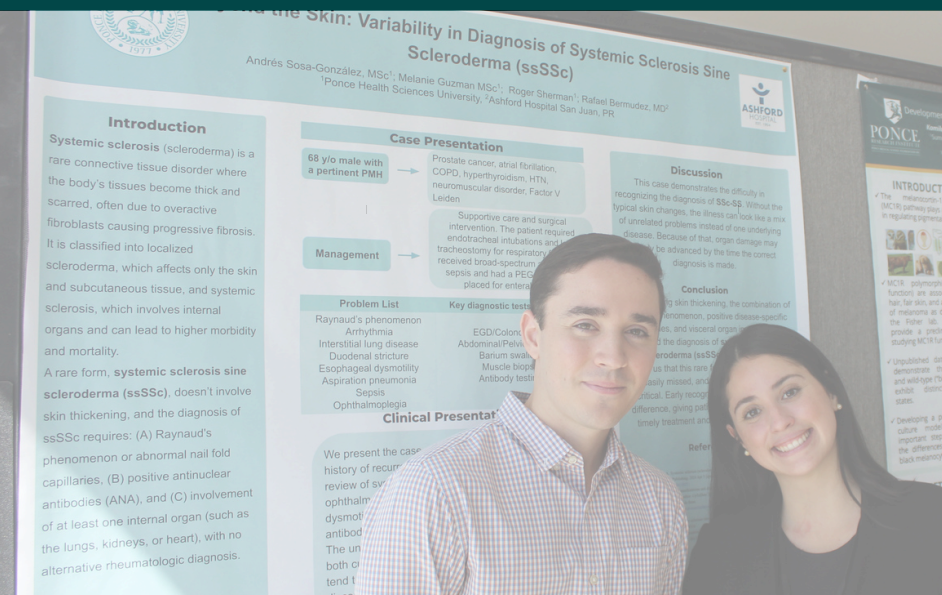


Medical Student SUMMER RESEARCH EXPO



This special edition represents the dedication of students, trainees, researchers, and mentors whose passion for discovery continues to strengthen the scientific community in Puerto Rico. Each visual abstract included in these pages is a testament not only to rigorous academic effort, but also the commitment of emerging scholars to improving the health and well-being of our communities.

We extend our deepest gratitude to the faculty advisors, coordinators, and institutional partners who nurture scientific curiosity and provide the guidance necessary for students to transform ideas into meaningful contributions.

Most importantly, we celebrate the resilience, creativity, and enthusiasm of the participants of the *2025 Medical Student Summer Research Expo*. Your commitment to scientific inquiry and academic excellence continues to elevate our institution and bolster the culture of research in Puerto Rico. We are grateful for your participation and proud to showcase the impactful work emerging from our community.

Sincerely,

The PHSU-Scientific Journal Team

On behalf of the Medical Research Group, we have the honor of introducing this Special Edition of the PHSU Scientific Journal, featuring selected abstracts from the *2025 Medical Student Summer Research Expo*. As pioneers of this student-led initiative at PHSU, our group is proud to lead an evolving event for a second consecutive year, bringing together more than 80 presenters and over 150 attendees.

This issue celebrates the dedication of student organizers, faculty and judges, as well as the ongoing support of the Ponce Research Institute in making this event possible. Most importantly, this issue highlights the work of our students. Their engagement in research demonstrates their strong commitment to professional growth that will undoubtedly benefit the communities they will one day serve.

Congratulations to all those featured, and thank you for your continued support of our mission to inspire and mentor the next generation of physicians. See you next year!

Sincerely,

Jeitzel Torres-Rodríguez

Medical Research Group President

Evaluating Sex Disparities in the Management of Acute Coronary Syndrome in the Southern region of Puerto Rico

Authors: Yadira López Rivera, BS¹; Andrea San Antonio Sierra, MD²

Affiliation: ¹Ponce Health Sciences University

²Centro Médico Episcopal San Lucas

Background

HEART ATTACK SYMPTOMS: MEN VS. WOMEN

MEN	WOMEN
Nausea or vomiting	Nausea or vomiting
Jaw, neck or back pain	Jaw, neck or upper back pain
Squeezing chest pressure or pain	Chest pain, but not always
Shortness of breath	Pain or pressure in the lower chest or upper abdomen
	Shortness of breath
	Fainting
	Indigestion
	Extreme fatigue

The Ohio State University Wexner Medical Center THE HEART PARTNERSHIP Memorial HEALTH

- CVD is the leading cause of death in US and PR
- Women with ACS face delayed diagnosis
- Local data from PR is scarce

Study population

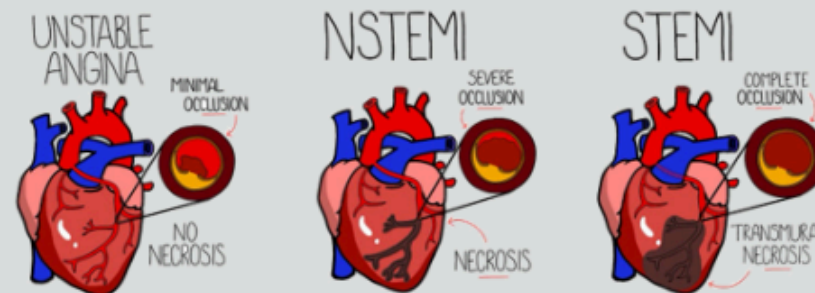


Males:
48.7%
Mean age:
65



Females:
51.2%
Mean age:
67

ACS Diagnosis



Design / Methods

Cross-sectional observational study using EHR data from CMESL.



CMESL
07/2021 - 07/2022



Adults +21



n = 600 patients



Testing:
Invasive (LHC) vs
Non-Invasive
(SPECT)

Main Findings



NSTEMI
p = 0.012



Received
invasive testing
53.2%

Received Non-
invasive testing
64.2%

- Males were more likely to present with STEMI (64.5% of STEMI cases). Females more frequently presented with NSTEMI or UA, (53 and 51%, respectively).

Additional Results:

2-year instead of a 10-year delay in ACS diagnosis for women

Conclusion / Takeaway

- The study demonstrates clear sex-based disparities in ACS evaluation in southern Puerto Rico.
- Women with NSTEMI were less likely to undergo invasive testing and more likely to undergo non-invasive testing compared to men.
- Disparities are diagnosis-specific.
- The age difference at presentation between men and women was smaller than reported in other populations.
- Findings support that sex influenced disparities in ACS management exist locally.

Takeaway:

Women appear to be less aggressively evaluated for ACS, despite having the same diagnosis.

Circulating T Follicular Helper Cells in Dengue Virus Immunity: Protection and Pathogenesis

José A. Collazo-Llera, Paola N. Flores-Pérez, Fabiola A. Rodríguez-Alvarado, and Vanessa Rivera-Amill*
School of Medicine, Ponce Health Sciences University/Ponce Research Institute
Correspondance: vrivera@psm.edu

Background

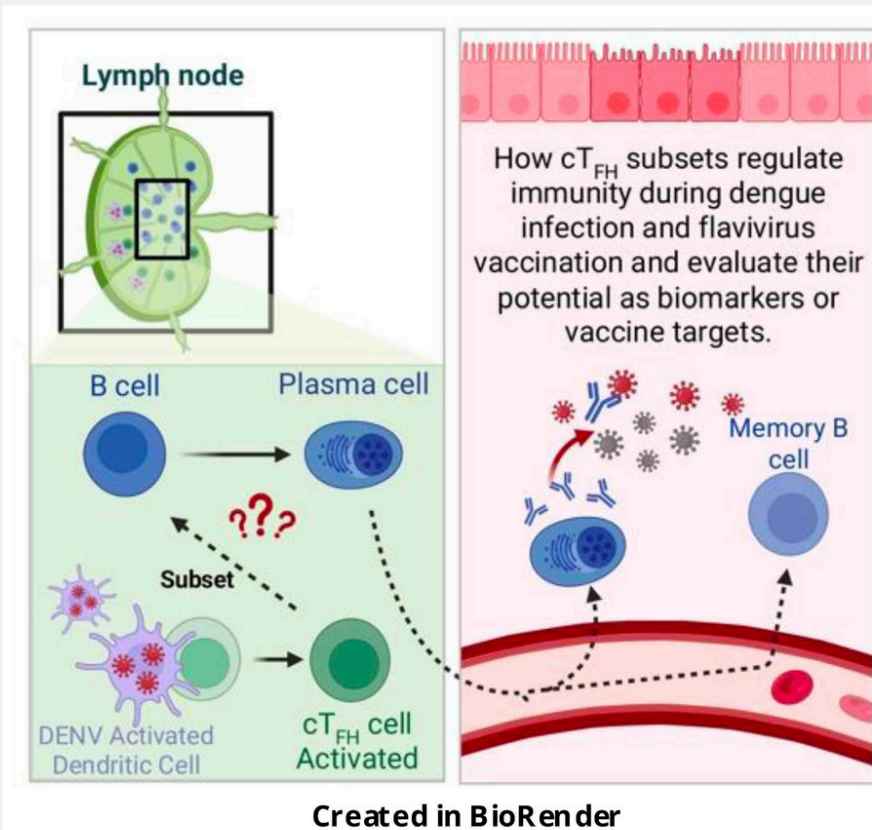
Dengue virus (DENV) infects ~400 million people annually and causes illness ranging from mild fever to life-threatening disease.

Effective immunity requires coordinated B-cell and T-cell activation.

Circulating T follicular helper cells (cT_{FH}) support B-cell maturation, plasmablast expansion, and production of neutralizing antibodies (nAbs).

However, heightened cT_{FH} activity may also contribute to antibody-dependent enhancement (ADE) and severe dengue.

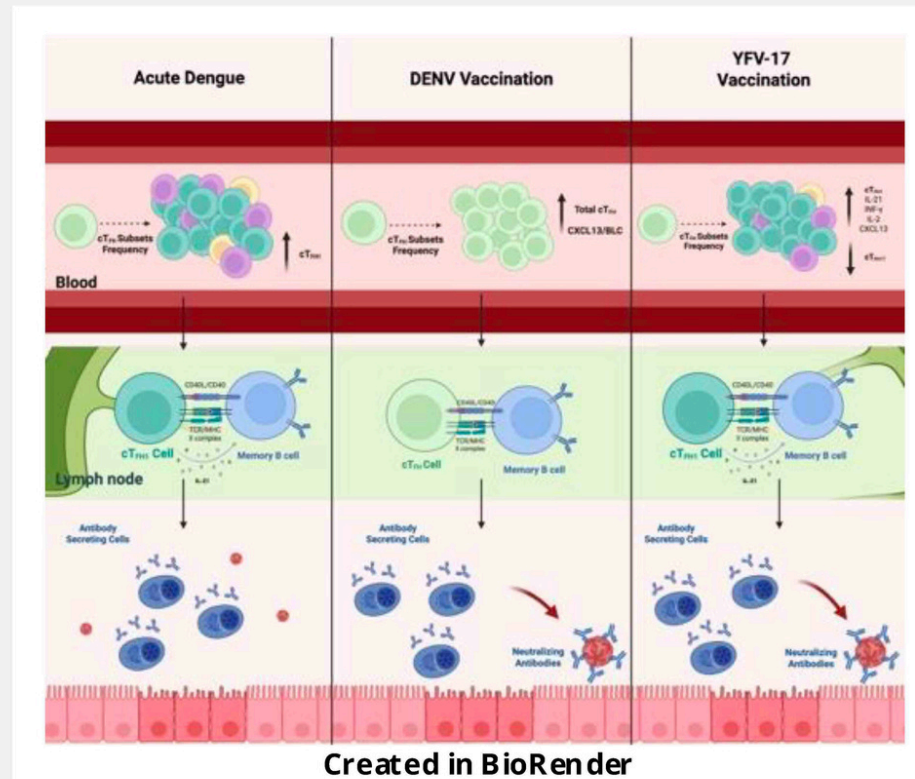
Role of cT_{FH} subsets in B-cell activation and antibody responses during DENV infection



Methods

- Literature review of human studies (2009–2024) on cT_{FH} in dengue, yellow fever vaccination, and TV003 dengue vaccine trials.
- Extracted data on:
 - cT_{FH} subsets (cT_{FH1}, cT_{FH2}, cT_{FH17})
 - Activation markers (CXCR5, PD-1, ICOS)
 - Cytokines (IL-21, IFN- γ , IL-4, IL-17)
 - Associations with plasmablasts, memory B cells, and neutralizing antibody titers
- Compared immune profiles in primary vs. secondary dengue.

Differential activation of cT_{FH} subsets and antibody responses in DENV infection vs. DENV and YF17D vaccination



Takeaway

- cT_{FH} cells are central regulators of B-cell immunity in dengue infection and vaccination.
- cT_{FH1} activation supports protective nAb responses, while exaggerated activity may contribute to disease severity.
- cT_{FH}-based immune signatures may guide next-generation dengue vaccine design and serve as biomarkers for durable immunity.

Acknowledgments

Supported by NIH/NIMHD RCMI CRR (U54MD007579)/CDC U01CK000580 (V. Rivera-Amill), and NIGMS T32GM144896 (P. Flores-Pérez).

Age-Specific Trends and the Impact of Hypertension in SEDSS Participants from 2012 through 2025

Cristina A. Román Soto, Angélica De Jesús Mieres, Víctor Burgos Ruiz, Verónica Frasier-Quintana, Rachel M. Rodríguez-Santiago, and Vanessa Rivera-Amill
Ponce Health Sciences University/Ponce Research Institute



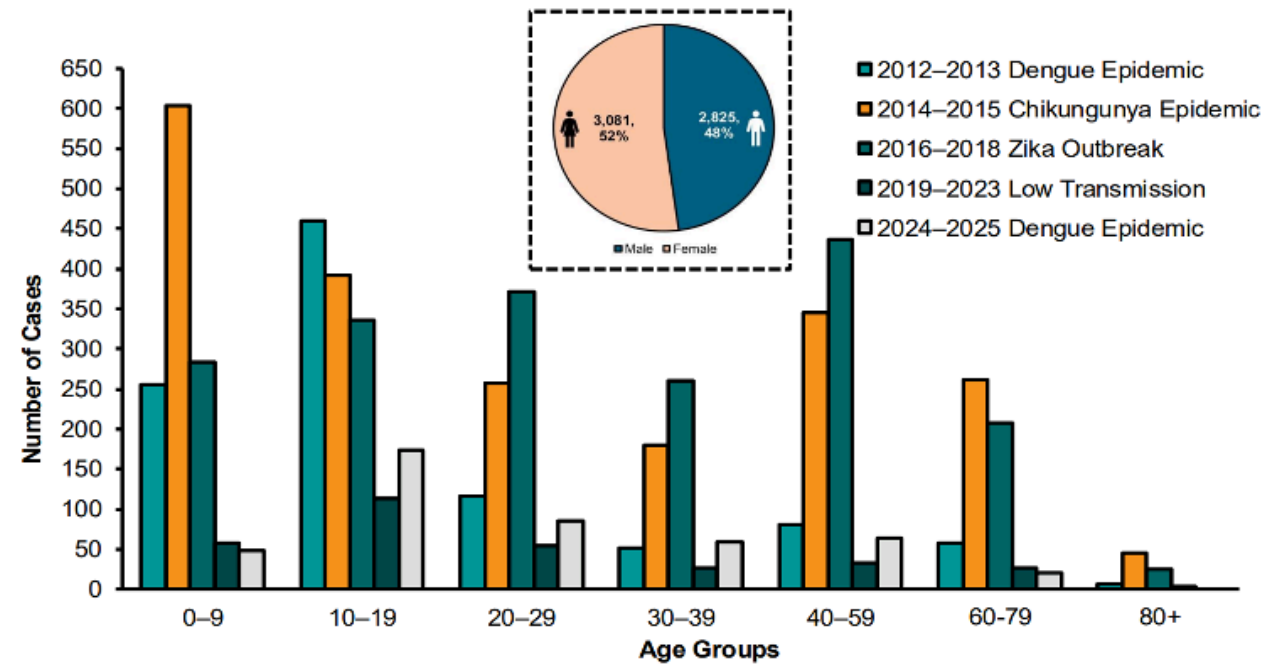
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Background

Arboviral infections (dengue, Zika, and chikungunya) remain a major public health concern in Puerto Rico.

Despite this, the evolving burden of chronic conditions within these infections has not been well characterized.

Study Population



Design / Methods

Laboratory Testing

2012–2016

DENV 1–4 RT-PCR

2016–2020

Triplex RT-PCR (DENV, CHIKV, ZIKV) + DENV serotyping

2020–2025

DENV 1–4 RT-PCR
Serologic testing via IgM ELISA confirmed dengue, Zika, or chikungunya infections.



Samples:

- Blood
- NP, and OP swabs

Main Findings

Hypertension among arboviral cases increased over time, highest odds after the Zika epidemic (2016).

Zika and chikungunya infections were associated with higher odds of hypertension than dengue.

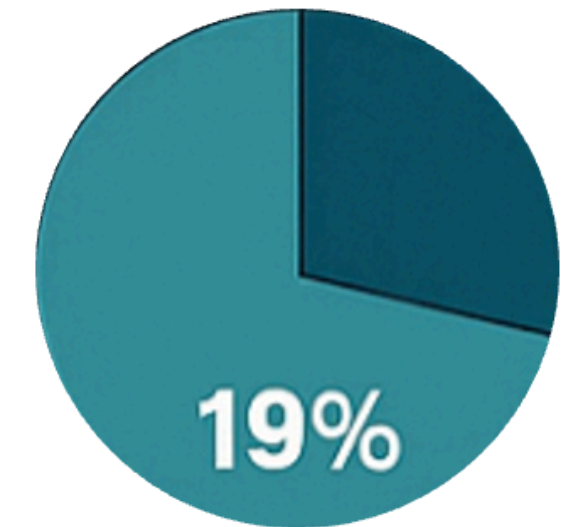
Conclusion / Takeaway

The shift in arboviral cases towards older age groups parallels rise in hypertension, suggesting aging as a big influence on chronic disease prevalence in arboviral surveillance data.

This shows the importance of integrating chronic disease surveillance into arboviral monitoring programs and considering hypertension as a relevant factor in management and outcomes.



Confirmed arboviral cases (N=5,906)



Consecutive Case Series of Surgically Treated Adolescent Idiopathic Scoliosis (AIS) Patients in Puerto Rico

Alexandra Vela Williams, BS¹; Jael E Camacho Matos, MD²; Humberto Guzmán, MD³

¹Ponce Health Sciences University, School of Medicine; ²University of Puerto Rico, School of Medicine, Emergency Medicine Department, San Juan PR; ³University of Puerto Rico, School of Medicine, Orthopaedic Surgery Division, San Juan PR

Background

AIS is the most common pediatric spine deformity requiring surgery

Puerto Rican AIS data are limited

Study describes baseline characteristics and surgical outcomes

Study population

73 adolescents (ages 10–18)

44% state-funded insurance

89% female

Mean Cobb at presentation: 44°

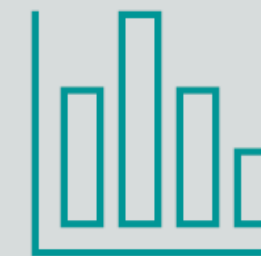


Design / Methods

Retrospective case series (2013–2019)

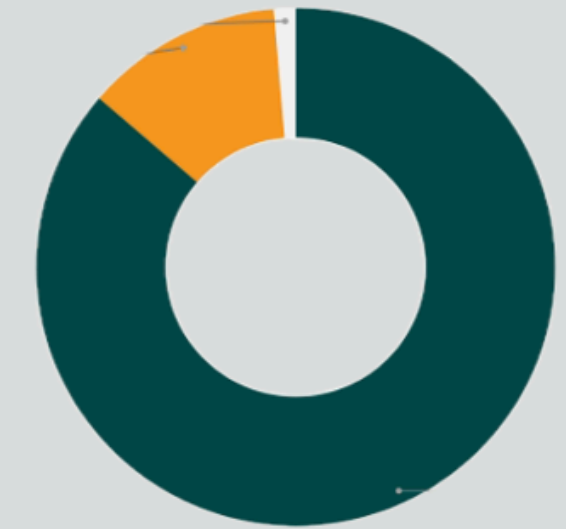
Posterior spinal fusion for AIS

Data: demographics, Cobb angles, surgical timing, complications



Statistical tests: t- test, Wilcoxon, Fisher's exact, Chi-square

Main Findings



- Curves progressed **+14°** prior to surgery
- 86% no complications**
- Minor: 12% (pain 7%, infection 3%)
- Major: 1.4% reoperation

Conclusion / Takeaway

AIS patients in Puerto Rico present with advanced curves but experience **excellent postoperative outcomes**. A trend toward higher complications in state-funded patients suggests possible socioeconomic disparities.



Racial Differences in Inpatient Mortality Rates by Goals of Care Documentation Status

Andrea N. Navarro-Zambrana, MS^a and Gina Piscitello, MD, MS^b

^a School of Medicine, Ponce Health Science University; ^b Palliative Research Center, University of Pittsburgh

Background
Previous studies suggest goals of care (GOC) conversations may be associated with racial differences in patient outcomes.

Objective
This study examines whether goals of care documentation are associated with racial disparities in inpatient mortality among seriously ill hospitalized adults.

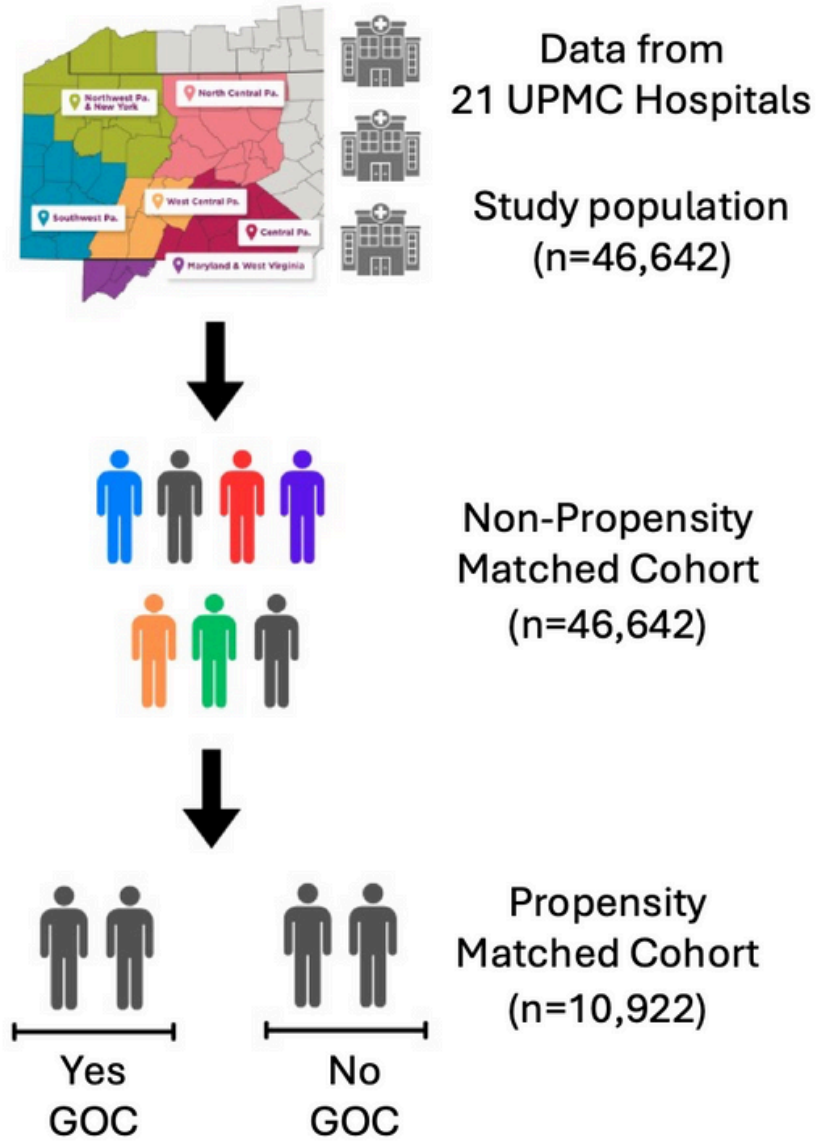
Methodology

Study Type

- Retrospective (July 2021 – April 2023)
- Data from University of Pittsburgh Medical Center (UPMC)

Statistical Analysis (RStudio)

- Propensity Matching
- Multivariable Logistic Regression



Main Findings

With GOC documentation

White patients had higher inpatient mortality than Black patients in both non-matched (aOR 1.4, p=0.0007) and propensity-matched (aOR 1.5, p=0.0005) analyses.

Without GOC documentation

No racial differences in mortality were observed (aOR 1.1, p=0.5911).

Comparing patients with and without GOC documentation

Black patients with GOC documentation were less likely to die in the hospital than those without (aOR 0.7, p=0.0253).

Conclusions



White patients with GOC documentation had higher inpatient mortality than Black patients, while Black patients with GOC documentation were less likely to die in the hospital.



Further study is needed to assess GOC conversation quality and patient preferences to better understand and address these differences.

The Role of Anxiety and Clinical Factors in Predicting Clinically Significant Perceived Stress Among Young Women with Breast Cancer

Figueroa-Vargas, Sanel, MS¹; Rivera-Alers, Dayaneira, MPH^{1,5}; Torres-Cruz, Yamilet, MA, BS^{1,4}; Rivera-Vélez, Manuel, MPH^{1,5}; Rodríguez-Castro Zindie, MD¹; Cortes-Castro, Cinthia, MS, LCSW¹; Peña-Vargas, Cristina, PhD^{1,4}; Armaiz-Pena, Guillermo, PhD^{1,2,3}; Castro-Figueroa, Eida M., PsyD, MSc^{1,2,4}.

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⁵Ponce Health Sciences University, Public Health Program, Ponce, PR, USA



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Background



Women with breast cancer often experience significant psychological distress, including anxiety and perceived stress, which can affect their overall well-being and treatment outcomes.



Study population

A cross sectional study was conducted between 2019 and 2023

- 42 women aged 26 to 45 years
- all residing in the southern region of Puerto Rico and diagnosed with breast cancer.



Design / Methods

The questionnaires used were: Generalized Anxiety Disorder-7 (GAD-7) scale, Perceived Stress Scale (PSS), MD Anderson Symptom Inventory, and comorbidities.



Main Findings

- Clinical anxiety (GAD-7) was the strongest predictor of clinically significant perceived stress (PSS).



- Physical symptoms (MD Anderson) were also associated with stress, though to a moderate degree.



Conclusion

- Anxiety and physical symptom severity were identified as the primary contributors to perceived stress in young women with breast cancer, while medical comorbidities appeared to affect stress indirectly.
- These findings suggest that distress in this population is driven not only by clinical disease characteristics but also by subjective symptom experience and emotional processing.



Exploring the Inflammatory and Intracellular Role of Exogenous Plasminogen Activator Inhibitor 1 (PAI-1) in Endothelial Cells



Arianna C. López Pérez B.S¹, Gjina Ahmetaj B.S^{2,3}, Molly McAdow M.D., Ph.D.^{2,3}

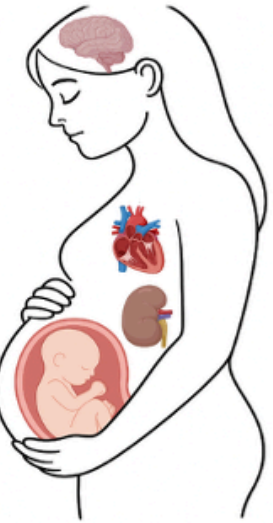
1. Universidad Central del Caribe SoM, 2. Yale School of Medicine Department of OB-GYN, 3. Yale School of Medicine Department of Physiology



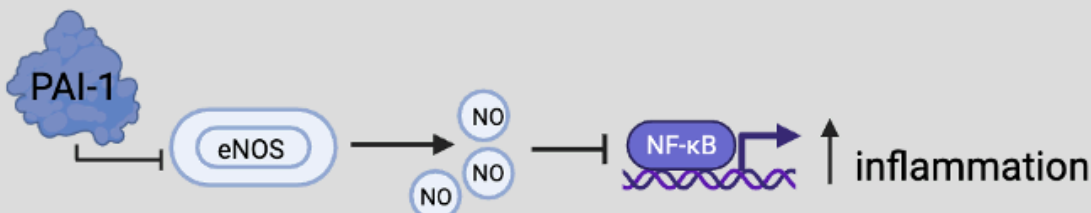
Background

Preeclampsia

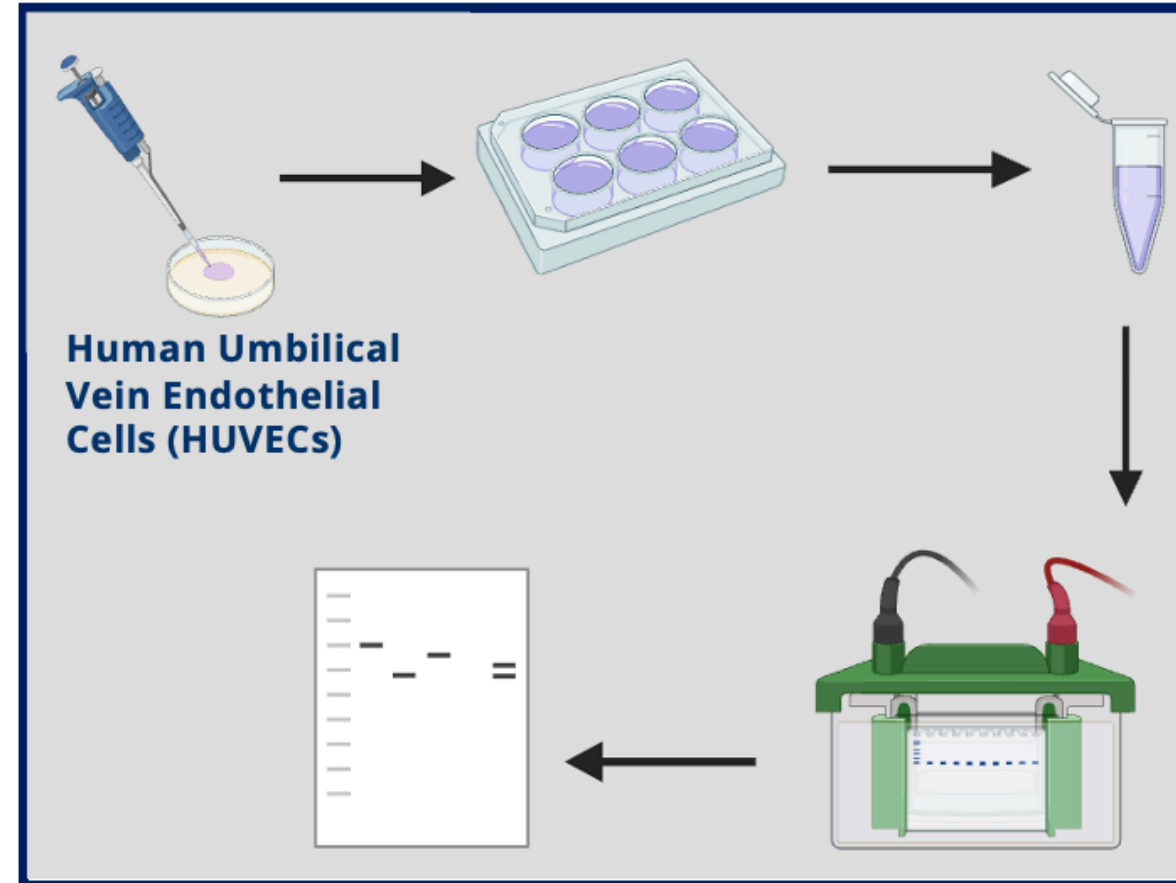
- New onset hypertension in pregnant people
- Maternal endothelial dysfunction
- High maternal and fetal mortality
- PAI-1 is a biomarker



Does PAI-1 induce inflammation through eNOS mediated NFκB activation?



Design / Methods



HUVECs with PAI-1 overexpressed, silenced or inhibited were analyzed by SDS-PAGE and Western blot to detect target protein expression.

Main Findings

- Exogenous PAI-1 was internalized by endothelial cells and remained detectable within the cells for up to three hours.
- Silencing of endogenous PAI-1 reduced TNF- α -induced expression of proinflammatory markers, although I κ B protein levels remained unchanged.
- In contrast, pharmacological inhibition of PAI-1 with TM5441 did not significantly attenuate inflammatory gene expression.

Conclusion / Takeaway

- PAI-1 remains internalized in endothelial cells
- PAI-1 promotes endothelial inflammation
- PAI-1 does not use NF- κ B for inflammatory process

Optimization of Patient Allocation in the Emergency Department: An Evaluation of Bed Admissions and Fast-Track Implementation

Ana Carolina Rivera-Martínez, M.S.^{1,2}; Juan Mercado-Muñoz, M.S.^{1,2}; Kevin Laureano, MD²; Eddie Romero, MD²; Leslie N. Padilla Vásquez, MPH^{1,2}; Carlos Garcia Gubern, MD².

¹ Ponce Health Sciences University, School of Medicine, Ponce, Puerto Rico, USA. ² Centro Médico Episcopal San Lucas, Emergency Department, Ponce, Puerto Rico, USA.

Background



ED overcrowding and boarding are linked to worse outcomes.



EMS use for non-emergent conditions increases.



At Centro Médico Episcopal San Lucas (CMESL), all EMS arrivals are assigned to high-acuity beds regardless of complaint severity.

Methodology / Population



IRB Approved



Retrospective EHR Review

(October 2023-January 2024)



Sample: 586 patients

Inclusion Criteria:

- Adults > 21 y/o
- EMS Complaint
- Chief Complaint (EDLOS)

Main Findings

Variable	Frequency	Percent (%)
Type of emergency		
Trauma (low risk)	52	8.9%
Trauma (high risk)	23	3.9%
Psychiatric	29	4.9%
Medical (low risk)	93	15.9%
Medical (high risk)	357	60.9%
Other Medical factors	21	3.6%
Medical evaluation	11	1.9%
Chief complaint category		
Minor complaint	126	21.5%
Major complaint	460	78.5%
Total	586	100%

Table 4. Distribution of emergency types and chief complaint category of patients arriving at Centro Médico Episcopal San Lucas Emergency Department.

Variable	Median	Mean	Std. Deviation	Minimum	Maximum
EDLOS time in hours and minutes	7hr and 8min	7hr and 55min	± 4 hr and 35 min	23min	25 hr and 47 min

Table 5. Measures of central tendency and dispersion for the EDLOS of patients who arrived at the emergency department of Centro Médico Episcopal San Lucas in Ponce, Puerto Rico with a minor chief complaint.



EDLOS: 7h 08m



Left Without Treatment 4.9%

Main Findings

Variable	Was EMS bed necessary?		OR (95% CI)	p-value
	Yes n(%)	No n(%)		
Chief complaint category				
Minor complaint	15 (3.2%)	111 (89.5%)	0.004 (0.002 – 0.008)	< 0.001*
Major complaint	447 (96.8%)	13 (10.5%)		

Table 7. Association between chief complaint category and EMS bed allocation at Centro Médico Episcopal San Lucas ED in Ponce, Puerto Rico.

Conclusion

- Hypothesis confirmed: minor complaints rarely need stretcher.
- High EDLOS = delays + LWBS
- Need for new protocols to optimize ED flow.



Characterizing Violence and Discrimination Patterns Across Gender and Sexual Identities in Puerto Rico's LGBTQ+ Individuals

Jan M. Ruiz Núñez, B.S., Tania Vega, M.S., Vanessa Pagán Rodríguez, B.A., & Caleb Esteban, Ph.D.

Ponce Health Sciences University, Puerto Rico



BACKGROUND: LGBTQ+ individuals in Puerto Rico experience disproportionate **violence** and **discrimination**, driven by structural vulnerabilities such as limited legal protections, austerity, and sociocultural stigma. Understanding these patterns is essential for **advancing equitable health interventions**.

POPULATION

161 cisgender, 22 transgender



183 LGBTQ+ adults (ages 18-68) living in Puerto Rico. Participants identified as **female** (38.7%), **male** (49.5%), and **transgender/non-binary** (11.8%).



Most identified as **bisexual** (61.3%) or **gay/lesbian** (25.1%).

Education: High school to postgraduate

Income: Low Income to High Income

Residence: All participants living in Puerto Rico.

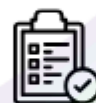
METHODS



Source: Queer Biopsychosocial Health Laboratory Dataset



Recruitment through community networks and social media



Measures: lifetime violence + discrimination



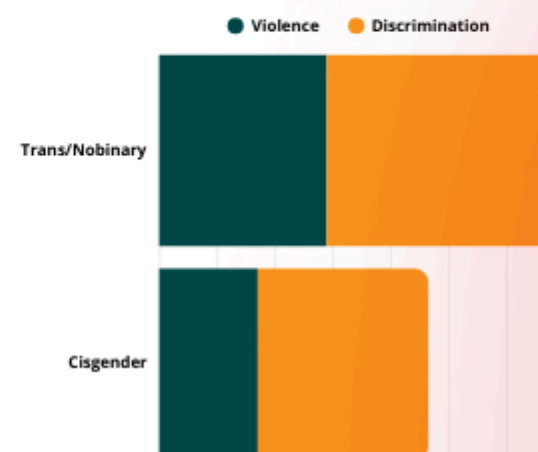
Data Analysis: Descriptive statistics, Chi-square tests

Identity variables evaluated: **gender identity, sexual orientation, education, income**

MAIN FINDINGS

Overall: 39.1% experienced lifetime **violence** | **63.5%** reported **discrimination**

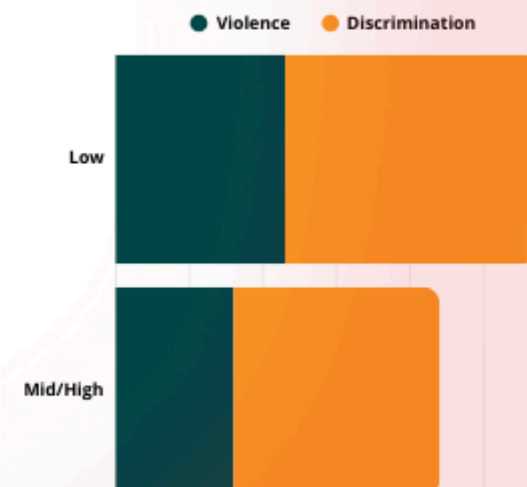
By Gender Identity:



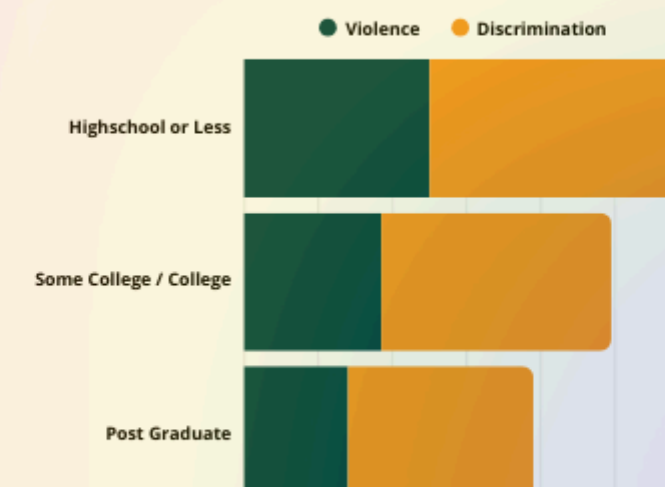
By Sexual Orientation:



By Income Level:



By Education Level:



CONCLUSION

Transgender, non-binary, bisexual, low-income, and low-education LGBTQ+ adults in Puerto Rico face disproportionately **high violence and discrimination**. These results highlight the urgent need for **inclusive policies, equitable healthcare access, and structural protections** to reduce **LGBTQ+ health disparities**.

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cesteban@psm.edu

References:

Scan the QR Code for more information.



Lactic Acidosis Induced by Prolonged Linezolid Therapy: A Case Report

Yambó-Chévere, Yanizbeth, B.S.¹; Bermúdez-Rivera, Rafael, M.D.^{1,2}

¹ Medicine Department, Ponce Health Sciences University, Ponce, P.R. ² Internal Medicine Department, Ashford Presbyterian Community Hospital, San Juan, P.R.

Correspondence: yyambo22@stu.psm.edu

Background



87 y/o woman

4 admissions / 6 months

Afebrile

↑ CRP / ESR

Polymicrobial cultures

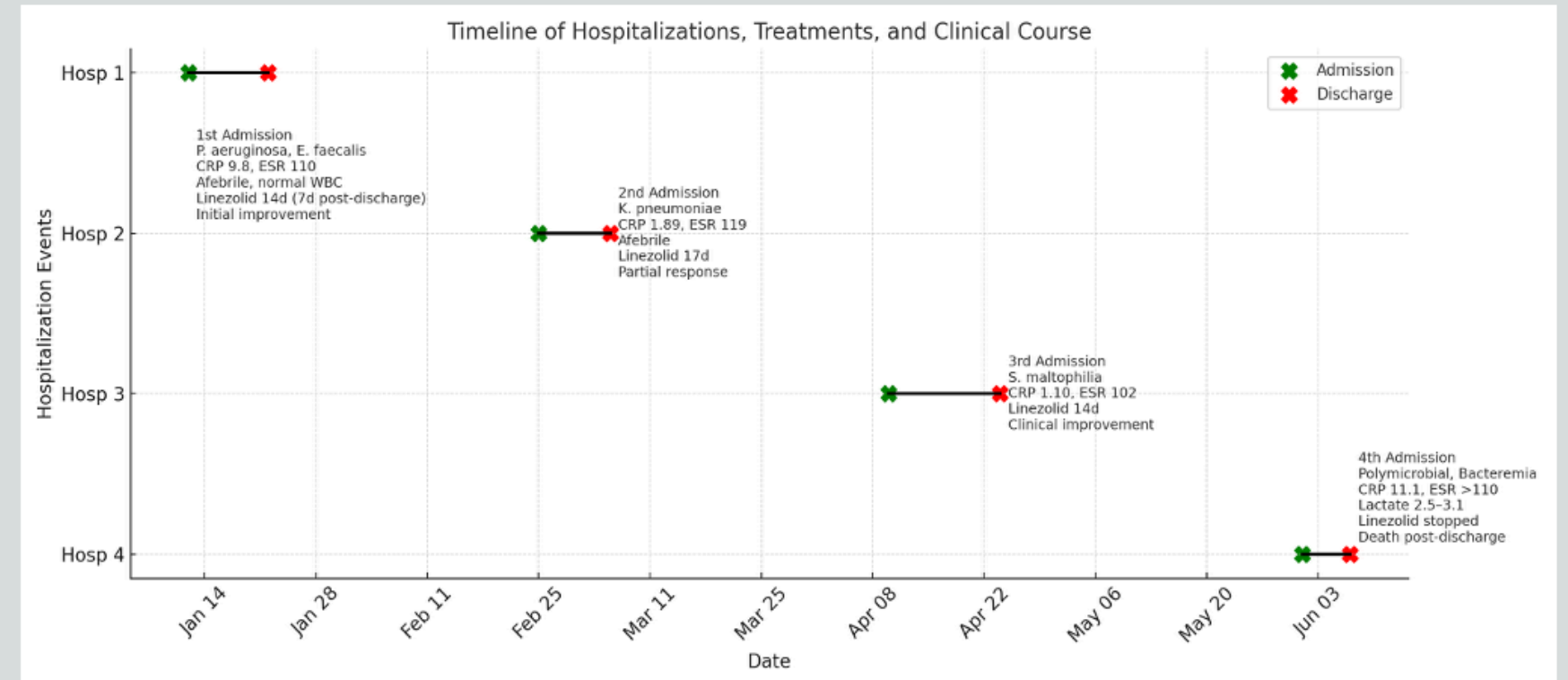
Linezolid ~8 weeks

Methods

Chart review

Caregiver narrative

Main Findings



Hospitalization	Duration of Stay	Site(s) of Cellulitis	Key Findings	Organisms Cultured	Treatment (Antibiotics)	Outcome
1	13 days	Right forearm ulcer + bilateral upper limbs	CRP = 9.8 mg/dL, ESR = 110 (mm/hr)	P. aeruginosa, E. faecalis	IV cefepime (10d), oral linezolid (14d total incl. 7d post-discharge)	Improved; discharged with 7-day oral linezolid
2	26 days	Recurrent right leg + upper limbs	CRP = 1.89 mg/dL, ESR = 119 (mm/hr)	K. pneumoniae	Linezolid (10d IV, 7d oral), piperacillin-tazobactam (5d)	Partial response; discharged on linezolid
3	7 days	Leg + arms	CRP = 1.10 mg/dL, ESR = 102 (mm/hr)	S. maltophilia + others	IV cefepime (14d), linezolid (14d)	Improved; discharged with home care
4	27 days	Leg + arms	Lactate 2.5-3.1 mmol/L, CRP = 11.1 (mg/dL), bacteremia	K. pneumoniae + P. aeruginosa	Broad-spectrum antibiotics (meropenem), linezolid discontinued	Discharged clinically fragile; died 2 days later

Conclusion / Takeaway

- Cellulitis may be difficult to diagnose in older adults who do not show typical signs of infection.
- Clinicians should monitor biomarker trends closely and remain alert for early signs of drug-related toxicity.
- Better prevention, follow-up, and coordination of care in the geriatric population are key to improving outcomes in delicate patients.

Pure Intracranial Schwannoma of Cranial Nerve X: Case Presentation and Literature Review

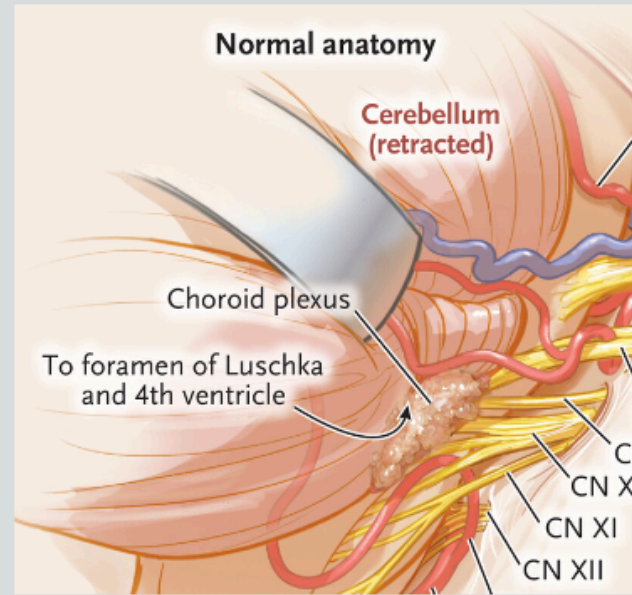
Diego López-Soto, BA¹; Jeffrey Breton, MD²; Samir Sur, MD²

¹Universidad Central del Caribe; ²Medstar Georgetown University Hospital



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Background



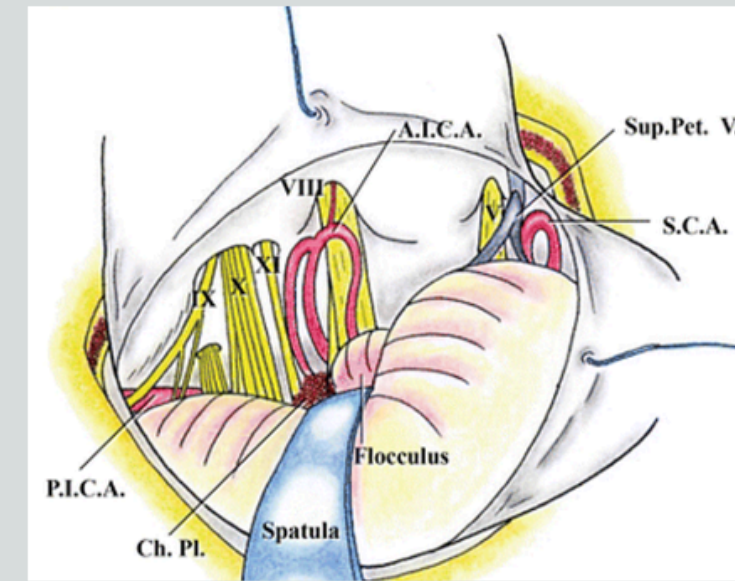
- Rare purely intracranial vagal nerve (CN X) schwannoma
- Radiographically mimics common cerebellopontine angle tumors

Study Design



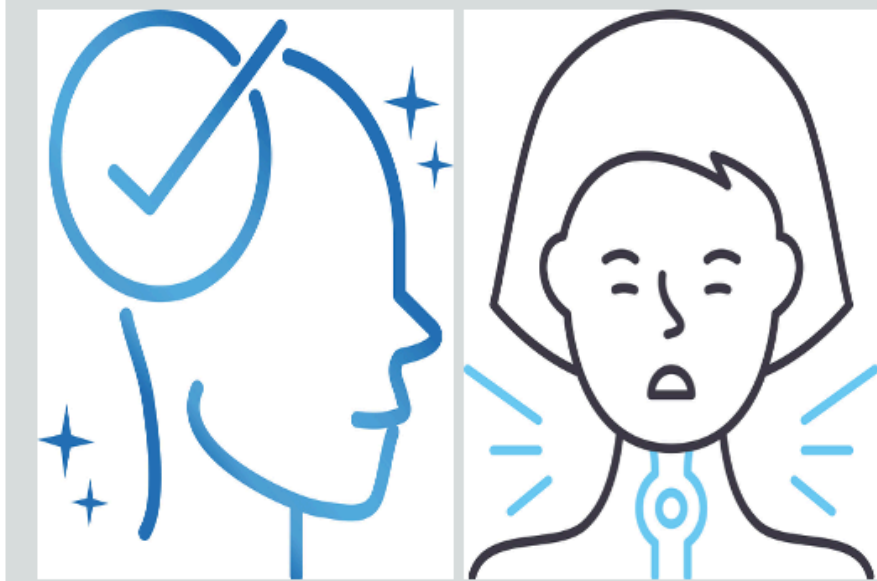
- Single-patient case report
- 43-year-old woman

Intervention



- Brain MRI
- Left retrosigmoid craniotomy

Outcomes

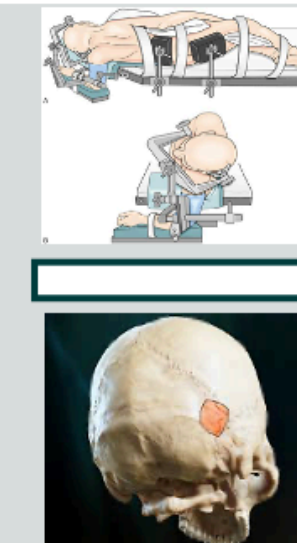
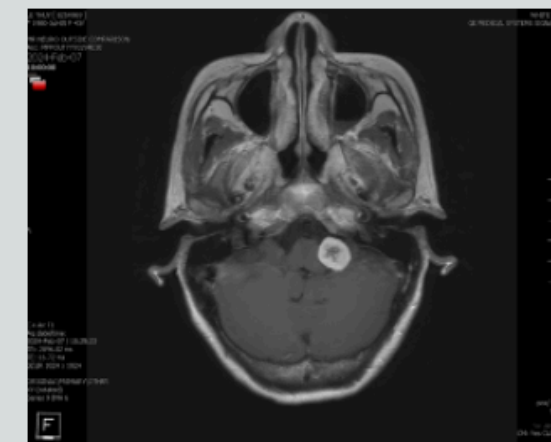


- No new neurological deficits
- Temporary dysphagia

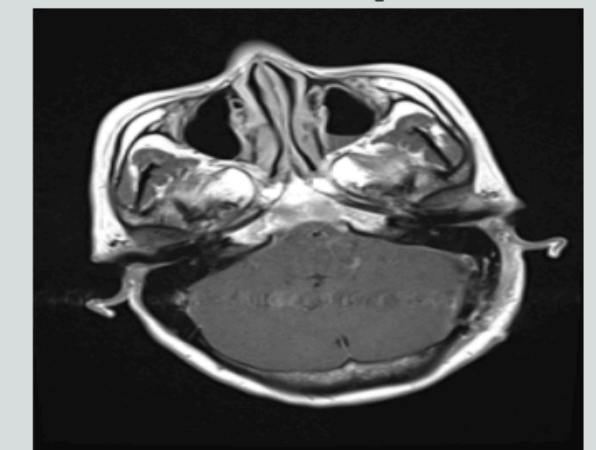
Conclusion

- Purely intracranial vagal schwannomas confined to the cerebellomedullary cistern can present with nonspecific headache and gastrointestinal symptoms while radiographically mimicking other posterior fossa tumors
- Gross total resection of intracranial vagal schwannomas is feasible with favorable outcomes

Pre-Op



Post-Op



Evaluation of Standardized POCUS-Guided regional anesthesia in the Emergency Management of Musculoskeletal Pathologies: A Retrospective Review in Southern Puerto Rico

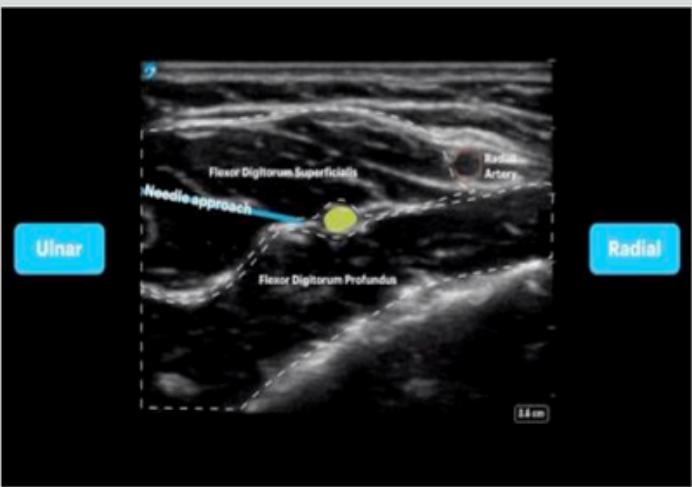


Zachary Morales¹, Claudia C. Galíndez Díaz², Miguel Agrait³, MD, Edgardo Martinez Berdecia³, MD, Alexander Torres Rey³, MD, Roberto Rosado³, MD

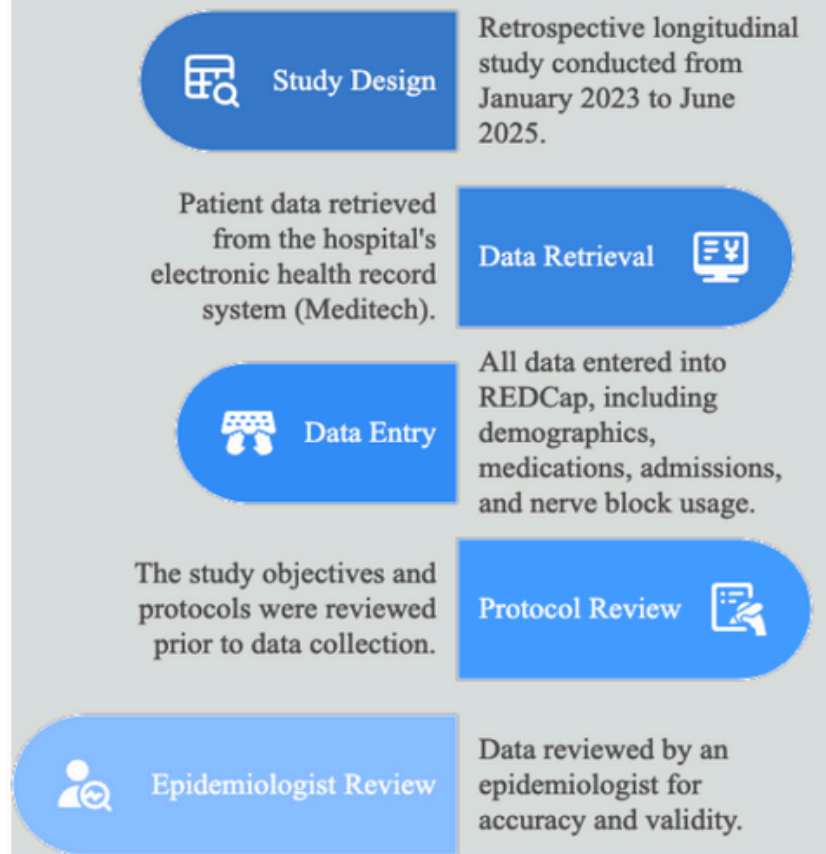
¹Ponce Health Sciences University, Ponce, PR ²University of Puerto Rico at Mayagüez, Mayagüez, PR ³Department of Emergency Medicine, Centro Médico Episcopal San Lucas, Ponce, PR

Background

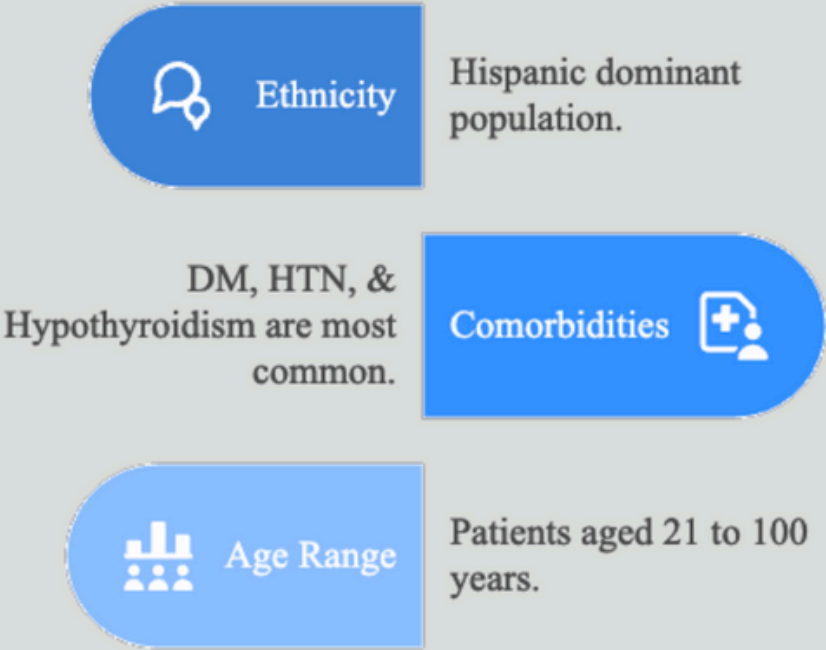
POCUS-guided regional anesthesia (nerve block) has become a more common procedure for musculoskeletal pathologies.



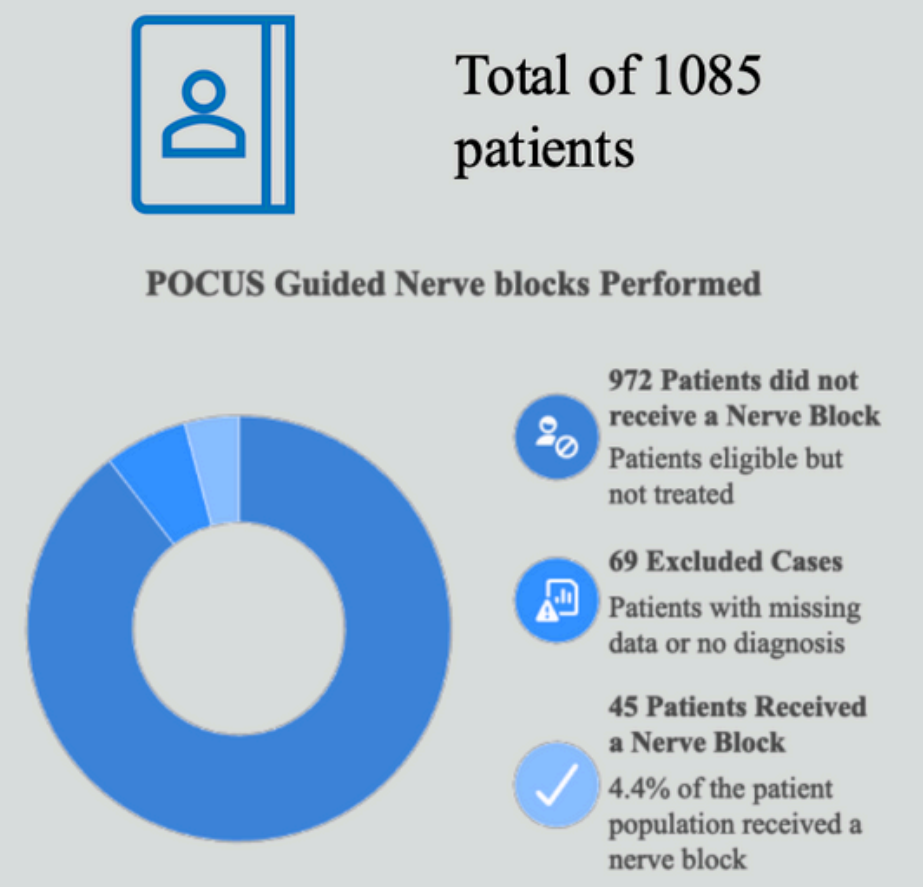
Study Methodology



Patient Demographics



Main Findings



Conclusion / Takeaway

This study revealed there to be a need in improvement within the ED with increasing the frequency of POCUS-guided regional anesthesia being performed. Necessitates a need to increase workshops at San Lucas with the procedure to allow the residents to develop mastery with it.

Beyond Diet: Biological and Clinical Determinants of Kidney Stones

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¹Ponce Health Sciences University School of Medicine, Ponce, PR; ²St. Luke's Hospital, Department of Urology, Ponce, PR; ³Ponce Health Sciences University, Department of Surgery, Ponce, PR

Background

- **Nephrolithiasis is a growing global health concern**, affecting mostly males.
- Although the prevalence is rising across minorities populations, **less than 1% of published papers include Hispanics.**
- Among US mainland Hispanics, **Puerto Ricans have the second highest prevalence of kidney stones** but there are **no island-based datasets** and Puerto Ricans are often excluded from mainland studies.

Study population

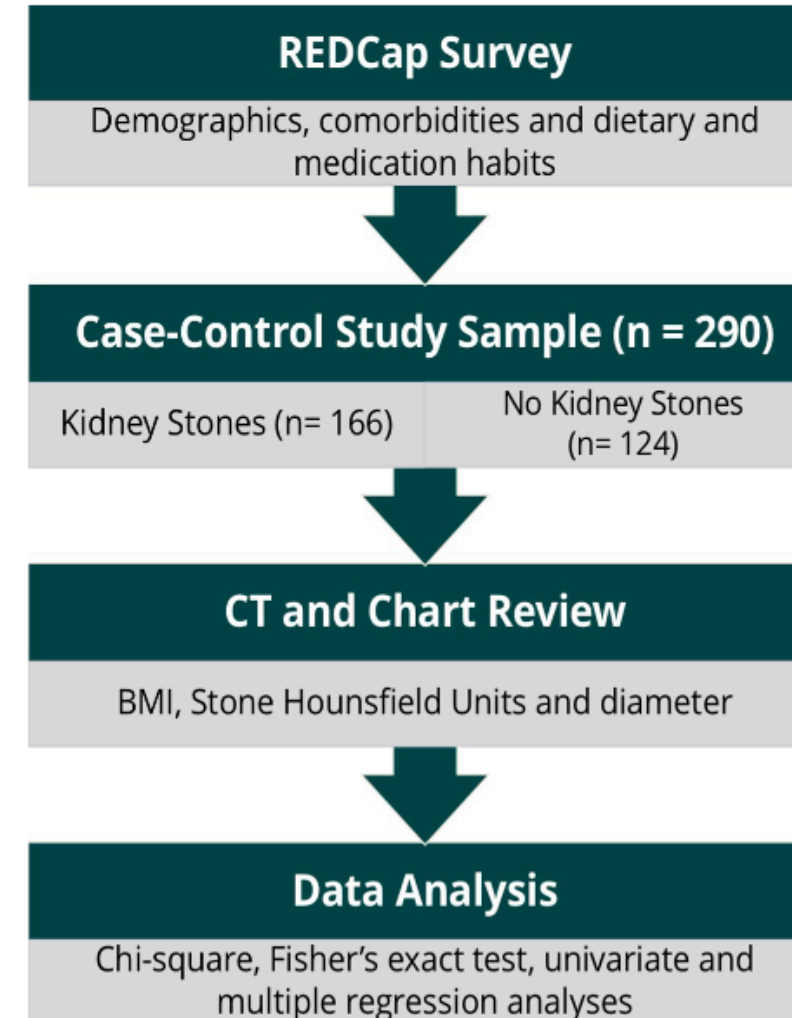


- Case Control study of **290 Puerto Rican residents** from August 2023 to October 2025.



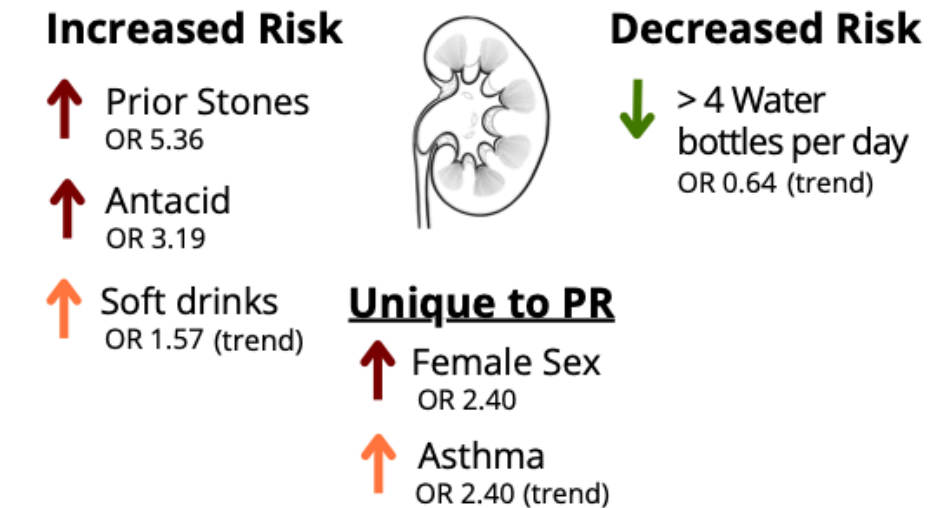
- RedCap Interview conducted at **Urocentro clinic covering urban and rural areas** across multiple municipalities in southern Puerto Rico.

Design / Methods



Main Findings

Nephrolithiasis



Female sex, prior stone history, and antacid use significantly increased odds of Nephrolithiasis.

Conclusion / Takeaway

- Biological and clinical factors, not diet were the strongest predictors of kidney stone disease in this Puerto Rican cohort.
- Consistent with mainland data, prior stone history and antiacid use significantly increased the risk of kidney stones.
- Contrary to the male predominance seen in the mainland U.S., kidney stones were more prevalent in Puerto Rican females.

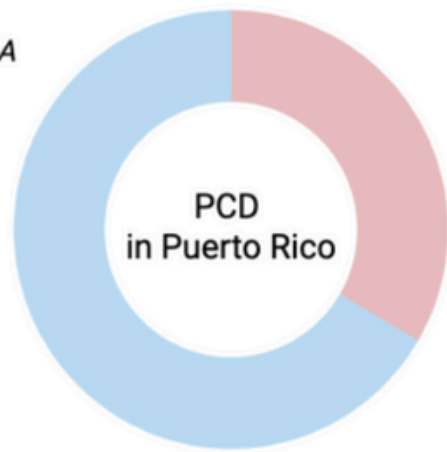
Air Compartment Analysis of nNO and FeNO in RSPH4A-Associated Primary Ciliary Dyskinesia (PCD) vs Asthma

Natalia M. Ortiz Pérez¹, BS, Gabriel Rosario Ortiz¹, BS, Frances M. Quiñones Del Toro¹, MPH, Wilfredo De Jesús Rojas¹, MD, FAAP, MSc, ATSF.

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Background

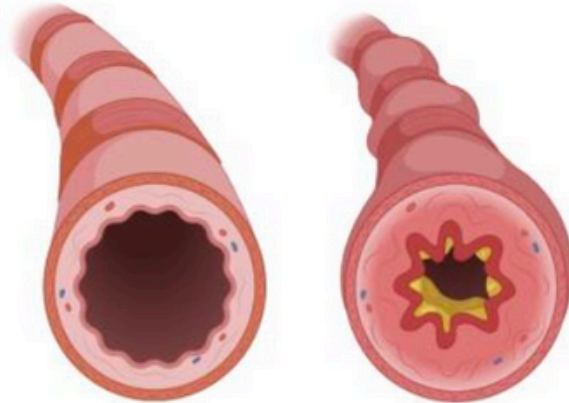
70% *RSPH4A*
30% Other



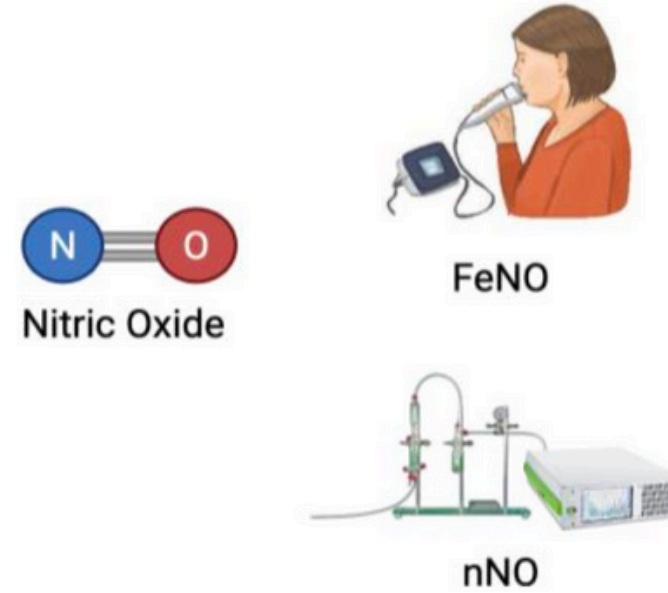
- PCD is a rare genetic disease that impairs mucociliary clearance.
- Founder variant in *RSPH4A* [c.921+3_921+6delAAGT].
- **Nitric Oxide** ↓

- Asthma is an inflammatory airway disease characterized by:
- Reversible bronchospasms
- Type 2 inflammation
- **nNO** ↑ **FeNO** ↑

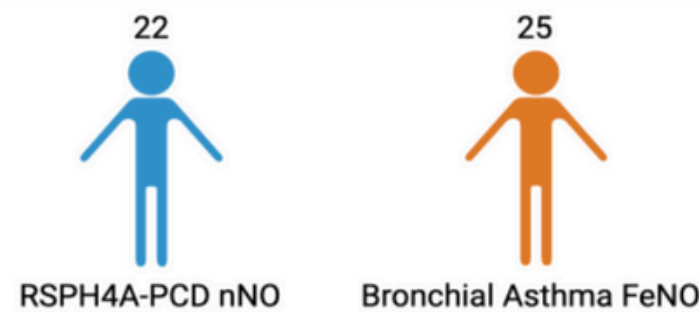
Bronchospasm



Methods



Cohort



Results

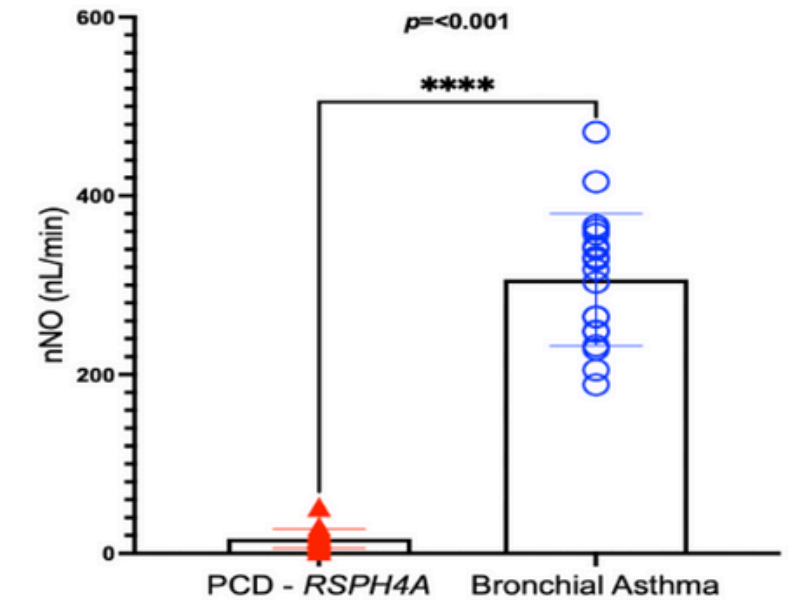


Figure 1: Nasal nitric oxide (nNO, nL/min) levels in subjects with *RSPH4A*-associated PCD were significantly lower ($p < 0.001$) than in age- and gender-matched bronchial-asthma controls, reflecting impaired epithelial NO production due to ciliary dysfunction.

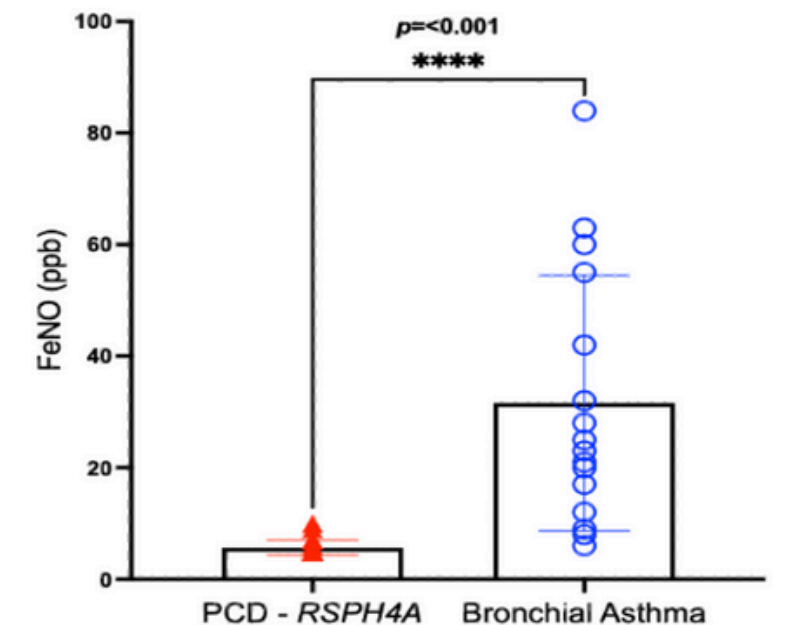


Figure 2: Fractional exhaled nitric oxide (FeNO, ppb) was markedly reduced ($p < 0.001$) in *RSPH4A*-PCD compared with bronchial asthma, distinguishing defective NO synthesis in PCD from elevated airway NO in inflammatory disease.

Conclusion

RSPH4A-associated PCD shows significantly reduced upper and lower airway nitric oxide, opposite to the elevated levels in asthma. This underscores key mechanistic differences between ciliary dysfunction and airway inflammation and supports further study of nitric oxide as a disease biomarker.

AI-Based Digital Uroflowmetry and Symptom Tracking: Insights from MenHealth

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Background

- Lower urinary tract symptoms (LUTS) and benign prostatic hyperplasia (BPH) are highly prevalent in men.
- Smartphone, sound based uroflowmetry enables accurate, non-invasive assessment of urinary flow.
- Artificial intelligence, such as MenHealth, is integrated in digital uroflowmetry to improve management of LUTS and BPH.

Study Population/ Design

Design: Multicenter Prospective Cohort

Sample: 170 male patients

Location: Five urology centers in Puerto Rico



Average age:
60.8 years



Patient engagement:
Completion of
multiple tests

The data comprised:

Demographics

Test
Frequency

Time of Day
Distribution

Longitudinal
uroflowmetry
Parameters

IPSS & QoL
Index

Device
Utilization

Main Findings

Metric	Result	Interpretation
Total test	3,586	Robust Data collection
Average test/ patient	25	High Adherence
Patient with >5/10/20 test	56%/42%/32%	Sustained Engagement
Avg max flow	16.60 ml/sec	Expected for LUTS/BPH
Avg. voided volume	211.79 ml	Consistent with real life
Avg BPH symptoms score	11.62	Moderate symptoms burden
Avg Quality of Life Score	2.15	Good Quality of Life score

Conclusion / Takeaway

- MenHealth platform enabled large-scale, real-world, data collection of remote AI-based uroflowmetry and symptom tracking.
- Dataset showed high patient engagement, frequent testing, and integration of symptom and quality of life tracking.
- Uroflowmetry and symptom measures matched target population, supporting the platform's feasibility and clinical relevance.
- Findings support integration of digital monitoring into routine urological practice to improve diagnosis, management, and follow-up.

