate side effect sizes (R2 = 0.30-0.49; p<0.05). All linear regression models included as possible covariates: gestational and maternal age. EN consistently predicted general mother-infant bonding (β =0.480; p=0.038); bonding disorder of pathological anger (β=0.482; p=0.030); and infant-focused anxiety (β=0.481; p=0.031). PN also significantly predicted bonding disorder within the model (β =-0.427; p=0.033). These findings suggest that EN and PN are associated with poorer parental bonding in mothers, with potential intergenerational effects on postpartum mother-infant bonding. Future research should consider cultural factors specific to Latinx mothers and broader samples to better understand intergenerational bonding patterns. IRB Approved: Protocol #: 2290030458R002 (02/10/2025)

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Enhancing Cancer Diagnosis Accessibility: The Impact of Mobile Clinics

Mariela Colón Peñalbert[1], Celinés Rodríguez Acevedo[2], Elinette Albino[1,2]
[1]School of Health Professions, Clinical Laboratory Sciences Program, Medical Sciences Campus, University of Puerto Rico, Río Piedras, PR;
[2]School of Health Professions, Puerto Rico Genetics Laboratory, Medical Sciences Campus, University of Puerto Rico, Río Piedras, PR

Background and Objectives: The Oncology on Wheels clinics at the Dr. Isaac González Martínez Oncology Hospital have been taking place since 2015 until the present. This study aimed to evaluate the impact of the Oncology on Wheels clinics on cancer diagnosis among participants in various municipalities where the clinics have been active since 2015. Additionally, it sought to assess the reasons that motivate people to participate in the clinics by administering a questionnaire to gather insights from the population. Methods: To measure the clinics' impact, data from 20 clinics conducted between 2015 and 2023 were analyzed, revealing 142 cancer diagnoses. A questionnaire was used to understand participants' reasons for attending, though only 85 responses were collected, falling short of the target of 100 due to refusals. The study also reviewed the clinics' evolution, noting improvements such as the inclusion of more specialists and expanded services, including routine diagnostic tests like mammograms, Pap smears, and blood tests. Results: Since 2015 the Oncology on Wheels clinics have successfully diagnosed cancer in 142 participants through 20 clinics conducted up to 2023. The clinics have also expanded their services over time, offering access to additional specialists and various routine diagnostic tests. In the second phase of the study, despite not achieving the target of 100 completed questionnaires, 85 participants provided responses, offering valuable insights into their motivations for attending the clinics. Overall, the results demonstrate the clinics' positive impact on cancer prevention, diagnosis, and outreach within different municipalities of the island. Conclusion: The Oncology on Wheels clinics have significantly improved cancer diagnosis and prevention, identifying 142 cases since 2015 and expanding services over time. Despite challenges in collecting questionnaire responses, insights from 85 participants highlighted the clinics' role in increasing access to early detection and specialized care in underserved communities. IRB Approved: Protocol #: 2308131216 (12/20/2023)

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Exploring the Impact of Health Literacy on Clinical Trial Awareness among Hispanic/Latino and Black Cancer Survivors

Claudia Rachid-Batlle[1], Hilmaris Centeno-Girona[1], Marievelisse Soto-Salgado[1], Stephanie Cameron-Maldonado[1], Claudia X. Boneu[1], Juan Diego González-Mayoral[1], Arnethea L. Sutton[2], Katherine Tossas[2], Robert Winn[2], Marcia Cruz-Correa[1,3]
[1]University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico; [2]Virginia Commonwealth University Massey Comprehensive Cancer Center, Virginia, United States; [3]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Biochemistry and Surgery, San Juan, Puerto Rico

Background/Objectives: Participation of minorities Hispanic/Latino (H/L) and Black women (BW) in clinical trials (CT) remains significantly low compared to non-Latino whites. Health literacy (HL), which plays a crucial role in the ability of patients to access and understand health-related information, can contribute to this disparity by limiting CT awareness. This study aims to examine the relationship between HL and CT awareness among H/L and BW cancer survivors in Puerto Rico (PR) and Virginia, USA. Methodology: Cross-sectional study where participants completed an interviewer-administered questionnaire to assess awareness of CT and social determinants of health. Self-reported HL was measured using a validated 3-item survey that assessed understanding of medical information and confidence in completing medical forms. The sample included survivors of H/L gastrointestinal cancer from PR and BW with breast or gynecological cancers from Virginia, aged 21+ years. Logistic regression models were used to estimate the prevalence odds ratios (POR) and 95% confidence intervals (CI) for HL and CT awareness adjusting for sex, income, employment, medical insurance, recruitment site, and cancer stage. Results: 293 H/L (49.5%) and BW (50.5%) cancer survivors were included. Women accounted for 76.8% of the sample, and the mean age of study participants was 55 ±11.8 years. The proportion of participants with CT awareness was higher among those with a high annual income (84.5%), employed (64.1%), and those with private medical insurance (73.9%) ($p<0.05$). Significant differences were observed between CT awareness and health literacy ($p<0.05$). After adjusting for covariates, participants who reported being aware of CTs had lower odds of reporting inadequate health literacy than their counterparts (POR: 0.26, 95%CI: 0.10-0.64). Conclusion: Awareness of CTs was associated with health literacy among H/L and BW cancer survivors. Addressing gaps in health literacy and promoting CT awareness could improve CT participation and equity in cancer research among these underserved populations. IRB Approved: Protocol #: 2410003254 (0 8/16/2023). Acknowledgments: This work has been supported by the AACR Grant: Social Determinants of Health, Grant Number: 23-01-SDoH. The study was approved by the UPR-CCC IRB (protocol # 2023-08-112).

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Clinical Characteristics of Recurrent Cystic Trigeminal Schwannoma: A Case Report

Alejandra Cardona[1], Claudia Muns[1], Lyan Cabello Ballester[2], Alejandro Acosta[3]
[1]Diagnostic Radiology, Department of Radiological Sciences, School of Medicine, University of Puerto Rico, Medical Sciences Campus; [2]San Juan Bautista School of Medicine; [3]School of Medicine, University of Puerto Rico Medical Sciences Campus

Purpose: To present the challenging case of a 24-year-old female with recurrent cystic trigeminal schwannoma to highlight the importance of thorough imaging review in correlation with clinical course to better enhance therapeutic planning of patients with this complex tumor. Case Description: A 24-year-old female with prior history of left-sided schwannoma removal six years ago arrived at the emergency department complaining of progressive left-sided hearing loss, severe headache, dizziness, and blurry vision of 3 weeks of duration. Her hearing loss had begun four years prior and worsened over the last year, accompanied by imbalance. On examination, she had left cranial nerve (CN) V1 hypoesthesia and left CN VII and VIII deficits, left facial asymmetry and mild sensory loss on the left forehead. Contrast-enhanced MRI revealed large left trigeminal cystic schwannoma (TCS) measuring 5 x 3 x 4 cm, with mass effect on the midbrain, pons, cerebellar hemisphere, and temporal lobe. After left-retrosigmoid craniotomy and cyst aspiration, the diagnosis of TCS was confirmed, and post-surgical improvement in blurry vision was noted. However, CN VII and VIII symptoms persisted. A follow-up MRI two months later showed recurrence of TCS leading to another resection. Nevertheless, seven months later, MRI revealed it had regrown to its original size with increased contrast enhancement and leptomeningeal changes. The patient has not returned for follow-up care. Conclusion: This case underscores the complexity of managing recurrent cystic trigeminal schwannomas, emphasizing necessity for individualized treatment plan and careful postoperative monitoring. When resecting, incomplete surgical excision presents a significant challenge. Future research should focus on improving surgical techniques and evaluating adjunctive therapies, such as stereotactic radiosurgery, to improve patient outcomes. Acknowledgments: We would like to thank the faculty of medicine of the Department of Radiology for their contributions to establishing diagnosis and implementing patient management.

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Extremophile-Derived Radioprotectors to Potentiate Cell Therapy

Victoria I. García[1], Joshua Tolliver[2], Sheeba Jacob[2], Zachary J. Reitman[2]
[1]San Juan Bautista School of Medicine, Caguas, PR;
[2]Department of Radiation Oncology, Duke School of Medicine, Durham, NC, USA

Background & Objectives: Radiotherapy is a key treatment for over half of all cancer patients, effectively targeting and destroying cancer cells. However, radiation therapy can also damage surrounding healthy tissues and immune cells, impairing the body's ability to mount a robust immune response. This project aims to explore methods to protect immune cells, particularly T-cells, from radiation-induced damage. Based on research into radioresistant proteins, we focused on Dsup (damage suppressor protein), a protein derived from the tardigrade Ramazzottius varieornatus, which is known for its remarkable resilience to extreme environmental stress, including radiation. We hypothesize that Dsup can protect T-cells from radiation damage, offering a potential therapeutic strategy for patients undergoing radiation therapy. Methods: Jurkat cells, an immortalized T-cell leukemia line, were used as a model for T lymphocytes. The open reading frame encoding Dsup and a C-terminal green fluorescent protein (GFP) tag was cloned into the lentiviral vector pGenlenti (Genscript). The control vector expressed GFP alone. GFP expression was assessed using fluorescence microscopy to confirm successful protein expression. Results: Transfection protocols were optimized to efficiently deliver Dsup-expressing constructs into Jurkat cells. Both transient and lentiviral transduction methods were employed to maximize transfection efficiency. The Lipofectamine and X-treme Gene protocols resulted in strong green fluorescence in transfected cells, indicating successful expression of the GFP-tagged Dsup protein. Conclusion: This study establishes a framework for

expressing candidate radioprotector genes in T-cells. Our findings suggest that Dsup can be successfully expressed in T-cells. Future work will focus on assessing the efficacy of Dsup in protecting immune cells from radiation-induced damage and on screening additional radioprotective candidates to enhance the therapeutic potential of radiation therapy. This approach holds promise for improving patient outcomes by preserving immune cell function during radiation treatment.

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Mejorando la Calidad de Vida de los Adultos Mayores en Las Marías: Un Enfoque Holístico

Jousteven Méndez Pérez, Sandra Otero Morales, Gabriela A. Algarín Zayas, Marianyoly Ortiz Ortiz, José F. Cordero
Fideicomiso de Salud Pública de Puerto Rico, un programa del Fideicomiso para Ciencias, Tecnología e Investigación de Puerto Rico

Introducción y Objetivos: El bienestar integral de la población adulta mayor en Las Marías enfrenta desafíos importantes como el aislamiento social, el acceso limitado a servicios adecuados y la vulnerabilidad ante fraudes financieros. Según el perfil demográfico de personas adultas mayores de Puerto Rico del 2022, el 28% de la población de Las Marías tiene 60 años o más y un 44% vive bajo el nivel de pobreza. Este proyecto tuvo como objetivo mejorar la calidad de vida de mínimo de 30 personas adultas mayores mediante un enfoque integral que combina educación, asistencia y apoyo emocional, buscando reducir la soledad y mejorar el bienestar emocional y físico. Método: El diseño incluyó talleres educativos sobre prevención de enfermedades, manejo financiero y salud emocional, junto con estrategias de coordinación de servicios médicos. Se realizaron 200 sesiones individuales y grupales de apoyo emocional durante seis meses, con un promedio de dos sesiones semanales. Además, se llevaron a cabo 30 actividades grupales, como talleres de arte y sesiones de música, para fomentar la interacción social. Resultados: Las encuestas pre y post intervención evidenciaron una reducción del 40% en los niveles de soledad percibida y una mejora del 35% en el bienestar emocional. La participación en actividades grupales aumentó un 50%, y las visitas a emergencias por problemas de salud mental disminuyeron un 20%. Conclusión: El proyecto demostró efectividad en reducir el aislamiento social y mejorar el bienestar integral de los adultos mayores, destacando la relevancia de un enfoque empático e integral. A futuro, se planea expandir el programa y evaluar su impacto a largo plazo. Reconocimientos: Agradecemos al Centro Geriátrico de Las Marías por su dedicación y apoyo continuo. Su esfuerzo ha sido fundamental para mejorar la calidad de vida de nuestros adultos mayores, reduciendo el aislamiento y promoviendo su bienestar emocional.

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From COVID-19 Rumors to Facts: Developing an Educational Tool with Rumors Collected by Community Health Ambassadors in Loíza

Alexandra S. Ortiz, Gabriela A. Algarín, Rachel M. Millán, Marianyoly Ortiz Ortiz
Puerto Rico Science, Technology & Research Trust, Puerto Rico Public Health Trust, Community Engagement Division, San Juan, Puerto Rico

Background and Objectives: The evolving nature of the COVID-19 pandemic has fueled the spread of misinformation and disinformation, creating barriers to public health efforts. This project aimed to collect and analyze rumors related to COVID-19 and use the findings to develop an educational tool for use in community settings. Methods: To leverage the trust community leaders, have within their communities, six community leaders from Loíza were trained as Community Health Ambassadors (CHAs). These CHAs engaged with their communities and reported rumors through Microsoft Forms. Between December 2022 and January 2024, CHAs collected a total of 150 rumors in Loíza. Results: Of the 150 rumors, 134 (89%) were collected in community settings, with the remaining 11% gathered via Facebook and WhatsApp. Of the 150 rumors, 121 (81%) pertained to COVID-19, while the other 29 addressed topics of general community interest. Among the COVID-19-related rumors, 56% (n=68) were related to vaccination, with the majority (54%) focused on vaccine hesitancy. Additionally, 26% (n=18) described negative vaccine side effects based on personal or secondhand experiences, 7% (n=5) asserted that vaccination leads to death, and 6% (n=4) questioned the effectiveness of vaccines during the pandemic. Other COVID-19-related rumors included 26 about the pandemic itself (such as speculation about its start or end), 15 associating COVID-19 with a control agenda, and 12 related to mask use. The results of the rumor classification were used to create "COVID-Hechos," a set of educational cards designed to engage communities and promote accurate information. Conclusion: By collecting and classifying rumors, the project provided valuable insights into the misconceptions surrounding COVID-19 in these communities. These insights were instrumental in the development of an educational tool now being used by Community Health Workers (CHWs) to promote accurate COVID-19 information and address misinformation at the community level. Acknowledgement: This project was funded by the Puerto Rico Fiscal Agency and Financial Advisory Authority (AAFAF).

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Ventricular Arterial Coupling as a Predictor of Mortality in Veterans Hospitalized with Acute Decompensated HF

Sara Ocasio-Gari, BS[2]; Adrián Pérez-Aybar, MD[1]; Sonia Vicenty, MD[3]; Ingrid M. Bonilla, PhD[2,4]
[1]Veterans Affairs Caribbean Healthcare System; [2]Cardiology Department, Veterans Affairs Caribbean Healthcare System: Research and Development Department; [3]Veterans Affairs Healthcare System Miami; Cardiology Department; [4]University of Puerto Rico, School of Medicine, Department of Pharmacology and Toxicology

Background: Acute decompensated heart failure (ADHF) is rapid onset of new or worsening signs and symptoms of heart failure and one of the leading admissions diagnoses worldwide, yet its pathophysiology is incompletely understood with limited therapeutic options. Patients admitted for ADHF have high in-hospital morbidity and mortality due to suboptimal medical management. Ventriculo Arterial Coupling (VAC) measures the relationship between the ventricle and the vascular system, and it has been used as a measure for ADHF severity. Still VAC usefulness as a mortality predictor in ADHF patients remains undetermined. We hypothesized that non-invasive VAC measurement could predict 30-day readmission and mortality risk in ADHF patients. Methods: The study was approved by the VA Caribbean Healthcare System IRB Committee (00803). A retrospective analysis of 48 veterans (46 males, 2 females; average age 81 years) admitted with ADHF was conducted. Echocardiographic parameters, including VAC and EA, were calculated. Patients were categorized into HFrEF (n=30) and HFpEF (n=16) groups. Results: VAC was significantly increased in HFrEF compared to HFpEF patients (1.84 ± 0.52 vs 1.07 ± 0.43, $p<0.05$).

Readmission rates were 46% for HFrEF and 33% for HFpEF, with mortality rates of 86% and 83% among readmitted patients, respectively. HFrEF patients who died within one-year post-hospitalization (n=16/30), VAC showed a trend towards increase compared to survivors (1.9 ± 0.4 vs 1.7 ± 0.6, p=0.2). Increased VAC and Atrial fibrillation (afib) were present at a higher percentage on deceased HFrEF patients than in the HFrEF survivor group (p<0.05). Conclusions: VAC was increased in HFrEF. Deceased HFrEF patients had increased VAC and afib, thus providing a possible marker for mortality in this group. Further research with a larger sample size is needed to establish definitive conclusions and improve risk stratification in this population. Acknowledgment: This material is based upon work supported by the Research and Development Service, your section or department and Department of Veterans Affairs, Caribbean Healthcare System San Juan, P.R. Disclaimer: The contents of this abstract do not represent the views of the VA Caribbean Healthcare System, the Department of Veterans Affairs or the United States Government.

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Granulomatous Lobular Mastitis: A Challenging Diagnosis in a Reproductive-Age Patient with Recurrent Breast Mass and Abscess Formation

José Rolón-Pérez, Alemi Viera
University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, Puerto Rico

Granulomatous Lobular Mastitis (GM) is a rare form of breast inflammation that can mimic more commonly seen breast conditions, such as abscesses and inflammatory breast cancer. Significant challenges lie in recognizing, diagnosing, and adequately treating GM. This obstacle is highlighted in the following case study: A 26-year-old G1P1 woman of Hispanic descent with recent history of unsanitary bilateral nipple piercings presented with a rapidly growing mass on the left breast with associated multiloculated abscess formation. During prolonged hospital stay, the patient completed multiple rounds of wide-spectrum IV antibiotics, with no apparent response to treatment. The abscess was drained twice, and wound cultures were consistently free of any potential abscess forming organism. A significant delay in adequate diagnosis and prolonged hospital stay were seen in this patient, causing marked psychological distress. The patient was ultimately correctly diagnosed through a core-needle biopsy, which revealed non-caseating granulomas and a lack of cellular atypia, indicating no malignancy. Referral to appropriate specialists was made and patient was managed with surgical excision and corticosteroid therapy. This case underscores key diagnostic features of GM, such as recurrent, rapidly enlarging breast masses unresponsive to antibiotics. Identifiable risk factors, including recent lactation, parous age, and Hispanic descent, were notable in this patient. Prompt recognition and management of GM are critical to prevent severe complications, such as breast disfigurement or nipple-areolar complex inversion. Additionally, patients must be informed about the chronic and recurrent nature of the disease and its potential long-term impact on physical appearance and self-image. Greater awareness of GM's unique clinical features is needed to facilitate early diagnosis and optimal treatment.

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Regenerative Dynamics of the IGF System: Insights from Holothuria Glaberrima.

Evelyn. J. Avilés-Ríos, Matilde Grosso-García, José E. García-Arrarás
University of Puerto Rico, Río Piedras Campus, Biology Department, San Juan, Puerto Rico

Background and Objectives: As humans, our inability to fully regenerate cells, tissues, or organs often leads to disease. Some organisms, however, possess mechanisms that allow complete repair. Understanding these mechanisms could revolutionize regenerative medicine. Regeneration shares biological processes with development, including cell division, migration, and differentiation. The Insulin-like Growth Factor (IGF) system plays a critical role in these processes during development and has been implicated in some regenerative events. However, its role in promoting regenerative organogenesis remains poorly understood. Method: We propose using the sea cucumber, Holothuria glaberrima, to explore the IGF system's role in regeneration. This echinoderm, capable of fully regenerating organs like the digestive tract and nervous system, serves as a unique model for studying IGF-related mechanisms. Components of the IGF system include IGF-binding proteins (IGFBP), the Acid Labile Subunit (ALS), and the IGF receptor (IGFR). Results: In this study, we characterized the IGF system in H. glaberrima and analyzed its expression during intestinal regeneration. Transcriptome analyses revealed distinct expression patterns for each component: IGF was upregulated in the first three weeks, IGFBP-ALS was downregulated, and IGFBP showed early downregulation followed by overexpression at later stages. IGFR expression remained unchanged during initial stages. Furthermore, single-cell RNA sequencing at eight days post-injury identified IGF-positive cells within the coelomic epithelium of the mesentery. Conclusions: These findings provide valuable insights into the dynamics of the IGF system during regeneration in echinoderms, laying a foundation for further studies in other tissues and potential applications in human regenerative medicine or therapies. Acknowledgment: This research was supported by NIH-1T32GM152384-01 and 1R25NS127776-01.

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Impact of an Educational Video on Knowledge of Vaccination Against Influenza, Pertussis, and COVID-19 in Pregnant Women Living in Puerto Rico

Daniel Pérez-Cordero[1], Josefina Romaguera[2], Aniris Román[3]
[1]UPR, Medical Sciences Campus, School of Medicine, San Juan, Puerto Rico;
[2]UPR, Medical Sciences Campus, School of Medicine, Department of OB-Gyn, San Juan, Puerto Rico;
[3]UPR, Río Piedras Campus, Puerto Rico

Background and objectives: Educating pregnant women about immunizations is critical for maternal and fetal health, particularly in Puerto Rico, where vaccination knowledge data is limited. This study evaluates the impact of an educational video on understanding vaccines for influenza, pertussis, and COVID-19, addressing concerns about fetal protection among pregnant women living in Puerto Rico. We explored how knowledge influences vaccination decisions and hypothesized that misconceptions correlate with limited understanding or insufficient background knowledge. Methods: Two hundred participants (aged 21–44) completed an online pre- and post-questionnaire about the video *Vacunación durante el embarazo*, which explained vaccine safety and efficacy during pregnancy. SurveyMonkey was used primarily to analyze changes in knowledge and perceptions. Results: When asked whether vaccination reduces hospitalization and death in infants under six months, uncertainty ("don't know" response) decreased from 29% pre-video to 5.5% post-video. Similarly, uncertainty regarding the statement, "The COVID-19 vaccine can cause a miscarriage," declined from 50.5% to 12%. Across all questions, correct responses increased, while misconceptions decreased, suggesting the video's effectiveness in improving understanding. Conclusion: The educational video significantly improved knowledge and reduced misconceptions

about immunization during pregnancy among Puerto Rican pregnant women. Expanding similar educational initiatives could enhance maternal and fetal health through increased vaccine awareness. IRB Approved: Protocol #: 2290035320R003 (02/18/2025)

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Fast-Tracking Kidney Transplant Referrals: A Quality Improvement Initiative

Celenia Torres Resto[1], Catherine Johnson Ramos[1], Johanie Carrasquillo Burgos[1], Brenda Calo Flores[1], Myriam Centeno Cintrón[1], Nilka de Jesús González[1,2]
[1]Transplant Center, Hospital Español Auxilio Mutuo, San Juan, Puerto Rico;
[2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Pediatrics, San Juan, Puerto Rico

Background: Timely evaluation and processing of referrals for transplant from dialysis units (DU) by transplant centers (TC) is essential for facilitating prompt access to kidney transplantation. We identified that our TC's initial evaluation of kidney transplant referrals were taking longer than expected, often exceeding three months. To address this, we established a goal of 45 days to initiate referral processing at TC and aimed to increase the percentage of referrals evaluated within 45 days of submission from DU to 80% by April 2022. Methods: Kidney transplant referrals from January-March 2021 were analyzed to assess the baseline time from DU referral submission to TC initial referral processing. Root cause analysis revealed primary factors contributing to delays in initiating referral evaluation, including lack of personnel dedicated to evaluating referrals, absence of a standardized process for managing referrals, and no standardized system for submitting referrals. Interventions implemented to address these issues included establishing a referral team, designing a referral process flowchart, developing an electronic platform to submit referrals and communicate with DU, and training DU providers on the referral process. The interventions were assessed through PDSA cycles. The primary process measure was time from DU referral submission to TC referral evaluation, monitored monthly using run chart standard rules. Results: From January 2021-April 2022, 1,009 kidney transplant referrals were received. At baseline (January–March 2021), only 31% of referrals were evaluated within 45 days. After implementing interventions, run chart monitoring revealed that the percentage of referrals evaluated within 45 days rose from 36% (January-June 2021) to 95% (July 2021-April 2022). The mean time from DU referral submission to TC referral evaluation decreased from 104 days (January-June 2021) to 16 days (July 2021-April 2022) ($p<0.01$). Conclusions: Implementing a standardized referral process and assigning dedicated personnel to manage referrals at the TC markedly enhanced kidney transplant referral processing timeliness.

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A Müllerian Anomaly Affecting the Quality of Life

Karla Lugo[1]; María Isabel Hawayek, MD[2]; Helen Oquendo Del Toro[2]
[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, Puerto Rico;
[2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Obstetrics and Gynecology, San Juan, Puerto Rico

Purpose: Müllerian anomalies are often difficult to diagnose, and treatment modalities are hard to establish, requiring a multidisciplinary team and expert handling of delicate cases both socially and surgically. Often these anomalies lead to severe and debilitating pelvic pain. Case presentation: We present a case of a 17-year-old female with a Müllerian anomaly presenting as a double uterus without connection to the cervix who underwent an abdominal hysterectomy due to persistent pelvic pain and endometriosis. Since undergoing menarche, the patient had extremely painful periods. After various ER visits, she was diagnosed with a hematometra requiring incision and drainage in 2021. MRI imaging was remarkable for a didelphys uterus without other anomalies. She was started on oral contraceptives, however continued with debilitating pain causing her to miss school often. In 2023, she underwent a diagnostic laparoscopy. During that procedure, a uterus was visualized along with the ovaries. Endometriosis implants were also appreciated and resected at this time. The patient continued with severe pelvic pain. Decision was made to start the patient on treatment with Lupron. However, due to the various adverse effects it was deemed inappropriate to continue this medication for a long period of time. After careful, and extensive conversations were undertaken with the patient, hospital director, and family members, the patient decided to undergo an abdominal hysterectomy. At this moment, she was found to have two rudimentary uteri with streak ovaries. No connection was appreciated between the uterus and cervix during the surgery despite multiple previously performed radiographic images failing to recognize it. Conclusions: This case highlights a divergent treatment for patients within the müllerian anomaly spectrum. While maintaining fertility should be considered important in cases of mullerian anomalies, pelvic pain and quality of life should also be considered. This case serves to highlight a rare condition requiring an individualized approach to treatment. Acknowledgements: No sources of funding were used for this project. The authors have no conflicts of interest to disclose.

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Effects of SARS-CoV-2 Spike Protein and Nicotine Exposure on α7 Nicotinic Acetylcholine Receptor Levels in the SH-SY5Y

Sonia Corretjer-Farinacci[1], Adriana Rodríguez-Aponte[1], Rolando Irizarry-Álvarez[1], Bismark Madera[1,2], Negin Martin[3], Jerrel L. Yakel[4], Manuel Delgado-Vélez[1,2,5], José A. Lasalde-Dominicci[1,2]
[1]Department of Biology, University of Puerto Rico, Río Piedras Campus;
[2]University of Puerto Rico, Molecular Sciences Research Center;
[3]National Institute of Environmental Health Sciences, National Institutes of Health;
[4]Neurobiology Laboratory, National Institute of Environmental Health Sciences, National Institutes of Health;
[5]Department of Pharmaceutical Sciences, Medical Sciences Campus

SARS-CoV-2 is the etiological agent of coronavirus disease (COVID-19), primarily impacts the respiratory system, producing symptoms such as fever, dyspnea, and anosmia. Beyond respiratory effects, accumulating evidence highlights the virus's potential for long-term neurological repercussions. A key player in neuroimmune regulation is the alpha7 nicotinic acetylcholine receptor (α7-nAChR), which is expressed in both neuronal and non-neuronal cells. This receptor has critical anti-inflammatory properties and is a cornerstone of the cholinergic anti-inflammatory response (CAR), an innate neuroimmune mechanism that mitigates excessive inflammation. Dysregulation of CAR impairs the body's ability to control inflammatory processes, which may contribute to post-COVID-19 complications. Nicotine is a known agonist of α7-nAChR, plays a vital role in enhancing CAR by activating α7-nAChR, which subsequently dampens pro-inflammatory cytokine release. This study explores whether the SARS-CoV-2 spike

protein disrupts CAR by modulating α7-nAChR expression and investigates nicotine's protective role in preserving receptor function. Using the SH-SY5Y human neuroblastoma cell line as an in vitro model, we measured α7-nAChR levels following exposure to the SARS-CoV-2 spike protein. Our findings reveal a dose-dependent decrease in α7-nAChR expression after 12, 24, 36, and 48 hours of spike protein exposure at concentrations of 30 nM, 100 nM, and 300 nM. Notably, pre-treatment with nicotine 24 hours before spike protein exposure successfully maintained normal α7-nAChR levels, preventing the spike protein-induced reduction. This underscores nicotine's role in preserving CAR function and counteracting the inflammatory dysregulation caused by SARS-CoV-2. By restoring α7-nAChR function, nicotine may serve as a potential therapeutic adjunct in combating the neuroinflammatory consequences of SARS-CoV-2 infection. Further studies are warranted to explore this mechanism in vivo and assess the feasibility of α7-nAChR modulation as a therapeutic strategy. The findings of this study contribute to the growing understanding of CAR in COVID-19 pathology and offer promising insights for therapeutic interventions targeting the cholinergic system.

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Infertility Among Hispanic PCOS Patients in Puerto Rico: A Descriptive Assessment

I. Seguinot-Tarafa[1], A. Rivera-Vélez[2], A. Rivera-Rosario[2], A. San Miguel-Pérez[3], N. Bracero-Serrano[1]
[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Obstetrics and Gynecology, San Juan, Puerto Rico;
[2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, Puerto Rico;
[3]Universidad Central del Caribe, School of Medicine, Bayamón, Puerto Rico

Background & Objectives: Polycystic Ovary Syndrome (PCOS) is one of the most common endocrinopathies during the reproductive years. Research has shown that Hispanic women with PCOS present the phenotype with the most severe hyperandrogenism and metabolic disturbances. Absence of detailed characterization of PCOS in Puerto Rican patients poses significant barriers to translating research findings into clinical practice. Prior research has been limited in providing evidence-based schema to guide the initial and subsequent choice of ovulation induction methods among Hispanic women with PCOS. We aim to conduct an in-depth exploration of the gynecological profile of Hispanic PCOS patients who are living in PR and determine which ovulation induction regimen is most successful in this population. Methods: Retrospective study involving 133 female participants aged 21-40 years with PCOS who underwent infertility evaluation between January 2007 to June 2024. The medical records were analyzed by a team of investigators and demographic and clinical data were collected and analyzed. IRB approval number: 2212062629R001. Results: A significant portion of PCOS patients were legally married (84.8%), aged 31-35 years (55.9%), with a BMI classified as overweight to obese class 3 (52.5%). Among our sample, 24.6% of patients reported trying to conceive for over five years. Most were treated with Letrozole, with 61.6% of this group receiving a positive pregnancy test after treatment. Conclusions: We were able to characterize a sample of patients with PCOS who sought care for infertility in Puerto Rico. Our study population's characteristics align with those reported in the literature. While this research contributes valuable insights, it is essential to acknowledge the study's limitations, particularly the relatively small sample size. Further investigation and broader sampling are warranted to substantiate and refine these initial findings.
Acknowledgments: This research is authorized under IRB approval number: 2212062629R001.

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Periosteal Pdgfrα-lineage Cells Contribute to Heterotopic Ossification in Fibrodysplasia Ossificans Progressiva

Loreilys Mejías Rivera[1,4], Brian Herman[1], Diego Ocaranza Nuñez[1], Alexandra Goodwin[1], Fatoumata Diarra[1], Foteini Mourkioti[1,3,5], Eileen M. Shore[1,2,4,5]
[1]University of Pennsylvania, Perelman School of Medicine, Departments of Orthopaedic Surgery; [2]Genetics, and [3]Cell and Developmental Biology; [4]Center for Research in FOP and Related Disorders; [5]Penn Institute for Regenerative Medicine, Philadelphia, PA

In Fibrodysplasia Ossificans Progressiva (FOP), a rare genetic disease, soft tissues like skeletal muscles form bone due to mutations in *ACVR1* (*ACVR1*$^{R206H/+}$). Heterotopic ossification (HO) arises spontaneously or after injury from Pdgfrα+ progenitors, particularly fibro/adipogenic progenitors (FAPs) in muscle. However, the periosteum, a bone-surrounding connective tissue with Pdgfrα+ progenitors, might also contribute to HO, but this remains unexplored. To examine how Acvr1$^{R206H/+}$ Pdgfrα-lineage cells affect the regenerating muscle microenvironment and lead to ectopic bone formation, we generated an inducible *Pdgfrα*-CreERT2; *Acvr1*$^{R206H/+}$ mouse model and used micro-computed tomography and histology to evaluate HO progression with and without muscle injury. Induction of *Acvr1*^{R206H} mutation alone induced periosteal expansion by 5 days post-tamoxifen (dp-TAM) and periosteal osteogenesis is detected after 2 weeks. In response to muscle injury, mutant mice showed impaired regeneration as HO formed. The thickness of mutant periosteum expanded significantly compared to controls at sites proximal to the injured muscle by 5 days post-injury (dpi). This periosteal expansion is driven by a significant increase in cambium layer thickness. Over time (10 dpi), the periosteum transitioned to endochondral ossification that infiltrated the surrounding skeletal muscle. Periosteal expansion appears to be systemic after muscle injury as bones distal to injury also had significant increases in thickness. Our findings reveal cellular insights into muscle and periosteal interactions, aiding future therapies to enhance muscle repair and reduce bone formation in FOP patients. IRB Approved: Protocol #: #803040 (01/25/2025). Funding: NIH/NIAMS R01-AR071399 and the International Fibrodysplasia Ossificans Progressiva Association.

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Incidental Discovery of a Large Retro Cerebellar Arachonoid Cyst and Syringomyelia Following a Syncopal Episode

Claudia Muns[1], Jean Paul Inesta Rivera[1], Marcos Martínez Morandeira[2], Andrés Pavarini[1], Luis Biescas[3]
[1]School of Medicine, University of Puerto Rico, Medical Sciences Campus; [2]Ponce Health Sciences University, School of Medicine; [3]VA Caribbean Healthcare System

Purpose: Syncope is a common clinical presentation that can result from diverse etiologies, ranging from benign causes to potentially life-threatening conditions. It's diagnostic approach often requires extensive evaluation to identify underlying pathologic processes. The use of proper diagnostic imaging is essential for the accurate

assessment and effective management of many cases. We report the case of a patient presented after a syncopal episode who was diagnosed and treated for an incidental discovery of a large retrocerebellar arachnoid cyst with associated cervical syrinx. This case emphasizes the importance of considering uncommon causes of syncope in clinical practice. Case Description: A 49-year-old Hispanic male with hypertension and dyslipidemia presented after a sudden syncopal episode, resulting in a fall. Patient denied headaches, neurological deficits, or other symptoms. Vital signs, physical examination and laboratory workups were unremarkable. Non-contrast head CT revealed a large retrocerebellar arachnoid cyst, confirmed by MRI. Cervical MRI confirmed the presence of an associated syrinx extending to C5-C6. Neurosurgical consultation led to laparoscopic-assisted ventriculoperitoneal (VP) shunt placement. Postoperatively, the patient was stable, and head CT revealed no change in ventricular size and configuration. Patient was discharged to inpatient rehabilitation and follow-up care was arranged. Conclusion: This case highlights a rare presentation of a patient with syncope caused by a large retrocerebellar arachnoid cyst with associated cervical syrinx. It emphasizes the need for comprehensive evaluation and multidisciplinary collaboration in managing patients presenting with syncopal episodes and incidental intracranial pathology. Clinicians should suspect intracranial pathologies as possible etiology for patients with syncope, especially when initial evaluation is inconclusive. Neurosurgical intervention proved effective in addressing the underlying pathology and improving patient outcomes. Acknowledgments: We would like to thank the faculty of medicine of the department of radiology for their contributions to establishing diagnosis and implementing patient management.

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Neuroinflammatory Impact of HIV-gp120 on the Hippocampus

Sofía Sánchez-Franceschini[1], Morayma S. Yordán-González[2], Zanishka M. Báez-Prieto[3], Irmaliz Girona-Rodríguez[4], Kendall A. Krans-Díaz[5], Raymond Sánchez-Robles[6], Mikhail Inyushin[7], Janaina M. Alves[2]

[1]School of Medicine, Universidad Central del Caribe, Bayamón, PR, 00960, U.S.A;
[2]Dept. of Microbiology & Immunology, Universidad Central del Caribe, Bayamón, PR, 00960, U.S.A.;
[3]General Biology Program, Universidad de Puerto Rico, Bayamón Campus, Bayamón, PR, 00960, U.S.A;
[4]Neuroscience Program, Johns Hopkins University, 21218, U.S.A.;
[5]Biology Program, Loyola University, Maryland, 21210, U.S.A.;
[6]School of Medicine, University of Puerto Rico, Medical Sciences Campus, PR, 00921, U.S.A.;
[7]Dept. of Physiology, Universidad Central del Caribe, Bayamón, PR, 00960, U.S.A.

Background and Objectives: According to UNAIDS, over 30 million people live with HIV, a virus that has significantly impacted global health and caused numerous deaths. HIV can lead to neurocognitive disorders, including dementia, by entering the brain and triggering an inflammatory response mediated by the HIV-gp120 protein. This protein, integral to the virus, induces cytotoxicity in the brain, contributing to neurocognitive decline. As HIV replicates, the effectiveness of combination antiretroviral therapy (cART) diminishes, and inflammatory responses are initiated. HIV directs itself to the proteasome, transforming it into an "immunoproteasome," which disrupts cellular homeostasis and neuronal protein dynamics. To investigate this process, we hypothesized that the infusion of HIV-gp120 into the hippocampus would increase the concentration of beta-amyloid (Aβ) in the

area, potentially contributing to cognitive impairment. In this study, stereotaxic surgery was performed to infuse HIV-gp120 into the hippocampus using the following coordinates: anterior-posterior (AP) −0.28 mm, midlateral (ML) ±0.17 mm, and dorsoventral (DV) −0.37 mm. Following injection, an increase in Aβ concentration was observed, with a slight reduction noted 24 hours post-injection. The presence of Aβ in blood vessels and tissues was confirmed one hour and 24 hours after the injection using immunohistochemical staining. ELISA tests further validated the increased Aβ levels, and a decrease in neuronal presence was noted in affected areas. This research aims to explore how HIV-gp120 induces inflammation in the brains of patients treated with cART and its role in promoting neurocognitive disorders. Understanding the neurotoxic effects of HIV-gp120 at the neuronal level could lead to new strategies for reducing the incidence of HIV-related cognitive decline. These findings have the potential to advance scientific knowledge and contribute to the global effort to reduce the impact of HIV on public health. IACUC Approved: Protocol #:041-2020-31-00-PHA (September 2024). Acknowledgments: The content is the sole responsibility of the authors and does not necessarily reflect the official views of the Universidad Central del Caribe (UCC). This project was supported by the OADRGS, the Hispanic Alliance for Clinical and Translational Research (The Alliance) under Grant# U54 MD007587 from the National Institute on Minority Health and Health Disparities (NIMHD) of NIH, the Expanding Undergraduate Students Education, Opportunities, and Options in Clinical and Translational Research program supported by the US Department of Education Title V Grant Award #P031S200104, the MAC-FRED Program 2018 and Grant #SC3GM143983 from NIGMS.

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Qualitative Data Collection Through Semi-Structured Interviews in Puerto Rican Communities Reliant on Small Water Systems

Coralys Ginés-Torres, BS[1]; Karen Andújar-Aponte, ME[1]; Nicole M. Marrero-Vázquez, BA[1]; María Ramos-Rosado, BS[1]; Zaymarie Chévere-Delgado, BS[1]; Leslie Maas-Cortés, MHS[1]; Omar Pérez-Figueroa, PhD[1]; Graciela Ramírez, PhD[2]; Jared Bowden, PhD[3]; Jay Levine, PhD[3]

[1]Puerto Rico Public Health Trust, a program of the Puerto Rico Science, Technology and Research Trust; [2]Center for Environmental Education, Conservation and Research (CECIA) of the Interamerican University of Puerto Rico; [3]North Carolina State University

Background and Objectives: Puerto Rico is home to over 235 Small Water Systems (SWS), vulnerable to the increasing frequency of droughts. The systems are predominantly operated by community volunteers in rural areas where the population is largely elderly, low-income, and facing significant public health challenges, including limited resources, and difficulty meeting EPA sanitation standards. The conducted semi-structured interviews (SSI) explore experiences of community members managing SWS and understand cultural and contextual factors. The study aims to assess the cumulative impact of droughts on SWS in Puerto Rico using a Community-Based Participatory Research (CBPR) approach. Through SSI and observations, the study seeks to evaluate contextual factors influencing community-operated SWS and identify actionable needs to enhance their resilience. Methodology: Using a CBPR framework, SSI were conducted in 12 randomly selected communities across Puerto Rico's six ecozones, involving three participant groups: operators, residents, and external collaborators. The interviews explored perceptions of climate change, water management, and strategies implemented during drought events. Results: A total of 46 SSIs

were conducted, with 26 of them coded and analyzed using a codebook containing 27 main codes categorized into 7 themes, including "Water Quality and Quantity". These themes were further grouped into broader categories such as "Dynamics of Water Management in Community Hands," highlighting systemic challenges and the critical role of community-led water management. Preliminary analysis reveals infrastructure deficiencies and participation gaps. For example, a southern community struggles with inadequate tank infrastructure, while a northern community faces participation gaps, placing a burden on a few individuals managing the SWS. Conclusion: The interviews have revealed critical challenges, including limited community participation, high maintenance costs, and insufficient funding. Integrating indigenous knowledge gathered through SSI will support future quantitative analysis and help develop drought resilience plans that ensure safe water access and improve public health in vulnerable Puerto Rican communities. Acknowledgement: This project is fully funded by the US EPA STAR Program, EPA-G2021-STAR-H1, Grant No. 84047601: Community-based research to address cumulative health effects of drought on rural communities operating drinking water aqueducts in Puerto Rico. EPA-G2021-STAR-H1, Grant No. 84047601: Community-based research to address cumulative health effects of drought on rural communities who operate drinking water aqueducts in Puerto Rico. IRB Protocol Number Approval: 2307158833

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Advancing Pain Management: Applying Multimodal Analgesia with Lidocaine and Dexmedetomidine According to Scientific Evidence

Andrea E. García-Ortiz, Valerie Linera-Hernández, Taysha Montañez-Montañez, Cristian Román-Santiago, Noemy Díaz-Ramos, Carmen Mabel Arroyo-Novoa, Milagros I. Figueroa-Ramos
University of Puerto Rico, Medical Sciences Campus, School of Nursing

Clinical Question: In adult patients undergoing laparoscopic abdominal surgery, how does multimodal analgesia, including lidocaine and dexmedetomidine infusions, affect pain intensity and opioid consumption within the first 24 hours postoperatively? Scope: The opioid crisis highlights the urgent need for transformative approaches to perioperative pain management. This capstone project aimed to implement lidocaine and dexmedetomidine infusions as part of multimodal analgesia to enhance postoperative pain management and reduce opioid consumption in adult patients undergoing laparoscopic abdominal surgery. Literature Review: A systematic literature review identified 11 high-quality studies supporting the efficacy of lidocaine and dexmedetomidine infusions in perioperative pain management. These studies demonstrated that combining these agents in multimodal analgesia protocols effectively reduces postoperative opioid use, mitigates complications, and improves recovery outcomes. Project Implementation: Twenty-five patients received standard anesthesia care supplemented with intravenous lidocaine (1.5 mg/kg bolus followed by a continuous infusion of 1.5 mg/kg/hr) and dexmedetomidine (0.5 mcg/kg bolus over 10 minutes, followed by a maintenance infusion of 0.3–0.5 mcg/kg/hr). Both infusions were discontinued upon skin closure. Pain levels were assessed using the Numeric Rating Scale (NRS) at 2 and 24 hours postoperatively, and opioid consumption within 24 hours was documented. Results: Pain scores were mild at 2 hours (NRS mean 2.04) and moderate at 24 hours (NRS mean 3.24). Excluding outliers with high opioid use reduced variability in opioid consumption, reinforcing the effectiveness of the intervention in controlling pain. Implications for Practice: Certified Registered Nurse Anesthetists (CRNAs) are critical in advancing evidence-based and patient-centered care. Multimodal analgesia strategies, including lidocaine and dexmedetomidine, target diverse pain mechanisms, reduce opioid-related complications, and improve patient satisfaction and recovery. This

approach is essential for modernizing anesthesia practices and addressing the opioid crisis. Acknowledgments: No funding sources or conflicts of interest to disclose. IRB Approved: Protocol #: 2407251257 (10/25/2024)

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Resurgiendo de la Crisis: El Impacto del Covid-19 en los Estudiantes Recién Graduados de Enfermería

Priscilla Mercado, Daniella Olmo
University of Puerto Rico, Medical Sciences Campus, School of Nursing

Antecedentes: La pandemia de COVID-19 interrumpió significativamente las prácticas clínicas en la formación de enfermería, obligando a una transición abrupta a la educación remota. Este cambio planteó desafíos en la adquisición de habilidades clínicas esenciales para los estudiantes recién graduados. Propósito: Explorar el impacto del COVID-19 en la formación de enfermeros recién graduados, evaluando cómo la pandemia ha afectado su motivación, adaptación y preparación clínica a través de metodologías de enseñanza alternativas como clases online y simulaciones. Metodología: Se adoptó un enfoque cuantitativo descriptivo utilizando un cuestionario desarrollado por Marcos Bani (2022). La muestra consistió en 34 estudiantes recién graduados de la Universidad del Recinto de Arecibo (UPRA) y del Recinto de Ciencias Médicas (RCM) en Puerto Rico. Resultados: Los resultados indicaron que un 38% de los graduados experimentaron dificultades significativas durante su transición a profesionales de la salud, con mayores retos reportados por los egresados de UPRA. Las respuestas variaron en términos de satisfacción laboral y preparación académica. Conclusión: El estudio destaca la necesidad de fortalecer los programas educativos y proporcionar mayor apoyo psicológico y mentoría para mejorar la satisfacción laboral y la retención del personal de enfermería, lo cual redundaría en un impacto positivo en la calidad del cuidado al paciente. Aprobado por el IRB: Núm. del protocolo: 2404217155A001 (13/12/2024)

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Scoliosis in a Patient with Partial Trisomy 13: Expanding the Phenotypic Spectrum of Patau Syndrome

Andrea Fábregas, BS[1]; Elyette Lugo, BS[2]; Amer Samdani, MD[1]
[1]Shriners Children's Philadelphia, Department of Orthopedic Surgery, Philadelphia, PA, USA;
[2]John Hopkins University, Department of Orthopedic Surgery, Baltimore, MD, USA

Purpose: Patau Syndrome (PS) is a chromosomal disorder characterized by trisomy 13. PS presents with neurological deficits and multiple congenital anomalies, including cleft lip and palate, cerebral defects and anophthalmia, simian creases, polydactyly, and capillary hemangiomas. While various skeletal anomalies have been reported in PS, scoliosis has not previously been described in the literature. To our knowledge, this is the first reported case of scoliosis in a patient with Patau Syndrome, further broadening the known phenotypic spectrum of this rare chromosomal disorder. Case Presentation: An 18-year-old male with partial trisomy 13, resulting from a balanced (13:21) translocation, presented with severe progressive scoliosis exceeding 90°. His scoliosis was first identified at age eight with a 26-degree curve and managed with bracing until treatment was halted due to a pneumothorax.

Despite reaching skeletal maturity, his curve progressed to 98 degrees by age 18, significantly impairing mobility. Additional phenotypic features included microcephaly, myopia, hypotonia, and severe bilateral contractures. Conservative management remains ongoing, with surgical intervention being considered if symptoms worsen. Discussion: PS's manifestations are well-documented in literature, with a broad range of skeletal, neurological, and craniofacial abnormalities described. This case brings into fact another phenotypic variability of PS, with scoliosis representing a previously unreported manifestation. The progression of scoliosis beyond skeletal maturity suggests a distinct mechanism compared to adolescent idiopathic scoliosis, where curves typically halt after growth cessation. Given the rarity of both PS and its skeletal complications, this case highlights the importance of comprehensive evaluations, multidisciplinary care, and tailored management for patients with rare chromosomal disorders. Conflicts of Interest and Source of Funding: None

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Rare Anatomical Variation of the Celiac Trunk: A Cadaveric Case Study

Gabriella Torres Irizarry, MS; Natalia Valentín-Carro, MS, PhD
University of Puerto Rico- Medical Sciences Campus- Department of Anatomy and Neurobiology

Purpose: Examination of a possible undescribed variation of the celiac trunk. Case description: During routine cadaveric dissection at the human gross anatomy laboratory of the School of Medicine of the University of Puerto Rico of the peritoneum and foregut, we encountered that the celiac trunk only had two arteries arising from it. The standard description of the celiac trunk, as described by Moore, is that it originates from the abdominal aorta and gives origin to the splenic artery, left gastric artery, and common hepatic artery. The celiac trunk of our case arose from the abdominal aorta and gave origin to the splenic artery and the common hepatic artery. The common hepatic artery branches into the gastroduodenal and proper hepatic artery. The proper hepatic artery divides into the right hepatic artery and a trunk that branches into the left hepatic artery and the left gastric artery, the last not arising from the celiac trunk as normally described. As described by the book, the right hepatic artery gives rise to the cystic artery while also giving rise to an accessory right hepatic artery. The specimen's age is unknown, but it may be accessed for further examination. Conclusion: It is essential to learn about the different anatomical variations of the celiac trunk anatomy for angiographic and surgical procedures. Unawareness of these may lead to intraoperative injuries during hepato-pancreaticobiliary procedures. Acknowledgments: This research complies with all Junta de Donaciones Anatómicas de Puerto Rico regulations.

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Profile of Pediatrics Patients Requiring Non-Invasive Procedural Sedation in an Imaging Center

Marlacoral Ortiz, MD[1]; Anabel Puig-Ramos, PhD[2]; Natalia S. Díaz-Correa[3]; Juliara E. Ortiz-Santana, MD, FAAP[4]; Joel Rivera[3]; Sebastián Medina-Enríquez[3]; Elyzabeth Vega-Arroyo[3]; Dylan G. Rivera-Talavera[3]; Amanda Suárez[3]; Isaura Martínez[4]; Fabiola Urbistondo[2]; Carlos Ocasio, MD, FAAP[2]; Ricardo García, MD, FCCM, FAAP[2]

[1]San Juan City Hospital, Department of Pediatrics;
[2]University of Puerto Rico, School of Medicine, Department of Pediatrics-Critical Care Medicine Section;
[3]University of Puerto Rico, Río Piedras Campus;
[4]University of Puerto Rico, School of Medicine, Department of Pediatrics;
[5]University of Puerto Rico, Cayey Campus

Introduction: For those patients that require sedation for procedures, it is critical to assess the safety and efficacy to achieve the desired outcomes and guarantee the patient conscious recovery. In this study, we determined the prevalence, average age, and common diagnosis for non-invasive procedures without and with sedation. Methods: We evaluated patients that required non-invasive procedures in the imaging center from June 1st, 2024, to June 30th, 2024. Patients who required use of opioids were excluded. We evaluated the percentage of procedures conducted with dexmedetomidine (Dex) alone or Dex combined with other sedatives, and without sedation. A Mann-Whitney test was used to compare between the two groups, with a p-value < 0.05 for statistical significance. Results: A total of 176 patients received services during the study. The most frequent imaging study among patients that required sedation (34%) was the MRI, 57 (95%), specifically, Brain MRI (65%). The average age was 36 ± 51 months, and the most common diagnosis were seizures, congenital brain malformations and autism spectrum disorder. Dex (63%) was the most frequent sedative used, followed by Dex combined with ketamine or midazolam (28%). Patients treated with Dex or Dex combined did not have a difference in sedation time (median time: 44 vs 47 minutes, p = 0.6). There was no difference in total study time between patients that received either drug. No adverse events were reported during the study period. Conclusion: Optimizing pediatric sedation for imaging procedures involves age, diagnosis, imaging study type, duration of study and individual response to sedative. No significant difference was found between Dex alone or in combination. Data demonstrated that younger patients and patients with developmental or behavioral problems required the use of sedation. Individualized protocols, monitoring, and post-procedure care can further improve efficiency, outcomes and maintain patient safety.

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Mechanistic Insights into the Downregulation of CXCR4 Surface Expression by Oral Bacterial Cell Wall Molecules.

Kamish D. Marrero[1], Ying Dang[2], Qiujia Shao[2], Xiangxu Jia[2], Bindong Liu[2]
[1]Universidad Central del Caribe, School of Medicine, Bayamón, Puerto Rico;
[2]Meharry Medical College, Center for AIDS Health Disparities Research, Department of Microbiology, Immunology and Physiology, Nashville, Tennessee

Background & Objectives: Human immunodeficiency virus type 1 (HIV-1) is predominantly transmitted through mucosal surfaces, such as the genital and rectal mucosa, making these the primary sites of infection. However, oral mucosal transmission remains rare, and the mechanisms underlying this rarity are poorly understood. Previous work in our lab demonstrated that a cell wall component from the oral commensal bacterium Streptococcus cristatus (termed CC5A) inhibits HIV-1 replication in THP- 1 cells, a human monocytic cell line that is targeted by this

virus. However, the mechanism by which CC5A inhibits HIV-1 replication remains largely unknown. In this study, we show that CC5A downregulates the surface expression of the chemokine receptor CXCR4, thereby reducing the probability of HIV entry into host cells. Methods: THP-1 cells were treated with CC5A overnight, followed by monitoring the overall and surface expression of CXCR4 using flow cytometry. Additionally, quantitative Reverse-Transcription Polymerase Chain Reaction(qRT-PCR) was performed to measure CXCR4 mRNA expression, confirming that overall CXCR4 mRNA expression showed no significant change compared to untreated THP-1 cells. Results: Flow cytometry results revealed that CXCR4 surface expression was reduced in CC5A-treated samples, while the overall CXCR4 expression remained unchanged. Data also indicated that CC5A had no effect on the overall and surface expression of the CD4 receptor. qRT-PCR confirmed that CXCR4 mRNA expression showed no significant change compared to untreated THP-1 cells. Conclusions: Given that HIV requires at the cell membrane the presence of both CD4 receptors and co-receptors such as CXCR4 to infect target cells, the reduction of CXCR4 cell surface expression decreases the likelihood of HIV entry into the host cell. This finding provides insight into a potential mechanism underlying the rarity of oral mucosal HIV transmission and highlights the role of commensal bacteria in modulating host susceptibility to viral infections. Acknowledgements: This research was supported by NIAID grants R25AI164610 and P30AI117970.

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Examining Cellular and Viral DNA Replication Dynamics During Virus Infection

Lynnette A. Martínez-Rivera, Namrata Kumar,
Holly Chan, Matthew Weitzman
Division of Protective Immunity, Department of Pathology and Laboratory Medicine,
Children's Hospital of Philadelphia, Philadelphia, PA, USA

Background and Objectives: Herpes simplex virus 1 (HSV-1) is a widespread double-stranded DNA virus that disrupts host DNA replication and induces replication stress. HSV-1 infections are very common amongst children with a 31% seroprevalence in the United States. This study aims to examine the dynamics of cellular and viral DNA replication during HSV-1 infection. Focusing on how HSV-1 replication impacts host genome stability, hypothesizing that HSV-1 accelerates viral DNA replication while inhibiting host replication. Method: We utilized DNA fiber analysis using thymidine analogs (EdU and IdU) to label actively replicating DNA. The Auxin-Inducible Degron 2 (AID2) system was used to degrade host replication machinery (MCM2), and Pritelivir was applied to inhibit viral helicase-primase activity. These approaches enabled us to independently analyze infected cells' host and viral DNA replication dynamics. Results: HSV-1 replication compartments actively incorporated EdU and IdU, demonstrating robust viral DNA synthesis. Viral replication proceeded independently of host replication machinery, as evidenced by the degradation of MCM2 via the AID2 system. Host replication forks slowed during infection, indicating replication stress, while HSV-1 replication forks elongated faster than host forks. Pritelivir inhibited viral replication, confirming the specificity of viral DNA synthesis. Conclusion: HSV-1 accelerates its replication at the expense of host genome stability, inducing replication stress and slowing host replication. These findings provide insight into the mechanisms by which HSV-1 exploits host cellular processes. Future research will explore host factors and antiviral interventions to further elucidate replication dynamics and potential therapeutic targets. Acknowledgments: This work was supported by the Weitzman Lab and the Children's Hospital of Philadelphia Research Institute Summer Scholars Program (CRISSP).

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Persistence and Progression of HPV Infection Among Hispanic Women Living in Puerto Rico: A Longitudinal Analysis

Andrea Cortés-Nazario[1], Angelie Carrión-Vélez[1], Andrea Padilla-Bou[1], Bianca Alonso-Cardona[1], Arianna Villegas-Román[2], Kvrismar González-Castillo[2], Josefina Romaguera[2], Filipa Godoy-Vitorino[1]*
[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Microbiology and Medical Zoology, San Juan, Puerto Rico; [2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Obstetrics and Gynecology, San Juan, Puerto Rico

Background & Objectives: Persistent infections caused by sexually transmitted carcinogenic types of human papillomavirus (HPV) are the leading cause of cervical cancer. While most HPV infections are cleared naturally in young women, the progression, and resolution of these infections remain poorly understood in women. This study aimed to analyze longitudinal variations of HPV and the impact of persistent High-Risk HPV infections among Hispanic women living in Puerto Rico (PR). Methods: We recruited 71 women ages 21-70 visiting gynecology clinics in San Juan, PR (IRB Streamlyne #2290033153) for an initial visit and follow-up visit within one year if presenting Negative Intraepithelial Lesions (NILM) and within six months for High-Grade Lesions (HGSIL). Women were followed across two visits where cervical swabs were obtained for cytology and genotyping. DNA was extracted from cervical swabs for HPV genotyping using a high-resolution SPF10 assay, which amplifies 60 known HPV strains and hybridizes the SPF10 PCR product on the LiPA25, limited to 25 of the most relevant and prevalent genotypes. HPV types and risks groups were evaluated across two visits and across cervical disease status. Results: Of the women initially enrolled,10.53% remained HPV-negative, whereas 47.37% continued to test positive for HPV. Among those who were initially HPV-positive, 36.84% cleared the infection by the second visit. Transitions from High-Risk HPV to both High-Risk and Low-Risk HPV genotypes, as well as from High-Risk genotype to another accounted for 12.82% of the observed changes. Despite the persistence of HPV infections, particularly High-Risk types, 22.81% of the women experienced a regression from High-Risk HPV to a negative status. Conclusions: The factors modulating the persistence and transitions of HPV dynamics are not yet understood. The alteration patterns of HPV infection detected, including both persistence and regression may provide valuable insights for patient monitoring and follow-up. Acknowledgements: This project was funded by the Center for Collaborative Research in Minority Health and Health Disparities (RCMI) 2U54MD007600, NIH-NIGMS programs Alliance U54MD007587 and PR-INBRE 5P20GM103475-17.

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Polysaccharide Peptide as an Immunological Modulator to Halt HIV-1 Progression in CD4+ T-Lymphocytes via Cofilin-1 Downregulation

Abigaíl M. Rivera-Berganzo[2]; Glamaris Rosario-Sanfiorenzo[3]; Giovanni O. Alicea-Pérez[3]; Ileanmarie Santana-Costas[2]; Victoria Bermúdez-Fosse[2]; Nashalie M. Hernández Paniagua[2]; Naiara Hernández[2]; Fabiola I. Colón-Santiago[1]; Khristian R. Belavan Rosado[2];

Betsy Santos[2]; Jeshua J. Colón[2]; Natalia Sánchez Otero; Amanda C. Rivera[2]; Andrea S. Rodríguez De La Rosa[2]; Elaine Ruiz[4]; Eduardo Álvarez-Rivera, PhD[1]
[1]Department of Microbiology and Immunology; [2]Department of Science and Technology, Universidad Interamericana de Puerto Rico, San Juan; [3]Department of Biology, Universidad de Puerto Rico, Bayamón; [4]Department of Medical Images Technology, Universidad Central del Caribe, School of Medicine, Bayamón, Puerto Rico

Introduction: HIV-1 poses a serious threat to adaptive immunity, particularly in CD4+ T-cells. Our recent findings show that polysaccharide peptide (PSP) from *Coriolus versicolor* exhibits potent anti-HIV-1 effects. PSP impacts viral replication and entry by pre-inducing Nuclear Factor Kappa B (NF-κB) and Protein Kinase-R (PKR) through Toll-like Receptor 4 (TLR4). For the first time, we identified PSP's mechanism of HIV-1 restriction as PKR-mediated cofilin-1 phosphorylation, leading to cytoskeletal polymerization and viral entry inhibition in innate immunity. This study aims to explore PSP's role in adaptive immunity, hypothesizing that PSP activates TLR4 and Signal Transducer Activator of Transcription (STAT), inducing interferons (IFN) and antiviral chemokines to disrupt HIV-1 life cycles. Our preliminary data reveals PSP-induced overexpression of key markers, including TLR4, NF-κB, interferon-induced protein (IFN-IP), PKR, cofilin-1, STAT-1, and STAT-2, with no cytotoxicity. This research seeks to establish PSP as potential alternative treatment alongside existing antiretroviral drugs against HIV-1. The findings of this research will pave the way to implement PSP as a significant immune booster to inhibit HIV-1 entry and replication to both healthy and infected individuals respectively. Methods: Jurkat T-cells were treated with PSP (50-1,000 µg) for 6 days to assess PSP working concentration. Viral load assessments with and without PKR inhibition were performed, along with immunoblotting for PKR, TLR4, NF-κB, Cofilin-1, STAT-1, and STAT-2. MTT assays measured cytotoxicity at 3- and 6-days intervals. Results: PSP induced a 73% overall viral restriction (11% using C16: PKR blocker), with overexpression of key markers and no cytotoxicity. Immunoblotting resulted in the overexpression of PKR, TLR4, NFκB, STAT-1, and STAT-2 while significantly downregulating Cofilin-1 in a dose-dependent manner in PSP-treated T-cells. MTT reported no PSP-cytotoxicity during a 3- and 6-days treatment. Conclusion: This study presents PSP's immune-boosting effects in the adaptive immunity with very strong potential as an HIV-1 treatment.
Acknowledgements: The project described was supported by the Universidad Central del Caribe (UCC) Pilot Project Program grant and Title V Pilot Project (Grant # PO31S200104). The PI also thanks Dr. Diana Fernández, Associate Dean of Research and Graduate Studies and the Chairwoman of the department of Microbiology and Immunology, Associate Dean of School of Medicine, Zilka Ríos, for their constant support and assistance of this project.

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Oral Bacteria Associated with Nitrate Reduction in Saliva

Jorge Bermúdez Landa[1], Kai Guo[2], Jairelisse Morales Morales[2], José C. Clemente[3], Kaumudi Joshipura[4], Evangelia Morou-Bermúdez[2]*
[1]Natural Sciences Faculty, University of Puerto Rico, Río Piedras Campus; [2]School of Dental Medicine, University of Puerto Rico, Medical Sciences Campus; San Juan, PR, United States; [3]Department of Genetics and Genomic Sciences, Icahn School of Medicine at Mount Sinai, New York, NY, United States; [4]School of Public Health, Ahmedabad University, Ahmedabad, India

Background: Oral bacteria reduce nitrate (NO3-) to nitrite (NO2-) via Nitrate Reductase (NR), and subsequently to ammonium (NH4+) via Dissimilatory Nitrite Reduction to Ammonium (DNRA). These activities are an essential component of the entero-salivary pathway, and they can impact nitric oxide (NO) metabolism and cardiometabolic health, but the responsible oral bacteria and pathways have not been characterized. Objective: To identify the bacteria associated with NR and DNRA activities in saliva. Methods: A cross-sectional study was conducted using a convenience sample of 144 participants from the San Juan Overweight Adult Longitudinal Study (SOALS). DNRA and NR activities were measured in salivary pellets under aerobic or CO2-enriched conditions. Bacteria taxa were identified and enumerated using 16S rRNA sequencing. Associations between bacteria taxa and DNRA/NR quartiles were analyzed with one-way ANOVA and boxplots. The study was approved by the University of Puerto Rico Human Research Subjects Protection Office Institutional Review Board (IRB #2290032918). Results: Under aerobic conditions, nitrate reduction was significantly associated with bacterial taxa in the order of Clostridiales, specifically in the families of Lachnospiraceae (DNRA p=0.018) and Veillonella (DNRA p=0.037). Under CO2-enriched conditions, the production of ammonium from nitrate (DNRA) was positively associated with the genus Neisseria (p=0.041) and negatively associated with the genus Streptococcus (p=0.012). Nitrite production (NR) was positively associated with the genus Rothia (p=0.005) and the family Pasteurellaceae (NR p<0.001). A GenBank search indicated that Streptococci do not possess genes for nitrate reduction, but they can reduce nitrite via assimilatory pathways; the rest of the identified taxa possessed genes for both nitrate and nitrite reduction pathways. Conclusions: Several oral taxa were positively associated with the production of NO2- or NH4+ from nitrate in saliva except for oral streptococci which were negatively associated with the production of NH4+. Ongoing microbiome analysis will help elucidate the impact of diverse nitrate reduction pathways of salivary bacteria on systemic NO levels and in cardiometabolic health. Acknowledgements: The research reported was supported by the National Institute for Dental and Craniofacial Research under awards number R01DE028195 and R01DE020111 and by the National Institute of General Medical Sciences (NIGMS) of the National Institutes of Health under award number U54GM133807. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

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Impact of Natural Disasters and Pandemics on Hypertension Mortality in Puerto Rico: Analysis from 2015 to 2023

Hillary S. Telemin Vilorio; Isabel Castellanos;
María José Sánchez Muñiz;
Cecilia V. Olmo-López; Oscar A. Lugo Capera, MSc
School of Medicine, Universidad Central del Caribe, Bayamón, PR

This study examines the impact of emergency events, such as Hurricane María and the COVID-19 pandemic, on hypertension-related mortality rates in Puerto Rico from 2015 to 2023. Using data provided by the Puerto Rico Demographic Registry and Vital Statistics, a time series analysis and a generalized linear model with Poisson distribution were applied. Results revealed that year and age group were significant factors, with mortality rates in 2017 (Hurricane María) and during the COVID-19 pandemic showing significant differences compared

to 2015. Six age groups were defined: under 40 years, 40-49 years, 50-59 years, 60-69 years, 70-79 years, and over 80 years. A two-way analysis of variance (ANOVA) found significant differences in mortality rates by both year and age group, highlighting the increased vulnerability of older adults. Emergency periods, characterized by disruptions in healthcare services and increased stress, exacerbate pre-existing conditions like hypertension, raising mortality risks. This study underscores the importance of strengthening disaster preparedness and improving chronic disease management during emergencies. The findings provide a solid foundation for the development of public health strategies aimed at reducing hypertension-related mortality, particularly in crisis settings. IRB approval number: 2024-38

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Hypertensive Disorders During Pregnancy and the Effects on the Fetus Weight at Birth

Keischaly Collazo Aparicio[1]; Omar A. Benítez[1];
María Isabel Hawayek, MD[2]; Alberto De La Vega, MD[2]
[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, Puerto Rico;
[2]University of Puerto Rico, Medical Sciences Campus, Department of Obstetrics and Gynecology, San Juan, Puerto Rico

Background and Objective: During pregnancy, hypertensive disorders such as chronic hypertension and preeclampsia pose adverse effects on both maternal and fetal health. Hypertensive disorders can lead to uteroplacental insufficiency, resulting in impaired fetal growth and low birth weight (LBW) neonates. There is limited research on these effects within Hispanic populations where hypertensive disorders are prevalent. This study aims to establish the relationship between LBW neonates and mothers with hypertensive disorders during pregnancy. These findings aim to improve maternal and neonatal outcomes by enhancing practices and interventions. Methods: A retrospective cohort study was conducted using electronic health records from UDH, involving mothers who gave birth to liveborn infants between 2020 and 2023. Maternal and fetal data, including type of hypertensive disorder, BMI, gestational age, type of delivery, and maternal health conditions, were obtained. Records of 246 patients were included in the analysis divided into hypertensive disorders unrelated to preeclampsia, hypertensive disorders with preeclampsia, and no hypertensive disorders. Results: Forty (16.3%) neonates were of low birth weight (LBW), defined as less than 2500g. Logistic regression unadjusted model suggested that patients diagnosed with hypertension and preeclampsia were almost 1.5 times more likely (OR: 1.47; 95%CI: 0.68, 3.18) to have a LBW neonate compared to patients without hypertension. When adjusting the models for BMI, diabetes, and GA, patients diagnosed with hypertension alongside preeclampsia were just as likely to have a LBW neonate compared to mothers without hypertension (p>0.05). When comparing mothers with hypertension to those without hypertension, the odds of having a LBW neonate were similar (OR: 0.96; 95%CI: 0.33, 2.76). Conclusion: Overall, the findings suggest that having a hypertensive disorder during pregnancy within the Hispanic population, does not lead to a LBW neonate. Further exploring and evaluating the Hispanic population is imperative for future orientation and recommendations in an increasingly diverse population. Approved by IRB: 2402194437A002.

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Statistical Analysis of Mortality Due to Renal Disease and Associated Causes in Puerto Rico During Periods of Emergency (2015-2023)

Oscar Andrés Lugo, José Encarnación, Carlos Pérez, Paola Rivera
Universidad Central del Caribe, School of Medicine, Bayamón, PR

Background & Objectives: The relationship between renal disease and mortality during emergency periods is an understudied area, particularly in Puerto Rico. The impact of emergency events, such as hurricanes and earthquakes disrupt healthcare systems and exacerbate chronic conditions, ultimately leading to higher mortality rates. This research seeks to assess the role of renal disease in mortality trends and understand its broader implications on the health of Puerto Rican populations. Methods: This scientific research analyzed mortality data from acute kidney disease (AKD) and chronic kidney disease (CKD) collected monthly between 2015 and 2023, provided by the Puerto Rico Registry of Demography and Vital Statistics. Statistical significance was determined by performing an analysis of temporal series, hypothesis testing, analysis of variance (ANOVA), and generalized linear models (GLM). Results: Mortality data for AKD, CKD, and their combined outcomes were evaluated using a two-way ANOVA, considering the effects of Year, Age, Month, and Gender. Interactions between Year and Month, Year and Age, and Year and Gender were also assessed. Across all three causes of mortality, significant differences were observed concerning the variable of Year ($p < 0.05$). However, for CKD, Month did not show a significant effect ($p > 0.05$), indicating no substantial monthly variation in CKD-related deaths. A generalized linear model with a Poisson distribution was implemented, incorporating the same variables (Year, Month of Death, Gender, and Age). This model demonstrated statistical significance, further supporting the observed trends in mortality data. Conclusion: The findings demonstrate a significant difference in mortality trends when analyzing Year for acute and chronic kidney disease during the period 2015–2023. Approved by IRB.

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Modified Rabies Virus Glycoprotein Peptide Increases Gold-liposome Internalization in Glioblastoma Cells

Diego García Ortiz[1], Annelis Sánchez[2], Pablo E. Vivas-Mejía[1,2]
[1]University of Puerto Rico, Medical Sciences Campus, Department of Biochemistry, San Juan, Puerto Rico;
[2]University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico

Background & Objectives: Glioblastoma (GBM) is the most aggressive of primary brain tumors, with an average survival rate of 12 to 15 months after diagnosis. The current standard treatment, known as the Stupp regimen, involves surgery followed by a combination of chemotherapy (Temozolomide) and radiotherapy. However, the prognosis for GBM patients has not significantly improved, highlighting the urgent need for new therapies to enhance both life expectancy and quality of life. Several studies have shown that the deregulation of microRNAs, which are non-coding RNAs involved in post-transcriptional regulation, plays a critical role in GBM

proliferation, drug resistance and tumor maintenance. Specifically, microRNA-92b (MiR-92b) is upregulated in GBM patients and cell lines compared to controls. Targeting MiR-92b with Oligonucleotide MicroRNA Inhibitors (OMIs) has been shown to reduce cell proliferation and tumor growth in a subcutaneous GBM mouse model. The major challenge in GBM treatment is delivering these OMIs across the Blood-Brain Barrier (BBB), which protects the brain from harmful substances. To address this, we utilized the Rabies Virus Glycoprotein (RVG) peptide, which binds to nicotinic acetylcholine receptors on GBM and BBB cells. Methods: We modified the amino acid sequence of RVG peptides and conjugated them to nanoliposomes. Concurrently, we conjugated OMIs to 5 nm gold liposomes to create spherical nucleic acids (SNA) and encapsulated these SNAs within RVG-liposomes. Results: Our results demonstrated that GBM cells incubated with these modified nanoparticles showed increased efficiency in internalization compared to those with unmodified RVG peptides. Conclusions: These findings suggest that our novel RVG-modified nanoparticles have significant potential for crossing the BBB and improving GBM treatment. Acknowledgements: We would like to acknowledge the NIGMS/NIH R16 Sure Grant #1R16GM145558-03 (PEVM), the UPR Comprehensive Cancer Center, and the G-RISE # 1T32GM14840601 (DGO).

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A Multi Decade Analysis of Substance Overdoses in Puerto Rico

Yariel Gómez-Hernández, BS[1]; Francisco Dávila-Toro, MD[2]
[1]School of Medicine, University of Puerto Rico;
[2]Institute of Forensic Sciences, Universidad Central del Caribe

Introduction: Drug overdoses have become one of the leading causes of death globally, with synthetic opioids as the most prevalent offenders. Puerto Rico has had circumstances that have likely increased rates of substance use, such as hurricane María and associated socioeconomic hardships, but thorough analyses are absent. Therefore, it is relevant to determine whether there has been an increase in illicit drug-overdose fatalities and how the trends have compared over time. Methods: Data was acquired from the Institute of Forensic Sciences for the years 2003, 2013 and 2023. It was filtered to include only accidental overdose deaths due to illicit substances. Frequencies were obtained for single and multiple substance fatalities across the aforementioned years. This categorical analysis was also done for sex, age and municipality variables. Results: The total number of cases increased from 280 in 2003 to 623 in 2023. The combination of cocaine and opioids was the most common agent in 2003 and 2013. While cocaine was the most frequent individual drug, in 2023, fentanyl became the most prevalent, being involved in 85% of all deaths. This year also showed the widest array and largest combinations of substances. Gender distribution is skewed heavily towards males across all years, though there has been an upward trend in female cases, from 7% to 12%. The average age has increased from 36.95 to 42.47. San Juan was the most prevalent municipality every year, with Caguas and Ponce also being among the most frequent locations. Conclusion: Puerto Rico has been experiencing an increase in drug related deaths for the past decades, especially involving fentanyl, indicating current treatment and prevention options may be inadequate. Further studies that investigate past drug use and current aid for substance users may help elucidate strategies to better handle this ongoing crisis. Acknowledgments: The study was made possible with the aid of the Institute of Forensic Sciences.

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Access to Care: Examining Wait Times for Health Specialist Appointments Across Puerto Rico's Medical Specialties and Regions

Isabel Castellanos-Castillo; María José Sánchez; Cecilia V. Olmo Lópeza; Hillary S. Telemin Vilorioa; Jerry Cruz-Rodríguez; Gabriel A. Jiménez; Bárbara Riestra Candelaria, PhD
School of Medicine, Universidad Central del Caribe, Bayamón, PR

Background and Objectives: Puerto Rico faces a critical healthcare challenge, with the number of physicians decreasing from 14,500 in 2009 to approximately 9,000 in 2020. The physician shortage has significantly impacted access to care, as over 80% of adult patients reported wait times exceeding four weeks to consult specialists in 2022. The objective of this study is to assess waiting times for new patient appointments across six major medical specialties: Physiatry, Allergy and Immunology, Endocrinology, Orthopedics, Neurology, and Rheumatology, as well as to identify regional disparities in access to care. Methods: Over one year, data were collected from 193 clinics across Puerto Rico. Information was obtained on new patient appointment wait times (in weeks), changes from 2020–2022, and appointment request volumes. Clinics were categorized by specialty and grouped into seven regions: Arecibo, Bayamón, Caguas, Fajardo, Mayagüez, Metropolitan Area, and Ponce. Data analysis utilized ANOVA to determine significant differences among specialties. Results: Analysis revealed significant disparities in waiting times across specialties. Endocrinology exhibited the longest average wait time at 18 weeks, followed by Neurology at 15 weeks. Orthopedics and Physiatry reported shorter wait times of 7 and 6 weeks, respectively. Substantial delays were observed across all specialties, impacting on timely care delivery. Conclusion: The findings highlight a systemic healthcare crisis in Puerto Rico, with extended wait times particularly severe in Endocrinology and Neurology. Gaps in chronic disease management and regional disparities emphasize the need for immediate interventions. Addressing inefficiencies and bolstering the healthcare workforce are critical steps toward improving access to care and health outcomes across the Island.

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Salud y Comunidad: Un Camino hacia la Autosuficiencia para Sobrevivientes de Violencia de Género

Luisa Pérez, María del Mar López Berríos, Gabriela Algarín Zayas, Marianyoly Ortiz Ortiz, José Cordero
Fideicomiso de Salud Pública de Puerto Rico, un programa del Fideicomiso para Ciencias, Tecnología e Investigación de Puerto Rico

Introducción y Objetivos: La violencia de género representa una problemática crítica en Puerto Rico, afectando a seis de cada 10 mujeres, según el Observatorio de Equidad de Género de Puerto Rico (2024). Este proyecto fue diseñado con el propósito de brindar herramientas individuales y comunitarias a 170 participantes de la organización Casa Juana en Comerío. Su objetivo principal fue mejorar la calidad de vida de las participantes, facilitar el acceso a servicios de salud y fortalecer habilidades para alcanzar una autosuficiencia sostenible.

Método: Se implementó un enfoque integral que combinó orientaciones personalizadas, talleres comunitarios y colaboraciones con organizaciones especializadas. Las áreas de trabajo incluyeron salud integral, seguridad alimentaria e independencia económica. Resultados: A través de evaluaciones de satisfacción y registro de servicios completados se observó que el proyecto logró una reducción significativa de barreras para acceder a servicios de salud, un mayor conocimiento sobre recursos comunitarios y un aumento en la confianza y el empoderamiento de las participantes para manejar sus necesidades. Adicionalmente, se evidenció una mayor integración de las mujeres en actividades grupales y en la implementación de estrategias para alcanzar sus metas personales. Conclusión: Este modelo implementado, que combina atención personalizada, capacitación práctica y el fortalecimiento de redes comunitarias, ha demostrado ser efectivo en la transformación de las condiciones de vida de las sobrevivientes de violencia de género. Esta experiencia destaca la relevancia de estrategias sostenibles y colaborativas para fomentar la equidad, la autosuficiencia y el bienestar integral. Además, su potencial de replicabilidad lo posiciona como un enfoque prometedor para avanzar en la justicia social y la transformación comunitaria en diversos contextos. Reconocimientos: Casa Juana Colón Apoyo y Orientación a la Mujer Inc.

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Acute Vascular Distress Syndrome (AVDS) of Bronchial Mucosa in Post Coronavirus Disease 2019 (COVID-19) Infection

Diane L. Mankin-Cruz, MD; William J. Ramos-González, MD; Frankie Alvarado, MD
Pavía Hospital, Internal Medicine Department, Pulmonary Disease Section, Arecibo, Puerto Rico

Background: The Coronavirus disease 2019 (COVID-19) has been linked to diffuse alveolar damage and membrane disruption associated to the host inflammatory response of the immune system and the cytokine storm as it has been reported. Patients may experience respiratory failure as result of perivascular inflammation and endothelial damage in the presence of intracellular viral infection. Coagulation disorders also play part in the viral pulmonary process with fibrin deposits and thrombosis resulting on alveolar capillaries occlusion with secondary angiogenesis on bronchial mucosa. The role of angiotensin-converting enzyme 2 (ACE2) expression on endothelial cells is also important. ACE2 receptors are associated with changes in the vascular anatomic structure, as one of the vascular consequences of COVID-19, leading to increase pulmonary vascular flow, creating a right to left shunt which is suggested to be associated with hypoxemia. Vascular flow increment in COVID-19 patients could be associated with Acute Vascular Distress Syndrome (AVDS) as reported in previous scientific publications. Purpose: To present the clinical case report of long COVID-19 complications associated with AVDS in our patient for whom bronchoscopy was performed. Case description: Case of a 44-year-old female patient admitted due to diagnose of refractory bronchitis. Patient with three previous COVID-19 infections and nonreactive COVID-19 test on admission to hospital. Diagnostic white light bronchoscopy procedure was performed; hypervascularization of the bronchial mucosa was observed, for which AVDS as long COVID-19 complication was diagnosed. Conclusions: As suggested by previous scientific articles, we conclude that COVID-19 has a vascular component on bronchial mucosa. AVDS can be seen in acute COVID-19 infection as reported in previous clinical case reports and it also plays an important role as a chronic complication of long COVID-19, as seen in our patient. Acknowledgments: We would like to thank our patient for the disposition and agreement to participate in the clinical case report, helping us to contribute to medicine and science.

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Mental Health Impacts of Abortion Restriction and Denial: A Scoping Review

Claudia S. Rivera Barbeito[1], Amanda Mele[2], Alyssa Grimshaw[3], Ariadna Forray[2]
[1]University of Puerto Rico, Medical Science Campus, School of Medicine;
[2]Yale University, School of Medicine, Department of Psychiatry;
[3]Harvey Cushing/John Hay Whitney Medical Library at Yale

Background: The overturning of Roe vs. Wade has fundamentally altered the framework of reproductive care in the United States, leading some states to enact restrictions and full bans on abortions. The full impact of these restrictions on the mental health of women and pregnant people remains to be seen. This is a scoping review of the available literature examining the relationship between mental health and abortion restrictions or denial. Methods: To identify studies that examined the relationship between mental health and abortion restrictions or denial using validated clinical scales we searched the following databases, APA PsycInfo, Cochrane Library, Google Scholar, Ovid Embase, Ovid Medline, Scopus, and Web of Science Core Collection, using a combination of keywords and controlled vocabulary including abortion, denial, mental health, and tests/measures. Results: Out of 5724 abstracts screened 42 met criteria for full-text review, out of which 15 were included for extraction. The 15 studies had a range of population from 77 to 4988 patients who sought an abortion in different healthcare systems including the USA, Brazil, Israel and Curacao. Five of the 15 papers showed that psychiatric symptoms such as depression and anxiety worsened after denial. Eight papers reported that receiving an abortion did not lead to worsening psychiatric symptoms including depression, anxiety, PTSD or suicidal ideation. Conclusions: Abortion denial was found to lead to higher levels of anxiety and depression. This highlights the importance of health care policy and laws that protect bodily autonomy and access to reproductive care. Acknowledgements: Yale University School of Medicine Department of Psychiatry, Harvey Cushing/John Hay Whitney Medical Library at Yale.

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Chylolymphatic Mesenteric Cyst: A Rare Clinical Entity in the Differential of Cystic Abdominal Masses: A Case Report

Coral Martes Villalobos, BS[1]; Luar A. Rodríguez Galves, BS[1]; Heriberto Casanova Rodríguez, MD[1,2]
[1]Universidad Central del Caribe School of Medicine, Bayamón, Puerto Rico;
[2]Doctor's Center Hospital, Carolina, Puerto Rico

Purpose: Chylolymphatic mesenteric cysts are rare intra-abdominal tumors more prevalent in the pediatric population, with an incidence of 1:20,000 in children and 1:100,000 in adults. They arise from lymphatic malformations or dilated lymphatic vessels and usually contain an independent blood source. They present with abdominal pain, mass effect, or complications such as volvulus, bowel obstruction, or infection. Due to their

nonspecific presentation, they are often misdiagnosed, delaying appropriate management. This case highlights the importance of early diagnosis and surgical intervention in preventing complications related to this rare pathology. Case Description: A 37-year-old female with no significant past medical history presented with five days of gradual-onset umbilical pain radiating to the epigastric and pelvic regions, associated with nausea and headache. Imaging studies identified a 5.3 × 5.8 cm cyst with internal septations and peripheral stranding. Described as a nonspecific mesenteric lesion, including urachal cyst and enteric duplication cyst as possible differential diagnoses. The patient underwent exploratory laparotomy with complete cyst enucleation. Histopathologic examination confirmed a simple mesenteric cyst with a fibrous connective tissue wall and a single epithelial layer, with surrounding chronic inflammation. Gross examination revealed a 5.6 × 5.2 × 3.7 cm cyst containing brown fluid and a separate 1.0 × 1.0 × 10 cm cystic cavity. The combination of imaging studies, pathology report, and intraoperative findings strongly supported the diagnosis of a chylolymphatic mesenteric cyst. The patient had an uneventful recovery and was discharged in stable condition. Conclusion: Chylolymphatic mesenteric cysts should be considered in patients with chronic abdominal pain and a palpable mass. Early imaging and surgical excision are crucial for preventing complications and ensuring a definitive diagnosis. This case emphasizes the importance of distinguishing intra-abdominal cystic lesions and highlights the role of surgery in effective management.

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Anterior Displacement of the Anus: A Case Report on Clinical Presentation and Management.

Rubi Ortiz, MD[1]; Marianna Martini, MD[1]; Norma Claudio, MD[2]
[1]San Juan City Hospital, Department of Pediatrics, San Juan, Puerto Rico;
[2]San Juan City Hospital, Department of Neonatology, San Juan, Puerto Rico

Purpose: The objective of this case report is to present the clinical diagnosis and management of anterior displacement of the anus (ADA), a congenital anomaly part of the spectrum of anorectal malformations, that is more common in females and is often overlooked during routine newborn exams. This case underscores the importance of early identification using the Anal Position Index (API) and highlights the potential functional and cosmetic outcomes of timely surgical correction. Case Description: A term female newborn, adequate for gestational age, was delivered via C-section at 39 2/7 weeks of gestational age (WGA). The mother, a 26-year-old G4P3 with a history of hypothyroidism, had a pregnancy complicated by oligohydramnios. Patient APGAR scores were 8 and 9 at 1 and 5 minutes respectively, and vital signs within expected ranges. Physical examination was unremarkable except for an Anogenital Position Index (API) of 0.33, which is below the diagnostic cutoff for females, finding consistent with anterior displacement of the anus. Renal and abdominopelvic ultrasounds revealed no additional anomalies. The nursery course was uncomplicated, with normal stooling and voiding observed. The patient was transferred to the surgical team to evaluate and plan corrective anoplasty. Conclusion: This case highlights the critical role of thorough newborn examinations and the use of the API in diagnosing ADA. Surgical correction, when performed early, ensures improved functional and cosmetic outcomes. Long-term follow-up is essential to monitor bowel function and address potential complications like constipation or fistula formation. Future research should focus on understanding ADA's genetic and embryological origins and evaluating long-term surgical outcomes. Acknowledgments: None.

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Pregnancy and Management of Ischemic Stroke: A Case Report

Esteban R. Rivera Rivera, BS[1]; Alexander I. Acevedo Jetter, BS[1]; Alejandro E. Cedeño Morán, BS[1]; Rodolfo E. Alcedo-Guardia, MD[2,3]
[1]University of Puerto Rico, School of Medicine, San Juan, Puerto Rico;
[2]University of Puerto Rico, School of Medicine, Department of Neurosurgery, San Juan, Puerto Rico;
[3]Mennonite Health System, Department of Neuroscience, Caguas, Puerto Rico

Purpose: Stroke is the leading cause of disability and the fifth leading cause of death nationwide with large vessel occlusions (LVO) accounting for over a quarter of all strokes. LVO risk increases with multiple factors such as diabetes, hypertension, and hypercoagulable states including pregnancy. Maternal ischemic strokes are a rare but severe complication that occurs in approximately 12 out of 100,000 pregnancies. Stroke management in pregnancy lacks well-established guidelines due to the exclusion of pregnant women from clinical trials. Case reports of Alteplase (TPA) and mechanical thrombectomy (MT) use during pregnancy suggest potential safety and efficacy; however, novel agents such as Tenecteplase (TNK) have less evidence. Case Description: We present the case of a 27-year-old woman, G5P2A2, at 8 weeks gestation who presented with sudden onset seizure-like activity, expressive aphasia, and right-sided hemiparesis, NIHSS 21. The patient was treated at an outside hospital where a non-contrast CT revealed no hemorrhage, prompting IV thrombolysis. TNK was administered without symptom resolution. The patient was transferred to our center for further management. CT perfusion demonstrated occlusion of the left posterior middle cerebral artery (MCA) territory, and CT angiography demonstrated persistent left M2 occlusion. The patient underwent successful MT, with post-procedure imaging showing no residual occlusion. The following day, the patient was neurologically intact. At 20 weeks' gestation the patient and fetus did not experience any further complications. Conclusion: To our knowledge, this represents the first case of LVO in pregnancy treated with tenecteplase and MT in the first trimester. As for the patients' last obstetric follow-up, the fetus remains well, and the mother achieved complete recovery. This patient and fetus will continue to be closely monitored for complications. More data is needed to determine whether TNK with MT is a safe alternative for pregnant patients presenting with LVO during the first trimester.

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Inflammatory Bowel Disease in Hermansky-Pudlak Syndrome Patients: A Descriptive Study

Jesús G. Rivera Román, María López Avilés, Natalia Hernández Cuevas, Gretchen Ríos Grant, Ricardo Marrero Torres, Esther A. Torres
University of Puerto Rico, School of Medicine, Department of Medicine - Gastroenterology, San Juan, Puerto Rico

Background: Hermansky-Pudlak Syndrome (HPS) is a rare autosomal recessive disorder with oculocutaneous albinism and bleeding due to impaired platelet aggregation. HPS type 1 has a described frequency of 1:1800 in the northwestern region of Puerto Rico. The relationship between Hermansky-Pudlak Syndrome (HPS) and

inflammatory bowel disease (IBD) is limitedly studied. Approximately 15% of HPS patients develop granulomatous Crohn's-like colitis. This study aims to describe a group of HPS patients with concomitant IBD in Puerto Rico. Methodology: This descriptive study explores Puerto Ricans with HPS-IBD recruited from multidisciplinary clinics. Demographic and medical data were collected after informed consent. Variables examined included sex, age at the time of IBD diagnosis, IBD phenotype, HPS-related diseases, surgery for IBD, medications, family history of both conditions and extra-intestinal manifestations (EIM). Descriptive analysis included mean and standard deviations. This study is approved by the UPR MSC-IRB. Results: Eighteen patients with HPS-IBD are reported (mean age 37 years old; 10 males; 8 females). Seventeen patients were genotype 1 and one was unknown. The mean age at the time of IBD diagnosis was 20±11 years. Nine were diagnosed at ≤ 16 y/o, 8 were diagnosed between 17-40 years, and two patients were in the range of early onset IBD (< 10 years old). Twelve patients had perianal fistulizing disease. Most patients (61%) had surgery for IBD. Most patients (14) were using biologics and seven were using immunomodulators. The family history of HPS was reported in 33.3% (6) and of IBD in 16.7% (3). Conclusions: Our findings demonstrate that subjects with HPS, specifically genotype 1, have a more severe presentation of IBD, as evidenced by an earlier age of diagnosis, surgical interventions and use of biologic therapy. Rectal bleeding in HPS patients should not be entirely attributed to bleeding diathesis but must be further evaluated for early identification of IBD. IRB Approved (Protocol #: 2090034837R003, Date: 01/18/2025).

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Strengthening Superficial Small Water Systems in Rural Puerto Rico: A Community Advisory Board as an Approach to Increase Climate Adaptation

María D. Ramos-Rosado, BS[1]; Karen Andújar-Aponte, ME[1]; Nicole M. Marrero-Vázquez, BA[1]; Coralys Ginés-Torres, BS[1]; Zaymarie Chévere-Delgado, BS[1]; Leslie Maas-Cortés, MHS[1]; Omar Pérez-Figueroa, PhD[1]; Graciela Ramírez, PhD[2]; Jared Bowden, PhD[3]; Jay Levine, PhD[3]

[1]Puerto Rico Public Health Trust, a program of the Puerto Rico Science, Technology and Research Trust;

[2]Center for Environmental Education, Conservation and Research (CECIA) of the Interamerican University of Puerto Rico;

[3]North Carolina State University

Background and Objectives: Puerto Rico has 235 small water systems (SWS) operated by communities, 32% of which rely on surface water and are highly vulnerable to the changing climate conditions that affect their water quality and quantity. These systems face environmental health challenges exacerbated by extreme weather events. To address this issue, the Resilient Communities During Drought Project (CRESe, for its acronym in Spanish), partnered with 10 communities reliant on surface SWS to form a Community Advisory Council (CAC) with representatives from each community. The members were chosen through a participatory process by community residents. The objectives of this initiative are: 1) Understand the needs, and challenges faced by community leaders managing SWS, 2) To foster peer-to-peer learning among SWS members, and 3) To develop planning tools tailored to the specific challenges of each SWS. Methods: CAC members participate in monthly meetings with CRESe staff to discuss topics related to community engagement and to receive training and

technical support. These meetings also provide a platform for members to share their insights and experiences, contributing to the community-based participatory research conducted by the CRESe project. In recognition of their time and efforts, members receive a monthly stipend. This collaborative approach ensures community voices are captured, fostering collaboration and proposing actionable strategies to address health risks. Results: As part of this project, nine monthly meetings have been held, during which members worked on key documents, including community hazard vulnerability assessments, SWOT analyses, and community descriptions. These documents form essential components of a comprehensive resilience plan customized to each community to enhance climate adaptation through practical approaches. Conclusion: This model of multi-community advisory boards exemplifies an effective approach that fosters relationships between research projects and communities, making collaborative efforts more impactful and inclusive. Acknowledgments: This effort is funded by EPA-G2021-STAR-H1, Grant No. 84047601: Community-based research to address cumulative health effects of drought on rural communities who operate drinking water aqueducts in Puerto Rico.

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HIV Awareness among a Cohort of First-Year Medical Students in Puerto Rico

Sofía Rey-Garaycoa; Yarelis Martínez Rodríguez; Guillermo Martínez Hernández; Juan Salichs Gelabert; Linda Rose Pérez Laras, DrPH; Peter Barbosa, PhD
San Juan Bautista School of Medicine, Caguas, Puerto Rico

Background & Objectives: Puerto Rico has one of the highest per-capita rates of human immunodeficiency virus (HIV) infections. Despite that, the island also exhibits the lowest prescribed prophylaxis medication to prevent new infections. This study assesses the basic knowledge and awareness of HIV among San Juan Bautista School of Medicine (SJBSM) first-year medical students. Quantifying the degree of HIV knowledge of first-year medical students at SJBSM and correlating demographic factors provides insight into the preparedness of future physicians of Puerto Rico and reflects HIV education on the island. Methods: This cross-sectional study collected data using an anonymous web-based survey in the REDCap platform. The survey was completed by 28 (40%) of students registered as first-year students in the MD program at SJBSM. There were three survey sections: (1) demographics, (2) general HIV knowledge as assessed by a nationally validated instrument, and (3) recent HIV preventive measures. A multiple linear regression analysis was conducted to predict the HIV Knowledge Questionnaire Score using the predictor variables identified by a backward stepwise analysis using a p-value of 0.1. Results: Variables such as being raised in the mainland USA, female gender, and bisexuality are all significantly associated with higher HIV knowledge ($p = 0.009$, $<.001$, 0.008, respectively). Students with prior work experience as Medical Assistants ($p = 0.042$) and Tutoring/Teacher Assistants ($p<0.05$) scored significantly lower on HIV knowledge than those without prior work experience. Knowledge of preventive measures, such as awareness of pre-exposure prophylaxis, was limited. Conclusions: This study reveals disparities in HIV knowledge among SJBSM first-year medical students influenced by gender, upbringing, and sexual orientation. Findings emphasize the need for targeted educational strategies to address these gaps, enhancing the preparedness of future physicians and improving HIV prevention efforts in Puerto Rico. IRB Approved: Protocol #: EMSJBIRB-13-2024 (11/06/2024). Acknowledgments: None.

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Enhancing Volunteer and Patient Experiences at Padre Venard Community Clinics Through Feedback Survey

Priamo Pichardo, Alondra Soto, Antonio Morales, Gabriel Camareno
Universidad Central del Caribe, Bayamón, Puerto Rico

Background and Objectives: Clínicas Padre Venard is a student-run health clinic in Old San Juan, Puerto Rico, that has provided free primary care to underserved, uninsured, and houseless individuals since 1999. In November 2024, the clinic implemented a tailored feedback survey aimed at assessing volunteer experiences and identifying strategies to optimize clinic logistics, resource allocation, and patient care. The objective of this project is to gather insights from clinic's volunteers to improve operations, strengthen team dynamics, and foster professional development while maintaining high-quality care for the community. Methods: A post-session survey was distributed to volunteers via QR code after each clinic. It included variables such as demographics, clinical tasks performed, logistics, resource availability, patient interactions, professional growth, and team collaboration. Descriptive statistics were employed to analyze responses, identify trends, and prioritize areas requiring improvement. Results: Preliminary findings indicate that volunteers, predominantly medical students at various stages of their education, reported an average enhancement in clinical skills (4.8/5). Organizational efficiency and communication were rated highly (4.9/5), with most volunteers feeling well-supported by their teams. Key suggestions for improvement include enhancing patient flow coordination and record-keeping systems. Resource shortages, including hygiene supplies, clothing, and shoes, were frequently reported. Patient satisfaction perceived was exceptionally high (4.9/5), reflecting the clinic's dedication to quality care. Conclusions: This survey highlights the clinic's strengths in team collaboration, clinical learning, and patient care while identifying opportunities to optimize resource management, record organization, and patient flow coordination. Implementing these improvements will ensure that Clínicas Padre Venard continues to foster meaningful volunteer experiences and deliver high-quality care for the community.

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Assessing the Clinical Management of Acute Otitis Externa: A Retrospective Cross-Sectional Study

Lawrence F. Oppenheimer Vélez, MD[1]; Javier A. Vilá Ortiz, BS[1]; Carlos E. Crespo Borges, BS[2]; Gabriela C. Pomales Díaz, BS[2]; Edgar del Toro Diez, MD[1]; Jeamarie Pascual Marrero, MD, MPH[1]
[1]University of Puerto Rico School of Medicine, Otolaryngology–Head & Neck Surgery Section, Surgery Department, San Juan, Puerto Rico; [2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, Puerto Rico

Objective: Assess the clinical management of patients presenting with AOE at the Puerto Rico Medical Center (PRMC). Study Design: Retrospective cross-sectional study. Methods: A retrospective review of AOE patient medical records (n=226) was conducted at the PRMC. Eligibility criteria were based on ICD-10 diagnosis between January

2018 to December 2022. Data on patient demographics, clinical presentations, and management strategies were analyzed. Results: Preliminary findings indicate significant mismanagement of patients presenting with AOE. Specifically, an 89% misdiagnosis rate was found upon specialist evaluation at our quaternary care center. AOE misdiagnosis due to suspected acute mastoiditis (AM) alone accounted for approximately 63% of these redundant referrals. Radiologic-detected mastoid effusion was the primary reason cited for suspected AM. All misdiagnosed patients had completed unnecessary oral antibiotic regimens and CT-imaging. Conclusions: This study highlights the importance of a careful and comprehensive evaluation of patients presenting with AOE to mitigate healthcare burden and costs associated with its misdiagnosis and mismanagement. The use of aural toileting, ototopical agents, and analgesics are the recommended first-line treatments for AOE upon diagnosis, whereas oral antibiotics and CT-imaging are contraindicated due to the increased risk of antibiotic resistance and damage to local radiosensitive organs. While mastoid effusion is a common radiologic finding among AOE patients, its clinical significance shouldn't be over-interpreted barring additional definitive evidence of AM. Future work may address a more comprehensive diagnostic algorithm for primary care centers and emergency departments to enhance clinical decision-making. IRB Approved: Protocol #: 2301072827 (11/3/2023). Acknowledgements: No conflicts of interest. IRB approved study.

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Patients Treated with Intravenous Thrombolytics at University of Puerto Rico Hospital Emergency Department

Víctor Ramos de Jesús, BS, MS-IV[1]; Jael E. Camacho Matos, MD, PGY-2[2]; Juan González Sánchez, MD[2]*
[1]UPR, Medical Sciences Campus, School of Medicine;
[2]Emergency Medicine Department, UPR – Medical Sciences Campus, School of Medicine
[*]Principal investigator
Corresponding author: jael.camacho@upr.edu

Background: Current guidelines recommend the use of intravenous thrombolytics in a timely manner for the management of acute ischemic stroke (AIS) patients. Recent studies have demonstrated that Tenecteplase, a genetically engineered version of alteplase, with faster onset of action and longer half-life, have non-inferior results when compared to alteplase. In this study we aimed to identify complications after treatment with Tenecteplase in the UPR Hospital Emergency Department. Methods: We performed a quality improvement project that included de-identified data from hospital pharmaceutical department that included a list of patients treated with Tenecteplase for AIS for a 3-year period. We then documented number of reported cases with complications and their description. Results: In a 3-year period a total of 28 patients received Tenecteplase for the treatment of AIS. Of the cases evaluated only one case (3.6%) reported to have developed an adverse effect. As per reported records, patient developed angioedema of right upper extremity. This demonstrates a complication free rate of 96.4% for patients treated with Tenecteplase at hour University Hospital Emergency Department. Conclusion: Our findings indicate that Tenecteplase is a safe option for the treatment of AIS, with a low complication rate consistent with expected rates of less than 5%. This supports the growing evidence that Tenecteplase is a viable and safe alternative to alteplase in AIS management. Further research with larger sample sizes is recommended to validate these findings and optimize AIS treatment protocols. Acknowledgement: To the University of Puerto Rico Hospital's Pharmaceutical Department for assisting us with this project.

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Spongiotic Gingival Hyperplasia in an 8-year-old Child, Male with Multiples Dental Caries in Operating Room: a Case Report

Heidi Sánchez-Montero, PGY-1[1]; Aarón Ávila-López, PGY-2[1]; Yolanda Heredia-Matos[1]; Viviana Acevedo-Rodríguez[1]; Ferdinand Lugo[2]; Danny Mora[2]; Camila Pérez-López[1]
[1]General Practice Residency, School of Dental Medicine, University of Puerto Rico;
[2]UPR School of Dental Medicine, Surgical Sciences Department

Background: Localized spongiotic gingival hyperplasia (LJSGH) is a gingival is a benign lesion proliferation of non-keratinized stratified squamous epithelium with evident spongiosis, exocytosis leukocytes, and dilated vessels with varying numbers of inflammatory cells; occurring in young patients as gingival erythema and overgrowth, typically localized on the gingiva of maxillary incisors. Case description: An 8-year-old boy with a gingival painless lesion, multiple dental caries, and heavy plaque, which had appeared spontaneously one year before, was treated at the Hospital Dental Clinic of our Graduate Program of General Practice Residency (GPR) at Hospital Federico Trilla in Carolina. Intraoral examinations showed a well-defined, red gingival overgrowth involving the left maxillary lateral incisor and the marginal gingiva. The clinical diagnosis of LJSGH was made due to its pathognomonic aspect. Periapical radiographs of the adjacent area did not show any alteration of bone or teeth. Based on these findings, the differential diagnosis was a non-neoplastic proliferative process or a factitious injury. An excision biopsy was performed, and a histopathologic diagnosis was conclusive for JSGH. The surgical excision was done using a Gemini Laser in all areas where the lesion was located. The lesion was irrigated with chlorhexidine gluconate. The patient recovered one week after the operating room, where good healing was found. Clinical observations and plaque control were done in follow-up visits to prevent gingival recession defects. Clinical implications: This case highlights the importance of early intervention in managing dental caries and associated gingival conditions in children. Proper oral hygiene and regular dental visits prevent such conditions and promote oral health.

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Differential Activation of Epithelial-Mesenchymal Transition Pathway in BRAF vs. NRAS Mutated Metastatic Melanoma

Víctor J. Raimundi Santos, BS, MDc[1]; Tyrel Porter, BS, MDc[2]
[1]School of Medicine, Medical Sciences Campus, University of Puerto Rico;
[2]School of Medicine, Universidad Central del Caribe

Background and Objectives: Melanoma, a leading cause of skin cancer mortality, is predominantly driven by mutations in the BRAF and NRAS genes, affecting 40-60% and 10-25% of cases, respectively. These mutations activate distinct signaling pathways that influence tumor progression and response to therapy. The epithelial-mesenchymal transition (EMT) pathway, known to facilitate metastasis, may be differentially regulated in BRAF- and NRAS-mutated melanomas. This study investigates EMT pathway activation in these subtypes to better understand their metastatic mechanisms and clinical implications. Methods: RNA sequencing and clinical data from metastatic

melanoma samples were obtained from The Cancer Genome Atlas (TCGA). A cohort of 361 samples, including 173 BRAF-mutated and 100 NRAS-mutated cases, was analyzed. Gene Set Enrichment Analysis (GSEA) was performed to assess EMT pathway enrichment using the HALLMARK_EPITHELIAL_MESENCHYMAL_TRANSITION gene set. Kaplan-Meier survival analysis compared overall survival between mutation groups. Enrichment scores (ES), normalized enrichment scores (NES), and statistical significance were evaluated using nominal p-values. Results: BRAF-mutated melanomas exhibited significant EMT pathway activation (NES = 1.820, p = 0.019, FDR = 0.237). In contrast, NRAS-mutated melanomas showed no significant EMT enrichment (NES = -1.067, p = 0.387). Survival analysis revealed better outcomes for BRAF-mutated patients (median survival: 112.6 months) compared to NRAS-mutated patients (68.15 months; p = 0.0469). Conclusions: BRAF-mutated melanomas demonstrate heightened EMT activation, contributing to metastasis through the MAPK/ERK pathway, while NRAS-mutated melanomas likely utilize alternative mechanisms. These findings underscore the need for mutation-specific therapies, with potential EMT-targeted treatments for BRAF-mutated cases and immune-focused approaches for NRAS-mutated melanomas. Further studies are needed to elucidate alternative pathways in NRAS-driven metastasis.

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Adverse Childhood Experiences as Predictors of Perceived Social Support and Depression Levels in NICU Mothers

Roberto Y. Rodríguez Lozada[1], Polaris González-Barrios[2], Keimarisse Colón Díaz[2], Zayhara Reyes Bou[3], Gabriela M. Vera Santiago[4], Darielie Rivero Rolón[1], Paula Román Villamil[1], Yeleniz Díaz Vicioso[1],Yessica Areché Serrano[1], José Martínez González[5], Lourdes García Fragoso[3], Inés García García[3]

[1]University of Puerto Rico, Río Piedras Campus, Natural Sciences Faculty, Department of Biology, San Juan, Puerto Rico;

[2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Psychiatry, San Juan Puerto Rico;

[3]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Pediatrics, San Juan Puerto Rico;

[4]University of Puerto Rico, Bayamón Campus, Natural Sciences Faculty, Department of Biology, Bayamón, Puerto Rico;

[5]Albizu University, Department of Clinical Psychology, San Juan, Puerto Rico

Background and Objectives: Maternal mental health in the Neonatal Intensive Care Unit (NICU) is a critical area of concern, particularly for mothers with a history of Adverse Childhood Experiences (ACEs). ACEs are known to have long-lasting effects on social functioning and mental health, potentially exacerbating the psychological burdens of having a critically ill child and increasing the risk of developing postpartum depression. This study explores the relationship between ACEs, perceived social support, and depression levels among Puerto Rican NICU mothers from 2020 to 2023. Methods: A total of 102 mothers were assessed using the Patient Health Questionnaire (PHQ-9) for depression, the Multidimensional Scale for Perceived Social Support (MSPSS), and the ACEs questionnaire. Results: Our results revealed that while ACEs were not significantly associated with depression (PHQ-9 scores, Wald Chi-Square=16.824, p = 0.664), a significant negative relationship emerged between ACEs and perceived

social support (MSPSS scores, Wald Chi-Square=7.135, p = 0.008), with higher ACE scores linked to lower perceived social support. Three regression models were tested, with the final model including depression, social support, planned pregnancy, and family presence at childbirth, showing a statistically significant prediction of ACEs ($F=2.978$, $df=4$, $p = 0.024$, R^2 adjusted = 0.083). Conclusions: These findings underscore the potential protective role of social support in mitigating the psychological effects of ACEs. This study highlights the importance of addressing maternal mental health in NICU settings, especially for mothers with a history of childhood trauma. Further research is needed to understand how other factors, such as the potential long-term effect of regional challenges faced by Puerto Rican mothers, such as Hurricanes Irma and Maria, and the COVID-19 pandemic, may impact mental health outcomes. IRB Approved: Protocol #: 2290035508R002 (04/17/2024). Acknowledgments: The research reported was supported by the National Institute of General Medical Sciences (NIGMS) of the National Institutes of Health under Award Number U54GM133807. The content is solely the authors' responsibility and does not necessarily represent the official views of the National Institutes of Health. We also thank Dr. Cristina Martínez-Benito and the Scientific Writing class at the University of Puerto Rico, Rio Piedras Campus, for their assistance in preparing this manuscript.

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Effects of Social and Family Support on Emotional Dysregulation Among Hispanic and Non-Hispanic Mothers Following the COVID-19 Pandemic

Adyanis Centeno[1]; Daniel Mulligan, PhD[2]; Kim McCarthy, LMSW[2]; Damion Grasso, PhD[2]; Margaret Briggs-Gowan, PhD[2]
[1]University of Puerto Rico, School of Medicine, Medical Center, San Juan, PR;
[2]Division of Child Psychiatry, Department of Psychiatry, UConn Health

Background and Objectives: The COVID-19 pandemic increased global mental health problems. Familism, a core value in Hispanic populations, often improves mental health. Emotional dysregulation (ED) can indicate emerging psychopathology of various types. This study examines the impact of social and family support on ED among Hispanic mothers (HM) and Non-Hispanic White mothers (NHWM) post-pandemic. Methods: Participants (N=1,349; mean age = 32.3; HM = 222, NHWM = 1,134) were surveyed in the Parenting Infants in the Pandemic Study (PIPS). All mothers had given birth during the COVID-19 pandemic. ED was assessed via the Difficulties in Emotion Regulation Scale (DERS). Pandemic increases in family support (PIFS) were measured using the Epidemic-Pandemic Impacts Inventory (EPII). A multiple regression model was used to assess PIFS differences between groups and effect on ED while controlling for age, social determinants of health (SDoH), and current social support. Results: Results revealed higher SDoH scores for HM (Median = 1) than NHWM (Median = 0), $p < .001$. Adjusting for covariates, HM showed greater increases in PIFS (adjusted mean = 1.94) than NHWM (1.74), $F(1, 1348) = 6.21$, $p = .013$, partial $\eta^2 = .004$. PIFS negatively correlated with ED, $r = -.15$, $p < .001$. Adjusted ED means were slightly lower for HM (1.38) than NHWM (1.41). Ethnic group did not significantly moderate the relationship between PIFS and ED. Conclusions: Ethnic groups showed a similar negative association between PIFS and ED. Despite heightened pandemic stressors reported among Hispanic families, HM's strong family connections and larger households may have reinforced the protective effects of familism, resulting in comparable ED levels to NHWM. IRB Approved: Protocol #: 21-143OSC-1 (08/07/2024). Acknowledgements: No conflict of interest to disclose.

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Mental Health Status and Service Utilization: A Cross-Sectional Study in La Perla, San Juan, Puerto Rico

Jessica Jaramillo Criado[1]; Mariela Torres Cintrón, DrPH[1]; Ruth Ríos Motta, PhD[1]; Juan Negrón Ayala, PhD[2]; Natalia Antúnez Serrano[1]; Alejandro Carro Mendoza[1]; Gloria Cuevas Rodríguez[1]; Victoria Finkel Aguilar[1]; Gabriel A. Laracuente Toro[1]; Ámbar Marrero Sierra[1]; Jeymeliz Martes Vargas[1]; Kariely Martínez Gómez[1]; Tatiana Martínez Merle[1]; José Mercado Navarro[1]; Fabiola Morales Muñiz[1]; Raymond Robles Laguna[1]; Juleika L. Torres O' Neill[1]; Sofía Vega Mercado[1]; Marisol Peña Orellano, EdD[1]
[1]University of Puerto Rico, Medical Sciences Campus, School of Public Health, Department of Health Services Administration, San Juan, Puerto Rico; [2]University of Puerto Rico, Medical Sciences Campus, School of Public Health, Department of Social Sciences, San Juan, Puerto Rico

This cross-sectional study examined mental health status and service utilization patterns in La Perla, San Juan, Puerto Rico. A census-based survey was administered to 47 residents aged 21 and older (43.5% response rate). Results revealed significant mental health challenges, with 23% reporting depression and 21% anxiety among participants. Mental health perception showed variability: 81% of residents reported good to excellent personal mental health, while 64% perceived community mental health as regular. Despite mental health needs, only 38% reported using mental health services, with 85% having no visits in the past year. Major barriers included limited-service availability (38%), healthcare anxiety (26%), and unclear service navigation (23%). Service utilization was concentrated in San Juan (78%), with limited access to other municipalities. These findings highlight the disparity between mental health needs and service utilization, suggesting the need for improved local mental health services and reduced access barriers in this community.

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Rapid-Onset Creutzfeldt-Jakob Disease Following COVID-19 Infection in Puerto Rico: A Case Report

Francisco J. López-Font, MHA[1]; Carlos A. Vega-Mena, MD[1]; Antonella Jiménez-Cabarcas, MD[1]; Christian Valentín-Santiago, MD[1]; José Ávila-Ornelas, MD[2]; Naggai González-Segarra, MD[2]; Ramón Scharbaai-Vázquez, PhD[1]; Mario Polo-Asenjo, MD[1,2]; Ernesto García-Santiago, MD[1,2]
[1]Luis A. Ferré Highway Exit #21, Road 172 Caguas to Cidra, Urb. Turabo Gardens, Caguas, PR 00727;
[2]Hospital Menonita Caguas. Luis A. Ferré Highway Exit #21 Road 172 Caguas to Cidra, Urb. Turabo Gardens, Caguas, PR 00727

Purpose: COVID-19 is a disease caused by the SARS-CoV-2 virus, and infection typically leads to the development of respiratory symptoms and illness. However, neuropsychiatric and neurodegenerative disorders from SARS-CoV-2 have also been reported. Creutzfeldt-Jakob Disease (CJD) is a rapidly progressive neurodegenerative disease

caused by misfolded prion protein aggregates within the central nervous system. There are 3 main types of CJD classifications: Acquired, Inherited, and Sporadic. Sporadic (s)CJD is the most common human prion disease, with an incidence of 1-2 cases per 1 million people per year, and it typically affects the middle-aged and elderly populations. Although the interplay between COVID-19 and the development of CJD remains poorly understood, reports suggesting a potential link between the two can be found within the literature. Case Description: We report the case of a previously healthy, vaccinated 58-year-old Puerto Rican male who developed neurodegenerative signs two weeks after a COVID-19 infection. The patient initially presented with vertigo, visual disturbances, and poor extremity coordination. The patient then developed confusion, generalized myoclonus, increased muscle tone, and tremors. Magnetic resonance imaging (MRI) revealed prominent T2/FLAIR signal abnormalities within the entire cortex of both cerebral hemispheres. Cerebrospinal fluid (CSF) revealed elevated 14-3-3 gamma concentrations that, along with a positive real-time quaking-induced conversion (RT-QuIC), confirmed the diagnosis of sCJD. Conclusion: CJD development after COVID-19 infection is rare, and the underlying pathophysiological mechanisms between both conditions have yet to be elucidated. Further investigation is required to better understand the link between these two pathologies. Despite this poorly understood association, our case underscores the need for close monitoring post-COVID-19 infections, as cognitive sequelae can be indicators of rapid neurodegenerative processes, like CJD. Acknowledgements: We acknowledge Hospital Menonita de Caguas and San Juan Bautista School of Medicine for their support in this project. We also extend our condolences to the family of the deceased; we cannot imagine the level of suffering they endured.

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Effects of NLRC5 Mutation on IFN Alpha and Gamma Stimulated MHC Class I Expression

Madeline Candelas Torres[1]; Noam Savion-Gaiger, MD[2]; Harriet Kluger, MD[2]; Kevan Herold, MD[2]; Ana Luisa Perdigoto, MD, PhD[2]
[1]San Juan Bautista School of Medicine, Caguas, PR, USA;
[2]Yale University School of Medicine, New Haven, CT, USA

Objective / Hypothesis: Immunotherapies targeting immune checkpoint regulators CTLA-4, PD-1, and PD-L1 offer survival benefits across various types of cancers. However, their increased use has led to a rise in immune-related adverse events, including endocrinopathies like checkpoint inhibitor-induced diabetes mellitus (CPI-DM). A germline missense mutation in NLRC5, an MHC class I transactivator, is prevalent in patients with CPI-DM. Our purpose is to investigate the effects of the NLRC5 mutation on interferon-stimulated MHC class I expression. We hypothesize that cells with the NLRC5 mutation will respond differently to interferon treatment, showing altered MHC class I gene expression that may explain patient susceptibility to diabetes development. Approach: To understand the impact of the NLRC5 mutation on the immune response and MHC gene expression, we treated wild-type and mutant peripheral blood mononuclear cells (PBMCs) with IFN-γ or IFN-α for 24 hours. We then harvested and analyzed the PBMCs using FACS to examine protein cell surface expression and qPCR to measure gene expression of MHC genes. Luminex was used to quantify cytokines in the supernatants. Results: We found that cells from individuals with the NLRC5 mutation showed enhanced expression of MHC class I pathway proteins and genes in response to IFNγ compared to wild-type cells. Surprisingly, we also identified enhanced expression of HLA-DR4, a member of the MHC class II family, in cells from individuals with the NLRC5 mutation in response to IFNγ. Preliminary results indicate that IL-8 is higher in untreated NLRC5 mutant cells compared to wild-type cells.

Summary / Conclusions: Our results suggest that the NLRC5 mutation may enhance the inflammatory response and antigen presentation in response to IFNγ, potentially increasing susceptibility to CPI-DM by inducing a more pronounced MHC response compared to wild-type subjects. Further investigation into IL-8 trends is necessary.

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Multidisciplinary Approach to Full Oral Rehabilitation in a Patient with Systemic Lupus Erythematosus, Sjögren's Syndrome, and Depression

Karla Sánchez Ortega, DDS
General Practice Residency, University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico

Background: Systemic lupus erythematosus (SLE) is a chronic autoimmune disease with unknown causes and varied clinical presentations, predominantly affecting women. Its prevalence ranges from 12 to 50 per 100,000 globally, influenced by location and ethnicity. SLE is a progressive disease involving cellular and cell-mediated processes, often associated with comorbidities like Sjögren's syndrome and depression. These conditions and immunosuppressive treatment pose challenges for oral rehabilitation, such as delayed healing and psychological factors. Case Description: A 44-year-old female with SLE, Sjögren's syndrome, and depression requiring full oral rehabilitation presented at UPR GPR dental clinics. The patient was on medications including Cellcept, Prednisone, Hydroxychloroquine, Temazepam, and Sertraline, and has a history of iodine allergy. Dental treatment includes zirconia crowns, tooth extraction, bone grafting, and partial dentures. A medical history evaluation and radiographic/clinical assessment of bone quality, mucosal health, and functional requirements were performed. Treatment included minimally invasive tooth extraction, bone grafting, zirconia crown placement, and customized partial dentures. Regular follow-ups were done to monitor health and to adapt the prosthesis. Successful rehabilitation with functional and esthetic improvements, adequate healing despite systemic challenges, and high patient satisfaction with oral function and outcomes were obtained. Clinical implications: This case emphasizes the importance of an interdisciplinary approach to oral rehabilitation in medically complex patients. Treatment strategies that address systemic and psychological factors are crucial for achieving optimal results.

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Congenital Herpes Simplex II Manifestation in a Newborn Male: A Case Study

Jessica I. Rizo Hernández, MD[1]; Fiorella Raffucci Velázquez, MD[1]; Amarilis Rivera Marrero, MD[2]; Israel Matías, MD[2]; Norma Claudio, MD[2]; Álvaro Santaella MD[2]
[1]San Juan City Hospital, Department of Pediatrics, San Juan, Puerto Rico;
[2]San Juan City Hospital, Department of Neonatology, San Juan, Puerto Rico.

Purpose: Infections with Herpes Simplex Virus (HSV), are the most common cause of genital infection. When acquired or reactivated during pregnancy, there is a risk of transmission to the fetus or neonate. In utero HSV transmission, it is present as a distinct clinical entity characterized by cutaneous findings, neurologic manifestations, and eye findings present at birth. This may lead to severe health issues and high mortality if not quickly

identified and treated. Case Description: We present a case of a term, male newborn patient with severe dermal manifestation observed immediately after birth. Physical examination is remarkable for annular erythematous lesions throughout the body, measuring about 2-3cm, at different stages of healing. Patient was admitted to our Neonatal Intensive Care Unit, multidisciplinary services consulted for evaluation due to possible dissemination of infection or rheumatologic etiology. Tzanck smear reported suggestive for HSV, lesion biopsy reported suggestive of viral changes. Blood HSV-2 IgG and CSF HSV-2 PCR positive. Ophthalmology found no signs suggestive for intraocular HSV. MRI showed evidence of left germinal matrix hemorrhage grade 1, periventricular leukomalacia, left periventricular volume loss and left cerebellar arachnoid cyst. Echocardiogram showed patent foramen ovale and mild pulmonary branches stenosis. Patient completed 28 days of intravenous Acyclovir therapy, discharged on oral Acyclovir suppression for 6 months, and multidisciplinary follow up outpatient. Conclusion: Intrauterine HSV infection is a rare but severely impactful condition. Our patient will require outpatient follow up with neurology, infectious diseases, ophthalmology, dermatology and cardiology. This case illustrates the rarity and the importance of remaining up to date on the best practices for diagnosis and treatment. Acknowledgements: none

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Perceived Loneliness and Mental Health Among Adults in Urbanización Delgado, Caguas: A Cross-Sectional Study

Luis J. Rivera Rivera, MPH; Sergio A. Vidal Rosa; Karen Agosto Valentín, DrPH, JD, MPH; Sheylimar M. Andino Escudero, MPH; Derick O. Bermúdez Cartagena, MPH; Ariana Carreras Espinosa, MPH; Joshua A. Doble Rivera, MPH; Luis G. Fuentes Burgos, MPH; María A. González, MPH; Oscar A. González García, MPH; Adriana N. Núñez Rosado, MPH; Génesis D. Rivera Martínez, MPH; Karoline M. Rosario Esquilín, MPH; Karina E. Santiago Adorno, MPH; Quiriat J. Torres Rosario, MPH; Marisol Peña Orellana, EdD, MS
Master's Program in General Public Health, University of Puerto Rico, Medical Sciences Campus, Faculty of Biosocial Sciences and Graduate School of Public Health, Department of Health Services Administration, San Juan, Puerto Rico

Background: Social determinants of health are crucial factors that influence mental health and levels of loneliness in urban populations, Yang et al. (2023). Objective: Describe the mental health status and perceived loneliness in a group of adult residents of the Urbanización Delgado community in the municipality of Caguas during the months of May to July 2024. Method: The study is a descriptive cross-sectional study design. A structured questionnaire was used to collect sociodemographic data, health conditions, disabilities, and economic information. For mental health, multiple dimensions were assessed, including general perception and specific diagnoses, such as conditions of anxiety, depression and the Spanish Version of the Three-Item Loneliness Scale (TILS). The study involved a sample of 110 community residents over the age of 21, who voluntarily participated during the summer of 2024. Results: Results showed that 27.3% of participants reported their mental health perception as fair or poor. Regarding the perception of days with poor mental health, 77.3% reported no days, 14.5% reported experiencing 1 to 13 days of poor mental health, and 8.2% reported 14 to 30 days. Additionally, 34.5% reported having been diagnosed with a mental health disorder. Among the most prevalent categories, 27.3% reported a diagnosis of depression, 24.5% anxiety, 4.5% bipolar disorder, and 3.6% schizophrenia. Concerning

perceived loneliness, as assessed by the TILS questionnaire (Spanish Version), participants exhibited a moderate average score. A total of 86.4% showed no signs of loneliness, while 13.6% reported experiencing loneliness. Conclusion: The findings suggest a significant number of participants experience mental health challenges, with depression and anxiety being the most prevalent conditions. However, 13.6% who reported loneliness highlights a vulnerable subgroup. These outcomes underscore the importance of addressing social determinants of health, such as community support, access to mental health services, and socioeconomic conditions, to improve overall mental health and reduce loneliness within this urban population. Acknowledgment: This study was part of the Integrative Learning Experience, a community integration project to fulfill the requirements for a Master's degree in General Public Health (MPH). Special thanks to the community leaders and residents of the Urbanización Delgado in Caguas, Puerto Rico, for their willingness to collaborate on this project. IRB: This project was approved by the IRB: protocol number 2404214606, approved on June 3, 2024.

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Posterior Fossa Constraints in a Case of Developmental Facial Palsy with Chiari I Malformation

Adrian A. Naoun[1], Yandy García[1], Fabián Gómez, Philip Cantu[1], Ernesto García[2]
[1]San Juan Bautista School of Medicine, Caguas, PR, USA;
[2]Hospital Menonita, Caguas, PR, USA

Purpose: Congenital facial palsy is rare, typically originating from antenatal or peripartum trauma and, less commonly, secondary to aberrant developmental disturbances during ontogeny. Developmental facial paralysis (DFP) frequently manifests in conjunction with syndromic disorders such as Möbius syndrome, Goldenhar syndrome, and CHARGE syndrome, but is infrequently observed as an isolated anomaly. Chiari I malformation, characterized by cerebellar tonsil herniation through the foramen magnum, constitutes a structural anomaly of the posterior fossa. Whilst no documented cases report the coexistence of DFP with Chiari I malformation, alterations in posterior fossa dynamics due to reversible mass effect could potentially impact cranial nerve perfusion and/or development if spatiotemporally aligned with critical embryological stages. Case description: Herein, a 37-year-old female with a pertinent medical history of isolated, purely motor ipsilateral cranial nerve VII palsy, gastritis, and seizures presents with recurrent occipital cephalgia lasting for six months. The associated symptoms included intermittent posterior cervical allodynia, nausea, and vertigo. Magnetic resonance imaging (MRI) studies revealed features consistent with Chiari I malformation, including a 12 mm cerebellar tonsillar descent inferior to the foramen magnum. Posterior fossa decompression (PFD) with suboccipital craniectomy and C1 laminectomy relieved her symptomatic compression but did not resolve the congenital facial palsy, suggesting an underlying developmental etiology. Conclusion: The exact mechanism(s) remain unclear; however, our case suggests that Chiari I malformation may impede facial nerve development through posterior fossa spatial constraints. Indirect brainstem compression via the mass effect could alter cerebrospinal fluid flow and/or disrupt distal neurovascular perfusion to key structures, including the facial nucleus, impairing neurogenesis. Inherently, pressure differentials may alternatively compromise small distal paramedian branches of the basilar artery, leading to ischemia and irreversible facial nerve damage. Further investigation is needed, although our case may illustrate a rare form of isolated developmental facial palsy linked to abnormal posterior fossa morphology. Acknowledgments: No funding or conflicts of interest.

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El Rol del Programa de Introducción a Estudios en Medicina del Centro Hispano de Excelencia de la Escuela de Medicina de la Universidad de Puerto Rico

César Ostolaza Santiago[2], Abner Flores Siaca[2], Keylianise Espinosa Sotomayor[3], Ángeles Martínez Vélez[1], Ileana M. Ayala-Fontánez[1], América Facundo Rosado[1]
[1]Centro Hispano de Excelencia, Escuela de Medicina, Universidad de Puerto Rico, Recinto de Ciencias Médicas; [2]Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela Graduada de Salud Pública, Programa Graduado de Demografía, San Juan, Puerto Rico; [3]Universidad de Puerto Rico, Recinto de Río Piedras, Departamento de Química

Trasfondo: Según la Administración de Recursos y Servicios de Salud de los Estados Unidos (por sus siglas en inglés HRSA, 2024) los estudiantes de contextos desfavorecidos enfrentan barreras económicas y en su entorno que limitan su acceso y éxito en el ingreso a Escuelas de Profesiones de la Salud, tales como bajos ingresos económicos, vivir en áreas con escasez de servicios médicos y falta de preparación académica adecuada. En promedio, entre el 25% de los estudiantes admitidos en la Escuela de Medicina de la UPR pertenecen a una o más de estas categorías. El Centro Hispano de Excelencia de la Escuela de Medicina de la UPR ha implementado estrategias de reclutamiento y retención a través del Programa de Introducción a Estudios en Medicina (PIEM) ofreciendo a esta población recursos de mentoría académica, consejería, destrezas de estudio y educación interprofesional en disparidades y determinantes sociales de la salud. Objetivo: Analizar la continuidad de estudiantes participantes de PIEM hacia residencias en Puerto Rico y Estados Unidos luego de graduarse de la Escuela de Medicina. Método: Se analizaron los datos de los informes administrativos del período 2020-2024 utilizando un enfoque descriptivo. Resultados: De 528 estudiantes graduados entre el 2020-2024, 148 participaron del Programa de PIEM. Un 89% de los participantes logró admisión en un programa de residencia una vez concluidos sus estudios de medicina, comparado con un 75% en la población general. De estos, 81 está en Puerto Rico y 50 en Estados Unidos. Entre las residencias de mayor admisión se encuentran: Medicina Interna, Pediatría, Cirugía y Psiquiatría. Conclusión: PIEM ha sido efectivo en el reclutamiento y retención de los estudiantes participantes, contribuyendo significativamente al sistema de salud en Puerto Rico con 81 egresados en residencias locales. Afiliaciones: El Centro Hispano de Excelencia es subvencionado por la Administración de Recursos y Servicios de Salud (HRSA, por sus siglas en inglés) del Departamento de Salud de los Estados Unidos, Grant No. D34HP24463.

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Oral Microbial Community Differences Associated with HPV Infection and Increased Oropharyngeal Cancer Risk in Puerto Rican PWH

Juliana M. Serrano-Rodríguez[1,2], Jurelis Torres-Reyes[1], Yakshi N. Ortiz-Maldonado[1], Carlos A. Solá-Morlá[1,3], Gabriel Borges-Vélez[1], Jeannette L. Salgado-Montilla[1], María M. Sánchez-Vázquez[1], Magaly Martínez-Ferrer[4], Ana P. Ortiz-Martínez[1], Ramón F. González-García[5], Josué Pérez-Santiago[1,5]

[1]Division of Clinical and Translational Cancer Research, University of Puerto Rico Comprehensive Cancer Center, San Juan, PR; [2]University of Puerto Rico, Río Piedras Campus, San Juan, PR; [3]School of Medicine - Universidad Central del Caribe, Bayamón, PR; [4]School of Pharmacy, University of Puerto Rico Medical Sciences Campus, San Juan, PR; [5]School of Dental Medicine, University of Puerto Rico Medical Science Campus, San Juan, PR

Background & Objectives: HPV-related oropharyngeal cancers (OPC) are aggressive malignancies with limited detection strategies. People with HIV (PWH), particularly in the Caribbean, are disproportionally burdened by HPV infections, highlighting the need for improved prevention and treatment strategies. Puerto Rico (PR) has disparities for HIV and HPV-related malignancies, as well as socio-economic disadvantages that further increase cancer risk. Moreover, dysbiosis of the oral microbiome may increase the risk of oral HPV infection and persistence, promoting oncogenesis, but these factors have not been evaluated altogether in PWH, especially in PR. Our objective is to characterize the oral microbiome in Puerto Rican PWH and analyze other risk factors associated with oropharyngeal cancers. Methods: We collected saliva, oral rinse, sociodemographic, clinical, lifestyle variables, and evaluated periodontal disease (PD) status from 165 virologically suppressed PWH. We sequenced oral bacteriome (16s sequencing, n=98) and mycobiome (ITS sequencing, n=32). Diversity, taxonomic assignments, and differential abundance analysis were performed using QIIME2 and R-statistical software (v.4.4.2). Results: Prevalence of oral HPV infection was 32%, with high-risk genotypes exceeding 61%, with HPV-18 being the most abundant (35%), meanwhile prevalence of PD was 86%. HPV+ PWH showed higher bacterial diversity, but lower fungal diversity (Shannon Index p=0.056 and p=0.040, respectively). Higher richness of bacterial species (p=0.012) and fungal phylogenetic diversity (p=0.029) was found in PD. In addition, significantly higher abundance of fungal pathogenic species was observed in both HPV+ PWH and PD, characterized by higher relative abundance of *Candida*. Conclusion: Overall, dysbiosis of the oral microbiome associated with HPV infection and PD was observed in PWH, which may contribute to subsequent inflammation and oral tissue damage, increasing the risk of OPC. Understanding the mechanistic interplay between these cancer risk factors is essential to establish targets for early prognosis, personalized treatment approaches, and better preventive public health strategies to reduce OPC. IRB Approved: Protocol #: 2021-05-50 (05/17/2024).
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Asymptomatic Ulcerative Colitis Culminating in Toxic Megacolon: Case Report

Camilla M. Feliciano González, BS[1]; Emily A. Rosa Bouza, BS[1]; Hilmaris C. Santiago Figueroa, BS[2]; Arnaldo E. Álvarez-Meléndez, BS[2]; Paola E. Flores-Arroyo, BS[3]; Anabel Puig Ramos, PhD[4]; Charles Castro, MD[4]; Stephanie González, MD[4]; Claudia Garza, MD[4]; Carlos Ocasio, MD[4]; Hilda Díaz, MD[4]; Manuel Iglesias, MD[4]; Paola Montalvo, MD[4]; Ricardo García De Jesús, MD[4]

[1]UPR-School of Medicine, San Juan, PR; [2]San Juan Bautista School of Medicine, Caguas, PR; [3]Ponce Health Sciences University, Ponce, PR; [4]UPR-School of Medicine, Department of Pediatrics-Critical Care Section, San Juan, PR

Toxic megacolon, a rare but severe complication of colonic inflammation, is most associated with inflammatory conditions like ulcerative colitis and certain infections1. Early identification of its signs and symptoms can help provide efficient intervention and treatment; therefore, avoiding or minimizing complications. We present a case of a 16-year-old Hispanic female with a history of allergic rhinitis and suspected juvenile idiopathic arthritis, who was transferred from Community Hospital after complications arose. Her symptoms began on the last day of a tropical vacation, with abdominal discomfort persisting for two weeks. A week later, she developed worsening symptoms, including bloody diarrhea, leading to her hospital admission. Laboratory findings indicated leukocytosis with neutrophilic predominance and bands, and imaging revealed pneumoperitoneum. She was diagnosed with toxic megacolon and septic shock upon transfer to our pediatric intensive care unit, requiring immediate surgical intervention. Findings showed a severely dilated and necrotic large bowel from the ascending to descending colon, with perforation of the transverse colon. A total colectomy and ileostomy were performed. The pathology report confirmed ulcerative colitis, an autoimmune inflammatory bowel disease. Notably, patient exhibited the typical symptoms of UC, such as bloody diarrhea, weight loss, abdominal pain, until severe complications developed. Toxic megacolon is a critical, life-threatening complication of ulcerative colitis that demands immediate intervention3. In this instance, the lack of a previous UC diagnosis and the early absence of significant symptoms prevented prompt medical intervention, which led to septic shock and toxic megacolon and the eventual need for drastic surgery. Despite the severity of her condition, the patient made a remarkable recovery in the PICU and was discharged with future plans of an ileorectal anastomosis. Physicians must carefully evaluate pediatric patients presenting with persistent or worsening GI symptoms. In this manner, complications that drastically affect patients' quality of life can be avoided or minimized. Acknowledgements: Authors want to acknowledge the Pediatric Intensive Care Unit staff, nurses, and respiratory therapists from The University Pediatric Hospital for their work as a team to achieve clinical evaluation and patient management.

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Comparison of the Performance of the Large Language Models, GPT-4o and Copilot on the American Society for Surgery of the Hand Self-Assessment Examination

Benjamín Nieves-López[1], Mohammad Kahrizi[2], Keith Aziz[2]
[1]University of Puerto Rico, Medical Sciences Campus; [2]Mayo Clinic Jacksonville

Introduction: ChatGPT and Copilot are large language models (LLMs) that use vast data sets to produce human-like conversations and learn from past interactions. These LLMs have proven beneficial in improving patient care and supporting medical exam preparation. While ChatGPT has demonstrated proficiency in standardized hand surgery questions, it struggles with image-based questions. Conversely, Copilot's applications in hand surgery have yet to be explored. Consequently, the efficacy of artificial intelligence (AI) models in hand surgery remains controversial. This study aims to evaluate the accuracy of both models when asked questions from the American Society for Surgery of the Hand (ASSH) Self-Assessment Examination (SAE), compare their performance across different question types, assess their citation effectiveness, and analyze the types of references used. Methods:

GPT-4o and Copilot were compared using 200 multiple-choice questions from the ASSH-SAE. Questions included text, radiographs, and clinical photos. Accuracy and reference types were evaluated. Statistical analysis included Chi-Square, logistic regression, and Cohen's Kappa. Results: This study analyzed 200 questions from the 2024 ASSH-SAE, comparing GPT-4o and Copilot. GPT-4o achieved 77.5% accuracy, surpassing both Copilot's 59.5% and the real-world mean correctness rate of hand surgeons (76.6%). GPT-4o scored 78.3% on text-only questions, while Copilot achieved 64.2%. For image-based questions, GPT-4o scored 76.2% versus Copilot's 52.5%. GPT-4o cited peer-reviewed articles 49% of the time compared to Copilot's 45%, with Copilot failing to provide references in 9% of responses. Logistic regression showed real-world correctness rates significantly predicted performance, with GPT-4o's odds of correctness increasing by 4.5% per 1% increase. A Chi-Square test confirmed GPT-4o's superiority ($p < 0.001$). Conclusion: GPT-4o's high accuracy and robust reference generation highlight its potential as an educational tool for hand surgery. While current limitations in image interpretation persist, future AI advancements could transform preoperative planning, diagnostics, and personalized surgical strategies, enhancing patient care and clinical workflows.

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Intracranial Hypertension, Empty Sella, and CSF Leak Leading to Intracranial Hypotension: a Case Report

Claudia Muns[1], Alejandro González[1], Alejandro Acosta[1], Alejandro Linera[2], Luis Biescas[3]
[1]School of Medicine, University of Puerto Rico, Medical Sciences Campus; [2]University of Maryland School of Medicine; [3]VA Caribbean Healthcare System

Purpose: To present the case of a 59-year-old female presenting with rhinorrhea six years after being diagnosed with idiopathic intracranial hypertension (IIH) and empty sella syndrome, to justify clinical discussion, providing relevant learning, and raising awareness of the condition. Case Description: A 59-year-old female with a history of overweight, sleep apnea, and IIH diagnosed six years ago presented to the Emergency Room (ER) referred from the ears, nose, and throat (ENT) office due to spontaneous left-sided nasal rhinorrhea since one year ago. The patient reported intense left-sided headaches radiating towards the left neck and occasional fevers for the past two months, with gradual worsening of headaches over the past two weeks. No visual disturbances or nausea were reported. Physical examination revealed persistent clear rhinorrhea with head tilt and bilateral papilledema and neck pain on flexion. Imaging studies including Head CT and Brain and Orbit MRI with IV contrast demonstrated an empty sella with partial expansion and remodeling of the sella turcica and thinning along the anterolateral wall of the sphenoid air cell with simple fluid in the left sphenoid sinus suggestive of cerebrospinal fluid (CSF) leakage. Neurology services performed a targeted epidural blood patch at the site of the CSF leak, resulting in significant symptom improvement. Long-term follow-up was scheduled to monitor symptoms, intracranial pressure, and the integrity of the CSF leak repair. Conclusion: This case highlights the importance of considering CSF leaks in patients with IIH and the potential progression to intracranial hypotension. A multidisciplinary approach is essential for effective management and long-term follow-up to monitor symptoms and the integrity of the CSF leak repair. Acknowledgments: We would like to thank the faculty of medicine of the department of radiology for their contributions to establishing diagnosis and implementing patient management.

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Conocimiento de los Maestros de Escuela Superior sobre los Síntomas de Ansiedad y Estrategias de Reducción en el Salón de Clases

Victoria Núñez-Pérez BSN, MSN; Ana S. Tavera-Pimentel BSN, MSN; Carmen I. Díaz-Colón EdD, MSN
Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela de Enfermería,
Programa de Maestría en Ciencias en Enfermería, San Juan, Puerto Rico

Trasfondo y objetivos: La ansiedad en adolescentes ha aumentado significativamente en Puerto Rico, exacerbada por eventos como el huracán María y la pandemia. Este problema afecta la salud mental y el rendimiento académico. Los maestros desempeñan un rol en la identificación y manejo inmediato de la ansiedad en el salón de clases. Sin embargo, la falta de familiarización con los síntomas representa un desafío. Los objetivos fueron: describir y comparar el conocimiento de los maestros sobre la ansiedad en los estudiantes y las estrategias efectivas para reducirla, en el entorno escolar, antes y después de una intervención educativa. Métodos: Se utilizó un diseño cuasiexperimental, pre y post prueba. Los datos se recopilaron electrónicamente mediante cuestionario demográfico y el *Anxiety Literacy Questionnaire*. La intervención educativa ofrecida, por dos enfermeras escolares, consistió en definiciones, síntomas y estrategias efectivas para manejar la ansiedad en el salón de clases. La muestra fue de 20 maestros de nivel superior. El 70% eran féminas, con promedio de 41.5 años, 50% poseía maestría o doctorado, 94.7% tiene especialidad en ciencias y matemáticas. Resultados: La media de respuestas correctas antes y después de la intervención educativa fue 24.5 (DE=3.4) y 32.4 (DE=0.8), respectivamente. Los resultados reflejaron aumento estadísticamente significativo en el conocimiento de los maestros ($p < 0.001$). A pesar de que 70% de los maestros ha tenido algún desarrollo profesional sobre manejo de ansiedad, solo 50% tiene experiencia identificando y brindando apoyo a estudiantes con ansiedad. Conclusión: La intervención educativa fue efectiva fortaleciendo el conocimiento de los maestros sobre ansiedad. Estos hallazgos subrayan la importancia de ofrecer intervenciones educativas a los maestros del sistema educativo para optimizar el bienestar estudiantil y su rendimiento académico. Agradecimientos: A la facultad y administración de la Escuela William Rivera Betancourt por su tiempo y colaboración para realizar este proyecto de investigación.

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Exploring Climate and Healthcare Vulnerabilities in Caribbean Island Communities: The Experience of Puerto Rico and the U.S. Virgin Islands

Paola Buch[1], Polaris Torres[1], Nancy Cardona-Cordero[1], Marievelisse Soto-Salgado[1],
Noreen Michael[2], Pablo Méndez-Lázaro[3], Ana Patricia Ortiz[1]
[1]University of Puerto Rico Comprehensive Cancer Center, San Juan, Puerto Rico; [2]University of the Virgin Islands, St. Thomas, USVI; [3]University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico

Background & Objectives: Climate change stressors such as extreme heatwaves, floods, droughts, wildfires, and storms disproportionately affect vulnerable populations. Low-income communities, marginalized groups, and developing regions face heightened risks due to systemic disparities in resources, healthcare access, and social

safety nets. Climate disasters have direct and indirect impacts on human health, including injuries, deaths, and displacement. Disruptions to essential services such as clean water, food, and healthcare due to climate disasters further compound health vulnerabilities. This study evaluates communities at increased risk of environmental and climate burdens in Puerto Rico (PR) and the United States Virgin Islands (USVI). Methods: Publicly available data from the Climate and Economic Justice Screening Tool (CEJST) were analyzed along with the Departments of Health's hospital directories. CEJST identifies disadvantaged communities using burden indicators categorized into eight groups: climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development. Communities were classified as disadvantaged if their census tracts met at least one burden threshold. Results: In PR, a total of 945 communities were identified, of which 842 (89%) were classified as disadvantaged. Specific burdens for PR communities include climate change (115, 12%), energy (259, 27%), legacy pollution (93, 10%), and water and wastewater (82, 9%). Of 44 communities with hospitals, 42 (95%) were in disadvantaged areas. In USVI, 32 communities were identified, of which 7 were classified as disadvantaged (23%). None of the 2 communities with hospitals in the USVI were in disadvantaged areas. Conclusion: Identifying high-risk communities is essential to improve preparedness and resilience in Caribbean Island communities. This study highlights significant disadvantages within PR and gaps in data for USVI, emphasizing the need for improved data collection and expanded assessments of environmental and climate burdens using tools like CEJST. Acknowledgements: This research was supported by NIH/NCI award 1P20CA294096-01.

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Advancing Equity in Genomic Research: Bridging Gaps with Minority and Vulnerable Populations

Celinés Rodríguez-Acevedo[1], Paola Giusti-Rodríguez[2], Carmen J. Buxó[3], Elinette Albino[1,4]
[1]School of Health Professions, Puerto Rico Genetics Laboratory, Medical Sciences Campus, University of Puerto Rico, Río Piedras, PR; [2]School of Medicine, Psychiatry Department, University of Florida; [3]School of Dental Medicine, Medical Sciences Campus, University of Puerto Rico, Río Piedras, PR; [4]School of Health Professions, Clinical Laboratory Sciences Program, Medical Sciences Campus, University of Puerto Rico, Río Piedras, PR

Background and Objectives This study explores strategies to engage minority and vulnerable populations, including individuals with disabilities, in genomics research. It addresses the ethical, legal, and social implications (ELSI) of human research, with emphasis on data management and culturally sensitive return of actionable results. Methods This study will utilize a mixed-methods approach, combining quantitative surveys with qualitative interviews and focus groups to gather data from minority populations and individuals with disabilities in genomics research. Key stakeholders, including community leaders and healthcare providers, will be engaged to ensure the study's design reflects community needs and values. Data management practices will be evaluated to align with ethical standards and community expectations. Additionally, the study will examine how actionable results can be effectively communicated to participants, considering cultural and individual differences. Results/Anticipated Results Initial results suggest that a one-size-fits-all approach to community engagement in genomic research is ineffective. This research emphasizes the importance of engaging diverse populations from the very beginning of the study to ensure that their voices are heard, and their concerns are adequately addressed. Preliminary data reveal significant variations in how communities perceive genetic research, highlighting the need for culturally tailored communication strategies. The proposed study also identifies key barriers to participation, such as mistrust

of the research process and concerns about data privacy, which must be addressed to enhance community engagement. Conclusion Successful community engagement in genomic research requires understanding of the cultural and social dynamics of the populations involved. Researchers must adopt flexible, community-centered approaches that address the unique needs of minority and vulnerable groups, improving inclusivity and leading to more equitable health outcomes. IRB Approved: Protocol #: 2305114422A001 (02/10/2025). Acknowledgements Hispanic Clinical and Translational Research Education and Career Development Program (R25MD007607)

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The Impact of Knowledge Gaps on Contraception Use Among Hispanic Women in Puerto Rico

Nattalia Rosario Vega, Natalia Cárdenas-Suárez, Kvrismar González-Castillo, Alexander Pacheco Camacho, A. Muñoz-Matta
Department of Obstetrics and Gynecology, University of Puerto Rico

Background and Objectives: Contraception is an essential component of women's reproductive health. Lack of knowledge continues to hinder contraceptive use, especially in the Hispanic population. This study evaluates the impact of knowledge in the contraceptive use among women in Puerto Rico (PR). Methods: Cross-sectional study involving Hispanic women aged 21-45, recruited via social media and at the University of PR clinics. A self-administered questionnaire was used to address participant's sociodemographic and current practices. Contraceptive knowledge was also evaluated. Informed consent was required prior to participation. Descriptive statistics were used for analyzing preliminary data. Results: Participants (204) had an average age of 33(± 2) years. Most identified as heterosexual (86.7%). Approximately 79.3% reported being sexually active, but only 33.3% were using contraception. Of the participants not using contraception, 22.5% reported fear of hormonal contraceptive side effects as the reason. Regarding knowledge assessment, more than half of the participants (52.4%) scored less than 50% on evaluation. Most concerning, 55.2% were uncertain of the effect of medications on contraception's efficacy and 21.1% did not know about the various forms of hormonal contraceptives available. Satisfaction with their current contraceptive was reported by 57.1% of sampled women. Conclusion: Preliminary data highlights women's poor contraceptive use and knowledge gap regarding all methods, particularly hormonal contraception. Such issues place women at high risk for unwanted pregnancies. Knowledge gaps could also influence women's method selection and their corresponding satisfaction with use. These findings underscore the need for educational campaigns and public strategies for increasing contraceptive knowledge and awareness among Hispanic women in PR. IRB Approved: Protocol#: 2311162290 (06/21/2025). Acknowledgments: The authors would like to thank all participants who collaborated on this study.

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Did Adults with Diabetes and Adults Without Chronic Diseases in Puerto Rico Differ in Socio-Psychological Well-being During the COVID-19 Pandemic?

Luna Oliveira-Mercado, HSDG[1]; Eduardo Cumba-Avilés, PhD[1]; Leamsi M. Rivera-Sáez, HSDG[1]; Stella N. Maymí Cintrón, HSDG[1]; Amaris Nieves López, HSDG[1]

[1]University of Puerto Rico, Río Piedras Campus, Institute for Psychological Research, College of Social Sciences, San Juan, Puerto Rico

Background/Objectives: In Puerto Rico (PR), adults with diabetes (AWD) had higher rates of psychopathology symptoms (PS) than adults without chronic diseases (AWOCD) during the COVID-19 pandemic. The concept of "mental health" includes the relative absence of PS and the presence of significant indicators of socio-psychological well-being (SPWB). No study conducted in PR has examined the SPWB of AWD during the pandemic. We examined the SPWB of AWD (G1=198) vs. AWOCD (G2=672) who lived in PR during the outbreak. Methods: Participants aged ≥21 (M =43.96) had to be PR residents for ≥3 months before enrollment, have internet access and understand Spanish. They completed the Socio-Demographic Data and Health History Module and the 8-item Flourishing Scale (FS) during an online survey held between June 10, 2020–June 9, 2021 (IRB-Approved #1920-194). Among AWD, 42 had type 1 diabetes, and 156 had type 2 diabetes. Using Chi-square and Student's t-test, we compared groups in sociodemographic variables. We conducted a multivariate analysis of covariance (MANCOVA), followed by individual ANCOVAs, to compare group means in individual items and Total scores, adjusting for age and household size. Results: The omnibus test was statistically significant [F (8, 852) = 4.46, p < .001]. AWD showed significantly lower means in all items. The largest between-group differences were observed in item 3 ("I am engaged and interested in my daily activities") and the smallest were found in item 6 ("I am a good person and live a good life"). Consequently, G1 reported significantly lower FS Total scores than G2 [F (1, 859) = 21.72, p < .001]. No differences were observed by diabetes type. Conclusion: AWD showed a lower SPWB than AWOCD and this pattern covered all specific areas of the construct. Public health officials must consider strategies to encourage SPWB among AWD to prevent or reduce their mental/emotional suffering during public health emergencies. Acknowledgments: No funding was received for conducting this study. The research project from which data reported in this study was obtained (known as "COVID-19 and Mental Health in Adults from Puerto Rico") was financed with the personal funds of the second author. Some research assistants that collaborated in this project were hired thanks to funds granted to the Institute for Psychological Research by the Deanship of Graduate Studies and Research from the University of Puerto Rico, Río Piedras Campus.

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A Rare Case of Pulmonary Hypertension Secondary to Abernethy Malformation in a Pediatric Patient

Sofía I. González-Espola, BS[1]; Juliara E. Ortiz-Santana, MD, FAAP[2]; Ricardo García, MD, FCCM, FAAP[2]
[1]Universidad Central del Caribe-School of Medicine, Bayamón, Puerto Rico;
[2]University of Puerto Rico-School of Medicine, Department of Pediatrics, San Juan, Puerto Rico

Purpose: Abernethy malformation (AM) type 1b is a rare congenital extrahepatic portosystemic shunt where portomesenteric blood drains directly into systemic circulation, often associated with congenital malformations. Pulmonary hypertension (pHTN), though a rare complication of AM, is life-threatening and requires prompt, effective management. Case Description: A 3-year-old female with past medical history of AM type 1b, chronic cyanosis, and hepatic dysfunction was admitted to the Pediatric Intensive Care Unit (PICU) due to increased cyanosis, respiratory difficulty, and abdominal pain. Further evaluation revealed increased pulmonary markings on chest X-Ray, suggesting a pneumonic process. Additionally, lab results showed thrombocytopenia, acidosis,

hyperbilirubinemia, elevated AST, and prolonged prothrombin time, prompting PICU admission. Her history was further remarkable for pHTN, oxygen dependence, polysplenia, and intestinal malrotation. CT scans revealed that the mesenteric and splenic veins form a short extrahepatic portal vein that drains into the left renal vein, then the IVC, with no portal vein in the liver. The echocardiogram revealed the right ventricle (RV) failure. The AM likely contributed to fluid overload, pHTN, and RV failure, which were treated with diuretics, Milrinone infusion, a high-flow nasal cannula (HFNC), and inhaled nitric oxide (iNO). She improved and was discharged home on oxygen, diuretics, and Sildenafil. Six days later, she was readmitted to PICU with the same symptoms. She was treated with diuretics, Milrinone, Epinephrine, HFNC, and iNO without significant improvement. Patient was not a candidate for surgical correction given the severity of her pHTN, thus the goals of care shifted to a palliative approach. Eventually, she expired in the PICU accompanied by her closest family members. Conclusion: This case highlights the intricacy of Abernethy malformation type 1b when complicated by pHTN. It emphasizes the need for multidisciplinary care management and close follow-up to avoid this life-threatening complication, especially when surgical correction of the shunt was not possible. Acknowledgements: We would like to express our appreciation and gratitude to our mentor, Dr. Anabel Puig Ramos, for guiding and encouraging us throughout the completion of this case report.

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Reproductive Experiences and Contraceptive Choices: a Study on Sterilization Regret and Family Planning in Puerto Rico

Kvrismar González-Castillo[1], Daniela Medina-Camacho[1], Camila Cuevas-Burgos[2], Natalia Cárdenas-Suárez[1], Katherine Vernaza-Ochoa[2], Josefina Romaguera-Agrait[1]
[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Obstetrics and Gynecology, San Juan, Puerto Rico; [2]University of Puerto Rico, Río Piedras Campus, Natural Sciences Faculty, Department of Biology, San Juan, Puerto Rico

Background and objectives: Access to preferred contraceptive methods is crucial for empowering informed reproductive choices and reducing irreversible contraception. Limited data on sterilization regrets reveals a gap in understanding long-term satisfaction with contraceptive methods. This study aims to assess knowledge of contraceptive options and sterilization regrets among women in Puerto Rico (PR). Methods: A cross-sectional study was conducted using self-reported survey data via an online questionnaire to examine contraceptive use, barriers, and factors influencing reproductive intentions among Hispanic women in PR. Protocol was approved by our IRB. Participants were recruited through social media and clinics at the University of Puerto Rico Medical Sciences Campus (UPR-MSC) using QR code flyers. After providing informed consent, participants completed surveys on socio-demographics, sexual practices, contraceptive use, reproductive beliefs, and medical history, including family planning and sterilization regrets. Descriptive statistics summarized demographic and contraceptive data, and logistic regression identified predictors of reproductive intentions. Statistical analysis in STATA used a significance level of $p \leq 0.05$ to identify trends. Results: Among 117 participants (average age 23 (±2)), significant differences in reproductive outcomes were found. While 36.75% had reached their desired number of children, 84.62% were dissatisfied with their family size. Of pregnancies, 57.58% were unplanned. Regarding the timing of first childbirth 9.09% believed they should have had their first child earlier, 28.79% preferred having their first child later, and 50.00% considered the timing ideal. Sterilization was reported by 20.51%, with 22.58% regretting the timing.

Among 22.22% who experienced abortion, 28.89% were induced. These findings reflect diverse reproductive experiences and complex family planning decisions. Conclusions: The study highlights high rates of unintended pregnancies, dissatisfaction with family size, differing views on childbirth timing, and regret over sterilization. These findings emphasize the need for better reproductive health education, access to family planning, and policies supporting informed decision-making. IRB Approved: Protocol #: 2407257581 (09/13/2024)

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Dental Students Knowledge about Sleep Disturbance Breathing in the Pediatric Population

Gabriela Rodríguez-Sanzo, Zareth Jana, Lydia M. López del Valle, Damaris Molina-Negrón
University of Puerto Rico, School of Dental Medicine, ADEA Fellowship

Background: Sleep Disturbance Breathing (SDB) refers to a range of conditions that disrupt normal sleep patterns, including Sleep Apnea, Snoring, and Mouth Breathing, among others. While much research has focused on adults, recent data shows that milder forms of these conditions are also prevalent in children, highlighting the need for early intervention. The aim of this academic intervention was to assess the level of knowledge dental students have about these conditions and the diagnostic tools available. Methods: A lecture was provided by the Association of Pediatric Dentistry at the University of Puerto Rico, attended by 20 students and some faculty members. Both a pre-test and a post-test of 4 general questions about the topic of SDB were administered to students to evaluate their understanding. Results: The pre-test results revealed that 50-75% of students answered the questions correctly, while in the post-test, 75-100% achieved correct answers. The area with the lowest score was related to Hypopnea/Apnea. Conclusion: This academic intervention impacted on the knowledge of dental students about SDB in more than 75% overall. New evaluation tools and early intervention strategies were presented that enriched the knowledge of dental students. Acknowledgement: This academic intervention for dental students was supported by the UPRSDM ADEA Fellowship Program.

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Reverse Fragility Index: Reoperation Rates in Spinal Fusion vs. Interventions for Lumbar Spinal Stenosis (LSS) – A Systematic Review and Meta-Analysis

Rafael Baella Anzalota, MD; Gerardo Olivella, MD; José I. Acosta-Julbe, MD; Alondra Vázquez, BSc; Daniel Deliz, BSc; Hans W. Hess Arcelay, MD; Enrique Escobar, MD
University of Puerto Rico, Medical Sciences Campus

Background: This systematic review and meta-analysis use the Reverse Fragility Index (RFI) and Reverse Fragility Quotient (RFQ) to assess the neutrality of RCTs comparing complication rates of spinal fusion vs conservative treatment of LSS. Uncertainty remains about complication rates following LSS surgery. The RFI, the minimum events needed to shift an outcome from nonsignificant to significant, quantifies RCT robustness. Applying RFI analysis addresses the limitations of relying solely on P-values for significance. We hypothesize that reported rates of revision, infection, and pseudoarthrosis are statistically fragile under RFI evaluation. Methods: We identified 688 studies using PubMed and Embase databases. 5 RCTs were used after the exclusion process. We collected study

design details, pseudoarthrosis rates, infection rates, and total number of patients per group. The primary outcome was the RFI based on the comparison of revision rates. Secondary outcomes included the RFQ and the number of studies in which the RFI was less than the patients lost to follow-up. Statistical significance was determined using the Chi-square test or the two-tailed Fisher's exact test. Continuous variables were expressed as medians with interquartile ranges (IQRs) and categorical variables were shown as proportions. All statistical analyses were conducted using Stata SE and Microsoft Excel. Results: The median RFI was 5 (IQR, 1-5). The median RFQ was 0.07 (IQR, 0.01-0.104). The median RFI was lower than the median number of patients lost to follow-up (11, IQR 9-19). Furthermore, the RFI was lower than the number of patients lost to follow-up in all but one study. Conclusion: Our findings reveal significant fragility in literature, emphasizing the limitations of current standards and the need for caution. RFI reporting and stronger research practices can improve spine surgery research and more clearly define the role of fusion in LSS. Acknowledgments: This study was conducted without any external funding sources. The authors declare no conflicts of interest related to the design, execution, or reporting of this research. We acknowledge the contributions of all researchers and institutions involved in the primary studies analyzed in this systematic review and meta-analysis. Their work has provided the foundation for this investigation.

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Assessing Novel JAK Targeting Agents for the Treatment of CTCL

Kerely Lorenzo-Méndez[1], Wei Yan[2], Julia M Lewis[1], Hong-yu Li[2], Michael Girardi[1]
[1]Department of Dermatology, Yale School of Medicine, New Haven, CT, USA;
[2]Department of Pharmacology, UT Health San Antonio, Long School of Medicine, San Antonio, TX, USA

Cutaneous T-cell lymphoma (CTCL) is characterized by dysregulated T-cell receptor signaling and gene expression, leading to unchecked proliferation and cytokine overproduction. Exome sequencing has previously suggested therapeutic targets within the JAK/STAT pathway. This study investigates the efficacy of novel JAK targeting agents in modulating this pathway to effect malignant T cell viability. Ten novel compounds were tested in vitro on CTCL cell lines and patient-derived malignant T cells using 72 hr. dose-response assays. A broad range of sensitivities to JAK inhibition were observed across both cell lines and patient-derived samples. The results revealed YW-JK-24, YW-JK-25, and YW-JK-26 as the best candidates demonstrating the greatest cytotoxicity in the nanomolar range. The average IC50s across four CTCL patient-isolated samples were 0.16 ± 0.15 mM, 0.04 ± 0.03 mM, and 0.61 ± 0.6 mM (mean ± SE) for YW-JK-24, YW-JK-25, and YW-JK-26, respectively. These findings highlight the therapeutic potential of targeting JAK/STAT signaling in CTCL and pave the way for further translational research to improve patient outcomes. IRB Approved: Protocol #: 1111009386 (11/14/24)

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Health Literacy Among Pediatric Caregivers: Assessing Levels and Sociodemographic Correlations

Jan F. Bidot Cruzado[1]; Hanna L Rigamonti, MD[2]; Francheska Salgado García, MD[2]; Israel Matías González, MD[3]; Norma Claudio Figueroa, MD[3]; Lourdes García Fragoso, MD[3]; Inés García García, MD[3]

[1]Department of Biology, University of Puerto Rico-Río Piedras Campus;
[2]Department of Pediatrics, San Juan City Hospital; [3]Neonatology Section, Department of Pediatrics, School of Medicine, University of Puerto Rico-Medical Sciences Campus

Background and Objectives: Health literacy (HL) is the ability to access, understand, and use medical information for informed decision-making. Low parental HL can negatively impact a child's well-being. This study assessed HL levels among pediatric caregivers and explored correlations with sociodemographic factors, hypothesizing that higher educational attainment correlates with better HL. Methods: A cross-sectional survey was conducted with 150 caregivers at CDT Dr. Javier J. Anton from August 2023 to December 2024. HL was evaluated using Nutbeam's Schema of Health Literacy and an 18-item questionnaire. Sociodemographic factors analyzed included age, education, and employment status. HL levels were scored on a 0–4 scale. Data analysis was performed using IBM SPSS Statistics version 30.0. Results: The sample was predominantly mothers (92.7%), with 42% aged 21–30. Most caregivers completed secondary education (90%), and 58.7% pursued post-secondary education. HL levels were high, with 86.7% achieving the maximum score. No significant correlations were found between HL and sociodemographic factors (p=NS). Conclusion: High HL levels across diverse caregiver demographics suggest effective doctor-patient communication at this clinic. These findings highlight the importance of clear communication in mitigating barriers to understanding health information and addressing health disparities. Future research should explore other potential factors influencing HL to develop targeted interventions. Acknowledgements: Approved by IRB (02052024)

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A Comparative Assessment of Health Insurance Coverage in Puerto Rico and the United States

Kai Guo[1], Quan Kevin Shan[2], He Eric Shan[2]
[1]School of Dental Medicine, University of Puerto Rico; [2]San Juan Saint John School

Introduction: Health insurance plays a vital role in safeguarding both individual and public health by providing financial security, access to necessary medical services, and promoting overall well-being. Due to the impact of some factors (e.g., economic status, federal policies and disparities in Medicare Advantage Plans), Puerto Rico, as a U.S. territory, presents a unique case in the analysis of health insurance coverage compared to the United States. The objective of this study is to compare health insurance coverage in PR and US. Method: Using the 2023 American Community Survey (ACS) from U.S. Census Bureau, the estimate and margin of error for percent health insured, and the calculated 95% CI were assessed for overall population and within different groups, including age groups (<19, 19-64, ≥65 years), sex (male, female), education (<high school, high school, college or associate's degree, ≥bachelor degree), employment status in the last 12 months (full-time, part-time, no work), household income (<$25,000, $25,000-$49,999, $50,000-$74,999, $75,000-$99,999, ≥$100,000). In addition, chi-square tests were used for homogeneity. Results: In 2023, PR's health insurance coverage is significant higher (94.7%, 95% CI: (94.4%, 95%)) than U.S. (92.1%, (92%, 92.2%)) in total population and within the subgroups with p values<0.001: age <19 years (97.8% vs. 94.6%), 19-64 years (92% vs. 89%); male (93% vs. 91%), female (96.3% vs. 93.1%); education <high-school (94.9% vs. 79.3%), high-school (92.9% vs. 89.2%); part-time worker (89.7% vs. 85.7%), no-work (93.4% vs. 85.8%); and all income groups (% difference ranged from

+1.9% to +6%). However, the coverage was lower in the ≥bachelor group in PR (95.5% vs. 96.5%). No significant difference existed in the ≥65 years age group (99.2%) and the "college or associate" education group (92% vs. 91.3%). Conclusion: Puerto Rico has better health insurance coverage metrics such as higher insured rates compared to the U.S. All authors have reviewed and approved the information contained in the abstract and there are no conflicts to report.

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Energy Dynamics During Migration and Cytolytic Action of CAR-T Cell Tergatring Cancer Tissue Through Gel Systems

Manuel J. La Torre-Poueymirou[1], Andre Kelly[2], Roddy S. O'Connor[2]
[1]Universidad Central Del Caribe, School of Medicine, Bayamón, Puerto Rico;
[2]University of Pennsylvania, Perelman School of Medicine,
Center for Cellular Immuntherapies, Philadelphia, Pennsylvania

Background and Objectives: The efficacy of CD19-specific CAR T cell therapy is influenced by energy demands during migration and cytolytic activity. This study investigates the energy demands of CD19-specific CAR T cells during migration through a Matrigel barrier compared to their cytolytic activity. We present a proof-of-concept that CCL9-conditioned CAR T cells migrate at accelerated rates through a Matrigel barrier while exhibiting enhanced cytolytic activity. We hypothesize that preconditioning CAR T cells with CCL9 will boost their migratory capacity and improve their ability to lyse target cells. Method: By using eSIGHT real-time cell analysis (RTCA) technology, we tracked the migration of CCL9-conditioned CAR T cells through a Matrigel layer separating them from SY5Y cells expressing the CD19 antigen. We compared the migration rates of CCL9-preconditioned CAR T cells to non-preconditioned controls and assessed their cytolytic function in co-culture with SY5Y-CD19 cells to evaluate the impact of CCL9 on cytolytic capabilities. Results: Findings confirm our proof-of-concept where CCL9-conditioned CAR T cells migrate faster through the Matrigel barrier compared to controls. Furthermore, this enhanced cytolytic activity against SY5Y-CD19 target cells, indicating that CCL9 conditioning improves both migratory and cytotoxic functions. Conclusion: This study elucidates the potential of CCL9 conditioning in enhancing the migratory and cytolytic efficacy of CAR T cells, providing insights for optimizing therapeutic strategies in clinical applications. Future research will focus on characterizing mechanisms underlying these observations exploring other conditions and clinical implications. IRB Approved: Protocol #: 705906; IACUC Approved: Protocol #: 807240. Acknowledgments: This research at the ROC Lab was supported by NIH R01 CA278837.

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Nivel de Concordancia Entre los Tecnólogos Médicos Durante el Análisis Microscópico de Sedimento Urinario con Tinción Directa *Sternheimer Malbin*

Michael Alejandro-Berdecía, Yadiris López-Rivera, Linda Pérez-Laras
Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela de Profesiones de la Salud,
Maestría en Ciencias de Laboratorio Clínico

Trasfondo y Objetivos: La enfermedad renal crónica (ERC) representa un desafío global de salud debido a su prevalencia y consecuencias clínicas. La detección temprana es crucial para mejorar la calidad de vida de los pacientes y prevenir complicaciones. El análisis urinario se destaca como una herramienta valiosa en este contexto, proporcionando información diagnóstica y pronóstica. Sin embargo, la calidad de este análisis depende en gran medida de la habilidad y experiencia del tecnólogo médico y la calidad de la muestra. El objetivo de esta investigación fue evaluar la concordancia entre los tecnólogos médicos en la detección de elementos patológicos durante la lectura del sedimento urinario utilizando el tinte supravital Sternheimer-Malbin (SM). Métodos: El estudio transversal utilizó muestras de sedimentos urinarios (N=100) de un laboratorio clínico privado ubicado en San Juan, Puerto Rico, durante el periodo de estudio de octubre a noviembre de 2023. La edad promedio de los participantes fue 71 años (±16.8). El análisis estadístico del coeficiente de Kappa fue utilizado para evaluar la concordancia interobservadora entre los tecnólogos médicos. Resultados: Los únicos elementos del sedimento urinario con niveles de concordancia sustancial fueron las células rojas, las células blancas y los cristales amorfos (k=0.62, k=0.76 y k=0.65, p<0.001). Los elementos del sedimento urinario con niveles de concordancia de leve a pobre fueron las células transicionales, las células renales y los cristales de oxalato de calcio (k=0.24, k=0.33 y k=0.23, p<0.001). La concordancia interobservadora entre los tecnólogos médicos al evaluar las muestras con tinción SM fue casi perfecta para todos los elementos del sedimento urinario (k=0.81-1.0, p<0.001). Conclusión: En todas las muestras, la tinción SM permitió una mejor recuperación de elementos del sedimento urinario, incluida la detección de cilindros renales y otros elementos patológicos, indicando su potencial para mejorar la detección de elementos clave en la identificación temprana de ERC. IRB Protocol: 2309144591

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Development of a Non-Invasive, Self-Managed Physical Therapy System to Improve Wrist Motor Functions Using sEMG Data Signals

Sarah Naji-Naji[1]; Alex J. Díaz-Sepúlveda[1]; Ariana Ortega-Mendoza[2]; Adriana Pagán-Hernández[3]; Camelia Zamora-Vázquez[4]; Jorge Ruiz-Torres[5]; Ricardo Nieves-Santiago, BS[5]; Walter Frontera, PhD[5]; Abraham Schwartz, PhD[5]; Emma Fernández-Repollet, PhD[6]
[1]University of Puerto Rico, Río Piedras Campus; [2]Adianez School; [3]University of Rochester; [4]Georgia Institute of Technology; [5]Commonwealth-Parkville School; [6]University of Puerto Rico, Medical Sciences Campus

Background and Objectives: Wrist injuries or chronic conditions can severely impair motor functions, necessitating physical rehabilitation for recovery. Physical rehabilitation therapy is essential for recovery, but traditional methods may be limited by accessibility, cost, and time constraints. To address these limitations, this project aimed to develop a non-invasive, 3D-printed physical therapy device designed to use surface electromyography (sEMG) signals for self-managed wrist therapy, providing a cost-effective solution for individuals with impaired wrist motor functions. Methods: The device was designed using computer-aided design (CAD) software and 3D-printed with PLA filament. It integrates six electrodes placed on specific muscle groups, including the flexor carpi ulnaris (FCU) and extensor carpi ulnaris (ECU), to capture sEMG signals. A Raspberry Pi processes and stores the signals to control the device's movements. Signals were recorded from a sample group of healthy subjects, rectified, and processed to establish threshold values for activating the device. The therapy device reproduced wrist flexion and extension movements based on these signals. Results: The device successfully mirrored wrist movements with a defined threshold range

of 1000–3500 mV for flexion and 1000–2500 mV for extension, providing precise activation of the therapy device. Preliminary findings suggest that this system can provide consistent and reproducible motion patterns for physical therapy exercises. These results highlight the potential of the device as a cost-effective, accessible alternative to traditional rehabilitation. Conclusions: This study presents a self-managed, 3D-printed therapy device that leverages sEMG signals for non-invasive wrist rehabilitation. Future research will focus on testing the device's effectiveness with injured subjects and comparing outcomes with standard outpatient therapy. Acknowledgments: This project is supported by the Biomedical Innovation Center, Department of Pharmacology, School of Medicine, University of Puerto Rico Medical Sciences Campus.

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Social Determinants of Health Associated with Clinical Trials Participation among Hispanic/Latino Cancer Survivors Residing in Puerto Rico

Liamarys Ortiz-Torres, BS[1]; Stephanie Cameron-Maldonado, MS[2]; Lorena González-Sepúlveda, MS[2,3]; Karina Rivera-Mejías, MPH[3]; Noedly Ayala-Sánchez[1]; Yadielis Arce-Rivera[1]; Alejandra Díaz-Rohena, BS[5]; Natalia Domínguez-Betancourt[4]; María Vázquez-Torres, BS[2]; Marivelisse Soto-Salgado, DrPH, MS[2]
[1]University of Puerto Rico, Cayey Campus, Cayey, PR; [2]University of Puerto Rico Comprehensive Cancer Center, San Juan, PR; [3]University of Puerto Rico, Medical Sciences Campus, Graduate School of Public Health, San Juan, PR; [4]University of Puerto Rico, Río Piedras Campus, San Juan, PR; [5]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, PR

Background and Objectives: Clinical trials (CT) are the backbone of new cancer treatments. However, participation in cancer CT remains low, with the Hispanic/Latino minority particularly underrepresented. This study aimed to assess the demographics and social determinants of health (SDoH) factors associated with participation in CT among Hispanic/Latino cancer survivors in Puerto Rico. Methods: Data from the ongoing cross-sectional study START-PR was analyzed. Cancer survivors who completed the online survey between November 2023 and December 2024, aged 21+ years, residing in PR, and receiving treatment within the last year, were included in this analysis (n=566). A multivariate logistic regression analysis was used to evaluate the association between demographics and SDoH factors and CT participation; odds ratios (OR), and 95% confidence intervals (95%CI) were adjusted by age, sex, education, income, medical insurance, comorbidities, and physical limitation. Results: Most of the participants were women (68.6%), aged 51-64 years (41.2%), residing in urban areas (56.6%), and had at least a high school education (72.7%). Only 18.4% reported having participated in CT. Higher odds for participating in CT were observed for individuals diagnosed at a regional stage (aOR=1.67, 95%CI: 0.99-2.82) and those who had physical limitations (aOR=2.14, 95%CI: 1.16–3.93) compared to those diagnosed at localized stages and without physical limitations, respectively. Meanwhile, those aged 65+ showed 46% lower odds (95%CI: 0.28, 1.03) of participating in CT than those aged 21-50. Sex, area of residence, education level, employment status, income level, transportation access, and type of health insurance were not associated with CT participation (p>0.05). Conclusions: The participation of cancer survivors in CT in Puerto Rico is notably low. Despite physical limitations and the advanced cancer stage being associated with CT participation, future studies should identify interventions to increase the participation of Hispanic/Latino cancer survivors in cancer-related CT. Acknowledgments: This study was supported by the UPRCCC IRB (protocol #: 2023-11-123).

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Critical Importance of Early Symptom Recognition and Proactive Management in Preventing Fatal Outcomes: A Case Report on Autoimmune Polyglandular Syndrome

Paola E. Flores-Arroyo, BS[1]; Arnaldo E. Álvarez-Meléndez, BS[2]; Emily A. Rosa Bouza, BS[4]; Camilla M. Feliciano González, BS[4]; Hilmaris C. Santiago Figueroa, BS[2]; Andrés B. Sosa-González, MSc[1]; Anabel Puig Ramos, PhD[5]; Gilberto Puig-Ramos, MD[3]
[1]Ponce Health Sciences University, Ponce, PR; [2]San Juan Bautista School of Medicine, Caguas, PR; [3]San Jorge Children and Women's Hospital, San Juan, PR; [4]University of Puerto Rico, Medical Sciences Campus, San Juan, PR; [5]UPR-School of Medicine Department of Pediatrics- Critical Care Section, San Juan, PR

Autoimmune Polyglandular Syndrome (APS) is a rare inherited disorder characterized by immune dysfunction targeting multiple endocrine glands, leading to significant multi-organ complications. The condition is often associated with mutations in the AIRE gene, crucial for maintaining immune tolerance, and the HLA-DR/DQ gene complex, which predisposes individuals to specific autoimmune diseases within the APS spectrum. Diagnosis is typically confirmed through genetic testing for AIRE mutations, although clinical suspicion arises when a patient exhibits at least two hallmark components of the syndrome. Beyond its core features, APS may involve additional autoimmune manifestations affecting the skin, bones, joints, nails, and gonads. APS type 1 is distinguished by a classic triad: chronic mucocutaneous candidiasis, hypoparathyroidism, and adrenocortical insufficiency. We report the case of a 13-year-old Hispanic girl admitted to the PICU following an adrenal crisis. Her medical history includes APS type 1 and growth hormone deficiency, both managed with hormone replacement therapy. During hospitalization, she presented with hypocalcemia, hyperglycemia, hypercapnia, and hypomagnesemia, necessitating urgent adjustments to her medications and close follow-up. Notably, her prior hospitalizations were complicated by episodes of hypercalcemia, hyponatremia, and symptoms resembling thyroid storms. The patient and her caregiver were educated on the severity of the condition and the importance of recognizing high-risk symptoms, such as hypoglycemia, fatigue, polyuria, polydipsia, nausea, vomiting, and abdominal pain. They were also advised to report symptoms or triggers promptly for evaluation and treatment. Effective management of electrolyte imbalances, maintenance of homeostasis, and strict adherence to hormonal therapy were emphasized as essential for positive outcomes. This case underscores the complexity of Autoimmune Polyglandular Syndrome, which involves more than endocrine dysfunction alone, requiring vigilance for its broad manifestations. Comprehensive care necessitates a multidisciplinary approach to screening, evaluation, and management. Early diagnosis, timely interventions, and ongoing education are pivotal to reducing complications and improving patient outcomes.

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Efficacy of a Novel Myosin II Inhibitor of Muscle Contraction in Juvenile Zebrafish Hearts

Victoria A. Blaiotta Vázquez, MPH[1]; Christopher Kauffman[2]; Natalia Torres, PhD[2]; Martin Tristani-Firouzi, MD[2]
[1]University of Puerto Rico, School of Medicine; [2]Nora Eccles Harrison CVRTI, University of Utah

Background and Objectives: Aficamten® (CK-274) is a cardiac myosin II inhibitor used to treat hypertrophic cardiomyopathy (HCM), which reduces left ventricular outflow. Its properties, such as high solubility, stability, and lack of photosensitivity, make it a good candidate for electrophysiologic studies where motion artifact needs to be eliminated. Blebbistatin has been widely used for this purpose, but its disadvantageous chemical properties complicate its use. A latter developed blebbistatin derivative, Para- aminoblebbistantin, showed better solubility but still shares some of the blebbistatin drawbacks. In this study we aim to assess the efficacy and optimal dosage of Aficamten® for electrophysiologic studies in explanted zebrafish hearts by evaluating contractility, calcium transients, and action potential (AP) after its application. Methods: We recorded contractility, calcium transients, and action potential from the explanted juvenile and adult zebrafish hearts in control solution and after exposure to 5, 15, and 20μM of Aficamten® in five-minute increments. Contractility was assessed by video recording, and calcium transients and action potentials were acquired in a spinning disk microscope. All procedures were approved by the Institutional Animal Care and Use Committee (IACUC) under protocol #00001744, valid through [4/29/27]. Results: Aficamten was found to have good solubility at all used concentrations. We found that 20μM of Aficamten reduced the frequency and strength of the contractions after 30 minutes treatment. However, action potential and calcium transient were still present in the absence of contraction. We also observed a reduction in the heart rate after Aficamten treatment that needs further experiments to understand. Conclusion: We conclude that Aficamten has a similar dose and treatment time performance than blebbistatin, without the solubility or photostability issues. Future studies should compare the effect of blebbistatin, with that of para-aminoblebbistain and Aficamten® in action potential and calcium transient recordings to determine optimal use in electrophysiological studies of zebrafish hearts. Acknowledgments: This work was supported by the NIH Ruth L. Kirschstein National Research Service Award (NRS) institutional training grant (T35HL007744, Dr. Tristani-Firouzi), and the Medical Student Research Program at the University of Utah SFE School of Medicine. The content is solely the authors' responsibility and does not necessarily represent the official views of NIH.

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Persistent ARVD/C-like Electrophysiology Following Successful Excision of a Right Atrial Myxoma

Adrian A. Naoun[1], Génesis Virella[1], Carol Sánchez Santana[1], Milianette Cruz[1], Luis Jiménez Reyes
[1]San Juan Bautista University, Department of Medicine, Caguas, PR, USA;
[2]Caribbean Heart Institute, Caguas, PR, USA

Purpose: Our case explores the clinical management and implications of a right atrial myxoma with atypical features, including persistent conduction abnormalities post-resection. Case description: Herein, a 46-year-old female presented with symptoms including dizziness, shortness of breath, and general fatigue. Initial electrocardiogram evaluation revealed an inverted T wave in leads aVL and V1, poor R-wave progression (PRWP), nonspecific ST-T wave changes (NSSTTWC), and a right ventricular conduction delay (RVCD) with a primitive epsilon wave in lead V1. A 2D transthoracic echocardiography showed impaired diastolic filling, diminished relaxation, mild left atrium dilation, and a pedunculated mass suggestive of a right atrial myxoma. Cardiothoracic surgery successfully excised the mass weighing 35 grams and measuring 4.7 x 4.5 x 3.5 cm. Histopathological examination confirmed the cardiac myxoma diagnosis and revealed compelling additional findings of multiple dark red hemorrhagic foci and an inflammatory infiltrate, implying an atypical proinflammatory phenotype with potential postoperative

complications. Conclusion: Despite successful resection of the myxoma, follow-up ECGs showed persistent inverted T wave morphology in leads aVL and V1, a primitive epsilon wave associated with RVCD, and a right axis deviation, though the NSSTTWC and PRWP patterns resolved. Subsequent echocardiograms noted no structural abnormalities, ruling out remnant intracavitary masses or atrial appendage thrombosis. These persistent electrophysiological abnormalities suggest underlying structural or conduction system abnormalities resembling a pseudo-arrhythmogenic right ventricular dysplasia/cardiomyopathy (ARVD/C) constellation. The mechanism(s) remains in question; however, genetic predisposition, mild congenital anomalies, and/or inflammation-induced fibrotic changes might have contributed to altered electrical conduction. In conclusion, our case highlights the complexity of cardiac myxoma presentations, offers insights into persistent conduction abnormalities, and suggests immunophenotyping to predict postoperative recovery while facilitating targeted therapies. Acknowledgments: No funding or conflicts of interest reported.

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¡Ponte al Día! Proyecto Intergeneracional: Cerrando Brechas Digitales para Combatir la Soledad en Adultos Mayores de Puerto Rico

Gabriella Tarrats-Irizarry, Rachel Millán-Rodríguez, Gabriela Algarín-Zayas, Marianyoly Ortiz-Ortiz
Puerto Rico Public Health Trust, Puerto Rico Science, Technology and Research Trust

Trasfondo y Objetivos: En Puerto Rico, donde el 34% de los adultos mayores de 60 años han muerto por suicidio, la soledad y el aislamiento representan una crisis silenciosa de salud pública agravada por la inequidad digital. El proyecto ¡Ponte al Día! mediante Promotores de Salud Comunitaria Jóvenes busca promover la alfabetización digital y fortalecer la conexión social. Método: El proyecto se llevó a cabo en Naguabo con la meta de reclutar 100 participantes de 55 años o más. Elaboramos perfiles de los(as) participantes y administramos pre y pospruebas para medir los niveles de soledad con la Escala Adaptada de Soledad de UCLA, y las habilidades digitales. Se realizaron nueve (9) intervenciones grupales e individuales dirigidas por las PSCJ con los temas de funciones básicas del teléfono como llamadas y contactos, y plataformas como WhatsApp. Resultados: Se reclutaron 88 participantes de seis comunidades de Naguabo. Durante la preprueba, el 56% presentó un nivel bajo de soledad, mientras que el 42% reportó un nivel moderado. El 2% de los participantes obtuvo un nivel moderadamente alto. De los 88 participantes iniciales, 55 completaron la posprueba, y los resultados reflejaron un impacto positivo en los niveles de soledad; el 64% de los(as) participantes presentó un nivel bajo, y el 36% un nivel moderado. Esto representa una disminución del 100% en la categoría "moderadamente alto" y del 46% en la categoría "moderado". Conclusión: El proyecto ¡Ponte al Día! aborda la inequidad digital y reduce la soledad en adultos mayores mediante sesiones grupales donde aprenden a usar herramientas tecnológicas fortaleciendo sus conexiones sociales.

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A Close Call: Airway Compromise due to Fractured Tracheostomy Tube Presenting as Tracheal Foreign Body

Clariliz Munet Colón, MD[1]; Javier A. Vilá Ortiz, BS[1]; Pamella Abreu Lozada, BS[2]; Eric Pérez Pérez, BS[2]; Shayanne A. Lajud Guerrero, MD[1]

[1]University of Puerto Rico School of Medicine,
Otolaryngology–Head & Neck Surgery Section, Surgery Department, San Juan, Puerto Rico;
[2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, Puerto Rico

Objective: This report highlights the case of a fractured tracheostomy tube presenting as a tracheal foreign body. Case Presentation: A 46-year-old female presented to the ER with mild respiratory distress. Pertinent medical history included tracheostomy due to prolonged mechanical ventilation after a drug overdose-induced heart attack. On arrival to our service, the patient was stable, with no apparent indication of a tracheostomy tube malfunction. However, a chest X-ray confirmed that the tracheostomy tube had fractured near the faceplate junction and migrated to the carina, thereby compromising the patient's airway and prompting immediate need for foreign body management. In the OR, the tracheal stoma was dilated using a nasal speculum and the tube shaft was removed using a curved hemostat and replaced under direct visualization via flexible bronchoscopy. Conclusion: Careful monitoring of tracheostomy patients is important to reduce the risk of life-threatening complications. Although rare, airway compromise due to tracheostomy tube malfunction may occur after prolonged tube usage without replacement. Additional stress factors like repeated sterilization of the device may contribute to the tube's underlying deterioration. Overall, this case underscores the role of pertinent best practices like bi-monthly tube replacement in mitigating preventable adverse events during tracheostomy management. IRB (2290033311) approved study. Acknowledgments: No conflicts of interests.

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Uso de Servicios de Salud entre la Población de Hombres y Mujeres Trans y Personas de Género No Binario en Puerto Rico

Manuel Franco Colón, DrPH[1]; Carlos E. Rodríguez Díaz, PhD, MPH, MCHES[2]; Caleb Esteban, PhD[3]; Mariela Torres Cintrón, DrPH, MS[1]
[1]Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela Graduada de Salud Pública; [2]Boston University School of Public Health; [3]Ponce Health Sciences University

Trasfondo y Objetivos: La limitada recolección sistemática de datos sobre poblaciones transgénero dificulta la comprensión de sus necesidades de salud y patrones de utilización de servicios. Este estudio buscó identificar diferencias en el uso de servicios de salud entre hombres transgénero, mujeres transgénero y personas no binarias, considerando factores que predisponen, facilitan o generan necesidad. Método: Análisis secundario de datos de una encuesta realizada en 2020 por Arianna's Center y Sex+TEAM del Recinto de Ciencias Médicas con personas transgénero y no binarias en Puerto Rico (n=188). El análisis estadístico incluyó estadísticas descriptivas, análisis bivariados y regresión logística multivariada, basados en el Modelo de Comportamiento de Uso de Servicios de Salud de Andersen. Los análisis bivariados y multivariados tomaron en consideración las categorías de identidad de género de hombres y mujeres transgénero (n=166), por la falta de información en la categoría de personas no binarias. Aprobado por IRB, protocolo #2312169746. Resultados: Las mujeres transgénero mostraron mayor probabilidad de recibir supervisión médica para afirmación hormonal (OR=0.18, p=0.028) y usar PrEP (OR=12.87, p=0.002) comparadas con hombres transgénero. Después de ajustar por covariables, las cirugías de afirmación de género se asociaron con la edad (aOR=2.97, p=0.014) e ingresos anuales (aOR=4.42, p=0.005). El estado civil influyó significativamente en el uso de PrEP entre mujeres transgénero (aOR=0.11,

p=0.002). No se encontraron diferencias significativas por identidad de género en el acceso a otros servicios como pruebas de ITS. Conclusión: Los hallazgos demuestran patrones distintos de utilización de servicios de salud entre subgrupos transgénero, con mujeres transgénero mostrando mayor participación en ciertos cuidados preventivos y relacionados con la transición. Factores socioeconómicos influyen significativamente en el acceso a procedimientos de afirmación de género. Los resultados resaltan la necesidad de intervenciones y políticas dirigidas que aborden las barreras específicas que enfrentan diferentes segmentos de la población transgénero. Reconocimientos: Estudio apoyado por Arianna's Center y Sex+TEAM del Recinto de Ciencias Médicas.

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Retrospective Evaluation of Molecular Diagnostic Approaches for BCR-ABL1-negative Myeloproliferative Neoplasms in Puerto Rico

Loraine Rivera Ostolaza[1], Celinés Rodríguez Acevedo[2], Elinette Albino[1,2]
[1]School of Health Professions, Clinical Laboratory Sciences Program, Medical Sciences Campus, University of Puerto Rico, Río Piedras, PR; [2]School of Health Professions, Puerto Rico Genetics Laboratory, Medical Sciences Campus, University of Puerto Rico, Río Piedras, PR

Background and Objectives: Philadelphia-negative myeloproliferative neoplasms (MPN) BCR-ABL1-negative are chronic clonal disorders resulting from genetic alterations in hematopoietic progenitor cells, causing increased proliferation of mature blood cells. Traditionally, they are categorized into polycythemia vera (PV), essential thrombocytopenia (ET), and primary myelofibrosis (PMF) based on the affected cell lineage. This study aimed to analyze the testing algorithms used by Puerto Rican physicians from 2018 to 2020 for diagnosing Philadelphia-negative myeloproliferative neoplasms (MPNs) and determine the prevalence of MPNs in Puerto Rico and assess hematologists' awareness and application of molecular testing algorithms through a questionnaire. Methods: This study utilized a reference lab database from 2018 to 2020 to analyze diagnostic testing algorithms employed by Puerto Rican physicians for Philadelphia-negative myeloproliferative neoplasms (MPNs). Surveys were administered to hematologists to assess their awareness and application of molecular testing, focusing on practices for tests such as JAK2V617F, CALR, MPL, and JAK2EXON12 in diagnosing conditions like polycythemia vera (PV) and essential thrombocytopenia (ET). The study also examined challenges, including financial constraints related to insurance coverage and communication gaps between clinicians and laboratories, to identify areas for improving diagnostic practices. Results: Survey results indicated that in suspected PV cases without the JAK2V617F mutation, 75% would order a JAK2EXON12 test. For ET without the JAK2V617F mutation, 73.3% chose the CALR mutation test. Notably, when both JAK2V617F and CALR were negative in suspected ET cases, 86.7% favored the MPL test, and 13.3% preferred a bone marrow biopsy. A unanimous challenge reported was insurance coverage when ordering molecular tests. Communication between clinicians and labs varied, with some maintaining active dialogue and others admitting limited interactions. Conclusion: While MPN diagnosis requires a synergy of clinical expertise and genetic insights, challenges like financial constraints and communication gaps exist. The study underscores the need for standardized guidelines, enhanced training, and strengthened physician-lab interactions for optimal patient outcomes.

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Development of an Automated Operant Conditioning Chamber for Assessing Hedonia and Motivation in Rats

Saumarí Negrón-Santos[1], Charlie J. Montes Rivera[1*], Keven Laboy-Juárez[2#]*
[1]University of Puerto Rico, Bayamón Campus, Department of Electronics, Bayamón, Puerto Rico;
[2]University of Puerto Rico, Molecular Sciences Research Center, San Juan, Puerto Rico
[*]These authors contributed equally to this work; #Author for correspondence: keven.laboy@upr.edu

Background and Objectives: A variety of techniques can be utilized for psychiatric drug discovery. To enhance and facilitate their study, custom-designed operant conditioning chambers serve as fully integrated home-cage environments for automated effort discounting task training in rats. Building on the foundational automated rodent training (ARTs) designs from Dr. Ölveczky's laboratory at Harvard, some key modifications have been identified for adapting the system. These include incorporating hedonic measurements to detect anhedonia and enhancing hardware stability and scalability. Method: Comprehensive redesign and modifications were implemented on the foundational hardware for automated behavioral training to enhance system stability and scalability while conserving performance. This enables its adaptation for the use of the Two-Arm Bandit Task, an established training method that has not been automated. The implementation and assembly of the system incorporates two levers and two lick ports, with their respective reward delivery system for sugar or water to the rodent with the purpose of studying hedonic measurements. Results: The improved system responds as fast as the rat interacts with it. With a new microcontroller, it has a latency response of 8 to 12 microseconds. This ensures that behavioural events like lever presses are recorded at a temporal precision that allows proper behavioural phenotyping and mapping of neural responses to behaviour. Conclusion: Automated training systems for studying hedonic measurements to detect anhedonia could prove invaluable to researchers, as it would streamline their studies by allowing the system to operate independently, freeing up valuable time previously spent on constant human intervention. The system is being developed with the objective of creating a modular design that will facilitate commercialization and adaptation to new research initiatives. IACUC Approved: Protocol #: 2024-0003 (08/16/2024). Acknowledgments: This project is funded by the University of Puerto Rico, Molecular Sciences Research Center and supported as a Capstone project at the University of Puerto Rico at Bayamón.

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Comparative Analysis of Lipidomic Profiles Focused on Diabetes and Age

Emilie I. Dávila Perea[1,2], MinYoung Park[1], José O. Alemán[1]
[1]Holman Division of Endocrinology and Diabetes, Department of Medicine, New York University Langone Health, New York, USA; [2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, Puerto Rico

Background and Objectives: Analyzing lipid profiles provide insights into their role in health and disease. Abnormal lipid profiles have been linked to type 2 diabetes (T2D), cancer, and cardiovascular and neurodegenerative disease.

Liquid Chromatography–Mass Spectroscopy (LC-MS) provides data on types, subtypes, and concentrations of lipids. This study aimed to compare differences in lipidomic profiles by age and diabetes status. Methods: We divided LC-MS data from human plasma samples from participants in two different studies into four groups: 1) young (age<60), non-diabetic group (YND) (HbA1c <5.7%, n=16, avg age=40); 2) young type 2 diabetic group (YD) (HbA1c ≥ 6.5%, n=13, avg age=49); 3) older (age>60) insulin-sensitive group (OIS) (SSPG ≤ 150 mg/dL, n = 5, avg age=63); and 4) older insulin resistant group (OIR) (SSPG > 150 mg/dL, n = 6, avg age=64). We averaged lipid concentrations (nmol/mL) per lipid species for each patient group and calculated the percent difference of diabetic lipid concentrations relative to their non-diabetic counterpart's. Results: In the OIR group, lysophosphatidycholine, sphingomyelin, diglyceride and ceramide concentrations showed greater percent changes from their non-diabetic controls than did YD. Triglyceride levels increased in both age groups among those with IR or T2D, relative to their controls. Phosphatidylethanolamines, phosphatidylcholines, and cholesterol esters showed decreased concentrations in YD compared to YND, while no significant changes were observed between OIR and OIS. Lysophosphatidylethanolamines exhibited opposing trends: a percent increase in YD and a percent decrease in OIR. Conclusions: These results suggest age impacts metabolic responses to diabetes, thus resulting in distinct lipid profiles between younger and older diabetics. It also underlies lipids' distinct behaviors, and how these are uniquely altered due to age and diabetes. This study emphasizes the need for age-specific approaches to diabetes care to address distinct lipidomic profiles in disease and their potential associated risks. Acknowledgements: This research was supported by the Medical Student Training in Aging Research (MSTAR) Program.

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Changes in T Cell and B Cell Subsets in Hispanic Patients with Cervical Dysplasia and Cervical Cancer During Chemoradiation Treatment

Emmanuel Colón Rodríguez, BS[1]; Josefina Romaguera, MD[1,2]; Kamila A. Andino del Valle[3]; Sharee Umpierre, MD[1,2]; Madison O'Hara, BS[4]; Lauren Colbert, MD[4]; Jagannadha K. Sastry, PhD[4]; Stephanie M. Dorta-Estremera, PhD[1,5]
[1]University of Puerto Rico Comprehensive Cancer Center, Clinical and Translational Sciences Division; [2]University of Puerto Rico, Medical Sciences Campus, Obstetrics and Gynecology Department; [3]San Juan Bautista Medical School; [4]University of Texas MD Anderson Cancer Center; [5]University of Puerto Rico, Medical Sciences Campus, Microbiology Department
Author email: ecolonr05@gmail.com; PI email: stephanie.dorta@upr.edu

Background & Objectives: Cervical cancer ranks as the fourth most common cancer among women globally. It often begins with persistent human papillomavirus (HPV) infections, which can progress to cervical dysplasia, and, if left untreated, cervical cancer. Compared to non-Hispanic White, Hispanic women had a 30% higher chance of dying from cervical cancer and a 40% higher chance of receiving a diagnosis. Our project aims to investigate how T cell and B cell subsets change during cervical disease progression and during chemoradiation in Hispanic women and to identify immunological biomarkers that can guide individualized treatments for this population. Methods: Our study recruits individuals in San Juan, PR and Houston, TX to collect blood samples and cervical cytobrushes. Peripheral blood mononuclear cells (PBMCs) and cervical samples undergo immune cell quantification and characterization by flow cytometry to analyze T and B cell populations and activation sites. Results: We observed a significant decrease in CD4+ T helper cells in cervical brushings from cervical

cancer patients compared to dysplasia patients. In cervical brushings, a decrease of CD27-CD38+ (% among CD4+) and CD27+CD38+ was generally observed between healthy and cervical cancer patients. In PBMCs, significant reductions of CD27-CD38+ and CD27+CD38+ T cells were observed on cancer patients compared to healthy individuals. Conclusions: Some differences were observed on specific T cell populations, especially those expressing CD38, an early activation marker for T cells in cervical cancer patients. Further research is needed to determine their functionality and clinical relevance. The findings emphasize the potential role of immune profiling in predicting treatment responses and developing targeted therapies for Hispanic cervical cancer patients. IRB Approved: Protocol #: 2210058249A010 (March 2023). Acknowledgements: This project was partially supported by CAPAC (Award Grant Number# R25CA240120) from the NCI, the UPR/MDACC: Partnership for Excellence in Cancer Research (Award# U54CA096300/U54CA096297), and Seed money from the Comprehensive Cancer Center University of Puerto Rico.

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Radiographic Predictors of Chronic Subdural Hematoma Recurrence: Insights from a Population-Based Study

Carlos E. Calderón Valero, BS, MS[1,2]; Giancarlo Mignucci-Jiménez, MD[1,3]; Esteban Rivera, BS[2]; Alejandro J. Matos-Cruz, MD[4]; Kivanc Yangi, MD[1]; Aixa De Jesús, MPH[5]; Caleb Feliciano, MD[5]; Mark C. Preul, MD[1]

[1]The Loyal and Edith Davis Neurosurgical Research Laboratory, Department of Neurosurgery Barrow Neurological Institute, St. Joseph's Hospital and Medical Center, Phoenix, Arizona; [2]University of Puerto Rico, Sciences Campus, School of Medicine, Department of Medicine, San Juan, Puerto Rico; [3]The University of Oklahoma, Department of Neurosurgery, Oklahoma City, Oklahoma; [4]Department of Neurosurgery Allegheny General Hospital Pittsburgh, Pennsylvania; [5]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Section of Neurosurgery, San Juan, Puerto Rico

Introduction: Chronic subdural hematomas (CSDHs) are a common neurosurgical condition with a significant risk of recurrence following initial surgical intervention. Identifying patients at high risk for recurrence is essential for optimizing outcomes and enhancing patient care. This study aimed to identify preoperative and postoperative radiographic variables associated with CSDH recurrence in the Puerto Rican population. Methods: We conducted a single-center, population-based retrospective study using data from patients who underwent surgical treatment for chronic subdural hematomas (CSDHs) at the Puerto Rico Medical Center over more than two (2) years. Patient demographics, clinical characteristics, and preoperative and postoperative computed tomography (CT) images were collected and analyzed. Multivariate analysis was performed to identify radiographic variables associated with CSDH recurrence. Results: Among the 428 patients treated during the study period, 10.5% (n=45) experienced at least one recurrence, with a median (Q1–Q3) time to recurrence of 26 days. Our analysis revealed that postoperative midline shift and the size of the postoperative secondary subdural space in patients with bilateral CSDH were independently associated with recurrence ($P \leq 0.01$). Conclusion: The present study stands out due to its unique population and findings. Conducted at a single institution responsible for all trauma and emergent neurosurgical care, excluding strokes, this

population-based study provides a comprehensive analysis of preoperative and postoperative radiographic variables associated with chronic subdural hematoma (CSDH) recurrence. Our findings further emphasize that radiographic variables can serve as valuable predictors for identifying patients at high risk of CSDH recurrence following initial surgical evacuation. IRB Approved: Protocol #: A0230120 (09/12/2022)

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Genetic Literacy and Experiences with Genetics, Diagnostics, and Support Services in Puerto Ricans Diagnosed with Huntington's Disease

Laly Sánchez-Delgado[1], Elinette Albino[1,2]
[1]School of Health Professions, Clinical Laboratory Sciences Program, Medical Sciences Campus, University of Puerto Rico, Río Piedras, PR;
[2]School of Health Professions, Puerto Rico Genetics Laboratory, Medical Sciences Campus, University of Puerto Rico, Río Piedras, PR

Background and Objectives: Huntington's Disease (HD) is a neurodegenerative disorder with autosomal dominant inheritance, profoundly impacting individuals and families. Despite the availability of genetic testing and counseling, access to these services is limited in underserved populations. This study examines the genetic literacy of Puerto Ricans diagnosed with HD and explores their experiences with genetic diagnostics, educational support, and essential services. Methods: A mixed-methods approach was employed, combining quantitative surveys to evaluate genetic literacy with qualitative interviews to document experiences with genetic testing, diagnosis, and support services. Participants were recruited through Fundación Huntington Puerto Rico. The survey included validated genetic literacy tools, while semi-structured interviews captured their perceptions, challenges, emotional responses related to their diagnostic journey and the role of support services in addressing their needs. Results/Anticipated Results: Findings reveal that none of the participants had access to formal genetic counseling services, highlighting a significant gap in care. However, many reported receiving educational support and assistance with essential services through Fundación Huntington Puerto Rico, which they described as critical for navigating their condition. Participants expressed concerns about stigma, accessibility to specialized care, and the emotional burden of the disease on family dynamics. Genetic literacy levels were limited, with most participants demonstrating only a basic understanding of inheritance patterns and genetic testing implications. The emotional and practical support from the foundation mitigated some challenges associated with the lack of formal counseling services. Conclusion: This study highlights critical gaps in genetic literacy and systemic challenges faced by Puerto Ricans diagnosed with Huntington's Disease. While the lack of access to formal genetic counseling underscores the urgent need for culturally tailored counseling services, the pivotal role of organizations like Fundación Huntington Puerto Rico in providing educational and practical support cannot be overstated. Strengthening collaborations between healthcare providers and community organizations could bridge these gaps, enhance understanding, and improve access to care, ultimately supporting better disease management and informed family planning decisions. IRB Approved: Protocol #: 2302078362 (08/01/2023)

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Risk Factors for Cerebral Aneurysms in Sickle Cell Disease

Alejandro R. González-Barreto[1], Manus Donahue[2],
Mark Rodeghier[3], Samantha Davis[4],
Michael R. DeBaun[4,5], Adetola A. Kassim[5,6], Lori C. Jordan[4]
[1]University of Puerto Rico, Medical Science Campus, School of Medicine, San Juan, Puerto Rico;
[2]Vanderbilt University Medical Center, Department of Neurology, Nashville, Tennessee;
[3]Rodeghier Consulting, Chicago, Illinois;
[4]Vanderbilt University Medical Center, Department of Pediatrics, Nashville, Tennessee;
[5]Vanderbilt-Meharry Center of Excellence in Sickle Cell Disease, Nashville, Tennessee;
[6]Vanderbilt University Medical Center, Department of Medicine, Nashville, Tennessee

Background & Objectives: Cerebral aneurysm frequency in sickle cell disease (SCD) is higher than in the general population. Specific risk factors explaining this difference have not been previously explored. We hypothesize that increased cerebral blood flow (CBF), low hemoglobin levels, and documented risk factors for aneurysms in the general population would be associated with aneurysm development in SCD. Methods: An IRB approved cohort study was performed. Children and young adults with SCD (HbSS and HbSβ0 thalassemia) were recruited from SCD clinics at an academic medical center and a community health clinic from 2014 to 2022, along with age- and race-matched controls. Inclusion criteria were ages 6-45 years, MRI/MRA of the brain, and risk factor data. Exclusion criteria included no MRI due to contraindications (e.g., metal in the body or claustrophobia). CBF was assessed via MRI with pseudo-continuous arterial spin labeling. Results: The study included 183 SCD participants, 13 (7.1%) with aneurysms. Among 77 controls, 3 (3.9%) had aneurysms (all women). In the SCD group, 10 of 13 (76.9%) aneurysms occurred in males, while 76 of 170 (44.7%) without aneurysms were male ($p=0.025$). Among those with aneurysms, 3 of 13 (23.1%) were smokers versus 8 of 170 (4.7%) without aneurysms ($p=0.035$). Median age was older in those with aneurysms (30.9 vs. 17.2 years, $p<0.001$). Systolic blood pressure (SBP) and hemoglobin levels were not significantly different ($p=0.074$ and $p=0.358$), though SBP was 119.7±14.9 with aneurysms vs. 113.2±12.3 without. Mean gray matter CBF was higher in those with aneurysms (86.7±25.9 vs. 80.8±20.3 ml/100g/min, $p=0.325$). Conclusion: Increased CBF and low hemoglobin were not risk factors for aneurysms in this cohort. Age and smoking were significant, while male sex was a risk factor in SCD, unlike in the general population. IRB Approved: Protocol #: IRB00002125 (10/21/2024). Acknowledgements: This research was supported by NIH grants R01HL155207, R01NS096127 and K24HL147017.

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A Longitudinal Case of Hurthle Cell Carcinoma Followed by Papillary Thyroid Carcinoma

Adrian A. Naoun[1], Milianette Cruz[1], Norianne Martínez Viota[1],
Génesis Virella Tirado[1], Alfredo González-Buxó[2]
[1]San Juan Bautista School of Medicine, Caguas, PR, USA;
[2]Oficina Médica Buxó, Aguas Buenas, PR, USA

Purpose: Thyroid cancer is the most common endocrine malignancy, with papillary thyroid carcinoma (PTC) representing 70–80% of cases with a 20-year survival rate of 90%. In contrast, the follicular Hurthle cell carcinoma (HCC) variant constitutes less than 5% of differentiated thyroid malignancies in iodine-sufficient regions, with a 20-year survival rate of 61.9%. HCC has higher recurrence and mortality, with a distant metastasis rate of 15–34%. Case description: Herein, a 58-year-old female with a history of left hemithyroidectomy five years ago for a 1.3 cm HCC nodule, managed with radioactive iodine and levothyroxine, presented with dysphagia and dysphonia. Two years ago, a follow-up fine needle aspiration (FNA) biopsy at the left thyroid bed was nondiagnostic; however, an ultrasound conducted a month prior revealed a lobulated nodule in the interpolar region of the left thyroid lobe. The physical exam was unremarkable, but imaging showed a 1.0 cm isoechoic nodule in the right posterior lobe, later confirmed as PTC with lymphovascular invasion. Ultrasound-guided FNA of lymph nodes revealed a 2.3 cm right neck (level III) nodule and a 2.2 cm left neck (level IIa) nodule, later identified as reactive lymph nodes. Shortly thereafter, a right thyroidectomy revealed a 0.6 cm unifocal PTC with lymphovascular invasion. Histopathological features included follicular cells in a papillary pattern, macrofollicles, intranuclear pseudoinclusions, longitudinal grooves, abundant watery colloid, histiocytes, and nuclear clearing. Conclusion: Current guidelines address singular thyroid malignancies; however, no specific protocols dictate the management for temporally distinct neoplasms. Overly aggressive interventions increase risks, including recurrent sialadenitis, xerostomia, iatrogenic recurrent laryngeal nerve injury, and second malignancies. Our case highlights the need for tailored approaches for distinct neoplastic entities, as the dual occurrence implies a more complex prognosis. Future research should focus on standardized protocols to improve outcomes. Acknowledgments: No funding or conflicts of interest.

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Maternal Comorbidities and Placental Findings in Small for Gestational Age Neonates Born to a Population Living in Puerto Rico

Omar A. Benítez, BS[1]; Keischaly Collazo Aparicio, BS[1]; María Isabel Hawayek, MD[2]; Alberto De La Vega, MD[2]; Lourdes García Fragoso, MD[3]; Inés García, MD[3]
[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, Puerto Rico; [2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Obstetrics and Gynecology, San Juan, Puerto Rico; [3]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Pediatrics, San Juan, Puerto Rico

Background and Objective: Maternal comorbidities such as hypertension, obesity and diabetes complicate numerous pregnancies worldwide. Within a Hispanic population these complications are especially prevalent. Small for Gestational Age (SGA) neonates face significant risks of adverse outcomes that are inherently linked to several maternal comorbidities. Moreover, the association of these conditions with placental findings continue to undergo research. This study aims to characterize the clinical profiles of mothers who delivered SGA neonates in Puerto Rico and asses their neonatal outcomes. Additionally, we described the pathological findings of their placentas. Method: In this retrospective study, we identified the records of 60 mothers who delivered an SGA neonate admitted to the Neonatal Intensive Care Unit at the University Pediatric Hospital between 2021 and 2022. Data were collected on maternal comorbidities, neonatal outcomes and placental gross and pathological findings. Approved by IRB. Results: Univariate statistics evaluated a sample of 60 Hispanic mothers who delivered an SGA neonate. The median age of the mothers was 27 and 76.7% delivered their neonates via cesarean section. Of the cases evaluated, 14 (23%)

had gestational hypertension, 25 (42%) had preeclampsia, and 16 (27%) had hypertension with superimposed preeclampsia with severe features. Of the cases studied, 4 (6%) had increased umbilical artery doppler flow, 9 (15%) had absent end diastolic flow, and 1 (2%) had reverse end diastolic flow. Of the placentas evaluated, 34 (62%) showed amnionitis, 9 (16%) had placental infarcts, 20 (36%) had arteriopathies, 4 (7%) had thrombosis detected, and 5 (9%) had fibrosis. Conclusions: A majority of those diagnosed with SGA were born to mothers with hypertensive disorder. Many neonates had a previous diagnosis of placental flow abnormality. Placental pathologies such as amnionitis and placental infarcts were commonly found within these descriptions. These findings suggest an association between placental pathology and SGA outcomes in neonates. Approved by IRB: 2304103588 (Exp Date: 02/20/2025).

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Veterans Affairs Lipid Optimization Reimagined Quality Improvement Program: A Multidisciplinary Approach for Veterans with ASCVD at the VACHS

Loriany Alcocer-Rodríguez, BS[1]; Juan I. Vázquez-Fuster, MD[1]; Ingrid M. Bonilla-Mercado, PhD[2,3]; Luis F. Rodríguez-Ospina, MD, FACC[1]
[1]VA Caribbean Healthcare System, Cardiology Department, San Juan, Puerto Rico; [2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Pharmacology and Toxicology Department, San Juan, Puerto Rico; [3]VA Caribbean Healthcare System, Research and Development Department, San Juan, Puerto Rico

Background: ASCVD is a leading cause of morbidity and mortality at Veterans Affairs Healthcare System. VACHS is one of 50 VA sites participating in a national quality improvement initiative; VA Lipid Optimization Reimagined Quality Improvement Program (VALOR QI), collaborative project between the U.S. Department of Veterans Affairs and the American Heart Association (AHA) with the goal of positively impacting Veterans' cardiovascular health. VA sites work with an AHA QI consultant to develop and deploy a local quality improvement plan to help overcome site specific barriers preventing Veterans from achieving optimal cholesterol levels. Methods: A multidisciplinary treatment approach was implemented to provide personalized care to Veterans, prioritize ASCVD care, and reduce clinical inertia using high-intensity statins and combination therapy. The enrollment criteria included Veterans >18 years diagnosed with ASCVD and LDL-C ≥70 mg/dL or non-HDL-C ≥100 mg/dL. A Healthcare Coach was assigned to provide patient support and liaise between the healthcare providers and pharmacists. The Healthcare Coach monitored patients' lipid medications and refills, provided clinical appointment reminders, and emphasized the importance of therapy and diet compliance. Patients starting a new lipid medication are scheduled for a blood workup 3 months later. After reaching the target, there is a follow up in 6 months with labs for maintenance. Results: The VALOR QI at VACHS began in 2023 and is actively enlisting patients. It has engaged 336 male and 7 female Veterans, with an average age of 74, 95% of whom are Hispanic. So far, 208 (61%) have achieved the target LDL-C; 311 (96%) are using any statin; 187 (58%) are on any non-statin lipid-lowering therapy (LLT); 177 (55%) are on both statin and any LLT, and 39 (12%) are using a PCSK9 inhibitor. Conclusions: By addressing dyslipidemia and treatment barriers, this program could improve ASCVD management and potentially reduce morbidity and mortality. Acknowledgement: The VALOR-QI program is supported by Novartis. This material is based upon work supported by the Research and Development Service, Cardiology Department and Department of Veterans Affairs, Caribbean Healthcare System San Juan, PR. There are no conflicts of interest and nothing to disclose. The contents of this presentation do not represent the views of the VA Caribbean Healthcare System, the Department of Veterans Affairs or the United States Government.

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Indicadores del Nivel Socioeconómico en el Acceso a Servicios de Salud entre los y las Residentes de la Urbanización Delgado en Caguas, Puerto Rico

Ariana Carreras Espinosa, MPH; Sheylimar M. Andino Escudero, MPH; Derick O. Bermúdez Cartagena, MPH; Joshua A. Doble Rivera, MPH; Luis G. Fuentes Burgos, MPH; María A. González, MPH; Oscar A. González García, MPH; Adriana N. Núñez Rosado, MPH; Génesis D. Rivera Martínez, MPH; Luis J. Rivera Rivera, MPH; Karoline M. Rosario Esquilín, MPH; Karina E. Santiago Adorno, MPH; Quiriat J. Torres Rosario, MPH; Sergio A. Vidal Rosa, MPH; Karen Agosto Valentín, DrPH, JD, MPH; Marisol Peña Orellana, Ed.D, MS
Universidad de Puerto Rico, Recinto de Ciencias Médicas, Facultad de Ciencias Biosociales y Escuela Graduada de Salud Pública, Departamento de Administración de Servicios de Salud, San Juan, Puerto Rico

Trasfondo y Objetivo: Las desigualdades socioeconómicas fomentan prácticas perjudiciales para la salud, limitan el acceso a servicios de salud de calidad y se vinculan con los Determinantes Sociales de la Salud (DSS), los cuales son modificables e influenciados por factores ambientales, sociales y económicos. Es por eso por lo cual, este estudio tiene como objetivo desarrollar un perfil comunitario, con enfoque en los DSS y los factores que influyen en el acceso a servicios de salud de la Urbanización Delgado en Caguas, PR. Método: Para el estudio se empleó una metodología de tipo de investigación cuantitativa de alcance descriptivo con un diseño de estudio transversal. Se utilizó un cuestionario estructurado para recolectar datos sociodemográficos, económicos y de percepción de salud en una muestra de 110 residentes mayores de 21 años, quienes participaron voluntariamente en el verano de 2024. Resultados: La muestra estuvo mayormente constituida por mujeres (56.4%). Los grupos etarios de mayor participación son el de 65 a 84 años (44.5%) y 45 a 64 años (30.0%). En términos de nivel de escolaridad, el 35.5% completó el Cuarto Año de Escuela Superior y 39.1% indicó haber logrado estudios subgraduados o graduados. Más de la mitad de los hogares (52.8%) informan ingresos familiares anuales menores a $19,000.00. El 43.7% percibe su salud física como regular o pobre, mientras que el 27.3% percibe su salud mental de igual manera. Además, el 30.9% enfrentó barreras para acceder a servicios de salud, incluyendo largos tiempos de espera y dificultad para desplazarse fuera de la comunidad. Conclusiones: Las desigualdades socioeconómicas afectan el acceso a servicios de salud, especialmente entre mujeres de Edad Mayor e ingresos familiares anuales bajos. Se necesitan más estrategias enfocadas en los DSS para el bienestar y la calidad de vida de la comunidad. Agradecimientos: Este estudio fue parte de un trabajo integrador de comunidad para completar el grado de Maestría en Salud Pública General (MPH). El agradecimiento a las lideresas comunitarias y las personas residentes de la Urbanización Delgado en Caguas, PR por su disposición a colaborar con este proyecto. Conflicto de intereses: Ninguno. Aprobado por el IRB: número de protocolo 2404214606 del 3 de junio de 2024. Autora de correspondencia: Karen Agosto Valentín: karen.agostovalentin@upr.edu

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Nucleus Accumbens Deep Brain Stimulation During Extinction and Reinstatement of Morphine Place Preference

Fabiola I. Ricardo-López[1], Isabel López-Molini[1], Ricardo Schrils-Soto[1], Joy Velázquez-Colón[2], Imanol Berríos-Rivera[3], Astrid Valle-Toste[3], Helena Arraiza-Truust[2], Jennifer L. Barreto-Estrada[1]
[1]Department of Anatomy and Neurobiology, University of Puerto Rico-Medical Sciences Campus, 00936;
[2]Department of Biology, University of Puerto Rico-Río Piedras Campus, Río Piedras, 00925-253;
[3]Department of Biology, University of Puerto Rico-Bayamón Campus, 00959-1919

Opiate overdose remains a leading cause of death in the United States, accounting for 81,806 drug-related deaths in 2022 (CDC). Existing treatments, such as medication-assisted therapies and cue-based exposure therapy, often fall short in preventing relapse. Drug-seeking behaviors, a hallmark of substance abuse, involve the ventral striatum/nucleus accumbens (VS/NAc) and the corticomesolimbic reward system, which mediates dopamine release and reinforcement of behavior. While pharmacological and psychosocial interventions reduce withdrawal and relapse, resistance in some patients highlights the need for alternative approaches, such as deep brain stimulation (DBS). Low-frequency DBS (LF-DBS) targeting the VS/NAc has shown promise in reducing drug-seeking behaviors. LF-DBS (20 Hz) aimed to the VS/NAc during extinction training has been shown to enhance extinction memory for morphine-seeking and significantly reduce the time required for extinction of morphine-conditioned place preference (CPP). However, administering LF-DBS solely during extinction training does not prevent drug reinstatement. In this study, we evaluated the effects of LF-DBS during both extinction and reinstatement sessions using a CPP paradigm. Adult male rats were conditioned to morphine (5 mg/kg), followed by extinction training and two reinstatement tests. The DBS-animal group received LF-DBS during extinction sessions and reinstatement, while the Sham-DBS received LF-DBS during extinction training but not during reinstatement. Behavioral outcomes were measured as the percentage of time spent on the drug-paired side across extinction and reinstatement tests. Our preliminary results suggest that after successful morphine conditioning and extinction, LF-DBS does not prevent reinstatement to the drug. These findings suggest that the beneficial effects of LF-DBS are specific to the stage of addiction. Future studies will explore whether high-frequency DBS (HF-DBS) (130 Hz) during reinstatement sessions can prevent drug-seeking behavior. IACUC Approved: Protocol #: 9940112 (January 2025). Supported by: NIGMS-1R16GM149491, NIGMS G-RISE T32GM148406, NIGMS-RISE-5R25GM061151, NeuroID 5R25NS080687.

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Análisis de la Distribución Geográfica de la Prestación de Servicios Especializados de Salud en los Hospitales de Puerto Rico

Verónica Febus, MS, DrPHc[1]; Christian González Serrano, MPH, DrPHc[2]; Juan Pérez Emmanuelli, MD, DrPH[2]
[1]Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela de Salud Pública, Departamento de Salud Ambiental, Programa Doctorado en Salud Pública con especialidad en Salud Ambiental, San Juan, Puerto Rico;
[2]Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela de Salud Pública, Departamento de Administración de Servicios de Salud, Programa Doctorado en Salud Pública con especialidad en Análisis de Sistemas de Salud y Gerencia, San Juan, Puerto Rico

Trasfondo y Objetivo: Comprender la organización de los sistemas de salud es crucial para evaluar cómo responden a las necesidades de la población. Conocer la distribución geográfica permite una mejor planificación de recursos, mejora la cobertura, reduce las desigualdades en el acceso y facilita la toma de decisiones para optimizar la ubicación de nuevos centros de salud, asegurando una respuesta efectiva a emergencias o epidemias. Este estudio tiene como objetivo analizar la distribución geográfica de los servicios médicos especializados en los 78 hospitales de Puerto Rico y su relación con las comunidades circundantes. Métodos: Es un estudio cualitativo de análisis de datos obtenidos de las páginas web de los hospitales en 2024. Se verificó que los hospitales tuvieran una presencia en línea activa y una página web con información accesible. Se evaluaron las áreas de servicio y especialidades de cada hospital examinando la presencia de 48 especialidades esenciales seleccionadas en los centros hospitalarios de Puerto Rico. Resultados: Los datos muestran que el área metropolitana tiene una concentración del 43% de los servicios especializados, 13% en el área oeste, 9% en el área sur, 9% área central y 3% el área este. Los resultados revelan un acceso desigual a las 48 especialidades analizadas. Las áreas rurales y de difícil acceso enfrentan barreras para recibir servicios debido a la distancia y la distribución geográfica de los hospitales en la isla. Conclusión: Este estudio destaca la urgente necesidad de políticas públicas que mejoren la distribución equitativa de los servicios especializados, con el objetivo de reducir las disparidades en el acceso y mejorar los resultados de salud en todo Puerto Rico.

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Ventral Pallidum GABAergic Neurons Are Engaged in Extinction of Approach/Avoidance Conflict

Vanelisse Rivera-Marzán[1], Pamela Pérez-Vázquez[2], Alanis Delgado-Suárez[3], Jose Pérez-Torres[3], Angelys Rivera-Hernández[1], Roberto Vázquez-Alicea[1], Kelvin Rodríguez-Rivera[3], Cristina María-Ríos[3], Christian Bravo-Rivera[3]
[1]University of Puerto Rico, Río Piedras Campus, San Juan, PR;
[2]University of Puerto Rico, Mayagüez Campus, Mayagüez, PR;
[3]University of Puerto Rico, School of Medicine, San Juan, PR

Background and Objectives: In situations where reward-seeking involves risk, healthy individuals balance approach and avoidance drives through a cost-benefit analysis. Extinction plays a crucial role by allowing individuals to "unlearn" responses to cues that no longer hold value, enabling flexible behavioral adjustments. Methods: To study this, we use the platform-mediated avoidance (PMA) task in mice, which involves both reward and threat cues. Food-restricted mice learn that a light signals sucrose reward availability and a tone signals a foot-shock. When both cues are co-presented, mice must choose between seeking safety on a platform or risking getting shocked for the reward. After training, mice underwent threat extinction, where the tone no longer predicted a shock. Over three days, mice exhibited reduced platform time and increased reward approach, indicating extinction of avoidance behavior. We then performed three days of reward extinction, where the reward was no longer delivered upon cue presentation. Mice increased their time in the reward zone but decreased nose-poking, suggesting they learned that both cues no longer predicted threat or reward. The ventral pallidum (VP), a primarily GABAergic structure, mediates approach and avoidance, but its role in conflict extinction remains unknown. Using in-vivo fiber photometry, we recorded VP GABAergic neuron activity. Results: During threat extinction, cue co-presentation induced sustained excitatory responses across sessions despite reduced avoidance. In reward extinction, these responses were shorter and slightly decreased over sessions aligning with the reduction in reward approach. Some mice also exhibited excitatory responses during shock omission, consistent with positive prediction errors that may be key for learning. Conclusions: These findings reveal insights into conflict extinction behavior and highlight a novel role for VP GABAergic neurons in extinction learning. Approved by IACUC: A720222. Acknowledgments: This research was supported by NIH grants M/123495 and MH058883 to CB-R, D-SPAN 8K00MH136687-03 to CM-R, G-RISE T32GM148406 to AD-S, and NeuroID Program to AR-H.

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Disruption of Mitochondrial Function by Ergosterol Peroxide in Triple-Negative Breast Cancer Cells

Aliyah L. Bocachica-Adorno[1,2]; Luz V. Arroyo-Cruz, PhD[2]; Taotao Ling, PhD[3]; Fátima Rivas, PhD[3]; Carlos Barreto[4]; Maribella Domenech-García, PhD[4]; Michelle Martínez-Montemayor, PhD[2]
[1]University of Puerto Rico, Bayamón Campus, Department of Biology, Bayamón, Puerto Rico; [2]Universidad Central del Caribe School of Medicine, Department of Biochemistry, Bayamón, Puerto Rico; [3]Louisiana State University, Department of Chemistry, Baton Rouge, LA; [4]University of Puerto Rico, Mayagüez Campus, Department of Chemical Engineering, Mayagüez, Puerto Rico

Background & Objectives: Triple-Negative Breast Cancer (TNBC) tumors lack the three common types of protein receptors (ER, PR, Her2), thus cannot be treated with targeted therapies. These features increase cancer recurrence, resistance and metastasis, resulting in increased patient mortality rates. Ergosterol peroxide (EP) is a compound extracted from the medicinal mushroom, Ganoderma lucidum, and we have shown its promising selective anticancer properties, which include no detrimental effects on healthy tissue, induction of intrinsic apoptosis pathways via reactive oxygen species (ROS) induction in TNBC cell lines. Thus, the objective of this study was to assess the effect that EP produces at an organelle level, focusing on mitochondria, given that the production of ROS causes major mitochondrial damage. Methods: To evaluate changes that EP produces specifically in the mitochondrial membrane potential (MMP), the TMRM and JC-1 assays were performed. Additionally, to further assess the effect EP could have on basic mitochondrial functions, a Mito-Stress Seahorse assay was performed. Each

assay was performed on a TNBC representative cell line (MDA-MB-231). Results: TMRM assay results show that there was a significant reduction in the membrane potential of cells treated with EP, compared to the control group, which remained with an intact MMP. These results were confirmed with a JC-1 assay, which shows a reduction of MMP in cells treated with EP with a significant decrease ($p<0.02$) in the J-aggregates to J-monomers. Finally, Seahorse assay results show that EP selectively targets and has negative effects on TNBC cells mitochondria and greatly reduces mitochondrial respiration functions. Conclusions: Results show a preliminary mechanism of action for EP in TNBC models through mitochondrial function disruption. Acknowledgements: This study was sponsored by NIH/NIGMS #R16GM145488 to MMM, Susan G. Komen ASPIRE, the Therapeutic Accelerator Program (TAP), and the Advanced Research Grant from the Puerto Rico Science, Technology and Research Trust.

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Unveiling the Unexpected: A Rare High-Grade B-Cell Lymphoma of the Small Bowel with a Unique Presentation

Victoria Pinto-Sánchez, BS[1]; Gerardo Caussade-Silvestrini, BS[1]; Noelia García-Pérez, MD[2]; Melanie Santos-Marrero, MD[2]; Radamés Revilla-Orellano, MD[2]; Cristina Fernández-Hernández, BS[1]; Rafael Rivera-Sotomayor, BS[1]; Brayan Pagán-Rodríguez, BS[1]; Arelis Febles-Negrón, MD[2]
[1]School of Medicine, University of Puerto Rico, Medical Sciences Campus, San Juan;
[2]Department of Internal Medicine, University of Puerto Rico, Medical Sciences Campus, San Juan

Introduction: Malignant lymphomas are classified as Hodgkin's lymphoma (HL) or Non-Hodgkin's lymphoma (NHL). While NHL often originates within lymph nodules, extranodal NHL sites, such as the gastrointestinal (GI) tract have been reported. However, lymphomas are a rare cause of malignant neoplasms in the GI tract. Other extranodal NHL sites include the skin, lungs, and oral cavity. Diffuse large B-Cell lymphoma (DLBCL) is the most prevalent NHL subtype. Case presentation: A 36-year-old male presented to the ED due to mandibular and lower lip numbness. Initially, the symptoms were attributed to a broken tooth, which was extracted. His symptoms failed to improve, even after taking Ibuprofen 800mg and completing a 7-day-course of Amoxicillin 500mg every 6 hours. The patient subsequently started presenting nausea, vomiting, bloating, fullness, early satiety, decreased appetite, urinary retention, diarrhea, hematochezia, a 30-pound weight loss, night sweats and febrile episodes. PE revealed hyperactive bowel sounds and a globose, distended abdomen which was soft, depressible, and non-tender. Abdominal palpation was unremarkable. Intraoral examination identified bilateral swollen and tender gingival masses adjacent to the lower molars and bilateral mandibular paresthesia. CT scan demonstrated innumerable soft tissue nodules seen throughout the omentum and mesentery and focal dilation of the small bowel suggestive of small bowel lymphoma with extensive peritoneal lymphomatosis. A biopsy revealed high-grade B-Cell lymphoma (HBCL), a unique subset of DLBCL. The patient's condition was complicated by respiratory failure and was transferred to the ICU. Conclusion: We present a case of a young patient with a small bowel HBCL which comprises about 1-4% of all gastric malignancies. Additionally, NHL involvement in the oral cavity accounts for only 0.5-1% of cases reported in the literature. Thus, this case showcases the evolution of a rare presentation of small bowel lymphoma that can be used to guide diagnosis for future patients with similar symptoms.

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An Academic Perspective of Challenges in Doing Population-Based Research in Puerto Rico During the COVID-19 Pandemic: January 7, 2020, Earthquake

Fernando J. Mercado-Ortiz[1], Israel A. Almodóvar-Rivera[2], Verónica M. García-Ramírez[1], Keila E. Narváez-Sánchez[1], Cruz M. Nazario-Delgado[1], Rosa V. Rosario-Rosado[1]
[1]University of Puerto Rico, Medical Science Campus, Graduate School of Public Health, Department of Biostatistics and Epidemiology, San Juan, Puerto Rico; [2]University of Puerto Rico, Mayagüez Campus, College of Arts and Sciences, Department of Mathematical Sciences, Mayagüez, Puerto Rico

Background & Objectives: During 2019-2020, the archipelago of Puerto Rico experienced a significant earthquake sequence highlighted by a "mainshock". The event, which occurred on January 7, 2020, impacted the southwest area of Puerto Rico resulting in an emergency state. Added to the devastating effect of this natural disaster, the first local case of COVID-19 was identified in March 2020, an aspect that affected the daily lives of Puerto Ricans. This work aims to discuss and reflect on the academic challenges confronted by the research team composed of three Master of Science in Epidemiology students at the University of Puerto Rico and their mentors in the conceptualization, planning, and implementation of population-based epidemiological research in a critical community setting in Guánica. Methods: A cross-sectional study was designed and sampling by availability was used. A sample of 87 participants was recruited and personal interviews were conducted through a questionnaire. Results: Most of the participants were 65 years or older (51.7%), 78.2% were females, 32.6% had diabetes, 51.2% had hypertension, 55.2% experienced changes in dietary patterns after the earthquake, and 82.8% spent time outside the home after the earthquake. Two important challenges for the data collection were to assess chronic disease management and related behaviors during critical periods before and after the 2020 earthquake. Conclusions: The experience with the "mainshock" of January 2020 and the COVID-19 pandemic taught several challenges to the overall public health professionals in Puerto Rico, particularly to academic researchers. The scenario to conduct population-based research under unfavorable conditions was challenging, but the interest and compromise to document the historical experience and to know the needs of the most vulnerable population that suffered the impact of the earthquake was imperative. IRB Approved: Protocol #: 0750121 (05/05/2021). Acknowledgments: We appreciate the efforts of the community leaders and participants. The authors declare no conflict of interest.

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Alcance de las Capacitaciones sobre el Estigma Asociado al VIH en Profesionales de la Salud en Puerto Rico durante los años 2020 al 2024

Solaritza Rivera-León, MPH, MPHE; Keishla M. Torres-Montalvo, MPH, CGG; Maricarmen Rodríguez-González, BA
Universidad de Puerto Rico, Recinto de Ciencias Médicas, Decanato de Asuntos Académicos, Northeast Caribbean AIDS Education and Training Center

Introducción: El estigma asociado al VIH sigue siendo una barrera significativa para que las personas con el diagnóstico busquen servicios de prevención, atención y tratamiento. Este estudio evaluó la efectividad de doce capacitaciones a profesionales de la salud en la identificación, comprensión y reducción del estigma asociado al VIH en contextos clínicos y comunitarios. Metodología: Las capacitaciones se desarrollaron utilizando modalidades presenciales, virtuales sincrónicas y virtuales asincrónicas. Incluyeron contenidos teóricos y prácticos sobre la naturaleza del estigma, estrategias para la comunicación inclusiva y estudios de caso interactivos. Participaron 753 profesionales de la salud de diversas disciplinas (medicina, enfermería, trabajo social, entre otras) en Puerto Rico. El cambio en conocimiento de las capacitaciones asincrónicas fue evaluado mediante prepruebas y pospruebas. Las capacitaciones presenciales fueron evaluadas con un formulario automatizado que contiene preguntas para medir cambios en actitudes, conocimientos y prácticas relacionadas al servicio. Resultados: Los análisis preliminares mostraron que el 99% (n=171) de los profesionales que participaron de la modalidad virtual asincrónica incrementaron significativamente su nivel de conocimiento sobre el estigma asociado al VIH después de la capacitación. En cuando a la modalidad presencial y sincrónica virtual el 89% (n=554) de los participantes reportaron estar fuertemente de acuerdo en cambiar la forma en que proveen servicios a las personas con diagnóstico positivo a VIH y estar más conscientes de factores que necesitan considerar en su trabajo. Las capacitaciones demostraron ser intervenciones efectivas para mejorar e incrementar los conocimientos, actitudes y prácticas de los profesionales de la salud en torno al estigma asociado al VIH. Estos resultados subrayan la importancia de la educación continua como estrategia para abordar inequidades en salud y promover entornos de atención más inclusivos. Estudios futuros deberían explorar la experiencia de la población que recibe los servicios. Reconocimientos: El Northeast/Caribbean AIDS Education and Training Center es un proyecto financiado con fondos federales de la Administración de Servicios y Recursos de Salud (HRSA) Donativo #1 U1OHA292910100.

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Hábitos, Preferencias y Accesibilidad de Alimentos entre los Estudiantes de la Escuela Graduada de Salud Pública: Explorando la Inseguridad Alimentaria en el Recinto de Ciencias Médicas

Adriana S. Mirandés-Ramírez
Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela Graduada de Salud Pública, Departamento de Ciencias Sociales, San Juan, Puerto Rico

Antecedentes y Objetivos: La inseguridad alimentaria, entendida como la disponibilidad limitada o incierta de alimentos nutricionalmente adecuados y seguros, es un problema de salud pública de carácter global. Uno de los grupos con mayor prevalencia de inseguridad alimentaria en la actualidad son los estudiantes universitarios. Según datos de 2020, más de un millón de estudiantes universitarios en Estados Unidos y Puerto Rico, tanto a nivel subgraduado como graduado, enfrentan inseguridad alimentaria y nutricional. El objetivo de esta investigación es explorar los hábitos alimentarios, las preferencias y la accesibilidad de alimentos entre los estudiantes de la Escuela Graduada de Salud Pública (EGSP) del Recinto de Ciencias Médicas (RCM). Método: Se distribuyó una encuesta, realizada como parte de un curso, a los estudiantes de la EGSP, complementada con un ejercicio de *photomapping*. Resultados: El ejercicio de *photomapping* reveló que las opciones alimentarias disponibles en el RCM son limitadas, con una sola cafetería y máquinas expendedoras que ofrecen principalmente alimentos poco nutritivos. Según los datos de la encuesta, las bebidas más consumidas por los estudiantes son el agua, seguida del

café y las bebidas azucaradas. Los alimentos más frecuentemente consumidos son los disponibles en la cafetería del RCM, meriendas de las máquinas expendedoras, comida de los restaurantes de comida rápida cercanos al RCM y alimentos o meriendas traídas del hogar. El presupuesto semanal promedio destinado a alimentos preparados es de $50. Entre las recomendaciones planteadas por los estudiantes, se destacan la extensión del horario de la cafetería, la disponibilidad de opciones más saludables en las máquinas expendedoras y la necesidad de precios más asequibles. Conclusión: Los resultados de esta investigación buscan servir de base para la implementación de intervenciones educativas, cambios estructurales y políticas institucionales que contribuyan a reducir la inseguridad alimentaria y nutricional entre los estudiantes de la EGSP.

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A Rare Manifestation of SLE: The First Documented Case of Lupus Cystitis in Puerto Rico

Luis Xavier Mayol-Vélez, Saribel Torres, Fernando Zayas
Family Medicine, University of Puerto Rico, Medical Sciences Campus, San Juan, PR

Lupus cystitis is an uncommon, yet serious complication of systemic lupus erythematosus (SLE) marked by inflammation of the bladder and associated with significant urinary tract manifestations. The diagnosis of Lupus Cystitis can be very challenging as it often appears before the diagnosis of Lupus has been established. This case report presents a 36-year-old male admitted to a supra-tertiary hospital in Carolina, Puerto Rico diagnosed with lupus cystitis and highlights the clinical presentation, diagnostic challenges, and management strategies in these patients. The diagnosis was confirmed through a combination of clinical examination and laboratory findings. Treatment with corticosteroids and immunosuppressive agents can lead to substantial improvement for which early diagnosis and recognition by primary care team providers in a hospital setting is pivotal as delayed diagnosis can result in significant morbidity. This report highlights the critical importance of considering lupus cystitis as a differential diagnosis in patients with systemic SLE patients presenting with urinary symptoms.

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Allatotropin Expression in the CNS of *Biomphalaria Glabrata*, an Intermediate Host for Human Schistosomiasis

Diego Nazario-Martínez[1], Joseph Torres-Cruz[1], Alana Rivera[2], Dina Bracho[2], Laura Vicente-Rodríguez[1], Mark W. Miller[2]
[1]University of Puerto Rico, Cayey Campus, Department of Biology, Cayey, Puerto Rico;
[2]University of Puerto Rico, Medical Sciences Campus, Institute of Neurobiology, Department of Anatomy and Neurobiology, San Juan, Puerto Rico

Background & Objectives: Schistosomiasis is a Neglected Tropical Disease (NTD) that affects approximately 240 million people globally, with over 90% of cases estimated to occur in Africa. The most widespread form of intestinal schistosomiasis is caused by the parasite *Schistosoma mansoni*. The life cycle of this trematode relies exclusively on freshwater snails from the genus *Biomphalaria* as its intermediate host. Within the snail, *S. mansoni*

larvae transform into cercariae, the infectious form for humans. As infected snails undergo changes that support parasite development, we are exploring whether infection alters expression of regulatory neuropeptides. One potential neuropeptide target, *Biomphalaria allatotropin* (*Biom*-allato), was identified using a neural transcriptomic approach. The present study utilized two complementary histological techniques to localize allatotropin expression in the central nervous system (CNS) of *Biomphalaria glabrata*. Methods: The transcript encoding the Biom-allato precursor was localized using Hybridization Chain Reaction (HCR) *in situ* labeling. Peptide expression was localized with immunohistochemistry. Results: Approximately 200 allatotropin-like immunoreactive (allato-li) neurons were distributed throughout the CNS. Co-localization of allato-li cells and the allatotropin transcript was well correlated in the buccal ganglia. In other ganglia, co-localization was less consistent. Conclusion: We propose that the expression of the *Biom*-allatotropin peptide precursor is regulated at both the level of transcription and translation. Future investigation will test this hypothesis and examine whether schistosome infection alters the cellular expression pattern of *Biom*-allatotropin. Acknowledgements: Supported by the National Institutes of Health: MD007600 (RCMI), P30GM149367 (COBRE); National Science Foundation: IOS-2217657 (OSIB), HRD-1137725 (CREST), OISE-1545803 (PIRE), and DBI-1337284. Imaging support was provided by the UPR COBRE Center for Neuroplasticity, Neuroimaging and Electrophysiology Facility (NIEF).

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Caracterización Bibliométrica de la Investigación sobre Salud Mental en Puerto Rico durante el Período 2000-2022

Mariely García Vélez
Universidad de Puerto Rico en Ponce

Trasfondo y objetivo: La salud mental en Puerto Rico enfrenta desafíos únicos debido a la recurrencia de desastres naturales, crisis económicas y complejidades socioeconómicas relacionadas con su estatus político como Estado Libre Asociado de los Estados Unidos. Estos factores han contribuido a una alta prevalencia de trastornos de salud mental, especialmente en depresión y ansiedad. El objetivo de este estudio es caracterizar la producción científica sobre salud mental en Puerto Rico entre 2000 y 2022, utilizando indicadores bibliométricos para analizar tendencias, identificar áreas de desarrollo y aportar al diseño de políticas que mejoren la atención en salud mental. Metodología: El estudio utilizó una estrategia de búsqueda basada en el vocabulario controlado MeSH en bases de datos especializadas como PubMed®, iCite, Journal Citation Reports® y SCImago Journal & Country Rank. Los datos fueron recolectados a través de consultas en PubMed® entre febrero y marzo de 2023, centrándose en términos relacionados con salud mental y afiliaciones institucionales en Puerto Rico. Se utilizaron indicadores bibliométricos para evaluar la productividad, colaboración científica, visibilidad de las publicaciones y temáticas de investigación, empleando técnicas estadísticas para analizar la evolución de la producción científica y el impacto de las colaboraciones. Resultados: Los resultados muestran un crecimiento sostenido en la producción científica sobre salud mental en Puerto Rico a partir de 2011, alcanzando su punto más alto en 2022 con 40 publicaciones. Este aumento refleja un fortalecimiento de la investigación en este campo, impulsado por la creciente colaboración científica, tanto nacional como internacional, y una mayor visibilidad de las investigaciones en revistas reconocidas. Conclusiones: Las conclusiones sugieren que la investigación sobre salud mental en Puerto Rico ha experimentado un crecimiento significativo en los últimos años, lo cual es clave para mejorar la atención de salud mental en la isla. Reconocimientos: Ninguno

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Carcinoma Anaplásico de Tiroides: Estudio de caso en mujer de 87 años.

Yanielis Moreno-Díaz[1]; Yadiris López-Rivera, DrPH, CT (ASCP)[1];
Yomayra Aquino CT (ASCP)[1,2]; Javier Rodríguez-Becerra, MD[1,2]
[1]Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela de Profesiones de la Salud - Programa de Citotecnología; [2]Atlantic Pathology Manatí, Puerto Rico

Propósito: El cáncer de tiroides es el tercer cáncer con mayor incidencia en mujeres puertorriqueñas. El carcinoma anaplásico de tiroides representa menos del 5% de las malignidades en tiroides, por lo que la información publicada sobre este tipo de cáncer es limitada. El objetivo de este estudio de caso fue analizar la presentación clínica, características citológicas e histológicas y el panel de pruebas inmunohistoquímicas para enriquecer la literatura científica. Descripción del caso: El estudio de caso presenta una mujer de 87 años que presentó una masa de rápida evolución en el lado derecho del cuello La paciente fue remitida para realizarle una biopsia de aspiración por aguja fina. Al analizar los hallazgos citológicos e histológicos se observaron células sueltas con razón núcleo-citoplásmica alterada, núcleos aberrantes, citoplasma rasgado, multinucleación, macronucleolo, pleomorfismo, hipercromasia y membrana nuclear irregular. El panel de pruebas inmunohistoquímicas mostró resultados positivos para los marcadores tumorales PAX8, Vimentina y MCK. Por otro lado, el resultado negativo para el marcador Melan-A, descarta el diagnóstico de melanoma, mientras que los resultados negativos para los marcadores TTF-1 y CEA descartan el diagnóstico de un carcinoma de tiroides pobremente diferenciado o un adenocarcinoma metastásico. Conclusión: Las características citológicas, los marcadores tumorales, junto con el historial clínico de la paciente confirman el diagnóstico de carcinoma anaplásico de tiroides. Este estudio de caso aporta a la comunidad científica exponiendo un caso que representa menos del 5% de todas las malignidades de tiroides. Al realizar pruebas moleculares del tumor se identificó un resultado positivo en el biomarcador PD-L1, lo que permite tratar a la paciente con nivolumab o pembrolizumab. Un año después del diagnóstico, la paciente sigue viva, pero se desconoce si recibió tratamiento.

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Movimientos Geográficos de la Población Dentro de Puerto Rico: Diferencias Entre los Que Migraron Internamente y Aquellos Que No Cambiaron de Municipio para el Periodo de 2018-2022

Abner U. Flores-Siaca, Luz E. León-López
Programa de Demografía, Escuela Graduada de Salud Pública, Recinto de Ciencias Médicas-UPR

Introducción/Objetivo: El movimiento geográfico en Puerto Rico es uno que deja saber dónde las personas se están mudando o quedando. Conocer sus características sociodemográficas brinda información para planificar mejor. El objetivo de este estudio fue analizar las características de los que se mudaron y se quedaron dentro de P.R para el periodo de 2018-2022. Metodología: La fuente de datos utilizada fue la Encuesta sobre la Comunidad de Puerto Rico, 2018-2022. El estudio fue uno transversal descriptivo. Hallazgos: El total de migrantes internos fue 70,343 y

unos 3,153,769 que se quedaron. Las mujeres presentaron mayor cifra de movimiento geográfico dentro del mismo municipio. (53%). Los que migraron internamente dentro del mismo municipio o fuera de este eran más jóvenes que los que no lo hicieron, con una mediana de edad de 30 para los que se movieron fuera o dentro del mismo municipio compara con una de 45.1 para los no se movieron. Un 41% de los que no se mudan nunca se han casado en comparación con los que migran, 56%. En cuanto a nivel académico, de las personas con un grado asociado o más alto, los que no se movieron fueron un 51% mientras los que se movieron fueron 59%. La mediana de ingreso fue de $14,855 de los que se movieron dentro del municipio, $15,578 de los que no se movieron, mientras que los que se movieron fue $16,462. Conclusión: Las personas que se movieron son en su mayoría nunca casados, con mayor educación, con un ingreso más alto y más jóvenes. Es importante el estudio de los movimientos geográficos dentro de P.R. para saber si las personas con mayores oportunidades se están mudando o quedando en ciertos municipios. A las personas moverse dentro de la isla tendrá un efecto en lo que el gobierno local pueda proveer.

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Short-chain Fatty Acids: A Pathway to Reducing Oncogenic Phenotypes in Breast Cancer Subtypes

Amanda Prats-Marrero[1,2], Riseilly Ramos-Nieves[1,3], Samira B.F. Abdullah-Vargas[1,2], Ángel J. Amaral-Maisonet[1,2], Liah M. Román-Calderón[1], Ariana S. García-López[1,2], Jeannette L. Salgado-Montilla[1], Gabriel Borges-Vélez[1], Esther Peterson[1], Josué Pérez-Santiago[1,3]
[1]University of Puerto Rico Comprehensive Cancer Center, San Juan, PR;
[2]University of Puerto Rico, Río Piedras Campus, San Juan, PR;
[3]University of Puerto Rico, Medical Sciences Campus, San Juan, PR

Background: Breast cancer is the second leading cause of cancer death in women in the United States. Triple-negative breast cancer (TNBC) is an aggressive form that lacks hormone receptors, limiting treatment options. While hormone receptor-positive (HR+) breast cancers tend to be less aggressive, treatments have painful side effects, showing the need for alternatives. Recent studies associate short-chain fatty acids (SCFAs), produced by gut microbiota, with a reduced risk of colorectal cancer. Objective: This study aimed to determine SCFAs' effects on oncogenic phenotypes, including cell viability, proliferation, and migration in TNBC and HR+ breast cancer. Methodology: MDA-MB-231 (TNBC) and MCF-7 (HR+) cell lines were used as *in vitro* models and administered with SCFAs acetate, propionate, and butyrate. Cell viability was studied through a cytotoxicity assay with alamarBlue, and the half-maximal inhibitory concentration (IC50) values were determined after 24, 48, and 72 hours (h) of SCFA treatment. Proliferation was assessed by seeding 150,000 cells per well and counting cells at 24h and 48h of 1mM and 5mM SCFA treatment. Migration was evaluated at 24h and 48h through wound healing assays after treatment with SCFAs at 1mM and 5mM. Results: Cytotoxicity assays showed decreased cell viability with higher concentrations of all SCFAs in both cell lines. Butyrate reduced cell proliferation in MDA-MB-231 cells at both 1mM ($p=0.005$) and 5mM concentrations ($p=0.0001$). Propionate also reduced proliferation at 1mM ($p=0.0031$) and 5mM ($p=0.0030$). Acetate showed a significant reduction in cell proliferation at 5mM ($p=0.0002$). In MCF-7 cells, butyrate showed a significant decrease in proliferation. Although there was no significant effect on MCF-7 cells, MDA-MB-231 cells demonstrated slower migration rates when exposed to higher concentrations of all SCFAs. Conclusion: These findings suggest that SCFAs may suppress oncogenic mechanisms in breast cancer with varying responses between TNBC and HR+, calling for further investigation into their therapeutic

potential. Acknowledgements: This project was supported by the National Human Genome Research Institute: 1R25HG012702-01 and diversity supplement, National Cancer Institute: R21 CA264606, the National Institute on Minority Health and Health Disparities: RCMI Program U54 MD007600, CAPAC Program: R25 CA240120 and the Federal Department of Education's Developing Hispanic-Serving Institutions Program – Title V (PO31S200104).

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ADEA Academic Dental Careers Fellowship Program: Education about Human Development and Behavior Management at UPR-SDM

Paola N. Álvarez García; Carla Rodríguez Bonilla, DMD
University of Puerto Rico, Medical Sciences Campus, School of Dental Medicine, San Juan, Puerto Rico

Background and Objectives: The ADEA Academic Dental Careers Fellowship Program (ADCFP) aims to inspire and prepare the next generation of dental faculty and researchers. As a participant, I have the privilege of working closely with a faculty mentor who provides invaluable guidance and resources to help me explore a potential academic career in dentistry. The program's objectives include engaging in teaching and professional development by planning lectures and educating peers. Methods: As part of this project, I delivered a lecture to 40 first-year dental students and facilitated a case discussion with a smaller group of 9 first-year dental students in the Human Development and Behavior Management course (EVDI 7115). Key topics included adopting a holistic approach to dental medicine and understanding the distinctions between growth and development. During the case discussion, we assessed a scenario involving a pregnant young woman, focusing on her nutrition, dental treatment, medical conditions, and psychosocial factors. The students actively participated, responding to impromptu questions and demonstrating a strong interest in the lecture material. Results: The presentation was highly successful. Based on the questions posed during the lecture and the responses to the post-lecture questionnaire, the students (n = 35) demonstrated a strong understanding of the topics discussed and showed genuine interest in the material. Implementing SIM to Care technology will be Phase II of this educational project. Conclusion: The ADCFP offers invaluable exposure to the academic environment, providing participants with opportunities to engage actively in the teaching profession. Beyond enhancing teaching strategies, the program prepares us to make meaningful contributions to advancing dental education and developing the next generation of professionals. It also fosters personal and professional growth, helping to refining skills in communication and mentorship. Acknowledgment: This is a non-funded program. I appreciate the effort and collaboration of Dr. Carla Rodríguez and Dr. Dunia Rodríguez.

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Correlational Study of the Sociodemographic Profile and Characteristics of the Physical Therapy Profession in Puerto Rico.

Marienid Tirado-Hernández, José F. Rivera-Rodríguez, Gabriel M. Avilés-Matías, Fabiola M. Fontán-Fontán, Karisol Chévere-Rivera
University of Puerto Rico, Medical Sciences Campus, School of Health Professions, Doctor in Physical Therapy Program, San Juan, Puerto Rico

Background & Objectives: Despite the physical therapy profession's presence in Puerto Rico for over 80 years, no sociodemographic study of its workforce has been done. The lack of information on the occupation profile has prevented the profession from having an up-to-date understanding of its current state. This further restricts access to physical therapy services and hinders effective educational planning of the field. Methods: A cross-sectional and descriptive web-based survey was conducted. Initially, 10 physical therapists (PTs) and physical therapist assistants (PTAs) provide feedback on translated and modified version of the Physical Therapist and Physical Therapist Assistant Cross Profession Minimum Data Set Questions. Then, the data was collected from stratified samples across the seven health regions of Puerto Rico. Approved by IRB (Protocol number: 2404215010). Results: There are 188 PT's (n=100), PTA'S (n=88) who reported active licenses. The average incomes for PTs and PTAs were $56,334.49 and $30,572.48, respectively. The average number of years working for PTs was 21.93 and PTA 15.64. There is a weak but significant correlation between income and years of experience (r = 0.174, p = 0.022). However, there is no significant relationship between income and the number of hours worked (r = 0.039, p = 0.611). No significant differences were found in the average income across gender groups (F = 0.458, p = 0.633). Conclusions: The lack of an updated public policy prevents distinguishing between well-paying and poorly paying jobs in the PT and PTA profession. Regardless of experience the average the income remains consistent across genders even though most of the PT and PTA are women, who historically faced unequal pay. The need for effective public policy is therefore imperative. IRB Approved: Protocol #: 2404215010 (10/22/2024)

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A Cohort Analysis Using NIH *All of Us*: Cancer Diagnostic Age and Incidence in ADHD versus non-ADHD Population

Melissa G. Soto-Santiago[1], Mayra S. Haedo-Cruz[1], Grace Vélez Crespo[1], Gabriel Borges-Vélez[1], Josué Pérez-Santiago[1,2]
[1]University of Puerto Rico Comprehensive Cancer Center, San Juan, PR;
[2]University of Puerto Rico Medical Sciences Campus, San Juan, PR

Background & Objectives: Neurodivergent populations, such as individuals with attention deficit hyperactivity disorder (ADHD), are known to have higher rates of comorbid conditions, including cancer, although studies are limited. Literature has shown higher colorectal, lung, and brain cancer rates in individuals with ADHD. Other common comorbidities include cognitive and psychiatric disabilities, which could result in medical stigma and potentially delay cancer diagnosis or worsen health outcomes. This study aims to investigate whether cancer rates and age of diagnosis in the National Institute of Health (NIH) *All of Us* database were higher in individuals with ADHD, particularly for cancer types not widely studied in relation to neurodiversity. Methods: We utilized the NIH *All of Us* Controlled Tier database and RStudio for cohort creation and statistical analysis. The study focused on four types of cancer: Gastrointestinal, Head and Neck, Breast, and Prostate cancers. The control group was matched using the Optmatch package in R for sex at birth, age, and cancer type, consisting of around n=525 per group (with and without ADHD), with 612 women and 440 men. Results: Breast cancer was the most common type (n=333), followed by Head and Neck (n=295), then GI (n=265) and finally prostate (n=160). Cancer rates per 100,000 were 9395.88 for the ADHD group and 9016.13 for the non-ADHD group. The age of diagnosis was divided into groups with and without ADHD, with a p-value of 0.667, indicating no significant difference. Paired tests for ADHD status, cancer type, and sex also resulted in p-values > 0.05. Conclusions: No significant

differences were found in the age of diagnosis between ADHD and non-ADHD groups. Future studies will focus on prevalence and incidence data and explore other cancer types with more documented literature to potentially yield more significant findings. Acknowledgements: We gratefully acknowledge *All of Us* participants for their contributions, without whom this research would not have been possible. We also thank the National Institutes of Health's *All of Us* Research Program for making the participant data used in this study available. Additionally, we thank Josue Pérez-Santiago (JPS) Laboratory for Translational Sciences for their support in this study.

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Transcriptome Analysis for Merkel Cell Carcinoma Patients Testing Positive (+) and Negative (-) for Polyoma Virus

MíaSara Pérez[1,2]; Fnu Srividya PhD[1]; Daniel Wang[1]; Nicole Muñoz[1,2]; Leomar Ballester, MD, PhD[1]; Phyu P. Aung, MD, PhD[1]; Manuel Delgado Vélez, PhD[2]; José A. Lasalde Dominicci, PhD[3]
[1]Department of Pathology and Lab Medicine, MD Anderson Cancer Center, University of Texas, Houston, TX, 77030, USA; [2]University of Puerto Rico, School of Medicine, San Juan, PR 0025-2537, USA; [3]University of Puerto Rico, Department of Biology, San Juan, PR 00925, USA

Background: Merkel cell carcinoma (MCC) is a rare, aggressive skin cancer with neuroendocrine differentiation originating from Merkel cells in the epidermis. It exhibits a notable propensity for early metastasis to lymph nodes, lungs, and brain. Approximately 3,000 new cases are diagnosed annually in the United States, with incidence rates partly rising due to advancements in diagnostic methods. The exact cause of MCC is unknown, but several potential etiologies have been proposed, including exposure to ultraviolet radiation (UVR) and integration of Merkel Cell Polyomavirus (MCPyV). While MCPyV has been detected in up to 80% of MCC tumors in the United States, its presence is associated with a better prognosis, with a five-year overall survival rate of approximately 50%. This study aims to investigate the transcriptomic and methylomic profiles of skin samples from 27 patients with MCC, comparing those positive and negative for MCPyV. The objective involves identifying potential genetic biomarkers that could be targeted for therapeutic intervention for both MCPyV (+) and MCPyV (-) patients. Methods: Tissue samples were extracted for DNA and RNA using the *QIAGEN ALL PREP MicroKit*. DNA methylation patterns were analyzed using the Illumina iScan BeadChip system to identify hypo- and hyper-methylated genes. For gene expression, RNA samples were analyzed using the Nanostring nCounter system. Data was visualized with volcano plots, heat maps, and partial least squares discriminant analysis (PLS-DA) to assess gene expression differences between MCPyV (+) and MCPyV (-) samples. Results/Discussion: The results revealed key upregulated genes: *MYB* in MCPyV (+) samples and *HLA-DQA1* in MCPyV (-) samples. MYB encodes an oncogenic transcription factor that regulates cell proliferation and apoptosis. This gene's upregulation is consistent with its role in malignancy. Inhibitors of this gene, such as Celastrol and Blumbagin, have shown promising results in preclinical models, suggesting a potential target for therapy in MCPyV (+) MCC. Additionally, *HLA-DQA1* was upregulated in MCPyV (-) samples. This gene is involved in immune recognition, presenting antigens to T-cells as part of the histocompatibility complex. Enhancing *HLA-DQA1* expression could improve the immune targeting of MCC cells, suggesting immunotherapy as a potential strategy for MCPyV (-) patients. Conclusion/ Future Directions: Significant differences in gene expression were observed between MCPyV (+) and MCPyV (-) MCC, with MYB and HLA-DQA1 emerging as potential therapeutic targets. Further research should focus on validating these findings and developing targeted therapies for both subsets of MCC.

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Nacimientos por Cesáreas: Características Sociodemográficas y de Salud de la Madre y del Neonato en Puerto Rico entre 2015-2023

Nicole J. Rivera, Ana L. Dávila, Luz E. León
Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela Graduada de Salud Pública, Programa Graduado de Demografía, San Juan, Puerto Rico

Trasfondo y Objetivo: La cesárea es un procedimiento quirúrgico utilizado principalmente para salvar la vida de las madres y los neonatos durante el parto cuando es necesario por motivos clínicos. La Organización Mundial de la Salud (OMS) establece, desde 1985, que las tasas de cesáreas no deben sobrepasar entre el 10 al 15 por ciento de los nacimientos. Este trabajo procura describir las características sociodemográficas y de salud de las madres y sus nacidos vivos en Puerto Rico entre 2015 y 2023. Métodos: Se utilizó el archivo de nacimientos del Registro Demográfico del periodo 2015 al 2023. Este archivo consiste en un total de 201,953 nacimientos registrados. Se realizó un análisis descriptivo de variables como: edad de la madre, lugar de residencia de la madre, método de parto, edad gestacional, método de pago, entre otras. Resultados: El 2023 fue el año con la mayor tasa de cesáreas, con un 50.6 por ciento del total de nacimientos. La tasa de cesáreas aumentó con la edad. Del total de nacimientos pretérmino, el 57 por ciento fueron partos por cesáreas. En el periodo, el 63.9 por ciento de las madres que se le realizaron una cesárea habían alcanzado más de la escuela superior. Resalta un aumento en las cesáreas de madres jóvenes. Conclusiones: Desde el 2015, la tasa de cesárea ha aumentado en un 9.28 por ciento. Las madres que dan a luz por cesárea cuentan con un nivel de escolaridad superior a las que pasaron por un parto vaginal. La tasa de cesáreas en Puerto Rico supera el umbral recomendado por la OMS, lo que invita a una revisión de las políticas sobre los partos en el archipiélago.

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The Plant-Derived Compound Simalikalactone D is a Potent Anticancer Agent in Triple Negative Breast Cancer Cells

Joshua Nieves[1], Annelis O. Sánchez[1], Claudia Ospina[2], Pablo E. Vivas-Mejía[1]
[1]University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico,
[2]Inter American University of Puerto Rico, Bayamón Campus, Bayamón, Puerto Rico

Background and Objectives: Triple Negative Breast Cancer (TNBC), is the subtype of BC with the worst prognosis that accounts for 10-20% of total BC cases. TNBC has a high risk of distant recurrence and death, creating an urgent need for novel treatments for this aggressive disease. Simalikalactone D (SKD), extracted from Simarouba tula, an endemic Puerto Rican plant, shows potential as an anticancer compound. We observed that the MDA-MB-231 and MDA-MB-468 TNBC cell lines exhibited different sensitivity to SKD. Therefore, it is critically necessary to determine the mechanism of action of SKD in TNBC cells. Methods: In this study, we performed a comparative analysis of MDA-MB-231 and MDA-MB-468 cells and their differential responses to treatment with SKD. Tandem Mass Tag (TMT)-based quantitative proteomics and Ingenuity Pathway Analysis (IPA) were employed to find uniquely active

networks and signaling pathways, as well as distinct cellular behaviors, between these TNBC cell lines. Results: In the MDA-MB-231 cell line, SKD appeared to downregulate mitochondrial metabolism, and lower PEST-Containing Nuclear Protein (PCNP) and Protein Disulfide Isomerase A4 (PDIA4) expression. MDA-MB468 cells showed an apparent change in PD-1/PD-L1 signaling, and decreased expression of Myc, Akt, NFkB, and ITGB1. Conclusions: Lower PCNP and PDIA4 protein expression are associated with lower tumor proliferation, migration, and growth. Alternatively, observed protein expression changes in MDA-MD-468 cells correlate with reduced cell survival and adhesion in breast cancer. These results highlight the influence of genetic and molecular differences on TNBC cell responses to SKD, reinforcing the clinical importance of personalized medicine. Acknowledgments: We would like to acknowledge the NIGMS/NIH R16 Sure Grant #1R16GM145558-03 (PEVM), the UPR Comprehensive Cancer Center, and the "Título-V RCM" grant of the Federal Department of Education (#PO31S200104).

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Complications of a Delayed Diagnosis of Total Anomalous Pulmonary Venous Return in an Infant

Paola M. Alvelo-Fernández, MPH[1]; Gabriel S. Medina-Ortiz, BS[2]; Juliara E. Ortiz-Santana, MD, FAAP[2]; Ricardo García, MD, FCCM, FAAP[2]
[1]San Juan Bautista School of Medicine, Caguas, Puerto Rico;
[2]University of Puerto Rico, School of Medicine, San Juan, Puerto Rico

Purpose: Total Anomalous Pulmonary Venous Return (TAPVR) is a rare congenital heart defect in which the pulmonary veins drain abnormally into the right atrium. TAPVR is usually diagnosed shortly after the baby is born and presents with an atrial septal defect (ASD), which aids in the baby's survival. In patients with congenital heart disease, the risk of severe respiratory syncytial virus (RSV) infection increases, leading to pathophysiological alterations. Case Description: A 5-month-old male was admitted to the Pediatric Intensive Care Unit (PICU) due to RSV+ bronchiolitis, severe pulmonary hypertension, and congestive heart failure, for which he required mechanical ventilation and inotropes due to a high risk of hemodynamic instability and death. Upon evaluation of pulmonary hypertension, an echocardiogram was performed, which was suggestive of TAPVR to superior vena cava, ASD, pulmonary arterial hypertension, small left side heart, and mild posterior pericardial effusion. The patient was in critical condition for several weeks, with identified complications including acute respiratory distress syndrome, persistent rhonchi, decreased breath sounds, left lung collapse, cardiomegaly, periorbital edema, and acute kidney injury. After the patient's condition was optimized from his bronchiolitis, he was transferred to the Cardiac Care Unit for urgent corrective surgery, where the TAPVR was successfully repaired, and discharge was made with a cardiology follow-up appointment and medications for heart failure. Conclusion: The infant had an unremarkable past medical history, where he was born at term via spontaneous vaginal delivery, with no complications during pregnancy, delivery, or postpartum period and without any diagnosis made after birth. This patient's late TAPVR diagnosis led to health complications, including a severe RSV infection and the need for critical care. Efforts should be made to evaluate early signs of this congenital defect to improve treatment and management and reduce associated risks. Acknowledgements: We sincerely thank Dr. Puig, Dr. García, and Dr. Ortiz for their insights during the preparation of this case report and their guidance during the process. The authors declare no conflict of interest.

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Functional Outcomes and Imaging-Related Factors in Distal Radius Fractures Among Older Adults: A Comprehensive Review

José J. Aponte-Reyes, MD; José I. Acosta-Julbe, MD; Joseph Salem-Hernández, BS; Emmanuel J. Belardo Del Río, MD; Fernando J. Arocho-Oquendo, BS; Christian A. Foy Parrilla, MD, FAAOS
School of Medicine, University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico

Background: Distal radius fractures (DRFs) are common in older adults, often resulting in significant functional impairments and reduced quality of life. Radiographic parameters such as dorsal/volar angulation, radial inclination, radial height, ulnar variance, and articular incongruity are emphasized in treatment planning, yet their relationship with functional recovery remains inconsistent. This systematic review synthesizes evidence from 23 studies to evaluate the associations between imaging-related factors and functional outcomes in elderly DRF patients, aiming to inform strategies that prioritize functionality over strict radiological alignment. Methods: A review of 23 studies was conducted, analyzing radiographic parameters—dorsal/volar angulation, radial inclination/height, ulnar variance, and articular incongruity—and their relationship with functional recovery. Outcomes were assessed using metrics such as the Disabilities of the Arm, Shoulder, and Hand (DASH) score, the Patient-Rated Wrist Evaluation (PRWE), grip strength, and range of motion. Treatment approaches, including surgical (e.g., volar locking plate fixation) and conservative (e.g., casting) methods, were evaluated for their effectiveness. Results: Radial inclination/height (14/23 studies), dorsal/volar angulation (10/23), and ulnar variance (10/23) were the most frequently studied radiographic factors. Surgical interventions improved radiological alignment but did not consistently correlate with better functional outcomes. Radial shortening and articular step-off were associated with worse outcomes, while radial inclination and ulnar variance correlated with improved recovery. Grip strength and range of motion emerged as stronger predictors of functional recovery than radiographic alignment, underscoring the importance of patient-centered approaches. Variability in findings highlights the influence of individual factors like age, comorbidities, and activity levels. Conclusion: Radiological parameters have limited predictive value for functional recovery in elderly DRF patients. Management should prioritize functionality, grip strength, and range of motion over radiographic alignment. Personalized protocols are essential to address the unique needs of older adults and improve long-term outcomes. Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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Overmedication and Intoxication: Management of Calcium Channel Blocker and Beta-blocker Overdose in an Overmedicated Psychiatric Patient

Alanis Quijano-Torres, BS[1]; Camilla Feliciano-González, BS[1]; Emily Rosa-Bouza, BS[1]; Natasha L. Pérez-Nieto, BS[1]; Giancarlos Isidor-Pagán[2]; Diego-Fernández Vázquez[2]; Nicole Martínez-Martínez[2]; Rhina Jiménez, MS[1]; Anabel Puig-Ramos, PhD[1]; Gilberto Puig, MD, FAAP[3]
[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan; [2]University of Puerto Rico, Río Piedras Campus; [3]San Jorge Children and Women's Hospital

Major Depressive Disorder (MDD) and Generalized Anxiety Disorder (GAD) are common psychiatric conditions with a comorbidity of approximately 50%. Standard treatment involves antidepressants, such as serotonin re-uptake inhibitors (SSRIs) and serotonin-norepinephrine re-uptake inhibitors (SNRIs), which often carry black box warnings for increased suicidal ideation, particularly in the adolescent population. This case study features a 16-year-old female patient with a past medical history of MDD and GAD managed with Escitalopram, Lamotrigine, Buspirone, Hydroxyzine, and Trazodone, combined with weekly psychotherapy. The patient had three previous hospitalizations for suicidal ideation, suicidal attempt and disordered eating behaviors, and self-harm. She presented to the ER with an overdose of Nifedipine, a calcium channel blocker (CCB), and Metoprolol succinate, a beta-blocker (BB), alongside her daily medication regimen, of which most drugs, particularly Lamotrigine, were prescribed off-label according to her age and diagnosis. Transfer to Hospital Panamericano was initiated, but delayed due to the patient's presentation of hypotension, hypoxemia, and respiratory distress. She was then transferred to San Jorge Children and Women's Hospital, where she was mechanically ventilated and stabilized with epinephrine and norepinephrine drips, Midazolam, Fentanyl and Cisatracurium besylate continuous infusions. This study aims to evaluate the influence of a psychiatric diagnosis and current pharmacotherapy on the emergency management of a pediatric suicide attempt and to review strategies for the management of overdose cases to improve clinical outcomes. The authors wish to acknowledge the Pediatric Intensive care Unit staff at San Jorge Children and Women's Hospital for their teamwork and dedication to this patient and her family.
There are no conflicts of interest to report.

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Disparities in Surgical Cancer Care Among Latino and Puerto Rican Populations in the USA: Analyzing Access, Treatment, and Outcomes

Sebastián A. Hernández Candelario, BS[1]; Iris I. Sánchez Lebrón, BS[1]; Diego E. Collazo-Irizarry, BS[1]; Marcel Grau Rodríguez, BS[1]
[1]Universidad Central del Caribe, School of Medicine, Bayamón, Puerto Rico, United States of America

Background & Objectives: Latino and Puerto Rican (L/PR) populations in the USA face significant health disparities in surgical cancer care. These disparities manifest as limited access to care, worse postoperative outcomes, and reduced survival rates compared to non-Latino populations. This meta-analysis aimed to quantify the disparities in surgical cancer care among L/PR patients, focusing on access, insurance status, and cancer-specific survival rates compared to non-L/PR patients. Methods: A systematic review and meta-analysis were conducted using peer-reviewed studies evaluating surgical cancer care among L/PR populations. Key outcomes included odds ratios (OR) for adverse surgical outcomes, the impact of insurance status, and survival rates for colorectal cancer (CRC) and lung cancer. Subgroup analyses were performed for Puerto Rican patients and other Latino populations to evaluate differences within these groups. Results: L/PR patients had an OR=1.39 for adverse surgical outcomes, indicating a 39% higher likelihood of complications compared to non-Latino populations. Puerto Rican patients had an OR=1.38 (95% CI:1.22-1.55), while other Latino groups showed an OR=1.39 (95% CI:1.31-1.49). Uninsured patients faced significantly worse outcomes (OR=1.64, 95% CI:1.50-1.79) compared to insured patients (OR=1.31, 95% CI:1.21-1.42). CRC patients showed a mean survival rate of 74% (OR=1.40, 95% CI:1.27-1.54), while lung cancer patients had a survival rate of 57% (OR=1.50, 95% CI:1.33-1.69). Lung cancer was often diagnosed at advanced stages in L/PR populations. Conclusion: This study highlights significant disparities in surgical cancer

outcomes among L/PR populations, emphasizing the need for targeted interventions, including reforms to insurance coverage, early detection programs, and culturally tailored healthcare strategies. Acknowledgments: The authors have no conflicts of interest to disclose.

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Spontaneous Regression of Atypical Myxoid and Spindle Cell Neoplasm: a Case Report

Alejandro Arbona-Lampaya[1], Kumarasen Cooper[2], Jenny T. Bencardino[3]
[1]School of Medicine, University of Puerto Rico - Medical Sciences Campus, San Juan, Puerto Rico; [2]Department of Pathology & Laboratory Medicine, Perelman School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania; [3]Department of Radiology, Montefiore Medical Center - Albert Einstein College of Medicine, Bronx, New York

Purpose: To describe the spontaneous regression of an atypical myxoid and spindle cell neoplasm of the foot in an adult patient. Case Description: A 64-year-old man presented with a one-year history of a palpable mass on his left lateral hindfoot. On physical examination, a soft, compressible, superficial mass was found on the left lateral hindfoot, with no other symptoms. There was no significant past medical history. Initial ultrasound and MRI studies characterized the mass as cyst-like, fluid-containing lesion. Biopsy results indicated an atypical myxoid and spindle cell neoplasm, with the following profile: CD34: Positive, Desmin: Negative, S100: Positive only in adipocytes, RB1: Retained, MDM2: Not amplified, MGEA5 FISH: Abnormal signal, favoring Hemosiderotic Fibrolipomatous Tumor (HFLT). Four months after the biopsy, follow-up MRI revealed substantial tumor size regression with decreased post-contrast enhancement. This case contributes to the limited literature on these types of neoplasms, highlighting a rare but clinically significant instance of spontaneous tumor regression. Given the potential for recurrence and malignant transformation in HFLT, continuous monitoring with possibly complete surgical excision is recommended. Conclusion: This case documents the spontaneous regression of an atypical myxoid and spindle cell neoplasm. The findings highlight the importance of regular imaging and clinical follow-up for soft tissue neoplasms, as spontaneous regression, though rare, may occur. However, due to the potential risk of recurrence and malignant transformation of HFLT, careful monitoring and consideration for complete surgical excision remain key components of management. This case adds to the understanding of HFLT and contributes to the limited literature on these tumors. Acknowledgments: We would like to thank the patient for his participation, and our institution's medical team for their cooperation and dedication.

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Alfabetización Física: Potencial de un Repositorio Digital para Empleados Universitarios

Emmanuel Hernández-Torres, Marcilyn Colón-Colón, Rosalie Ayala-Colón
Escuela Graduada de Salud Pública, Recinto de Ciencias Médicas, Universidad de Puerto Rico

Trasfondo y objetivos: Según la Declaración de Consenso de Canadá (2015), la alfabetización física abarca la motivación y confianza, competencia física, conocimiento y comprensión, y el compromiso con la actividad física a lo largo de la vida. Estos dominios son esenciales para fomentar estilos de vida activos y saludables

entre empleados universitarios, una población frecuentemente afectada por entornos laborales sedentarios, estrés y barreras organizacionales para realizar actividad física (Cooper & Barton, 2015). En este proyecto se explora si un repositorio digital con recursos multimedia contribuiría a desarrollar la alfabetización física en esta población para su bienestar integral (Schmidt, 2012). Método: Se realizó una encuesta digital completada por 48 personas miembros del personal de la Escuela Graduada de Salud Pública para identificar opciones que les ayudaran a promover el movimiento corporal en el lugar de trabajo. Estas incluían herramientas interactivas y estrategias prácticas asociadas a la motivación, competencia física, comprensión y compromiso. Resultados: Entre los recursos de mayor interés se seleccionaron videos cortos de ejercicios sencillos (77%), actividades para manejo de estrés y relajación (69%), cápsulas informativas y de motivación (46%) y recomendaciones de rutas y caminatas (48%). Temas clave incluyeron ejercicios de estiramiento en el escritorio y estrategias para reducir el tiempo sedentario. Discusión: Un repositorio digital representa una herramienta clave para viabilizar la accesibilidad digital y asincrónica a recursos que fomenten la alfabetización física. Su flexibilidad permite acceder contenidos educativos en horarios convenientes, superando barreras comunes como la falta de tiempo o disponibilidad presencial. Además, el centralizar videos, guías prácticas y estrategias interactivas en un repositorio permite que pueda adaptarse a diversas necesidades y propicia una experiencia personalizada. Conclusión: Un repositorio digital facilita la práctica y adopción de estilos de vida activos entre empleados universitarios, mejorando su bienestar y promoviendo una cultura de salud integral. Reconocimientos: Participantes de la encuesta.

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Fecal Indicator Bacteria in the Waters at the Isla Verde Marine Reserve and Torrecilla Lagoon

Laura I. Santiago-Pérez[1], Karla M. Nadal-Nevárez[2], Daniela M. Rodríguez-Rodríguez[2], Angelie Rivera Rodríguez[2]
[1]University of Puerto Rico, Bayamón Campus, Department of Chemistry, Bayamón, Puerto Rico;
[2]University of Puerto Rico, Bayamón Campus, Department of Biology, Bayamón, Puerto Rico

Bacteria such as Total Coliforms, Fecal Coliforms, Enterococci, and *Escherichia coli (E. coli)* are part of the intestinal flora of warm-blooded animals. These bacteria are considered as fecal indicator bacteria (FIB) which are used as a valuable tool to assess water quality and to evaluate the sanitary condition of recreational waters as well as its potential public health risks. Higher amounts of FIB in the recreational waters put at risk the public health of the people that visit the place. The area of the Isla Verde Marine Reserve as well as Torrecilla Lagoon near the Balneario de Carolina are visited by locals and tourists frequently. However, the water in these areas is susceptible to fecal contamination possibly by sewage water disposal, improper disposal of human and animal feces and water disposal of commercials near the place. Because it could represent a public health issue, the aim of this study is to determine the presence of the FIB in the water of the Isla Verde Marine Reserve and Torrecilla Lagoon. For the determination of the FIB, water samples were collected in sterile bags at four (4) points of the Isla Verde Marine Reserve, one point (1) at *Balneario de Carolina* and one (1) point from the Torrecilla Lagoon. These samples were transported to the laboratory in a cooler to perform bacteriological analysis. Enterolert and Colilert test kits by IDEXX Laboratories were employed to determine the presence of Enterococci, Total Coliform, and *E. coli* bacteria. The results showed higher amounts of coliforms and *E. coli*

in the water of the Isla Verde Marine Reserve and Torrecilla Lagoon in different samples points, and dates which are affected by climate and maritime conditions such as precipitation and hide or low tide. The higher amounts observed overstep the permitted limits representing a public health alert. Acknowledgement: NASA Puerto Rico Space Grant Consortium NASA Cooperative Agreement 80NSSC20M0052

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Severe Ulcerative Colitis Exacerbation in a Pediatric Patient: a Case Report

Paola E. Flores Arroyo, BS[1]; Arnaldo E. Álvarez Meléndez, BS[2]; Anabel Puig Ramos, PhD[3]; Gilberto Puig Ramos, MD[4]
[1]Ponce Health Sciences University; [2]San Juan Bautista School of Medicine; [3]UPR Medical Science Campus, School of Medicine, Pediatrics Critical Care; [4]San Jorge Hospital

A 12-year-old female with ulcerative colitis (UC), a chronic inflammatory bowel disease (IBD) affecting the rectum, colon, and cecum, was admitted for a severe exacerbation complicated by sepsis. UC typically presents with bloody diarrhea, abdominal pain, and fecal urgency, with elevated inflammatory markers (e.g., ESR, CRP) and fecal calprotectin. Although perinuclear antineutrophil cytoplasmic autoantibodies (pANCA) are suggestive, definitive diagnosis requires endoscopy, which reveals friable mucosa, erosions, or ulcerations. Treatments include 5-aminosalicylic acids (e.g., mesalamine) for mild-to-moderate disease and corticosteroids or immunosuppressants for severe cases. The patient, managed previously with mesalamine, Prevacid, Pepcid, and steroids, was started on intravenous methylprednisolone (15 mg every 12 hours) and iron infusion. Initial testing, including C. difficile antigen and stool cultures, was negative. Persistent fever and elevated inflammatory markers prompted empiric Zosyn, later replaced by cefepime and metronidazole, which were discontinued due to poor response. A CT scan revealed moderate proctocolitis, while tests for COVID-19, influenza, CMV, blood, and urine cultures were unremarkable. Her condition deteriorated with recurrent vomiting, diarrhea, tachycardia, and hypotension, requiring transfer to the PICU. Severe anemia (Hgb 7.1), hypoalbuminemia, and hyponatremia were treated with albumin infusions, PRBC transfusions, intravenous hydration, and TPN. Liposyn was titrated from 0.5 g/kg/day to 2 g/kg/day. After poor response to her third dose of Remicade, she was transitioned to Solumedrol (20 mg every 8 hours) and tapered to 15 mg every 12 hours. Oral mesalamine and enemas were discontinued due to intolerance. After seven days in the PICU, her inflammatory markers, hemoglobin, and nutritional status improved. Transferred to the pediatric ward, she resumed a regular diet, and TPN was discontinued. At discharge, she showed normalized labs, reduced stool frequency, and weight gain, with plans for continued oral steroids and gastroenterology follow-up. Correct management and early identification is crucial for a favorable outcome.

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A Modified Posterior Approach to the Nerve Transfer of the Spinal Accessory Nerve to the Suprascapular Nerve

Lenny L. Rivera[1], Gerardo Caussade-Silvestrini[2], José Acosta-Julbe[1], Rubén Tresgallo[1], Alexandra Claudio[1], Christian Foy-Parrilla[3]

[1]University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico; [2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, Puerto Rico; [3]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Division of Orthopaedic Surgery, San Juan, Puerto Rico

Background & Objectives: Brachial plexus injuries may occur after birth complications or trauma, often accompanied by severe loss of shoulder function. Dual neurotization consisting of spinal accessory nerve (SAN) transfer to the suprascapular nerve (SSN) and radial nerve transfer to the axillary nerve provide an excellent method for reconstruction of shoulder stability and function. However, transfer of the SAN to the SSN is a challenging procedure so we propose a modification for the posterior approach to the SSN that decreases length of surgery and eases identification of the SSN. Methods: We retrospectively analyzed the postoperative results of 14 patients who suffered brachial plexus injuries and then underwent SAN to SSN and radial nerve to axillary nerve transfer between September 2018 to November 2022. Outcomes were assessed using DASH questionnaire results, medical research council (MRC) grading system, and shoulder range of motion. Our results were compared with those in literature. Approved by IRB. Results: Six patients treated after obstetric brachial plexus injuries and 8 patients treated after traumatic total brachial plexus injuries were included. Shoulder abduction, forward flexion, and external rotation improved in all 14 patients. Pediatric patients demonstrated an average of 101 degrees of active forward flexion (range 85-125), 93 degrees of active abduction (range 85-115), and 15 degrees of active external rotation (range 5-25), with an average MRC grade of 4 (±1). Adult patients demonstrated an average of 53.3 degrees of active forward flexion (range 15-140), 46.6 degrees of active abduction (range 10-120) and 22.5 degrees of active external rotation (range 5-60); average DASH score was 50.83 while MRC grade was 3.6 (±1.5). Conclusion: The modified posterior approach to the SSN lessens the length of surgery without significantly compromising patient's functional outcomes. Pediatric patients treated after obstetric brachial plexus injuries demonstrated superior outcomes when compared to adult patients. IRB Approved: Protocol #: 2307128615 (11/27/2023)

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Successful Treatment of Severe Morphea with Upadacitinib in a Patient with Rheumatoid Arthritis

Valerie Encarnación-Cortés[1], Cristina Brau-Javier[2] (Co-first author)
[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, Puerto Rico;
[2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Dermatology, San Juan, Puerto Rico

Purpose: This case report highlights an innovative approach to managing severe localized scleroderma (morphea) using Upadacitinib, a JAK inhibitor. It underscores this drug's potential to serve as an alternative to traditional treatments, particularly for cases resistant to standard therapies. These findings may encourage further research and consideration of Upadacitinib in dermatologic practice, potentially expanding therapeutic options for treatment resistant morphea. Case Description: This manuscript describes the use of Upadacitinib, a Janus kinase (JAK) inhibitor, as treatment for severe generalized morphea, a rare fibrosing skin condition with challenging management options. Despite the lack of FDA-approved treatments for morphea, Upadacitinib, originally used for conditions like rheumatoid arthritis and atopic dermatitis, showed promising results in this case. This case

report suggests that Upadacitinib could be a viable alternative to conventional therapies, offering a potentially safer and effective option for severe cases of morphea. Conclusion: Localized scleroderma (LoS) is a fibrosing skin disorder that, if untreated, can progress involving deeper tissues, leading to limb deformities, severe skin atrophy, and joint contractures. Patients with severe morphea face limited treatment options, which often carry a high risk of adverse effects. Immunomodulation with JAK inhibitors may offer a safer alternative. Acknowledgements: This article has no funding source. The authors declare that there are no conflicts of interest to disclose.

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Cannabis Medicinal: Su Efecto en la Sintomatología de la Ansiedad

Arianis Dávila
Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela de Enfermería

Antecedentes: La ansiedad puede estar caracterizada por síntomas de irritabilidad, dolores de cabeza y tensión ante una amenaza real o percibida. Así mismo, los desórdenes de ansiedad son los más prevalentes de las condiciones mentales debilitantes. Rogers, Wieman y Baker (2020) sugieren que pacientes que sufren esta condición suelen tener comorbilidades mentales y físicas, lo cual puede resultar en menor efectividad en los resultados esperados del tratamiento. Según el Departamento de Salud de Puerto Rico (2024) luego del insomnio, la ansiedad, es la segunda razón más común para utilizar cannabinoides medicinales. En En Puerto Rico, hasta enero de 2024, se han registrado 114,818 pacientes que utilizan cannabis medicinal. Propósito: Esta investigación tuvo como propósito medir el efecto del cannabis medicinal en la sintomatología de la ansiedad. Metodología: Diseño cuantitativo, descriptivo. La muestra estuvo compuesta por 77 participantes, cuyas edades oscilaron entre los 21 y 58 años. Como instrumento de recolección de datos se utilizó el *State-Trait Anxiety Inventory* (STAI). El análisis de los datos se realizó mediante estadística descriptiva. Resultados: Los resultados no mostraron diferencias estadísticamente significativas al comparar la cantidad de THC y CBD consumidos con los niveles de ansiedad experimentados. Estos hallazgos sugieren que la relación entre el consumo de cannabinoides medicinales y la ansiedad no es directa, al menos en los parámetros evaluados. Conclusión: Aunque se planteó la hipótesis de que el cannabis medicinal podría modular los síntomas de ansiedad a través del sistema endocannabinoide, este estudio no exploró de manera específica síntomas relacionados, como los de naturaleza fisiológica. Los resultados subrayan la necesidad de investigaciones adicionales que aborden este fenómeno desde una perspectiva más integral, con el objetivo de desarrollar guías de tratamiento basadas en evidencia que optimicen el manejo de la ansiedad en pacientes que utilizan cannabis medicinal. Aprobado por el IRB: Núm. del protocolo: 2404214344 (05/29/2024)

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La Población que se va de Puerto Rico: ¿Cuáles son sus Características Sociodemográficas y Económicas?

Emanuel de la Cruz Travieso; Luz E. León López, PhD
Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela Graduada de Salud Pública, Programa Graduado de Ciencias en Demografía

Introducción y objetivos: Puerto Rico ha perdido población de forma considerable a través de los años a causa de la emigración. Esto no solo ha provocado el envejecimiento de la población, sino que disminuyan aún más las personas que nacen en P.R. El aumento del impacto de la emigración trae consecuencias perjudiciales al desarrollo social y económico del país. El objetivo del estudio fue describir las características sociodemográficas de la población de emigrantes que se fueron desde Puerto Rico hacia los E.E.U.U durante 2018 a 2022. Metodología: La investigación fue descriptiva transversal. La fuente de datos fue la Encuesta sobre la Comunidad de Puerto Rico, 2018-2022. Hallazgos: Durante los años 2018-2022, emigraron hacia E.E.U.U, 72,330 residentes en P.R. Los estados que recibieron en mayor proporción estos emigrantes son Florida (30.94%), Pennsylvania (11.25%), New York (9.73%), Texas (7.64%) y Massachusetts (5.59%). Cerca de la mitad (44.5%) de los emigrantes estaban entre las edades de 20 a 44 y 25.8% se encontraban entre las edades de 1 a 19. El 50.02% eran mujeres. Un 42% por ciento eran solteros y el 36.57% casados. El 82.65% obtuvo diploma de cuarto año o más, de los cuales un 31.76% obtuvo bachillerato o más. El 73.53% reportaron ingresos menores a $34,999. Poco más del 54% se encontraba por encima del nivel pobreza. Un 76.40% vivían en hogares rentados. Conclusión: La emigración es un evento que ha provocado un decrecimiento acelerado en la población de P.R. El país pierde emigrantes jóvenes, altamente educados, con bajo nivel de pobreza y en edades reproductivas. Esto perjudica el crecimiento económico y social de la Isla provocando una baja actividad económica y situaciones críticas en términos de la salud y bienestar colectivo. Este panorama urge la creación de políticas públicas enfocadas en reducir la fuga de talentos en Puerto Rico.

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Risk Factors for Intraventricular Hemorrhage in Preterm Infants Admitted to the San Juan City Hospital: Preliminary Findings

Katia Santiago-Ledee, MD[1]; Miranda K. Burger[1], MD; Israel Matías, MD[2]; Norma Claudio, MD[2], Debby Meléndez Pérez[3]; Alejandra Álvarez[3]; Lourdes García-Fragoso, MD[2]; Inés García-García, MD[2]
[1]San Juan City Hospital, Department of Pediatrics, San Juan, Puerto Rico;
[2]UPR, Medical Science Campus, School of Medicine, Department of Pediatrics, Neonatology Section, San Juan, Puerto Rico;
[3]UPR, Río Piedras Campus, Faculty of Natural Sciences, San Juan, Puerto Rico

Background and Objectives: Recent advancements in medicine have enabled the survival of significantly premature neonates. However, intraventricular hemorrhage (IVH) incidence has remained stable over the past few decades. In infants born at less than 32 weeks of gestation, the germinal matrix is the most common site of hemorrhage, primarily due to the underdeveloped structural support of blood vessels and the high metabolic activity in this region. This condition can lead to neurodevelopmental consequences. The objective of this study is to assess the risk factors associated with IVH in preterm infants admitted to the Neonatal Intensive Care Unit at San Juan City Hospital. Methods: This study is a retrospective review of electronic medical records for preterm infants born at less than 32 weeks of gestation, admitted between 2020 and 2023. Approved by IRB. Statistical analysis was conducted using Statistix 8.0. Results: The study included 54 newborns diagnosed with IVH and 17 without. The mean gestational age for infants with IVH was 29 weeks, and their mean birth weight was 1210 grams, compared to 1434 grams for those without IVH. Preliminary analysis indicates that infants with IVH

exhibited a higher prevalence of the following factors: lower birth weight, a need for invasive ventilation (30% in IVH cases versus 12% in non-IVH cases), and surfactant administration (50% versus 29%). Conclusion: While the identified factors may have detrimental or beneficial effects on premature neonates, our most significant finding is that decreased birth weight correlates with an increased incidence of IVH, surpassing all other risk factors. This supports existing literature that highlights invasive ventilation and respiratory distress syndrome as risk factors for IVH. Expanding our sample size will enhance our statistical power and further elucidate the risk factors for IVH within our population, ultimately assisting in developing preventive strategies and appropriate follow-up care. IRB Approved: Protocol #: 00002788 (12/19/2024)

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Clinical Outcomes and Multimodal Management of Cerebral Arteriovenous Malformations: a Single Center Experience

Esteban R. Rivera, BS[1]; Carlos E. Calderón Valero, BS, MS[1]; Juan C. Vicenty Padilla, MD[2,3]; Juan M. Ramos-Acevedo, MD[2,3]; Rodolfo E. Alcedo, MD[2,3]
[1]University of Puerto Rico, School of Medicine, San Juan, Puerto Rico;
[2]University of Puerto Rico, School of Medicine, Department of Neurosurgery, San Juan, Puerto Rico;
[3]Mennonite Health System, Department of Neuroscience, Caguas, Puerto Rico

Introduction: Cerebral arteriovenous malformations (AVMs) present a complex challenge for neurosurgeons. Despite advancements in management, optimal treatment modality remains a topic of debate. This study examines the experiences and outcomes at Puerto Rico's only stroke center, Hospital Menonita de Caguas (HMC). Methods: A retrospective review of the AVM database of HMC, the only stroke center in the island, was performed. 22 patients (13 males and 9 females), diagnosed with Spetzler-Ponce grade A through C AVMs between 2019 and 2024, were identified. The following data was collected from the electronic medical records: anatomical location, treatment modality, Spetzler-Ponce grade, pre-treatment rupture status, complications and the modified Rankin scale (mRS) at discharge. Results: Amongst our population the median age was 46 years. Anatomical locations were as follows: right parieto-occipital (23%), left parieto-occipital (18%), right temporal (18%), left temporal (9%), right frontal (9%), deep (9%), cerebellar (5%). Treatment modalities employed were radiosurgery alone (23%), resection alone (27%), embolization + resection (41%), embolization + radiosurgery (5%), and resection with partial embolization of residual (5%). Preoperative rupture of AVM was present in 41% of patients and absent in 59%. Spetzler-Ponce grading distributions were as follows; A (55%), B (36%) and C (9%). 82% of patients were discharged with an mRS of 1, 5% with mRS of 2 and 9% with an mRS of 3. Postoperative complications included wound breakdown, aphasia, weakness and post-resection bleed. Conclusion: At our center most of the AVMs multimodal treatment was the most frequently employed strategy. Favorable outcomes were observed in 82% of cases, with a modified Rankin scale (mRS) of 1 at discharge. These findings suggest that a tailored, multimodal treatment strategy can be effective in managing complex AVMs. Notably, the HMC stroke center has managed to mitigate disparities in Medicare and Medicaid funding on the island, allowing for adequate access to AVM treatment.

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The Role of Community Mobilization in Integrated Vector Management in Bayamón, PR

Paola K. Figueroa Colón[1], Emily N. Rivera Viera[1], Gabriela A. Cosme Silva[1], Allison Laboy Parrilla[1], Rafael Saavedra[2], Jania García[2], Katherine Torres[2]
[1]University of Puerto Rico at Bayamón; [2]Puerto Rico Science, Technology and Research Trust

Background & Objectives: A community mobilization program was implemented in Bayamón, Puerto Rico, to address the dengue epidemic declared in March 2024 by the Health Department of Puerto Rico. This initiative aimed to educate the public about *Aedes aegypti* mosquitoes and prevention methods. The objectives of this project are: 1) Emphasize our efforts on major hotspots for dengue cases; 2) Raise awareness among the communities about the vector *Aedes aegypti* and the transmission of the dengue virus, its symptoms and effective strategies to eliminate breeding sites; 3) Educate the Bayamón community about the components of the Integrated Vector Management Program. Methods: Activities included educational talks, educational storytelling, house-to-house visits, and educational booths. The educational talks explained the mosquito's lifecycle and breeding habits, while educational storytelling engaged children with prevention messages. House-to-house visits provided personalized guidance on eliminating breeding sites, and prevention methods. Educational booths showcased the mosquito life cycle and effective prevention methods against mosquito bites. This initiative empowered the community to take proactive steps in preventing dengue by reducing mosquito breeding sites and increasing awareness. However, the pre and posttests focused specifically on data collected from educational talks and storytelling sessions, as these were methods used to measure knowledge gains. Results: High school students among the grades of 9th to 12th showed the highest knowledge gain (28.80%), followed by the general public (26.10%), suggesting that these groups were particularly receptive to the material. Conclusions: Through targeted community mobilization, this initiative effectively educated the public about *Aedes aegypti* mosquito control, leading to significant increases in knowledge post educational sessions. Future work should focus on better ways to integrate the younger community, from 1st to 8th grade, to help raise more awareness about *Aedes aegypti* and its impact on our community. Acknowledgements: This project was funded by the non-profit organization Puerto Rico Science, Technology and Research Trust.

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Determining the Association of Antiretroviral Treatment, Sociodemographic Factors, Social Determinants of Health, and Depression in Patients with HIV

Anthony Maldonado, Madline Cintrón, Nilka Lorenzo, Kyle Melin, Jonathan Hernández, Sayel Rivera, Bianca Torres
University of Puerto Rico, Medical Sciences Campus, School of Pharmacy

Background and Objectives: Depression in patients with HIV is influenced by various factors, including the chronic nature of the disease, psychosocial stressors, and the side effects of antiretroviral therapy (ART). Other factors such as income, educational level, and housing stability may play a role in the overall mental and physical health of

individuals living with HIV. This study explores the association between ART, sociodemographic factors and social determinants of health in HIV patients with depression. As such, our aim is to identify HIV patients at higher risk for depression with a focus on antiretroviral treatment selection. Methods: The *All of Us* Research Program database was used to build a cohort of patients with HIV selected from self-reported surveys and electronic health records diagnosis. The relationships between 24 ART, sociodemographic factors, social determinants of health, and depression outcomes were analyzed using Jupyter Notebooks with Python. Chi-square tests, logistic regression, and the Benjamini-Hochberg correction were used to ensure robust results. Results: Key findings show that ART regimens such as lopinavir (OR = 9.04 (95% CI [3.09–26.42], P < 0.001), and etravirine (OR = 3.96 (95% CI [1.84–8.53], P < 0.001), are positively correlated with depression. Unemployment and housing instability were significant risk factors, while male gender and homeownership offered protective benefits. Conclusions: This study emphasizes the importance of ART selections and other social interventions, such as stable housing and employment support, to reduce depression risk and improve health outcomes in this population. The ultimate goal is to enhance depression screening for vulnerable groups and reduce depression's impact on medication adherence and health outcomes. Acknowledgements: We acknowledge *All of Us* participants for their contributions. We also thank the NIH's *All of Us* Research Program for making available the participant data examined in this study.

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ERK and AKT Expression in the BDNF Signaling Pathway in the Extinction of Morphine Place Preference

Joy Velázquez-Colón[1], Wilma V. Richiez-Mateo[2], Fabiana Z. Rosado-Rodríguez[3], Ricardo Schrils-Soto[4], Imanol Berríos-Rivera[5], Astrid Valle-Toste[5], Jennifer L. Barreto-Estrada[4]

[1]Department of Biology, University of Puerto Rico, Río Piedras Campus, Río Piedras, 00925-253;
[2]Department of Synaptic Integration and Neuromodulation NIH, 20892;
[3]Department of Psychology, University of Puerto Rico, Río Piedras Campus, Río Piedras, 00925-253;
[4]Department of Anatomy and Neurobiology, University of Puerto Rico-Medical Sciences Campus, 00936;
[5]Department of Biology, University of Puerto Rico, Bayamón Campus, 00959- 1919

Opioid addiction has led to a rise in drug overdose deaths, with approximately 81,000 fatalities in 2022 in the US, revealing the significance of this issue regarding public health. Among the treatments for opioid dependence, including medications and support systems, behavioral therapies are considered a promising tool for addiction rehabilitation. Extinction training can be useful to study drug-related behaviors. In past studies, forced-extinction of morphine-induced conditioned place preference (CPP) led to increased expression of the growth factor, brain derived neurotrophic factor (BDNF), in the hippocampus (HPC) and ventral striatum/nucleus accumbens (VS/NAc) in female rats. However, BDNF signaling may depend on tropomyosin receptor kinase B (TrkB) receptors in the cell membrane and intracellularly, as signal regulated kinases. In this study we seek to understand the

expression of extracellular signal-regulated kinases (ERK) and protein kinase B (AKT) in the intracellular signaling pathway after extinction training in female rats. ERK and AKT are a part of signaling pathways that regulate cellular processes and neuronal development and can also be activated by growth factors. Specifically, BDNF has been identified as an activator for both pathways. In this study, we combined morphine (5mg/kg) CPP and forced-extinction protocols to determine by Western blots the expression of ERK and AKT in the VS/NAc.Preliminary results showed that non-phosphorylated ERK and AKT expression through the VS/NAc is invariable across the sham-extinction, extinction and extinction-resistant phenotypes. Future studies will test the active phosphorylated forms (pERK, pAKT) in both VS/NAc and HPC. The results will contribute to a better understanding of signaling cascades underlying behavioral therapies for drug addiction. Approved by IACUC: 9940112. Supported by: MBRS-SCORE-1SC2DA047809, NIGMS-1R16GM149491, NIGMS-RISE-5R25GM061151-, NeuroID 5R25NS080687 PR-INBRE P20GM103475.

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An Old Foe Causing Neonatal Kidney Failure in 2023: A Case Report

Maraida L. Serrant-Hernández, MD, MHA, MPH[1];
Alexandra I. Rodríguez-Díaz, MD[2]; Melvin Bonilla-Félix, MD, FAAP[3]
[1]San Juan City Hospital, Department of Pediatrics, San Juan, Puerto Rico;
[2]University of Puerto Rico Pediatric Hospital, Department of Pediatrics, San Juan, Puerto Rico;
[3]University of Puerto Rico Pediatric Hospital, Department of Pediatric Nephrology, San Juan, Puerto Rico

Purpose: The renin-angiotensin system (RAS) is crucial for prenatal kidney development. In-utero exposure to RAS-blocking drugs, such as ACE inhibitors (ACEIs) or angiotensin receptor blockers (ARBs), can lead to fetal and neonatal complications like oligohydramnios, renal failure, pulmonary hypoplasia, and perinatal death. Despite these risks, ACEIs and ARBs are still prescribed to pregnant women and those of childbearing age. This case report describes a newborn with renal failure from prenatal ARB exposure, highlighting the need to avoid these drugs in pregnancy. Case Description: We present a 3-day-old baby boy transferred to intensive care due to anuria since birth. Born at 37 weeks via cesarean section after an episode of maternal profuse bleeding, he weighed 2.45 kg and experienced respiratory distress, requiring oxygen support. APGAR score was 6/7/8 at 1, 5 and 10 minutes respectively. Mother had a history of chronic hypertension, presumed to be treated with Labetalol. Fetal ultrasounds were reported as normal, without oligohydramnios or anatomical abnormalities. On admission, the baby exhibited anasarca, elevated creatinine (3.55 mg/dL), hyponatremia, and metabolic acidosis. Renal ultrasound showed slightly hyperechoic kidneys, expected for age. Emergent peritoneal dialysis was initiated. The cause of his renal dysfunction became clear after the mother admitted to using her husband's prescription for Losartan 100 mg daily throughout her pregnancy. Our patient's course was complicated with peritonitis, bowel perforation, septic shock, anoxic brain injury with transtentorial herniation and eventual death. Conclusion: Neonatal ARB-induced nephropathy is preventable. ARBs, ACEIs, and direct renin inhibitors should be discontinued as soon as pregnancy is detected or suspected. Despite well-documented risks, cases like this continue to occur. Alternative antihypertensive medications, such as nifedipine, labetalol, methyldopa, and hydralazine, should be prioritized during pregnancy. Physicians must understand the risks of these drugs, their duty as doctors to educate their patients and advocate for those yet to be born. Acknowledgement: None

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Patients' Journey to Substance Use Recovery

Sandra I. Ralat[1], Marcos I. Roche[1], Joshua N. Bernabe[2], Claudia S. Morales[3], Thairys Flores[1], Ricardo Rojas[1], Ismael Pérez[1], Victoria Agostini[4], Francisco Arbelo[4], Andrea N. Torres[4], Yimayra Rivera[4], Sara Díaz[1], Karen Martínez[1], Darlene Santiago[1]
[1]University of Puerto Rico, Medical Sciences Campus; [2]Universidad Central del Caribe; [3]San Juan Bautista Medical School, Caguas, Puerto Rico; [4]University of Puerto Rico, Río Piedras Campus

Background and Objectives: The Puerto Rico Racial & Ethnic Minority Acceleration Consortium for Health Equity (PR-REACH) conducted a pilot research project mapping substance use disorder (SUD) patients' journey to recovery to understand their unmet health care needs. Methods: The clinical questionnaires used were: (1) Patient Health Questionnaire (PHQ-9), to measure depressive symptoms; (2) Generalized Anxiety Disorder 7-item (GAD-7), to measure anxiety symptoms; (3) Alcohol Use Disorders Identification Test (AUDIT), to screen for risky or unhealthy alcohol use; and (4) Mini Mental State Examination (MMSE) to evaluate cognitive functioning. Descriptive statistical analyses were performed using IBM SPSS Statistics v29. Results: The study sample consisted of nineteen patients actively in treatment for opioid use disorder and two for alcohol use disorder. Thirteen (62%) were males, nine (43%) had education level of 9-12 years, and fifteen (76%) had normal cognitive functioning (MMSE scores). Most participants were younger than 55-years-old (76%). Overall, the sample results showed no significant levels of depression (mean score 9.0 ± 6.8 PHQ-9) or anxiety (mean score 7.1 ± 5.2 GAD-7). Results also demonstrated hazardous or harmful alcohol consumption (mean score 11.8 ± 10.6 AUDIT). The 44-55 age group showed lower depression and anxiety scores than other age groups. Participants with cognitive impairment (lower MMSE scores) had lower anxiety than those in the normal cognitive range. Those with an education level of at least 13 years had higher alcohol consumption (higher AUDIT scores) than those who had a lower education level. Conclusions: This sample of patients with SUD showed differences in depression, anxiety, and alcohol consumption depending on age, education level, and cognitive factors. The findings highlight the need to address alcohol consumption in opioid use disorder treatment as well as tailoring health care interventions to patients' age, education, and cognitive function. IRB Approved: Protocol #: 2308131870R001 (02/05/2024)

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A Rare Case of an Adamantinous Craniopharyngioma Seeding After Resection: a Pediatric Case Report

Claudia Muns[1], Alejandro Arbona-Lampaya[1], Luis Biescas[2], Ángel Rosado González[3], Maximiliano Carrera[4]
[1]School of Medicine, University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico; [2]VA Caribbean Healthcare System; [3]UT Southwestern Medical Center; [4]University of Medicine and Health Sciences, Saint Kitts and Nevis

Purpose: To underscore the complexity of craniopharyngioma management, demonstrating the rare occurrence of intracranial seeding and recurrence after repeated surgeries. Case Description: This patient presented at 10

years old with a history of worsening headaches and nausea. Initial MRI showed a sellar complex solid and cystic lesion with enhancing solid components and expansion of the sella turcica. The initial resection was a left frontal craniotomy aimed for gross total removal with careful dissection. Pathology reported the tumor as Craniopharyngioma, Adamantinous variant, WHO Grade I. Adjuvant radiotherapy was initiated to minimize the risk of recurrence. At 14 years old, three years after initial resection, the patient presented with headaches to the ER. Imaging showed the craniopharyngioma had recurred and it was resected a second time. At 16 years old, follow-up, CT evaluation showed a left inferior frontal intra-axial mass, measuring 2 by 2 by 2 cm with calcifications and edema, located at the prior surgical tract. Following excision, histopathologic analysis confirmed the same histology indicating that the tumor cells migrated from the original craniopharyngioma site, compatible with seeding. The patient underwent another left frontal craniotomy for resection. The next year, at 17 years old, the patient presented with headaches, nausea, vomiting, decreased peripheral vision, weight loss and behavioral changes, subsequent CT and MRI revealed a 2 cm complex partially enhancing left frontal lobe mass, compatible with recurrence of tumor seeding. The tumor was resected and the patient continues with surveillance. Conclusion: This case highlights the rare occurrence of intracranial tumor seeding in craniopharyngioma, the challenges associated with craniopharyngioma resections and emphasizes the need for careful postoperative monitoring. Acknowledgments: We would like to thank the faculty of medicine of the department of radiology for their contributions to establishing diagnosis and implementing patient management.

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Cranial Mass with Dural Invasion as a Rare Manifestation of Follicular Thyroid Cancer

Esteban R. Rivera-Rivera, BS[1]; Alejandro E. Cedeño-Morán, BS[1];
Alexander I. Acevedo Jetter, BS[1]; Rodolfo E. Alcedo-Guardia, MD[2,3]
[1]University of Puerto Rico, School of Medicine, San Juan, Puerto Rico;
[2]University of Puerto Rico, School of Medicine, Department of Neurosurgery, San Juan, Puerto Rico;
[3]Mennonite Health System, Department of Neuroscience, Caguas, Puerto Rico

Purpose: Thyroid Carcinomas (TC) are the most common type of endocrine tumors. Follicular thyroid carcinoma (FTC) is an aggressive subtype of TC, known for its propensity to metastasize. Cranial metastasis with dural invasion is exceedingly uncommon and poses unique challenges. Case Description: We report the case of a 68-year-old female with a pulsatile occipital mass with progressive enlargement over six months. Initial head CT showed an aggressive solid right occipital scalp mass with destruction of adjacent occipital bone. CTA suggested a highly vascular mass with feeding vessels from the right occipital artery. Given the highly vascular nature of the mass, a two-stage approach with initial endovascular digital subtraction angiography (DSA) for characterization with concomitant endovascular embolization of feeding vessels followed by craniotomy for resection of the mass. DSA confirmed feeding vessels from posterior branches of the occipital artery which were subsequently embolized utilizing Onyx. Craniotomy resulted in successful en block resection of the mass including accompanying skin, soft tissue, bone and dura. H&E stain revealed metastatic carcinoma with follicular features, invasion of bone, subcutis and dura mater. Immunohistochemistry resulted positive for CK-7, TTF-1, PAX8 and TGB consistent with metastatic adenocarcinoma with a suspected thyroid primary. The patient underwent a thyroid ultrasound which revealed a left thyroid nodule graded as Bethesda scale III after FNA. PET/CT for head and neck and base of the skull to mid-thigh was performed and showed increased uptake at

craniotomy site and left thyroid lobe. Conclusion: Thyroid cancers have a greater than 90% 10-year survival rate. However, metastatic disease, as seen in this patient, reduces survival by 50%. This case illustrates a rare case of cranial metastasis of FTC with dural invasion and underscores the importance of comprehensive evaluation and collaboration among specialists facilitating early diagnosis and intervention in patients presenting with atypical symptoms.

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Wassel-Flatt Type IV and VII Pre-Axial Hand Polydactyly in Adults: a Case Series and Review of Literature

Lenny Rivera-Rosario[1], Carlos Campa-Maldonado[1], José I. Acosta-Julbe[1], Derick Rodríguez-Reyes[2], José A. Rosario-González[3], Christian Foy[1]
[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Orthopedic Surgery, San Juan, Puerto Rico;
[2]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of General Surgery, San Juan, Puerto Rico;
[3]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, Puerto Rico

Purpose: Polydactyly is the most common congenital hand deformity. One year is the average recommended age for surgical treatment to ensure proper functionality when fine motor skills develop during infancy. However, preaxial hand polydactyly can be effectively reconstructed surgically in adults. Yet, there is a lack of literature on adults' surgical management and improvement in functional outcomes, especially in Hispanics. This report aims to bridge that gap by presenting two adult cases of surgically managed preaxial hand polydactyly. Case Description: Case 1: A 54-year-old Hispanic female with a Wassel-Flatt Type IV right thumb preaxial polydactyly presented unable to flex the interphalangeal joint. Physical examination revealed a duplicated distal and middle phalanx with a robust radial thumb and a smaller ulnar duplicated thumb. Surgical reconstruction involved excision of the extra digit and alignment optimization using osteotomy and K-wire fixation. Post-operative outcomes showed functional improvement with no complications. Case 2: A 19-year-old Hispanic male with a Wassel-Flatt Type VII left thumb preaxial polydactyly exhibited absent flexion and extension. Physical exam findings showed a triphalangeal thumb including a robust ulnar thumb and a duplicated radial thumb. Reconstruction involved capsulotomy, adjacent tissue rearrangement, osteotomy, and Arthrex anchors. Post-operative results showed adequate alignment and vascularity, with no complications. Conclusion: Surgical management of adult preaxial polydactyly can lead to significant functional improvements, even when performed beyond the typically recommended pediatric age. Further research is necessary to evaluate long-term functional outcomes and apply the management techniques to aging populations, especially Hispanics. Acknowledgments: This work was supported by the University of Puerto Rico School of Medicine Department of Orthopedic Surgery resources. The authors declare no conflicts of interest.

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Transplant-Associated Thrombotic Microangiopathy in a Pediatric Patient: Insights and Challenges

Sofía I. González-Espola, BS[1];
Juliara E. Ortiz-Santana, MD, FAAP[2];
Marlacoral Ortiz, MD[2];
Ricardo García, MD, FCCM, FAAP[2]
[1]Universidad Central del Caribe-School of Medicine, Bayamón, Puerto Rico;
[2]University of Puerto Rico-School of Medicine,
Department of Pediatrics, San Juan, Puerto Rico

Introduction: Transplant-associated thrombotic microangiopathy (TA-TMA) is a serious, life-threatening complication of hematopoietic stem cell transplantation (HSCT), characterized by microangiopathic hemolytic anemia, hypertension with renal failure, and central nervous system dysfunction. Severe TA-TMA has a mortality rate over 50%, highlighting the importance of comprehensive studies and case reports to improve treatment strategies and patient outcomes. Description: This case describes a 6-year-old Hispanic female with high-risk neuroblastoma treated with autologous tandem HSCT. The patient developed TA-TMA, resulting in compromised renal function, complicated with anemia, hemolysis, proteinuria, tubular acidosis, thrombocytopenia, electrolyte imbalance, gastritis, hypovitaminosis D, and severe pericardial effusions, requiring pediatric intensive care unit (PICU) admission. Multiple interventions included pericardiocentesis, pericardial window, and hemodialysis. Once diagnosed, she began monoclonal antibody therapy and antimicrobial prophylaxis due to immunosuppression. Markers used to monitor the TMA's response to treatment included haptoglobin levels, platelets, LDH, C3 and C4 levels, CH50, and AH50. Despite prolonged monoclonal antibody treatment with Eculizumab and Ravulizumab, her condition deteriorated. She received complementary treatment with methylprednisolone, acetylcysteine, Rituximab and Basiliximab. Her TMA was resistant to first-line agents, as evidenced by worsening TMA markers. Compassionate use of Narsoplimab was recommended for outpatient administration. After five weekly doses, she was readmitted to PICU due to severe respiratory distress caused by SARS-CoV-2 and *Klebsiella oxytoca* infections. The progression of TMA, pulmonary hypertension, diastolic dysfunction, and transfusion-associated circulatory overload contributed to respiratory failure. She subsequently experienced cardiac arrest and passed away. Discussion: Managing TA-TMA and its complications is challenging and requires close monitoring of the patient's status, including frequent assessments of renal function, blood counts, coagulation profiles, and specific markers to detect worsening microangiopathy. This case emphasizes the need of a multidisciplinary approach including Hematologists, Oncologists, Nephrologists, Transplant team, Infectious Diseases, and Critical Care. It is imperative to research TA-TMA and its treatments to improve patient care. Acknowledgements: We would like to express our appreciation and gratitude to our mentor, Dr. Anabel Puig Ramos, for guiding and encouraging us throughout the completion of this case report.

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TCMDC-124132: a Novel Antimalarial Candidate Targeting Multiple *Plasmodium* Life Stages

Kathy Trujillo-Nevárez[1], Emilee E. Colón-Lorenzo[1], Alison Roth[2], Roberto G. Díaz[1], José G. Ortiz[3], David A. Fidock[4,5], Joel Vega-Rodríguez[1,6], Jürgen Bosh[7,8,9], Adelfa E. Serrano-Brizuela[1]. [1]University de Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Microbiology and Medical Zoology, San Juan, Puerto Rico; [2]Walter Reed Army Institute of Research, In Vitro Studies Experimental Therapeutics Branch, Bethesda, Maryland, United States; [3]University de Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Pharmacology and Toxicology, School of Medicine, San Juan, Puerto Rico; [4]Department of Microbiology and Immunology, Columbia University Medical Center, New York, United States; [5]Division of Infectious Diseases, Department of Medicine, Columbia University Medical Center, New York, United States; [6]National Institutes of Health, National Institute of Allergy and Infectious Diseases, Laboratory of Malaria and Vector Research Rockville, Maryland, United States; [7]Department of Biochemistry and Molecular Biology, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, United States; [8]Division of Pediatric Pulmonology and Allergy/Immunology, Case Western Reserve University, Cleveland, Ohio, United States; [9]InterRayBio, LLC, Baltimore, Maryland, United States. [*]Corresponding author*

Background & Objectives: Malaria remains a significant global health threat, causing high morbidity and mortality, with *Plasmodium* parasites increasingly developing resistance to existing drugs. The World Health Organization estimated 263 million malaria cases and 597,000 deaths worldwide in 2023, an increase of 11 million cases compared to 2022; deaths remain consistent. Annually, approximately 2,000 malaria cases are diagnosed in the USA, usually linked to international travel. This underscores the urgent need for novel antimalarial drugs with distinct mechanisms of action. Among the promising approaches, enzymes within the glutathione pathway, particularly glutathione S-transferase, have emerged as potential targets. We previously validated *P. berghei* glutathione S-transferase (pbGST) as a drug target. Structure-based screening of the Malaria Box compounds against *Plasmodium* GST identified potential hits. Four compounds inhibited parasite growth with EC50 of 1-3µM. PbGST inhibition assays using a crude *P. berghei* protein extract showed that these compounds do not inhibit the predicted target. Compound TCMDC-124132 initial results showed antimalarial activity against *P. falciparum* strains. Methods: Drug susceptibility assays using SYBR Green were conducted to evaluate TCMDC-124132's activity against *P. falciparum* blood stages. In vitro assays with *P. berghei* strains (1037cl1 and PbGFP-Luc) assessed its antiplasmodial activity on asexual blood and sexual stages. Luminescence-based assays were used to determine EC_{50} values. Results: TCMDC-124132 showed activity in blood stages against a sensitive and three multidrug resistant *P. falciparum* strains at low concentrations (IC_{50} range of 0.09 – 0.21nM). *In vitro* assays with *P. berghei* mutant strains (1037cl1 and PbGFP-Luc) showed inhibitory activity against the ookinete stage (IC_{50} range 6.52 - 16.89µM) and asexual blood stages (IC_{50} range 2.1 - 16.8µM). Preliminary results showed inhibition of male gamete exflagellation, an important sexual stage of development. Conclusion: TCMDC-124132 demonstrated antimalarial activity against multiple parasitic stages at micromolar concentrations, making it a promising candidate for antimalarial drug development. IACUC Approved: Protocol #: 2480108 (Exp. Date: 04/18/2025). Acknowledgments: This work was partially supported by the Center for Collaborative Research in Health Disparities (CCRHD), RCMI-Grant NIHMHD U54 MD007600 from the National Institute on Minority Health and Health Disparities of the NIH and NIH RISE grant 5R25GM061151-22 and the ASM Robert D. Watkins Graduate Research Fellowship award and MBRS-RISE award R25GM061838.

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Impact of Ogilvie Syndrome Outcomes in Absence of Standard Protocols: Single-Center Experience in Puerto Rico

Gustavo Alayón[1], Manuel Frau[1], Marcia Alayón[2], Gabriela Santiago[3]
[1]Ponce Health Sciences University; [2]Private Practice; [3]University of Medical Health Sciences

Purpose: Ogilvie syndrome, or acute colonic pseudo-obstruction, is a rare life-threatening condition seen in 1 out of 100,000 patients nationwide. It is characterized by severe colonic dilation without mechanical obstruction. In Puerto Rico, the lack of standardized treatment guidelines and gastroenterologist availability put increasing numbers of bedridden patients at a higher risk for developing Ogilvie Syndrome. This study aims to evaluate the impact of absence of conservative management protocols on surgical outcomes. Case description: A retrospective study at a single center in Puerto Rico was conducted on patients meeting the criteria for Ogilvie syndrome diagnosis. Patients were all bedridden with electrolyte imbalances and underlying comorbidities, experiencing symptoms for an average of 7.17 days prior to intervention. Standard protocol indicated as conservative management included electrolyte imbalance correction, neostigmine therapy, rectal tube, nasogastric decompression and colonoscopic decompression to reduce colonic dilation. Nonconservative surgical resection of the colon was performed for cases with colonic perforation or at imminent risk. Lack of guidelines resulted in an earlier onset of surgical intervention in 66.7% cases, with 16.7% experiencing postoperative complications. Inconsistent conservative treatment led to 66.7% not receiving colonoscopic decompression, and 83 % not receiving any neostigmine therapy. Only one case with complete conservative treatment recovered successfully from mild ileus distention. Conclusion: This study addresses a critical gap in the management of Ogilvie syndrome, particularly in resource-limited settings where standardized treatment protocols are lacking. By evaluating the effectiveness of aggressive conservative management, this research provides actionable evidence to recommend implementation of standardized management protocols to reduce surgical intervention. Approved by IRB: 2405199073. Acknowledgments: None.

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Overcoming Barriers: Challenges and Opportunities Researching the Population of Transfemmes and Transwomen in Puerto Rico

Kaitleen Rodríguez Correţjer[1], Christian Torres Franqui[1], Rafael García Berdecía[2], Miguel Vázquez Rivera[3,4], Rosa V. Rosario Rosado[1]
[1]University of Puerto Rico, Medical Sciences Campus, Graduate School of Public Health, Department of Biostatistics and Epidemiology; [2]University of Puerto Rico, Medical Sciences Campus, School of Pharmacy; [3]Trueself Foundation; [4]Clínica Psicoalternativas

Background & Objectives: Transfemmes and transwomen have historically faced marginalization and neglect. Substantial barriers in epidemiologic research to study this underserved population likely have contributed to perpetuating health disparities and inequities. Therefore, this project aims to evaluate the challenges faced by investigating the population of transwomen and transfemmes in Puerto Rico. Methods: The challenges

and opportunities working with stakeholders and a sample of this population were documented as part of an exploratory sequential mixed-methods study to assess the quality of life among transfemmes and transwomen in Puerto Rico. Results: Our findings highlight several key challenges grouped into the following: (1) limited data, due to a lack of comprehensive and accurate information on trans health; (2) mistrust and stigma, stemming from historical mistreatment; (3) diverse experiences, the varied lived experiences of transfemmes and transwomen demand nuanced and inclusive research approaches; and (4) recruitment barriers, hindered by fear of discrimination and a lack of trust in researchers. Despite growing interest in trans health research, critical gaps remain. These include the failure to address the unique needs of trans individuals and the tendency to generalize findings across diverse LGBTQ+ populations. As emphasized by community stakeholders, researchers must uphold the principle of "Nothing about us, without us," ensuring meaningful involvement of trans communities in all aspects of research. Furthermore, participants have stressed that their engagement depends on perceivable benefits to their participation. Conclusions: By acknowledging and addressing these challenges and adopting a collaborative, community centered approach, researchers can build trust with trans communities and produce more meaningful findings that help to promote health equity for transfemmes and transwomen. Prioritizing their well-being and amplifying their voices will lead to research that better reflects and supports their unique experiences. IRB Approved: Protocol #: 2309143340

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Health Clinics Outcomes-Disparities in Diabetes Prevalence by Socioeconomic Status in Puerto Rico

Mayra A. Robles-Molina[1], Mariela Torres-Cintrón[2], Linda R. Pérez-Laras[3]
[1]University of Puerto Rico, Medical Sciences Campus, School of Health Professions, Clinical Laboratory Sciences Program, San Juan, Puerto Rico; [2]University of Puerto Rico, Medical Sciences Campus, School of Public Health, Department of Health Services Administration, San Juan, Puerto Rico; [3]University of Puerto Rico, Medical Sciences Campus, School of Health Professions, Clinical Laboratory Sciences Program, San Juan, Puerto Rico

Background: Diabetes is a chronic disease with a global impact, ranking as the third leading cause of death among Puerto Ricans in 2020. The literature identifies that factors such as sex, age, and income influence the development and management of diabetes in the population; it is understood that the higher the income, the lower its prevalence will be. Objectives: This study aims to identify the geographic prevalence of patients who attended health clinics, determine where there is a higher prevalence of diabetes in Puerto Rico, and determine whether the health disparities influence the positive diagnosis of diabetes. Methodology: A cross-sectional chart review study was conducted, reviewing a sample of 1,517 patient records from those who attended health clinics offered by the *Colegio de Tecnólogos Médicos de Puerto Rico* in the western and northern regions of Puerto Rico in 2023. Descriptive, bivariate, and multivariate analyses were performed to determine the impact of health disparities on diabetes. Results: A higher prevalence of diabetes was found in lower-income cities, led by Mayagüez (4.6%). There was no statistically significant relationship between diabetes diagnosis and income. Age and sex were statistically significant in diabetes diagnosis ($p<0.05$). The Odds Ratio of this relationship found that men were 31% (OR: 1.31, $p<0.05$) more likely to have a diabetes diagnosis when adjusting for age and income. Individuals who were 46 and older were 2 times (OR: 2.35, $p<0.05$) more likely to have a diagnosis of

diabetes when adjusting sex and income. Conclusion: Age, sex, and income continued to be health disparities in the diagnosis of diabetes in Puerto Ricans. This phenomenon should be analyzed at the island level, including broader income ranges, and encompassing all seventy-eight municipalities, to obtain more data that sheds light on the reasons for this, including the factor of health services by region. IRB Approved: Protocol #: #2405234558 (07/29/2024). Acknowledgments: None.

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Effect of an Educational Workshop on Nurses' Knowledge of Pain: A Quantitative Quasi-Experimental Study

Viviana Torres-Reyes[1,2]
[1]University of Puerto Rico, Medical Sciences Campus San Juan, Puerto Rico;
[2]University of Phoenix, Arizona, United States of America

Background and Purpose: Pain is considered a public health problem. Nurses do not have adequate knowledge about pain management, which generates undesirable clinical and psychological outcomes in patients. Proper pain treatment guarantees high-quality health care. The purpose of this quantitative quasi-experimental study with a pre-post-test design was to determine the effect of an educational workshop on nurses' knowledge of pain management. Therefore, a research question was established: What is the effect of an educational workshop on nurses' knowledge about pain management, as measured by pre and post-test scores of the Knowledge and Attitudes Survey Regarding Pain? Methods: The sample was for convenience, not probabilistic. From a total population of 154 nurses, the sample was established with a confidence level of 90% and a margin of error of 10%. The sample was made up of 44 staff nurses and 18 nurse managers. The IBM Statistical Package for Social Sciences (SPSS) was used to analyze the data. The nurses (staff and managers) were subjected to a pre-and post-test, which effectively measured the change in knowledge about pain management. A paired samples t-test was used to address the research question. The test was stratified into two groups (staff and managers) to evaluate the pre- and post-test scores' differences. Results: The findings demonstrated a significant increase in pre-and post-test scores. Conclusions: These results, with a p-value of 0.000, not only have immediate implications for the development of educational programs within healthcare organizations but also serve as a solid foundation for future research in this area. IRB Approved: Protocol #: 2081973-2 (11/06/2023)

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Regulation of Lipid Droplet Formation in ApoE4 Astrocytes by PPAR-γ Activation.

Natalia Álvarez-Roger[1], Jayvon Nougaisse[2], Xin-Yun Lu[2]
[1]Universidad Central del Caribe School of Medicine, Bayamón, Puerto Rico;
[2]Augusta University, Department of Neuroscience, Georgia, United State of America

Background and Objectives: Progressive neurodegeneration and cognitive decline are hallmarks of Alzheimer's Disease (AD) -the world's leading cause of dementia. The most potent genetic risk factor for late-onset AD is apolipoprotein E4 (ApoE4), which worsens amyloid-β aggregation and disrupts lipid metabolism. The main source

of ApoE4 is astrocytes, which are important for lipid metabolism in the central nervous system. ApoE4 astrocytes also accumulate lipid droplets to a greater degree than ApoE3 astrocytes. Lipid droplet (LD) metabolism is controlled by the neuroprotective transcription factor Peroxisome Proliferator-Activated Receptor Gamma (PPAR-γ). Previous work has shown that PPAR-γ activation reduces LDs in activated microglia. The goal of this study was to determine whether PPAR-γ also regulates LD formation in ApoE4-expressing astrocytes. We hypothesize that PPAR-γ activation mitigates LD accumulation in ApoE4 astrocytes. Methods: To test this hypothesis, Rosiglitazone, a selective PPAR-γ agonist (50 μM), and DMSO, the vehicle control, were administered to ApoE4-expressing astrocytes for a duration of 4 hours. A neutral lipid dye was used to visualize and quantify LDs, and the proportion of cells exhibiting LD production was examined using flow cytometry. Results: Preliminary results show that Rosiglitazone-treated ApoE4 astrocytes exhibited a tendency towards reduced LD number and intensity than vehicle-treated ApoE4 astrocytes. After PPAR-γ activation, flow cytometry demonstrated a decrease in the proportion of astrocytes that were LD-positive. These results suggest that PPAR-γ could play a role in lowering ApoE4 astrocyte lipid buildup. Conclusion: Rosiglitazone-induced PPAR-γ activation may be a therapeutic option to address abnormalities in lipid metabolism in ApoE4-expressing astrocytes, which are a major contributor to Alzheimer's disease pathogenesis. More research is required to clarify the molecular pathways involved and to confirm these results using in-vivo mice models. IACUC Approved: Protocol #: AUP-2017-0868 (05/30/2017). Acknowledgments: This project was supported by the PARIS Summer Research Program at Augusta University and conducted under the mentorship of Dr. Xin-Yun Lu and Jayvon Nougaisse.

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Potter's Sequence and Autosomal Recessive Polycystic Kidney Disease, Enduring Beyond the Neonatal Period

Andrea G. Ríos-Ballagas, BS[1]; Adriana I. Pérez Vega, BS[2]; Sofía I. González Espola, BS[3]; Paola M. Alvelo-Fernández, MPH[2]; Juliara E. Ortiz-Santana, MD, FAAP[4]; Ricardo García, MD, FCCM, FAAP[4]
[1]University of Puerto Rico, Medical Sciences Campus, School of Medicine, San Juan, Puerto Rico;
[2]San Juan Bautista School of Medicine, Caguas, Puerto Rico;
[3]Universidad Central del Caribe, School of Medicine, Bayamón, Puerto Rico;
[4]University of Puerto Rico, Medical Sciences Campus, School of Medicine, Department of Pediatrics, San Juan, Puerto Rico

Purpose: Potter's sequence is a rare fatal disorder that occurs in sporadic and autosomal recessive forms with an incidence of 1 in 4000 births, primarily affecting male fetuses and characterized by pulmonary hypoplasia, skeletal malformation, and kidney abnormalities. One of Potter's sequence main characteristics is pulmonary hypoplasia, caused by oligohydramnios due to defective or absent kidneys. The fetus generally dies soon after birth due to respiratory insufficiency. Case Description: This is a case of 7-month-old boy born preterm (34 weeks) with a history of bilateral polycystic kidneys admitted to NICU due to respiratory failure. He was diagnosed with Autosomal Recessive Polycystic Kidney Disease (ARPKD) and subtype I Potter's Sequence. ARPKD caused resistant hypertension so left nephrectomy was performed, and he was started on daily peritoneal dialysis. Subsequently, he was admitted to PICU for respiratory support, ARPKD management, and close monitoring of dialysis, due to increased risk of deterioration. Parenteral nutrition was used to meet hydric and caloric requirements. He was able to be off mechanical ventilation, but developed septic shock due to bowel perforation, requiring intubation,

inotropes, and prompting hemodialysis. During his prolonged hospitalization in the PICU he continued on mechanical ventilation for pulmonary hypoplasia, leading to the decision to perform a tracheostomy. During the next period at PICU, he received daily hemodialysis since continuous replacement therapy was not available. Eventually, the patient developed sepsis related to the dialysis catheters, which deteriorated his health and died of septic shock. Conclusion: Patients with Potter Sequence typically die perinatally or within the first weeks of life due to pulmonary hypoplasia and associated complications. This infant makes this case a noteworthy outlier that could offer valuable insight regarding the management of this condition. Identifying the factors contributing to this patient's extended survival could improve the outlook for future neonates diagnosed with Potter Sequence. Acknowledgments: We are very grateful with our mentor Dr. Puig for guiding us through the writing process and with Dr. Ortiz and Dr. García for their guidance and revising the case report. Our deep condolences to the patient's family and to all the medical team who took care of him.

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