

**2015 Internal Medicine Residency Research Symposium Abstract List**

**Project #1: Stem cell Mobilization Outcomes in Multiple Myeloma Patients who Received Lenalidomide Prior to Autologous Stem Cell Transplant**

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**Objective:** The current standard of care for Myeloma Multiple (MM) consists of induction chemotherapy with regimes containing lenalidomide or bortezomide and subsequent stem cell collection followed by high dose chemotherapy and hematopoietic stem cell transplantation (HSCT). We examined the impact on stem cell collection in patients treated with lenalidomide, a matter that has shown conflicting evidence in literature.

**Methods:** Retrospective cohort data for age, gender, CD34+ stem cell collected, prior chemotherapy and mobilization agents from 36 patients with MM who received HSCT treatment at the University District Hospital during January 2012 to January 2014 was retrieved from medical records. Median comparison among lenalidomide use and CD34+ cells mobilization was performed along with other study variables. UPR-MSC-IRB approved the study.

**Results:** Mean CD34+ of  $9.0 \times 10^6 \pm 2.05 \times 10^6$  with lenalidomide (n=21) and  $11.7 \times 10^6 \pm 1.62 \times 10^6$  without lenalidomide (n=15), with P value of 0.08.

**Conclusions:** The data showed no significant change on stem cell collection between patients with and without lenalidomide. Although not significant, there is a trend towards greater collection among patients without lenalidomide. Other studied variables did not show significant changes in collection outcome. Study power limited by patient number. Future studies should aim to design prospective cohorts and increase patient number.

## **Project #2: Outpatient antibiotic therapy among patients discharged from Adults University hospital (UDH) in Puerto Rico Medical Center**

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**Objective:** Literature shows that after careful patient selection, outpatient parenteral antimicrobial therapy (OPAT) is a safe and preferred alternative to an inhospital admission since it produces greater patient satisfaction, less hospital acquired infections and reduction in healthcare costs. In healthcare systems where OPAT is extensively used, patient selection is made after an “OPAT Team” that includes physicians, social workers and pharmacists performs a comprehensive evaluation. In the Adults University Hospital (UDH) in Puerto Rico, OPAT is also extensively prescribed, however, there is no data supporting its efficacy and patient selection is made by the admitting physician and preferred antimicrobial selection. The objective of our study is to describe a profile of patients sent to receive OPAT and identify variables associated with failure which could serve as a guide to assist our clinicians.

**Methods:** A retrospective cohort study of patients sent to receive OPAT from August, 2014 to December, 2014 were identified. Clinical and microbiologic data, healthcare plan, admission and prescription diagnosis, length of hospital stay and prescribed antimicrobials were recorded for 148 patients during the selected time period.

**Project #3: Cardiovascular diseases: Perception and knowledge of risk factors, prophylaxis and therapy guidelines among medical interns in Puerto Rico.**

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**Objectives:** The aim of this study was to gain a better understanding of baseline perception and basic knowledge regarding cardiovascular diseases of medical interns currently enrolled in postgraduate training programs in Puerto Rico.

**Methods:** An anonymous questionnaire consisting of 30 multiple answer questions (17 based on knowledge, 13 based on individual experience) covering latest guidelines for the identification and treatment of cardiovascular risk factors was used for this cross sectional survey.

**Results:** 51 interns participated in this study, only 8% percent showed an appropriate knowledge level, defined as scoring 70% or better. Total mean value of correct answers was  $7.9 \pm 0.4$ . Statistical significant differences in terms of knowledge was noted according to both age ( $\leq 30$  years old: 8.51 and  $> 30$  years: 6.66; p value=0.0146) and medical school (Schools of Puerto Rico 8.566 and schools outside Puerto Rico 7; p value=0.0357).

**Conclusion:** Perception and knowledge of cardiovascular diseases among medical interns of PR is considerably disappointing. The results of this analysis seems to suggest that there is an urgent need to improve current medical schools' curriculum to improve the importance of cardiovascular disease and its immediate impact on the general morbidity and mortality of the general population.

**Project #4: Prevention of new thromboembolic events in patients with Inflammatory Bowel Disease admitted to the University Hospital: Are we doing it well?**

Priscila Medero, MD; Esther A.Torres, MD; Marievelisse Soto Salgado, MS, De Jesus C.

**Background:** Patients with Inflammatory Bowel Disease (IBD) are at a higher risk of thromboembolic events (TE) when compared to the general population. This study aimed to determine the incidence of TE among hospitalized IBD patients and evaluate the compliance with the standard anticoagulation protocol.

**Methods:** We reviewed the medical records of patients admitted to the IBD service at University Hospital in 2012. Admissions were selected by predetermined ICD-9 codes associated to IBD. Patients with known hypercoagulable disorders, acquired hypercoagulable states and suspected thromboembolic events at admission were excluded. Description of demographic and clinical characteristics was performed with STATA/IC 12.0.

**Results:** 158 patients were included in the study. The mean age was 36; 54% were male and 46% were female; 65% had CD and 35% had UC. Anticoagulation protocol was completed in 63% of the medical records of which only 71% were placed on anticoagulant measures. No thromboembolic events were identified in our study sample.

**Conclusions:** Compliance with the protocol was deficient. Although no TE events occurred, omitting the risk assessment and therefore the prophylaxis may increase the probability in this at risk population. Corrective measures should be undertaken to improve physician compliance with this standard of care.

## **Project #5: Evaluation of Cardiac Manifestations in a Puerto Rican Population with Confirmed Dengue Infection**

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**Background:** Dengue (DENV) cardiac manifestations have been documented, although not extensively studied. It has represented a public-health challenge in Puerto Rico although no studies have focused in evaluating cardiac manifestations.

**Objective:** Study the cardiovascular manifestations in Puerto Ricans with confirmed DENV.

**Methods:** We performed a retrospective chart review to identify patients with confirmed infection. Study population included patients with confirmed infection (PCR and or ELISA), 17 years or older admitted to UPR Hospital Carolina between August 1, 2013 and February 28, 2015. Presence of cardiovascular signs and symptoms was obtained. UPR-MSD IRB approved the study.

**Results:** Fourteen patients with acute febrile illness were admitted within the study period. Seven (50%) had confirmed DENV, 3(21%) Chikungunya (CHIKV) and 4 (29%) influenza (FLU). Forty-seven percent of DENV patients were hospitalized in comparison with 5% of CHIKV and 12.5% of FLU. None had suggestive cardiac symptoms or major manifestations. Mean lowest heart rate was 54.7( $\pm$ 8.6) in comparison with 71.3( $\pm$ 5.0) for CHIKV and 71.0( $\pm$ 5.1) for FLU. Six (85.7%) DENV patients developed bradycardia but none of the CHIKV or FLU.

**Conclusions:** DENV patients were hospitalized more frequently than other patients. There may be an association between DENV infection and development of bradycardia as described previously.

***Project #6: Use of Polymyxin B for Gram negative Multidrug resistant bacteria in the University District Hospital Intensive Care Unit***

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University of Puerto Rico Internal Medicine Residency Program

**Background:** The incidence of MDR Gram-negative bacterial infections has risen and there are few new available antibiotics. Older agents such as Polymyxin B have had to be reevaluated despite its potential side effects. This study intends to determine the prevalence of MDR *A. baumannii*, *K. pneumoniae* and *P. aeruginosa* in the University District Hospital ICU, estimate the mortality rate and compare the morbidity and mortality differences among those treated with and without Polymyxin B.

**Methods:** We selected adults patients admitted to the ICU who had positive cultures from January 2012 to June 2013. Sample consisted of 25 patients with age ranges from 27-78 years old, 12 men and 13 women.

**Results:** The median age at death was 60. Nephrotoxicity was identified on 12% of patients. Variables that improved survival were younger age, female sex, use of Polymyxin B, and the use of Daptomycin. The use of Vancomycin and vasopressors were associated with worse outcome. All cause mortality associated to each MDR bacteria was *A.baumannii* 93%, *K.pneumoniae* 91% and *P.aeruginosa* 86%.

**Conclusion:** The use of Polymyxin B does reduce mortality. Unexpectedly we found a significantly improved survival in patients who received Polymyxin B in combination with Daptomycin, which awaits prospective confirmation.

## **Project #7: Descriptive Analysis of Hemodialysis Patients in University District Hospital**

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**Objectives:** Chronic kidney disease is a processes associated with a gradual reduction in renal function. At the end stage of the disease the majority of patients may require dialysis therapy. The incidence and prevalence of patients treated with dialysis has continued to increase worldwide. The objective of this study is to describe the clinical characteristics and demographic information of the population on maintenance hemodialysis at University District Hospital.

**Methods:** A total of 58 records of active patients at the Hemodialysis Unit were reviewed and 55 were eligible. Data was collected to identify the demographic profiles and clinical characteristics of the sample. UPR-MSC IRB approved the study.

**Results:** Most of the patients in this sample had prior diagnosis of arterial hypertension (65.5%) vs diabetes mellitus (40%). Fifty-eight were males and forty-two females. The most common comorbidity identified was coronary artery disease in 40.0% of population that correlates well with literature. Arteriovenous fistula was the predominant vascular access (65.5%). Bacteremia was identified on 32.7% of patients.

**Conclusions:** This was the first descriptive study on hemodialysis patients at University District Hospital. However further studies to assess association between comorbidities and clinical characteristics are necessary to help physicians prioritize attention to specific health issues.

## **Project #8: Screening Test Knowledge among Puerto Rico's Geriatric Population**

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**Objective:** Geriatric population constitutes the fastest growing segment of the population in America. In Puerto Rico there is lack of information regarding screening test knowledge in the geriatric population. The objective of this study is to determine the level of knowledge of the geriatric population about screening tests.

**Methods:** A cross-sectional prevalence study was performed; participant's  $\geq 65$  years were selected from our clinics at the UPR-MSC and interviewed. A comparison of categorical variables by knowledge for each screening test was performed using Fisher's exact test.

**Results:** A total of 53 participants were recruited. Mammography was performed at least once, purpose known and recommended by a healthcare professional in 100% female participants. On Bone Densitometry participants who received medical recommendation and those with higher education have more knowledge ( $p=0.053$  and  $p=0.017$ ). Participants who received information about colonoscopy have more knowledge about the test (89.58% and  $p=0.089$ ). Marginal difference was found on lipid panel test knowledge in participants with higher education (83.3% and  $p=0.066$ ).

**Conclusion:** There is an overall lack of knowledge about screening test in our geriatric population; some risk factors such as education level, healthcare provider recommendation and information given have been identified. Nevertheless, our geriatric population is more educated with some screening tests than others.



## **Project #9: Traumatic Cardiac Injuries Experiences in the Puerto Rico Trauma Hospital**

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**Introduction:** To date, there are no available epidemiological studies or clinical information on TCI in P.R. The incidence, mortality, mechanism of trauma, and demographic data are unknown.

**Objectives:** To describe the prevalence of TCI in the PRTH from 2000 to 2014 and identify risk factors for morbidity and mortality in patients with TCI.

**Methods:** Retrospective cohort study from the Trauma Registry database, from 2000 - 2014. Data analyzed using Non-parametric Fisher's exact test to assess the association between type of trauma and explanatory variables. Logistic Regression Model to evaluate the odd ratio between mortality vs. type of trauma and variables.

**Results:** Total of 100 subjects, 89% were men with a mean age of 41.77 years, 71% of cases were BCT, and 76.1% were cardiac contusion. PCT represents 29% of the total of cases, 34.4% were cardiac chambers laceration. MVA represents 42% of total cases, followed by stab wounds with a 24%. Cardiac trauma has a high severity, 46 % of cases with > 25 in the ISS scale. Absolute mortality was 37%, risk factors for mortality were; length stay, ISS (>25) and need of blood transfusion.

**Conclusions:** TCI in Puerto Rico are mainly BCT, with high severity and mortality, in middle age men associated to MVA.

## **Project #10: Association of Inflammatory Bowel Disease risk allele IL-23R and smoking in a Puerto Rican cohort**

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**Objective:** The Inflammatory Bowel Diseases (IBD) are believed to result from the interaction of genetic, immune and environmental factors. The objective of our study was to determine if an association exists between single nucleotide polymorphisms (SNPs) for IL23R risk allele (rs11209026) previously identified in cohort of Puerto Ricans with IBD and proven environmental risk factor smoking.

**Methods:** A retrospective cohort data from 861 patients from the UPR Center for IBD were included. Statistical tests were used to describe cohort and determine risk allele and environmental factor association. UPR-MSD IRB approved the study.

**Results:** Mean age was  $39 \pm 14$ . 82%, 9% and 8% of the cohort were non-smokers, ex-smokers and smokers, respectively. Compared to controls, a significant risk reduction in ex-smokers in UC ( $p < 0.05$ ) and no significant risk reduction in current smokers was noted. Ex-smokers had a significant risk reduction in CD ( $p < 0.05$ ) while a non-significant risk increase in current smokers was noted. The SNPs for the IL23R risk allele studied showed no statistically significant association with smoking.

**Conclusion:** Future gene-environment association studies may allow better understanding of the complex, multifactorial IBD etiology and pathogenesis and may provide ultimate translational benefits. More studies in Hispanic cohorts are needed.

## **Project #11: The Obesity Paradox in a Hispanic Population: Effects of BMI in the Prognosis of Acute Coronary Syndrome**

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**Background:** Despite that obesity is a risk factor for acute coronary syndrome (ACS); recent studies suggest that obese patients have lower mortality after ACS compared to their normal weight counterpart. This phenomenon is called: *the obesity paradox*. However, there are no data available about this phenomenon in the population of Puerto Rico (PR).

**Objective:** To evaluate the relationship between body mass index (BMI) and in-hospital mortality of patients with ACS in the PR population.

**Methods:** A cross-sectional study of 4,120 patients was conducted with the database of Puerto Rico Heart Attack Study from 2007-2011. Sample was divided into four BMI categories: 18.5-24.9kg/m<sup>2</sup>(n=1,113), 25-29.9kg/m<sup>2</sup>(n=1,632), 30-34.9kg/m<sup>2</sup>(n=801), ≥35kg/m<sup>2</sup>(n=447).

Data related to socio-demographics, medical history, inpatient work up, cardiac symptoms, inpatient complications, and treatment was included. Logistic regression analysis was done to estimate the association between BMI and mortality. A p<0.05 was considered statistically significant.

**Results:** After adjusting by age, sex, marital status, diabetes, and diaphoresis, patients morbidly obese [OR<sub>adj</sub>=0.444; CI95%(0.225-0.808)], obese [OR<sub>adj</sub>=0.563; CI95%(0.358-0.866)], and overweight [OR<sub>adj</sub>=0.623; CI95%(0.444-0.871)] had lower risk for dying than normal weight patients.

**Conclusion:** Our results are consistent with prior literature showing that higher BMI has less mortality after ACS. Future studies should clarify the biological mechanism that may explain this relationship.

**Project #12: Characterization of HbA1c levels in a sample of Hispanic adults living in the San Juan Metropolitan Area.**

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**Objective:** Determine the mean HbA1c among the non-diabetic Hispanic population living in the San Juan metropolitan area. Compare this value with different ethnicities around the world. Evaluate the sensitivity and specificity of the HbA1c as a diagnostic test for patients with pre diabetes.

**Research Design and Methods:** This is a secondary data analysis of the parent study Burden of Diabetes and Hypertension in the adult population of the San Juan Metropolitan Area of Puerto Rico (IRB Protocol Number 6050111). Patient with the diagnosis of diabetes were excluded from this analysis. Association between FBS and HbA1c were analyzed using the sensitivity, specificity and predictive values.

**Results:** A total of 370 patients were reviewed. Among them 242 were non- diabetic. The mean Hba1c among the non diabetic population was 5.38%. Sensitivity , specificity, and area under the receiving operating characteristic curve were 56.8%, 74.2% and 0.843 for diagnosis of pre-diabetes by using the HbA1c as sole diagnostic test (P <0.001).

**Conclusion:** It is evident that although our multicultural background is present in our population, the A1c level among the non-diabetic population is very similar to the non-hispanic whites living in the United States. In addition we found in agreement with other studies a low sensitivity of A1c for the purpose of diagnosis of pre-diabetes.