REVISTA FARMACEUTICA

Octubre-Diciembre de 2023 | Vol. 84 | Número 4

Edición Convención Anual 2023

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La Revista Farmacéutica de Puerto Rico se publica cuatro veces al año por el Colegio de Farmacéuticos, P.O. Box 360206, San Juan, Puerto Rico 00936-0206. Se distribuye a todos los colegiados como un servicio más por el pago de su cuota anual. El precio de suscripción de la revista es $5.58 por número y la suscripción anual es de $16.73. Para pauta de anuncios y artículos favor de comunicarse a la División de Educación Continua.
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CONTENIDO

MENSAJE

La Gala de celebración de los 85 años de nuestra institución fue la actividad más extraordinaria de nuestra convención. La misma fue auspiciada por Droguería Betances, quien siempre nos apoya en nuestras actividades tanto sociales, políticas como educativas ¡Gracias Raúl Rodriguez y tu equipo por siempre estar presente!

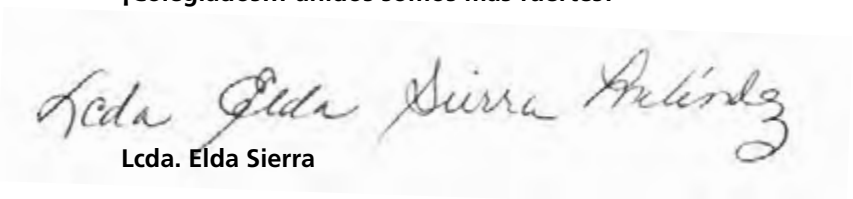
Demás esta decir la experiencia educativa que tuvimos durante la convención. Hubo de todos los temas para poder cubrir todas las áreas de desempeño en nuestra profesión. Gracias a la comisión de Educación Continúa guiada por la Dra. Mirza Martinez y su excelente equipo de voluntarios. Tuvimos 23 charlas en total, tanto para farmacéuticos como para técnicos y se logró ofrecer presencial y virtual.

¡Qué bien se pasó en el área de exhibidores! Que mucha tecnología presentada y que cantidad de información y presentación de productos innovadores, de salud y de belleza para nuestros pacientes se ofreció para las diferentes áreas de desempeño. La confraternización con los suplidores fue espectacular.

Los carteles de los estudiantes, y la espectacular obra "El ojo del Farmacéutico" por nuestro Colegio fue de gran interés y admiración.

Nuevamente este año nos volveremos a reunir del 22 al 25 de agosto de 2024, en el Hotel Sheraton del Centro de Convenciones de Puerto Rico ya tenemos cerca de 20 temas sugeridos para volver a ofrecer una buena gama de especialistas en los temas. Celebraremos los 25 y 50 años de Colegiación de los colegas que así cumplen, pero lo mejor nos volveremos a encontrar para compartir, e intercambiar vivencias de nuestras áreas de desempeño. Volveremos a sentir la hermandad. Nuestra Colegiación es oro, muy necesaria para la salud de nuestro pueblo y así lo hemos demostrado pues NUNCA le hemos fallado a Puerto Rico al tener nuestras puertas abiertas como expresó la pasada presidenta Lcda. Idalia Bonilla "La defensa de nuestra colegiación es vital para perpetuar nuestro legado del cuidado farmacéutico"

¡Colegiados… unidos somos más fuertes!



Lcda. Elda Sierra

Presidenta

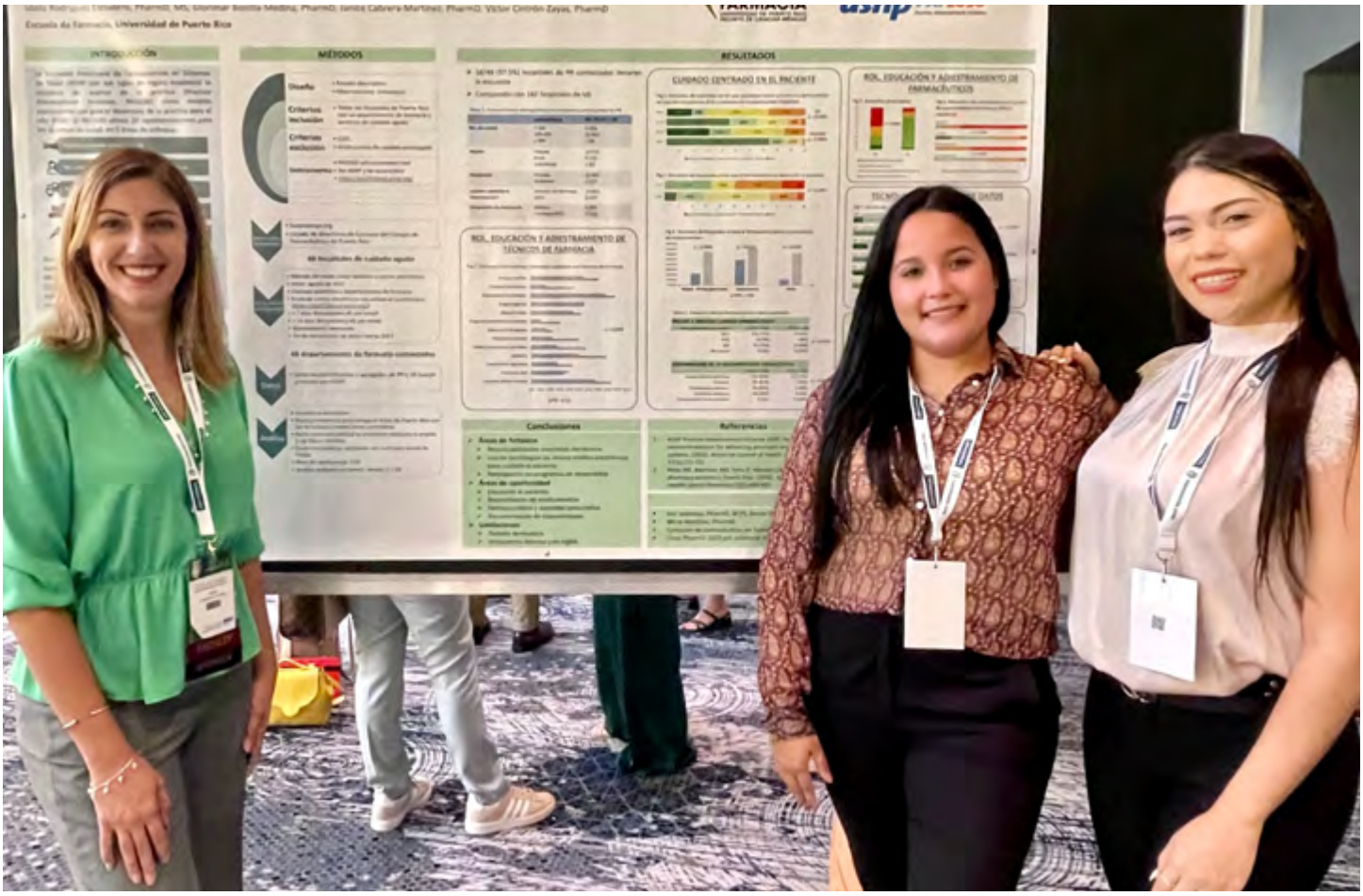
RECONOCIMIENTO A LOS PROYECTOS DE INVESTIGACION PRESENTADOS EN LA CONVENCION ANUAL 2023 DEL COLEGIO DE FARMACEUTICOS DE PUERTO RICO

El Colegio de Farmacéuticos de Puerto Rico reconoce la labor de compañeros farmacéuticos que presentaron sus proyectos de investigación durante la 85va Convención 2023. Este ano, respondiendo a la convocatoria llevada a cabo en abril, se expusieron 16 trabajos de investigación, y un proyecto innovador. Los proyectos representaron diversas áreas de farmacia: ciencias farmacéuticas y estabilidad de productos, farmacia clínica, farmacia institucional, uso de medicamentos, farmacia de comunidad, educación farmacéutica, y farmacia ambulatoria.

Se reconocieron los 5 primeros trabajos que cumplieron con los criterios de originalidad y su impacto en los avances de conocimiento en Puerto Rico, de metodología y su rigidez científica, aplicabilidad a la profesión de farmacia en sus diversas áreas, y los criterios de diseño del poster/afiche (apariencia, organización y claridad). Los autores de los trabajos reconocidos serán invitados a presentar su proyecto en forma escrita en la Revista Farmacéutica de Puerto Rico.

A continuación los proyectos de investigación reconocidos.

PRIMER RECONOCIMIENTO



SERVICIOS FARMACÉUTICOS EN HOSPITALES DE PUERTO RICO PARA EL AÑO 2022

Autores:

- Idaliz Rodríguez-Escudero, PharmD, MS
- Glorimar Bonilla-Medina, PharmD
- Janice Cabrera-Martínez, PharmD
- Víctor Cintrón Zayas, PharmD

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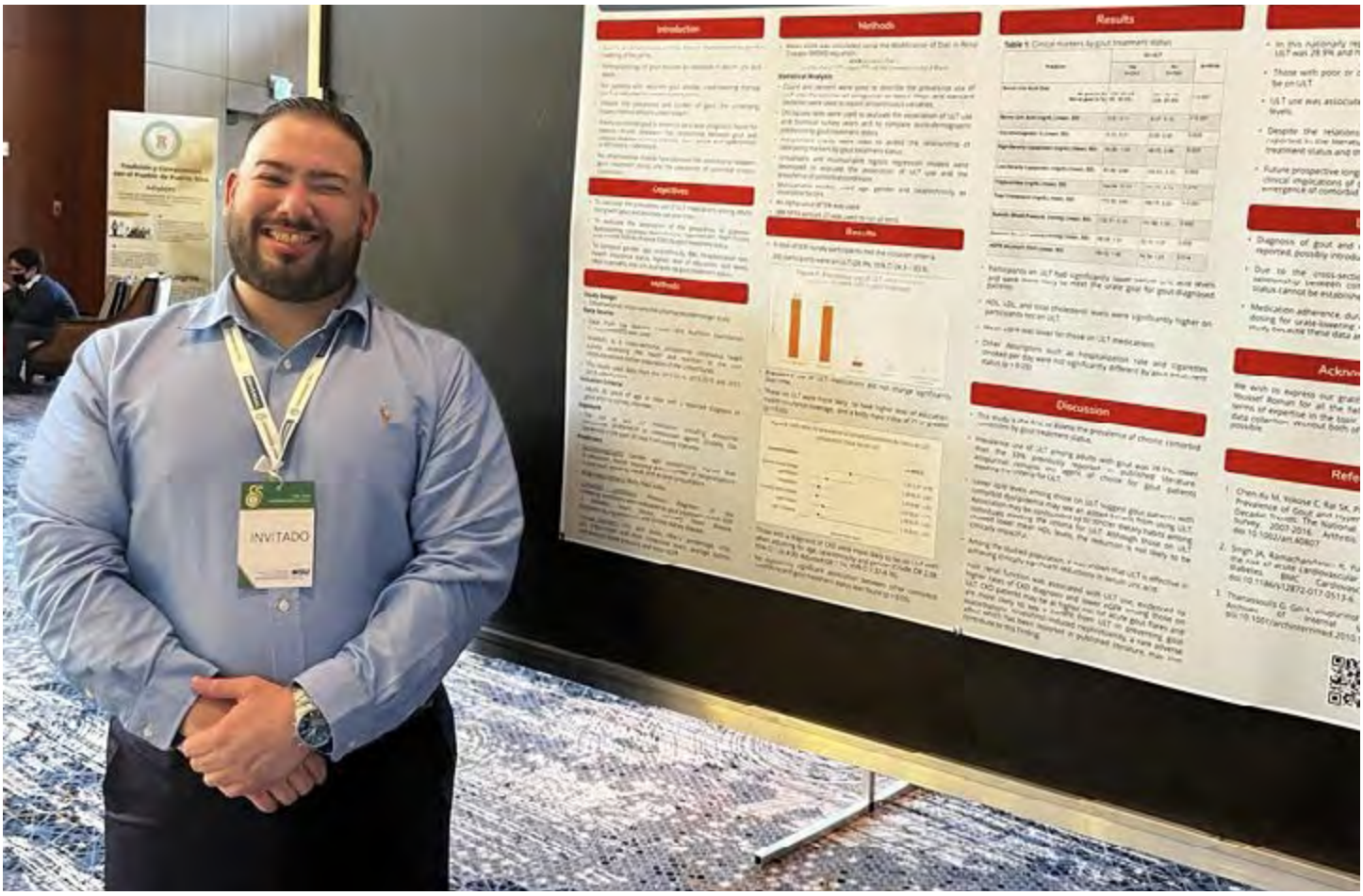
DEVELOPMENT AND PHYSICAL STABILITY ASSESSMENT OF AN EXTEMPORANEOUS FORMULATION OF GABAPENTIN LOZENGES

Autores:

- Jetzabel Delgado Díaz, PharmD
- Sormarie Figueroa Morales, PharmD
- Karissa González Jiménez, PharmD
- Marisol López Nieves PharmD, MPH, RPh, FACA, FACVP



2

PREVALENCE USE OF URATE-LOWERING MEDICATIONS AMONG ADULTS WITH GOUT AND THE RELATIONSHIP BETWEEN GOUT TREATMENT AND CHRONIC DISEASE COMORBIDITY

Autores:

- Jeanlouis Betancourt-Gaztambide
- Marcos Ortiz-Uriarte
- Alexandra Pérez
- Youssef Román

SEGUNDO RECONOCIMIENTO

ADOPTING A PRECISION MEDICINE PARADIGM IN PUERTO RICO: LEVERAGING ANCESTRAL DIVERSITY TO IDENTIFY PREDICTORS OF CLOPIDOGREL RESPONSE IN CARIBBEAN HISPANICS

Autores:

- Gretchen G. Gutiérrez Santana, PharmD
- Mariela Loyola Cruz, PharmD
- Paola K. Pereira Rivera, PharmD
- Jorge Duconge, PhD, MSc, BS Pharm

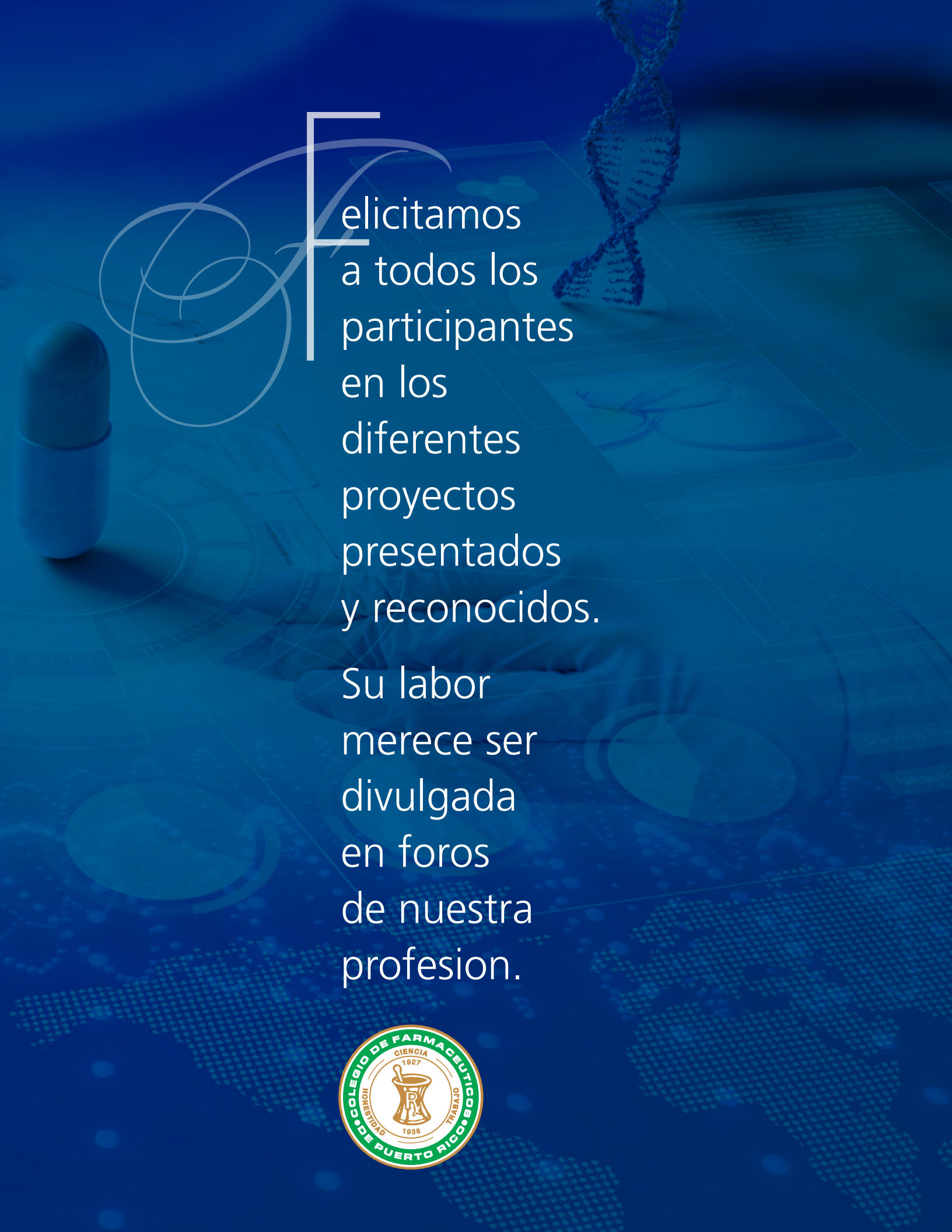
TERCER RECONOCIMIENTO

3

PREPARATION AND STABILITY OF DOXYCYCLINE HYCLATE CAPSULES USING RESONANCE ACOUSTIC MIXING TECHNOLOGY

Autores:

- Enrique Nieves, PhD
- Jessy A. Marrero, PharmD
- Jessica Quiles, PharmD
- Ángel Toledo, MS



Felicitamos a todos los participantes en los diferentes proyectos presentados y reconocidos.

Su labor merece ser divulgada en foros de nuestra profesion.

COLEGIO DE FARMACEUTICOS DE PUERTO RICO
CIENCIA 1927 HONESTIDAD TRABAJO 1938

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Poster 1:

SERVICIOS FARMACÉUTICOS EN HOSPITALES DE PUERTO RICO PARA EL AÑO 2022

Idaliz Rodríguez-Escudero, PharmD, MS | *Glorimar Bonilla-Medina, PharmD*
Janice Cabrera-Martínez PharmD | *Víctor Cintrón Zayas, PharmD*

Introducción: La Sociedad Americana de Farmacéuticos en Sistemas de Salud (ASHP) publicó metas para el desarrollo de la práctica de farmacia en hospitales para el año 2030 (Practice Advancement Initiative, PAI2030). El objetivo principal de este estudio es describir el escenario actual de la farmacia hospitalaria en Puerto Rico (PR), a la luz de las recomendaciones PAI2030. También se comparó con datos de Estados Unidos (EEUU).

Metodología: Diseño observacional transversal. Se contactó a directores de farmacia hospitalaria en Puerto Rico para que completaran el ASHP PAI2030 Self-Assessment Tool entre agosto 2022 y marzo 2023. ASHP proveyó los datos de PR y EEUU para el análisis.

Resultados: 18 de 48 hospitales contactados contestaron la encuesta; 72% de zonas urbanas. Se encontró que 50% y 89% no utilizan al personal farmacéutico en la reconciliación de medicamentos durante la admisión o alta del paciente, respectivamente. El 77% reportó tener acceso a expedientes médicos de pacientes (vs. EEUU 97%, P=0.0187). En 50% de los hospitales rara vez el personal de farmacia provee educación de medicamentos a pacientes. El 85% indicó que sus farmacéuticos son líderes en el manejo comprensivo de medicamentos, a pesar de que sólo 33% otorga autoridad prescriptiva al farmacéutico a través de privilegios o práctica colaborativa (vs. EEUU 79%, P<0.0001).

Conclusiones: Áreas de oportunidad identificadas para el desarrollo de la práctica de farmacia hospitalaria en Puerto Rico son la reconciliación de medicamentos, educación a pacientes hospitalizados y ampliación de la autoridad del farmacéutico para manejar terapias de pacientes.

Poster 2:

VALIDATION OF VANCOMYCIN DOSING TOOL AND THE IMPACT OF AREA UNDER THE CURVE TARGETED DOSING ON CLINICAL OUTCOMES

Lizvette A. Flores Aponte, PharmD | Hector Cintrón, PharmD

Purpose: Evaluate the effectiveness of the vancomycin AUC dosing tool comparing clinical outcomes in patients that received trough vs AUC guided Vancomycin dosing.

Methods: Retrospective quasi experimental, pre and post intervention study of all patients aged 18 yrs. or older admitted to all services. Patients are eligible for inclusion if they received vancomycin for a period greater than 48 hrs. Exclusion criteria applied to patients with the following criteria: Acute Kidney Injury (AKI), refusing laboratory draw, in dialysis and pregnancy. Study endpoints included the effectiveness of the AUC dosing tool and was evaluated by reviewing the AUC target attainment with the first chosen dose, AUC target attainment after one dose adjustment, variance between empirically estimated pharmacokinetic parameters and the observed and surveillance trough assessment. Also comparing clinical outcomes such as identifying if patients developed AKI and complete resolution of infection while on medication and 30-day infection recurrence.

Results: A total of 225 patients from VA Caribbean Healthcare System were included in the analysis (123 patients AUC group; 102 patient trough group. Infection recurrence was observed more in the trough group (22.8%) compared to AUC group (15%) (p-value 0.172). Total days in vancomycin therapy in the AUC group 8 (SD 6.2 days) compared to trough 7.2 (SD 4.4 days) (p -value 0.184). Incidence of AKI was greater in the trough group (11.8%) compared to the AUC (5.7%) group (p-value 0.103). When comparing clinical success in both groups AUC (90.9%) had more clinical success compared to trough group (84.9%) (p-value 0.386).

Conclusion: AUC based monitoring has been observed to reduce the risk of acute kidney injury and reduction in 30-day readmission in our veteran patients.

Poster 3:

DETERMINING RISK FACTORS FOR PSEUDOMONAS AERUGINOSA INFECTION IN ADULT VETERANS DIAGNOSED WITH COMMUNITY -ACQUIRED PNEUMONIA AT THE VA CARIBBEAN HEALTHCARE SYSTEM

Rebeca Muniz-Cruz, PharmD | Cristian M. Méndez-Sepúlveda, PharmD, BCIDP

Background: The 2019 Infectious Disease Society of America (IDSA) guidelines for the management of community-acquired pneumonia (CAP) recommend the identification of locally validated risk factors for infection due to Pseudomonas aeruginosa (PSA).

Purpose: We aimed to identify risk factors potentially associated with CAP due to PSA in adult veterans at the VA Caribbean Healthcare System (VACHS).

Methods: This was a retrospective, observational, case-control study in patients from the VA Healthcare Caribbean System from January 1st, 2019 through August 31st, 2022 diagnosed with CAP. Student's t-test and Mann-Whitney U test were used to assess differences between study groups.

Results: A total of 68 subjects were included (34 in the PSA cohort and 34 in the non-PSA cohort). Most commonly isolated pathogens in non-PSA cohort were Hemophilus influenzae, Streptococcus pneumonia, and Staphylococcus aureus. A statistically significant difference was found among patients with dementia (45.5% vs 20.6%, p = 0.030), being bedridden (47.1% vs 17.6%, p = 0.010), proton-pump inhibitor use (58.8% vs 26.5%, p = 0.007), isolation or colonization of P. aeruginosa in the past 12 months (26.5% vs 0.0%, p = 0.002), or previous intravenous drug exposure in the past 60 (29.4% vs 2.9%, p = 0.003) or 90 days (29.4% vs 2.9%, p = 0.003).

Conclusions: Potential risk factors for CAP secondary to PSA at our institution included dementia, being bedridden, proton-pump inhibitor use, isolation or colonization of PSA in the past 12 months, and previous intravenous drug exposure in the past 60 and 90 days, suggesting that they might benefit from empiric antipseudomonal coverage.

Poster 5:

A KNOWLEDGE AND ATTITUDE ASSESSMENT TOOL FOR NALOXONE DISTRIBUTION PROGRAMS AND THE REDUCTION OF OPIOID OVERDOSE DEATHS IN PUERTO RICO

Ileana Rodríguez Nazario, Pharm.D., RPh | José García Toledo, Pharm.D, BCPP, RPh | Kyle Melin, Pharm.D, MSc, BCPS, AE-C
Carlos A. A. Poventud Escoriaza, Pharm.D. | Nevid G. Cruz Mendoza, Pharm.D. | Francisco J. Burgos González, Pharm.D.c.
Faculty of Pharmacy, School of Pharmacy, Medical Sciences Campus, University of Puerto Rico

Objectives: Develop a validated tool that measures patient education and disposition to use NARCAN® (naloxone) in an opioid overdose, Also, gauge opioid awareness interventions and trainings in clinics with take-home naloxone programs in Puerto Rico.

Methods: A cross-section and exploratory study, opioid overdose knowledge and attitude scales for take-home naloxone training evaluation developed in Europe were found. However, no instruments were identified in Puerto Rico. A shorter instrument was designed based on the previously validated scales that could be applied to the target population, Spanish-speaking at-risk individuals of an opioid-related overdose that are receiving NARCAN® from a take-home naloxone program. Correspondingly, 40 Spanish speaking Puerto Ricans completed the assessment tool. Internal consistency was assessed using Cronbach's α The correlation between knowledge and attitude scores was assessed using Pearson's (r) coefficient.

Results: Internal consistency for the opioid overdose attitude assessment was found acceptable, with Cronbach's αof 0.740. On the other hand, opioid overdose knowledge assessment results were unreliable, with internal consistency values being questionable, ranging from 0.218 and 0.522 for Cronbach's αcoefficient. Low positive correlation was found between knowledge and attitude (αof 0.306) but not statistically significant (p-value of 0.054); statistically significant correlation found between opioid overdose sign identification and attitude (r of 0.333; p-value of 0.036). While results for a shorter attitude assessment were good, knowledge assessment results were not satisfactory, highlighting possible gaps in knowledge on opioid overdose among at-risk individuals.

Conclusions: Potential risk factors for CAP secondary to PSA at our institution included dementia, being bedridden, proton-pump inhibitor use, isolation or colonization of PSA in the past 12 months, and previous intravenous drug exposure in the past 60 and 90 days, suggesting that they might benefit from empiric antipseudomonal coverage.

Poster 6:

TRENDS OF SLEEP MEDICATION USE AMONG ADULTS WITH SLEEP DISTURBANCES: NHANES 2009-2018

Julianna Lugo, PharmD | Viviana Monserrate PharmD | Pamela Ramos, PharmD
Mentors: Alexandra Perez PharmD, MS | Martin Downing PhD

Purpose: Evaluate the prevalence of sleep medication use in those who have reported having trouble sleeping and compare prevalence by social determinants of health and clinical factors.

Methodology: We designed a cross-sectional study using the National Health and Nutrition Examination Survey (NHANES) as our data source. Our study evaluated adults 20 years and older who reported to their doctor having trouble sleeping. The exposure was the use of benzodiazepines and nonbenzodiazepines in the past 30 days. Statistical analyses used were survey-weighted univariable logistic regression analyses. All analyses were conducted using IBM SPSS version 29, and all estimates are nationally representative.

Results: Our study included 7,449 out of 49,693 patients who reported having trouble sleeping. Among those, 6.1% (95% CI 5.5, 6.9) were on sleep medications, 0.9% (95% CI 0.7-1.2 %) were on benzodiazepines, and 5.2% (95% CI 4.6-5.9%) were on non-benzodiazepines. Sleep medication use from 2009 through 2018 declined from 7.2% (95% CI 6.0-8.7%) to 3.4% (95% CI 2.6-4.4%), respectively ($p<0.0005$).

Conclusion: Benzodiazepine and nonbenzodiazepine use for insomnia in adults 20 to 80 years of age decreased significantly over time. The number of patients using sleep medication was low. Inaccessibility to healthcare, little awareness by the medical practice, lack of consideration of insomnia as a primary concern and the inequalities subpopulations face may be the cause.

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Poster 7:

PREVALENCE USE OF URATE-LOWERING MEDICATIONS AMONG ADULTS WITH GOUT AND THE RELATIONSHIP BETWEEN GOUT TREATMENT AND CHRONIC DISEASE COMORBIDITY

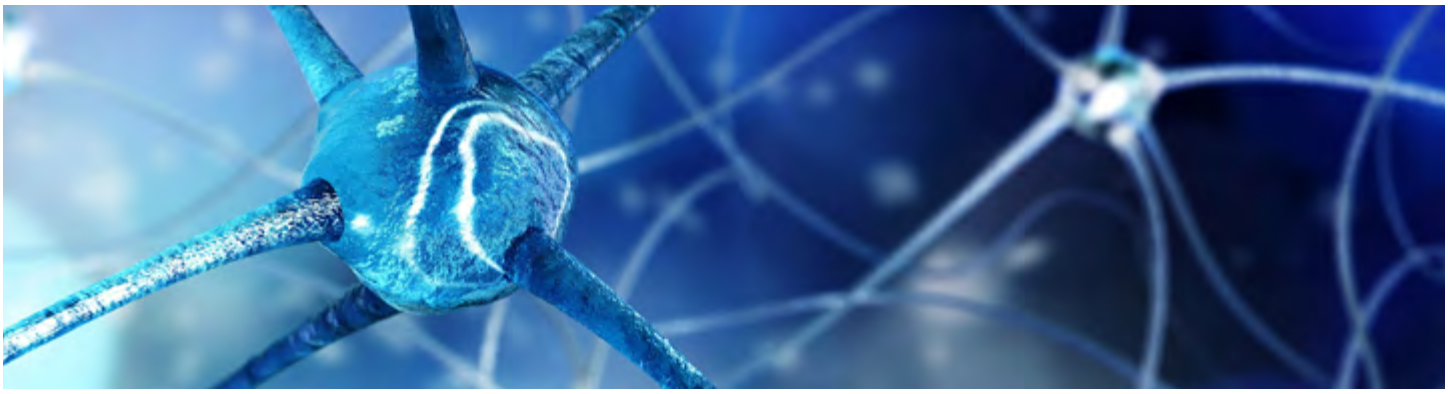
Jeanlouis Betancourt-Gaztambide, PharmD, MPH, MBA | Marcos Ortiz-Uriarte, PharmD
Alexandra Pérez, PharmD, MS | Youssef Román, PharmD, PhD.

Purpose: Explore the association between gout treatment status and the prevalence of comorbid conditions, such as ischemic heart disease, heart failure, hyperlipidemia, hypertension, chronic kidney disease (CKD), and clinical biomarkers in US adults diagnosed with gout.

Methods: This observational, cross-sectional pharmacoepidemiologic study utilized the 2013-2018 biannual cycles of the National Health and Nutrition Examination Survey (NHANES). The analysis involved adults aged 30 and above with a confirmed gout diagnosis. The association between urate-lowering therapy (ULT) utilization and dyslipidemia, coronary heart disease, heart failure, hypertension, and CKD was assessed using IBM-SPSS version 27 for statistical analysis.

Results: A total of 835 survey participants met the inclusion criteria. Use of ULT was 28.9% (95%CI 24.3%-33.9%). There was no significant association between ULT use and the prevalence of heart failure, coronary heart disease, hypertension, CKD, or dyslipidemia ($p>0.05$). Those on ULT had a lower mean eGFR compared to those not on treatment (68.03 versus 74.74 mL/min/1.73m², $p=0.014$). LDL, HDL, and total cholesterol were significantly lower among those on ULT treatment ($p<0.05$).

Conclusions: A higher prevalence of ULT use among those with a diagnosis of CKD is likely to be driven by the recent data suggesting that ULT use may improve outcomes and help preserve kidney functions in this proportion of patients on top of preventing future gout flares.



Poster 8:

PREVALENCE OF GABAPENTINOIDS AND CENTRAL NERVOUS SYSTEM DEPRESSANTS CO-PRESCRIPTION IN GERIATRIC PATIENTS FROM PUERTO RICO AT RISK OF SEVERE RESPIRATORY PROBLEMS: AN OBSERVATIONAL STUDY

Susanne L. Ortiz Valentín, PharmDc | Aitza M. Pérez López,. PharmDc
Advisors: Iadelisse Cruz González, Pharm D, BCGP, GCG | Rafael García Berdecía RPh, MPH | Mayra Vega Gerena, MPH

Purpose: In December 2019, the US Food and Drug Administration (FDA) warned of severe respiratory problems with gabapentinoids when used with CNS depressants or in patients with lung problems. It stated that the geriatric population is at higher risk. This study aims to explore the prevalence of potential drug-drug interactions (pDDI) between gabapentinoids and CNS depressant drugs, which may predispose to respiratory depression, and whether some contraindications or precautions warrant education.

Methodology: We analyzed a retrospective descriptive observational cohort study that collected dispensing data from a health insurance database provided by a Pharmacy Benefit Manager (PBM) during two trimesters. The study sample included patients 65 years and older who had been prescribed asthma or COPD drugs (a), gabapentinoids, and CNS depressants drugs (b) at a time in the same prescription, (c) from different providers, or (d) ordered by the same provider in different prescriptions with a one-day overlapping use of the medications.

Preliminary Results: Of 437 patients aged 65 or above, 52.9% take medication for respiratory conditions. Among these patients, 59.3% use nervous system depressants, 23.1% use gabapentinoids, and 6.9% use a combination of respiratory drugs, nervous system depressants, and gabapentinoids (known as a triple threat).

Preliminary Conclusion: In Puerto Rico, it is common for elderly patients with respiratory conditions to central nervous system depressants and gabapentinoids. Although the percentage of patients using both drugs is only 6.9%, it still poses a risk of respiratory depression. Hence, educating patients about this adverse effect is critical to prevent its occurrence.

Poster 9:

CONTRIBUTIONS AND CHALLENGES OF COMMUNITY PHARMACISTS IN PUERTO RICO DURING THE COVID-19 PANDEMIC

Georgina Silva-Suarez, PhD | Yarelis Alvarado, PharmD, BCPS, BCCCP | Frances M. Colón-Pratts, PharmD; Tania Delgado, PharmD | Ana María Mosquera, PharmD

Community pharmacists have encountered unprecedented challenges and played a vital role in the COVID-19 pandemic. This study assesses the contributions made by community pharmacists and explores their coping mechanisms throughout the pandemic in Puerto Rico.

Two open-ended questions: What do you feel has been your greatest contribution during the COVID-19 pandemic? and What strategies have you implemented to cope with the COVID-19 pandemic? were added to a cross-sectional online survey evaluating perceived stress and burnout among community pharmacists during the COVID-19 pandemic. The questions were distributed to all community pharmacists in Puerto Rico (N=1,200) using the Redcap platform and shared through the Puerto Rico Pharmacist Association listserv, social media, and professional chats. Data collection occurred from November 19 to December 17, 2021.

Eighty-five pharmacists responded to at least one of the open-ended questions. Most were female (77%), with a mean age of 47.2 (±13.2). Fifty-four percent worked in independent community pharmacies. Thirty-three percent practiced as staff pharmacists. An inductive thematic analysis of the open-ended responses revealed key themes, including institutional and personal coping mechanisms, professional contributions, the impact of COVID-19, barriers, and unappreciation. Coping mechanisms included adhering to COVID-19 regulations and minimizing exposure. Immunization was identified as a crucial contribution. Barriers including complex vaccine processes and inadequate supplies were highlighted. They felt unappreciated, stressed, and overworked, citing a lack of compensation and professional recognition.

Community pharmacists in Puerto Rico have demonstrated resilience by employing coping mechanisms and overcoming barriers to ensure uninterrupted care. However, they are experiencing a sense of unappreciation. Addressing their concerns is crucial, and their experiences should be considered for future public health initiatives.

Poster 10:

THE IMPACT OF COVID-19 STAY-AT-HOME ORDERS ON ACCESS TO HEALTHCARE AMONG SEXUAL MINORITIES LIVING IN PUERTO RICO

Idaliz Rodríguez-Escudero, PharmD, MS | *Glorimar Bonilla-Medina, PharmD*
Janice Cabrera-Martínez PharmD | *Víctor Cintrón Zayas, PharmD*

Purpose: In Puerto Rico, the COVID-19 pandemic compounded existing problems of healthcare access exposed by previous disasters of US-imposed measures due to the PROMESA Act of 2016, Hurricanes Irma and María in 2017, and earthquakes in 2019-20. Barriers to healthcare do not affect all members equally, as sexual minorities experience more difficulty. With this study, we analyzed how the first months of the pandemic impacted healthcare access among sexual minorities in Puerto Rico.

Methods: An online, cross-sectional survey was conducted among adults in Puerto Rico in July 2020. In addition to sociodemographic characteristics, participants responded to questions assessing access to healthcare services and prescription medications at the early stages of the pandemic. Sociodemographic and healthcare access variables were analyzed for association.

Results: A total of 1032 responses were available for analysis; 10.5% of participants reported being unable to reach a healthcare provider for non-COVID concerns, 4.8% reported being unable to reach a healthcare provider for COVID-related concerns, 44.3% reported canceling an appointment or procedure due to the pandemic, and 44.7% reported having an appointment or procedure being canceled on them. Regarding medications, 7.6% of participants reported experiencing problems taking their medications. Compared to heterosexuals, sexual minorities reported higher rates of trouble taking their prescription medications (11.4% vs 6.5%, p=0.025), being unable to reach a healthcare provider for non-COVID concerns (14.9% vs 9.1%, p=0.021), and being unable to reach a healthcare provider for COVID-related concerns (6.5% vs 4.5%, p<0.001).

Conclusions: Consistent with pre-pandemic findings, sexual minorities reported increased barriers to accessing healthcare during the initial 3 months of the COVID-19 pandemic in Puerto Rico.

Poster 11:

FACTORES PERCIBIDOS QUE INFLUYEN EN LAS ACTITUDES Y CONOCIMIENTOS DE LOS FARMACÉUTICOS HACIA LOS CUIDADOS PALIATIVOS Y HOSPICIO EN PUERTO RICO

Stephanie Alvarado Rivera, PharmD | *Sila M. Avilés Otero, PharmD* | *Javier J. Rivera Fábregas, PharmD*
Elsa Pedro Gutierrez, PharmD, BCPS, BCOP | *Jonathan Hernández Agosto, Ed.D, GCG*
Sandra M. Fábregas Troche, BSPh, RPh, MPC, Master in Bioethics, PhD

Propósito: Los cuidados paliativos y hospicio son enfoques de atención especializada dirigidos a mejorar la calidad de vida de pacientes que padecen enfermedades potencialmente mortales. Un estudio anterior realizado en Puerto Rico en 2021 mostró que los farmacéuticos tienen puntajes bajos de conocimiento y pobres actitudes hacia entornos de cuidados paliativos y hospicio. El objetivo principal de este estudio es determinar cuáles factores percibidos tiene mayor influencia en el pobre conocimiento y las actitudes de los farmacéuticos en Puerto Rico, con respecto a los cuidados paliativos y hospicio.

Metodología: Se realizó un estudio observacional, transversal y multivariable mediante la administración de un cuestionario a 169 farmacéuticos con licencia para ejercer en Puerto Rico.

Resultados: El análisis descriptivo reveló que el valor medio de las preguntas respondidas en la escala de Likert fue de -3.39 (DE ± 6,47) y la suma total de la escala osciló entre -22 y 22, el cual significa que la mayoría de los participantes están de acuerdo con las premisas estipuladas. El factor percibido que más influyó en el conocimiento y actitud de los farmacéuticos las actitudes con respecto a los cuidados paliativos y los hospicios se reveló como el ítem #10 (-1.09, DE ± 0,85), que estipula que los farmacéuticos desconocen la importancia de su rol en este escenario.

Conclusión: Nuestro análisis proporcionó información sobre la diversidad de las perspectivas de los farmacéuticos con respecto a los cuidados paliativos y hospicio, y destacó las áreas que pueden requerir más educación y capacitación para mejorar sus conocimientos y actitudes hacia este tema.

Poster 12:

PERCEPTION OF SENIOR PHARMACY STUDENTS AND COMMUNITY PHARMACISTS IN PUERTO RICO REGARDING SPECIALTY PHARMACY TOPICS AND SERVICES

Butler Lopez GJ., PharmD | Ramos Rosa J., PharmD | Rivera Sarate, S., PharmD; BCGP
Garcia Berdecia R., MPH | Hernandez Ortiz, HJ. Ed.D, GCG

Purpose: The services provided by specialty pharmacies require special training and skills to ensure the best outcomes for the patients. Although there is a perceived gap in knowledge regarding these topics, there are no studies concerning them in Puerto Rico. The primary objective of this study was to determine if there is a significant gap in self-perceived knowledge between two groups of pharmacy professionals regarding specialty pharmacy topics and services.

Methodology: This was a cross-sectional study with an exploratory scope that analyzed data obtained through a questionnaire about the perception of senior pharmacy students and community pharmacists in Puerto Rico regarding specialty pharmacy topics and services.

Results: A total 234 answers were received. Differences were found between the groups in 3 of the questionnaire items. These were related to: differences between traditional and specialty pharmacies, the quantity of patients that use specialty pharmacy services and the frequency in which these services are used, and differences in the perception of their academic preparation. Additional differences were found in various sub analyses performed within the community pharmacist group. These include differences regarding perception of academic preparation, knowledge about specialty medications storage, handling, and administration requirements, higher desire to pursue continuing education regarding specialty pharmacy topics and service, among others.

Conclusion: Despite there not being a significant gap in self-perceived knowledge between the groups, the sub analyses showed that there may be a growing interest in the specialty pharmacy field among pharmacists with a doctoral degree. While no specific recommendations regarding education on specialty pharmacy topics and services can be made within the current University of Puerto Rico's School of Pharmacy Doctoral curriculum, these results could serve as a baseline for further studies.

1

Poster 13:

DEVELOPMENT AND PHYSICAL STABILITY ASSESSMENT OF AN EXTEMPORANEOUS FORMULATION OF GABAPENTIN LOZENGES

Jetzabel Delgado Díaz, PharmD | *Sormarie Figueroa Morales, PharmD*
Karissa González Jiménez, PharmD | *Advisor: Marisol López Nieves, PharmD, MPH, RPh, FACA, FACVP.*

Purpose: To formulate gabapentin lozenges in three different bases and evaluate which base provides a physically stable extemporaneous compounded formulation.

Methods: An experimental design was used. Three gabapentin lozenges formulations were prepared with three different lozenges bases, sorbitol, PEG 1450, and gelatin to cover all the presentations of lozenges, which include, hard, soft, and chewable. The resulting formulations were then tested for physical stability including appearance, weight variation, and dissolution test at different temperatures (4°C and 25°C) over a period of 8 consecutive weeks. Retention of original physical properties during the testing period is indicative of physical stability.

Results: The results obtained show that gabapentin is physically stable in soft (PEG) and chewable (gelatin) lozenges bases at room temperature (25 ± 2 °C), and in hard (sorbitol) and soft bases at refrigerator temperature (4 ± 2 °C).

Conclusion: Findings suggest that the physically stable gabapentin lozenges formulation obtained in this study, which are soft and chewable at room temperature, and hard and soft at refrigerator temperature, can be considered a viable new dosage form.

Poster 14:

DEVELOPMENT AND STABILITY EVALUATION OF AMLODIPINE AND HYDROCHLOROTHIAZIDE TITRATION TABLETS FOR THE COMPOUNDING OF COMBINATION CAPSULES

Enrique Nieves, PhD | Natalia Acevedo, PharmD | Victoria Rivera, PharmD | Isabel Ruiz, PharmD
Jonathan Santiago, PharmD | Angel Toledo, MS.

Objective: The aim of this study was to prepare capsules containing amlodipine and hydrochlorothiazide titration tablets using the novel resonant acoustic mixing technology. This method combines acoustic and mechanical energy in the mixing process.

Methods: Titration tablets of amlodipine besylate and hydrochlorothiazide were prepared with blends mixed with resonant acoustic mixing technology. Titration tablets were produced separately and encapsulated afterwards according to their respective formulation dosage as follows: amlodipine besylate 5 mg + HCTZ 25 mg, amlodipine besylate 10 mg + HCTZ 12.5 mg, amlodipine besylate 10 mg + HCTZ 25 mg, and amlodipine besylate 10 mg + HCTZ 50 mg. HPLC testing was conducted for each formulation dosage at days 0 and 30.

Results: HPLC testing of the tablets at time zero and one-month intervals showed the formulations were stable and met assay requirements. Dissolution testing met USP standards for hydrochlorothiazide (more than 60%) and amlodipine (more than 75%). Statistical analysis with ANOVA was conducted to evaluate drug assay in capsules at time zero and one month, and the results showed not statistically significance differences among samples ($p>0.05$).

Conclusion: Resonant acoustic mixing technology is a suitable method to compound amlodipine and hydrochlorothiazide titration tablets in different doses for encapsulation. The tablets met key quality attributes, and the stability study demonstrated the product's suitability for long-term use. The advantages of compounding combined capsules of amlodipine and hydrochlorothiazide using this method include the ability to individualize therapy and the potential improvement of patient's adherence to prescribed hypertension regimens containing these drugs.

3

Poster 15:

PREPARATION AND STABILITY OF DOXYCYCLINE HYCLATE CAPSULES USING RESONANCE ACOUSTIC MIXING TECHNOLOGY

Enrique Nieves PhD | Jessy A. Marrero PharmD | Jessica Quiles PharmD | Angel Toledo, MS

Objective: The objective of this study is to determine the stability of a compounded formulation of a light sensitive drug, Doxycycline Hyclate (DOX), prepared with Resonance Acoustic Mixing Technology (RAM).

Methodology: Three formulations of DOX 100 mg. capsules were prepared using three different excipients widely used in pharmacy. Two were co-excipients of microcrystalline cellulose (MCC) and the third one was Lactose Monohydrate (Compounding Grade). Blends of 20 grams were prepared in the RAM using the highest intensity setting for 60 seconds. The drug loads were adjusted for each formulation to maintain capsule size constant. Fifty capsules size # 1 of each formulation were filled using a ProFiller 1100 with a target fill weight necessary to achieve 100 mg. of DOX per capsule. Pure DOX (used as control) and the DOX experimental capsules were analyzed for stability at time zero, 1 month and 6 months using a validated HPLC assay.

Results: The lactose-based formulation did not pass the content uniformity tests and was discarded for further testing. The formulations of the two co-excipients of MCC completed all the testing and produced excellent results in terms of content uniformity, potency, dissolution, and chemical stability.

Conclusion: The good results indicate that the technology can be safely used in this drug using the two co-excipients of this study. The selection of excipients is a key element for using RAM technology successfully in formulation and compounding such as in Doxycycline capsules.

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Poster 16:

ADOPTING A PRECISION MEDICINE PARADIGM IN PUERTO RICO: LEVERAGING ANCESTRAL DIVERSITY TO IDENTIFY PREDICTORS OF CLOPIDOGREL RESPONSE IN CARIBBEAN HISPANICS

Gretchen G. Gutiérrez Santana, PharmD | Mariela Loyola Cruz, PharmD | Paola K. Pereira Rivera, PharmD
Jorge Duconge, PhA. MSc, BS Pharm

Introduction: After percutaneous coronary intervention (PCI), clopidogrel resistant patients are at an increased risk of major adverse cardiovascular and cerebrovascular events (MACCEs). Whether genotype guided selection of oral antiplatelet drugs reduces the occurrence of these ischemic events at 6 months after treatment is unknown among Caribbean Hispanic patients.

Objective: We aimed to assess the statistical associations between patient's time free of MACCEs and treatment groups in this underrepresented population, using Kaplan-Meier survival analyses stratified by risk score and Cox proportional-hazards regression models.

Methods: This is a secondary analysis of existing data from 190 participants (i.e., median age: 67 years; BMI: 27.8; 41% women; 95/95 in standard of care [SoC] and genotype-guided groups) of an open-label, multicenter, prospective clinical pharmacogenomic study of 500 patients undergoing PCI for acute coronary syndromes (ACS) or stable coronary artery disease (CAD) and peripheral artery disease (PAD). Risk scores were calculated with a previously developed polygenic risk prediction algorithm. Recommendations were made in the genotype-guided, but not in the SoC group, for patients with high-risk scores ≥2 to be escalated to ticagrelor.

Results/Conclusion: Genotype-driven algorithm-guided selection of an oral antiplatelet drug (i.e., clopidogrel vs ticagrelor), compared with SoC, did not significantly reduce MACCEs over time based on the effect size that our pilot study was powered to detect (HR=1.42, p=0.34). However, the genotype-guided risk score discriminated between those patients with and without high rates of MACCEs in the genotype-guided group (HR: 3.26; p=0.013), indicating that this polygenic risk score is a useful predictor of clopidogrel poor outcomes among Caribbean Hispanics.

Poster 17:

MEDCOMPR: MEDICATIONS JUST FOR YOU

Tania M. Alvarado-Torres | Julianna Lugo-Serrano | Alexamary Planas-Rivera
Dyhamar A. Rosario-Hernández | Lynnette M. Solero-Vázquez | Ángel Torres-Llorens
Wilmarie Vázquez-Ramos, PharmDc | Frances Colon Pratts, Pharm D, CDCES

Purpose: Compounded medications can benefit patients who cannot be treated with FDA-approved drugs. High-demand compounded alternatives include hormone replacement therapy, dermatology, wound management, pediatrics, pain management, and veterinary medicines.

Methodology: MEDCOMPR is a mobile application consisting of three portals aiming to make compounded medications accessible to patients in Puerto Rico. The prescriber portal will provide the available formulations in each compounding pharmacy. Prescribers will be able to send e-prescriptions, upload patient records, place advertisements, and access medicine shortage lists and consultations with a pharmacist. The pharmacist portal will allow users to upload a list of medications compounded in their pharmacy, receive e-prescriptions, place advertisements, and access patient health records. Lastly, the patient portal will provide access to their health record, notifications, consultations with a pharmacist, symptom tracker, medication education, and adherence tools. Currently, there is no service like ours in Puerto Rico.

Results: Few prescribers know about compounding pharmacies and their services. Unfamiliarity with these medications can prevent prescribers from providing other alternatives to their patients. According to our survey results directed to patients, 30 out of 71 participants said "no" to using compounded medications in the past, and 33 out of 39 participants said "yes" to being interested in using compounding medications. These results show a need to increase accessibility and educate the population about compounded drugs.

Conclusion: MEDCOMPR will serve as a bridge between prescribers and compounding pharmacies to provide product accessibility and patient education while bringing more visibility to compounding services.

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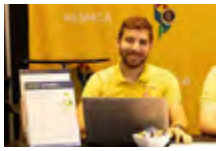

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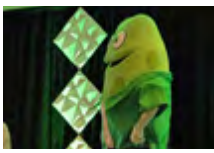


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CUANDO VENDO MÁS, DEPOSITO MÁS, HAGO MÁS NÚMEROS DE RECETAS, PERO MI GANANCIA BRUTA ES MENOR QUE EL AÑO 2022. UN ANÁLISIS FINANCIERO PARA PENSAR

Enrique Garay

El año 2024 será un reto económico para la gran mayoría de las farmacias porque el

negocio de rentabilidad se ha contraído en un 5% en la ganancia bruta o Gross Margin (GM). La farmacia era un negocio que se podía trabajar sin visibilidad contable, pero ahora está obligado a trabajarse con la visibilidad de contabilidad y poder analizar los "income statement" o Profi & Loss" de forma mensual. El propósito de analizar el profit & loss" es poder ver, analizar y comprender el aparato contable de una farmacia porque este asunto se ha convertido en un proceso económico muy difícil de manejar a medida que han pasado los años.

La razón de este asunto a discutir en este artículo es que muchas farmacias al ver que están depositando más dinero en el banco o generando más recetas piensan que están generando más ganancia bruta en comparación con el año 2022. Esto sería gran error de pensar tal cosa, porque de tener

visibilidad con tu sistema de cómputo podrían darse cuenta que entre el año 2022 versus 2023 hay una diferencia significativa entre un 4.5% - 5.5% en el GM o ganancia bruta de la farmacia. Varias farmacias que mantienen un inventario perpetuo nos han llamado para indicarnos que se encuentran vendiendo más pero no les alcanza pagar a los suplidores en un tiempo razonable y están perdiendo porcentaje de sus descuentos mensuales. Cuando comenzamos hacer los análisis de ventas versus costo de compra y ganancia bruta nos damos cuentas de lo siguiente en prácticamente todas las farmacias:

1. La venta del año 2023 ha aumentado en comparación con el año 2022 porque han salido más medicamentos de marca en comparación con el año 2021 y 2022.
2. El resultado en el aumentos de medicamentos de marca tienen el efecto que el gasto en la compra aumentó y el margen bruto o GM ha disminuido en un promedio de un 5% por ciento.
3. Al disminuir el GM se establece una contradicción en la venta en un mercado de farmacia donde los libros de contabilidad establecen que a mayor venta, mayor será la ganancia bruta. Pero esto no ha sido así en los dos últimos años de esta industria. A mayor la venta el GM disminuye en porcentaje. 4. ¿Por qué NO ha sido así?
    a. Porque las terapias o prescripciones de medicamentos a 90 días de suplidos se están pagando con 10% aproximadamente de "gross margin" (GM).
    b. En la terapia de 90 días de suplido (DS) se pierden dos "dispenser fee".
    c. Aumenta la valorización de inventario porque aumentó la compra y el volumen en las terapias de 90 días de suplido.
    d. Tu "cash flow" se afectó porque se disminuye el GM al comprar más inventario en medicamento de marca.
5. EL volumen de recetas o prescripciones ha aumentado en muchas farmacias, pero esto no compensa la disminución del 5% aproximadamente en el GM entre el año 2022 y 2023.

Si aumentamos el volumen de prescripciones el impacto será menos en la disminución del GM. Esto implica que para sostener dicho impacto en el GM se debería aumentar aproximadamente 25% en el volumen de las recetas o prescripciones por año. Hasta ahora en todos nuestros análisis no hemos encontrado que se ha aumentado el volumen de recetas de forma significativa. Por todo lo contrario el aumento de recetas entre años 2023 vs 2022 en las farmacias oscila entre 1-4%.

A todo este escenario económico debemos recordar que se suman los medicamentos biosimilares para bajar el alto costo de los medicamentos de marca. Un ejemplo claro de este asunto es que ahora la ganancia en dinero (NO GM) promedio en el medicamento HUMULIN es de unos $20.00-$18.00. Cuando se establezca este método de cobro o facturación de medicamentos biosimilares el GM será entre unos $4.00-$5.00 de ganancia en dinero. Esto será una disminución adicional en el GM.

Con todo esto mencionado debemos encontrar alternativa para minimizar este escenario o impacto en la economía de las farmacias:

1. Aumentar la venta en el piso
2. Aumentar GM en el piso
3. Saldar o capitalizar deudas
4. Invertir en el inventario de la farmacia. Por excelencia la mejor alternativa de inversión son los inventarios de las farmacia
5. Mantener un inventario perpetuo y saber rotarlo entre 6-10 días de suplido y enlazarlos con órdenes automáticas donde el sistema indique que se debe comprar según la experiencia estadística que establezca el sistema de cómputos.

Para más información pueden visitarnos en www.rx30pr.com para leer otros artículos sobre varios temas escritos en la revista de farmacéuticos.

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